Appendix B.

Supporting Documentation

Appendix B. Supporting Documentation

Table of Contents

FACILITIES TABLE

EXISTING			PROPOSED		
ID	FACILITY NAME	TOP ELEV.	ID	FACILITY NAME	EST. TOP ELEV.
1	AIR HANGAR	231.7'	A	TERMINAL	246'
2	TERMINAL BUILDING	246.2'	B	PARKING GARAGE	250'
3	A.R.F.F. BUILDING	209.3'	C	HANGAR EXPANSION	248'
4	NEW JERSEY STATE POLICE	191.3'	D	FUEL FARM	210'
5	NEW JERSEY ARMY NATIONAL GUARD	235.7'	E	TERMINAL PARKING EXPANSION	180'
6	JOHNSON AND JOHNSON AVIATION DIVISION	275.0'	F	FUTURE SCOTCH ROAD AUTO PARKING LOT	175'
7	EAST HANGAR	244.1'	G	MIXED GA LONG-TERM DEVELOPMENT AREA	180'
8	AIRPORT MAINTENANCE	222.7'	H	CORPORATE GA DEVELOPMENT AREA	170'
9	POWER SUBSTATION (U.S. NAVY)	N/A	J	MIXED GA DEVELOPMENT AREA	165'
10	MERCER COUNTY SHERIFF	230.0'	K	MIXED GA DEVELOPMENT AREA	215'
11	MERCER COUNTY MORGUE	N/A	L	LIGHT GA DEVELOPMENT AREA	200'
12	SIGNATURE AVIATION HANGAR	241.7'	M	SNOW REMOVAL EQUIPMENT BUILDING	225'
13	SIGNATURE AVIATION HANGAR	246.2'	N	FUTURE FBO DEVELOPMENT	230'
14	MERCER COUNTY COMMUNITY COLLEGE AVIATION SCHOOL	214.0'			
15	SIGNATURE T-HANGAR	222.4'			
16	SIGNATURE T-HANGAR	222.0'			
17	U.S. MARINES RESERVE	244.9'			
18	TAC TECHNICAL INSTRUMENT CORPORATION	218.7'			
19	CIVIL AIR PATROL	N/A			
20	AIR TRAFFIC CONTROL TOWER AND AFLV	277.2'			
21	DEPARTMENT OF PUBLIC WORKS BUILDINGS	223.1'			
22	PFIZER CORPORATE HANGAR	235.0'			
23	MERCK HANGAR	248.7'			
24	TRENTON-MERCER HANGAR ASSOCIATION	223.8'			
25	TRENTON-MERCER HANGAR ASSOCIATION	225.0'			
26	TRENTON-MERCER HANGAR ASSOCIATION	N/A			
27	CORPORATE AVIATION HANGAR OF TTN	230.7'			
28	CORPORATE AVIATION HANGAR OF TTN	229.7'			
29	CORPORATE AVIATION HANGAR OF TTN	229.4'			
30	CORPORATE AVIATION HANGAR OF TTN	230.2'			
31	CORPORATE AVIATION HANGAR OF TTN	229.2'			
32	CORPORATE AVIATION HANGAR OF TTN	229.0'			
33	COUNTY OF MERCER VACANT HANGAR	232.1'			
34	COUNTY OF MERCER VACANT FUEL FARM	N/A			
35	COUNTY OF MERCER IMPOUND LOT	N/A			
36	FAA RTR SITE / ADS ANTENNA	265.8'			
37	ANTENNA / COMMUNICATION TOWERS	355.0'			
38	AIRPORT BUSINESS CENTER (SZELES)	N/A			
39	BAGGAGE TRAILER	210.0'			
40	SALT DOME	240'			
41	GOLF COURSE	N/A			
42	SOCCER FIELDS	N/A			
43	MERCER COUNTY LIBRARY, EWING BRANCH	165'			

FEDERAL AVIATION ADMINISTRATION
HARRISBURG AIRPORTS DISTRICT OFFICE
CONDITIONALLY APPROVED
DATE:
SUBJECT TO COMMENTS IN LETTER DATED:
AIRSPACE STUDY NUMBER: 2018-AEA-199-NRA

FAA'S APPROVAL OF THIS AIRPORT LAYOUT PLAN (ALP) REPRESENTS ACCEPTANCE OF THE GENERAL LOCATION OF FUTURE FACILITIES DEPICTED. DURING THE PRELIMINARY DESIGN PHASE, THE AIRPORT OWNER IS REQUIRED TO RESUBMIT FOR APPROVAL THE FINAL LOCATIONS, HEIGHTS AND EXTERIOR FINISH OF STRUCTURES. FAA'S CONCERN IS OBSTRUCTIONS, IMPACT ON ELECTRONIC AIDS OR ADVERSE EFFECTS ON CONTROLLER VIEW OF AIRCRAFT APPROACH AND GROUND MOVEMENT AREAS WHICH COULD ADVERSELY AFFECT THE SAFETY, EFFICIENCY OR UTILITY OF THE AIRPORT.

MAGNETIC TRUE
12° 25' W (2016) ± 0° 21' changing by 0° 1' E per year Model Used: WMM2015

AIRPORT SPONSOR APPROVAL:
NAME:
TITLE: Airport Manager
DATE: 5/24/2018

TRENTON MERCER AIRPORT

URBAN ENGINEERS

NOT TO SCALE

REVISION	DESCRIPTION	DATE

TRENTON-MERCER AIRPORT
AIRPORT LAYOUT PLANS
PROJECT NO: 020.137.001

AIRPORT LAYOUT PLAN

DRAWN: JNH	APPROVED:
CHECKED: KWF	DATE: 05/10/2018

DRAWING NO. 3

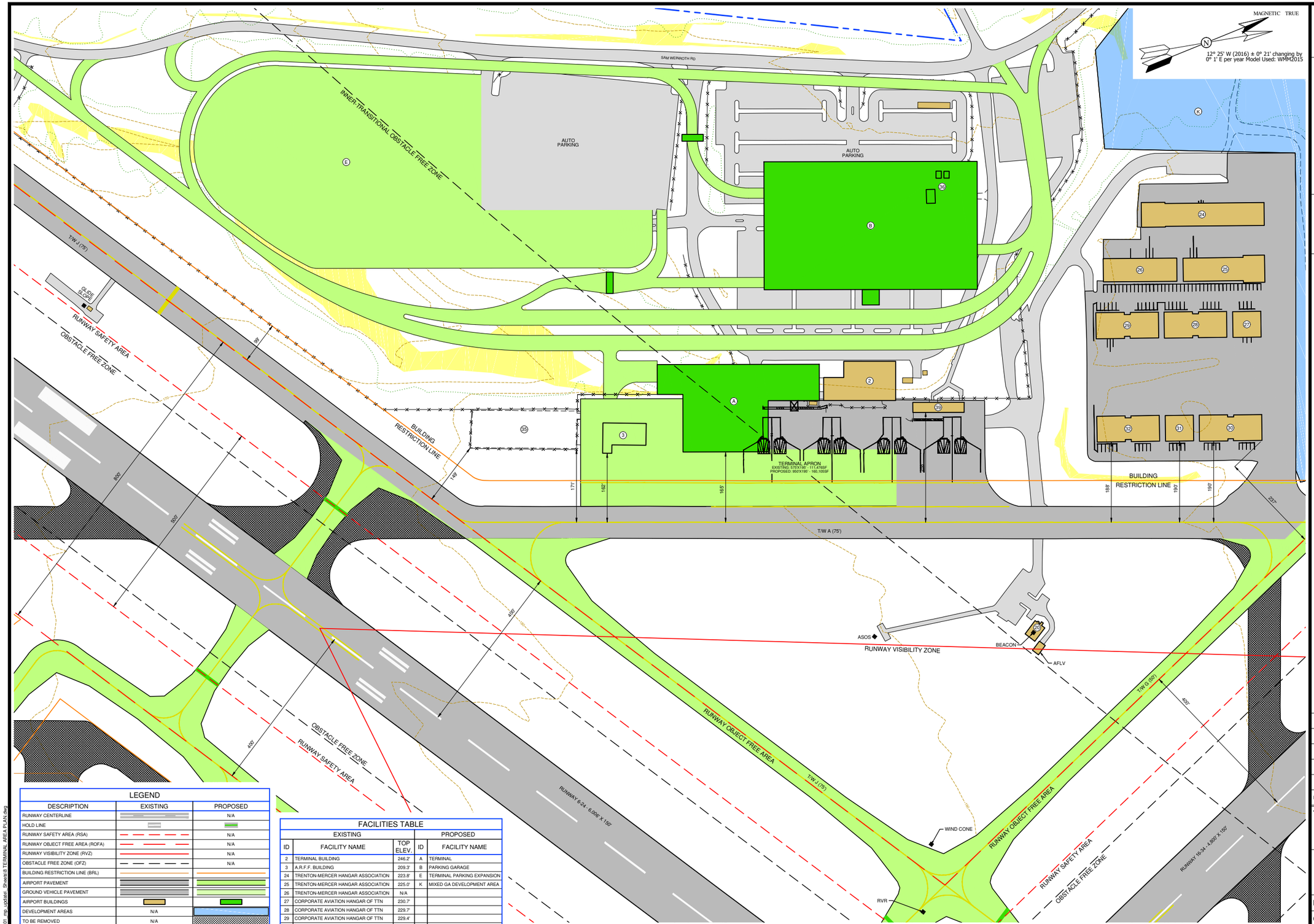
SHEET NO. 3 of 30

LEGEND		
DESCRIPTION	EXISTING	PROPOSED
RUNWAY CENTERLINE		N/A
HOLD LINE		
RUNWAY SAFETY AREA (RSA)		N/A
RUNWAY OBJECT FREE AREA (ROFA)		N/A
RUNWAY PROTECTION ZONE (RPZ)		
RUNWAY VISIBILITY ZONE (RVZ)		N/A
OBSTACLE FREE ZONE (OFZ)		N/A
PRECISION OBSTACLE FREE ZONE (POFZ)		N/A
BUILDING RESTRICTION LINE (BRL)		
CFR PART 77 APPROACH SURFACE		N/A
AIRPORT DESIGN APPROACH SURFACE		N/A
NAVAID CRITICAL AREA		N/A
AIRPORT REFERENCE POINT		N/A
AIRPORT PAVEMENT		
GROUND VEHICLE PAVEMENT		
AIRPORT BUILDINGS		
MISCELLANEOUS BUILDINGS		N/A
AERONAUTICAL DEVELOPMENT AREAS	N/A	
TO BE REMOVED	N/A	
AIRPORT PROPERTY		N/A
AIRPORT EASEMENT		N/A
NGS MONUMENT		N/A
FENCE		N/A
TREE LINE		N/A
GROUND ELEVATION CONTOURS (10')		N/A
WETLANDS		N/A

SCALE
0 400 800 1200 1600
FEET

NOTES:
- ALL POSITIONAL DATA REFERENCES NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM 1988 (NGVD88).
- AERIAL MAPPING BY WOOLPERT, 2014.
- ROAD ELEVATIONS AS INDICATED INCLUDE CONSIDERATION OF VEHICLES PER CFR PART 77. (15' FOR ROAD, 17' FOR INTERSTATE, 23' FOR RAILROAD).
- BUILDING RESTRICTION LINE (BRL) DETERMINED BASED ON GUIDANCE IN AC 150/5300-13A (CHANGE 1). OBSTRUCTION LIGHTING OR OTHER MITIGATION MAY BE NECESSARY TO COMPLY WITH 14 CFR PART 77 REQUIREMENTS.

T:\2014\020137_TTN_OnCall\001_MP_Update_Sheets\3 AIRPORT LAYOUT PLAN.dwg



LEGEND		
DESCRIPTION	EXISTING	PROPOSED
RUNWAY CENTERLINE		N/A
HOLD LINE		
RUNWAY SAFETY AREA (RSA)		N/A
RUNWAY OBJECT FREE AREA (ROFA)		N/A
RUNWAY VISIBILITY ZONE (RVZ)		N/A
OBSTACLE FREE ZONE (OFZ)		N/A
BUILDING RESTRICTION LINE (BRL)		
AIRPORT PAVEMENT		
GROUND VEHICLE PAVEMENT		
AIRPORT BUILDINGS		
DEVELOPMENT AREAS	N/A	
TO BE REMOVED	N/A	
AIRPORT PROPERTY		
FENCE		N/A
TREE LINE		N/A
GROUND ELEVATION CONTOURS (10')	850	N/A
WETLANDS		N/A

FACILITIES TABLE				
EXISTING			PROPOSED	
ID	FACILITY NAME	TOP ELEV.	ID	FACILITY NAME
2	TERMINAL BUILDING	246.2'	A	TERMINAL
3	A.R.F.F. BUILDING	209.3'	B	PARKING GARAGE
24	TRENTON-MERCER HANGAR ASSOCIATION	223.8'	E	TERMINAL PARKING EXPANSION
25	TRENTON-MERCER HANGAR ASSOCIATION	225.0'	K	MIXED GA DEVELOPMENT AREA
26	TRENTON-MERCER HANGAR ASSOCIATION	N/A		
27	CORPORATE AVIATION HANGAR OF TTN	230.7'		
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31	CORPORATE AVIATION HANGAR OF TTN	229.2'		
32	CORPORATE AVIATION HANGAR OF TTN	229.0'		
35	COUNTY OF MERCER VEHICLE LOT	N/A		
36	FAA RTR SITE / ADS ANTENNA	265.8'		
39	BAGGAGE TRAILER	N/A		

SCALE
0 100 200 300 400
FEET

B-5

NOTES:
- AERIAL MAPPING BY WOOLPERT, 2014.
- BUILDING RESTRICTION LINE (BRL) DETERMINED BASED ON GUIDANCE IN AC 150/5300-13A (CHANGE 1), OBSTRUCTION LIGHTING OR OTHER MITIGATION MAY BE NECESSARY TO COMPLY WITH 14 CFR PART 77 REQUIREMENTS.

TRENTON-MERCER AIRPORT

URBAN ENGINEERS
Formulating Excellence

NOT TO SCALE

REVISION	DESCRIPTION	DATE

TRENTON-MERCER AIRPORT
AIRPORT LAYOUT PLANS
PROJECT NO: 020.137.001

TERMINAL AREA PLAN

DRAWN:	JNH	APPROVED:	
CHECKED:	KWF	DATE:	05/10/2018

DRAWING NO. 8

SHEET NO. 27 of 30

I:\2014\020\137_tm_on-call\001_mp_ucdate_Sheets\8 TERMINAL AREA PLAN.dwg

U. S. Department Of Transportation

Federal Aviation Administration

Harrisburg Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011
717-730-2830
717-730-2838 (fax)

April 28, 2016

Melinda Montgomery
Trenton-Mercer Airport
340 Scotch Road, Suite 200
Ewing, NJ 08628

Dear Ms. Montgomery:

This is in response to your March 24, 2016 submittal of Section 2, Aviation Forecasts, for the Master Plan Update for Trenton-Mercer Airport (TTN), under AIP Project Number 3-34-0042-047-2014.

The forecast appears to be a reasonable long-term forecast when compared to the FAA Terminal Area Forecasts (TAF). Therefore, the forecasts are approved as follows:

Activity	Year	Airport Forecast (AF)	TAF 2016	AF/TAF Difference
Based Aircraft	2020	139 (all types)	132	5.3%
Based Aircraft	2025	147 (all types)	132	11.4%
Enplanements	2020	358,728	341,915	4.9%
Enplanements	2025	396,358	374,375	5.9%
Total Operations	2020	82,191	81,452	0.9%
Total Operations	2025	85,934	82,473	4.2%

The current Airport Reference Code (ARC) at TTN is C-III. Section 2 of the Master Plan Update recommends the Airbus A319, a C-III aircraft, be designated the critical aircraft for Runway 6-24. The Gulfstream V, also a C-III aircraft, is recommended as the critical aircraft for Runway 16-34. The recommendations are based on current operations, previous RSA determinations including design of the EMAS beds, and unavoidable airport constraints. Therefore, we approve the ARC at Trenton-Mercer as C-III for both runways, each with its own C-III critical aircraft.

If you have any questions or comments regarding this approval, please feel free to contact me at (717) 730-2843.

Sincerely,

Charles H. Trice, PE
Civil Engineer

U. S. Department Of Transportation

Federal Aviation Administration

Harrisburg Airports District Office
3905 Hartzdale Drive, Suite 508
Camp Hill, PA 17011
717-730-2830
717-730-2838 (fax)

September 30, 2016

Melinda Montgomery
Trenton-Mercer Airport
340 Scotch Road, Suite 200
Ewing, NJ 08628

Dear Ms. Montgomery:

This is in response to your September 1, 2016 submittal of Section 2, Aviation Forecasts, for the Master Plan Update for Trenton-Mercer Airport (TTN), under AIP Project Number 3-34-0042-047-2014. The forecast was previously approved on April 28, 2016, but was evaluated and resubmitted after a second airline proposed operating at TTN beginning in November 2016.

The forecast appears to be a reasonable long-term forecast when compared to the FAA Terminal Area Forecasts (TAF). Therefore, the forecasts are approved as follows:

Activity	Year	Airport Forecast (AF)	TAF 2016	AF/TAF Difference
Based Aircraft	2020	139 (all types)	132	5.3%
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If you have any questions or comments regarding this approval, please feel free to contact me at (717) 730-2843.

Sincerely,

Charles H. Trice, PE
Civil Engineer

New Jersey Statewide Airport Economic Impact Study

Evaluation of Economic and Fiscal Impacts of Public – Use New Jersey Airports

New Jersey Statewide Airport Economic Impact Study

Evaluation of Economic and Fiscal Impacts of 37 Public – Use New Jersey Airports

September 2016

Prepared for: New Jersey Department of Transportation
Bureau of Aeronautics

Prepared by: AECOM Technical Services, Inc.

Cover images:

Left: Trenton-Mercer Airport: Trenton, New Jersey
Right: Solberg-Hunterdon Airport: Readington, New Jersey

Cover Photos by Glenn Stott and Clare Mansfield
Content and Summary Photos by Glenn Stott

Contents

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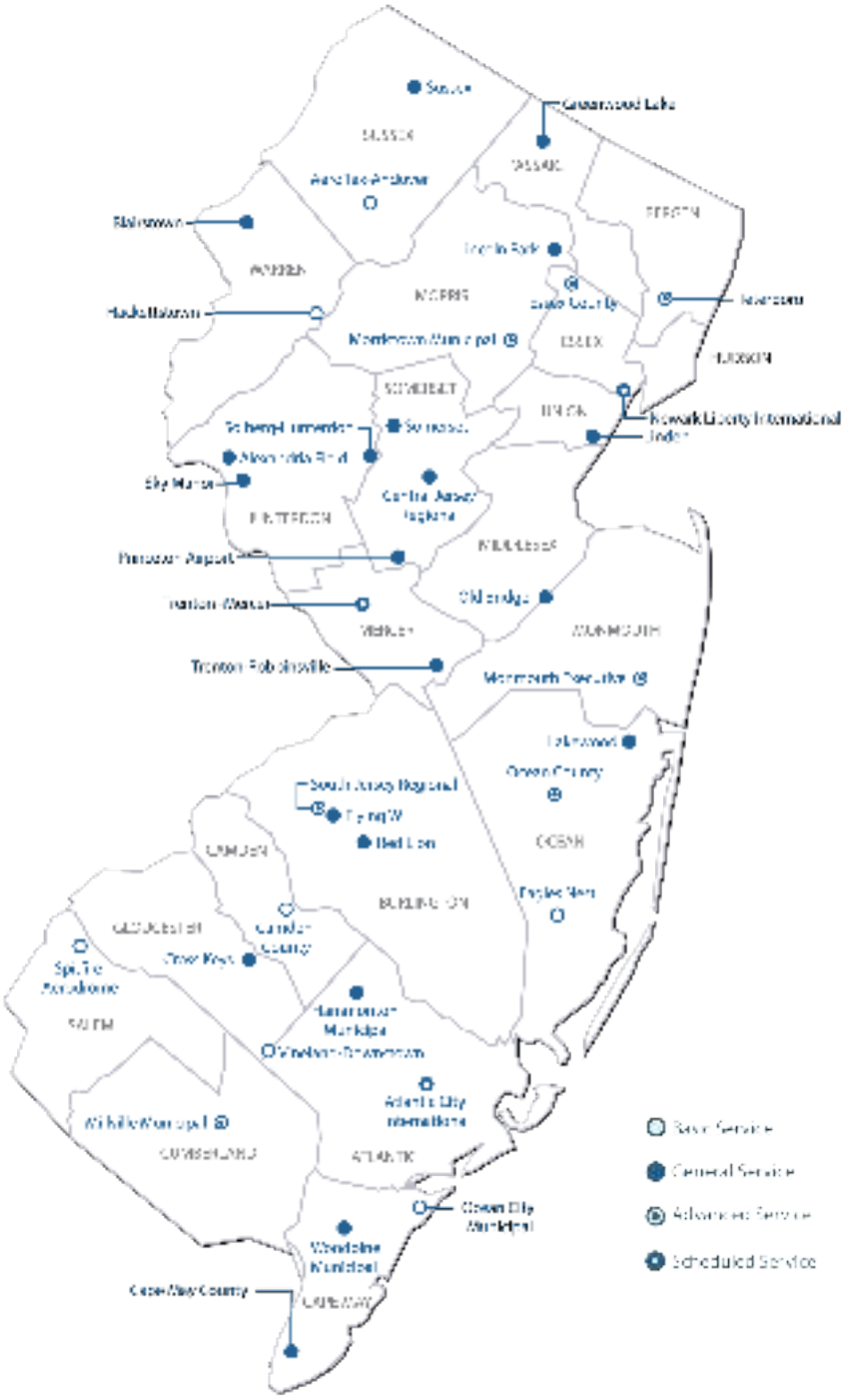
Executive Summary

Figure 1
Study Airports



The New Jersey Department of Transportation (NJDOT) periodically reviews and updates the New Jersey State Airport System Plan (NJSASP). Revisions to the economic impacts of its system airports are included to maintain accurate data on which to base business decisions made by the State, municipalities, airport community and other entities. Airports play a vital role in New Jersey's local and state economies, not only providing transportation for residents, businesses and visitors; but also serving as key economic drivers. The previous 2003 study has often been utilized in the past to benefit the airports and airport system as a whole within New Jersey.

Air transportation, in general, represents a larger portion of New Jersey's statewide economy when compared to national averages. Employment since the last plan has wavered with numbers in 2013 being less than previous numbers in 2003. The ultimate effect is that while there may be fewer employees, total output to the State's economy has increased which, in turn, causes payroll to increase as well.

The contribution of all airports, from small general aviation to large international commercial service, is crucial to the economy. Services provided at New Jersey's airports entail, but are not limited to, scheduled commercial service, corporate and charter aviation, general aviation, medical services, air cargo, aircraft rental and sales, aircraft fueling and maintenance, repair services, aircraft storage and more. Of the 37 public-use airports evaluated in this study (shown on **Figure 1**), 20 are privately owned.

Methodology

Economic impacts can be described as the sum of economic activity within a defined geographic region resulting from an initial change in the economy. This initial change, also referred to as the direct impact, spurs a series of subsequent indirect and induced activities. Households, businesses and governments are connected in a complex web of interdependent relationships based on producing, selling, purchasing and taxing goods and services. An initial change in one of these creates ripple effects through the others. Therefore, the direct impact will create revenues at other firms and employment for local residents and associated income, as well as tax revenues, to state and local governments referred to as fiscal impacts. The methodology for this study analyzes direct, indirect and induced impacts in order to determine the total economic impact to the State. Impacts were further measured by analyzing general aviation (GA) operations, visitors and capital spending.

Teterboro Airport: Teterboro, New Jersey

Model

An economic input-output (IO) model, the IMPLAN Model, was used to capture how investment circulates through the economy based on the data collected from the following select categories;

- Aircraft operations
- Passenger enplanements
- Based aircraft
- Airport services
- Air cargo volume
- Capital improvements
- Revenues and expenditures
- Full and part-time employees
- Airport tenants

Results from the analysis are presented for changes in output, employment and wages in the State as a cause of the direct impacts as described under the Methodology section.

- **Output:** This is the total annual value of goods and services produced across all industry sectors and all stages of production in the study area.

- **Employment:** This represents the number of jobs needed to support the given economic activity across all sectors. It includes all wage and salary employees, part- and full-time, as well as self-employed, temporary and seasonal jobs.

- **Wages:** The total annual payroll costs (including benefits) across all sectors supported by the initial investment. It includes the annual wages and salaries of workers who are paid by employers, as well as benefits such as health and life insurance, retirement payments and non-cash compensation. It also includes proprietary income received by self-employed individuals.

Figure 2 illustrates the study methodology used for calculating annual airport economic impacts for New Jersey.

Figure 2
Study Methodology

Results

This study analyzes on-airport tenant and visitor impacts. On-airport tenant impacts include those businesses located on airport property and/or businesses with a direct interest in airport operations. Visitor impacts include secondary businesses, such as hotels, restaurants and entertainment, which are affected by visitors who arrive via the study airports.

New Jersey airports generate the following total impacts:

- Over 60,000 commercial service jobs
- Over 12,800 GA jobs
- Over $4.6 billion in commercial service payroll
- Over $890 million in GA payroll
- Over $15.5 billion in total commercial service output
- Over $2.8 billion in total GA output

Comparing the impacts from this study to the 2003 study, total output has increased by 32%. **Table 1** details the impacts each individual airport has on the New Jersey economy for the study period highlighting employment numbers and payroll figures that ultimately result into an $18.4 billion annual impact on New Jerseys economy from 37 system airports alone.

Table 1
New Jersey Airports Economic Impact Summary

Airport	Total Employment	Total Payroll	Total Output
General Aviation Impacts			
Aeroflex-Andover	23	$1,600,900	$5,142,700
Alexandria Field	101	$7,510,500	$24,649,800
Atlantic City International	435	$27,407,500	$86,431,900
Blairstown	74	$5,455,000	$17,814,200
Camden County	65	$5,046,200	$16,705,000
Cape May County	214	$9,671,800	$27,264,600
Central Jersey Regional	50	$3,304,400	$10,558,600
Cross Keys	64	$4,386,200	$14,108,500
Eagles Nest	70	$5,414,600	$17,937,600
Essex County	670	$36,656,700	$110,812,500
Flying W	74	$4,712,200	$14,936,000
Greenwood Lake	34	$2,502,000	$8,170,500
Hackettstown	33	$2,349,300	$7,650,800
Hammonton Municipal	42	$2,902,300	$9,362,200
Lakewood	160	$12,314,600	$40,710,200
Lincoln Park	74	$5,368,100	$17,489,600
Linden	123	$8,012,500	$25,478,400
Millville Municipal	246	$12,849,100	$38,238,600
Monmouth Executive	193	$12,630,800	$40,216,600
Morristown Municipal	1,794	$128,224,200	$417,234,000
Newark Liberty International	1,199	$90,399,600	$297,657,700
Ocean City Municipal	71	$5,328,000	$17,467,400
Ocean County	106	$7,602,600	$24,769,200
Old Bridge	61	$4,536,300	$14,886,900
Princeton	92	$6,592,700	$21,451,600
Red Lion	8	$519,100	$1,633,500
Sky Manor	56	$4,009,000	$13,063,500
Solberg-Hunterdon	63	$4,285,200	$13,798,900
Somerset	87	$6,228,000	$20,229,100
South Jersey Regional	124	$9,093,400	$29,744,800
Spitfire Aerodrome	41	$3,099,600	$10,180,200
Sussex	73	$5,319,800	$17,407,000
Teterboro	4,901	$352,117,900	$1,147,039,000
Trenton-Mercer	1,258	$83,386,500	$266,416,700
Trenton-Robbinsville	64	$4,673,100	$15,261,700
Vineland Downstown	74	$5,782,200	$19,167,900
Woodbine Municipal	74	$5,428,100	$17,847,900
GENERAL AVIATION TOTAL	**12,891**	**$896,720,000**	**$2,898,935,300**
Commercial Service Impacts			
Atlantic City International	12,267	$956,756,600	$3,173,116,800
Newark Liberty International	47,450	$3,700,702,300	$12,273,508,600
Trenton-Mercer	311	$24,226,500	$80,348,200
COMMERCIAL SERVICE TOTAL	**60,028**	**$4,681,685,400**	**$15,526,973,600**
NEW JERSEY GRAND TOTAL	**72,919**	**$5,578,405,400**	**$18,425,908,900**

Note: Based on 2013 data

1 INTRODUCTION

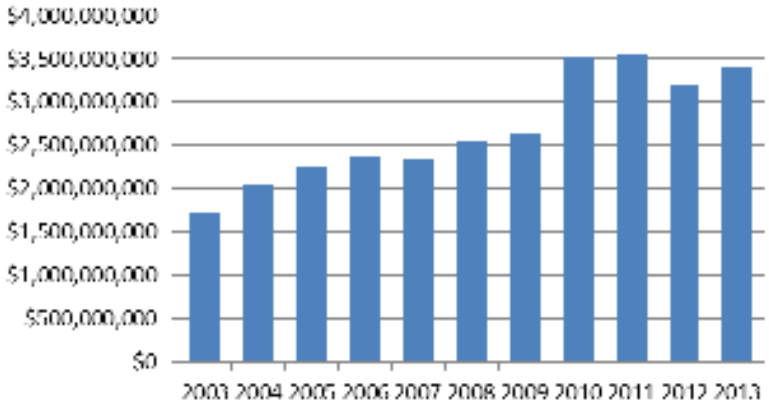
One element of a statewide aviation impact study is an assessment of broader trends that shape air travel for New Jersey, the United States (U.S.) and the world. Looking at data from the U.S. Department of Commerce – Bureau of Economic Analysis, air transportation generates more than $3 billion in gross state product (direct output) across New Jersey. Since 2003, total gross state product associated with air travel is more than doubled, from roughly $1.5 billion to almost $3.5 billion.

Figure 3 shows the gross state product for air transportation.

Figure 4 looks at air transportation as a share of total output for New Jersey, relative to national averages and indicates that, for New Jersey, air transportation represents a larger share of statewide economic activity compared to national averages. In 2013, air transportation represented approximately 0.5% of total U.S. economic activity; for New Jersey, the comparable percentage was 0.6%.

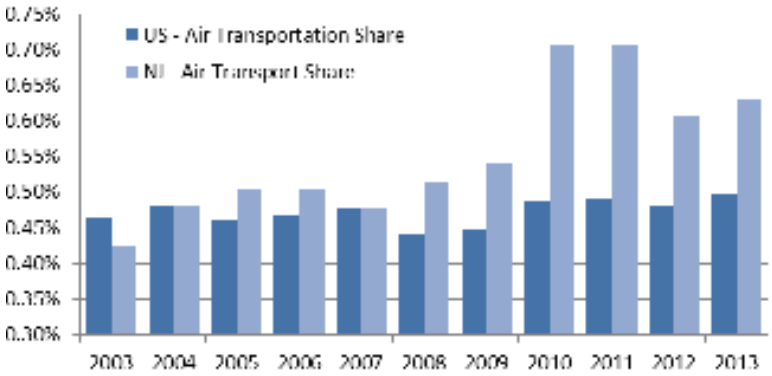
Figure 5 summarizes U.S. Department of Commerce – Bureau of Labor Statistics data regarding private sector aviation employment for New Jersey. It indicates that private sector aviation-related employment has decreased, falling to levels seen in 2003 and 2004. Taken in comparison with data related to total output (gross state product), the implication is that private sector air transportation is generating increasing output with fewer employees. This in turn indicates an increase in wages throughout this aviation sector.

Figure 3
New Jersey Gross State Product, Air Transportation



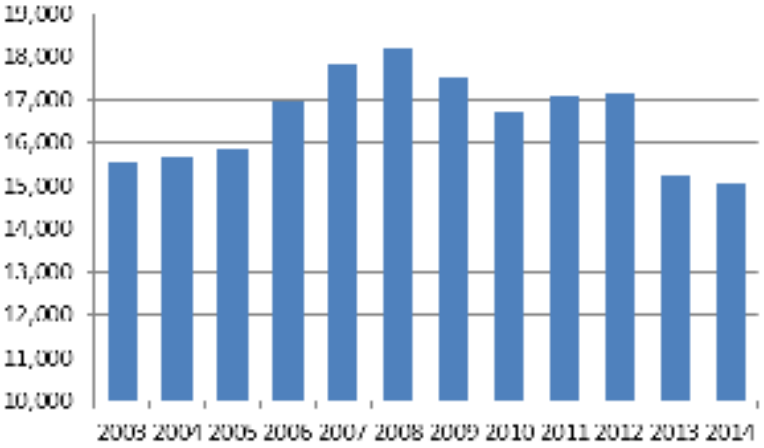
Source: Bureau of Economic Analysis, 2013

Figure 4
Air Transportation Percentage Share Of Total Gross Domestic Product



Source: Bureau of Economic Analysis, 2013

Figure 5
Total New Jersey Private Sector Aviation Employment



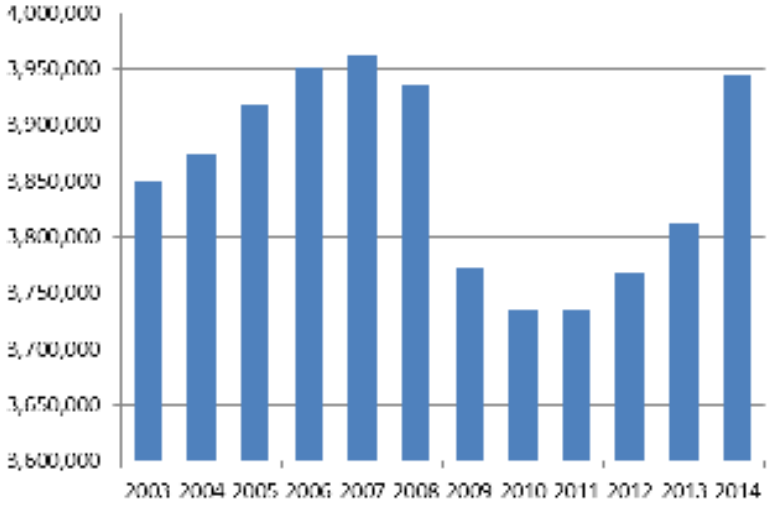
Source: Bureau of Labor Statistics, 2014

For perspective, **Figure 6** compares changes in total employment for New Jersey on an annual basis between 2003 and 2014. It shows that overall employment has begun to recover to pre-recession levels in 2007 when more than 3.95 million people were employed across the State. Since 2012, rates of job growth for the State have clearly accelerated, due to improvements in the economy since the 2008 economic downturn.

Figure 7 summarizes total passenger enplanements for 11 towered airports between 2003 and 2013; these airports include Newark Liberty International (EWR), Atlantic City International (ACY), Trenton Mercer (TTN), Teterboro (TEB), McGuire Air Force Base (WRI), Morristown Municipal (MMU), Monmouth Executive (BLM), Cape May County (WWD), Millville Municipal (MIV), Ocean County (MJX) and Essex County (CDW). Overall passenger enplanements have increased statewide at an annual rate of 1.9% between 2003 and 2013. Importantly, the rate of growth at EWR accounts for the vast majority of passenger enplanements (96% in 2013). Passenger enplanements have increased since 2009 at a slower rate (1.5%) compared to the long-term average. TTN saw the largest single year increase in enplanements due to the arrival of Frontier Airlines.

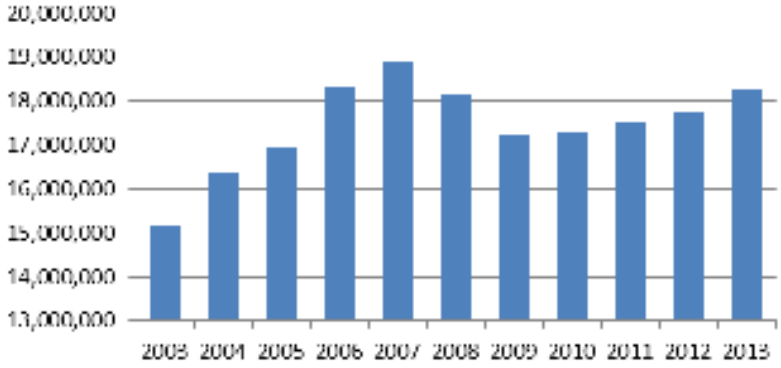
Figure 8 summarizes itinerant airport operations for the same subset of towered airports. In general, it shows stable operations for air carrier and air taxi with significant decreases in itinerant general aviation operations. Itinerant operations are defined as operations that are departing for, or arriving from, areas outside a 20-mile radius of the airport. Local operations, however, remain in the vicinity of the airport or within 20 miles.

Figure 6
New Jersey Total Employment



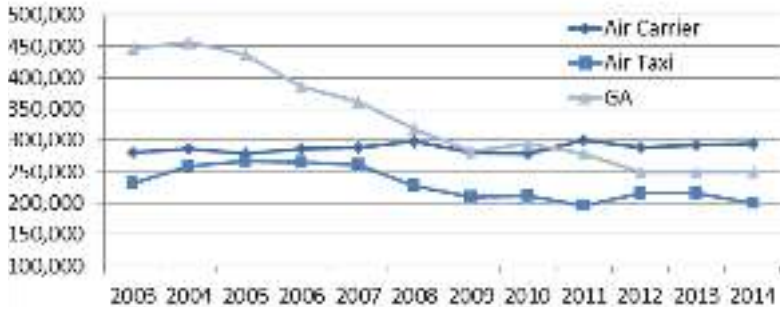
Source: Bureau of Labor Statistics, 2014

Figure 7
Total Passenger Enplanements – New Jersey



Source: FAA Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports, 2013

Figure 8
FAA Itinerant Airport Operations – 2003 to 2014



Source: FAA Air Traffic Activity System, 2014

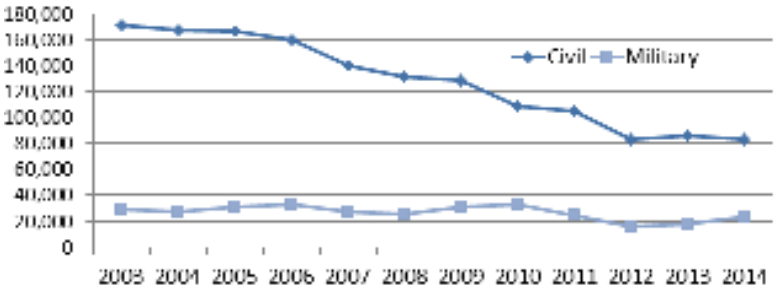
Reflecting a similar trend as above for general aviation at the towered airports, local general aviation operations shown in **Figure 9** also indicate a significant decrease across the State. Military operations have remained stable.

Regarding the operations data for airports tracked by the FAA (ACY, CDW, EWR, MMU, TEB and TTN), the data reflects the reality of a precipitous drop in general aviation related operations. Itinerant operations decreased at a 5.2% annualized rate, reflecting a total loss of approximately 197,021 operations since 2003. For local operations, the decrease was more significant at 6.4%, reflecting a loss of 88,359 operations within the same timeframe. While air carrier operations have increased slightly (14,068), air taxi operations have decreased from 231,271 to 200,568 between 2003 and 2014.

Figure 10 summarizes airport-specific decreases in total operations. The dramatic decrease in overall operations at MMU is notable. An increase in air carrier operations at EWR was offset by a larger decrease in air taxi operations. TEB had the second largest decrease in itinerant general aviation operations. A shift in aircraft fleet mix is likely a major contributing factor in the decrease in operations. Light GA operations have continued to decline over the years with a rise in higher end aircraft operations using larger turbine aircraft.

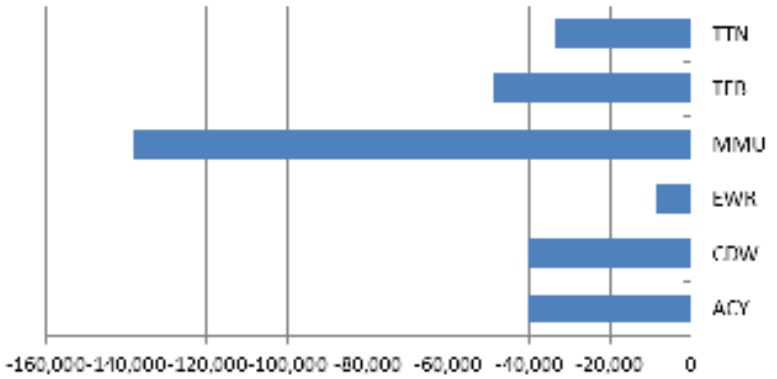
Figure 11 summarizes changes in gasoline and jet fuel prices between 2003 and 2015. In general, while gasoline prices have grown at an annualized rate of 4.4% from 2003 to 2015, jet fuel prices have grown at an annualized rate of 5.8% over the same period. For perspective, the Northeastern U.S. Urban Consumer Price Index has grown at a 2.2% rate over the same period, suggesting that prices of jet fuel have increased at approximately twice the rate of inflation since 2003.

Figure 9
Local Airport Operations – 2003 to 2014



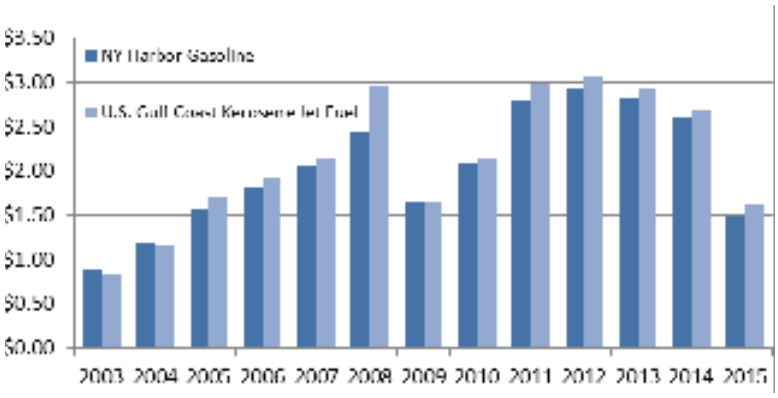
Source: FAA Air Traffic Activity System, 2014

Figure 10
Decrease in Total Operations – 2003 to 2014



Source: FAA Air Traffic Activity System, 2014

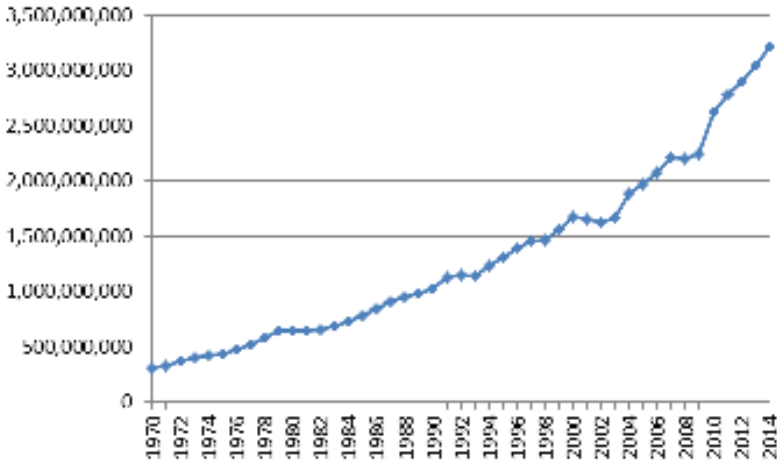
Figure 11
Gasoline and Jet Fuel Spot Prices per Gallon



Source: U.S. Energy Information Administration, 2015

At a global level, it is important to appreciate that demand for air travel has continued to grow in spite of recession and conflict. As shown in **Figure 12**, the total number of passengers traveling by air across the globe has increased at roughly a 5% annual rate. Given the importance of New Jersey airports in connecting people with major employment centers across the State, this Economic Impact Study provides a good basis of insightful airport economic contributions to assist New Jersey to manage its airports and prepare for long-term economic growth.

Figure 12
Global Growth in Passengers Traveling by Air - 1970 to 2014



Source: World Bank, 2014

Morristown Municipal Airport: Morristown, New Jersey

2 STUDY BACKGROUND

The New Jersey Airports Economic Impact Study was initiated as an update to the previous study completed as part of the NJSASP completed in 2003. The purpose of this study is to document how airports support the economy in New Jersey. The previous study included 49 airports with a summary of total output impacts from the previous study shown in **Table 2.**

Table 2
2003 Summary of Total Output Impacts

	Direct	Secondary	Total
Output	$8,135,654,400	$5,805,322,000	$13,940,975,400

Source: The Economic Impact of New Jersey Airports, Wilbur Smith, 2003

The items included in this study update focus on on-airport activity impacts, which are generated by facilities and activities occurring on the airport property and off-airport impacts, which are generated by local and state visitors. After gathering information regarding these impacts, direct, indirect and induced impacts from the study airports were calculated.

2.1 Study Airports

There are 37 public-use airports included in this study, 20 of which are privately owned. The 2006 NJSASP identified the airports in several different functional level categories: Scheduled Service, Advanced Service, General Service, Basic Service and Special Service. **Table 3** provides descriptions of each of the categories. It should be noted that no Special Service facilities were included in this study. Following, **Table 4** shows the airports included in this study, their respective cities and their NJSASP category. **Figure 13** provides an overall map of the State showing the study airport locations and their NJSASP categories.

There have been several changes to the airports included in this study since the previous plan which are detailed below:

The following airports have closed:

- Bader Field in 2006
- Marlboro in 2002

The following airports previously labelled "other" have closed:

- Li Calzi Airpark in 2009
- Newton in 2013
- Rudy's in 2005
- Twin Pine in 2008

The following airports previously labelled "other" are not included in this study:

- Bucks
- Kroelinger
- Little Ferry Seaplane Base
- Red Wing
- Southern Cross
- Trinca

The following airport has been renamed:

- Robert J. Miller Airpark to Ocean County Airport

Table 3
NJSASP Functional Level Categories

Airport Category	Description
Scheduled Service	– Intended to support commercial airline activities – Where capacity constraints permit, can also support general aviation activities including corporate/ executive operations, personal business operations, recreational activities and flight training – Recommended minimum runway length of 6,000 feet – Should meet FAA Airport Reference Code (ARC) C-III design standards, which will allow operation by a variety of aircraft including 737s, regional jets and smaller aircraft
Advanced Service	– Intended to support corporate/executive and private-use general aviation activities. – In some cases, located near major metropolitan areas and function as relievers to larger, more congested scheduled service airports. – Should be able to accommodate the largest and most demanding corporate jet traffic – Where operational and/or capacity constraints permit, could also support recreational activities and flight training – Recommended minimum runway length of 5,000 feet – Facilities should meet ARC C-II standards, which support most business jets
General Service	– Intended to support smaller corporate aircraft, such as twin-engine aircraft and the operation of general aviation aircraft for business and pleasure. – Intended to support a variety of uses, such as business, recreation and training, while providing the majority of the system's operational and storage capacity for single- and multi-engine piston aircraft. – Recommended minimum runway length of 3,500 feet – Facilities should meet ARC B-I design standards
Basic Service	– Paved or turf runways that support small general aviation aircraft, such as single and light twin-engine aircraft, storage and operation – Supports private pilots that may be flying for business or pleasure and require minimal support facilities and services – Recommended minimum runway length of 2,200 feet – Facilities should meet ARC B-I or lower standards
Special Service	– Include heliports, gliderports, seaplane bases, balloonports and ultralight facilities that primarily support components of aviation demand other than fixed-wing aircraft

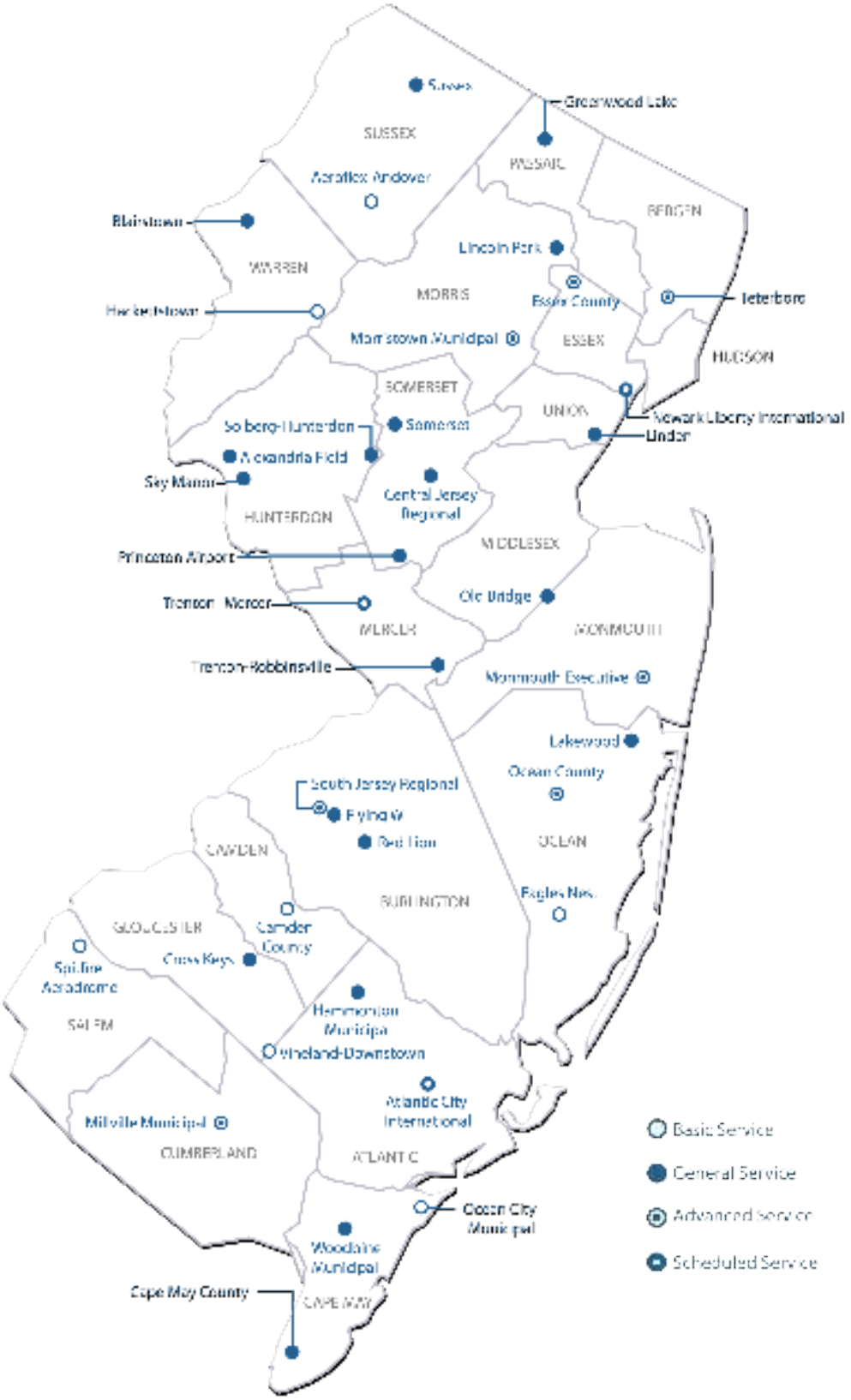
Source: New Jersey State Airport System Plan, Wilbur Smith, 2006

Table 4
Study Airports

Airport	Identifier	City	NJSASP Category
Aeroflex-Andover	12N	Andover	Basic Service
Alexandria Field	N85	Pittstown	General Service
Atlantic City International	ACY	Atlantic City	Scheduled Service
Blairstown	1N7	Blairstown	General Service
Camden County	19N	Berlin	Basic Service
Cape May County	WWD	Wildwood	General Service
Central Jersey Regional	47N	Manville	General Service
Cross Keys	17N	Cross Keys	General Service
Eagles Nest	31E	West Creek	Basic Service
Essex County	CDW	Caldwell	Advanced Service
Flying W	N14	Lumberton	General Service
Greenwood Lake	4N1	West Milford	General Service
Hackettstown	N05	Hackettstown	Basic Service
Hammonton Municipal	N81	Hammonton	General Service
Lakewood	N12	Lakewood	General Service
Lincoln Park	N07	Lincoln	General Service
Linden	LDJ	Linden	General Service
Millville Municipal	MIV	Millville	Advanced Service
Monmouth Executive	BLM	Belmar/Farmingdale	Advanced Service
Morristown Municipal	MMU	Morristown	Advanced Service
Newark Liberty International	EWR	Newark	Scheduled Service
Ocean City Municipal	26N	Ocean City	Basic Service
Ocean County	MJX	Bayville	Advanced Service
Old Bridge	3N6	Old Bridge	General Service
Princeton	39N	Princeton/Rocky Hill	General Service
Red Lion	N73	Southampton Township	General Service
Sky Manor	N40	Pittstown	General Service
Solberg-Hunterdon	N51	Readington	General Service
Somerset	SMQ	Somerville	General Service
South Jersey Regional	VAY	Mount Holly	Advanced Service
Spitfire Aerodrome	7N7	Pedricktown	Basic Service
Sussex	FWN	Sussex	General Service
Teterboro	TEB	Teterboro	Advanced Service
Trenton-Mercer	TTN	West Trenton	Scheduled Service
Trenton-Robbinsville	N87	Robbinsville	General Service
Vineland Downstown	28N	Vineland	Basic Service
Woodbine Municipal	OBI	Woodbine	General Service

Source: New Jersey State Airport System Plan, Wilbur Smith, 2006

Figure 13
Study Airports



3 STUDY METHODOLOGY

Economic impacts can be described as the sum of economic activity within a defined geographic region resulting from an initial change in the economy. This initial change, also referred to as the direct impact, spurs a series of subsequent indirect and induced activities. Households, businesses and governments are connected in a complex web of interdependent relationships based on producing, selling, purchasing and taxing goods and services. An initial change in one of these creates ripple effects through the others. Therefore, the direct impact will create revenues at other firms and employment for local residents and associated income, as well as tax revenues to state and local governments referred to as fiscal impacts.

- **Direct Impacts** result from an initial change in the economy such as construction costs, the operating revenues from a new business, or jobs created.

- **Indirect Impacts** result when the suppliers to the companies initiate the direct impacts to purchase goods and services.

- **Induced Impacts** result from the employees purchasing goods and services for their households from the wages they earn.

- **Total Impact** is the sum of the direct, indirect and induced impacts.

A direct impact occurs when a pilot buys a sandwich at the airport. When the restaurant owner buys the food, alcohol, linens, silverware and other goods and services needed to run this business, indirect impacts occur. Indirect impacts are further generated when these suppliers also buy goods and services for their businesses. The induced impact occurs when the workers at the restaurant and its suppliers spend their wages. As the economic impact process continues, wages and salaries are earned, increased employment and population are generated and spending occurs in virtually all economic sectors, generating taxes and creating jobs throughout a variety of industries.

The indirect and induced impacts are often referred to as the multiplier effect. The size of this multiplier effect depends on the region in which the impacts occur and the nature of the economy within the region. A large region with a closed economy, which means that most needs are being met by industries located within the region, would keep many of the sales, earnings and jobs impacts within the region. In a region like this, the multiplier effects would be relatively large, with a large share of the effects captured within the region.
In contrast, a smaller region with an open economy, which means an economy with a limited array of producers providing goods and services locally, may have to import more goods and services and sometimes labor, into the region as inputs leaking sales to other regions. Because many purchases would be made from industries outside the local economy, the multiplier impacts on the local economy would be smaller.

In the case of general aviation at New Jersey airports, three types of direct impacts are measured:

- **General Aviation Operations:** This includes impacts associated with airport operations as well as other on-site businesses.

- **Visitors:** The number of passengers on itinerant flights was estimated as well as their associated spending.

- **Capital Spending:** Capital expenditures include money spent directly on airport-related projects. Both past and current capital expenditures are evaluated.

Figure 14 shows the study methodology for calculating impacts.

Figure 14
Study Methodology

3.1 IMPLAN Model

The inter-industry relationships and the multiplier effects in the regional economy are captured in an input-output (I-O) model. This model estimates how effects in one industry will impact other sectors. In addition, I-O models estimate the share of each industry's purchases that are supplied by firms within the economic region being analyzed. Based on this data, multipliers are calculated that measure the re-spending of dollars in an economy and are used to calculate indirect and induced impacts. Once the relationships between households, firms and government in the economic region are determined, a change in the economy can be introduced in the model to estimate how the region will be affected based on those relationships.

There are several I-O models commonly used to estimate indirect and induced economic impacts. To calculate the economic impacts of the general aviation airports in New Jersey, this study used the I-O model developed by IMPLAN to trace how the initial investment circulates throughout the economy. For more than 35 years, IMPLAN has been widely used across the United States by government offices, non-profit agencies, industry associations and private entities to prepare location-specific economic impact analyses. IMPLAN's database includes state, county and zip code level data for 536 industrial sectors and the ways in which those sectors interact with each other, with households and with government agencies. IMPLAN data files are compiled from a wide variety of sources including the U.S. Bureau of Economic Analysis, the U.S. Bureau of Labor and the U.S. Census Bureau. Results from the analysis are presented for changes in output, employment and wages in the State as a result of the direct impacts outlined above.

- **Output:** This is the total annual value of goods and services produced across all industry sectors and all stages of production in the study area.

- **Employment:** This represents the number of jobs needed to support the given economic activity across all sectors. It includes all wage and salary employees, part- and full-time, as well as self-employed, temporary and seasonal jobs.

- **Wages:** The total annual payroll costs (including benefits) across all sectors supported by the initial investment. It includes the annual wages and salaries of workers who are paid by employers, as well as benefits such as health and life insurance, retirement payments and non-cash compensation. It also includes proprietary income received by self-employed individuals.

It should be noted that each economic impact analysis is unique resulting from differences in the I-O model used, definition of the economic region, data sources, assumptions, time frame of the analysis, among other factors. Therefore, comparisons across studies, even of seemingly similar impacts, are very complicated and should be done with considerable caution.

3.2 Data Collection

In order to have the most accurate economic impacts, data was collected from the study airports in order to calculate the input information for the IMPLAN Model. Information-gathering surveys were developed and sent to study airport owners and managers. Key information obtained from the surveys includes the following:

- Aircraft operations
- Passenger enplanements
- Based aircraft
- Airport services
- Air cargo volume
- Capital improvements
- Revenues and expenditures
- Full and part-time employees
- Airport tenants

In some instances, surveys were returned incomplete; eight airports did not respond to survey requests despite repeated attempts to gather the relevant information. In cases of missing data, the correlations between on-site employment and other factors, such as total operations, itinerant operations, number of based aircraft at an airport, number of runways and length of the longest runways were examined. Estimates were gathered from the Airport 5010 forms and the FAA Terminal Area Forecasts (TAF).

In addition to the surveys, four site visits were completed at Atlantic City International, Morristown Municipal, Teterboro and Trenton-Mercer Airports. Follow-up phone surveys were also conducted for airport tenants.

In order to estimate off-airport impacts, it was important to calculate transient, or visiting, arrivals. GA operations were estimated based on the information obtained through the surveys, follow-up phone calls and airport site visits. The percentage of itinerant operations was then applied to the total operations to calculate the total itinerant GA operations. The same methodology used in the previous plan was then applied to calculate the true transient arrivals. According to the previous plan, "true transients are aircraft that have departed from an airport at least 150 nautical miles away." A figure of 33% was used for true transients. Estimated true transient arrivals are shown in **Table 5.**

Table 5
Estimated True Transient Operations

Airport	City	Total GA Operations	Percent Itinerant	Itinerant GA Operations	Estimated True Transient Arrivals
Aeroflex-Andover	Andover	24,826	40%	9,930	1,640
Alexandria Field	Pittstown	18,459	40%	7,381	1,219
Atlantic City International	Atlantic City	26,280	78%	20,416	3,372
Blairstown	Blairstown	19,790	40%	7,916	1,307
Camden County	Berlin	5,230	35%	1,830	302
Cape May County	Wildwood	30,000	73%	22,000	3,633
Central Jersey Regional	Manville	24,300	30%	7,290	1,204
Cross Keys	Cross Keys	22,825	35%	7,988	1,319
Eagles Nest	West Creek	785	73%	575	95
Essex County	Caldwell	80,043	61%	49,205	8,127
Flying W	Lumberton	56,389	35%	19,737	3,260
Greenwood Lake	West Milford	18,099	20%	3,620	598
Hackettstown	Hackettstown	19,000	21%	4,000	661
Hammonton Municipal	Hammonton	15,900	47%	7,500	1,239
Lakewood	Lakewood	16,040	23%	3,750	619
Lincoln Park	Lincoln	28,642	20%	5,728	946
Linden	Linden	50,060	40%	19,950	3,295
Millville Municipal	Millville	53,000	38%	20,000	3,303
Monmouth Executive	Belmar/Farmingdale	57,229	13%	7,653	1,264
Morristown Municipal	Morristown	64,390	57%	36,702	6,062
Newark Liberty International	Newark	9,858	100%	9,858	1,628
Ocean City Municipal	Ocean City	20,164	60%	12,098	1,998
Ocean County	Bayville	31,625	40%	12,650	2,089
Old Bridge	Old Bridge	14,325	31%	4,500	743
Princeton	Princeton/Rocky Hill	39,662	30%	11,782	1,946
Red Lion	Southampton Township	7,549	33%	2,500	413
Sky Manor	Pittstown	22,132	30%	6,633	1,095
Solberg-Hunterdon	Readington	21,486	35%	7,520	1,242
Somerset	Somerville	30,339	40%	12,136	2,004
South Jersey Regional	Mount Holly	23,563	32%	7,540	1,245
Spitfire Aerodrome	Pedricktown	11,463	25%	2,866	473
Sussex	Sussex	19,257	35%	6,728	1,111
Teterboro	Teterboro	159,938	59%	94,988	15,688
Trenton-Mercer	West Trenton	80,615	57%	46,353	7,655
Trenton-Robbinsville	Robbinsville	19,615	34%	6,757	1,116
Vineland Downstown	Vineland	11,850	5%	550	91
Woodbine Municipal	Woodbine	14,135	31%	4,410	728
	TOTAL	**1,168,863**	**44%**	**513,040**	**84,733**

Note: Based on 2013 data

4 AIRPORT ECONOMIC IMPACTS

All airports included in this study contribute jobs, payroll and output to the local economy. Based on the data collected, each airport was evaluated to determine the impacts on the economy of New Jersey. Impacts take into consideration both on-site and off-site contributors.

4.1 General Aviation

GA is defined by the Aircraft Owners and Pilots Association (AOPA) as all civilian flying except scheduled passenger airlines. All airports included in this study have GA operations even if they also have commercial operations. GA airports contribute employment, payroll and output to the New Jersey economy through both aviation and non-aviation related activities. GA airports range from very small with limited services to very large with many tenants and a large amount of operations.

4.1.1.1 General Aviation Expenditures

GA expenditures can be described as the money spent as a result of people visiting the area. As with the true transient operations, the methodology used to calculate GA expenditures was taken from the previous plan. Total number of visitor days was calculated by applying an average trip length and average number of passengers. The assumptions used for these calculations are based on airport functional level and are shown in **Table 6.** The results of these calculations and annual GA visitor expenditures are shown in **Table 7.**

Ocean County Airport: Toms River, New Jersey

Table 6
General Aviation Expenditure Assumptions

Airport Functional Level	Visitors per Arrival	Days per Visitor	Spending per Visitor per Day
Scheduled Service	5.5	1.9	$215
Advanced Service	5.5	1.9	$215
General Service	3.6	1.5	$105
Basic Service	2.3	1.5	$50

Table 7
General Aviation Expenditures

Airport	Estimated True Transient Arrivals	Estimated GA Visitors	Total Annual Number of Days Stayed	Annual GA Visitor Expenditures
Aeroflex-Andover	1,640	3,770	5,660	$385,200
Alexandria Field	1,219	2,800	4,210	$598,800
Atlantic City International	3,372	18,550	35,240	$10,324,700
Blairstown	1,307	3,010	4,510	$642,000
Camden County	302	700	1,040	$71,000
Cape May County	3,633	19,990	37,980	$11,126,100
Central Jersey Regional	1,204	4,330	6,500	$925,300
Cross Keys	1,319	4,750	7,130	$1,013,900
Eagles Nest	95	220	330	$46,700
Essex County	8,127	44,700	84,930	$24,879,200
Flying W	3,260	7,500	11,240	$1,599,800
Greenwood Lake	598	1,380	2,070	$294,000
Hackettstown	661	1,520	2,280	$325,200
Hammonton Municipal	1,239	2,850	4,280	$608,300
Lakewood	619	1,420	2,140	$304,100
Lincoln Park	946	3,410	5,110	$726,100
Linden	3,295	11,870	17,800	$2,532,800
Millville Municipal	3,303	18,170	34,530	$10,116,500
Monmouth Executive	1,264	6,950	13,210	$3,870,200
Morristown Municipal	6,062	33,340	63,340	$18,556,600
Newark Liberty International	1,628	8,960	17,020	$4,984,700
Ocean City Municipal	1,998	4,600	6,890	$469,100
Ocean County	2,089	4,810	7,210	$1,028,300
Old Bridge	743	1,710	2,570	$365,300
Princeton	1,946	4,470	6,710	$955,000
Red Lion	413	950	1,420	$203,200
Sky Manor	1,095	2,520	3,780	$537,500
Solberg-Hunterdon	1,242	4,470	6,710	$954,700
Somerset	2,004	4,610	6,920	$985,000
South Jersey Regional	1,245	4,480	6,720	$956,900
Spitfire Aerodrome	473	1,080	1,620	$231,000
Sussex	1,111	2,560	3,840	$546,000
Teterboro	15,688	86,280	163,940	$48,025,800
Trenton-Mercer	7,655	42,110	80,000	$23,437,500
Trenton-Robbinsville	1,116	2,570	3,850	$547,400
Vineland Downstown	91	210	310	$21,200
Woodbine Municipal	728	1,670	2,510	$357,600
TOTAL	**84,730**	**369,290**	**665,550**	**$173,552,700**

Note: Based on 2013 data

4.1.1.2 General Aviation Employment

GA employment represents the number of jobs needed to support the given economic activity across all sectors and includes all wage and salary employees, part- and full-time, as well as self-employed, temporary and seasonal jobs. Both direct and secondary on-airport tenant employment and visitor employment were calculated. On-airport employment is comprised of on-airport businesses such as Fixed Base Operators (FBOs), corporate/charter aviation, flight schools, aircraft sales and maintenance and any other direct on-airport employment. Visitor employment occurs when visitors come through the airports and spend money to support jobs in the area. Such employment supported by visitors includes hotels, restaurants, retail, entertainment and other services in the vicinity of the airport. **Table 8** shows on-airport tenant employment with a total of 10,022 employees for the State. **Table 9** shows visitor employment with a total of 2,869 employees for the State. **Table 10** shows the total breakdown of direct and secondary jobs. Overall, general aviation in New Jersey accounts for almost 13,000 jobs.

Table 8
General Aviation On-Airport Tenant Employment

Airport	Direct Employment	Secondary Employment	Total Employment
Aeroflex-Andover	7	10	17
Alexandria Field	37	54	91
Atlantic City International	107	157	264
Blairstown	26	38	64
Camden County	26	38	64
Cape May County	12	18	30
Central Jersey Regional	14	21	35
Cross Keys	19	28	47
Eagles Nest	28	41	69
Essex County	105	154	259
Flying W	19	28	47
Greenwood Lake	12	18	30
Hackettstown	11	16	27
Hammonton Municipal	13	19	32
Lakewood	63	92	155
Lincoln Park	25	37	62
Linden	33	48	81
Millville Municipal	32	47	79
Monmouth Executive	52	77	129
Morristown Municipal	603	884	1,487
Newark Liberty International	453	664	1,117
Ocean City Municipal	26	38	64
Ocean County	36	53	89
Old Bridge	22	33	55
Princeton	31	45	76
Red Lion	2	3	5
Sky Manor	19	28	47
Solberg-Hunterdon	19	28	47
Somerset	29	42	71
South Jersey Regional	44	64	108
Spitfire Aerodrome	15	22	37
Sussex	26	38	64
Teterboro	1,666	2,441	4,107
Trenton-Mercer	353	517	870
Trenton-Robbinsville	22	33	55
Vineland Downstown	30	44	74
Woodbine Municipal	27	40	67
TOTAL	**4,064**	**5,958**	**10,022**

Note: Based on 2013 data

Table 9
General Aviation Visitor Employment

Airport	Direct Employment	Secondary Employment	Total Employment
Aeroflex-Andover	4	2	6
Alexandria Field	7	3	10
Atlantic City International	121	50	171
Blairstown	7	3	10
Camden County	1	0	1
Cape May County	130	54	184
Central Jersey Regional	11	4	15
Cross Keys	12	5	17
Eagles Nest	1	0	1
Essex County	290	121	411
Flying W	19	8	27
Greenwood Lake	3	1	4
Hackettstown	4	2	6
Hammonton Municipal	7	3	10
Lakewood	4	1	5
Lincoln Park	8	4	12
Linden	30	12	42
Millville Municipal	118	49	167
Monmouth Executive	45	19	64
Morristown Municipal	217	90	307
Newark Liberty International	58	24	82
Ocean City Municipal	5	2	7
Ocean County	12	5	17
Old Bridge	4	2	6
Princeton	11	5	16
Red Lion	2	1	3
Sky Manor	6	3	9
Solberg-Hunterdon	11	5	16
Somerset	11	5	16
South Jersey Regional	11	5	16
Spitfire Aerodrome	3	1	4
Sussex	6	3	9
Teterboro	561	233	794
Trenton-Mercer	274	114	388
Trenton-Robbinsville	6	3	9
Vineland Downstown	0	0	0
Woodbine Municipal	5	2	7
TOTAL	**2,025**	**844**	**2,869**

Note: Based on 2013 data

Table 10
General Aviation Total Employment

Airport	Direct Employment	Secondary Employment	Total Employment
Aeroflex-Andover	11	12	23
Alexandria Field	44	57	101
Atlantic City International	228	207	435
Blairstown	33	41	74
Camden County	27	38	65
Cape May County	142	72	214
Central Jersey Regional	25	25	50
Cross Keys	31	33	64
Eagles Nest	29	41	70
Essex County	395	275	670
Flying W	38	36	74
Greenwood Lake	15	19	34
Hackettstown	15	18	33
Hammonton Municipal	20	22	42
Lakewood	67	93	160
Lincoln Park	33	41	74
Linden	63	60	123
Millville Municipal	150	96	246
Monmouth Executive	97	96	193
Morristown Municipal	820	974	1,794
Newark Liberty International	511	688	1,199
Ocean City Municipal	31	40	71
Ocean County	48	58	106
Old Bridge	26	35	61
Princeton	42	50	92
Red Lion	4	4	8
Sky Manor	25	31	56
Solberg-Hunterdon	30	33	63
Somerset	40	47	87
South Jersey Regional	55	69	124
Spitfire Aerodrome	18	23	41
Sussex	32	41	73
Teterboro	2,227	2,674	4,901
Trenton-Mercer	627	631	1,258
Trenton-Robbinsville	28	36	64
Vineland Downstown	30	44	74
Woodbine Municipal	32	42	74
TOTAL	**6,089**	**6,802**	**12,891**

Note: Based on 2013 data

4.1.1.3 General Aviation Payroll

GA payroll represents the total annual payroll costs, including benefits, across all sectors supported by the initial investment. This includes the annual wages and salaries of workers who are paid by employers, as well as benefits such as health and life insurance, retirement payments and non-cash compensation, as well as proprietary income received by self-employed individuals. Payroll was analyzed for both on-airport tenants and visitors. As with employment, on-airport payroll is generated by the on-airport businesses whereas visitor payroll is generated by visitor-related businesses and services. **Table 11** shows on-airport tenant payroll with a total of approximately $781.8 million for New Jersey. **Table 12** shows visitor payroll with a total of approximately $114.9 million for New Jersey. **Table 13** shows the total breakdown of direct and secondary payroll. Overall, general aviation in New Jersey accounts for approximately $896.7 million in annual payroll.

Table 11
General Aviation On-Airport Tenant Payroll

Airport	Direct Payroll	Secondary Payroll	Total Payroll
Aeroflex-Andover	$732,800	$613,100	$1,345,900
Alexandria Field	$3,873,300	$3,240,900	$7,114,200
Atlantic City International	$11,201,100	$9,372,300	$20,573,400
Blairstown	$2,738,600	$2,291,500	$5,030,100
Camden County	$2,721,800	$2,277,400	$4,999,200
Cape May County	$1,256,200	$1,051,100	$2,307,300
Central Jersey Regional	$1,465,600	$1,226,300	$2,691,900
Cross Keys	$2,022,700	$1,692,400	$3,715,100
Eagles Nest	$2,931,100	$2,452,600	$5,383,700
Essex County	$10,991,700	$9,197,100	$20,188,800
Flying W	$1,989,000	$1,664,200	$3,653,200
Greenwood Lake	$1,256,200	$1,051,100	$2,307,300
Hackettstown	$1,161,900	$972,200	$2,134,100
Hammonton Municipal	$1,360,900	$1,138,700	$2,499,600
Lakewood	$6,595,000	$5,518,300	$12,113,300
Lincoln Park	$2,661,000	$2,226,500	$4,887,500
Linden	$3,449,600	$2,886,400	$6,336,000
Millville Municipal	$3,349,900	$2,802,900	$6,152,800
Monmouth Executive	$5,482,100	$4,587,000	$10,069,100
Morristown Municipal	$63,123,800	$52,817,600	$115,941,400
Newark Liberty International	$47,421,300	$39,678,900	$87,100,200
Ocean City Municipal	$2,731,700	$2,285,700	$5,017,400
Ocean County	$3,768,600	$3,153,300	$6,921,900
Old Bridge	$2,338,100	$1,956,400	$4,294,500
Princeton	$3,245,200	$2,715,300	$5,960,500
Red Lion	$209,400	$175,200	$384,600
Sky Manor	$1,989,000	$1,664,200	$3,653,200
Solberg-Hunterdon	$1,989,000	$1,664,200	$3,653,200
Somerset	$3,035,800	$2,540,200	$5,576,000
South Jersey Regional	$4,606,000	$3,854,000	$8,460,000
Spitfire Aerodrome	$1,604,300	$1,342,400	$2,946,700
Sussex	$2,699,600	$2,258,800	$4,958,400
Teterboro	$174,401,700	$145,927,200	$320,328,900
Trenton-Mercer	$36,953,100	$30,919,800	$67,872,900
Trenton-Robbinsville	$2,347,000	$1,963,800	$4,310,800
Vineland Downstown	$3,140,500	$2,627,700	$5,768,200
Woodbine Municipal	$2,826,400	$2,365,000	$5,191,400
TOTAL	**$425,671,000**	**$356,171,700**	**$781,842,700**

Note: Based on 2013 data

Table 12
General Aviation Visitor Payroll

Airport	Direct Payroll	Secondary Payroll	Total Payroll
Aeroflex-Andover	$147,900	$107,100	$255,000
Alexandria Field	$229,800	$166,500	$396,300
Atlantic City International	$3,963,000	$2,871,100	$6,834,100
Blairstown	$246,400	$178,500	$424,900
Camden County	$27,300	$19,700	$47,000
Cape May County	$4,270,600	$3,093,900	$7,364,500
Central Jersey Regional	$355,200	$257,300	$612,500
Cross Keys	$389,200	$281,900	$671,100
Eagles Nest	$17,900	$13,000	$30,900
Essex County	$9,549,500	$6,918,400	$16,467,900
Flying W	$614,100	$444,900	$1,059,000
Greenwood Lake	$112,900	$81,800	$194,700
Hackettstown	$124,800	$90,400	$215,200
Hammonton Municipal	$233,500	$169,200	$402,700
Lakewood	$116,700	$84,600	$201,300
Lincoln Park	$278,700	$201,900	$480,600
Linden	$972,200	$704,300	$1,676,500
Millville Municipal	$3,883,100	$2,813,200	$6,696,300
Monmouth Executive	$1,485,500	$1,076,200	$2,561,700
Morristown Municipal	$7,122,600	$5,160,200	$12,282,800
Newark Liberty International	$1,913,300	$1,386,100	$3,299,400
Ocean City Municipal	$180,100	$130,500	$310,600
Ocean County	$394,700	$286,000	$680,700
Old Bridge	$140,200	$101,600	$241,800
Princeton	$366,600	$265,600	$632,200
Red Lion	$78,000	$56,500	$134,500
Sky Manor	$206,300	$149,500	$355,800
Solberg-Hunterdon	$366,500	$265,500	$632,000
Somerset	$378,100	$273,900	$652,000
South Jersey Regional	$367,300	$266,100	$633,400
Spitfire Aerodrome	$88,700	$64,200	$152,900
Sussex	$209,600	$151,800	$361,400
Teterboro	$18,434,000	$13,355,000	$31,789,000
Trenton-Mercer	$8,996,100	$6,517,500	$15,513,600
Trenton-Robbinsville	$210,100	$152,200	$362,300
Vineland Downstown	$8,100	$5,900	$14,000
Woodbine Municipal	$137,300	$99,400	$236,700
TOTAL	**$66,615,900**	**$48,261,400**	**$114,877,300**

Note: Based on 2013 data

Table 13
General Aviation Total Payroll

Airport	Direct Payroll	Secondary Payroll	Total Payroll
Aeroflex-Andover	$880,700	$720,200	$1,600,900
Alexandria Field	$4,103,100	$3,407,400	$7,510,500
Atlantic City International	$15,164,100	$12,243,400	$27,407,500
Blairstown	$2,985,000	$2,470,000	$5,455,000
Camden County	$2,749,100	$2,297,100	$5,046,200
Cape May County	$5,526,800	$4,145,000	$9,671,800
Central Jersey Regional	$1,820,800	$1,483,600	$3,304,400
Cross Keys	$2,411,900	$1,974,300	$4,386,200
Eagles Nest	$2,949,000	$2,465,600	$5,414,600
Essex County	$20,541,200	$16,115,500	$36,656,700
Flying W	$2,603,100	$2,109,100	$4,712,200
Greenwood Lake	$1,369,100	$1,132,900	$2,502,000
Hackettstown	$1,286,700	$1,062,600	$2,349,300
Hammonton Municipal	$1,594,400	$1,307,900	$2,902,300
Lakewood	$6,711,700	$5,602,900	$12,314,600
Lincoln Park	$2,939,700	$2,428,400	$5,368,100
Linden	$4,421,800	$3,590,700	$8,012,500
Millville Municipal	$7,233,000	$5,616,100	$12,849,100
Monmouth Executive	$6,967,600	$5,663,200	$12,630,800
Morristown Municipal	$70,246,400	$57,977,800	$128,224,200
Newark Liberty International	$49,334,600	$41,065,000	$90,399,600
Ocean City Municipal	$2,911,800	$2,416,200	$5,328,000
Ocean County	$4,163,300	$3,439,300	$7,602,600
Old Bridge	$2,478,300	$2,058,000	$4,536,300
Princeton	$3,611,800	$2,980,900	$6,592,700
Red Lion	$287,400	$231,700	$519,100
Sky Manor	$2,195,300	$1,813,700	$4,009,000
Solberg-Hunterdon	$2,355,500	$1,929,700	$4,285,200
Somerset	$3,413,900	$2,814,100	$6,228,000
South Jersey Regional	$4,973,300	$4,120,100	$9,093,400
Spitfire Aerodrome	$1,693,000	$1,406,600	$3,099,600
Sussex	$2,909,200	$2,410,600	$5,319,800
Teterboro	$192,835,700	$159,282,200	$352,117,900
Trenton-Mercer	$45,949,200	$37,437,300	$83,386,500
Trenton-Robbinsville	$2,557,100	$2,116,000	$4,673,100
Vineland Downstown	$3,148,600	$2,633,600	$5,782,200
Woodbine Municipal	$2,963,700	$2,464,400	$5,428,100
TOTAL	**$492,286,900**	**$404,433,100**	**$896,720,000**

Note: Based on 2013 data

4.1.1.4 Output

GA output represents total annual sales and capital improvements for airport tenants. Tenants not included in these figures are airlines, government entities, or non-revenue generating facilities such as corporate flight departments. On-airport tenant output occurs when a tenant purchases goods and services for activities at the airport, such as construction of new buildings. As with the previous calculations, visitor output occurs when visitors spend money at visitor-related services. **Table 14** shows on-airport tenant output with a total of approximately $2.6 billion for New Jersey. **Table 15** shows visitor output with a total of approximately $305.9 million for New Jersey. **Table 16** shows the total breakdown of direct and secondary output. Overall, general aviation in New Jersey produces approximately $2.9 billion in annual output.

Table 14
General Aviation On-Airport Tenant Output

Airport	Direct Output	Secondary Output	Total Output
Aeroflex-Andover	$2,541,400	$1,922,300	$4,463,700
Alexandria Field	$13,433,300	$10,161,000	$23,594,300
Atlantic City International	$38,847,800	$29,384,400	$68,232,200
Blairstown	$9,498,100	$7,184,400	$16,682,500
Camden County	$9,439,700	$7,140,100	$16,579,800
Cape May County	$4,356,800	$3,295,400	$7,652,200
Central Jersey Regional	$5,082,900	$3,844,700	$8,927,600
Cross Keys	$7,015,100	$5,306,200	$12,321,300
Eagles Nest	$10,165,800	$7,689,400	$17,855,200
Essex County	$38,121,700	$28,835,200	$66,956,900
Flying W	$6,898,200	$5,217,800	$12,116,000
Greenwood Lake	$4,356,800	$3,295,400	$7,652,200
Hackettstown	$4,029,600	$3,048,000	$7,077,600
Hammonton Municipal	$4,719,800	$3,570,100	$8,289,900
Lakewood	$22,873,000	$17,301,100	$40,174,100
Lincoln Park	$9,228,900	$6,980,800	$16,209,700
Linden	$11,964,100	$9,049,600	$21,013,700
Millville Municipal	$11,618,000	$8,787,900	$20,405,900
Monmouth Executive	$19,013,000	$14,381,400	$33,394,400
Morristown Municipal	$218,927,300	$165,596,300	$384,523,600
Newark Liberty International	$164,467,800	$124,403,200	$288,871,000
Ocean City Municipal	$9,474,200	$7,166,300	$16,640,500
Ocean County	$13,070,300	$9,886,300	$22,956,600
Old Bridge	$8,109,200	$6,133,800	$14,243,000
Princeton	$11,255,000	$8,513,200	$19,768,200
Red Lion	$726,100	$549,200	$1,275,300
Sky Manor	$6,898,200	$5,217,800	$12,116,000
Solberg-Hunterdon	$6,898,200	$5,217,800	$12,116,000
Somerset	$10,528,800	$7,964,000	$18,492,800
South Jersey Regional	$15,974,800	$12,083,300	$28,058,100
Spitfire Aerodrome	$5,564,200	$4,208,800	$9,773,000
Sussex	$9,362,600	$7,081,900	$16,444,500
Teterboro	$604,863,800	$457,518,200	$1,062,382,000
Trenton-Mercer	$128,161,400	$96,941,100	$225,102,500
Trenton-Robbinsville	$8,139,800	$6,157,000	$14,296,800
Vineland Downstown	$10,891,900	$8,238,600	$19,130,500
Woodbine Municipal	$9,802,700	$7,414,800	$17,217,500
TOTAL	**$1,476,320,300**	**$1,116,686,800**	**$2,593,007,100**

Note: Based on 2013 data

Table 15
General Aviation Visitor Output

Airport	Direct Output	Secondary Output	Total Output
Aeroflex-Andover	$385,200	$293,800	$679,000
Alexandria Field	$598,800	$456,700	$1,055,500
Atlantic City International	$10,324,700	$7,875,000	$18,199,700
Blairstown	$642,000	$489,700	$1,131,700
Camden County	$71,000	$54,200	$125,200
Cape May County	$11,126,100	$8,486,300	$19,612,400
Central Jersey Regional	$925,300	$705,700	$1,631,000
Cross Keys	$1,013,900	$773,300	$1,787,200
Eagles Nest	$46,700	$35,700	$82,400
Essex County	$24,879,200	$18,976,400	$43,855,600
Flying W	$1,599,800	$1,220,200	$2,820,000
Greenwood Lake	$294,000	$224,300	$518,300
Hackettstown	$325,200	$248,000	$573,200
Hammonton Municipal	$608,300	$464,000	$1,072,300
Lakewood	$304,100	$232,000	$536,100
Lincoln Park	$726,100	$553,800	$1,279,900
Linden	$2,532,800	$1,931,900	$4,464,700
Millville Municipal	$10,116,500	$7,716,200	$17,832,700
Monmouth Executive	$3,870,200	$2,952,000	$6,822,200
Morristown Municipal	$18,556,600	$14,153,800	$32,710,400
Newark Liberty International	$4,984,700	$3,802,000	$8,786,700
Ocean City Municipal	$469,100	$357,800	$826,900
Ocean County	$1,028,300	$784,300	$1,812,600
Old Bridge	$365,300	$278,600	$643,900
Princeton	$955,000	$728,400	$1,683,400
Red Lion	$203,200	$155,000	$358,200
Sky Manor	$537,500	$410,000	$947,500
Solberg-Hunterdon	$954,700	$728,200	$1,682,900
Somerset	$985,000	$751,300	$1,736,300
South Jersey Regional	$956,900	$729,800	$1,686,700
Spitfire Aerodrome	$231,000	$176,200	$407,200
Sussex	$546,000	$416,500	$962,500
Teterboro	$48,025,800	$36,631,200	$84,657,000
Trenton-Mercer	$23,437,500	$17,876,700	$41,314,200
Trenton-Robbinsville	$547,400	$417,500	$964,900
Vineland Downstown	$21,200	$16,200	$37,400
Woodbine Municipal	$357,600	$272,800	$630,400
TOTAL	**$173,552,700**	**$132,375,500**	**$305,928,200**

Note: Based on 2013 data

Table 16
General Aviation Total Output

Airport	Direct Output	Secondary Output	Total Output
Aeroflex-Andover	$2,926,600	$2,216,100	$5,142,700
Alexandria Field	$14,032,100	$10,617,700	$24,649,800
Atlantic City International	$49,172,500	$37,259,400	$86,431,900
Blairstown	$10,140,100	$7,674,100	$17,814,200
Camden County	$9,510,700	$7,194,300	$16,705,000
Cape May County	$15,482,900	$11,781,700	$27,264,600
Central Jersey Regional	$6,008,200	$4,550,400	$10,558,600
Cross Keys	$8,029,000	$6,079,500	$14,108,500
Eagles Nest	$10,212,500	$7,725,100	$17,937,600
Essex County	$63,000,900	$47,811,600	$110,812,500
Flying W	$8,498,000	$6,438,000	$14,936,000
Greenwood Lake	$4,650,800	$3,519,700	$8,170,500
Hackettstown	$4,354,800	$3,296,000	$7,650,800
Hammonton Municipal	$5,328,100	$4,034,100	$9,362,200
Lakewood	$23,177,100	$17,533,100	$40,710,200
Lincoln Park	$9,955,000	$7,534,600	$17,489,600
Linden	$14,496,900	$10,981,500	$25,478,400
Millville Municipal	$21,734,500	$16,504,100	$38,238,600
Monmouth Executive	$22,883,200	$17,333,400	$40,216,600
Morristown Municipal	$237,483,900	$179,750,100	$417,234,000
Newark Liberty International	$169,452,500	$128,205,200	$297,657,700
Ocean City Municipal	$9,943,300	$7,524,100	$17,467,400
Ocean County	$14,098,600	$10,670,600	$24,769,200
Old Bridge	$8,474,500	$6,412,400	$14,886,900
Princeton	$12,210,000	$9,241,600	$21,451,600
Red Lion	$929,300	$704,200	$1,633,500
Sky Manor	$7,435,700	$5,627,800	$13,063,500
Solberg-Hunterdon	$7,852,900	$5,946,000	$13,798,900
Somerset	$11,513,800	$8,715,300	$20,229,100
South Jersey Regional	$16,931,700	$12,813,100	$29,744,800
Spitfire Aerodrome	$5,795,200	$4,385,000	$10,180,200
Sussex	$9,908,600	$7,498,400	$17,407,000
Teterboro	$652,889,600	$494,149,400	$1,147,039,000
Trenton-Mercer	$151,598,900	$114,817,800	$266,416,700
Trenton-Robbinsville	$8,687,200	$6,574,500	$15,261,700
Vineland Downstown	$10,913,100	$8,254,800	$19,167,900
Woodbine Municipal	$10,160,300	$7,687,600	$17,847,900
TOTAL	**$1,649,873,000**	**$1,249,062,300**	**$2,898,935,300**

Note: Based on 2013 data

4.1.1.5 Summary

Table 17 provides a summary of total employment, payroll and output for the general aviation portion of the study airports. As shown in the table, the three largest airport employers for general aviation are Teterboro, Morristown Municipal and Trenton-Mercer. Together, these three airports account for 62 percent of the total general aviation employment for the State. Likewise, these airports also have the most total payroll and total output for the State. Total general aviation economic impacts for the 37 airports included in this study amount to 12,891 jobs, $896,720,000 in payroll and $2,898,935,300 in output.

Table 17
General Aviation Impact Summary

Airport	Total Employment	Total Payroll	Total Output
Aeroflex-Andover	23	$1,600,900	$5,142,700
Alexandria Field	101	$7,510,500	$24,649,800
Atlantic City International	435	$27,407,500	$86,431,900
Blairstown	74	$5,455,000	$17,814,200
Camden County	65	$5,046,200	$16,705,000
Cape May County	214	$9,671,800	$27,264,600
Central Jersey Regional	50	$3,304,400	$10,558,600
Cross Keys	64	$4,386,200	$14,108,500
Eagles Nest	70	$5,414,600	$17,937,600
Essex County	670	$36,656,700	$110,812,500
Flying W	74	$4,712,200	$14,936,000
Greenwood Lake	34	$2,502,000	$8,170,500
Hackettstown	33	$2,349,300	$7,650,800
Hammonton Municipal	42	$2,902,300	$9,362,200
Lakewood	160	$12,314,600	$40,710,200
Lincoln Park	74	$5,368,100	$17,489,600
Linden	123	$8,012,500	$25,478,400
Millville Municipal	246	$12,849,100	$38,238,600
Monmouth Executive	193	$12,630,800	$40,216,600
Morristown Municipal	1,794	$128,224,200	$417,234,000
Newark Liberty International	1,199	$90,399,600	$297,657,700
Ocean City Municipal	71	$5,328,000	$17,467,400
Ocean County	106	$7,602,600	$24,769,200
Old Bridge	61	$4,536,300	$14,886,900
Princeton	92	$6,592,700	$21,451,600
Red Lion	8	$519,100	$1,633,500
Sky Manor	56	$4,009,000	$13,063,500
Solberg-Hunterdon	63	$4,285,200	$13,798,900
Somerset	87	$6,228,000	$20,229,100
South Jersey Regional	124	$9,093,400	$29,744,800
Spitfire Aerodrome	41	$3,099,600	$10,180,200
Sussex	73	$5,319,800	$17,407,000
Teterboro	4,901	$352,117,900	$1,147,039,000
Trenton-Mercer	1,258	$83,386,500	$266,416,700
Trenton-Robbinsville	64	$4,673,100	$15,261,700
Vineland Downstown	74	$5,782,200	$19,167,900
Woodbine Municipal	74	$5,428,100	$17,847,900
TOTAL	**12,891**	**$896,720,000**	**$2,898,935,300**

Note: Based on 2013 data

4.2 Commercial Service

In addition to the general aviation airports, there are three commercial service airports included in this study: Atlantic City International, Newark Liberty International and Trenton-Mercer. While the previous analysis did include the general aviation aspect of those airports, a separate analysis was done for the commercial service portion. Commercial service impacts are a direct result of airlines and airline-related activities at the airports. Such impacts are generated from pilots, flight attendants, ticketing and maintenance, for example. **Tables 18** through **20** show commercial service impacts for employment, payroll and output, respectively. Commercial service impacts includes approximately 60,000 jobs, $4.7 billion in annual payroll and $15.5 billion in annual output.

Table 18
Commercial Service Employment

Airport	Direct Employment	Secondary Employment	Total Employment
Atlantic City International	4,976	7,291	12,267
Newark Liberty International	19,247	28,203	47,450
Trenton-Mercer	126	185	311
TOTAL	**24,349**	**35,679**	**60,028**

Note: Based on 2013 data

Table 19
Commercial Service Payroll

Airport	Direct Payroll	Secondary Payroll	Total Payroll
Atlantic City International	$520,902,000	$435,854,600	$956,756,600
Newark Liberty International	$2,014,831,300	$1,685,871,000	$3,700,702,300
Trenton-Mercer	$13,190,000	$11,036,500	$24,226,500
TOTAL	**$2,548,923,300**	**$2,132,762,100**	**$4,681,685,400**

Note: Based on 2013 data

Table 20
Commercial Service Output

Airport	Direct Output	Secondary Output	Total Output
Atlantic City International	$1,806,603,900	$1,366,512,900	$3,173,116,800
Newark Liberty International	$6,987,882,700	$5,285,625,900	$12,273,508,600
Trenton-Mercer	$45,746,000	$34,602,200	$80,348,200
TOTAL	**$8,840,232,600**	**$6,686,741,000**	**$15,526,973,600**

Note: Based on 2013 data

5 CONCLUSIONS

Airports are a crucial part of New Jersey's overall economy. The total airport related economic output calculated in this study represents 3.7 percent of New Jersey's overall economy. From on-airport contributors, such as airport tenants and capital expenditures, to off-airport contributors, such as hotels, restaurants and recreation, each airport included in this study provides key services that stimulate New Jersey's economy. This study has analyzed jobs, payroll and output generated by 37 public-use airports ranging from large Commercial Service airports to small privately-owned turf strips.

Table 21 details the impacts each individual airport has on the New Jersey economy for the study period highlighting employment numbers and payroll figures that ultimately result into an $18.4 billion annual impact on New Jerseys economy from 37 system airports alone.

Morrristown Municipal Airport: Morristown, New Jersey

Overall, New Jersey's 37 GA and Commercial Service airports included in this study generate the following total combined annual impacts:

- **Over 60,000 commercial service jobs**
- **Over 12,800 GA jobs**
- **Over $4.6 billion in commercial service payroll**
- **Over $890 million in GA payroll**
- **Over $15.5 billion in commercial service output**
- **Over $2.8 billion in GA output**

Table 21
New Jersey Airports Economic Impact Summary

Airport	Total Employment	Total Payroll	Total Output
General Aviation Impacts			
Aeroflex-Andover	23	$1,600,900	$5,142,700
Alexandria Field	101	$7,510,500	$24,649,800
Atlantic City International	435	$27,407,500	$86,431,900
Blairstown	74	$5,455,000	$17,814,200
Camden County	65	$5,046,200	$16,705,000
Cape May County	214	$9,671,800	$27,264,600
Central Jersey Regional	50	$3,304,400	$10,558,600
Cross Keys	64	$4,386,200	$14,108,500
Eagles Nest	70	$5,414,600	$17,937,600
Essex County	670	$36,656,700	$110,812,500
Flying W	74	$4,712,200	$14,936,000
Greenwood Lake	34	$2,502,000	$8,170,500
Hackettstown	33	$2,349,300	$7,650,800
Hammonton Municipal	42	$2,902,300	$9,362,200
Lakewood	160	$12,314,600	$40,710,200
Lincoln Park	74	$5,368,100	$17,489,600
Linden	123	$8,012,500	$25,478,400
Millville Municipal	246	$12,849,100	$38,238,600
Monmouth Executive	193	$12,630,800	$40,216,600
Morristown Municipal	1,794	$128,224,200	$417,234,000
Newark Liberty International	1,199	$90,399,600	$297,657,700
Ocean City Municipal	71	$5,328,000	$17,467,400
Ocean County	106	$7,602,600	$24,769,200
Old Bridge	61	$4,536,300	$14,886,900
Princeton	92	$6,592,700	$21,451,600
Red Lion	8	$519,100	$1,633,500
Sky Manor	56	$4,009,000	$13,063,500
Solberg-Hunterdon	63	$4,285,200	$13,798,900
Somerset	87	$6,228,000	$20,229,100
South Jersey Regional	124	$9,093,400	$29,744,800
Spitfire Aerodrome	41	$3,099,600	$10,180,200
Sussex	73	$5,319,800	$17,407,000
Teterboro	4,901	$352,117,900	$1,147,039,000
Trenton-Mercer	1,258	$83,386,500	$266,416,700
Trenton-Robbinsville	64	$4,673,100	$15,261,700
Vineland Downstown	74	$5,782,200	$19,167,900
Woodbine Municipal	74	$5,428,100	$17,847,900
GENERAL AVIATION TOTAL	**12,891**	**$896,720,000**	**$2,898,935,300**
Commercial Service Impacts			
Atlantic City International	12,267	$956,756,600	$3,173,116,800
Newark Liberty International	47,450	$3,700,702,300	$12,273,508,600
Trenton-Mercer	311	$24,226,500	$80,348,200
COMMERCIAL SERVICE TOTAL	**60,028**	**$4,681,685,400**	**$15,526,973,600**
NEW JERSEY GRAND TOTAL	**72,919**	**$5,578,405,400**	**$18,425,908,900**

Note: Based on 2013 data

Pocket Content:

- Airport Profile Sheet Pullout
- Summary Table Pullout

AECOM

Prepared for:
The New Jersey Department of Transportation

September 2016

Terminal Functional Area Requirements

The existing functional areas and future needs of the terminal, including the deficiencies for each area, are provided in **Table B-1** below.

Note that the existing area calculations include Airport administrative space and the modular baggage claim facility which are located outside of the existing terminal building.

Table B-1: Terminal Functional Area Requirements (SF unless otherwise noted)

Terminal Area	Existing Space	Existing Need	Deficit
Ticketing			
Counter Positions (#)	6	10	4
Counter (LF)	32	50	18
Counter Area	500	780	280
Check-In/Queuing Area	700	1,890	1,190
Airline Office	2,750	3,020	270
Baggage Make Up	100	7,495[(1)]	-
Airline Operations	0	1,015	1,015
Hold Rooms			
Aircraft Parking (#)	4	4	None
Hold Room Waiting	2,420	11,830	9,410
Family Waiting	0	3,570	3,570
Play Area	0	805	805
Baggage Claim			
Claim Lobby Area	2,895	7,310	4,415
Baggage Storage	0	200	200
Baggage Drop Off	2,400	3,890[(1)]	-
Baggage Claim Support	0	870	870
Rental Cars			
Agencies (#)	1	3-6	2 - 5
Counter Frontage (LF)	18	60	42
Counter Area	180	500	320
Queuing Area	80	680	600
Office/Storage	0	750	750
Concessions			
Food/Gifts/Storage	2,950	9,090	6,140
Public Restrooms			
Total Square Footage	1,300	3,645	2,345
Public Lobby			
Main Lobby	1,550	3,460	1,910
Upper Lobby	0	265	265

Public Conference	0	405	405
Security			
Screening Lanes (#)	2	4	2
Passenger Screening	1,720	5,110	3390
Recomposure	0	1,440	1,440
Security Queuing	630	3,190	2,560
TSA Office/Support	300	1,495	1,195
Baggage Screening	600	8,525	7,925
Administration			
Office/Operations	4,000[2]	3,820	3,820[3]
Law Enforcement	960[2]	725	725[3]
Emergency Medical	0	1,610	1,610
Building Support	(Included Above)	1,360	-
Circulation	6,415	28,355	21,940
Mechanical/Electrical/Plumbing	(Included Above)	19,355	-
Totals			
Gross Terminal Area	32,450	125,070	92,620

[1] Denotes unenclosed/unconditioned space (not included in SF totals).

[2] Currently in a remote location.

[3] Assumes these functional areas will be included in the new terminal building and no longer located offsite.

Source: Urban Engineers, 2019.

TERMINAL PROGRAMMING AND FACILITY SIZING

General

ACRP Report 25: Airport Passenger Terminal Planning and Design produced by the Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it. The ACRP is part of the Transportation Research Board (TRB) and is funded by the National Academies of Sciences, Engineering, and Medicine and the Federal Aviation Administration (FAA). ACRP Report 25, published in 2010 provides guidance in planning and developing airport passenger terminals and assist users in analyzing common issues related to airport terminal planning and design.

In addition to ACRP Report 25, publications and concepts developed by Airport Authorities Coordinating Council (AACC), now Airports Council International (ACI), and International Air Transport Association (IATA) have been published as part of AACC/IATA's Guidelines for Airport Capacity/Demand Management, second edition 1990, and third edition 1996.

As part of the evaluation of the existing Terminal at TTN, the function of the spaces with the terminal were evaluated relative to the ACRP Report 25, the AACC/IATA's Guidelines for Airport Capacity/Demand Management, and the FAA's Advisory Circular AC 150/5360-13A, Airport Terminal Planning, 7/13/18.

The terminal operates at a Level of Service (LOS) F and is based upon both quantitative and qualitative analysis of the functions and operations within the building, comparisons with other airport terminals, and standards/recommendations for terminal programming and space planning.

Level of Service Definition and Standard

The definitions for LOS were modified as follows and have remained the IATA LOS definitions that most people use:

- A Excellent LOS; condition of free flow; no delays; excellent level of comfort.
- B High LOS; condition of stable flow; very few delays; high level of comfort.
- C Good LOS; condition of stable flow; acceptable brief delays; good level of comfort.
- D Adequate LOS; condition of unstable flow; acceptable delays for short periods of time; adequate level of comfort.
- E Inadequate LOS; condition of unstable flow; unacceptable delays; inadequate level of comfort.
- F Unacceptable LOS; condition of cross flows; system breakdown and unacceptable delays; unacceptable level of comfort.

For the various areas within the Terminal, the following table identifies the LOS standards.

Level of Service										
TERMINAL AREA	A		B		C		D		E	
Check-in Queue Area	19.4FT²	1.8M²	17.2FT²	1.6M²	15.1FT²	1.4M²	12.9FT²	1.2M²	10.8FT²	1.0M²
Wait/Circulate	29.0FT²	2.7M²	24.8F²	2.3M²	20.5FT²	1.9M²	16.1FT²	1.5M²	10.8FT²	1.0M²
Hold Room	15.0FT²	1.4M²	12.9FT²	1.2M²	10.8FT²	1.0M²	8.6FT²	0.8M²	6.5FT²	0.6M²
Baggage Claim	21.5FT²	2.0M²	19.4FT²	1.8M²	17.2FT²	1.6M²	15.1FT²	1.4M²	12.9FT²	1.2M²
Government Inspection Services	15.1FT²	1.4M²	12.9FT²	1.2M²	10.8FT²	1.0M²	8.6FT²	0.8M²	6.5FT²	0.6M²

Source: *Guidelines for Air Capacity/Demand Management*, Third Edition, ACI/IATA, 1996

Guidelines for Airport Capacity/Demand Management identifies that LOS C is typically recommended as a design objective for the design hour because it denotes good service at a reasonable cost. For terminal planning this guideline needs to be flexible in sizing for passengers the peaks and establish acceptable waiting times for processors including check-in, security, hold rooms, and baggage claims.

Note is made by the authors of the Guidelines for Airport Capacity/Demand Management that there are areas of significant agreement and disagreement regarding the qualitative definitions of the LOS and the translation of these qualitative definitions into metrics. Terminal space planning therefore needs to be flexible in sizing of the facility for passengers during the peaks in establishing acceptable waiting times for processors including check-in, security, hold rooms, and baggage claims.

Trenton Mercer Airport Replacement Terminal Facility Requirements

The facility requirements, including space planning and programming for the replacement terminal, were identified during the Master Plan for TTN. The standards within ACRP Report 25: Airport Passenger Terminal Planning and Design are the basis for the minimum sizes of spaces within the terminal. Additional space is added to the terminal layouts as the design progresses to accommodate circulation, separation and/or distinction between processors or movements within the building, and an increased LOS in the areas of baggage claim, meeter/greeter areas in the public lobby, circulation spaces, concessions, and gate holdrooms.

The existing terminal and replacement terminal planning are identified below. A column is also added for areas where the Terminal Planning Spreadsheet from the ACRP Report 25: Airport Passenger Terminal Planning and Design where values were able to be calculated.

Annual Enplanements – 476,507 (Forecast Year 2035)

Peak Hour Enplaned – 490

Program Area	Existing Terminal	ACRP 25 Program	ACRP 25 Calculation	Proposed Terminal Program	Proposed Terminal Program Notes
Ticketing					
Counter Positions (#)	6	14	40% of use by pax for counter and kiosks	14	
Counter Length (lf)	32	45	Existing counter lf	70	5 lf/position – counter and half shared scale
Counter Area (sf)	500	675	Based on 15 ft counter depth	700	10 sf/position – counter depth and standing depth to baggage belt
Check In/Queuing Area (sf)	700	345	sf based on positions and existing counter length	2,450	35 sf/counter length
Airline Offices (sf)	2,750	2,250	50 sf/counter length	2,950	30 sf/counter length
Baggage Makeup (sf)	100	-	Baggage Makeup is for back of house/cart circulation	6,900	100 sf/counter length
Airline Operations (sf)	0	-	-	2,010	30 sf/counter length
Hold Rooms					
Gates (#)	4	4		4	
Hold Room Waiting (sf)	3,420	4,300 sf per gate / 17,200 sf - 4 gates	Calculation based upon input for 180 seat aircraft with high utilization, high seating percentage, large number of families/ children. Corresponding Narrowbody standard (145 seats) is 4,180 sf/gate and	2,825 sf per gate / 11,300 sf – 4 gates	2 – A320 180 seat Aircraft = 6,320 sf 2 – RJ 70-90 seat Aircraft = 2,720 sf Increase by factor of 1.25 to add space for high number of families/children

			757 standard (185 seats) is 5,460 sf/gate		
Baggage Claim					
Claim Lobby Frontage (lf)	85	244 (Demand) 130 (Aircraft)	Based on peak hour arrivals and percentage of passengers checking bags	340	2 – 170 lf bag claims
Claim Lobby Area (sf)	2,895			8,500	25 sf per claim lf
Baggage Drop Off (sf)	2,400			10,125	20% above 25 sf per claim lf
Rental Cars					
Agencies (number)	1	-	-	3	3 families of rental car companies (6 individual rental car companies)
Counter Frontage (lf)	18	-	-	60	20 lf per family
Counter Area (sf)	180	-	-	600	10 sf per lf
Queuing Area (sf)	80	-	-	600	Same area as counter
Office/Storage (sf)	0	-	-	720	12 lf depth per family
Concessions					
Food/Gifts (sf)	2,950	-	-	7,475	15 sf per passenger based on airport experience/similar airports
Public Restrooms					
Public Restrooms (sf)	1,300	-	-	3,900	8 sf per passenger based on airport experience/similar airports
Public Lobby Seating					
Meeter/Greeter Waiting (sf)	1,550	-	-	8,650	15 sf per passenger for seating and 3 sf per passenger for waiting based on airport

					experience/similar airports
Security					
Screening Lanes	2	-	-	3	Based on TSA Standards
Passenger Screening (sf)	1,720	4,200	Based on lanes and typical screening lane spacing	5,175	Based on TSA Standards
Security Queuing (sf)	630	1,200	Based on lanes and typical screening lane spacing	900	Based on TSA Standards
TSA Office Support (sf)	300	-	-	2,000	Based on TSA Standards
Baggage Screening (sf)	600	3,380	Based on design hour bag load at 1.5 bags and 60% passenger checking baggage	3,450	Based on TSA Standards
Administration					
Office/Operations (sf)	4,000 (offsite)	-	-	5,425	Need based
Law Enforcement (Sheriff) (sf)	960 (offsite)	-	-	890	Need based
Emergency Medical Svcs. (sf)	0	-	-	150	Need based
Circulation/Structural/Support					
Circulation/Structural/ Support (sf)	6,645	9,900	Concourse circulation only based on length of concourse and wingspan	50,000	Circulation for comfort level. Structural Columns/Walls. Mechanical and support equipment based on sizes of spaces and mechanical load of the terminal


Existing View


Direction of View from townhomes west of Airport at 30' above ground - Eye at Elev 245 +/-
Site Map


Proposed View

Trenton-Mercer Airport

View from townhomes, west of airport.
Eye at Elev 239' +/-

Approved as to Form and Legality

County Counsel

Date

April 28, 2011

COUNTY EXECUTIVE AND CLERK TO THE BOARD AUTHORIZED TO EXECUTE A MEMORANDUM OF AGREEMENT BETWEEN THE DELAWARE AND RARITAN CANAL COMMISSION, AND THE COUNTY OF MERCER/TRENTON-MERCER AIRPORT REGARDING CERTAIN ACTIVITIES IN ORDER TO COMPLY WITH N.J.A.C. 7:45 ET. SEQ.

WHEREAS, the Delaware and Raritan Canal Commission (DRCC) is a duly authorized entity of the State of New Jersey under N.J.S.A. 13:13A-1 et. seq., and the Trenton-Mercer Airport (TTN) is located within the confines of a geographic area placing it under the jurisdiction of the DRCC, under N.J.A.C. 7:45 et. seq.; and,

WHEREAS, the DRCC is tasked with the regulation of stormwater and other activities impacting the Delaware and Raritan Canal, their tributaries, and the Delaware and Raritan Canal State Park; and,

WHEREAS, TTN must perform federally required safety and maintenance activities within DRCC regulated areas of the facility, and the DRCC has requested a Memorandum of Agreement (MOA) to be completed between the DRCC and TTN; and,

Clerk to the Board

RECORD OF VOTE

FREEHOLDER	Aye	Nay	N.V.	Abs.	Res.	Sec.	FREEHOLDER	Aye	Nay	N.V.	Abs.	Res.	Sec.
Cannon	X						Koontz	X					
Carabelli	X				✓		Walter	X					✓
Cimino	X						Colavita	X					
Frisby	X												

X—Indicates Vote Abs.—Absent N.V.—Not Voting
Res.—Resolution Moved Sec.—Resolution Seconded

WHEREAS, the attached MOA describes permitted activities, pertinent regulatory bodies, and the means by which to amend or terminate the MOA; now, therefore,

BE IT RESOLVED, that the County Executive and Clerk to the Board be and are hereby authorized to execute a Memorandum of Agreement between the Delaware and Raritan Canal Commission, located at Prallsville Mills, P.O. Box 539, 33 Risler Street, Stockton, NJ 08559, for the purpose aforesaid; and,

BE IT FURTHER RESOLVED, that the Clerk to the Board shall forward three (3) certified copies of this Resolution, along with three (3) fully executed Memorandums of Agreement, to the Office of the Airport Manager for further distribution to the DRCC and Omni Environmental, LLC, and a copy of each to the Director of the Mercer County Department of Transportation and Infrastructure.

I hereby certify this to be a true copy of the original.
Mercer County Board of Freeholders
Deputy *Clerk to the Board*

2011-228

Memorandum of Agreement
between
County of Mercer/Trenton-Mercer Airport and Delaware and Raritan Canal Commission

I. Purpose

This Memorandum of Agreement (MOA) is between the County of Mercer/Trenton-Mercer Airport (COM/TTN), which owns certain real property designated as Lot(s) 1,5,6,7,8 Block(s) 373, on the tax map of Ewing Township in the County of Mercer, State of New Jersey (the facility), and the Delaware and Raritan Canal Commission (DRCC), a duly authorized entity of the government of the State of New Jersey, and its successors and assignees.

This MOA is designed to bring COM/TTN into compliance with N.J.A.C. 7:45 et seq., and to define and make all parties aware of the present regulated areas located at the facility, and the present development plans of the COM/TTN. COM/TTN will insure against any adverse impacts on the corridors shown and to otherwise comply with the DRCC's requirements. This MOA in no way diminishes any rights and powers of COM/TTN under N.J.A.C. 7:45 et seq.

II. Agreements

A. Both parties agree that:

1. Consistent with N.J.A.C. 7:45 et seq, attached Exhibit A is a map of the facility with the location of all DRCC Stream Corridors (corridors) depicted, as well as depictions of current and planned land use for the balance of the facility.

2. Permitted activities in regulated areas include any approved by the DRCC, as well as those pursuant to all pertinent Federal and State Statutes and Regulations, including those of the U.S. Federal Aviation Administration, the U.S. Transportation Security Administration, the U.S. Department of Agriculture, the U.S. Environmental Protection Agency, the New Jersey Department of Transportation, all Federal Grant Assurances, as well as all other regulatory agencies.

3. Permitted activities include general maintenance, tree removal and pruning, the control of grass and weeds, the culling of unwanted pests, and any other activity designed to maintain a safe, secure, and legally compliant airport facility.

4. Any need to modify the designated activities or areas beyond that agreed upon in this agreement, as identified in Exhibit A, will require DRCC approval and modification of this MOA, consistent with N.J.A.C. 7:45 et seq.

III. Effective Date and Duration

This agreement will take effect immediately upon the signature of duly authorized representatives of both parties. This agreement shall remain in effect unless amended by consent of both parties or otherwise terminated by either party, upon 60-days written notice.

IV. Signatures

Trenton-Mercer Airport/County of Mercer

Date: 4/29/11 By: _____
Brian M. Hughes,
County Executive

Approved as to form by:

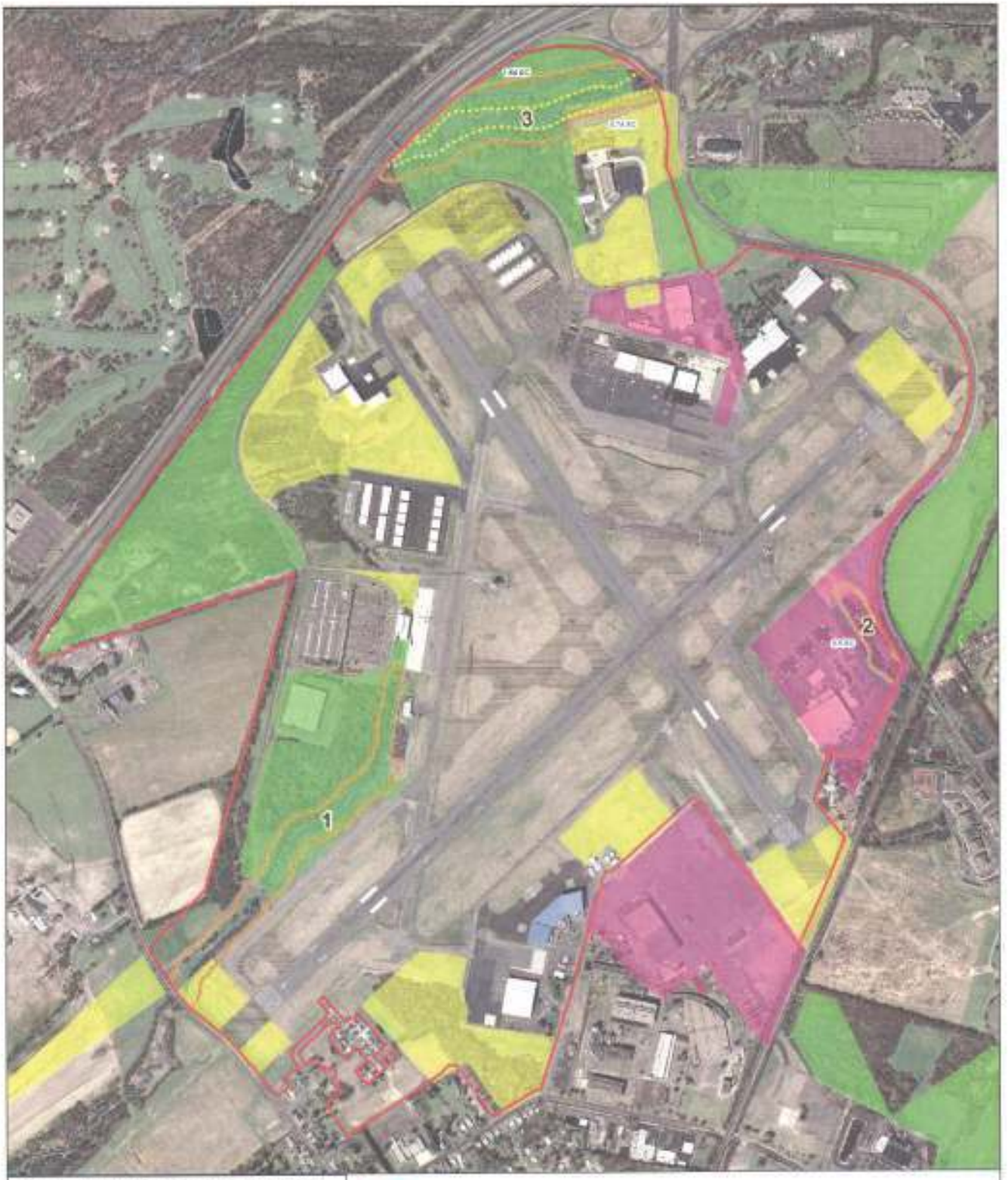
Date: 4/29/11 By: _____
Jerlene H. Worthy,
Clerk to the Board of Chosen Freeholders

Delaware and Raritan Canal Commission

Date: 5/6/11 By: _____
Ernest P. Hahn,
Executive Director

Approved as to form by:

Date: 5/6/2011 By: _____



DELAWARE & RARITAN CANAL COMMISSION STREAM BUFFER PLAN

Trenton-Mercer Airport
Mercer County, New Jersey

January 31, 2011

OMNI ENVIRONMENTAL LLC
321 Wall Street
Princeton, NJ 08540
Tel: 609-924-8821
Fax: 609-924-8831
www.Omni-Env.com

- Airport Parcel Boundary
- DRCC Stream Buffer
- Buffer Compensation Area
- Buffer Reduction Area
- 100 Year Flood Line
- Stream

Proposed Development Plan

- Proposed Aviation Development
- Proposed Aviation Re-Development
- Proposed Non-Aviation Development
- Proposed Land Development