AECOM

New Jersey State Airport System Plan

Final Technical Report

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New Jersey Department of Transportation
Bureau of Aeronautics

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ACRONYMS

ADA	Americans with Disabilities Act
AAC	Aircraft Approach Category
ABE	Lehigh Valley International Airport
AC	Advisory Circular
ACEA	Atlantic County Economic Alliance
ACI	Airports Council International
ACIP	Airport Capital Improvement Program
ACRP	Airport Cooperative Research Program
ACS	American Community Survey
ACY	Atlantic City International Airport
ADG	Airplane Design Group
ADS-B	Automatic Dependent Surveillance-Broadcast
AIP	Airport Improvement Program
ALP	Airport Layout Plan
ALS	Approach Lighting System
AOPA	Aircraft Owners and Pilots Association
ARC	Airport Reference Code
ATCT	Airport Traffic Control Tower
ASOS	Automated Surface Observing System
ASM	Available Seat Miles
ASTM	American Society for Testing and Material
ASV	Annual Service Volume
AWOS	Automated Weather Observing System
ASPM	Aviation System Performance Metrics
BA	Based Aircraft
BOA	Bureau of Aeronautics
BEA	Bureau of Economic Analysis
BLM	Monmouth Executive Airport

BLS	Bureau of Labor Statistics
CAGR	Compound Annual Growth Rate
CAO	Council for Airport Opportunity
CDW	Essex County Airport
CCTV	Closed-Circuit Television
CMC	Cape May County
COA	Certification of Authorization and Waiver
CPS	Current Population Survey
CVFP	Charted Visual Flight Procedures
d-CS	Digital Chart Supplements
DME	Distance Measuring Equipment
DP	Departure Procedure
d-TPP	Digital Terminal Procedures
DW	Dual Wheel
EAA	Experimental Aircraft Association
EIA	Energy Information Administration
EWR	Newark Liberty International Airport
EVY	Summit Airport
FBO	Fixed Based Operator
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
GA	General Aviation
GDP	Gross Domestic Product
GPS	Global Positioning Systems
GRP	Gross Regional Product
Hub	Atlantic County Aviation Innovation Hub
IAP	Instrument Approach Procedure
IED	Improvised Explosive Devices

ILG	New Castle Airport
ILS	Instrument Landing System
LNAV/VNAV	Lateral Navigation/Vertical Navigation
LAUS	Local Area Unemployment Statistics
LGA	LaGuardia Airport
LPV	Localizer Performance with Vertical Guidance
LSA	Light Sport Aircraft
MALSR	Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
MITL	Medium Intensity Taxiway Lights
MON	Motor Octane Number
MOU	FAA PSP Program
MPO	Pocono Mountains Municipal Airport
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
NARTP	National Aviation Research and Technology Park
NAS	National Airspace System
NASA	National Aeronautics and Space Administration
NDB	Non-Directional Beacon
NJAC	New Jersey Administrative Code
NJDOT	New Jersey Department of Transportation
NJ SASP	New Jersey State Airport System Plan
NJTPA	North Jersey Transportation Planning Authority,
NOTAM	Notice to Airmen
NPIAS	National Plan of Integration Airport Systems
OLS	Ordinary Least Squares
OMB	Office of Management and Budget
OPBA	Operations per Based Aircraft
PAFI	Piston Aviation Fuels Initiative

PAPI	Precision Approach Path Indicator
PANYNJ	Port Authority of New York and New Jersey
PATCO	Port Authority Transit Corporation
PATH	Port Authority Trans Hudson
PCI	Pavement Condition Index
PFC	Passenger Facility Charge
PHL	Philadelphia International Airport
PNE	Northeast Philadelphia Airport
POTUS	President of the United States
RDC	Runway Design Code
REIL	Runway End Identifier Lights
ROFA	Runway Object Free Area
RNAV	Area Navigation
RSA	Runway Safety Area
RPZ	Runway Protection Zone
SAG	Study Advisory Group
SAGE	System for Administering Grants Electronically
SASP	State Airport System Plan
SMQ	Somerset Airport
SEPTA	Southeastern Pennsylvania Transportation Authority
STAR	Standard Terminal Arrival
STEM	Science, Technology, Engineering, and Mathematics
SW	Single Wheel
TAF	Terminal Area Forecast
TDZL	Touchdown Zone Lights
TEB	Teterboro Airport
TFMSC	Traffic Flow Management System Counts
TFR	Temporary Flight Restriction

TSA	Transportation Security Administration
TTN	Trenton-Mercer Airport
UAS	Unmanned Aircraft Systems
UAM	Urban Air Mobility
VAR	Vector Autoregression
VASI	Visual Approach Slope Indicator
VAY	South Jersey Regional Airport
VFR	Visual Flight Rules
VGSI	Visual Glide Slope Indicator
VOR	Very High Frequency Omnidirectional Radio Range
VTOL	Vertical Take-Off and Landing
WAAS	Wide Area Augmentation System
YOY	Year-over-year

INTRODUCTION

The 2022 New Jersey State Airport System Plan (NJ SASP) is the New Jersey Department of Transportation Bureau of Aeronautics' (NJDOT BOA) planning study, funded by the Federal Aviation Administration (FAA), and has a 20-year planning horizon to guide airport development in New Jersey.

This 2022 NJ SASP studies and evaluates the capability of New Jersey's airport system's facilities to accommodate anticipated future demand and presents a comprehensive development and funding plan to improve aging and/or inadequate airside, landside, terminal, and support facilities over a 20-year planning horizon.

The state airport system plan for New Jersey has been developed in accordance with the Federal Aviation Administration's (FAA) Advisory Circular (AC) 150/5070-7 - The Airport System Planning Process. The 2022 NJ SASP serves as an update to the last system planning study, published in 2007.

NJDOT BOA has established the following 4 strategic goal areas and accompanying objectives for the 2022 NJ SASP:

1. **Airport Preservation** – Preserve the New Jersey airport system
    - Maintain airport elements critical to operations
    - Support aviation education
    - Raise public awareness of airport benefits
    - Promote planning and development initiatives
    - Enhance airport zoning and land use compatibility to support preservation and development

2. **Safety and Security** – Provide a safe and secure airport system
    - Enhance the safety of approach and departure procedures
    - Ensure conformance with key FAA Safety Standards
    - Ensure a secure airport environment

3. **Capacity and Efficiency** – Support an efficient airport system that maintains the flexibility to respond to changes in future demand
    - Plan for sufficient airport development to meet forecasted demand and needs identified in the airport master plan
    - Ensure airfield capacity can accommodate user demands and needs
    - Ensure landside capacity can accommodate user demands and needs

4. **Economic Growth** – Support economic growth in the State of New Jersey through airport activity
    - Develop and maintain airport infrastructure to attract new business
    - Promote job creation in the aviation sector
    - Identify the economic contributions of the airport system and individual airports

This 2022 NJ SASP includes the following components:

- Inventory of data on each of the system airports
- Analysis of socioeconomic and aviation industry trends
- Assessment of airport roles from the prior 2007 NJ SASP and an evaluation of needs for airport role changes in this system plan
- Forecasts of aviation demand
- Identification of improvements at each system airport to meet New Jersey's airport service role facility, service, and equipment objectives
- Analysis of airport system coverage measured by population accessibility
- Identification of development costs for projects that are eligible for public funding
- Systemwide recommendations to meet NJDOT BOA Goals and Objectives.

1 INVENTORY

1.1 Introduction

The purpose of this chapter is to present an inventory of existing facilities and conditions for public-use airports and specialty facilities that are part of the New Jersey airport system. The inventory data collected provide a solid foundation for understanding the existing system's current conditions and enable a comparison to the facilities inventoried in the 2007 New Jersey State Airport System Plan (NJ SASP). Further, the data collected will be used for future analysis, evaluations, and recommendations.

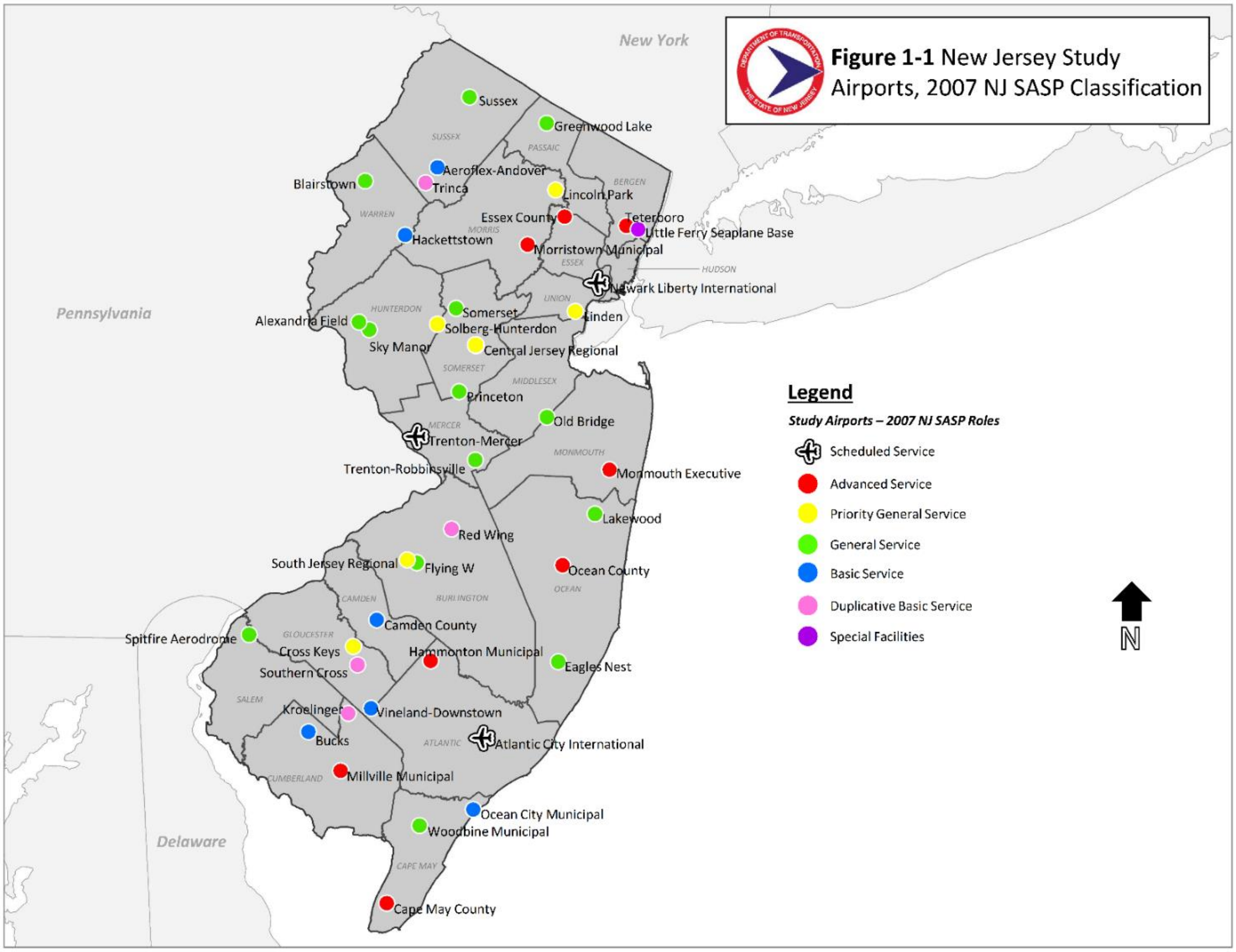
At the initiation of this 2022 NJ SASP in 2018, the New Jersey airport system consisted of 42 public-use airports. It is noted that Trinca (13N) closed in September 2020 during the course of the study. At the time of the completion of this chapter, 13N was open as a public-use airport and was included in the analyses. As of 2021, the New Jersey airport system consists of 41 public-use airports.

The existing airport system shown in **Figure 1-1** identifies airports according to the 2007 NJ SASP classifications. These airports range in size from single turf-runway facilities to large, multi-runway hub facilities. In this study, "airport" and "aviation facility" may be used interchangeably. Furthermore, the term "airport" refers to New Jersey's 41 public-use airports and one specialty facility. **Table 1-1** identifies each study airport's airport identifier code, associated city, and associated county.

Table 1-1 New Jersey Study Airports

FAA ID	Airport Name	Associated City	Associated County
12N	Aeroflex-Andover	Andover	Sussex County
N85	Alexandria Field	Pittstown	Hunterdon County
ACY	Atlantic City International	Atlantic City	Atlantic County
1N7	Blairstown	Blairstown	Warren County
00N	Bucks	Bridgeton	Cumberland County
19N	Camden County	Berlin	Camden County
WWD	Cape May County	Wildwood	Cape May County
47N	Central Jersey Regional	Manville	Somerset County
17N	Cross Keys	Cross Keys	Gloucester County
31E	Eagles Nest	West Creek	Ocean County
CDW	Essex County	Caldwell	Essex County
N14	Flying W	Lumberton	Burlington County
4N1	Greenwood Lake	West Milford	Passaic County
N05	Hackettstown	Hackettstown	Warren County
N81	Hammonton Municipal	Hammonton	Atlantic County
29N	Kroelinger	Vineland	Cumberland County
N12	Lakewood	Lakewood	Ocean County
N07	Lincoln Park	Lincoln	Morris County
LDJ	Linden	Linden	Union County
2N7	Little Ferry Seaplane Base	Little Ferry	Bergen County
MIV	Millville Municipal	Millville	Cumberland County
BLM	Monmouth Executive	Belmar/Farmingdale	Monmouth County
MMU	Morristown Municipal	Morristown	Morris County
EWR	Newark International	Newark	Essex County
26N	Ocean City Municipal	Ocean City	Cape May County
MJX	Ocean County	Toms River	Ocean County
3N6	Old Bridge	Old Bridge	Middlesex County
39N	Princeton	Princeton/Rocky Hill	Somerset County
2N6	Red Wing	Jobstown	Burlington County
N40	Sky Manor	Pittstown	Hunterdon County
N51	Solberg-Hunterdon	Readington	Hunterdon County
SMQ	Somerset	Somerville	Somerset County
VAY	South Jersey Regional	Mount Holly	Burlington County
C01	Southern Cross	Williamstown	Gloucester County
7N7	Spitfire Aerodrome	Pedricktown	Salem County
FWN	Sussex	Sussex	Sussex County
TEB	Teterboro	Teterboro	Bergen County
TTN	Trenton Mercer	West Trenton	Mercer County
N87	Trenton-Robbinsville	Robbinsville	Mercer County
13N	Trinca	Andover	Sussex County
28N	Vineland Downtown	Vineland	Gloucester County
OBI	Woodbine Municipal	Woodbine	Cape May County

Source: NJ SASP 2007, FAA, and NJDOT.



Source: AECOM, 2019.

Figure 1-1 New Jersey Study Airports by 2007 SASP Classification

At the time the 2007 SASP was conducted, 47 public-use airports were located in New Jersey. Included in this total were 45 existing study airports and two special use facilities. Since 2007, seven airports have either permanently closed or have changed from public-use facilities to private-use only facilities. As such, Bader Field, Marlboro, Red Lion, Li Calzi Airpark, Newton, Rudy's, and Twin Pine are not included in this study. Two specialty facilities, Holly City Heliport and Little Ferry Seaplane Base, were included in the 2007 SASP but Holly City Heliport is not included in this update to the New Jersey State Airport System Plan as it is closed. The only specialty facility that will be included in the 2022 NJ SASP is Little Ferry Seaplane Base, which was also included in the 2007 NJ SASP as a specialty facility.

The adequacy of the aviation system in New Jersey is largely based on the type of facilities that are provided to the public and airport users. Therefore, it is extremely important to determine the physical attributes and services available at each airport. This chapter of the SASP documents details for each facility. These details are provided primarily in the form of tables that present the information in a logical form for analysis. The following sections are included in this chapter:

1.2 Inventory Process and Methodology
1.3 New Jersey System Coverage
1.4 Inventory Table Summaries
1.5 Conclusion

1.2 Inventory Process and Methodology

The inventory process consisted of collecting and verifying data for each airport facility. An electronic database was created to catalog and store all collected information uniformly. To begin the inventory's data collection effort, many available data sources were reviewed. Data were obtained from the following sources:

- Airport Master Plans
- Airport Pavement Management Plans
- FAA Advisory Circular 150/5300-13A
- FAA General Aviation Airports: A National Asset (ASSET 1)
- FAA General Aviation Airports: In-Depth Review of the 497 Unclassified Airports (ASSET 2)
- FAA Digital Chart Supplements (d-CS)
- FAA Form 5010, Airport Master Record
- FAA AIP Grant History 2007-2018
- FAA National Based Aircraft Inventory Program
- FAA National Plan of Integrated Airport Systems (2019-2023)
- FAA 2018 Terminal Area Forecast (TAF) Report
- FAA Digital Terminal Procedures (d-TPP)
- NJDOT Bureau of Aeronautics (BOA)
- NJDOT Economic Impact Study
- NJDOT System for Administering Grants Electronically (SAGE)

The database was initially populated with available information for each dataset. The information collected for individual airports was then populated into an airport questionnaire and sent to each airport sponsor for their review to confirm or otherwise identify the changes that had occurred. Airport sponsors were also requested to provide additional data required to support subsequent system analysis that was not available from a secondary data source. A sample sponsor survey can be found in **Appendix A. Sample Airport Survey Questionnaire**.

After the distribution of the airport questionnaires, the database was updated to reflect information received from airport sponsors. Additional sponsor outreach, which included airport visits and/or phone calls, with each of the 42 study airports was conducted to resolve missing, incomplete, or inconsistent information compiled from the collection efforts. This first-hand confirmation of data used to support the study's analysis ensures that this 2022 NJ SASP uses the most accurate and up-to-date data available for each airport in the system.

The inventory database was finalized in June 2019 and is used throughout the 2022 NJ SASP process, providing a comprehensive snapshot of current facilities, activity, and conditions for all study airports. The database provides key information vital to the 2022 NJ SASP and can be utilized by the New Jersey Department of Transportation (NJDOT) Bureau of Aeronautics (BOA), as necessary, to obtain past and current inventory information for each airport.

1.3 New Jersey System Coverage

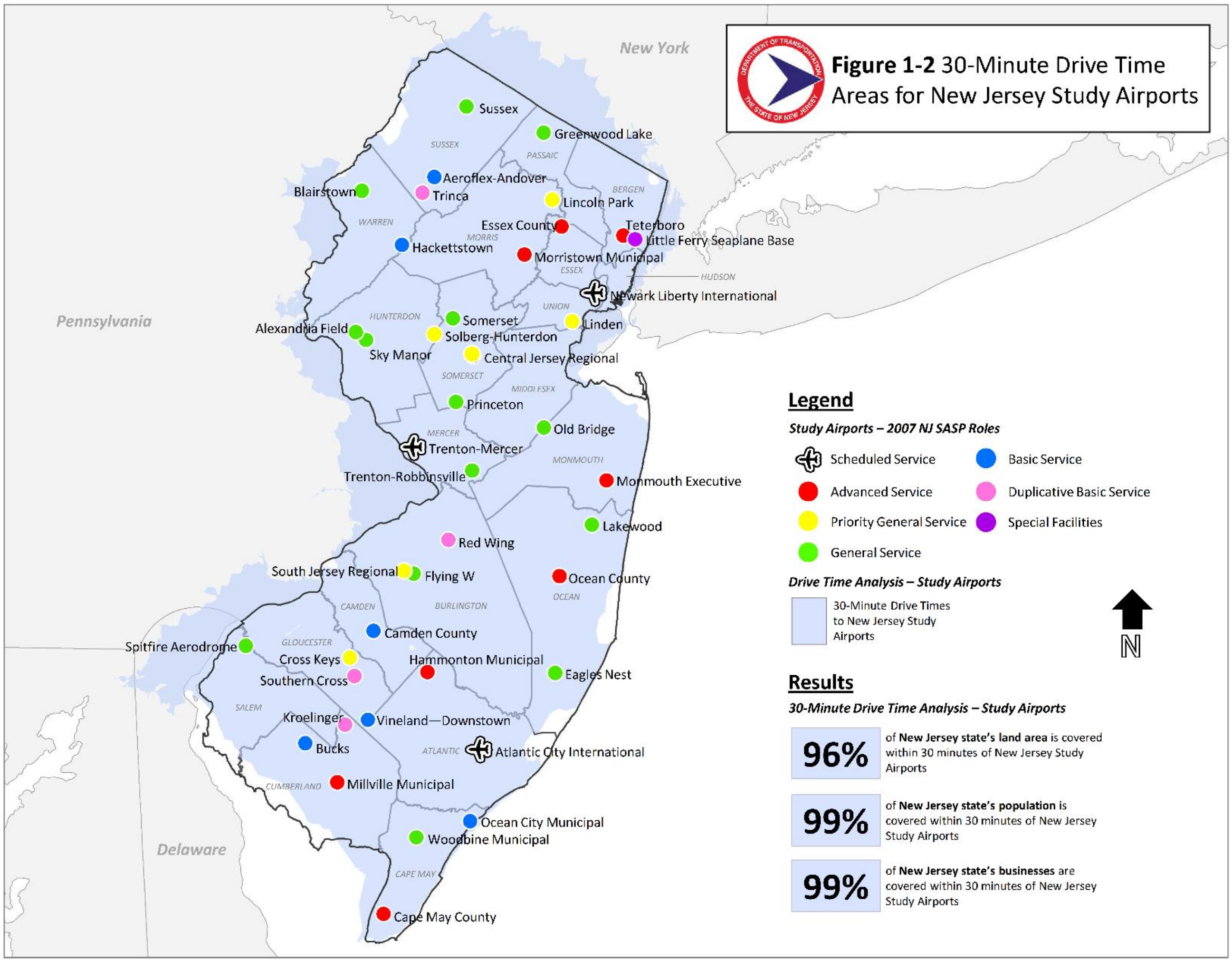
The New Jersey airport system is comprised of an extensive system of commercial service and general aviation airports, as shown in **Figure 1-1**. This section provides an overview of the New Jersey airport system's coverage of New Jersey's population, businesses, and land area. An important part of evaluating the adequacies and deficiencies in New Jersey's system of 42 public-use airports is through coverage, which is measured by each airport's service area.

To help identify airport drive time service areas, an analysis was completed using 2018 ESRI U.S. Roadway data, which specifies types of highway/roads, directionality, and speed limits for each road type. A 30-minute service area was established for each study airport according to the 2007 NJ SASP classifications, as depicted in **Figure 1-2**.

As part of measuring coverage, the drive time analysis also identified the population, number of businesses, and land area within each airport's established drive time service area. According to the 30-minute service areas[1], 99 percent of the New Jersey population, 99 percent of New Jersey businesses, and 96 percent of New Jersey's land area is covered by the airport system.

The airport service areas are important underpinnings for evaluating the performance of and the accessibility to New Jersey's airport system. The drive time analysis and the resultant estimates of population per airport service area are important inputs for the system evaluation effort that is presented in subsequent chapters. The methodology for this analysis is presented in **Appendix B. Drive Time Analysis Methodology**.

[1] NJDOT utilizes a 30-minute service area for evaluating coverage. This metric differs from the FAA's usage of a 30-mile radius for assessing NPIAS airports.



Source: AECOM, 2019.

Figure 1-2 30-Minute Drive Time Areas for New Jersey Study Airports

1.4 Inventory Table Summaries

Airport inventory data for this analysis has been collected, organized, and presented for the following major categories:

- Airport Ownership
- Airport Plan Information
- Airside Facilities
- Airport Navigational Aids and Facilities
- Airport Lighting Systems
- Runway Approach Characteristics
- Aircraft Parking
- Based Aircraft
- Airport Activity Statistics
- Airport Services
- Community Engagement
- Land Use
- Security and Utilities
- Airport Access

This section provides a summary for each of the tables included in **Appendix C. Inventory Update Data Tables**.

Appendix C Table 1: Airport Ownership presents information on each airport's listed sponsor, ownership status, and classification in the 2007 NJ SASP and the Federal Aviation Administration (FAA) National Plan of Integration Airport Systems (NPIAS). Of the 42 study airports:

- 43 percent (18 airports) are publicly-owned, and 57 percent (24 airports) are privately-owned.
- 57 percent (24 airports) are included in the NPIAS, and 43 percent (18 airports) are non-NPIAS airports. The commercial service NPIAS airports are shown in their NPIAS categories, including Large Hub, Small Hub, and Non-Hub airports, and the general aviation NPIAS airports are shown in their FAA ASSET roles, which consist of National, Regional, Local, Basic, and Unclassified airports.[2]
- 7 percent (3 airports) are classified as Scheduled Service airports, 19 percent (8 airports) are classified as Advanced Service, 14 percent (6 airports) are classified as Priority General Service, 33 percent (14 airports) are classified as General Service, 14 percent (6 airports) are classified as Basic Service, 10 percent (4 airports) are classified as Duplicative Basic Service airports, and 2 percent (1 airport) are classified as Specialty Facility.

Appendix C Table 2: Airport Plan Information presents the existence of airport planning studies, including master plans, ALPs, and Economic Impact Studies. If available, the year the plan was developed is provided. In addition to airport planning studies, this table presents the level of investment in the airport between 2008 and 2018 and includes information on whether the airport has a development project planned for 2019 onwards.

Appendix C Table 3: Airside Facilities presents information on each airport's airside characteristics, including runway designations, airport reference codes, runway lengths and widths, runway capacity estimates, runway surface types and strength, pavement condition index ratings, and taxiway type.

- The airport reference code (ARC) is an airport designation that signifies the airport's highest Runway Design Code (RDC) minus the visibility component. The ARC includes the aircraft approach category (AAC) and the airplane design group (ADG) components. The ARC is provided for each study airport's primary runway. Visibility minimums are defined in **Appendix C Table 6: Runway Approach Characteristics**.

The AAC relates to the operational characteristic of aircraft approach speed and is denoted by a letter according to **Table 1-1**.

[2] The Federal Aviation Administration (FAA) has established two mechanisms for classifying airports, airports (commercial service and general aviation) included in the National Plan of Integrated Airport Systems (NPIAS) and specific roles for general aviation airports as identified in the FAA's report titled General Aviation Airports: A National Asset (ASSET). See Chapter 3 Airport Roles, Section 3.3 FAA Roles for Study Airports for a summary of FAA ASSET categories.

Table 1-1 Aircraft Approach Category

Aircraft Approach Category	Approach Speed
Category A	Less than 91 knots
Category B	Between 91 knots and 121 knots
Category C	Between 121 knots and 141 knots
Category D	Between 141 knots and 166 knots
Category E	Greater than 166 knots

Source: FAA AC 150/5300-13A

The ADG relates to a grouping of airplanes based on tail height or wingspan and is depicted by a Roman numeral according to **Table 1-2.**

Table 1-2 Airplane Design Group

Airplane Design Group	Tail Height (ft)	Wingspan (ft)
Group I	< 20	< 49
Group II	20 to < 30	49 to < 79
Group III	30 to < 45	79 to <118
Group IV	45 to < 60	118 to < 171
Group V	60 to < 66	171 to < 214
Group VI	66 to < 80	214 to < 262

Source: FAA AC 150/5300-13A

- *Runway length* and *runway width* are presented for each study airport's runway in feet.
- *Airfield capacity estimates* show annual service volumes calculated based on the methodology outlined in FAA Advisory Circular 150/5060-5, Airport Capacity and Delay. A mix index of 0-20 was assumed for all general aviation airports.
- *Runway surface type* indicates the construction material of the runway surface. The surface types present in the study airports include: turf, concrete, asphalt, and gravel. Across the 42 study airports there are a total of 61 runways, 20 percent (12 runways) of which are turf and the remaining 80 percent (49 runways) are constructed with asphalt, concrete, or a mix of asphalt and turf.
- *Runway strength* identifies the landing gear gross weight strength of the runway in thousands of pounds. Runway strength is listed for single-wheel and dual-wheel type landing gear, where available. Runway strength is not applicable for airports with turf and water runways.
- *Pavement condition index* (PCI) ratings are developed based on an inspection of the runway, taxiway, and apron pavement at each airport. A PCI rating between 100 and 70 indicates good pavement condition, 70 and 55 as fair, and below 55 as poor. PCI ratings presented are estimates for the condition of each airport's primary runway in 2019 and are based on previous PCI rating studies and information collected through the Airport Survey Questionnaires.
- *Taxiway type* refers to the type of taxiway that serves each runway. These include full parallel and partial parallel taxiways. Runways without a parallel taxiway are also noted. Across the 42 study airports there is a total of 61 runways, 59 percent (36 runways) of which are served by a full parallel taxiway, 15 percent (9 runways) of which are served by a partial parallel taxiway, and the remaining 26 percent (16 runways) are not served by either a full or partial parallel taxiway.

Appendix C Table 4: Airport Navigational Aids and Facilities presents facilities at each airport that provide navigational guidance to pilots. These include: rotating beacons, wind indicators, segmented circles, weather reporting systems (WRS), airport traffic control tower (ATCT), runway end identifier lights (REILs), touchdown zone lights (TDZLs) and visual glide slope indicators (VGSIs) including precision approach path indicators (PAPIs) and visual approach slope indicators (VASIs).

- *Rotating beacons* identify the location and type of an airport and consist of a rotating light with a specific pattern of colored flashes. Rotating beacons for civilian airports have alternating single green and white flashes; military airports have one green flash followed by two white flashes. Pilots may use rotating beacons to identify an airport's location on approach or when way finding. Of the 42 study airports, 76 percent (32 airports) are equipped with a rotating beacon.
- *Wind indicators* provide information about airfield wind direction and intensity to pilots for their use in course adjustment prior to landing or after takeoff. Wind indicators, such as wind cones or wind socks, are free rotating hollow fabric shapes installed near runway ends; they are often lighted to allow their use at night or in other times of reduced visibility. Of the 42 study airports, 71 percent (30 airports) are equipped with a lighted wind indicator and

26 percent (11 airports) are equipped with a non-lighted wind indicator. The system's only specialty facility, Little Ferry Seaplane Base, is the only airport without a wind indicator.

- *Segmented circles* perform two functions; they aid pilots in locating airports and provide a centralized location for such indicators and signal devices as may be required on an airport. The segmented circle is installed so that the circle in a position affording maximum visibility to pilots in the air and on the ground. Of the 42 study airports, 21 percent (9 airports) are equipped with a segmented circle.
- An on-airport *weather reporting system* provides on-site weather updates and offer an additional safety buffer to aircraft using the airport, especially during periods of inclement weather. Of the 42 study airports, 40 percent (17 airports) have either an automated surface observing system (ASOS) or automated weather observing system (AWOS).
- An *airport traffic control tower* (ATCT) is an on-airport facility where personnel control flight operations within an airport's designated airspace and vehicle operations on the ground. Of the 42 study airports, 14 percent (6 airports) have on-airport ATCTs.
- *Runway end identifier lights* (REIL) enable pilots to identify the runway threshold during approach for landing. REILs consist of flashing white high-intensity lights installed at each end corner of a runway. REILs are particularly helpful during times of reduced visibility and in urban environments that have an abundance of other lighting near the airfield. Across the 42 study airports there is a total of 122 runway ends, 34 percent (41 runway ends) of which are equipped with runway end identifier lights.
- *Touchdown zone lights (TDZL)* enable pilots to identify the touchdown zone during approach for landing. TDZLs consist of two rows of steady white high-intensity lights installed along the path of the runway centerline. TDZLs are particularly helpful when landing under adverse visibility conditions. Across the 42 study airports, there are a total of 122 runway ends, seven percent (9 runway ends) of which are equipped with touchdown zone lights.
- *Visual glideslope indicators* (VGSI) include precision approach path indicators (PAPI) and visual approach slope indicators (VASI). VGSIs are lighting systems which assist pilots in aligning their aircraft with the correct and safe glide path for approach for landing at an airport. VGSIs include angled red and white lights in different patterns that indicate the angle of the approach glide path. VASIs and PAPIs are the most common VGSI systems and are described further below:
  - A VASI is used primarily under visual flight rules (VFR) conditions. A VASI provides vertical visual guidance to a pilot during approach for landing by displaying a pattern of high-intensity red and white lights that indicate whether the aircraft is too high or too low on approach. VASIs may be configured in a 2-box (two bars with two light units) or a 4-box (two bars with four light units) arrangement. Across the 42 study airports, there is a total of 122 runway ends, 4 percent (5 runway ends) of which are equipped with a VASI.
  - A PAPI provides visual glide path guidance using lights that indicate to a pilot the aircraft's position relative to the safe path for landing. PAPIs may be configured in a 2-box (single row of two light units) or a 4-box (single row of four light units) arrangement. Two-box PAPIs are typically installed on runways without electronic guidance, on non-Part 139 airports, or when an aircraft's descent below the normal approach angle presents a serious hazard. Four-box PAPIs are typically installed at airports with jet operations. Across the 42 study airports, there is a total of 122 runway ends, 50 percent (61 runway ends) of which are equipped with a PAPI.

Appendix C Table 5: Airport Lighting Systems presents the approach lighting systems (ALS) by runway end, and runway lights, runway lighting separation, taxiway lights, and centerline lighting available by runway.

- An *approach lighting system* (ALS) guides pilots when landing on a runway. There are several types of ALS. The two types that are prevalent at the study airports include the *medium intensity approach lighting system with runway alignment indicator lights* (MALSR) and the *high intensity approach lighting system with sequenced flashing lights* (ALSF2). Across the 42 study airports, there are a total of 122 runway ends, 8 percent (10 runway ends) of which are equipped with an ALS.
- *Runway lighting* provides guidance for pilots when navigating on the runway. There are three types of runway lighting: high intensity runway lights (HIRL), medium intensity runway lights (MIRL), and low intensity runway lights (LIRL). Airports with non-FAA standard runway lighting are noted with "NSTD." Runways with no lighting are also noted. Across the 42 study airports, there are a total of 61 runways, 78 percent (48 runways) of which are equipped with runway lighting.
- *Runway lighting separation* is the distance between runway lights on a runway. The New Jersey Administrative Code (NJAC) specifies in 16:54-6.1 that runway lights should not be spaced more than 200 feet apart. Airports that to do

meet this requirement are noted as non-standard. Across the 42 study airports, there a total of 61 runways. Only one runway, located at Cross Keys, does not have standard runway lighting separation.

- *Taxiway lighting* provides guidance for pilots when navigating on the taxiway. The standard taxiway lighting system for airports is medium intensity taxiway lights (MITL). Airports with non-FAA standard taxiway lighting are noted with "NSTD." Taxiways with no lighting are also noted. Across the 42 study airports, there are a total of 61 runways, 76 percent (32 runways) of which have taxiway lighting.
- *Centerline lighting* provides guidance to pilots when landing on a runway under adverse visibility conditions. The lights are located along the runway centerline and change in color from white to red dependent upon the distance from the runway. Across the 42 study airports, there are a total of 61 runways, 10 percent (6 runways) of which have centerline lighting

Appendix C Table 6: Runway Approach Characteristics identifies the availability of the two key components of an instrument landing system, a glideslope and localizer, the approach type for the primary runway, approach minimums and whether a precision or non-precision approach exists for all runways. The table also identifies additional navigational aids and facilities critical to runway approaches, including very high frequency omnidirectional radio range (VOR), distance measuring equipment (DME), global positioning systems (GPS), and non-directional beacons (NDB). Instrument approaches typically increase safety and accuracy when landing and allow landings to be conducted in reduced visibility or in inclement weather. The following describe and summarize the types and conditions of runway approaches at each airport:

- An instrument landing system (ILS) consists of two facilities: the localizer and glideslope antenna. The ILS uses a line-of-sight signal from the localizer antenna and marker beacons and a reflected signal from the ground plane in front of the glideslope antenna. Precision approaches allow landings to be conducted at or below one-half-mile mile visibility and a 200-foot cloud ceiling height. The presence of an ILS provides a precision approach to the airport. Of the 42 study airports, 17 percent (7 airports) are equipped with an ILS and have instrument landing approach capabilities.
- VOR is a system radiating very high frequency radio signals to compatible airborne receivers, providing pilots a direct indication of bearing relative to the facility and is used for non-precision procedures. Across the 42 study airports, there is a total of 122 runway ends, 81 percent (99 runway ends) of which are equipped with a VOR.
- DME is often used in combination with a VOR approach procedure and provides pilots with a slant range measurement of distance to the runway in nautical miles. Across the 42 study airports, there is a total of 122 runway ends, 62 percent (76 runway ends) of which are equipped with a DME.
- GPS refers to a network of satellites that provide navigational signals to aircraft for use in navigating between airports and also for airport approach and departure procedures. There are many types of GPS procedures available that provide different levels of accuracy, depending upon availability, aircraft equipment and pilot training levels. Localizer performance with Vertical Guidance (LPV) approaches can enable a pilot to fly down to decision heights as low as 200. Across the 42 study airports, there is a total of 122 runway ends, 64 percent (78 runway ends) of which are equipped with GPS approaches.
- NDB sends radio signals from both on- and off-airport facilities used for non-precision approach procedures and is considered an older and less accurate system than a VOR. Of the 42 study airports, 10 percent (4 airports) are equipped with NDB.
- The approach procedure indicates the type of instrument approach procedure that provides the lowest decision altitude for each study airport.
- The approach minima provide the landing minima that must be achieved to continue the approach. The first number is the lowest altitude, expressed in feet above sea level at which a pilot must make a decision to execute a landing or missed approach. The second value reflects the minimum visibility specified for the approach, expressed in statute miles, or in hundreds of feet where runway visual range is reported.
- The approach type is defined as precision, non-precision, non-precision approach with vertical guidance or visual approach:
  - A precision approach provides vertical and horizontal (lateral) guidance to aircraft, using an ILS. The ILS provides pilots with electronic guidance for aircraft alignment, descent gradient, and position until visual contact confirms the runway alignment and location. Across the 42 primary runways for the 42 study airports, 12 percent (5 primary runways) have a precision approach available.
  - A non-precision approach with vertical guidance is an approach that utilizes both lateral and vertical guidance. It is the most advanced instrument GPS approach that utilizes Wide Area Augmentation System (WAAS)

capabilities. Across the 42 primary runways for the 42 study airports, 10 percent (4 runways) have an approach with vertical guidance available.

- A non-precision approach is an approach that utilizes lateral guidance but does not use vertical guidance. Pilots utilize airport-based equipment such as VOR and DME and localizers for non-precision approaches. GPS is also used to provide guidance for non-precision approaches. Across the 42 primary runways for the 42 study airports, 62 percent (26 runways) have a non-precision approach available.
- A visual approach is an approach carried out using visual references to the runway when weather conditions permit. Across the 42 primary runways for the 42 study airports, 17 percent (7 runways) have a visual approach available.

- Obstacle penetrations to 20:1 approach surfaces occur at a number of study airports. When such situations exist night time approaches to visual runaways are prohibited when mitigation methods (marking and lighting, obstacle removal) have not been implemented. To assess the number of runway ends with unmitigated 20:1 approaches, the Airport Survey Questionnaire responses were assessed, and individual airport approach plates were evaluated to determine if the approach was identified as “NA at night”. Across the 42 study airports, there are a total of 122 runway ends, of which 39 percent (47 runway ends) are estimated to have unmitigated penetrations to the 20:1 approach surface.

Appendix C Table 7: Aircraft Parking presents the aircraft parking facilities that currently exist at each airport for based and itinerant aircraft. The information includes the total number of T-Hangar spaces and conventional hangars, total apron size, based aircraft apron size and the number paved and unpaved tie-downs. Across the 42 study airports, there are a total of 1,645 paved and 236 unpaved tie-downs. These airports also provide 1,106 T-Hangar spaces and 2,917,636 square feet of conventional hangar space. The study airports also provide a combined total of 16,717,285 square feet of total apron space and 5,802,471 square feet of based aircraft apron space. Of the 42 study airports, 50 percent (21 airports) currently have a waitlist for conventional or T-hangar space.

Appendix C Table 8: Based Aircraft presents the total number of aircraft based at the airport and is indicated in the table by type of aircraft, including single-engine, multi-engine, jets, and helicopters. The 2018 based aircraft numbers presented in the table are determined from FAA’s BasedAircraft.com database, where available, and adjusted FAA’s Form 5010, Airport Master Record, numbers, to reflect the trends observed at airports where both data sources were available.

Appendix C Table 9: Airport Activity Statistics presents the estimates of 2018 aircraft operations and the number of days annually that individual airports experience Temporary Flight Restrictions (TFRs). Aircraft operations are categorized into air carrier, air taxi, general aviation (local), general aviation (itinerant), military, and total annual operations. The 2018 aircraft operations numbers presented in the table are estimates determined based on the 2018 TAF airport operations and based aircraft data. See **Appendix D. 2018 Airport Operations Methodology** for a description of how 2018 operations for all study airports were estimated. TFRs are aircraft operation restrictions put in place for a designated area by the FAA. Of the 42 study airports, 67 percent (28 airports) are impacted by TFRs at least one day per year.

Appendix C Table 10: Airport Services presents the services provided at the airport either by the Sponsor or by a fixed-based operator (FBO). These services include fueling (AvGas and Jet A), charter service, on-site rental car facilities, courtesy vehicle/crew car services, pilot training, aircraft maintenance, aircraft rental service, public-use restroom, restaurant and food services, food, beverage and vending machines, pilot lounge, and public-use WiFi.

- Of the 42 airports, 45 percent (19 airports) offer full-time *AvGas* fueling services while 31 percent (13 airports) offer part-time AvGas fueling services. For *Jet A* fuel, 33 percent (14 airports) offer full time Jet A fueling services while 26 percent (11 airports) offer part-time Jet A fueling services.
- Of the 42 airports, 26 percent (11 airports) offer *charter service*, 24 percent (10 airports) have *on-site rental car facilities* and 31 percent (20 airports) offer *courtesy vehicle/crew car services*.
- Of the 42 airports, 48 percent of airports (20 airports) offer either full time or part time *pilot training*, 71 percent of airports (30 airports) offer either minor or major *aircraft maintenance services*, and 45 percent of airports (19 airports) offer *aircraft rental service*.
- Of the 42 airports, 74 percent (31 airports) have a *public use restroom*, 24 percent (10 airports) have a *restaurant or offer food service*, 29 percent (12 airports) offer *catering services*, 43 percent (18 airports) have *food/beverage vending machines*, 62 percent (26 airports) have a *pilot lounge*, and 55 percent (23 airports) have *public-use WiFi*.

Appendix C Table 11: Community Engagement presents various activities that an airport or Sponsor can facilitate to engage the community with the airport. These activities include relationships with educational institutions, marketing materials and plans, and events at the airport, such as air shows and fly-ins. Of the 42 study airports, 38 percent (16 airports) have a relationship with an educational institution, 40 percent (17 airports) have a marketing strategy/plan in place, and 52 percent (22 airports) hold community events at their airport.

Appendix C Table 12: Land Use identifies whether airports are in compliance with FAA Runway Safety Area (RSA), FAA Runway Protection Zone (RPZ), FAA Runway Object Free Area (ROFA), FAA Runway-Parallel Taxiway separation standards, RPZ ownership, and compliance with the airport's Airport Safety Zone. This information was obtained from Airport Survey Questionnaire responses and supplemented where possible from estimates obtained using Google Earth.

- The *Runway Safety Area* is a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. Of the 84 primary runway ends, 54 percent (45 primary runway ends) are in compliance with FAA Runway Safety Area dimensions.
- The *Runway Object Free Area* (ROFA) is located on the runway centerline. Objects in the ROFA must be limited to air navigation or aircraft ground maneuvering purposes. The ROFA standard requires that objects protruding above the nearest point of the RSA be cleared. Of the 84 primary runway ends, 39 percent (33 primary runway ends) are in compliance with the Runway Object Free Area dimensions.
- The *Runway Protection Zone* (RPZ) is a trapezoidal shaped area off the runway end to enhance the protection of people and property on the ground. Airport ownership of the RPZ is the most effective way to ensure that zone is clear of incompatible objects and activities. Of the 84 primary runway ends, 32 percent (27 primary runway ends) are in compliance with FAA Runway Protection Zone dimensions and 8 percent (7 primary runway ends) are in compliance with the NJ SASP ownership objective recommendation.
- The FAA's *Runway-Parallel Taxiway Centerline separation* standard is determined by an airport's airport reference code and ensures adequate distance between the runway and parallel taxiway's centerlines. Of the 42 primary runways, 45 percent (19 primary runways) meet FAA's runway-parallel taxiway centerline separation standards.
- The municipality that each airport lies within and whether the municipality is in compliance with the airport's Airport Safety Zone, pursuant to *NJAC 16:62: Air Safety and Zoning* is presented. Information regarding the Airport Safety Zone was gathered from the Airport Survey Questionnaire and has not been verified; additional study outside of the scope of the SASP is required to further analyze municipality compliance with the Airport Safety Zone. Based on the Airport Survey Questionnaire responses, of the 42 study airports, 62 percent (26 airports) indicated that its municipality is compliant with the Air Safety and Zoning Act of 1983.

Appendix C Table 13: Security and Utilities presents information on each airport's available security and utilities facilities, including presence of a perimeter fence, an electronic reader security gate system, closed-circuit television (CCTV) system, and electricity, water, and sewage systems.

- Of the 42 study airports, 52 percent (22 airports) are equipped with a full perimeter fence, 45 percent (19 airports) are equipped with an electronic reader security gate system, and 55 percent (23 airports) are equipped with a CCTV system.
- Of the 42 study airports, 90 percent (38 airports) have an on-airport electricity system, 88 percent (37 airports) have an on-airport water system, and 88 percent (37 airports) have an on-airport sewage system.

Appendix C Table 14: Airport Access presents information on airport accessibility, including the number of automobile parking spaces at each airport, existence of airport access roads, and public transit and shuttle availability. A public transit facility is defined as a New Jersey Transit bus, rail, light rail, or subway stop or Port Authority Trans Hudson (PATH), Port Authority Transit Corporation (PATCO), or Southeastern Pennsylvania Transportation Authority (SEPTA) rail station.

- Of the 42 study airports, 21 percent (9 airports) are within 0.5 miles of a public transit facility, 12 percent (5 airports) have shuttle services, and 100 percent (42 airports) have a paved access road.

2 TRENDS ANALYSIS

2.1 Introduction

As part of assessing a system of airports it is necessary to evaluate trends that may influence the sustainability of the system. Socioeconomic data, airport operational statistics and overall aviation industry trends provide insight into the factors that may either support or hinder airport growth and development.

Efficient and safe transportation systems are an essential part of an economy. Civil aviation supports the New Jersey state economy through economic output by attracting business and tourism, supporting local economic development and helping retain jobs that otherwise might be located elsewhere. The New Jersey Department of Transportation (NJDOT) BOA (Bureau of Aeronautics) published the *New Jersey Statewide Airport Economic Impact Study* in September 2016, which identified the following total combined annual impacts:

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

Socioeconomic analyses provide insight into changing populations, employment and income levels. Geographies with increasing population, employment and income levels may support an increase in aviation usage while decreasing population, employment, and income levels may produce a decline in aviation usage. Changes within the aviation industry itself such as technological advances, new regulatory requirements or an increase in the cost of fuel can significantly influence airport growth and development.

Chapter 2 Trends Analysis assess the above characteristics to help provide insight into the trends affecting the growth and viability of airports in New Jersey. The following sections are included in this chapter:

2.1.1 Methodology
2.2 Socioeconomic Trends in New Jersey
2.3 Aviation Industry Trends
2.4 Funding Sources for Airport Improvements
2.5 Technological Trends

2.1.1 Methodology

This section of the study details the methodology used for **Chapter 2 Trends Analysis**, and outlines the quantitative methods applied and data sources used.

Quantitative Methods

The analysis used two trend metrics:

- Year-over-year (YOY) changes - YOY changes represent the annual percentage change between values. For example, an increase in per capita income from $10,000 to $10,100 between 2010 and 2011 would represent a 1 percent YOY change.
- Compound annual growth rate (CAGR) - CAGR represents a smoothed annual growth rate between a starting and ending value. For example, a population CAGR of 2 percent between 2010 and 2017 would indicate that between 2010 and 2017 population increased annually at 2 percent. CAGRs ignore YOY volatility of values between the start and end date.

Data Sources

Data for **Section 2.2 Socioeconomic Trends in New Jersey** and **Section 2.3 Aviation Industry Trends** originated from two types of sources: economic sources and aviation sources, respectively.

Economic sources were used to acquire data related to population, employment, and productivity. Specifically, data from the following sources were used:

- United States Census Bureau: Population data was collected from the Census Bureau. Data was collected from the 2000 Decennial Census, the 2010 Decennial Census, and the 2017 American Community Survey (ACS) 1-Year Estimate. Only data from the ACS is estimated by the Census Bureau based on a subset of total United States population. Data for 2000 and 2010 represent responses to the Decennial Census in each respective year.
- Bureau of Labor Statistics (BLS): The BLS provides data related to employment within North America. For this study, data from the Current Population Survey (CPS) was used to analyze unemployment. The CPS is an annual survey that is submitted to a sample of households to track employment-related statistics in the United States. CPS data is used to estimate the national unemployment rate. At the sub-national level, the Local Area Unemployment Statistics (LAUS) program provides monthly employment estimates. Unemployment estimates for the United States, New Jersey, and New Jersey's counties were retrieved from the BLS for 1990, 2000, 2010 and 2017.
- EMSI: EMSI is a private provider of employment and demographic data. Forecasts for employment and population are also provided from EMSI through 2028. For this study, EMSI was used to collect data related to economic output and population forecasts. For industry level analysis, EMSI allows for complete analysis of data without any suppression of values. Industry level data from the BLS and BEA is suppressed at more detailed levels to preserve the confidentiality of survey respondents. Consequently, using EMSI allows for more detailed analysis than traditional data sources allow.
- Bureau of Economic Analysis (BEA): Personal income data used in this analysis was retrieved from the BEA. Incomes in this document are stated in 2019 dollars (no inflation adjustment). Census population data is paired with BEA income data to calculate per capita personal income. Data was retrieved for the United States, New Jersey, and New Jersey's counties.

Aviation sources were used to retrieve data related to enplanements, aviation costs, and funding. These data sources include:

- The Federal Aviation Administration (FAA): The FAA tracks aviation-related metrics in the United States. Data from the following reports were used:
  - *FAA Aerospace Forecasts, Fiscal Years 2018-2038* provides historical figures and projections for United States airline traffic and capacity, FAA workload, general aviation activity and pilots as well as commercial space and unmanned aircraft system fleet and remote pilot figures.
  - *FAA Terminal Area Forecast 2017-2045* is the official forecast of aviation activity for United States airports. Forecasts presented in this study are for the four major users of the National Airspace System (NAS) including air carriers, air taxi/commuters, general aviation and the military aircraft.
  - *FAA Active Civil Airmen Statistics* is an annual report published by the FAA that provides detailed airmen statistics not published in other FAA reports. Relevant to this analysis, the *FAA Civil Airmen Statistics* report provides detail on pilot populations within specific states. This study references the FAA Active Civil Airmen Statistics for 2010 through 2017.
  - *FAA Traffic Flow Management System Counts (TFMSC)* and *FAA Aviation System Performance Metrics (ASPM)* were used to provide detail on business operations at selected schedule service and general aviation airports within New Jersey. Specifically, the TFMSC provides data on traffic by airport using TFMS flight messages while the ASPM is a broad collection of systems for reporting on the traffic and performance of the ASPM airports.
  - *FAA Grant Histories* for 2008 to 2018 provide summaries on Airport Improvement Program (AIP) grants for all airports included in the National Plan of Integrated Airport Systems (NPIAS).
- General Aviation Manufacturers Association (GAMA): GAMA tracks data related to the fabrication and production of aviation products. This study used one GAMA report:

 – *Quarterly Shipments and Billings Report (2001-2017)* is a year-end report produced by GAMA each year, summarizing the number of aircraft shipments worldwide. Within this report, the GAMA provides a further breakdown of general aviation aircraft shipments by manufactured location as well as by aircraft type.

- United States Energy Information Administration (EIA): The EIA tracks energy related metrics in the United States. This study used EIA jet fuel price data. EIA price data is based on a sample of retail and non-retail gasoline prices that is sent out weekly.
- The Office of Management and Budget (OMB): The OMB is an office of the Executive Branch and is responsible for assisting the Chief of State with policy, budget, and management activities. The OMB provides data on specific Federal Government expenditures.
- NJDOT: NJDOT's System for Administering Grants Electronically (SAGE) provides historical grant data for the study airports. This study used SAGE data from 2012 to 2017.

2.2 Socioeconomic Trends in New Jersey

This section will detail relevant socioeconomic trends within the State of New Jersey and within each of New Jersey's counties. Growth in aviation is often correlated to the socioeconomic conditions present in proximate communities. **Section 2.2 Socioeconomic Trends in New Jersey** examines trends in gross regional product (GRP), total population, personal income and unemployment for the United States, New Jersey and New Jersey's counties.

2.2.1 Gross Regional Product

GRP tracks value added by industry sector, quantifying the market value of all final goods and services produced in a region. **Table 2-1** below presents data on the GRP within the United States, New Jersey and each county in New Jersey. As of 2017, EMSI suggests the New Jersey's economy is the 8th largest in the United States.

Table 2-1 Total Gross Regional Product in the United States and New Jersey

Total Gross Regional Product (in millions)					
Area	2007	2010	2017	2007-2017 CAGR	2010-2017 CAGR
United States	$14,122,300	$14,573,233	$19,153,140	3.1%	4.0%
New Jersey	$479,643	$489,348	$605,668	2.4%	3.1%
Atlantic County	$12,569	$11,965	$13,150	0.5%	1.4%
Bergen County	$58,880	$59,434	$71,623	2.0%	2.7%
Burlington County	$21,845	$23,002	$28,773	2.8%	3.2%
Camden County	$20,648	$20,514	$25,170	2.0%	3.0%
Cape May County	$3,413	$3,521	$4,244	2.2%	2.7%
Cumberland County	$5,035	$5,261	$6,105	1.9%	2.1%
Essex County	$46,348	$46,704	$56,529	2.0%	2.8%
Gloucester County	$12,615	$10,920	$13,191	0.4%	2.7%
Hudson County	$30,148	$33,258	$46,036	4.3%	4.8%
Hunterdon County	$6,681	$6,710	$9,099	3.1%	4.4%
Mercer County	$25,395	$28,721	$37,279	3.9%	3.8%
Middlesex County	$51,253	$51,324	$64,137	2.3%	3.2%
Monmouth County	$29,713	$30,630	$38,236	2.6%	3.2%
Morris County	$47,336	$48,261	$57,646	2.0%	2.6%
Ocean County	$14,379	$15,088	$19,993	3.4%	4.1%
Passaic County	$18,815	$19,674	$22,370	1.7%	1.9%
Salem County	$3,110	$3,501	$3,842	2.1%	1.3%
Somerset County	$29,354	$30,482	$39,758	3.1%	3.9%
Sussex County	$3,994	$4,075	$4,983	2.2%	2.9%
Union County	$34,119	$31,994	$39,079	1.4%	2.9%
Warren County	$3,993	$4,309	$4,424	1.0%	0.4%

Source: EMSI; https://www.economicmodeling.com/

From 2010 to 2017, national GRP increased at a CAGR of 4.0 percent, outpacing growth in New Jersey over the same period. Additionally, national GRP growth outpaced GRP growth in all but three New Jersey counties. The three counties where GRP growth outpaced the national average from 2010 to 2017 include Hudson County, Hunterdon County and Ocean County. As of 2017, the top GRP producing counties within New Jersey include Bergen County ($71.6 billion), Middlesex County ($64.1 billion), Morris County ($57.6 billion) and Essex County ($56.5 billion). In 2010, New Jersey's total GRP ($489.3 billion) comprised 3.4 percent of the national total ($14.6 trillion). In 2017, the total GRP produced in New Jersey in 2017 ($60.6 billion) comprised 3.2 percent of the national total ($191 trillion), which is down from New Jersey's 3.4 percent share in 2010.

2.2.2 Population

Table 2-2 presents data on the total population within the United States, New Jersey and each county in New Jersey.

Table 2-2 Total Population in the United States and New Jersey

Total Population						
Area	2000	2010	2017	Gross Population Δ 2000-2017	CAGR 2000-2017	CAGR 2010-2017
United States	281,421,906	308,745,538	325,719,178	44,297,272	0.9%	0.8%
New Jersey	8,414,350	8,791,894	9,005,644	591,294	0.4%	0.3%
Atlantic County	252,552	274,549	269,918	17,366	0.4%	-0.2%
Bergen County	884,118	905,116	948,406	64,288	0.4%	0.7%
Burlington County	423,394	448,734	448,596	25,202	0.3%	0.0%
Camden County	508,932	513,657	510,719	1,787	0.0%	-0.1%
Cape May County	102,326	97,265	93,553	-8,773	-0.5%	-0.6%
Cumberland County	146,438	156,898	152,538	6,100	0.2%	-0.4%
Essex County	793,633	783,969	808,285	14,652	0.1%	0.4%
Gloucester County	254,673	288,288	292,206	37,533	0.8%	0.2%
Hudson County	608,975	634,266	691,643	82,668	0.8%	1.2%
Hunterdon County	121,989	128,349	125,059	3,070	0.1%	-0.4%
Mercer County	350,761	366,513	374,733	23,972	0.4%	0.3%
Middlesex County	750,162	809,858	842,798	92,636	0.7%	0.6%
Monmouth County	615,301	630,380	626,351	11,050	0.1%	-0.1%
Morris County	470,212	492,276	499,693	29,481	0.4%	0.2%
Ocean County	510,916	576,567	597,943	87,027	0.9%	0.5%
Passaic County	489,049	501,226	512,607	23,558	0.3%	0.3%
Salem County	64,285	66,083	62,792	-1,493	-0.1%	-0.7%
Somerset County	297,490	323,444	335,432	37,942	0.7%	0.5%
Sussex County	144,166	149,265	141,682	-2,484	-0.1%	-0.7%
Union County	522,541	536,499	563,892	41,351	0.4%	0.7%
Warren County	102,437	108,692	106,798	4,361	0.2%	-0.3%

Source: United States Census Bureau; https://www.census.gov/

As of 2017, the most populous counties within New Jersey include Bergen County (948,406 people), Middlesex County (842,798 people) and Essex County (808,285 people). Overall, population growth within the state has lagged behind national trends, as the United States experienced a 0.8 percent CAGR compared to a 0.3 percent CAGR experienced in New Jersey between 2010 and 2017. Additionally, Middlesex County and Ocean County experienced the largest population inflows between 2000 and 2017 with 92,636 people and 87,027 people, respectively.

Table 2-3 presents data on population forecasts for the United States, New Jersey and each county in New Jersey.

Table 2-3 Population Forecast for the United States and New Jersey

Population Forecast					
Area	2018	2023	2028	Forecast Population ∆ 2018-2028	CAGR 2018-2028
United States	328,038,851	337,021,693	340,591,282	12,552,431	0.4%
New Jersey	9,031,369	9,130,845	9,170,587	139,218	0.2%
Atlantic County	269,216	266,212	265,005	-4,211	-0.2%
Bergen County	953,105	971,495	978,771	25,666	0.3%
Burlington County	448,324	447,951	447,854	-470	0.0%
Camden County	510,390	509,800	509,626	-763	0.0%
Cape May County	93,023	91,169	90,437	-2,586	-0.3%
Cumberland County	152,176	149,780	148,823	-3,353	-0.2%
Essex County	811,228	823,713	828,716	17,488	0.2%
Gloucester County	292,903	295,518	296,600	3,697	0.1%
Hudson County	698,423	722,611	732,244	33,822	0.5%
Hunterdon County	124,692	123,683	123,270	-1,422	-0.1%
Mercer County	375,605	379,002	380,364	4,759	0.1%
Middlesex County	847,085	861,320	866,893	19,808	0.2%
Monmouth County	625,888	624,253	623,593	-2,295	0.0%
Morris County	500,340	503,258	504,446	4,105	0.1%
Ocean County	601,057	615,956	621,931	20,874	0.3%
Passaic County	513,774	517,930	519,538	5,764	0.1%
Salem County	62,355	60,851	60,271	-2,084	-0.3%
Somerset County	336,999	342,490	344,694	7,695	0.2%
Sussex County	140,719	137,607	136,379	-4,340	-0.3%
Union County	567,432	580,129	585,218	17,786	0.3%
Warren County	106,636	106,115	105,913	-724	-0.1%

Source: EMSI; https://www.economicmodeling.com/

Future population forecasts suggest that New Jersey could attain a population level of approximately 9,170,587 by 2028, or an increase of approximately 164,943 residents over the 2017 population level of 9,005,644. New Jersey counties that are expected to see increases at a pace equal or greater to that of New Jersey (0.2 percent) include Hudson County (0.5 percent), Bergen County (0.3 percent), Ocean County (0.3 percent), Union County (0.3 percent), and Essex County (0.2 percent).

2.2.3 Income

Table 2-4 presents data on personal income within the United States, New Jersey and each county within New Jersey.

Table 2-4 Personal Income in the United States and New Jersey

Personal Income					
Area	2001	2010	2017	CAGR 2000-2017	CAGR 2010-2017
United States	$31,589	$40,545	$51,640	3.1%	3.5%
New Jersey	$40,305	$51,379	$64,537	3.0%	3.3%
Atlantic County	$29,273	$38,964	$46,557	2.9%	2.6%
Bergen County	$52,084	$65,992	$81,203	2.8%	3.0%
Burlington County	$36,675	$48,375	$59,659	3.1%	3.0%
Camden County	$31,846	$41,834	$51,878	3.1%	3.1%
Cape May County	$35,477	$44,670	$58,324	3.2%	3.9%
Cumberland County	$25,315	$33,486	$38,893	2.7%	2.2%
Essex County	$39,969	$51,884	$63,554	2.9%	2.9%
Gloucester County	$30,455	$42,288	$52,506	3.5%	3.1%

Personal Income					
Area	2001	2010	2017	CAGR 2000-2017	CAGR 2010-2017
Hudson County	$31,010	$45,067	$59,623	4.2%	4.1%
Hunterdon County	$58,200	$70,018	$86,589	2.5%	3.1%
Mercer County	$44,807	$53,202	$66,343	2.5%	3.2%
Middlesex County	$38,087	$47,306	$57,598	2.6%	2.9%
Monmouth County	$46,176	$57,489	$75,395	3.1%	3.9%
Morris County	$55,926	$73,918	$94,259	3.3%	3.5%
Ocean County	$33,357	$39,902	$50,184	2.6%	3.3%
Passaic County	$31,817	$40,555	$48,152	2.6%	2.5%
Salem County	$29,315	$40,424	$47,191	3.0%	2.2%
Somerset County	$55,604	$69,171	$96,548	3.5%	4.9%
Sussex County	$37,881	$47,423	$59,193	2.8%	3.2%
Union County	$42,500	$50,990	$64,413	2.6%	3.4%
Warren County	$34,290	$44,251	$53,531	2.8%	2.8%

Source: Bureau of Economic Analysis; https://www.bea.gov/

The average personal income for those living within New Jersey was more than $12,800 greater than the national average in 2017 and increased at a moderately slower rate than the national average between 2010 and 2017. Out of the 21 counties in New Jersey, 16 counties boasted a higher personal income than the national average in 2017. Between 2010 and 2017, Somerset County and Hudson County experienced the most significant compound annual increase in personal income at 4.9 percent and 4.1 percent, respectively.

2.2.4 Unemployment

Table 2-5 presents data on unemployment rates in the United States, New Jersey and each county within New Jersey.

Table 2-5 Unemployment in the United States and New Jersey

Unemployment				
Area	1990	2000	2010	2017
United States	5.6%	4.0%	9.6%	4.4%
New Jersey	5.0%	3.7%	9.5%	4.6%
Atlantic County	6.2%	4.7%	12.3%	7.2%
Bergen County	3.9%	3.2%	8.0%	3.9%
Burlington County	4.6%	3.1%	9.0%	4.1%
Camden County	5.9%	3.9%	10.9%	5.1%
Cape May County	7.7%	6.4%	14.0%	9.1%
Cumberland County	7.5%	5.8%	13.0%	7.0%
Essex County	6.3%	4.5%	10.8%	5.7%
Gloucester County	5.6%	3.6%	10.3%	4.7%
Hudson County	7.3%	4.8%	9.6%	4.4%
Hunterdon County	2.7%	2.3%	7.4%	3.5%
Mercer County	4.4%	3.3%	8.4%	4.1%
Middlesex County	4.5%	3.4%	8.9%	4.1%
Monmouth County	4.1%	3.2%	8.7%	4.1%
Morris County	3.2%	2.7%	7.4%	3.6%
Ocean County	5.0%	3.7%	10.3%	4.8%
Passaic County	6.3%	4.6%	11.4%	5.7%
Salem County	5.3%	3.9%	11.7%	6.1%
Somerset County	2.9%	2.6%	7.6%	3.8%

Unemployment				
Area	**1990**	**2000**	**2010**	**2017**
Sussex County	4.2%	3.0%	9.4%	4.4%
Union County	5.4%	3.9%	9.5%	4.8%
Warren County	4.3%	2.9%	9.8%	4.2%

Source: Bureau of Labor Statistics; https://www.bls.gov/home.htm

Unemployment rates within New Jersey have generally trended in-line with national averages, with Hunterdon County and Morris County experiencing the lowest unemployment rates in New Jersey as of 2017 at 3.5 percent and 3.6 percent, respectively. As of 2017, Cape May County had the highest unemployment rate at 9.1 percent.

2.3 Aviation Industry Trends

This section details historical and projected trends for commercial and general aviation. Unless noted otherwise, trends presented in this section are for the United States as a whole.

2.3.1 Commercial Aviation Trends

2.3.1.1 Enplanements

Table 2-6 presents the total number of enplanements within the United States, which is the sum of all enplanements occurring on large carriers, regional carriers and commuter carriers.

Table 2-6 Historical and Projected Enplanements in the United States

Historical and Projected Enplanements (in millions)			
Year	**Domestic Enplanements**	**International Enplanements**	**Total Enplanements**
Historical			
2010	634.8	77.3	712.1
2011	650.1	81.0	731.1
2012	653.8	82.9	736.7
2013	654.4	85.1	739.5
2014	669.0	88.0	757.0
2015	696.3	90.2	786.5
2016	726.2	93.4	819.6
2017 (E)	743.5	96.9	840.4
Compound Annual Growth Rate (2010-2017)	2.3%	3.3%	2.4%
Forecast			
2018	778.1	101.8	879.9
2019	803.6	105.1	908.7
2020	814.8	108.4	923.2
2021	822.3	111.8	934.1
2022	832.3	115.4	947.8
2023	844.3	119.2	963.5
2024	856.6	123.2	979.9
2025	869.4	127.4	996.8
2026	882.0	131.7	1,013.7
2027	894.7	136.0	1,030.7
2028	909.1	140.4	1,049.5
2029	925.3	145.0	1,070.3
2030	941.3	149.7	1,091.0
2031	958.6	154.5	1,113.1

Historical and Projected Enplanements (in millions)			
Year	**Domestic Enplanements**	**International Enplanements**	**Total Enplanements**
2032	976.3	159.6	1,135.8
2033	994.6	164.9	1,159.4
2034	1,013.8	170.4	1,184.2
2035	1,031.8	176.0	1,207.7
2036	1,049.8	181.7	1,231.6
2037	1,069.4	187.6	1,257.0
2038	1,089.9	193.7	1,283.7
Compound Annual Growth Rate (2018-2028)	1.6%	3.3%	1.8%
Compound Annual Growth Rate (2018-2038)	1.7%	3.3%	1.9%

Note: **(E) indicates estimated data; Enplanements is the sum of large air carriers and regional/commuter carriers.**

Source: **FAA Aerospace Forecasts, Fiscal Years 2018-2038**

Between 2010 and 2017, total enplanements within the United States increased at a CAGR of 2.4 percent, increasing from 712 million in 2010 to an estimated 840 million in 2017. Over the same period, the international share of total United States enplanements grew from a 10.9 percent share in 2010 to an 11.5 percent share in 2017. The FAA projects that total enplanement growth within the United States may continue through 2028, albeit at a lesser pace than growth observed between 2010 and 2017. FAA data also suggests that international enplanements within the United States could continue to grow at a greater pace than domestic enplanements. In 2028, total international enplanements are expected to account for 13.4 percent of total United States enplanements. By 2038, it is expected that total international enplanements are expected to account for 15 percent of total United States enplanements.

Figure 2-1 depicts the total number of enplanements within the United States and the projected domestic, international and total enplanements up until 2038.

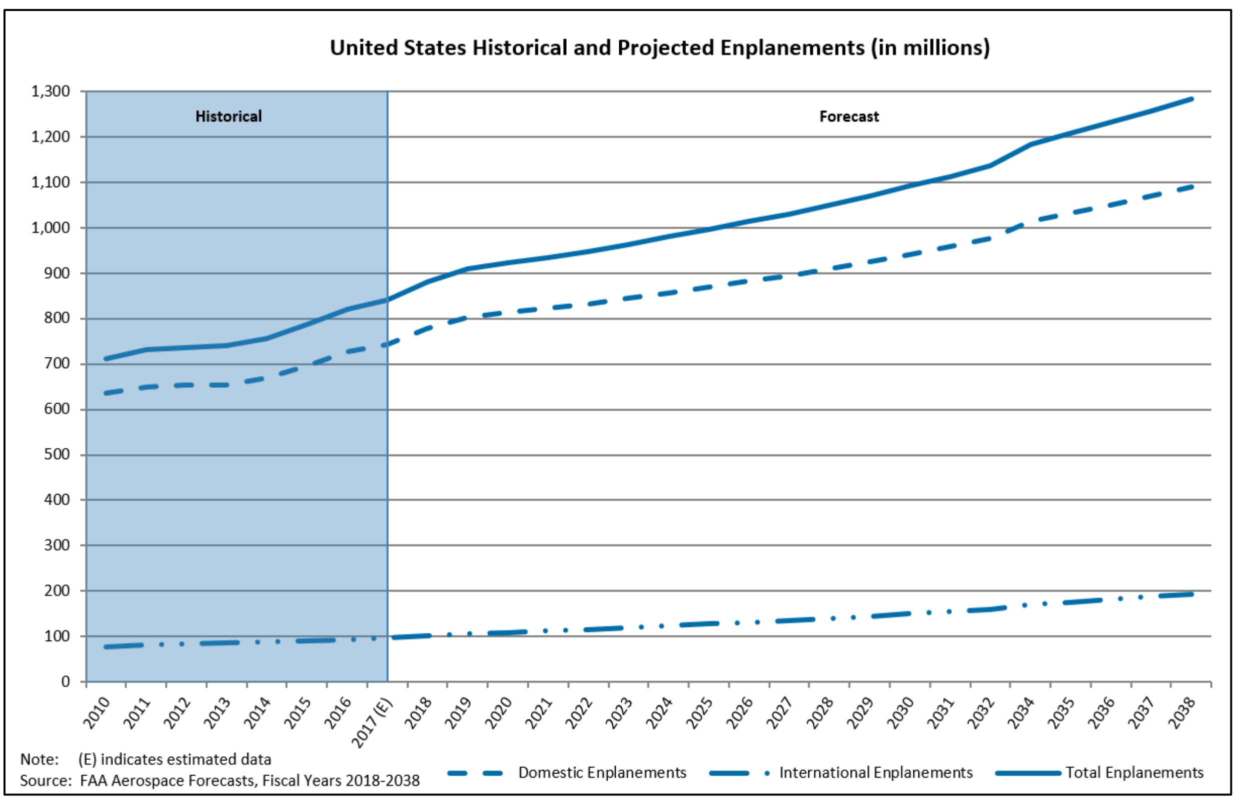


Figure 2-1 **Historical and Projected Enplanements in the United States**

2.3.1.2 Commercial Carrier Capacity and Load Factors

Figure 2-2 presents historical and projected future United States commercial carrier capacity and load factors. Data presented in the figure below is a product of United States mainline and regional carriers, including both domestic and international.

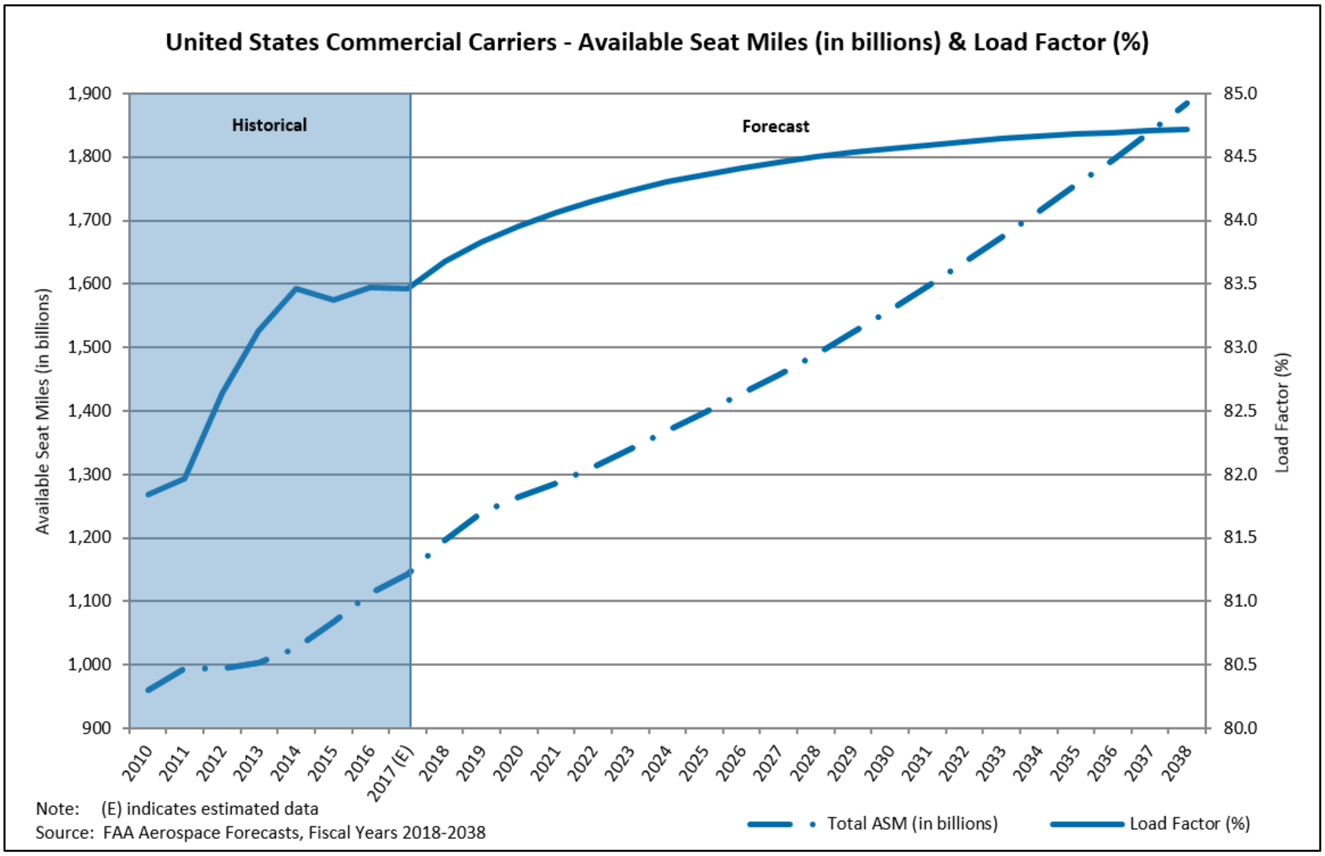


Figure 2-2 Historical and Projected Commercial Carrier Capacity and Load Factors in the United States

Since 2010, the total available seat miles (ASMs) for United States commercial air carriers have increased from 960 billion to an estimated 1,143 billion in 2017, growing at a CAGR of 2.5 percent. The FAA has indicated that United States commercial ASMs are expected to continue growing at a CAGR of 2.2 percent through 2028 to just under 1,490 billion. The United States commercial air carrier load factor has also increased over the period, growing from 81.8 percent in 2010 to an estimated 83.5 percent in 2017. The FAA projects that the commercial air carrier load factor in the United States may continue to increase through 2038 where it is expected to reach 84.7 percent.

Additionally, the *FAA Aerospace Forecast, FY 2018–2038* includes the forecast of a number of other commercial aviation metrics including the average seats per aircraft mile as well as the average passenger trip length. The average seats per aircraft mile for all United States commercial air carriers increased from 139.7 in 2010 to an estimated 154.3 in 2017. Domestic flights saw an increase from 121.8 average seats per aircraft mile in 2010 to an estimated 137.9 average seats per aircraft mile in 2017, which resulted in an overall system increase as the average seats per international aircraft mile remained flat over the period at 216 seats per aircraft mile. The FAA projects that the average seats per aircraft mile will continue to increase through 2038, peaking at 170.3 seats per aircraft mile.[3]

The average passenger trip length for the United States commercial air carrier system has also modestly increased, growing from 1,104 miles in 2010 to 1,136 miles in 2017. Again, this increase was propelled by an increase in domestic trip length as international trips saw a decrease in the average trip length. In its projections, the FAA has indicated that the average

[3] Federal Aviation Administration. FAA Aerospace Forecast, FYI 2018-2023, https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2018-38_FAA_Aerospace_Forecast.pdf

passenger trip length could increase to 1,198 miles in 2028 and 1,243 miles in 2038, propelled again by significant increases in domestic travel and by modest increases in international flights on United States carriers.[4]

2.3.2 General Aviation Trends

General aviation accounts for any civilian aviation activity outside of scheduled passenger and air cargo operations, and includes business flights, corporate flights, personal transportation, air taxi operations and helicopter operations. This section will provide information on national and global trends observed within this segment. A contributing factor to the national and global trends is the 2008 economic recession, which resulted in a decline in general aviation activities between 2008 and 2012. Although the United States economy has recovered from the recession, overall post-recession trends depict a steady decline in general aviation activity.

Aircraft Shipments and Billings

Table 2-7 details the total shipments and subsequent billings for general aviation aircraft worldwide.

Table 2-7 Worldwide General Aviation Aircraft Shipments and Billings

Worldwide General Aviation Aircraft Shipments and Billings		
Year	Total General Aviation Aircraft Shipments	Total General Aviation Aircraft Billings ($ millions)
2001	2,994	$13,867
2002	2,532	$11,797
2003	2,686	$9,995
2004	2,963	$11,904
2005	3,580	$15,140
2006	4,053	$18,808
2007	4,276	$21,837
2008	3,970	$24,766
2009	2,279	$19,474
2010	2,020	$19,715
2011	2,120	$19,042
2012	2,164	$18,895
2013	2,353	$23,450
2014	2,454	$24,499
2015	2,331	$24,129
2016	2,267	$21,059
2017	2,325	$20,201
Compound Annual Growth Rate (2001-2017)	-1.6%	2.4%
Compound Annual Growth Rate (2010-2017)	2.0%	0.3%

Source: General Aviation Manufacturers Association Quarterly Shipments and Billings Reports 2010 to 2017

While 2017 figures were down from a post-recession period high in 2014 of 2,454 general aviation aircraft shipments and just under $24.5 billion in billings, total shipments and billings have increased between 2010 and 2017. However, total shipments and billings have not yet rebounded to pre-recession levels where total general aviation aircraft shipments peaked at 4,276 in 2007 and total billings peaked at $24.7 billion in 2008. When looking at specific general aviation aircraft shipments, the number of turboprops shipped has increased by 53 percent since 2010, from 368 to 563 shipments. Additionally, the shipment of single- and multi-engine piston aircraft have increased by 22 percent since 2010, while total business jet shipments has decreased by 11 percent between 2010 and 2017. While total general aviation aircraft shipments have not fluctuated between 2013 and 2017, total general aviation aircraft shipments increased by 15 percent over 2010 levels.

Worldwide general aviation shipments and billings shed light onto global trends, but it is also important to understand trends occurring domestically.

Table 2-8 details the general aviation aircraft manufactured in the United States, as compared to worldwide trends, between 2010 and 2017.

[4] Ibid

Table 2-8 General Aviation Aircraft Manufactured in the United States

General Aviation Aircraft Manufactured*							
Year	Single-Engine Piston	Multi-Engine Piston	Turbo Props	Business Jets	Total Piston	Total Turbine	Grand Total
2010	679 (87%)	67 (62%)	224 (84%)	364 (61%)	746 (48%)	588 (52%)	1,334 (66%)
2011	639 (84%)	67 (49%)	395 (79%)	364 (75%)	706 (52%)	759 (62%)	1,465 (69%)
2012	645 (79%)	63 (69%)	463 (78%)	347 (79%)	708 (52%)	810 (64%)	1,518 (70%)
2013	674 (74%)	80 (66%)	527 (73%)	334 (82%)	754 (49%)	861 (65%)	1,615 (69%)
2014	716 (73%)	72 (50%)	468 (70%)	375 (78%)	788 (52%)	843 (64%)	1,631 (66%)
2015	740 (78%)	43 (39%)	420 (74%)	389 (75%)	783 (54%)	809 (63%)	1,592 (68%)
2016	685 (77%)	33 (26%)	411 (70%)	402 (71%)	718 (60%)	813 (65%)	1,531 (68%)
2017	745 (80%)	41 (28%)	409 (72%)	404 (73%)	786 (60%)	813 (66%)	1,599 (69%)
CAGR 2010-2017	1.3%	-6.8%	9.0%	1.5%	0.7%	4.7%	2.6%

Note: * Percentages below number of general aviation aircraft manufactured indicate the United States' share of worldwide aircraft production.

Source: General Aviation Manufacturers Association Quarterly Shipments and Billings Reports 2010 to 2017

The total number of general aviation aircraft manufactured in the United States reflects different trends than internationally. As opposed to an 11.1 percent CAGR internationally, piston aircraft manufacturing grew by only a .7 percent rate in the United States.[5] This highlights the popularity of turbine aircraft in the United States. In 2010, 224 turboprops and 364 business jets were manufactured in the United States compared to 409 turboprops and 404 business jets manufactured in 2017. Over this period, the number of turbo props and business jets produced outside of the United States has remained stable or has decreased, allowing for the total share of turbine aircraft manufactured in the United States to increase. In 2010, the United States manufactured 61 percent of turboprop aircraft and 48 percent of business jets worldwide, this share has increased to 73 percent and 60 percent in 2017, respectively.

2.3.2.1 Pilot Populations

Table 2-9 provides historical and projected future detail on pilot populations within the United States.

Table 2-9 Historical and Projected Pilot Populations

Historical and Projected Pilot Populations						
Year	Student*	Private	Commercial	Airline Transport	Other**	Total
Historical						
2010	119,119	202,020	123,705	142,198	40,546	627,588
2011	118,657	194,441	120,865	142,511	40,654	617,128
2012	119,946	188,001	116,400	145,590	40,639	610,576
2013	120,285	180,214	108,206	149,824	40,557	599,086
2014	120,546	174,883	104,322	152,933	40,815	593,499
2015	122,729	170,718	101,164	154,730	40,698	590,039
2016	128,501	162,313	96,081	157,894	39,573	584,362
2017	149,121	162,455	98,161	159,825	39,744	609,306
Compound Annual Growth Rate (2010-2017)	3.3%	-3.1%	-3.3%	1.7%	-0.3%	-0.4%
Forecast						
2018	--	162,450	96,650	161,300	39,835	460,235
2019	--	162,050	95,350	162,000	40,025	459,425
2020	--	161,300	94,250	162,900	40,220	458,670
2021	--	160,250	93,350	163,900	40,520	458,020
2022	--	158,900	92,600	164,900	40,875	457,275

[5] General Aviation Manufacturers Association. *Quarterly Shipments and Billings.* 2010-2017.https://gama.aero/facts-and-statistics/quarterly-shipments-and-billings.

Historical and Projected Pilot Populations						
Year	Student*	Private	Commercial	Airline Transport	Other**	Total
2023	--	157,450	92,000	165,900	41,340	456,690
2024	--	155,900	91,500	167,000	41,760	456,160
2025	--	154,300	91,050	168,000	42,325	455,675
2026	--	152,750	90,700	169,000	42,840	455,290
2027	--	151,150	90,400	170,000	43,455	455,005
2028	--	149,600	90,150	171,000	44,070	454,820
Compound Annual Growth Rate (2018-2028)	--	-0.8%	-0.7%	0.6%	1.0%	-0.1%
Compound Annual Growth Rate (2018-2038)	--	-0.9%	-0.4%	0.7%	1.2%	0.0%

Note: * Starting with April 2016, there is no expiration date on the new student pilot certificates. This generates a cumulative increase in the student pilot numbers and breaks the link between student pilot and private pilot or higher-level certificates. As the implementation is very new and there is not sufficient data to forecast the student certificates under the new rule, student pilot forecast is suspended and excluded from this table.

** Other includes pilots with recreational, rotorcraft only, sport only and glider only certificates.

Source: FAA United States Civil Airmen Statistics; ***FAA Aerospace Forecasts, Fiscal Years 2018-2038***

As of 2017, there was an estimated pilot population within the United States greater than 609,000; however, since 2010, the overall pilot population has experienced a modest decline in lieu of significant increases in the student pilot classification. As noted in the figure, there is no longer an expiration date associated with an individual's student pilot certificate and therefore, the 2016 and 2017 student pilot field may be inflated.

The total number of private pilots and commercial pilots has steadily declined between 2010 and 2017, experiencing compound annual decreases of 3.1 percent and 3.3 percent, respectively. The FAA suggests that declines in both pilot populations are expected to continue into 2028. Contrary to trends observed within the private and commercial pilot populations, the number of air transport pilots has been the only category to increase (excluding student pilots). This trend is suggested to continue into 2028 by the FAA. While the "Other" pilot category has experienced modest year over year decreases in total population, the FAA has indicated that the sport pilot population has experienced a compound annual increase of 7.5 percent between 2010 and 2017, a trend that is expected to continue through 2028 when the total population of pilots within this category is expected to peak at 9,520.[6] The 2010 sport pilot population was reported at 3,682.[7]

Figure 2-3 presents the active private, recreational and sport pilot population within New Jersey between 2012 and 2017.

[6] Federal Aviation Administration .FAA Aerospace Forecast, FYI 2018-2023. https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2018-38_FAA_Aerospace_Forecast.pdf
[7] ibid.

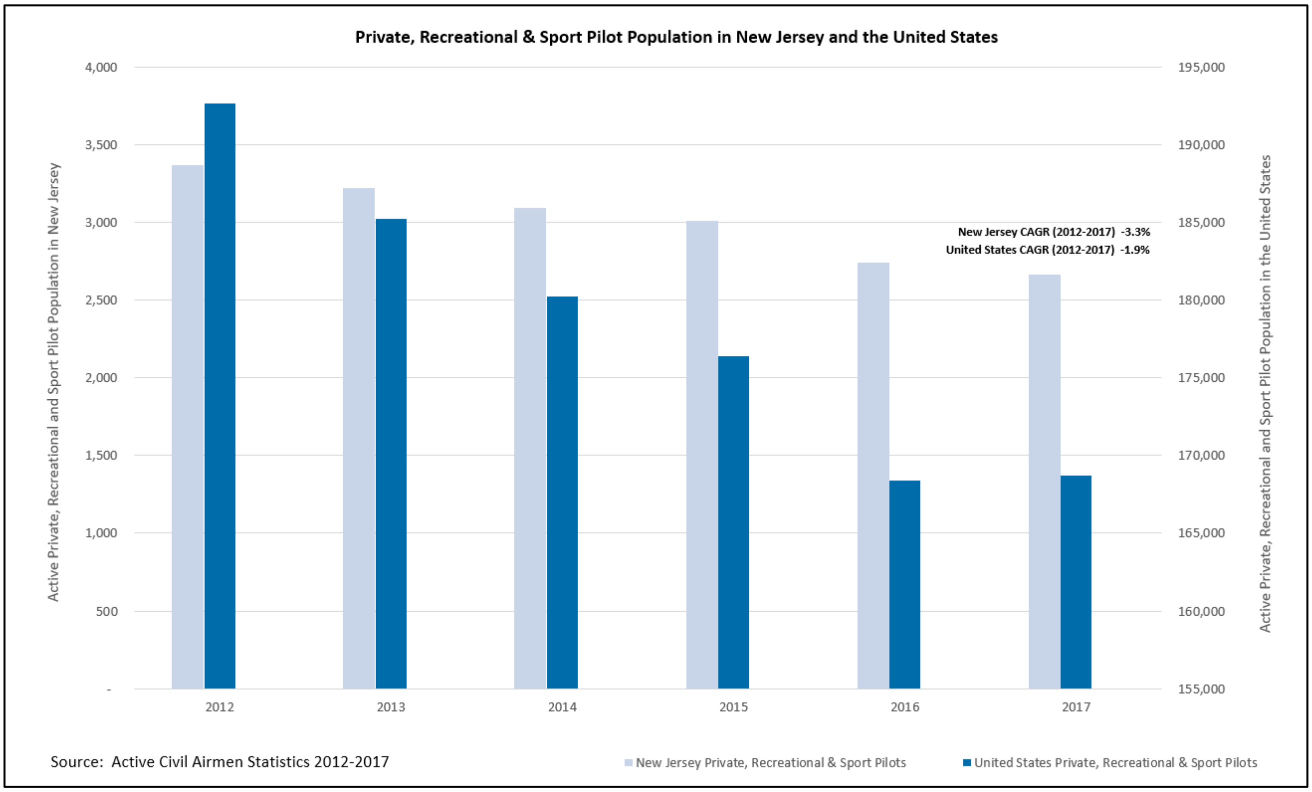


Figure 2-3 Private, Recreational and Sport Pilot Population in New Jersey and the United States

The number of active private, recreational and sport pilots within New Jersey has decreased at a greater pace than that observed within the United States. Between 2012 and 2017, New Jersey and the United States experienced annual decreases of 3.3 percent and 1.9 percent, respectively. Private, recreational, and sport pilot shortages across the United States and in New Jersey are a growing concern and pose a threat to the health of the general aviation market.

Figure 2-4 presents the total pilot population, including active private, recreational, sport, commercial and airline transport pilots, within New Jersey and the United States between 2012 and 2017.

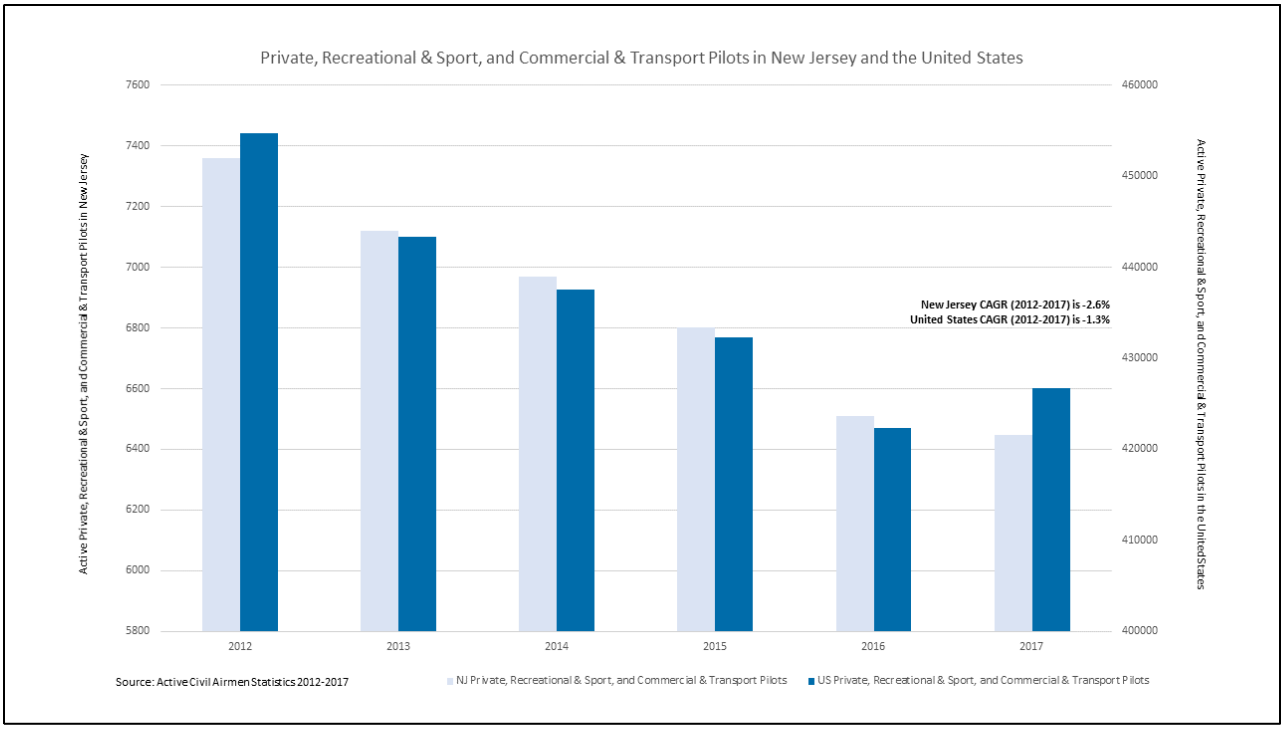


Figure 2-4 Total Pilot Population in New Jersey and the United States

The number of active private, recreational, sport, commercial and transport pilots within New Jersey has decreased at a greater pace than that observed within the United States. Between 2012 and 2017, New Jersey and the United States experienced annual decreases of 2.6 percent and 1.3 percent, respectively. In 2017, there was an increase in commercial and transport pilot populations across the United States, however, this trend was not seen in New Jersey.

2.3.2.2 Fleet Mix

Table 2-10 provides detail on the historic and projected future active general aviation fleet mix within the United States.

Table 2-10 Historical and Projected General Aviation Fleet Mix

Historical and Projected General Aviation Fleet Mix							
Year	Single-Engine Piston	Multi-Engine Piston	Turbo Prop	Turbo Jet	Rotor Craft*	Other**	Total
Historical							
2010	139,519	15,900	9,369	11,484	10,102	36,996	223,370
2011	136,895	15,702	9,523	11,650	10,082	36,601	220,453
2012	128,847	14,313	10,304	11,793	10,055	33,722	209,034
2013	124,398	13,257	9,619	11,637	9,765	31,251	199,927
2014	126,036	13,146	9,777	12,362	9,966	33,121	204,408
2015	127,887	13,254	9,712	13,440	10,506	35,232	210,031
2016	129,652	12,986	9,779	13,751	10,577	35,049	211,794
2017	130,330	12,935	9,430	14,075	10,805	35,475	213,050
Compound Annual Growth Rate (2010-2017)	-1.0%	-2.9%	0.1%	2.9%	1.0%	-0.6%	-0.7%
Forecast							
2018	130,500	12,895	9,195	14,390	11,030	35,895	213,905
2019	129,950	12,870	9,050	14,740	11,255	36,310	214,175
2020	128,950	12,835	8,975	15,105	11,480	36,705	214,050

Historical and Projected General Aviation Fleet Mix							
Year	Single-Engine Piston	Multi-Engine Piston	Turbo Prop	Turbo Jet	Rotor Craft*	Other**	Total
2021	127,850	12,800	8,940	15,475	11,695	37,130	213,890
2022	126,625	12,765	8,970	15,845	11,910	37,560	213,675
2023	125,330	12,720	9,025	16,220	12,125	37,970	213,390
2024	124,015	12,675	9,135	16,605	12,340	38,380	213,150
2025	122,710	12,635	9,270	16,980	12,560	38,795	212,950
2026	121,385	12,580	9,440	17,355	12,780	39,195	212,735
2027	120,060	12,525	9,650	17,730	13,005	39,610	212,580
2028	118,740	12,465	9,870	18,120	13,235	40,035	212,465
Compound Annual Growth Rate (2018-2028)	-0.9%	-0.3%	0.7%	2.3%	1.8%	1.1%	-0.1%
Compound Annual Growth Rate (2018-2038)	-1.0%	-0.4%	1.7%	2.2%	1.8%	1.0%	0.0%

Notes: ***Rotorcraft includes both piston and turbine rotorcraft**

****Other includes experimental aircraft, lightsport aircraft and other aircraft**

Source: **FAA Aerospace Forecasts, Fiscal Years 2018-2038**

The total general aviation fleet within the United States experienced a sharp decline between 2010 and 2013, decreasing by 3.6 percent on a compound annual basis over the period and is likely a result of the 2008 Recession. After the active general aviation fleet bottomed out at 199,927 in 2013, the total active fleet experienced a compounding annual increase of 1.6 percent between 2013 and 2017. The overall period decreases between 2010 and 2017 was led by a decrease in piston aircraft, both single-engine piston and multi-engine general aviation piston aircraft. The FAA suggests that this declining trend in general aviation piston aircraft is expected to continue into 2028 while all other general aviation categories are expected to grow.

2.3.3 New Jersey Aviation Trends

This section summarizes data collected for all scheduled service and general aviation airports within New Jersey, where available. As of 2018, there were 42 operational scheduled service and general aviation airports within New Jersey; however, only three of these airports are considered scheduled service commercial airports: Atlantic City International, Newark Liberty International and Trenton-Mercer. Information presented in the section was collected using the FAA's *Terminal Area Forecast 2018–2038*.

2.3.3.1 Scheduled Service and General Aviation Operations

Table 2-11 summarizes the total number of scheduled service enplanements at New Jersey's three scheduled service airports and is in context with neighboring scheduled service airports in New York, Pennsylvania and Delaware. The number of enplanements is generally correlated to population levels, employment and income of those living within proximity of the airport.

Table 2-11 Scheduled Service Airport Enplanements at New Jersey Airports and Select Neighboring Airports

Scheduled Service Airport Enplanements (in thousands)									
Year	2010	2011	2012	2013	2014	2015	2016	2017*	CAGR 2010-2017
New Jersey Airports									
Atlantic City International	636	695	675	539	578	581	583	537	-2.4%
Newark Liberty International	16,593	16,638	17,218	17,204	17,613	18,391	19,570	21,216	3.6%
Trenton-Mercer	0	2	6	118	305	388	307	352	159.6%
Total NJ Enplanements	17,230	17,335	17,899	17,861	18,496	19,361	20,460	22,105	3.6%
John F. Kennedy International	22,570	23,548	24,466	24,739	25,901	27,393	28,997	29,437	3.9%

Scheduled Service Airport Enplanements (in thousands)									
Year	2010	2011	2012	2013	2014	2015	2016	2017*	CAGR 2010-2017
Neighboring States Airports									
LaGuardia International	11,800	12,022	12,639	13,240	13,431	14,068	14,783	14,437	2.9%
Lehigh Valley International	408	424	378	306	292	315	325	320	-3.4%
Philadelphia International	14,826	14,928	14,693	14,716	14,785	14,909	14,848	14,169	-0.6%
Wilkes-Barre/Scranton International	206	227	223	217	213	216	232	253	2.9%

Note: *Forecasted data.
Source: FAA Terminal Area Forecast 2017

The number of scheduled service enplanements at New Jersey airports experienced a compound annual increase of 3.6 percent between 2010 and 2017. The number of scheduled service enplanements within New Jersey has grown at a greater compound annual rate than the United States, which experienced an average annual growth rate of 2.4 percent. Much of this growth has been propelled by an increased number of enplanements at Newark Liberty International, New Jersey's primary scheduled service airport, which also grew at 3.6 percent. Growth at Newark Liberty International more than offset the declining number of enplanements at Atlantic City International. Trenton-Mercer has seen the most dramatic increase in enplanements from 2010, which is linked to an increase in air service provided by Frontier Airlines.

Table 2-12 summarizes total operations at New Jersey's three scheduled service airports. Total operations are a sum of total take-offs and landings at an airport and are classified as either local or itinerant.

Table 2-12 Total Operations at Scheduled Service Airports in New Jersey

Total Operations at Scheduled Service Airports (in thousands)									
Year	2010	2011	2012	2013	2014	2015	2016	2017*	CAGR 2010-2017
Atlantic City International									
Commercial	18	18	16	14	15	15	14	13	-5.1%
GA	89	73	62	60	65	65	59	51	-7.7%
Total	107	91	78	74	80	80	72	63	-7.2%
Newark Liberty International									
Commercial	399	399	415	406	393	403	416	429	1.0%
GA	10	13	11	10	11	11	11	12	2.8%
Total	409	412	426	416	404	414	428	441	1.1%
Trenton-Mercer									
Commercial	3	3	4	5	8	9	9	9	19.6%
GA	81	74	74	75	69	71	77	85	0.6%
Total	84	78	79	80	77	80	86	94	1.6%
New Jersey Totals									
Commercial	419	421	435	425	416	427	439	450	1.0%
GA	181	161	148	145	145	147	147	148	-2.8%
Total	600	582	583	570	561	574	586	598	-0.04%

Note: *Forecasted data.
Source: FAA Terminal Area Forecast 2017

Total operations at both Newark Liberty International Airport and Trenton-Mercer increased between 2010 and 2017; however, total operations at the Atlantic City International decreased over the same period. Total commercial operations at Atlantic City International decreased at a compound annual rate of 5.1 percent between 2010 and 2017 while commercial operations at Newark Liberty International and Trenton-Mercer increased at a compound annual rate of 1.0 percent and 19.6 percent, respectively. Again, the dramatic annual increase in commercial operations at Trenton-Mercer is likely attributed to Frontier Airline's growth strategy.

As of 2017, commercial operations accounted for 20 percent of all operations at Atlantic City International, 97 percent of all operations at Newark Liberty International and 10 percent of all operations at Trenton-Mercer. As a result of the 2013 renovation at Trenton-Mercer, commercial operations as a percent of total operations increased from a 3 percent share in 2010 to a 10 percent share in 2017.

Across all scheduled service airports in New Jersey, total operations remained relatively consistent between 2010 and 2017, decreasing by 0.04 percent on a compound annual basis. However, total general aviation operations have decreased at a compound annual rate of 2.8 percent and have lost as a share of total operations. In 2010, general aviation operations accounted for 30 percent of all operations, decreasing to 25 percent in 2017, which mirrors national trends.

Table 2-13 summarizes the total based general aviation aircraft at each of the three scheduled service airports in New Jersey.

Table 2-13 Total Based Aircraft at Scheduled Service Airports in New Jersey

Total Based Aircraft at Scheduled Service Airports									
Year	2010	2011	2012	2013	2014	2015	2016	2017*	CAGR 2010-2017
New Jersey Airports									
Atlantic City International	48	38	54	58	58	35	46	46	-0.6%
Newark Liberty International	1	8	8	7	7	9	10	10	28.0%
Trenton-Mercer	138	138	132	133	132	116	132	132	-0.6%
Total Based Aircraft	187	184	194	198	197	160	188	188	0.1%

Note: * Forecasted data.
Source: FAA Terminal Area Forecast 2017

The total number of based, general aviation aircraft housed at scheduled service airports throughout New Jersey has remained flat over the period. A majority of the based general aviation aircrafts are located at Trenton-Mercer.

Table 2-14 summarizes total operations data at the NPIAS general aviation airports within New Jersey. Operations data was not available for the remaining general aviation airports, these airports are excluded from the below table.

Table 2-14 Total Operations at NPIAS General Aviation Airports in New Jersey

Total Operations at General Aviation Airports (in thousands)									
Year	2010	2011	2012	2013	2014	2015	2016	2017*	CAGR 2010-2017
New Jersey Airports									
Cape May County	30	30	30	30	30	30	30	30	0.0%
Central Jersey Regional	24	24	24	24	24	24	24	24	0.0%
Essex County	77	79	85	79	77	70	75	70	-1.4%
Greenwood Lake	16	18	18	18	18	18	18	18	1.5%
Hammonton Municipal	16	16	16	16	16	16	16	16	0.0%
Lakewood	15	15	16	16	16	16	16	16	0.7%
Lincoln Park	23	29	29	29	29	29	29	29	3.2%
Linden	43	43	43	43	43	51	51	51	2.4%
Millville Municipal	60	60	60	60	60	60	60	60	0.0%
Monmouth Executive	57	57	57	57	57	57	57	57	0.0%
Morristown Municipal	123	112	68	62	66	67	74	74	-7.1%
Ocean City Municipal	20	20	20	20	20	20	20	20	0.0%
Princeton	39	39	39	39	39	39	39	40	0.1%
Solberg-Hunterdon	21	21	21	21	21	21	21	21	0.0%
Somerset	30	30	30	30	30	30	30	30	0.0%
South Jersey Regional	31	31	24	25	23	23	25	25	-2.9%
Sussex	19	19	19	19	19	19	19	19	0.0%
Teterboro	157	161	161	160	166	171	176	179	1.9%
Trenton-Robbinsville	30	20	20	20	20	20	21	21	-5.0%
Woodbine Municipal	12	12	12	12	12	12	12	12	0.1%
Total	847	839	793	782	788	795	815	813	-0.6%

Note: *Forecasted data.
Source: FAA Terminal Area Forecast 2017

For airports with data available, total general aviation operations at New Jersey's general aviation facilities have decreased by 0.6 percent on a compound annual basis between 2010 and 2017. Driving declining overall operations are decreasing operations at Morristown Municipal and Trenton-Robbinsville which experienced compound annual decreases of 7.1 percent and 5.0 percent, respectively. Additionally, general aviation operations at Essex County and at South Jersey Regional have also decreased on a compound annual basis, by 1.4 percent and 2.9 percent, respectively between 2010 and 2017. While a number of general aviation airports within New Jersey have experienced declining operations, a few have experienced increased operations over the period and include some of the top trafficked general aviation airports in the state. Specifically, Teterboro has seen its total operations increase from 157,076 in 2010 to 178,636 in 2017, growing at a compound annual rate of 1.9 percent. As of 2017, Teterboro, one of the busiest general aviation airports in the United States, accounted for 22 percent of all total general aviation operations within New Jersey; no other general aviation airport accounts for more than 10 percent of total general aviation operations within the state. In 2010, 57 percent of total operations at Teterboro were air taxi operations; this figure has since grown to 77 percent of total operations in 2017.

Table 2-15 details the total operations at the most trafficked airports within New Jersey.

Table 2-15 Total Operations at Select Airports in New Jersey

Total Operations at Select Scheduled Service, Advanced Service and Priority General Service Airports			
Year	**2010**	**2017***	**CAGR 2010-2017**
New Jersey Airports			
Atlantic City International	107,250	63,445	-7.2%
Newark Liberty International	408,761	441,039	1.1%
Trenton-Mercer	84,056	93,887	1.6%
Cape May County	30,200	30,200	0.0%
Essex County	76,692	69,535	-1.4%
Linden	42,925	50,559	2.4%
Millville Municipal	60,000	60,000	0.0%
Monmouth Executive	57,229	57,229	0.0%
Morristown Municipal	123,214	73,628	-7.1%
Ocean County	30,687	32,135	0.7%
Teterboro	157,076	178,636	1.9%
Total Operations	1,178,090	1,150,293	-0.3%

Note: ***Includes both scheduled service and general aviation operations**

Source: **FAA Terminal Area Forecast 2017**

Total operations across the most trafficked airports in New Jersey have decreased between 2010 and 2017 at a compound annual rate of 0.3 percent. As previously mentioned, Atlantic City International and Morristown Municipal have experienced the most significant compound annual declines in total operations. Overall, total air operations within New Jersey's primary air facilities topped 1.15 million in 2017.

Table 2-16 details the total business operations at the most trafficked airports within New Jersey. Business operations are considered to be operations involving "business jets" or "business aviation" and were calculated using the TFMSC database available via the FAA's website.

Table 2-16 Total Business Operations at Select Airports in New Jersey

Total Business Operations at Select Scheduled Service and Advanced Service Airports			
Year	2010	2017*	CAGR 2010-2017
New Jersey Airports			
Atlantic City International	5,479	3,551	-6.0%
Newark Liberty International	5,698	6,747	2.4%
Trenton-Mercer	8,240	9,323	1.8%
Cape May County	597	683	1.9%
Essex County	449	649	5.4%
Linden	37	22	-7.2%
Millville Municipal	361	254	-4.9%
Monmouth Executive	3,170	3,877	2.9%
Morristown Municipal	21,585	22,535	0.6%
Ocean County	615	828	4.3%
Teterboro	119,605	141,761	2.5%
Total Operations	165,836	190,230	2.0%
Share of Total Operations	14%	17%	--

Note: *Business operations include "business jets" and "business aviation" operations

Source: FAA Traffic Flow Management System Counts (TFMSC); FAA Aviation System Performance Metrics (ASPM)

Since 2010, total business operations have increased at New Jersey airports, growing as a share of total operations over the period from a 14 percent share in 2010 to a 17 percent share in 2017. Notably, more than 85 percent of all business operations occurred at Morristown Municipal and at Teterboro in 2017.

2.3.3.2 Jet Fuel

Table 2-17 details historical and current jet fuel prices.

Table 2-17 Historical and Current Jet Fuel Prices in the United States and New Jersey

Historical and Current Jet Fuel Prices					
Area	Type	2000	2010	2017	CAGR 2010-2017
United States	Retail	$0.90	$2.20	$1.63	-4.2%
	Wholesale	$0.89	$2.18	$1.60	-4.4%
New Jersey	Retail	$0.89	$2.18	$1.63	-4.1%
	Wholesale	$0.90	$2.20	$1.58	-4.6%

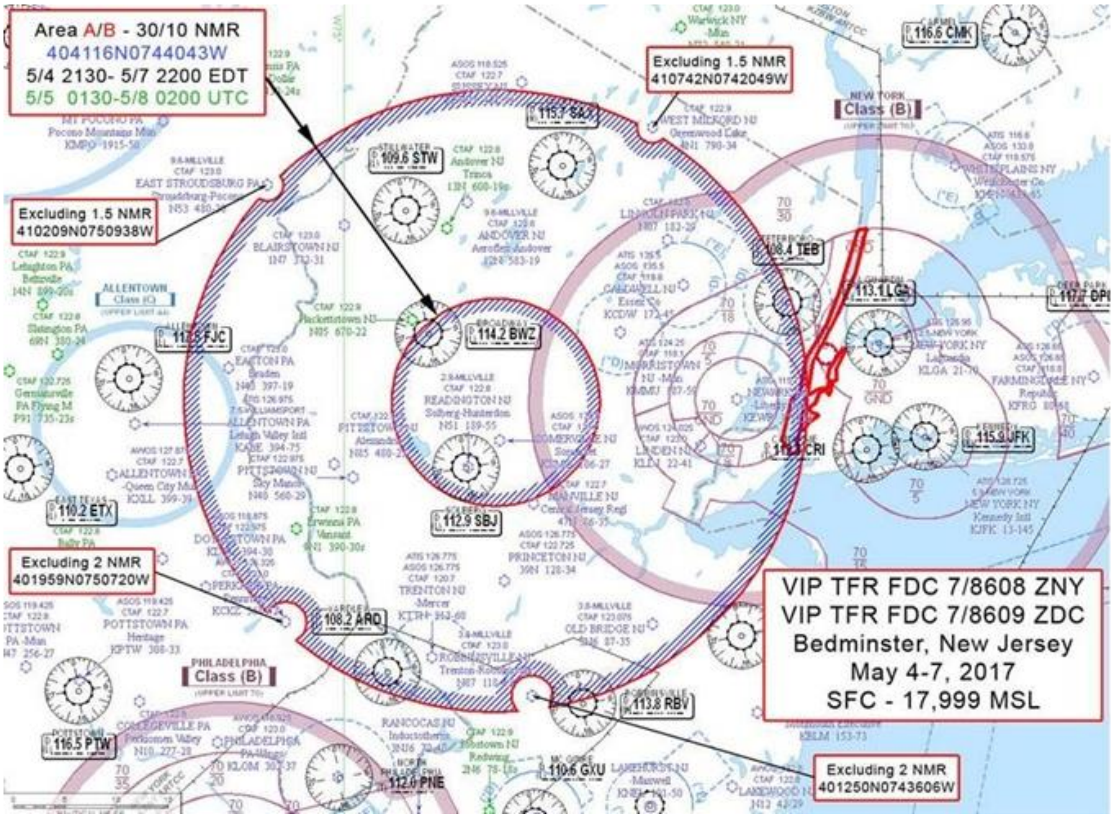
Source: United States Energy Information Administration; https://www.eia.gov

Since peaking at $2.20 per gallon in 2010, the average price per gallon of jet fuel has since decreased to $1.63 in 2017. Jet fuel prices in New Jersey have generally trended in line with national jet fuel prices. While fuel prices followed a strong upward trend through the summer of 2018, policy shifts, such as United States sanctions with Iran, and other supply factors have conspired to reduce fuel prices since October 2018.

2.3.3.3 Temporary Flight Restrictions

A new trend facing the New Jersey study airports is the frequent implementation of TFRs when the President of the United States (POTUS) visits his resort property in Bedminster, New Jersey. TFRs are a type of Notice to Airmen (NOTAM) that alerts pilots of airspace restrictions established for security reasons. TFRs remain in place for timeframes that vary based on the President's agenda. When the President visits his resort property, the TFR instituted enacts a 10 nautical mile radius core area where flight is prohibited, as depicted in the inner circle on **Figure 2-5**, which was a TFR that was implemented from May 4 to May 7, 2017. When in effect, this TFR restricts all operations at airports in the inner circle, including Somerset and Solberg-Hunterdon airports. Airports within a 30 nautical mile radius face restrictions as well, and are required to file flight plans, squawk discrete codes and maintain contact with ATC. Select airports on the edge of the 30 nautical mile zone are "cut out" of the restriction, as long as flight operations occur outside of the TFR area. Greenwood Lake is an example of a "cut out" airport. Airports in New Jersey that are affected include Morristown Municipal, Alexandria Field, Central Jersey Regional, among others.

TFRs are also established for Newark Liberty International and Morristown Municipal for shorter time periods to provide secure airspace for the President. TFRs significantly reduce special operations at study airports that include flight school activities, sky diving and other training operations, as flight training is prohibited inside a TFR area. General operations of business and personal aircraft are also affected as a result of the increase in delays associated with obtaining approval to fly through the outer TFR 30 nautical mile zone. This has produced significant financial hardships for several study airport operators. In response, the recently approved FAA Reauthorization Act of 2018 includes a requirement for a study by October 2019 that analyzes the effects of TFRs on airport related businesses and provides options and mitigation measures to offset the negative economic effects identified in the study. In addition, an analysis of a security program established for Maryland airports within the inner 10 nautical miles core of a TFR and its applicability to Solberg and Somerset airports will also be provided.



Source: AOPA.

Figure 2-5 POTUS Temporary Flight Restriction in New Jersey

2.4 Funding Sources for Airport Improvements

2.4.1 Federally Approved Sources of Airport Funding

In addition to basic airport operating revenue, there are three sources of funding for airport improvement projects supported by the federal government. One source of funding is the Airport and Airways Trust Fund, which is used to award grants to airports for planning and development projects under the Airport Improvement Program (AIP). Secondly, through the Passenger Facility Charge (PFC) program, the United States Congress has authorized airports to collect a local PFC for each boarding passenger, subject to federal program rules. Lastly, federal law grants investors preferential tax treatment on interest income from bonds issued by state and local governments for airport improvements that comply with federal program rules. The following discussion will describe funding through the AIP and PFC program for airports with scheduled service.

2.4.1.1 Airport Improvement Program Funding

To be eligible for airport funding an airport must be included in the NPIAS. Roughly 65 percent of public landing facilities in the United States are included in the NPIAS. The NPIAS was developed after World War II to establish a national network of airports. To become a NPIAS airport, certain eligibility criteria must be met. **Table 2-18** presents the different categories of NPIAS airports, based on passengers boarding. The existing entry criteria are included in FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems*. Privately owned airports can be eligible for NPIAS if they have been found to meet the criteria for airports that relieve congestion at a nearby commercial service airport. In their latest report to Congress, the FAA estimates the need for approximately $35 billion in AIP eligible projects between 2019 and 2023.[8]

Table 2-18 FAA NPIAS Categories of Airports

FAA NPIAS Categories of Airports			
Airport Classifications		**Hub Type: Percentage of Annual Passenger Boardings**	**Common Name**
Commercial Service: Publicly owned airports that have *at least 2,500* passenger boardings each calendar year and receive scheduled passenger service (1)	**Primary:** Have *more than 10,000* passenger boardings each year (2)	**Large:** 1% or more	"Large Hub"
		Medium: At least 0.25%, but less than 1%	"Medium Hub"
		Small: At least 0.05%, but less than 0.25%	"Small Hub"
		Nonhub: More than 10,000, but less than 0.05%	"Nonhub Primary"
	Nonprimary	**Nonhub:** At least 2,500 and no more than 10,000	"Nonprimary Commercial Service"
Nonprimary (Except Commercial Service)		Not Applicable	"Reliever" Airports (includes publicly and privately-owned) designated by the FAA to relieve congestion at Commercial Service Airports and to provide improved general aviation access to the overall community (3)
			"General Aviation" Public-use airports that do not have scheduled service or have less than 2,500 annual passenger boardings (4)

Notes: **Airport classifications are based on passenger boardings, which refer to revenue passenger boardings on an aircraft in service in air commerce whether or not in scheduled service. The definition also includes passengers who continue on an aircraft in international flight that stops at an airport in any of the 50 states for a non-traffic purpose, such as refuelling or aircraft maintenance rather than passenger activity. Passenger boardings at airports that receive scheduled passenger service are also referred to as enplanements.**
Hub type categories for Primary Airports are defined as a percentage of total passenger boardings within the United States in the most current calendar year ending before the start of the current fiscal year.
(1)49 USC 47102(7); (2)49 USC 47102(16); (3)49 USC 47102(23); (4)49 USC 47102(8).

Source: **Federal Aviation Administration; https://www.faa.gov/**

While AIP funding is used by large airports such as Newark Liberty International Airport, it is just one of a variety of options for financing infrastructure improvements for primary airports.[9] Within the category of primary airports are large hub and medium hub airports where AIP funding can be used to finance 75 percent of the federal share of the development project. For general aviation or reliever airports, which are considered non-primary airports, AIP funding can be used to finance up to 95 percent of the cost of a qualified project.[10] As a result, for general aviation airports, AIP funding is essential for maintaining the viability, safety and growth of such facilities. Eligible projects include improvements related to enhancing airport safety, capacity, security and environmental concerns. The program is mainly geared to support airport airfield rehabilitation and expansion projects. Ineligible activities include projects such as maintenance of equipment and vehicles, development of aircraft hangars, marketing plans, and costs related to airport operations. An airport sponsor who accepts AIP funding is required to accept conditions and obligations related to receiving such funding, such as maintaining that the airport is in safe and serviceable condition, not granting exclusive rights, mitigating hazards to airspace and using airport revenue properly.

From 2008 to 2018, total national annual AIP funding available for grants has averaged $3.4 billion. AIP funding is distributed based on a variety of formulas designed to meet congressional priorities, and the objectives of assuring airport safety and security, increasing airport capacity, reducing congestion, funding noise and environmental mitigation costs and financing small state and community airports. The formula for distributing AIP funding to meet these priorities is centered on a system of entitlement funding and discretionary funding. Formulas are used annually to calculate entitlement funds and once satisfied the remaining funds are considered discretionary. The following provides a summary of how these funds are apportioned among the United States' NPIAS airports:

[8] Federal Aviation Administration. *Report to Congress: National Plan of Integrated Airport Systems (NPIAS) 2019-2023*. Nov 4 2015. https://www.faa.gov/airports/planning_capacity/npias/reports/media/NPIAS-Report-2019-2023-Narrative.pdf

[9] According to the FAA's NPIAS categories, primary airports are defined as commercial service airports that have more than 10,000 passenger boardings each year.

[10] "Overview: What Is AIP?" Federal Aviation Administration. https://www.faa.gov/airports/aip/overview/.

Entitlement Funding

Entitlement funding is provided to airports by formula, typically related to airport classification and activity levels. Most airports have up to three years to use apportioned funding. Both nonhub primary and nonprimary commercial service airports have up to four years.[11]

Primary Airport Entitlement Funding: This funding is apportioned to airports that board more than 10,000 passengers annually and is based on total passenger counts. The minimum allocation is $1 million, and the maximum is $26 million.

Cargo Service Airports Entitlement Funding: This funding is apportioned to airports with all cargo operations that have a total annual landed weight of more than 100 million pounds. The majority of airports receiving cargo entitlements are primary airports. Dollars are allocated based on the proportion of the individual airports landed weight to total landed weight at all airports that qualify for the cargo entitlement.

Non-Primary Airport Entitlement Funding: All such airports, (i.e., nonprimary commercial service, reliever and general aviation) airports received the lesser of

- $150,000; or
- One-fifth of the estimated five-year costs for airport development listed in the most recent NPIAS five-year plan.

Remaining funds are distributed in accordance with a state-based population and area formula. In 2017, New Jersey was allocated approximately $3.7 million using this formula, which was roughly equal to the median funding received by airports in other states.[12]

Discretionary Funding

Discretionary funding is allocated by FAA based on project priority and other selection criteria. To provide perspective on total funding levels, discretionary funding was about 13 percent of total AIP funding in 2016.[13] 75 percent of discretionary grants must be used to preserve and enhance capacity, safety and security at primary and reliever airports, and to carry out noise compatibility planning and programs at these airports. From the remaining 25 percent, FAA is required to set aside $5 million for testing and evaluation of innovative security systems. Set asides are also established for airport noise, a program for conversion and dual use of military airports and grants for reliever airports in metropolitan areas experiencing flight delays.

In 2018, an additional source of discretionary funding was made available and identified as *Supplemental Guidance on the Airport Improvement Program for Fiscal Years 2018-2020*. The Consolidated Appropriations Act of 2018 appropriated an additional $1 billion in funding for airports. Priority consideration for funding was identified as:

(a) Nonprimary airports that are classified as Regional, Local or Basic airports and not located within a Metropolitan or Micropolitan Statistical area or;

(b) Primary airports that are classified as small hub or nonhub.

The federal share for projects under this program at nonprimary airports is 100 percent. Any airport identified in NPIAS is eligible to request funding under this program, but "priority consideration" is given to the airports with the above described characteristics. Application for this funding was required by August 8, 2018, for airports meeting priority consideration characteristics for fiscal year 2018 funding and by October 31, 2018, for any NPIAS airport for fiscal year 2019 and 2020 funding.

Table 2-19 identifies historical AIP funding levels for United States Airports from 2008 to 2018.

11 See **Table 2-18** for criteria for nonhub primary airports and nonprimary commercial airports.
12 "FY 2018 State Apportionments". Federal Aviation Administration. https://www.faa.gov/airports/aip/grantapportion_data/media/FY-2018-State-Apportionment.pdf
13 Congressional Research Service. *Financing Airport Improvements*. May 2017. https://crsreports.congress.gov/product/pdf/R/R43327

Table 2-19 Historical United States Airport Improvement Funding

Historical Airport Improvement Funding	
Fiscal Year	**United States AIP Funding Amount**
2008	$3,471,166,651.58
2009	$4,558,496,117.00
2010	$3,433,552,545.00
2011	$3,447,802,747.00
2012	$3,349,155,300.65
2013	$3,024,713,154.00
2014	$3,288,408,814.00
2015	$3,202,969,912.35
2016	$3,295,804,263.00
2017	$3,332,799,409.00
2018	$3,228,715,025.00
Total (2008-2018)	$24,487,856,427.58

Source: FAA Grant History 2008-2018

2.4.1.2 Passenger Facility Charge Funding

PFC funding was authorized by the Aviation Safety and Capacity Expansion Act of 1990. The act allowed an airport to impose a fee on each paying passenger that boards an aircraft at its airport. The initial PFC allowed was capped at $3 per passenger but was raised to a ceiling of $4.50 in 2000.[14]

H.R. 302 (P.L. 115-254), the FAA Reauthorization Act of 2018, was signed into law on October 5, 2018. It extended FAA's funding and authorities through Fiscal Year 2023. Prior to the FAA Reauthorization Act of 2018, to impose a PFC charge of above $3 per passenger an airport must show that funded projects will make a significant improvement to air safety, increase competition or reduce noise impacts or congestion at an airport. The Act removed the AIP funding reasonability determination for projects approved for collection at a level above $3. Previously, a PFC project could not be approved at a higher collection level if the FAA determined that AIP funding was reasonably available for the project. The FAA no longer uses this determination of AIP funding to set the collection level for which the project is approved. PFC Update, PFC 72-19, dated May 9, 2019, provides more detailed information.[15]

PFC is an imposed airline ticket fee as opposed to a tax deposited in the federal treasury. PFCs have more flexibility in application timing than AIP funding and are frequently used for landside and terminal development projects. Airports electing to impose a PFC may use the revenues for one or more of the following:

- Pay all or part of the allowable cost of an FAA approved project
- Pay debt service and financing costs associated with bond issuance
- Combine PFC funds with Federal Grant funds (e.g., AIP) to accomplish an approved project
- Apply PFC funds to meet non-federal share of the cost of projects funded under the Federal Airport Grant Program

PFCs allow public airport sponsors to collect revenue and use towards eligible projects that they were unable to meet with AIP or other funding. The PFC user cap has not been increased since 2000, and as it is not indexed for inflation its purchasing power has eroded significantly. [16] Airports Council International (ACI) has estimated $100 billion in airport infrastructure needs through 2021 and has estimated that airport infrastructure costs have increased by 32 percent over the past two years.[17] As a result, airports are lobbying Congress for support in increasing the PFC cap.

2.4.2 New Jersey Airport Funding Mechanisms

The State of New Jersey's Airport Grant and Loan program is outlined in Title 16 Chapter 56 (16:56) of the New Jersey Administrative Code (NJAC). The program allows the provision of grants to eligible applicants for projects that promote aviation safety, education, and aeronautics, and preserve and rehabilitate the state of the general aviation airport system. Funding for this program is provided through the New Jersey State Transportation Trust Fund and the Airport Safety Fund. The Transportation Trust Fund is financed through New Jersey State taxes on motor fuels, petroleum gross receipts and

14 The Tax Foundation. *Improving Airport Funding to Meet the Needs of Passengers*. May 2015. https://airportscouncil.org/wp-content/uploads/2018/10/TaxFoundation_FF466_0.pdf
15 PFC Update, PFC 72-19. May 2019. https://www.faa.gov/airports/pfc/pfc_updates/media/pfc_72_19_Reauthorization.pdf
16 Ibid.
17 Airports Council International. *Airport Infrastructure Needs 2017-2027*.March 2017. https://airportscouncil.org/wp-content/uploads/2018/08/2017infrastructureneedsstudy-web.pdf

sales taxes along with receipts from toll roads. The Airport Safety Fund is financed through revenues imposed on the sale of aircraft fuels sold for distribution at general aviation airports.

Airports, aviation enterprises or other related entities can apply for grants under NJAC 16:56.[18] Project types eligible for grants include runway, taxiway and apron construction/ rehabilitation, visual and navigational aids improvement, security enhancements, and land acquisitions, among other types of projects that impact airport operations and compliance with FAA standards.

Financial assistance for airport improvement grants must not exceed 90 percent of the total project cost and the recipient's share shall not be less than 10 percent of the total project cost. However, state mandated actions or emergent projects can receive 100 percent funding.

Before an airport can receive a grant for a development project, the State must carefully review the merit of the project. Criteria for evaluation include the scope and cost of the improvement, the value of the project to the surrounding community and economy, and the extent that the project will increase or retain air service at the airport. Other factors considered include the availability of local and federal funds, the ability of the applicant to successfully manage the grant, and the readiness of the project to begin construction when the grant is awarded.

The availability of grants is announced annually in the New Jersey register and on NJDOT BOA's website.[19] An applicant must apply for a grant via the SAGE program.[20] State grant applications are typically required to be submitted during an approximately eight-week period within the August to October timeframe. A recipient of a grant must certify that:

- The airport will be owned or effectively controlled, operated, repaired and maintained adequately during an improvement's useful life, for the benefit of the public;
- In connection with the operation of the airport, during an improvement's useful life, the public will not be deprived of its rightful, fair, equal and uniform use of the airport; and
- The airport will adhere to State and Federal laws and regulations.

Regulations and restrictions for aviation loans are documented in NJAC 16:56.

Table 2-20 presents New Jersey state aviation funding between 2012 and 2017. State funding has averaged approximately $5 million annually with approximately $1 million of this funding coming from the Airport Safety Fund.

Table 2-20 New Jersey State Aviation Funding Per Year

New Jersey State Funding						
Type	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Grant Amounts Committed	$4,688,929	$6,336,251	$5,335,498	$5,699,805	$4,185,211	$4,294,258

Source: NJDOT BOA SAGE Data 2012-2017

2.5 Technological Trends

2.5.1 Aviation Gasoline

Aviation gasoline, also known as avgas, is utilized by the majority of piston engine aircraft in the GA community. There are various American Society for Testing and Materials (ASTM) standards for avgas, but much of the avgas on the United States market today is low- lead 100-motor octane number (MON) avgas (100LL). Avgas contains tetraethyl lead which helps prevent engine knocking and potential engine failure, but also contains lead, which when emitted has adverse effects on the environment. The FAA, Environmental Protection Agency (EPA), and industry leaders, such as fuel producers and aircraft manufacturers, are working to develop an environmentally safer alternative to avgas that will not disrupt general aviation aircraft activity.[21]

In 2013, the United States Congress, FAA, and industry leaders funded the Piston Aviation Fuels Initiative (PAFI), an industry and government collaboration that supports a multi-year research and development program to advance unleaded fuel alternatives. Since 2013, PAFI, through its steering group, has been evaluating unleaded fuel formula candidates that are environmentally friendly, logistically feasible to produce and distribute, and are able to meet the unique needs of the general

18 An aviation enterprise refers to any business or enterprise that is principally located within a New Jersey unrestricted public-use general aviation airport where the Commissioner has determined such business or enterprise has a direct economic or operational benefit to the airport.
19 http://www.state.nj.us/transportation/airwater/multimodal/aviation.shtm
20 http://www.state.nj.us/transportation/airwater/multimodal
21 "Aviation Gasoline: Above Aviation Gasoline". Federal Aviation Administration. https://www.faa.gov/about/initiatives/avgas/

aviation aircraft fleet. Currently, various unleaded fuel formulas are being tested and screened at the FAA William J. Hughes Technical Center in Atlantic City, New Jersey. Unleaded fuel formulas that successfully pass the initial screenings will undergo further detonation and performance testing through a Cooperative Research and Development Agreement. Recent phase 1 and 2 testing of the replacement fuels by two fuel vendors revealed unique issues with each fuel that needed to be addressed. One of the fuel vendors has since dropped out of the testing program. Completion of testing is estimated to be delayed until mid-2020.[22] Although there are performance and safety challenges with unleaded alternatives that are still being resolved, the FAA and its industry and regulatory partners are committed to continuing research and development in this area.

Source: AECOM

Figure 2-6 Fuel Tanks (with 100LL and Jet A Fuel) at Greenwood Lake Airport

2.5.2 Light Sport Aircraft

Light sport aircraft (LSA) are a relatively new category of aircraft that were initially regulated by the FAA in 2004. They are low energy, low performance aircraft designed to be less expensive to own and operate with less demanding training requirements than what is traditionally required for private pilots. LSA can take many forms and include balloons, gliders, powered parachutes, gyroplanes, weight shift-controlled trikes and airplanes. According to the Experimental Aircraft Association's *Sport Pilot Sourcebook,* the performance definition for LSA includes the following characteristics:

- Maximum gross weight of 1,320 pounds;
- Maximum stall speed of 45 knots;
- Having a single reciprocating engine;
- An unpressurized cabin with one or two-person occupancy; and,
- Fixed landing gear.[23]

Figure 2-7 shows a picture of an Icon Aircraft A5, an amphibious LSA.

[22] Ibid

[23] Experimental Aircraft Association. Sport Pilot Sourcebook. https://www.eaa.org/~/media/files/eaa/aviationinterests/lsa/eaa-sport-pilot-sourcebook- rev-1303-v1.pdf

Source: Wikimedia Commons.

Figure 2-7 Icon A5 Aircraft

LSA pilots face a number of operational limitations: they are prohibited from Class A airspace and are prohibited from flying in Class B, C or D airspace without appropriate training and a logbook endorsement from an instructor. They may not tow any object, carry a passenger or property for compensation and can only fly during Visual Flight Rules (VFR) conditions (three miles visibility) up to an altitude of 10,000 mean sea level (MSL). Sport pilots are allowed to fly with up to one passenger, must fly in Class E and G airspace and must share operating expenses with the other passenger.[24]

The minimum flight instruction and solo flight time for a sport pilot license is just 20 hours as opposed to 40 hours for a private pilot. Private pilots must obtain an FAA medical certificate while sport pilots are allowed to use their state driver's license to establish medical fitness.[25]

The Experimental Aircraft Association has been working with FAA on broadening the LSA category. Changes under consideration include increasing the maximum weight of LSA to 3,600 pounds and incorporating new technologies like electric propulsion.

LSAs are a new and exciting component of the aviation world. The reduced cost and training requirements associated with LSAs lessen the barrier for entry for many people and is expected to bring a new market into the world of flying. The FAA Aerospace Forecast for FY 2018-2038 expects a 3.6 CAGR in LSA usage.[26] The New Jersey study airports provide a network of airfield infrastructure that can accommodate a growing LSA market.

2.5.3 Next Generation Technology

Next Generation, also known as NextGen, refers to a multitude of technological improvements being implemented by the FAA in a number of different areas designed to make flying safer, more efficient and more predictable.

One key component of NextGen is the introduction of technologies such as Automatic Dependent Surveillance-Broadcast (ADS-B), which is a system that allows an aircraft to determine and broadcast its position using satellite navigation, enabling the aircraft to be tracked. The goal is that this technology will eventually replace radar for surveilling aircraft worldwide. ADS-B will make the airspace safer by automatically broadcasting aircraft position in real time to air traffic controllers and other ADS-B equipped aircraft. It is also planned as an interface to provide pilots with graphical weather information. ADS-B technology will support better air traffic flow management, allow for reduced aircraft separation and closely spaced parallel runway approaches, and employ a host of other efficiency improvements for the NAS. The FAA has mandated that aircraft operating in airspace today requires transponders be equipped with ADS-B technology by January 1, 2020.[27] As reported by the Aircraft Owners and Pilots Association (AOPA) over the past few years, manufacturers have been able to reduce the cost of ADS-B technology from roughly $5,000 to $2,000 and FAA has reopened a $500 rebate program to offset the cost of ADS-B equipage.[28]

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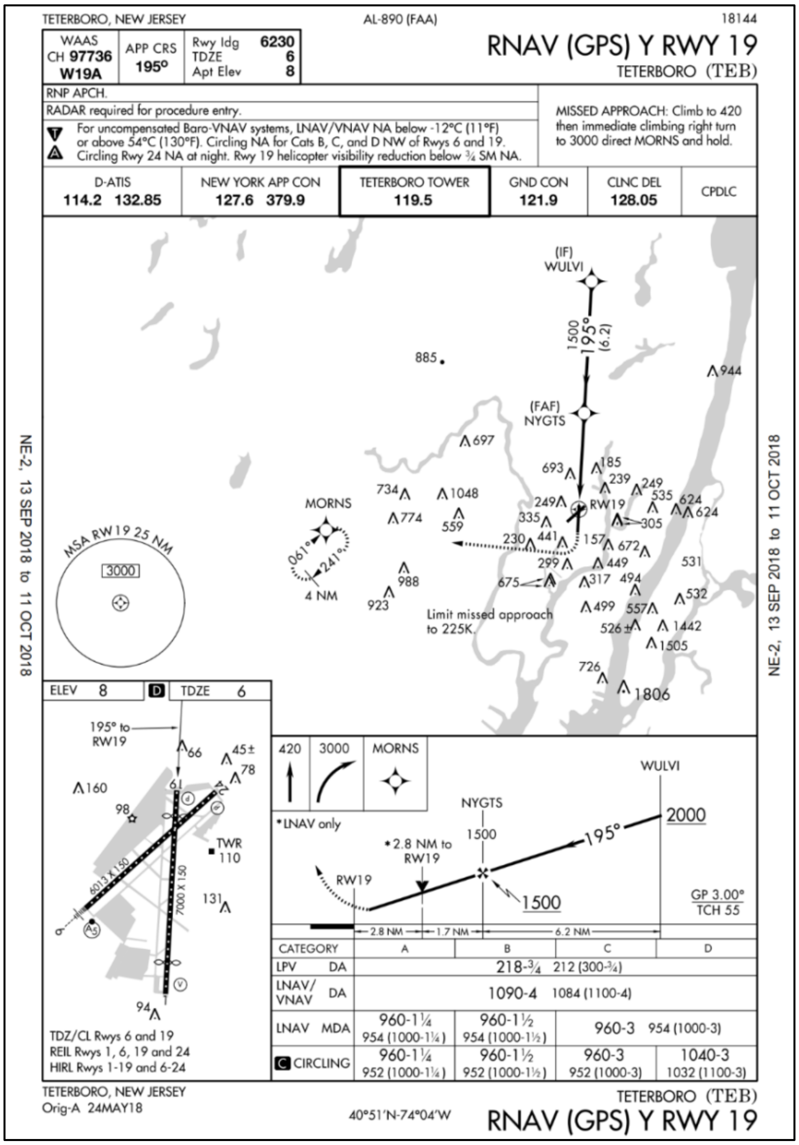
[24] ibid.
[25] ibid.
[26] FAA Aerospace Forecasts, Fiscal Years 2018-2038.
[27] "Equip ADS-B." Federal Aviation Administration. https://www.faa.gov/nextgen/equipadsb/.
[28] "FAA Relaunches ADS-B Rebate". AOPA. https://www.aopa.org/news-and-media/all-news/2018/october/12/faa-relaunches-ads-b-out-rebate

However, from an airport operator's perspective, the most significant aspect of NextGen is the development of Area Navigation GPS approach procedures that can provide approaches with and without vertical guidance without the need for airport based navigational equipment. A traditional ILS precision approach requires a glideslope for vertical navigation and a localizer for horizontal navigation. The two pieces of equipment provide a "precise" path to the landing threshold. An ILS with just a localizer is referred to as a non-precision approach as it just provides horizontal guidance (i.e., the location of the runway centerline). While these systems are the long-term standard for aviation navigation, they are expensive (approximately $2 million per runway end), which has limited their use at General Aviation airports. In addition, the requirement that certain surfaces remain clear while they are operational can negatively impact ground operations at an airport.

GPS based approaches require no land-based equipment at an airport as they rely on satellite signals for navigation. There are many types of GPS approaches providing various levels of landing accuracy, but the one that comes closest to ILS capability is the LPV approach. For example, **Figure 2-8** shows the approach plate for the RNAV (GPS) Y RWY 19 approach at Teterboro Airport and outlines the minima for the other types and categories of GPS approaches to Runway 19. The existing traditional Category I approach can provide a decision height of 200 feet and visibility of ½ mile. As can be determined from review of **Figure 2-8**, the Runway 19 LPV approach provides close to that level of accuracy with a decision height of 218 feet and visibility of ¾ mile. Lateral Navigation/Vertical Navigation (LNAV/VNAV) and LNAV GPS approaches are also provided for Runway 19, but do not provide the same level of landing minima as the LPV approach. In addition, a circling approach minimum is also available for this runway.



Source: FAA. Terminal Procedures. TEB RNAV (GPS) Y RWY 19. Procedure effective date: September 13 to October 11, 2018.

Figure 2-8 GPS Minima for Teterboro Airport Runway 19 Approach

Even though an LPV approach may be possible from a technological perspective, other issues may prevent implementation. Obstacle clearance surfaces for an LPV approach are the same as for an ILS approach, so while the infrastructure necessary to create the approach may be available, obstacles within the approach area often prevent implementation. In addition, all runway lighting systems and other features that are required for a traditional ILS approach are also required for an LPV approach.

However, even with these limitations, the FAA has made great progress in installing such approaches at airports around the country:

- Nearly 4,000 localizer performance with vertical guidance approach procedures serve close to 2,000 airports. More than 1,000 of those airports do not have an ILS. More individual LPV approaches are now available than traditional ILS approaches. Based on the most recent FAA data, NJ airports now have 13 runways with LPV approaches in place.
- More than 90,000 general aviation aircraft are equipped to fly such GPS-enabled procedures.
- Satellite-enabled approach procedures provide instrument-rated pilots access to more airports during low visibility compared to using an ILS.

- These procedures are enabling the FAA to retire many legacy ground-based navigational aids, particularly very high frequency omnidirectional radios (VORs).

2.5.4 Unmanned Aircraft Systems

A growing trend in the aviation industry is the use of unmanned aircraft systems (UAS), more commonly known as drones, for recreational, commercial and public uses. Recreational users operate UAS for personal interests and enjoyment, commercial users for purposes that are connected with a business, and the public for purposes operated by government or other publicly funded entities.[29,30] Such entities may include public universities, police and fire departments, and other public agencies.[31]

There are numerous applications for drones, especially for public entities, including search and rescue, weather forecasting, law enforcement, structural inspections, firefighting, disaster response, precision farming, scientific research, aerial photography, construction project management, communications relay, infrastructure monitoring and emergency management. These powerful, unmanned aircraft have great implications on the National Airspace System (NAS) and provide unique opportunities for the NJDOT BOA.

The FAA Modernization and Reform Act of 2012 outlines the logistics of integrating civil UAS into the NAS, with specialized regulations for specific types of UAS. The FAA Modernization and Reform Act of 2012 defines an unmanned aircraft as “an aircraft that is operated without the possibility of direct human intervention from within or on the aircraft” and, more broadly, an UAS as “an unmanned aircraft and associated elements (including communication links and the components that control the unmanned aircraft) that are required for the pilot in command to operate safely and efficiently in the national airspace system.”[32] On October 5, 2018, the President of the United States signed the FAA Reauthorization Act of 2018, which establishes new conditions for recreational use of drones.[33] The FAA is currently evaluating the implications of these regulatory changes and has stated that at this time the 2018 Act cannot be fully implemented.

In June 2017, the Senate and General Assembly of the State of New Jersey introduced Senate Bill No. 3370, which places operational restrictions on UAS.[34] The bill prohibits the operation of UAS near critical infrastructure (such as correctional facilities), in interference with first responder operations, in wildlife hunting areas, and operation under the influence.[35]

In response to the growing use of UAS, several areas in the United States have been designated as UAS Test Sites, including Cape May County (CMC) in New Jersey. In addition, NJDOT BOA has been recognized by the Federal Highway Administration and American Association of State Highway and Transportation Officials as a state department of transportation leading in the implementation of UAS technology. In August 2018, CMC received $3 million dollars in federal funding to be the first UAS Test Site in New Jersey. Overall, the UAS program at CMC has been advancing for approximately five years, since 2014.

CMC is in an area of the region with a unique airspace compared to other areas in the Northeast Aviation Corridor (accessible, few restrictions, yet sufficiently closer to more congested areas – an aspect that lends to its testing value). CMC is also close to the FAA Tech Center, whose engineers and other personnel participate in and support its activities.

The below describes UAS activities that are available at CMC.

Certification of Authorization

CMC has its own Certification of Authorization and Waiver (COA) from the FAA, permitting it to use a wide swath of airspace above the southern tip of NJ, extending over to Delaware, for UAS flights. A variety of companies – including Verizon, T-Mobile, American AeroSpace – have flown First Responder missions as part of this COA. Requests from universities and other federal agencies are also routinely accommodated by CMC for UAS testing activity.

FAA PSP Program (MOU)

CMC is evolving into a Test Bed for UAS flights in various substantive areas, including: 1st Responder, Energy/Utility Infrastructure, Maritime + C-UAS. The FAA has invited the County to enter a Memorandum of Agreement in its “Partnership

29 “Recreational Users.” Know Before You Fly. http://knowbeforeyoufly.org/for-recreational-users/.
30 “Business Users.” Know Before You Fly. http://knowbeforeyoufly.org/for-business-users/.
31 “Public Entities.” Know Before You Fly. http://knowbeforeyoufly.org/for-public-entities/.
32 112th Congress of the United States. “FAA Modernization and Reform Act of 2012.”
33 115th Congress of the United States. “FAA Reauthorization Act of 2018.”
34 Senate, No. 3370. State of New Jersey 217th Legislature. June 26, 2017.
35 ibid.

for Safety Program," in which personnel from FAA HQ in Washington assist mission teams in shaping testing parameters to ensure that ConOps meet all safety + other aviation requirements, and yield data useful not only to the commercial/ educational participants but also to the FAA. Flights will test the efficacy of specified technology and/or flight techniques in controlled aviation environments.

Incubator

In 2018, CMC completed outfitting of a Tech Incubator for start-ups and/or space sharers, at CMC Airport. A formal Incubator curriculum (program) is in abeyance for 2019, since the space is being used by (among other parties) innovators who will be moving into larger quarters on a permanent basis at the CMC "Tech Village" under construction at CMC Airport. However, the Incubator – which contains amenities such as a conference room, video equipment for presentations and telecons, 3-D printer, etc. – is accessible to individual members for their own daily uses.

Innovation Forums

Innovation forums have been held regularly for over four years, since 2015. This is the most successful "feeder system" for increasing innovator familiarity with CMC and New Jersey. UAS innovators come from throughout New Jersey and surrounding states to "meet up," discuss their work, have lunch together to increase networking, and hear a presentation by an expert in some aspect of UAS.

Over these building years, principally through the Forums, CMC's UAS Program has developed a contact list of several hundred UAS innovators. The Forums frequently seed what evolves into "missions," or public/private partnerships. Potential Team members self-identify and band together, and the county facilitates the connections, helping to define potential mutual interests and/or pathways forward.

Annual UAS Conference

CMC has been holding annual UAS conferences since 2015. These are multi-day events drawing national speakers and attendees.

Tech Village

Buildings are being constructed at the CMC Airport to house UAS and other tech companies. The USEDA has contributed $3 million toward construction. Two anchor tenants are in place and construction is expected to be complete in early 2020.

Additional Relationship-Building

Along with cultivating strong relationships with the innovators who are shaping the early UAS industry, CMC maintains strong relationships with: legislators and regulators (federal, state and FAA representatives), New Jersey educational institutions, surrounding counties (such as Atlantic County), and the FAA Tech Center.

2.5.5 Drones for Passengers and Package Delivery

The growing interest in UAS has sparked research in utilizing UAS for the transport of goods and passengers.

To evaluate UAS for the transport of goods, the FAA started the UAS Integration Pilot Program in 2018 to further investigate safely integrating UAS into the NAS through the facilitation of government and private sector partnerships to evaluate various operational opportunities, including night-time operations, package delivery and other uses.[36]

A growing concern in dense, urban areas is the congestion caused by delivery trucks. Large companies have developed strategies for how UAS could alleviate these conditions; in 2016, Amazon launched *Prime Air* which is a fully autonomous package delivery system that would utilize UAS, to optimize the logistics of transporting goods.[37] Similarly, UPS is investigating the feasibility of drone delivery to lower costs and keep prices competitive.

In addition to evaluating the capacity of UAS to transport goods, UAS has been at the forefront of research associated with the transportation of passengers through passenger drones. Passenger drones are defined as UAS that carry passengers and are being researched and evaluated as an alternative mode of passenger mobility that reimagines the more conventional

36 "UAS Integration Pilot Program." Federal Aviation Administration. https://www.faa.gov/uas/programs_partnerships/uas_integration_pilot_program/.
37 "Amazon Prime Air." Amazon. https://www.amazon.com/Amazon-Prime-Air

concepts of personal vehicles, taxis for short journeys, and commercial flights. Both personal and specialized uses, such as air ambulances, are being studied by the FAA and other industry leaders.

Since the 1980s, research assessing the feasibility of passenger drones has been advancing in the United States, as well as in countries across Africa, Asia, and Europe. Today, these technological advances have garnered interest from private sector companies, ranging from traditional aerospace companies such as Airbus to transportation network companies such as Uber, and several companies have already developed prototypes for passenger drones, such as Ehang's 184 AAV from China. The majority of the prototypes and concepts of passenger drones employ vertical take-off and landing (VTOL) aircraft as opposed to the more conventional fixed-wing aircraft, which are used for commercial flights, because VTOL aircraft do not require a runway to land. Based on these recent trends, agencies like National Aeronautics and Space Administration (NASA) have developed a concept of operations for a potential air taxi system, identifying the step-by-step flow of operations for a singular flying taxi trip, starting from the passenger requesting the flight to the aircraft undergoing service and maintenance.[38]

Drones have the potential to become an alternative mode of transport for people and goods, which may help alleviate traffic congestion in and around dense metropolitan areas, such as New Jersey. New Jersey's, strategic location to New York City and other urban centers makes the state uniquely positioned to benefit from UAS technology. There are still challenges and uncertainties that surround passenger drones, but the number of potential applications for drone technology is significant, along with the investment in research and development. It is expected that such technologies will rely on some portion of the infrastructure currently associated with traditional airports to support their business needs.

2.6 Conclusion

The socioeconomic and aviation industry trends presented in **Chapter 2 Trends Analysis** provide an overview of recent and anticipated trends in the State of New Jersey and in the aviation industry as a whole. These trends have the potential to shape future aviation activity and demand and provide critical context for the development of a statewide system plan. The data can be summarized as follows:

Socioeconomic Trends

- Overall, unemployment rates across the state of New Jersey have generally trended in-line with national averages. Within New Jersey, almost half of the counties have unemployment rates below the national average, with Morris County and Somerset County experiencing the lowest unemployment rates as of 2017 (3.6 percent and 3.8 percent, respectively).
- New Jersey has the 8th most productive state economy in the nation with income levels that outpace national averages.
- With regards to population growth, 10 of New Jersey's 21 counties are expected to add residents between 2018 and 2028.

Aviation Industry Trends

National Aviation Trends

- Between 2010 and 2017, total enplanements within the United States increased at a compound annual rate of 2.4 percent. Over the same period, the share of international enplanements of total United States enplanements grew from a 10.9 percent share in 2010 to an 11.5 percent share in 2017. The FAA projects that total enplanement growth within the United States may continue through 2028, albeit at a lesser pace than growth observed between 2010 and 2017, and that international enplanements will grow at a greater pace than domestic enplanements.
- Since 2010, the number of piston aircraft manufactured in the United States grew at a compound annual rate of 0.7 percent compared to a growth rate of 4.7 percent for turbine aircraft. Growth in the turbine segment is expected to continue through 2028 while growth in the piston aircraft market is expected to decrease.
- The total number of private pilots and commercial pilots has steadily declined between 2010 and 2017, experiencing compound annual decreases of 3.1 percent and 3.3 percent respectively. While the FAA suggests that declines in both pilot populations are expected to continue into 2028, the FAA expects the number of air transport pilots to grow through 2028.

[38] National Aeronautics and Space Administration. Exploring Concepts of Operation for On-Demand Passenger Air Transportation. June 5, 2017. https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20170006498.pdf.

- The total general aviation fleet within the United States experienced a sharp decline between 2010 and 2013, decreasing by 3.6 percent on a compound annual basis. Since 2013 the total general aviation fleet bounced back, experiencing a compound annual increase of 1.6 percent between 2013 and 2017.

New Jersey Aviation Trends

- While New York City area airports continue to sustain growth in passengers, smaller airports in central and southern New Jersey are experiencing a slower pace of passenger activity.
- Since 2010 general aviation airports have seen a decrease in operations. In the same period, however, business jet operations increased at New Jersey airports, gaining as a share of total operations over the period from a 15 percent share in 2010 to a 17 percent share in 2017. Notably, more than 75 percent of all business jet operations occurred at Morristown Municipal Airport and at Teterboro Airport in 2017.
- TFR restrictions related to Presidential movements are negatively impacting North Jersey airport operations.

The aviation industry is extremely dynamic. Researchers and innovators are developing new strategies to make the industry more efficient, safer, and sustainable. This presents tremendous opportunities for the aviation sector. While national and state aviation trends demonstrate a decline in general aviation activity, technological advances such as UAS, LSA, and NextGen technology will provide opportunities for growth and development in new areas. These advances have the potential to reshape the way people and goods move and can enable everyday citizens to enter the aviation world with fewer barriers.

The aviation landscape is changing rapidly, and the needs of new aviation systems are still uncertain. Future operation of UAS and other new technologies may require charging stations, hangars and other infrastructure currently in place at New Jersey's general aviation airports. Given the difficulty in establishing new aviation facilities in a densely populated state like New Jersey, preservation of existing infrastructure is advised given the many uncertainties associated with the next wave of aviation technology.

3 AIRPORT ROLES

3.1 Introduction

In a system of airports, airport roles are defined to generally reflect the type of users each airport accommodates and the facilities and services that the airport has in place. As part of the 2007 New Jersey State Airport System Plan (2007 NJ SASP), the New Jersey Department of Transportation (NJDOT) Bureau of Aeronautics (BOA) identified performance criteria that were used to assign public-use airports to a functional role in the state airport system. Airport roles also generally reflect the socio-economic and demographic characteristics of the communities the airport serves to ensure adequate service. In New Jersey, these roles also reflect the airport's relative importance, as it relates to the state's investment strategies by being delineated into two categories of its study airports – Core airports and Core Candidate airports.

Chapter 3 Airport Roles will provide a review and analysis of current state airport roles established in the 2007 NJ SASP and federal airport roles established by the Federal Aviation Administration (FAA) for the study airports and assess the need for changes to current airport roles.

3.2 Current New Jersey Roles for Airports

3.3 FAA Roles for Study Airports

3.4 Comparison of New Jersey State Roles to FAA ASSET Roles

3.5 Assessment of Need for Role Changes and Recommendations

3.2 Current New Jersey Roles for Study Airports

As part of the 2007 NJ SASP, the NJDOT BOA established performance criteria for assigning New Jersey's public-use airports to a functional role in the state system. In total, six different state airport roles were established within two key categories. The roles and categories established include:

- **Core Airports** have investment goals that utilize both federal and state monies and include the public acquisition of privately-owned airports, and the preservation and rehabilitation of airports:
  - Scheduled Service – Airports that are certified by the FAA as Part 139 operator with a Class I, II, or III designation and support scheduled air service with 10,000 annual enplanements. Where capacity constraints do not limit, these airports can also support general aviation activities.
  - Advanced Service – General aviation airports located near or in larger metropolitan areas that are intended to function as relievers to larger, more congested Scheduled Service airports. These airports support corporate/executive operations, private pilot business and recreational activities, and flight training.
  - Priority General Service – General aviation airports that contribute significantly to the airport system and should ideally be upgraded to Advanced Service but have constraints that make expansion at these airports unfeasible.
  - General Service – General aviation airports that provide facilities and services to a smaller market segment and support smaller corporate aircraft and the operations of general aviation aircraft by private pilots for business or pleasure.
- **Core Candidate Airports** have investment goals that are focused on the preservation and improvement of facilities with state monies:
  - Basic Service – General aviation airports with a lower level of operational activity than other general aviation airports. These airports support private pilots and require minimal support facilities and services.
  - Duplicative Basic Service – General aviation airports that provide duplicative coverage to Basic Service airports and accommodate low levels of activity.

The prior 2007 NJ SASP employed a two-step process to classify the study airports. The first step involved determining how each airport was currently performing in the system using performance-based criteria. Using industry accepted criteria, analysis was conducted using five performance factors (or criteria) that included: accessibility, aviation activity, development potential, economic contribution, and existing infrastructure. Through discussions with the NJDOT BOA "importance weightings" were applied to each performance criterion. The weightings allowed for each performance criterion to be rated on a scale of 1 to 4, with 4 reflecting highest importance. Additionally, each criterion had several measurable subcategories to be analyzed in the process. With each of the study airports stratified based on this analysis, airports were then assigned to a functional airport role: Scheduled Service, Advanced Service, General Service, Basic Service, and Other Facilities.

The second step of the airport classification process occurred after the State's system was evaluated to see how well it was performing. During this part of the process, the NJDOT BOA identified that its system contained two key categories of airports: Core airports and Core Candidate airports. Further, these two categories were consistent with NJDOT BOA's investment strategy of proactive preservation. Core airports have investment goals that utilize both federal and state monies and include the public acquisition of privately-owned airports, and the preservation and rehabilitation of airports. Core Candidate airports have investment goals that are focused on the preservation and improvement of facilities with state monies.

Table 3-1 presents the roles assigned to airports in the 2007 NJ SASP. Information related to ownership is also provided. For those airports that are privately-owned and have accepted either federal or state grant monies for projects, they are considered to be "obligated". When an airport accepts state or federal funding, they must adhere to a set of grant assurances. **Figure 3-1** depicts New Jersey's role assignments graphically. At the initiation of this 2022 NJ SASP in 2018, the New Jersey airport system consisted of 42 public-use airports. It is noted that Trinca (13N) closed in September 2020 during the course of the Study. At the time of the completion of this chapter, 13N was open as a public-use airport and was included in the analyses. As of 2021, the New Jersey airport system consists of 41 public-use airports.

Table 3-1 New Jersey Study Airports Based on 2007 NJ SASP Roles

Current (2007) Role	Airport Name	FAA ID	City	County	Ownership
Core Airports					
Scheduled Service	Atlantic City International	ACY	Atlantic City	Atlantic County	Public
	Newark International	EWR	Newark	Essex County	Public
	Trenton Mercer	TTN	West Trenton	Mercer County	Public
Advanced Service	Cape May County	WWD	Wildwood	Cape May County	Public
	Essex County	CDW	Caldwell	Essex County	Public
	Hammonton Municipal	N81	Hammonton	Atlantic County	Public
	Millville Municipal	MIV	Millville	Cumberland County	Public
	Monmouth Executive	BLM	Belmar/Farmingdale	Monmouth County	Private
	Morristown Municipal	MMU	Morristown	Morris County	Public
	Ocean County	MJX	Toms River	Ocean County	Public
	Teterboro	TEB	Teterboro	Bergen County	Public
Priority General Service	Central Jersey Regional	47N	Manville	Somerset County	Private Federal and State Obligated*
	Cross Keys	17N	Cross Keys	Gloucester County	Private
	Lincoln Park	N07	Lincoln	Morris County	Private Federal Obligated*
	Linden	LDJ	Linden	Union County	Public
	Solberg-Hunterdon	N51	Readington	Hunterdon County	Private
	South Jersey Regional	VAY	Mount Holly	Burlington County	Public
General Service	Alexandria Field	N85	Pittstown	Hunterdon County	Private State Obligated*
	Blairstown	1N7	Blairstown	Warren County	Private
	Eagles Nest	31E	West Creek	Ocean County	Private State Obligated*
	Flying W	N14	Lumberton	Burlington County	Private
	Greenwood Lake	4N1	West Milford	Passaic County	Public
	Lakewood	N12	Lakewood	Ocean County	Public
	Old Bridge	3N6	Old Bridge	Middlesex County	Private State Obligated*
	Princeton	39N	Princeton/Rocky Hill	Somerset County	Private Federal and State Obligated*
	Sky Manor	N40	Pittstown	Hunterdon County	Private State Obligated*
	Somerset	SMQ	Somerville	Somerset County	Private Federal Obligated*
	Spitfire Aerodrome	7N7	Pedricktown	Salem County	Private
	Sussex	FWN	Sussex	Sussex County	Private Federal and State Obligated*
	Trenton-Robbinsville	N87	Robbinsville	Mercer County	Private Federal and State Obligated*
	Woodbine Municipal	OBI	Woodbine	Cape May County	Public
Core Candidate Airports					
Basic Service	Aeroflex-Andover	12N	Andover	Sussex County	Public
	Bucks	00N	Bridgeton	Cumberland County	Private
	Camden County	19N	Berlin	Camden County	Private
	Hackettstown	N05	Hackettstown	Warren County	Private
	Ocean City Municipal	26N	Ocean City	Cape May County	Public
	Vineland Downstown	28N	Vineland	Gloucester County	Private
Duplicative Basic Service	Kroelinger	29N	Vineland	Cumberland County	Private
	Red Wing	2N6	Jobstown	Burlington County	Private
	Southern Cross	C01	Williamstown	Gloucester County	Private
	Trinca	13N**	Andover	Sussex County	Public
Specialty Facilities	Little Ferry Seaplane Base	2N7	Little Ferry	Bergen County	Private

Source: *New Jersey State Airport System Plan 2007*, FAA, and New Jersey Bureau of Aeronautics. Ownership status last updated in July 2020.

*** Private Obligated airports are those that are privately owned but have accepted state and/or federal funding and are therefore obligated by grant assurances to maintain and operate their airports to certain standards that generally require airports to operate their facilities safely and efficiently and in accordance with specified conditions. State obligations do not go into effect until the state-funded project has been substantially completed.**

**** Trinca (13N) closed in September 2020.**

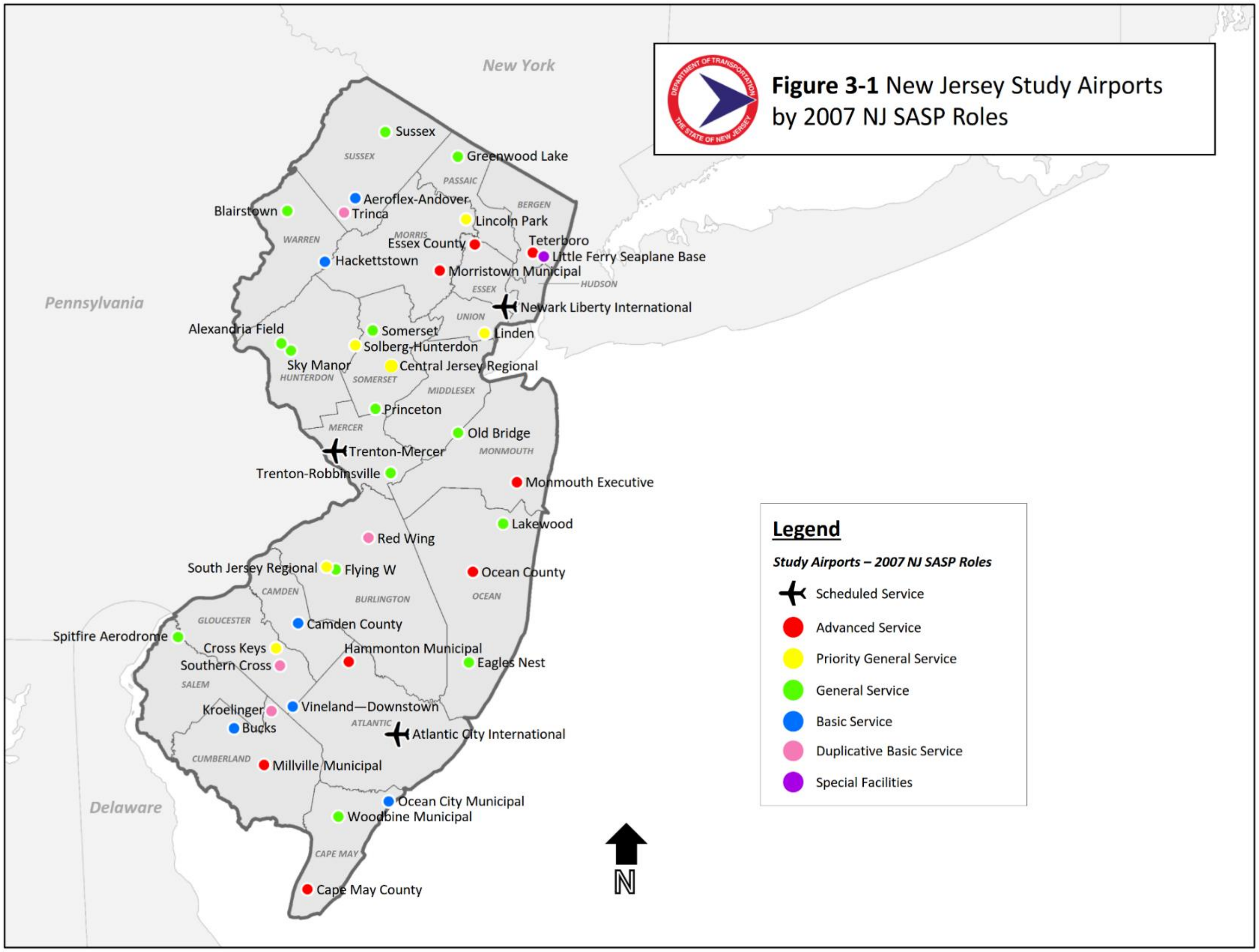


Figure 3-1 **New Jersey Study Airports by 2007 NJ SASP Airport Roles**

3.3 FAA Roles for Study Airports

The FAA has established two mechanisms for classifying airports, airports (commercial service and general aviation) included in the NPIAS and specific roles for general aviation airports as identified in the FAA's report titled *General Aviation Airports: A National Asset* (ASSET). The NPIAS is the tool, updated every two years, used by the FAA to classify airports in the U.S. that are open to the public and eligible for federal funding. Of the 3,321 airports included in the NPIAS (excluding seven proposed airports), 380 provide commercial service and are classified as "Primary" airports. The remaining 2,941 landing facilities (which include airports, seaplane bases, heliports, gliderports, and balloonports) have historically been referred to as general aviation airports. Within the general aviation category, 126 of these airports are "Non-primary Commercial Service" airports. General aviation aircraft mainly use these airports, but these airports support some level of commercial service and have between 2,500 and 10,000 annual commercial passenger enplanements. An additional 261 general aviation airports in the NPIAS are considered "reliever" airports. Reliever airports are high activity general aviation activity airports that provide metropolitan areas with congested large commercial service airports with an alternative for general aviation activity. All remaining airports included in the NPIAS are considered general aviation airports. See **Table 2-18** in **Chapter 2 Trends Analysis** for the eligibility criteria for all NPIAS categories.

Recognizing the unique roles played by the general aviation airports throughout the U.S., the FAA conducted a study in 2012 to further classify the general aviation airports included in the NPIAS.[39] The report documented the importance of the nation's general aviation airport system and established new categories or roles for general aviation airports. FAA's ASSET classifications apply to all reliever and general aviation airports included in the NPIAS. In 2014, the FAA completed a second study to further consider classifying general aviation airports, especially those that initially fell within the "Unclassified" category.[40] It is important to note that this time, the Unclassified airports continue to be included in the NPIAS, however, they are not eligible for entitlement FAA funding as they do not meet the basic criteria for NPIAS inclusion. However, these airports are still eligible to compete for discretionary funding from the FAA.

A summary of FAA ASSET categories or roles for general aviation airports is shown below.

- **National** (88 airports): Supports the national airport system by providing communities with access to national and global markets. These airports have very high levels of activity with many jets and multi-engine propeller aircraft. National airports average 249 total based aircraft including 30 jets.
- **Regional** (492 airports): Supports regional economies by connecting communities to regional and national markets. Fifty-three of these airports have limited air carrier service and 140 are designated as relievers for primary commercial service airports. Regional airports average 92 total based aircraft including three jets.
- **Local** (1,278 airports): Supplements local communities by providing access to local and regional markets. These airports are located near larger population centers but not necessarily in metropolitan areas. Seventy-three of these airports have limited air carrier service. Local airports average 34 based aircraft and no jets.
- **Basic** (840 airports): Supports general aviation activities, often serving aeronautical functions within the local community such as emergency response and access to remote communities. Basic airports average nine based aircraft and no jets.
- **Unclassified** (243 airports): These airports have limited activity and do not meet NPIAS eligibility. There are 55 privately-owned unclassified airports in this category. Over the next two years, the FAA reviews these airports for continued inclusion into the NPIAS.[41]

3.4 Comparison of New Jersey State Roles to FAA ASSET Roles

3.4.1 Role Classification Process Comparison

New Jersey and the FAA followed similar airport role evaluation processes and utilized similar factors to assign roles to airports. A summary of the criteria used to assign airport roles by New Jersey in the 2007 NJ SASP and the FAA's ASSET study are presented in **Table 3-2**. As shown, both New Jersey and FAA used a variety of data to evaluate and subsequently classify airports within their respective systems. The process used to delineate airports in New Jersey's airport system is similar to the process used in most other states across the country and one that is based on a variety of factors. When New Jersey's role classification criteria are compared to the FAA's ASSET classification criteria, it is clear that the FAA's primary

[39] *General Aviation Airports: A National Asset*, May 2012.
[40] *ASSET 2: In-Depth Review of the 497 Unclassified Airports*, March 2014.
[41] *National Plan of Integrated Airport Systems (2019-2023)*

deciding factors in determining an airport's role are activity-related. Because FAA classified general aviation airports in all 50 states, they were limited to using data in their role assignment process that was from a consistent source for all airports. This reduced the number of factors used in the FAA's ASSET role assignment process.

Table 3-2 2007 NJ SASP State Airport Role Criteria Compared to Federal Role Criteria Summary

New Jersey Role Criteria	ASSET Role Criteria
Activity/Use Factors	
• Total based aircraft • Total aircraft operations • Based aircraft fleet mix	• Total validated based aircraft • Validated based jet aircraft • Validated based helicopters • Instrument operations • International flight operations • Interstate departures • Enplanements • Cargo weight • Used by US Forest Service, US Marshalls, US Customs & Border Protection, US Postal Service or Essential Air Service • FAA designated "Reliever" within 90 validated based aircraft
Location/Accessibility Factors	
• Population within a 30-minute drive • Drive time to a 4-lane/interstate highway • Number of businesses within a 30-minute drive • Number of registered pilots within a 30-minute drive	• Located in a Metropolitan Statistical Area (MSA) • Distance from nearest NPIAS airport
Airport Infrastructure Factors	
• Primary runway length • Primary runway pavement condition index (PCI) • Available approaches • Number of aircraft storage units	None
Development Potential	
• Airside • Landside	None
Economic Contribution	
• Total economic impact	None

Source: General Aviation Airports: A National Asset and New Jersey State Airport System Plan 2007.

3.4.2 Comparison of State Roles to ASSET Roles Summary

Airport roles are defined differently from a national, state, and local perspective. For study airports, the FAA NPIAS and ASSET roles apply only to those airports that are included in the NPIAS. From a state perspective, New Jersey's Bureau of Aeronautics has established specific roles for airports as part of its state airport system as previously discussed in **Section 3.2 Current Roles for New Jersey Airports**. The state role classification includes both NPIAS and non-NPIAS airports.

Table 3-3 shows the current state airport roles based on the 2007 NJ SASP for each airport and compares the state role, as applicable, to the airport's role in ASSET. There are 24 study airports that are included in ASSET's five role categories. The remaining 18 airports are considered non-NPIAS and predominately privately-owned (Aeroflex-Andover and Trinca[42] are publicly-owned). Due to the significant number of non-NPIAS airports there are some instances where the state role reflects a higher level of importance for an airport than is reflected in ASSET, since the ASSET considers general aviation airports at the national level and the State considers each airport's functional role specific to New Jersey's airport system role classifications are based on local and regional importance, community support and economic impacts. **Figure 3-2** shows ASSET roles for New Jersey airports, as well as study airports that are not included in the NPIAS.

[42] At the onset of this 2022 NJ SASP, Trinca (13N) was open as a public-use airport and was included in the analyses. It is noted that Trinca (13N) closed in September 2020.

Table 3-3 Comparison of Current NJ SASP Airport Roles to 2014 FAA ASSET Roles

Airport Name	FAA ID	City	County	Current New Jersey Role	FAA ASSET Role
Commercial Service Airports*					
Atlantic City International	ACY	Atlantic City	Atlantic County	Scheduled Service	Small Hub
Newark International	EWR	Newark	Essex County	Scheduled Service	Large Hub
Trenton Mercer	TTN	West Trenton	Mercer County	Scheduled Service	Nonhub
General Aviation Airports**					
Cape May County	WWD	Wildwood	Cape May County	Advanced Service	Regional
Essex County	CDW	Caldwell	Essex County	Advanced Service	Regional
Hammonton Municipal	N81	Hammonton	Atlantic County	Advanced Service	Local
Millville Municipal	MIV	Millville	Cumberland County	Advanced Service	Local
Monmouth Executive	BLM	Belmar/Farmingdale	Monmouth County	Advanced Service	Unclassified
Morristown Municipal	MMU	Morristown	Morris County	Advanced Service	National
Ocean County	MJX	Toms River	Ocean County	Advanced Service	Regional
Teterboro	TEB	Teterboro	Bergen County	Advanced Service	National
Central Jersey Regional	47N	Manville	Somerset County	Priority General Service	Unclassified
Cross Keys	17N	Cross Keys	Gloucester County	Priority General Service	Non-NPIAS
Lincoln Park	N07	Lincoln	Morris County	Priority General Service	Regional
Linden	LDJ	Linden	Union County	Priority General Service	Local
Solberg-Hunterdon	N51	Readington	Hunterdon County	Priority General Service	Unclassified
South Jersey Regional	VAY	Mount Holly	Burlington County	Priority General Service	Regional
Alexandria Field	N85	Pittstown	Hunterdon County	General Service	Non-NPIAS
Blairstown	1N7	Blairstown	Warren County	General Service	Non-NPIAS
Eagles Nest	31E	West Creek	Ocean County	General Service	Non-NPIAS
Flying W	N14	Lumberton	Burlington County	General Service	Non-NPIAS
Greenwood Lake	4N1	West Milford	Passaic County	General Service	Local
Lakewood	N12	Lakewood	Ocean County	General Service	Local
Old Bridge	3N6	Old Bridge	Middlesex County	General Service	Non-NPIAS
Princeton	39N	Princeton/Rocky Hill	Somerset County	General Service	Unclassified
Sky Manor	N40	Pittstown	Hunterdon County	General Service	Non-NPIAS
Somerset	SMQ	Somerville	Somerset County	General Service	Regional
Spitfire Aerodrome	7N7	Pedricktown	Salem County	General Service	Non-NPIAS
Sussex	FWN	Sussex	Sussex County	General Service	Unclassified
Trenton-Robbinsville	N87	Robbinsville	Mercer County	General Service	Unclassified
Woodbine Municipal	OBI	Woodbine	Cape May County	General Service	Local
Aeroflex-Andover	12N	Andover	Sussex County	Basic Service	Non-NPIAS
Bucks	00N	Bridgeton	Cumberland County	Basic Service	Non-NPIAS
Camden County	19N	Berlin	Camden County	Basic Service	Non-NPIAS
Hackettstown	N05	Hackettstown	Warren County	Basic Service	Non-NPIAS
Ocean City Municipal	26N	Ocean City	Cape May County	Basic Service	Basic
Vineland Downstown	28N	Vineland	Gloucester County	Basic Service	Non-NPIAS
Kroelinger	29N	Vineland	Cumberland County	Duplicative Basic Service	Non-NPIAS
Red Wing	2N6	Jobstown	Burlington County	Duplicative Basic Service	Non-NPIAS
Southern Cross	C01	Williamstown	Gloucester County	Duplicative Basic Service	Non-NPIAS
Trinca	13N***	Andover	Sussex County	Duplicative Basic Service	Non-NPIAS
Little Ferry Seaplane Base	2N7	Little Ferry	Bergen County	Specialty Facilities	Non-NPIAS

Source: New Jersey State Airport System Plan 2007 and FAA National Plan of Integrated Airports (2019-2023).

*** FAA ASSET Roles do not apply to Commercial Service Airports. Thus, the FAA NPIAS role is stated for Commercial Service study airports.**

**** FAA ASSET Roles do not apply to Non-NPIAS study airports.**

***** Trinca (13N) closed in September 2020.**

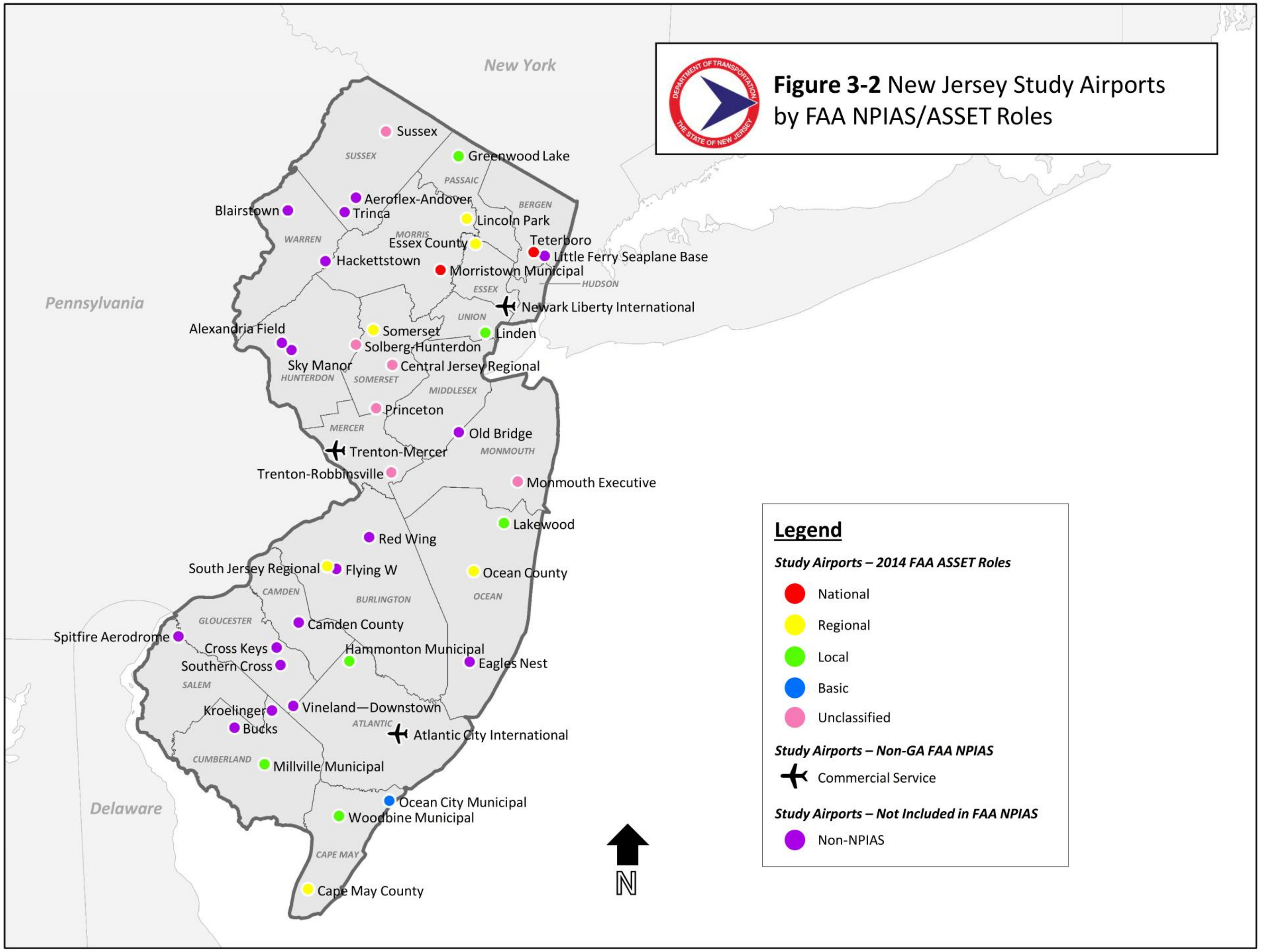


Figure 3-2 **New Jersey Airports by FAA NPIAS/ASSET Roles**

Table 3-4 presents a summary of the ASSET roles compared to the current state airport roles established in the 2007 NJ SASP. As shown, two airports in New Jersey (5 percent) are classified as National airports; 6 airports (14 percent) are classified as Regional airports; 6 airports (14 percent) are classified as Local airports; 1 airport (2 percent) is classified as a Basic airport; and 6 airports (14 percent) are Unclassified. The remaining 18 airports in the state system (43 percent) are non-NPIAS airports.

Table 3-4 Summary Comparison of ASSET and Current NJ SASP Roles

NPIAS/ASSET Category	Current NJ SASP Recommended Roles								U.S. Total
	CORE AIRPORTS				CORE CANDIDATE AIRPORTS			Total	
	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities		
Commercial Service	3							3	380
National		2						2	88
Regional		3	2	1				6	492
Local		2	1	3				6	1,278
Basic					1			1	840
Unclassified		1	2	3				6	243
Non-NPIAS			1	7	5	4*	1	18	-
Total	3	8	6	14	6	4	1	42	3,321
% of New Jersey Total									
Commercial Service	100%	-	-	-	-	-	-	7%	11%
National	-	25%	-	-	-	-	-	5%	3%
Regional	-	38%	33%	7%	-	-	-	14%	15%
Local	-	25%	17%	21%	-	-	-	14%	38%
Basic	-	-	-	-	17%	-	-	2%	25%
Unclassified	-	13%	33%	21%	-	-	-	14%	7%
Non-NPIAS	-	-	17%	50%	83%	100%	100%	43%	
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: *New Jersey State Airport System Plan 2007* and FAA National Plan of Integrated Airports (2019-2023).

*** Trinca (13N) closed in September 2020.**

3.4.3 Unclassified Airports

Table 3-5 and **Table 3-6** show the specific criteria used to determine entry into the FAA NPIAS and the criteria used to place each airport into one of the five FAA ASSET role categories for general aviation airports. As shown previously in **Table 3-4** and **Figure 3-2**, out of the 42[43] study airports, New Jersey has six Unclassified airports: Monmouth Executive, Central Jersey Regional, Solberg-Hunterdon, Princeton, Sussex, and Trenton-Robbinsville. These airports are currently designated in the NPIAS as reliever airports and are all privately owned facilities but are identified in ASSET as Unclassified airports. As noted previously, the FAA will be reviewing all Unclassified airports over the next two years to determine eligibility to remain included in the NPIAS.

[43] At the onset of this 2022 NJ SASP, the New Jersey airport system consisted of 42 public-use airports. It is noted that Trinca (13N) closed in September 2020. At the time of the completion of this chapter, 13N was open as a public-use airport and was included in the analyses.

Table 3-5 Existing FAA NPIAS Entry Criteria

Type of NPIAS Airport	Criteria
Commercial Service Airport	Publicly owned airport with scheduled air carrier service and more than 2,500 annual revenue passengers enplaned entered into the NPIAS as a: 1) Primary commercial service airport – has 10,001 or more enplanements; OR 2) Nonprimary commercial service airport - has between 2,500 and 10,000 enplanements
Non-primary Publicly Owned Airport	1) Is included in the current State Airport System Plan, accepted by FAA; 2) Has at least 10 validated based aircraft; AND 3) Serves a community located 30-mile radius or more from the nearest existing NPIAS airport
Special Justification Non-primary Airport	1) Significant national interest such as serving Native American communities or an isolated community; AND 2) A determination that the benefits of the airport will exceed potential federal investment
Reliever Airport	1) Relieves congestion at a commercial service airport that is serving a metropolitan area with a population of at least 250,000 or at least 250,000 enplanements; 2) Provide general aviation access to the overall community; 3) Have at least 100 validated based aircraft or 25,000 annual itinerant operations; AND 4) The airport being relieved must be operating at 60% of its capacity
Privately Owned Airport	1) Meet the reliever airport criteria and be designated as a reliever airport; OR 2) Have scheduled service and at least 2,500 passenger enplanements per year (currently there are no airports meeting criteria #2)

Source: Report to Congress: Evaluating the Formulation of the National Plan of Integrated Airport Systems (NPIAS), 2015.

Table 3-6 FAA ASSET Airport Categories and Criteria

ASSET Category	Criteria
National	1) 5,000+ instrument operations, 11+ validated based jets, 20+ international flights, or 500+ interstate departures; OR 2) 10,000 enplanements and at least 1 enplanement by a large certificated air carrier; OR 3) 500+ million lbs of landed cargo weight
Regional	1) Metropolitan Statistical Area (MSA) and 10+ domestic flights of 500 or more miles, 1,000+ instrument operations, and 1+ validated based jet or 100+ validated based aircraft; OR 2) Reliever with 90 or more validated based aircraft; OR 3) Nonprimary commercial service airport (requiring scheduled service) within an MSA
Local	1) Publicly owned, 10+ instrument operations, and 15+ validated based aircraft; OR 2) Publicly owned and 2,500+ annual enplanements
Basic	1) Publicly owned with 10+ validated based aircraft or 4+ validated based helicopters if a heliport; OR 2) Publicly owned and located 30+ miles from nearest NPIAS airport; OR 3) Owned or serving a Native American community; OR 4) Identified and used by US Forest Service, or US Marshalls, or US Customs and Border Protection, or US Postal Service, or has Essential Air Service; OR 5) New or replacement (publicly owned) airport that has opened in the last 10 years; OR 6) Unique circumstances related to special aeronautical use
Unclassified	Airports that do not meet the criteria of other categories. If the next review of an unclassified airport's activity shows levels that meet the criteria for one of the classifications, that airport will be reclassified in the next published NPIAS.

Source: FAA National Plan of Integrated Airports (2019-2023), Appendix C.

Due to their private ownership, the first step in determining if these six airports can be reclassified into another ASSET category is to evaluate whether or not they meet the criteria for inclusion in the NPIAS.[44] As reflected in **Table 3-7,** while all six airports are currently designated as Reliever airports, none of them meet all of the Reliever airport criteria due to the number of validated based aircraft. As privately owned, public-use airports, each of these facilities need to have at least 100 validated based aircraft in order to remain in the NPIAS with a reliever designation.

[44] FAA National Plan of Integrated Airport Systems (2019-2023) and FAA Order 5090.5: Field Formulation of the National Plan of Integrated Airport Systems (NPIAS), 2015.

Table 3-7 Unclassified Airport – NPIAS Eligibility Evaluation

Airport Name	FAA ID	City	County	NPIAS Designation	Located in an MSA	Provides General Aviation Access	Validated Based Aircraft and Annual Itinerant Operations	Airport Being Relieved Operating at 60% or Greater
Monmouth Executive	BLM	Belmar/ Farmingdale	Monmouth County	Reliever	Yes	Yes	46 validated based aircraft and 17,169 itinerant operations	Yes
Central Jersey Regional	47N	Manville	Somerset County	Reliever	Yes	Yes	88 validated based aircraft and 7,290 itinerant operations	Yes
Solberg-Hunterdon	N51	Readington	Hunterdon County	Reliever	Yes	Yes	42 validated based aircraft and 7,520 itinerant operations	Yes
Princeton	39N	Princeton/ Rocky Hill	Somerset County	Reliever	Yes	Yes	35 validated based aircraft and 16,857 itinerant operations	Yes
Sussex	FWN	Sussex	Sussex County	Reliever	Yes	Yes	32 validated based aircraft and 6,728 itinerant operations	Yes
Trenton-Robbinsville	N87	Robbinsville	Mercer County	Reliever	Yes	Yes	32 validated based aircraft and 6,230 itinerant operations	Yes

Source: FAA National Plan of Integrated Airports (2019-2023), FAA Form 5010, and FAA BasedAircraft.com.

Additional analysis was conducted to establish the possibility of reclassification within ASSET "if" any of the airports had a change in ownership status (i.e., changed from being privately owned to publicly owned). If five airports (Central Jersey Regional, Solberg-Hunterdon, Princeton, Sussex, and Trenton-Robbinsville) were to find a willing public sponsor, analysis presented in **Table 3-8** indicates that all could be reclassified as Local airports in ASSET. Data available for Monmouth Executive indicates that, if it was under public ownership, it may be eligible for reclassification as a Regional airport, however, further analysis is needed to confirm its eligibility.

A review of historical federal and state grant funding between 2007 and 2017 shows that four of the six Unclassified airports, Central Jersey Regional, Princeton, Sussex, and Trenton-Robbinsville, have received federal and state grant monies to complete projects at their airports. While Monmouth Executive and Solberg-Hunterdon airports have taken state grant monies, since the projects are not substantially complete as of July 2020, these two airports' obligation timeframes have not yet begun. When airports accept monies from the FAA or the NJDOT BOA, they agree to various obligations that generally require the airports to operate their facilities safely and efficiently and in accordance with specified conditions. By accepting financial assistance and agreeing to the grant assurances/obligations for projects such as the installation of on-site weather reporting equipment, the construction of a taxiway, additional aircraft parking, and the acquisition of equipment, all of the Unclassified airports have shown they are committed to staying open and supporting general aviation activity in New Jersey.

Based on available data and current characteristics for the Unclassified airports in New Jersey, there does not appear to be justification for requesting FAA to reconsider the Unclassified status for these six airports in New Jersey at this time. Airports identified as Unclassified are notified that they are not eligible for FAA assistance.

Table 3-8 Unclassified Airport - ASSET Role Determination with a Public Sponsor

ASSET Role/Criteria	Monmouth Executive (BLM)	Central Jersey Regional (47N)	Solberg-Hunterdon (N51)	Princeton (39N)	Sussex (FWN)	Trenton-Robbinsville (N87)
National						
5,000+ instrument operations, 11+ based jets, 20+ international flights, or 500+ interstate departures; OR	No	No	No	No	No	No
10,000 enplanements and at least 1 enplanement by a large certificated air carrier; OR	No	No	No	No	No	No
500+ million lbs of landed cargo weight	No	No	No	No	No	No
Regional						
Metropolitan Statistical Area (MSA) and 10+ domestic flights of 500 miles, 1,000+ instrument operations, and 1+ based jet or 100+ validated based aircraft; OR	Yes (Edison-New Brunswick NJ MSA; 10+ domestic flights of 500 miles; 1,000+ instrument operations and 1+ validated based jet)	No	No	No	No	No
Reliever with 90 or more validated based aircraft; OR	No	No	No	No	No	No
Nonprimary commercial service airport (requiring scheduled service) within an MSA	No	No	No	No	No	No
Local						
Publicly owned (or if a willing public sponsor is available), 10+ instrument operations, and 15+ validated based aircraft; OR	Yes (6,099 instrument operations and 52 validated based aircraft)	Yes (512 instrument operations and 71 validated based aircraft)	Yes (302 instrument operations and 55 validated based aircraft)	Yes (970 instrument operations and 42 validated based aircraft)	Yes (272 instrument operations and 70 validated based aircraft)	Yes (308 instrument operations and 33 validated based aircraft)
Publicly owned and 2,500+ annual enplanements	No	No	No	No	No	No
Basic						
Publicly owned with 10+ validated based aircraft or 4+ validated based helicopters if a heliport; OR	Yes (46 validated based aircraft)	Yes (88 validated based aircraft)	Yes (42 validated based aircraft)	Yes (35 validated based aircraft)	Yes (32 validated based aircraft)	Yes (32 validated based aircraft)
Publicly owned and located 30+ miles from nearest NPIAS airport; OR	No	No	No	No	No	No
Owned or serving a Native American community; OR	No	No	No	No	No	No
Identified and used by US Forest Service, or US Marshalls, or US Customs and Border Protection, or US Postal Service, or has Essential Air Service; OR	No	No	No	No	No	No
New or replacement (publicly owned) airport that has opened in the last 10 years; OR	No	No	No	No	No	No
Unique circumstances related to special aeronautical use	No	No	No	No	No	No

Source: NPIAS, FAA 5010, FAA BasedAircraft.com, FAA TFMSC, FAA Passenger and Cargo Data, FAA ASPM City-Pair Analysis, and US Office of Management and Budget.

3.4.4 Non-NPIAS Airports

The 18 non-NPIAS airports in the state were evaluated for their ability to meet NPIAS entry criteria as established in FAA Order 5090.5: *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*. While these airports are included in New Jersey's airport system and have been identified as playing a contributing role in the state system, they are not currently included in the federal system. **Table 3-5** provided the NPIAS entry criteria and **Table 3-9** and **Table 3-10** summarize each of New Jersey's 18 non-NPIAS airports' ability to meet the established NPIAS entry criteria. As shown, only one airport, Aeroflex-Andover meets the validated based aircraft criteria, has a public sponsor, and would meet the screening requirements for a facility to be considered for inclusion in the NPIAS because it protects natural resources as it serves as a base of operations for wildfire suppression by the New Jersey Forest Fire Service. Trinca meets the distance to another NPIAS airport criteria and is publicly owned, however, it does not meet the validated based aircraft criteria. At the time of the completion of this chapter, Trinca (13N) was open as a public-use airport and was included in the analysis. It is noted that Trinca (13N) closed in September 2020 and is no longer able to meet NPIAS entry criteria. The other 16 airports would not be considered for inclusion at this time due mainly to ownership status (they are all privately owned) but other factors include low numbers of validated based aircraft and proximity to an existing NPIAS airport within 30 miles or less. A benefit-cost analysis was not included as part of this analysis but could be undertaken by the airport or New Jersey Bureau of Aeronautics to see if eligibility for NPIAS could change.

Table 3-9 Airport NPIAS Eligibility for N85, 1N7, 17N, N14, 3N6, N40, 12N, 00N, and 19N

ASSET Role/Criteria	Alexandria Field (N85)	Blairstown (1N7)	Cross Keys (17N)	Flying W (N14)	Old Bridge (3N6)	Sky Manor (N40)	Aeroflex-Andover (12N)	Bucks (00N)	Camden County (19N)
Ownership									
Public (PU) or Private (PR)	PR	PR	PR	PR	PR	PR	PU	PR	PR
Facility Data									
Runway Length	2,550	3,112	3,500	3,496	3,594	2,900	1,981	1,900	3,094
Runway Width	60	70	50	75	50	50	50	150	45
Runway Surface	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt	Asphalt	Turf	Asphalt
Approach Type	Non-Precision	Non-Precision	Non-Precision	Non-Precision	Non-Precision	Non-Precision	Non-Precision	Visual	Non-Precision
Activity Data									
2018 Validated Based Aircraft	85*	41	34	102*	92*	102*	44*	17*	29*
2023 Validated Based Aircraft	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2018 Annual Operations	18,453	19,790	22,825	56,389	14,460	22,107	25,230	2,397	5,230
2023 Annual Operations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NPIAS Entry Criteria									
Closest NPIAS Airport	N51	FWN	N81	VAY	N87	N51	FWN	MIV	VAY
Distance (miles) to	21	28	18	2	21	17	18	12	15
Drive-Time (minutes) to	33	43	31	5	34	28	26	19	35
Reliever Designation	No	No	No	No	No	No	No	No	No
Receives U.S. Mail	No	No	No	No	No	No	No	No	No
National Defense Role	No	No	No	No	No	No	No	No	No
Eligible for NPIAS Inclusion if Yes to All									
Part of NJ SASP?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30+ miles from nearest NPIAS airport?	No	No	No	No	No	No	No	No	No
Forecast 10+ validated based aircraft by 2023?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is there a willing sponsor?	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Yes	Unknown	Unknown
Eligible for NPIAS Inclusion if Yes to Any									
Do the Airport benefits outweigh costs?	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Does Airport serve needs of:									
Remote/isolated community	No	No	No	No	No	No	No	No	No
Native American community	No	No	No	No	No	No	No	No	No
Recreational area	No	No	No	No	No	No	No	No	No
Protecting natural resources	No	No	No	No	No	No	Yes	No	No

Source: 2019 New Jersey SASP, ESRI's 2017 Business Analyst, Google Maps, US National Park Service, US Department of Interior, FAA 5010, and FAA BasedAircraft.com.

Note: N/A = Data Not Available

*** Asterisk indicates that based aircraft count requires further validation by the FAA.**

Table 3-10 Airport NPIAS Eligibility for 31N, N05, 29N, 2N6, C01, 7N7, 13N, 28N, and 2N7

ASSET Role/Criteria	Eagles Nest (31E)	Hackettstown (N05)	Kroelinger (29N)	Red Wing (2N6)	Southern Cross (C01)	Spitfire Aerodrome (7N7)	Trinca** (13N)	Vineland Downstown (28N)	Little Ferry Seaplane Base (2N7)
Ownership									
Public (PU) or Private (PR)	PR	PR	PR	PR	PR	PR	PU	PR	PR
Facility Data									
Runway Length	3,670	2,200	2,086	1,830	2,400	2,419	1,924	2,251	5,500
Runway Width	60	50	190	50	80	60	135	100	150
Runway Surface	Asphalt	Asphalt	Turf	Turf	Turf	Asphalt	Turf	Turf	Water
Approach Type	Non-Precision	Visual	Non-Precision	Visual	Visual	Non-Precision	Visual	Visual	Visual
Activity Data									
2018 Validated Based Aircraft	40*	21*	4*	5*	7*	23*	4*	21*	N/A
2023 Validated Based Aircraft	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2018 Annual Operations	1,034	19,000	220	2,500	237	11,463	11,395	12,700	N/A
2023 Annual Operations	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NPIAS Entry Criteria									
Closest NPIAS Airport	MJX	SMQ	MIV	VAY	N81	VAY	FWN	MIV	TEB
Distance (miles) to	26	24	12	12	17	37	20	15	2
Drive-Time (minutes) to	32	39	22	24	29	48	31	26	7
Reliever Designation	No	No	No	No	No	No	No	No	No
Receives U.S. Mail	No	No	No	No	No	No	No	No	No
National Defense Role	No	No	No	No	No	No	No	No	No
Eligible for NPIAS Inclusion if Yes to All									
Part of NJ SASP?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30+ miles from nearest NPIAS airport?	No	No	No	No	No	Yes	No	No	No
Forecast 10+ based aircraft by 2023?	Yes	Yes	No	No	No	Yes	No	Yes	No
Is there a willing sponsor?	No	Unknown	Unknown	Unknown	Unknown	Unknown	Yes	Unknown	Unknown
Eligible for NPIAS Inclusion if Yes to Any									
Do the Airport benefits outweigh costs?	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Does Airport serve needs of:									
Remote/isolated community	No	No	No	No	No	No	No	No	No
Native American community	No	No	No	No	No	No	No	No	No
Recreational area	No	No	No	No	No	No	No	No	No
Protecting natural resources	No	No	No	No	No	No	No	No	No

Source: 2019 New Jersey SASP, ESRI's 2017 Business Analyst, Google Maps, US National Park Service, US Department of Interior, FAA 5010, and FAA BasedAircraft.com
Note: N/A = Data Not Available

*** Asterisk indicates that based aircraft count requires further validation by the FAA.**

**** Trinca (13N) closed in September 2020.**

3.5 Assessment of Need for Role Changes and Recommendations

Building on the previous section's analyses, airport roles are now compared to the service area characteristics for population and employment to determine if adjustments are needed for current role assignments for study airports. This assessment is done to try and ensure that airports are meeting the state's economic, and transportation needs over time.

3.5.1 Factors Considered in Assessment

In order to assess the need for changes in role classification for airports, it is necessary to identify key differences between the 2007 NJ SASP and this Study. Below is a summary of differences between the two studies that have the potential to effect role classifications in New Jersey's airport system.

- At the time the 2007 NJ SASP was conducted 47 public-use airports were located in New Jersey. Included in this total were 45 existing study airports and two special use facilities. The study also recommended the development of two new airports. This Study is evaluating 42 study airports including one specialty facility. *It is important to note that* *system analysis conducted later in the system planning process will evaluate the need for any new or replacement facilities.*

- Since 2007, two airports have had a change in ownership status. South Jersey Regional (2004) and Trinca[45] (2002) were previously privately owned and are now publicly owned.
- Seven airports have either permanently closed or have changed from public-use facilities to private-use only facilities. As such, Bader Field, Marlboro, Red Lion, Li Calzi Airpark, Newton, Rudy's, and Twin Pine are not included in this Study.
- Two specialty facilities (Holly City Heliport and Little Ferry Seaplane Base) were included in the 2007 NJ SASP but Holly City Heliport is not included in this update to the New Jersey State Airport System Plan as it is closed. The only specialty facility that will be included in the 2022 NJ SASP is Little Ferry Seaplane Base, which was also included in the 2007 NJ SASP as a specialty facility.

When reviewing the need to make changes to airport roles, socioeconomic characteristics of the market areas served by the airports could be important factors. As discussed in **Chapter 2 Trends Analysis**, the state's economy is the 8th largest in the U.S. and has experienced a 3.1 percent CAGR since 2010, yet its population growth lags behind the national average. According to Wells Fargo Security economists, New Jersey is underperforming the nation from an economic standpoint, but the gap has begun to narrow.[46] **Figure 3-3** and **Figure 3-4** show projected population and employment growth by county between 2010 and 2034.

[45] Trinca (13N) closed in September 2020.
[46] *New Jersey Economic Outlook: September 2018*, Wells Fargo Securities.

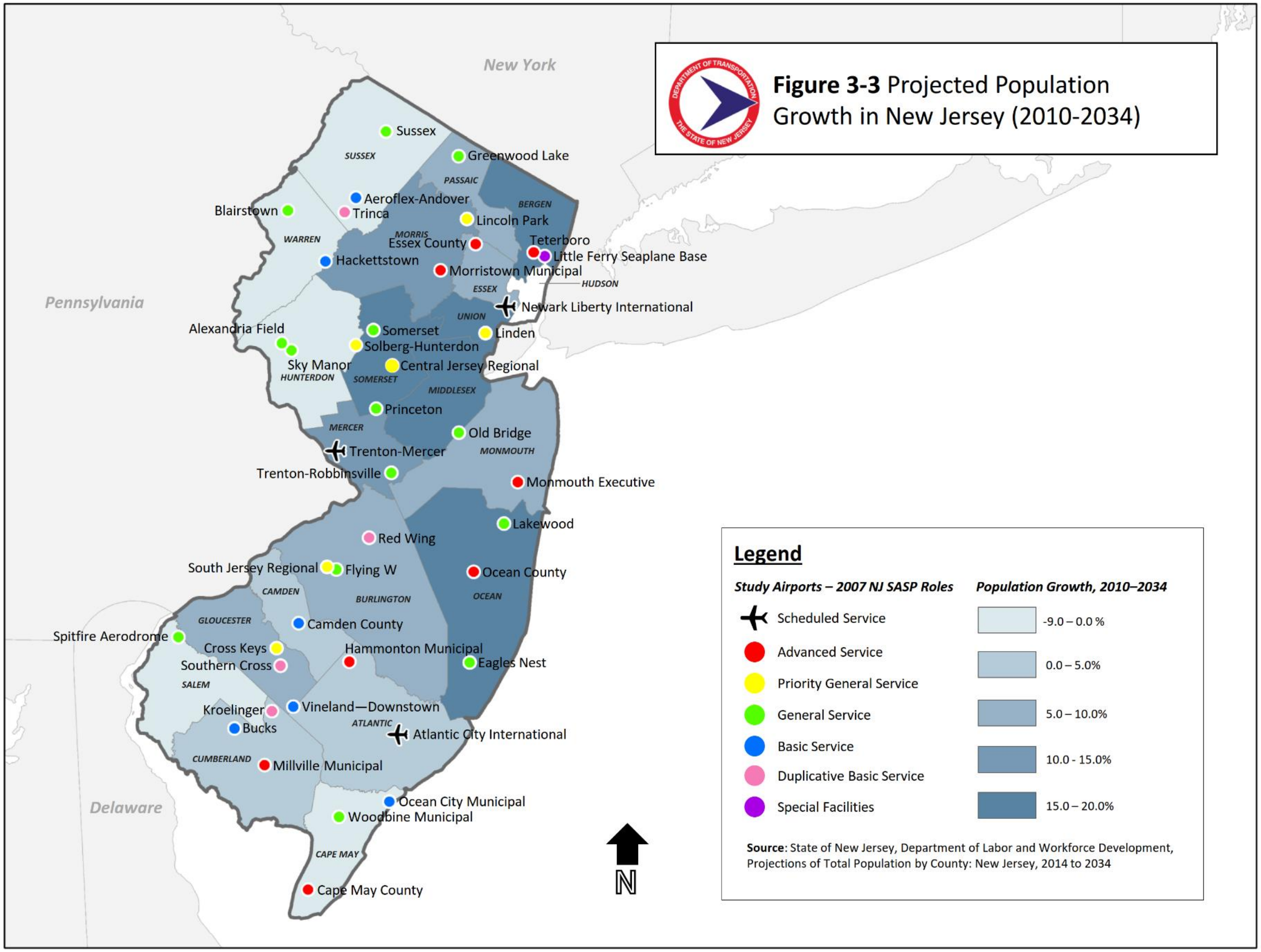


Figure 3-3 Projected Population (2010-2034) Growth

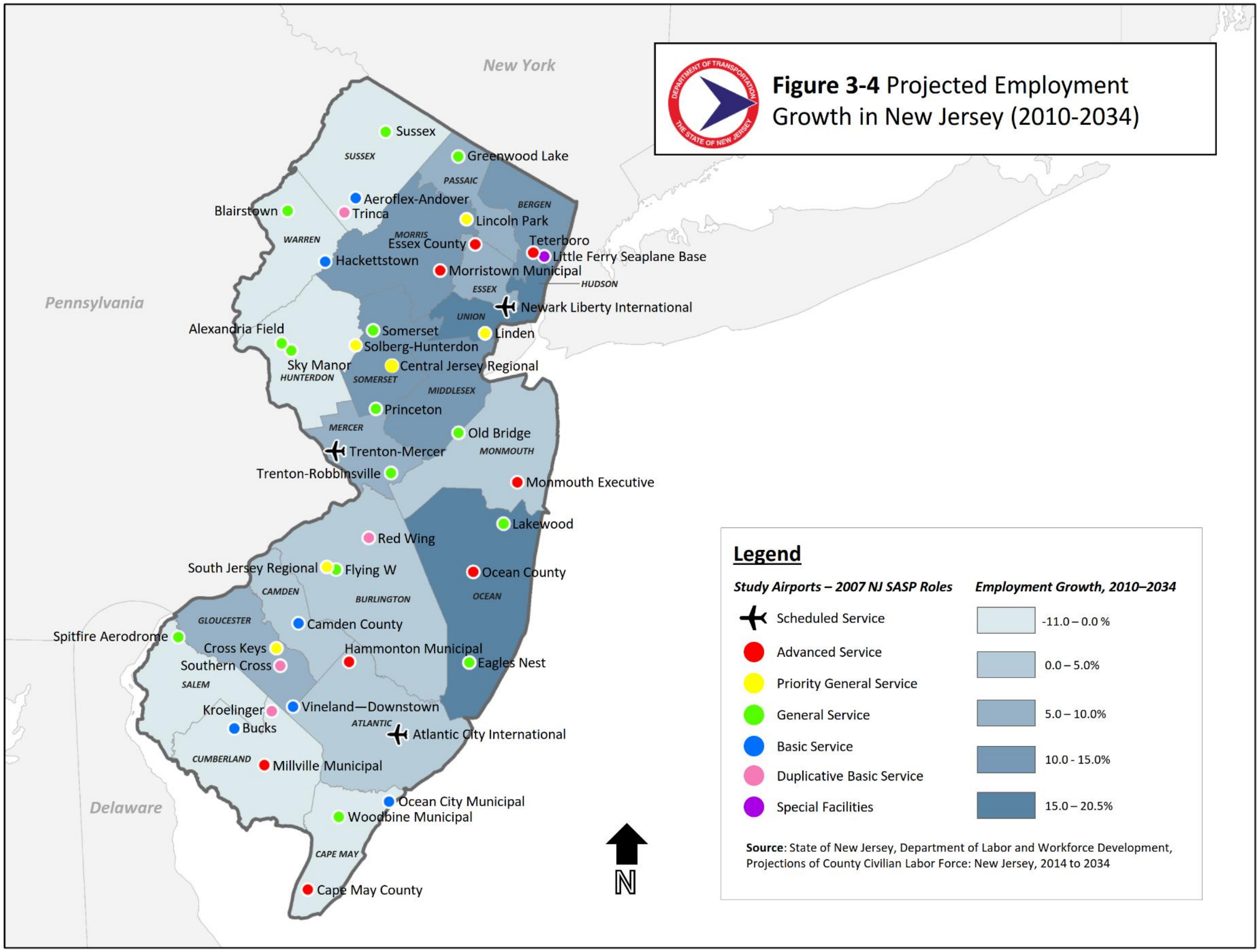


Figure 3-4 **Projected Employment (2010-2034) Growth**

New Jersey's diversified economy is home to 21 Fortune 500 companies and is supported by industries that include transportation logistics, warehousing, pharmaceuticals, tourism, and hospitality.[47] Companies contributing to growth and expansion in the state include Evotec, Teva Pharmaceuticals, and Allergan are large global life science companies bringing more than 1,000 new high-paying jobs to the state; Amazon, UPS, and FedEx have expanded their warehousing and distribution facilities and added thousands of new jobs; and the manufacturing industry as a whole is experiencing accelerated employment growth in recent years.

Using the economic characteristics of New Jersey's counties, drive time analysis was conducted to determine if the changes between this Study and the 2007 NJ SASP warrant any role classifications, as well as to identify any gaps or voids in geographic coverage that warrant action. As shown in **Figure 3-5**, the coverage provided by Scheduled Service, Advanced Service, and Priority General Service airports (Core airports) are combined with airports that are out-of-state, the majority of New Jersey's land area is covered. There is a small void in coverage over the northern part of the state in portions of Sussex and Warren counties. These two counties are anticipated to experience declining employment growth of 11.0 percent and 6.6 percent, respectively. When drive time analysis is conducted for General Service (Core airports) and Basic Service, Duplicative Basic Service, and Specialty Facilities (Core Candidate airports), it is evident that these airports provide adequate supporting coverage to the Schedule Service, Advanced Service, and Priority General Service airports (see **Figure 3-6**). This supporting coverage fills the void identified in **Figure 3-5.**

[47] *Fortune*, June 2018.

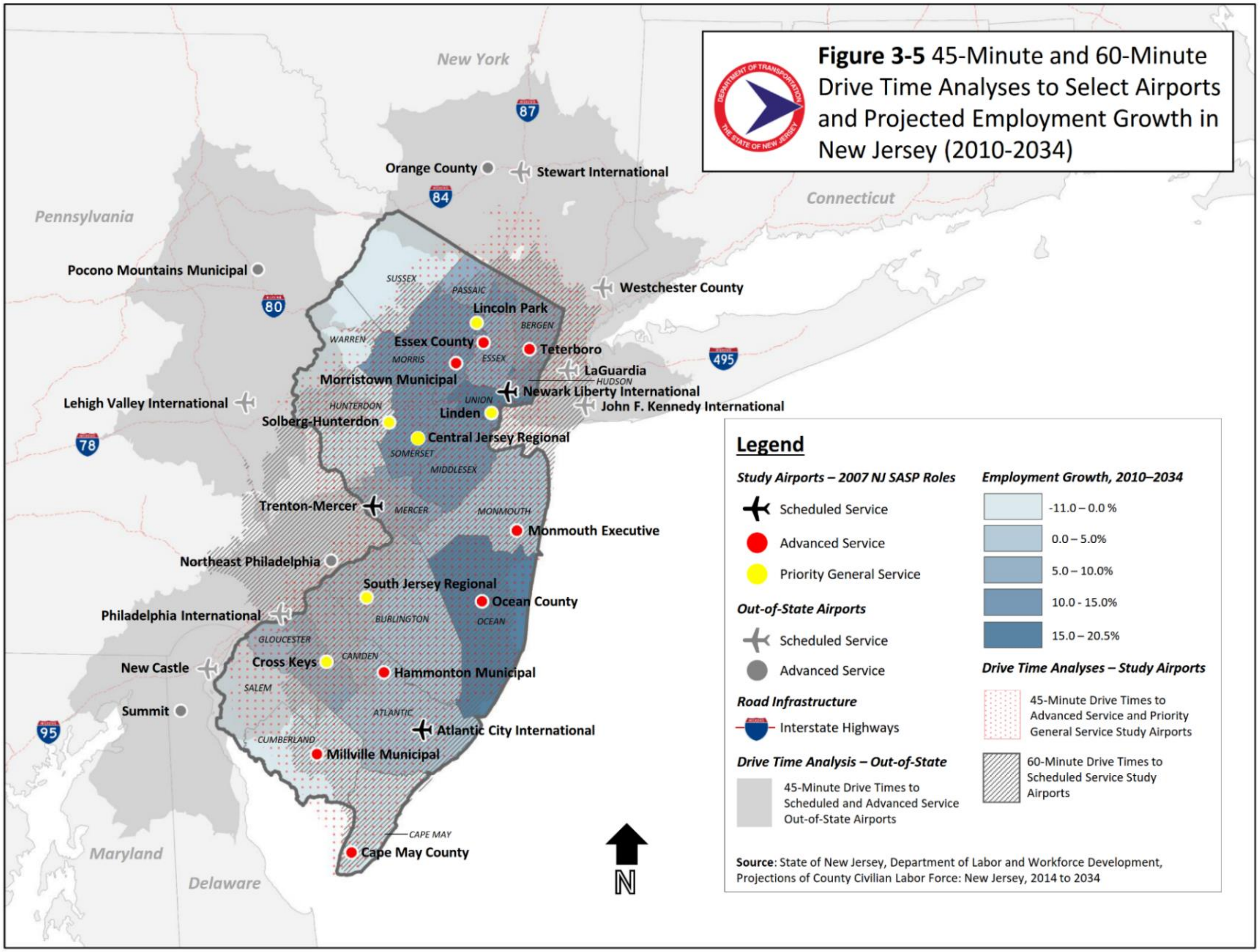


Figure 3-5 **45-Minute and 60-Minute Drive Time Analyses to Select Airports and Projected Employment Growth in New Jersey (2010-2034)**

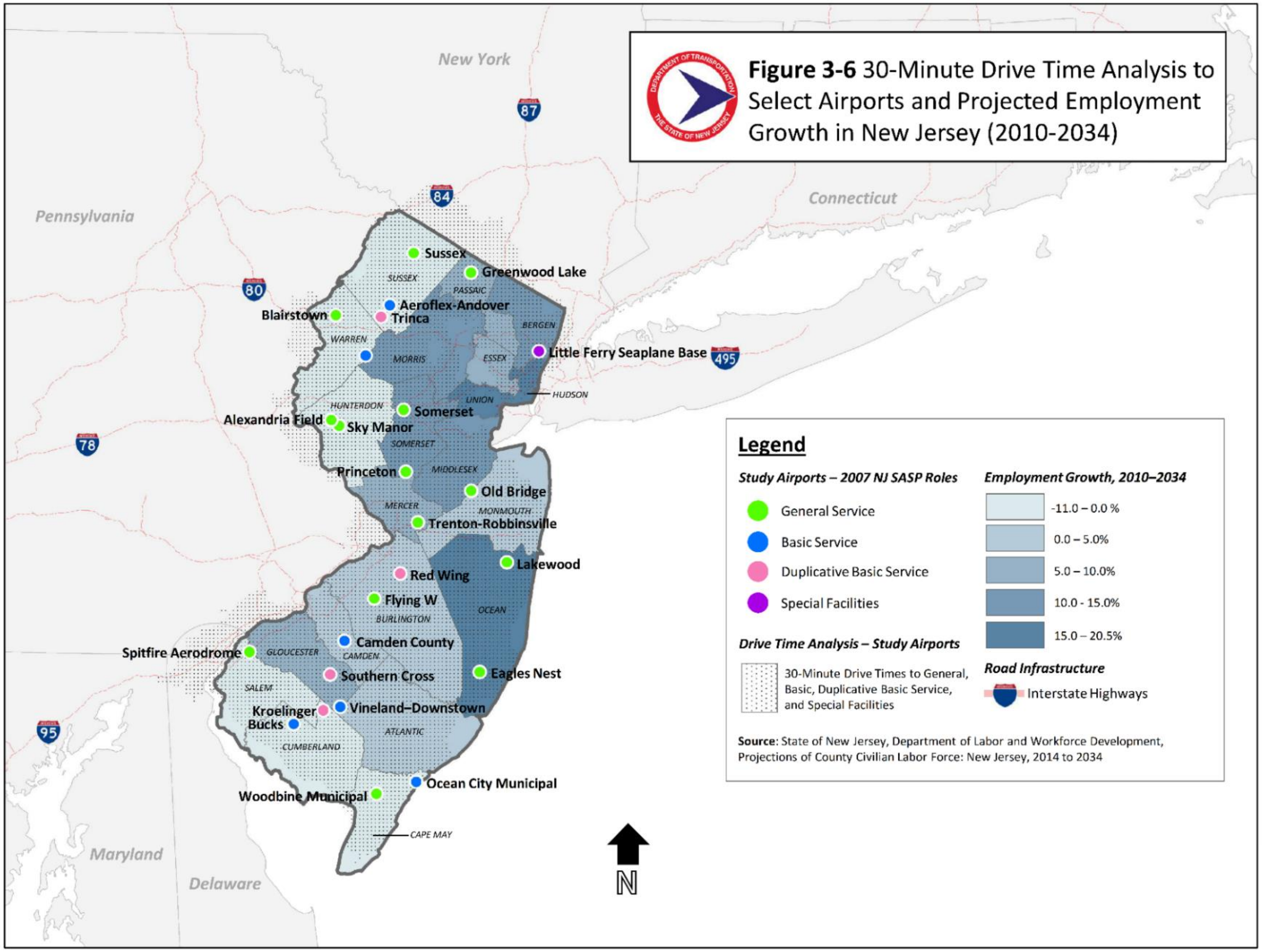


Figure 3-6 **30-Minute Drive Time Analysis to Select Airports and Projected Employment Growth in New Jersey (2010-2034)**

3.5.2 Recommendations

As noted in **Section 3.4.3 Unclassified Airports,** NJDOT BOA should continue to monitor the ownership status and activity levels at its six Unclassified NPIAS airports. While no changes are currently recommended based on current available data, any future changes to those specific criteria could warrant the need for re-classification within FAA's ASSET classification structure. **Section 3.4.4 Non-NPIAS Airports** identified that Aeroflex-Andover is eligible for inclusion into the NPIAS and ASSET classification. It is recommended the Bureau of Aeronautics work with the FAA to initiate the inclusion of Aeroflex-Andover into the NPIAS and to be designated as Local airports within ASSET.

The next steps in the update to New Jersey's airport system will include the following:

- Formulate forecasts of aviation demand for study airports,
- Examine improvements that are needed at individual airports to enable them to meet their respective functional roles, and
- Determine how the existing system is performing and if any changes to airport roles are needed.

This approach will pinpoint adequacies and deficiencies, which will allow for the identification of potential role changes needed to address the future needs of the system through scenario-based alternatives.

4 AVIATION DEMAND FORECAST

4.1 Introduction

Aviation demand forecasts are a key component of state aviation system plans. These forecasts are used to assess an airport system's sufficiency in terms of annual operational capacity, establish future airport facility requirements, and provide insight into where changes in a system may be appropriate over the forecast period.

It is important to set the context for projections developed as part of this 2022 NJ SASP (New Jersey State Airport System Plan). System plan forecasts are developed from the perspective of the overall system and are not individualized to consider all of the unique factors that may influence activity levels at each airport. System plan projections attempt to remove double counting of activity that may occur if master plan forecasts for airports in the same or neighboring market areas are aggregated. In addition, the system plan and individual airport master plans occur at varying intervals and points in time. As a result, forecasts developed for New Jersey airports as part of this 2022 NJ SASP may not agree with forecasts developed in individual airport master plans.

At the initiation of this 2022 NJ SASP in 2018, the New Jersey airport system consisted of 42 public-use airports. It is noted that Trinca (13N) closed in September 2020 during the course of the study. At the time of the completion of this chapter, 13N was open as a public-use airport and was included in the analyses. As of 2021, the New Jersey airport system consists of 41 public-use airports. For this update to the SASP, 42 study airports were included in the forecasting process. Forecasts were developed for the following metrics:

- Based General Aviation (GA) aircraft and fleet mix
- Annual GA Operations
- Annual Commercial Passenger Enplanements (only for three commercial service airports in New Jersey)
- Annual Commercial Operations (only for three commercial service airports in New Jersey)

Chapter 4 Aviation Demand Forecast includes an economic context review to assist in framing the forecasts of aviation metrics. Socioeconomic conditions can affect aviation demand and were included as a supplement to forecast documentation. Each metric that was forecasted includes a methodology section, a depiction of the forecast results by airport, and forecast validation against Federal Aviation Administration (FAA) TAF (Terminal Area Forecast) values. The following sections are included in this chapter:

4.2 Data Sources
4.3 Economic Context
4.4 Population
4.5 Median Age
4.6 Housing Units
4.7 Aviation Demand Forecasts

It is noted that this chapter was prepared prior to the COVID-19 pandemic; as such, the forecasts developed in this study does not consider the impacts of COVID-19 on aviation demand forecasts.

4.2 Data Sources

Forecasts of aviation demand were derived by synthesizing the following data sources[48]:

- United States Census Bureau Census 2000, 2010
- United States Census Bureau American Community Survey (ACS) 5 Year Estimate
- EMSI
- 2018 Adjusted BA from FAA BasedAircraft.com and adjusted FAA Form 5010, Airport Master Record, BA
- FAA Terminal Area Forecast
- FAA Traffic Flow Management System Counts
- FAA Aerospace Forecasts

[48] For additional information on data sources utilized, please see **Chapter 2 Trends Analysis**.

4.3 Economic Context

Section 4.3 Economic Context of the chapter details socioeconomic trends which provide additional context for aviation forecasts. Socioeconomic context is analyzed at the Metropolitan Statistical Area (MSA) level, since all New Jersey Counties are in an MSA. **Table 4-1** below depicts the 21 New Jersey counties and the MSA they fall in.

Table 4-1 New Jersey Counties and Associated MSA

County	MSA
Atlantic County	Atlantic City-Hammonton, NJ
Bergen County	New York-Newark-Jersey City, NY-NJ-PA
Burlington County	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Camden County	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Cape May County	Ocean City, NJ
Cumberland County	Vineland-Bridgeton, NJ
Essex County	New York-Newark-Jersey City, NY-NJ-PA
Gloucester County	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Hudson County	New York-Newark-Jersey City, NY-NJ-PA
Hunterdon County	New York-Newark-Jersey City, NY-NJ-PA
Mercer County	Trenton-Princeton, NJ
Middlesex County	New York-Newark-Jersey City, NY-NJ-PA
Monmouth County	New York-Newark-Jersey City, NY-NJ-PA
Morris County	New York-Newark-Jersey City, NY-NJ-PA
Ocean County	New York-Newark-Jersey City, NY-NJ-PA
Passaic County	New York-Newark-Jersey City, NY-NJ-PA
Salem County	Philadelphia-Camden-Wilmington, PA-NJ-DE-MD
Somerset County	New York-Newark-Jersey City, NY-NJ-PA
Sussex County	New York-Newark-Jersey City, NY-NJ-PA
Union County	New York-Newark-Jersey City, NY-NJ-PA
Warren County	Allentown-Bethlehem-Easton, PA-NJ

Source: United States Census Bureau (MSA Delineation – September 2018)

There are seven MSAs that contain at least one New Jersey county. Economic context is focused on these seven MSAs in relation to New Jersey and United States trends.

4.4 Population

Population is a component of regional economic growth (e.g., 200 people would produce more economic output than 100 people, all else equal). As a result, population is an important metric to understand in relation to aviation demand. **Table 4-2** below depicts population trends in the United States, New Jersey, and the seven MSAs that are the focus of this section. Population change between years is expressed as a CAGR, or an annualized rate of change:

Table 4-2 Population Totals

Geography	2000	2010	2017	CAGR 00-17	CAGR 10-17
United States	281,421,906	308,745,538	325,147,121	0.9%	0.7%
New Jersey	8,414,350	8,791,894	8,888,543	0.3%	0.2%
Allentown-Bethlehem-Easton, PA-NJ	740,395	821,173	838,081	0.7%	0.3%
Atlantic City-Hammonton, NJ	252,552	274,549	266,328	0.3%	-0.4%
New York-Newark-Jersey City, NY-NJ-PA	18,323,002	19,567,410	19,998,951	0.5%	0.3%
Ocean City, NJ	102,326	97,265	93,184	-0.5%	-0.6%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	5,687,147	5,965,343	6,078,451	0.4%	0.3%
Trenton-Princeton, NJ	350,761	366,513	368,602	0.3%	0.1%
Vineland-Bridgeton, NJ	146,438	156,898	151,748	0.2%	-0.5%

Source: United States Census Bureau Census 2000, Census 2010, Annual Estimates of Resident Population

As indicated in the table above, all the geographies included in this analysis experienced faster population growth pre-Recession than post-Recession (i.e., growth rates between 2000 and 2017 are higher than growth rates between 2010 and 2017). The Ocean City MSA has experienced population loss since 2000, while all other areas have had increases in population.

4.5 Median Age

The United States population is aging, with a 2017 median age of 37.8 years old, in contrast with a 2010 median age of 36.9. Significantly, on average, both the State of New Jersey and a majority of the MSAs in this analysis are growing older faster than the United States average. Only the Vineland MSA had a median age lower than the United States average (36.8 years old). Between 2010 and 2017, only the New York, Philadelphia, and Vineland MSAs aged slower than the United States average. New Jersey, and the other 4 MSAs in the analysis experienced faster median age growth than the United States average. **Table 4-3** below depicts median age in the study area geographies.

Table 4-3 Median Age

Geography	2010	2017	CAGR 10-17
United States	36.9	37.8	0.3%
New Jersey	38.5	39.6	0.4%
Allentown-Bethlehem-Easton, PA-NJ	40.1	41.3	0.4%
Atlantic City-Hammonton, NJ	39.4	41.1	0.6%
New York-Newark-Jersey City, NY-NJ-PA	37.4	38.2	0.3%
Ocean City, NJ	46.4	48.7	0.7%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	37.7	38.6	0.3%
Trenton-Princeton, NJ	37.4	38.6	0.5%
Vineland-Bridgeton, NJ	36.5	36.8	0.1%

Source: United States Census American Community Survey (ACS) 5 Year Estimate

4.6 Housing Units

Housing units are another socioeconomic metric that can influence aviation demand. While total population has a direct and intuitive link to air transportation, the number of housing units in an area also can influence aviation demand. For example, in tourist focused areas, otherwise vacant housing is often in seasonal tourist use, and resulting visitors will not be included in resident population counts. **Table 4-4** below depicts housing unit totals in each geography in 2010 and 2017.

Table 4-4 Housing Units

Geography	2010	2017	CAGR 10-17
United States	130,038,080	135,393,564	0.6%
New Jersey	3,529,033	3,595,055	0.3%
Allentown-Bethlehem-Easton, PA-NJ	338,833	347,649	0.4%
Atlantic City-Hammonton, NJ	125,826	127,809	0.2%
New York-Newark-Jersey City, NY-NJ-PA	7,469,623	7,916,318	0.8%

Geography	2010	2017	CAGR 10-17
Ocean City, NJ	98,394	99,014	0.1%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2,418,248	2,469,188	0.3%
Trenton-Princeton, NJ	142,377	144,385	0.2%
Vineland-Bridgeton, NJ	55,406	56,332	0.2%

Source: United States Census Bureau ACS 5 Year Estimate

Between 2010 and 2017, all the MSAs in the study except New York added housing units at a slower rate than the United States average. As a State, New Jersey also added housing units at a slower rate than the United States average.

4.6.1 Households

Households are groups of people who live in a common household under a head of householder. Housing units are defined as the physical housing dwelling that is inhabited. Household trends in all geographies generally mirrored housing unit trends, however in certain MSAs (e.g., Ocean City) there was a divergence in household and housing unit trends. **Table 4-5** below depicts change in households by geography.

Table 4-5 Households

Geography	2010	2017	CAGR 10-17
United States	114,235,996	118,825,921	0.6%
New Jersey	3,176,069	3,199,111	0.1%
Allentown-Bethlehem-Easton, PA-NJ	312,520	318,429	0.3%
Atlantic City-Hammonton, NJ	101,645	100,660	-0.1%
New York-Newark-Jersey City, NY-NJ-PA	6,809,482	7,168,027	0.7%
Ocean City, NJ	45,420	39,861	-1.8%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2,216,763	2,253,471	0.2%
Trenton-Princeton, NJ	129,213	129,546	0.0%
Vineland-Bridgeton, NJ	50,825	50,596	-0.1%

Source: United States Census Bureau ACS 5 Year Estimate

4.6.2 Housing Tenure

Across most study geographies, home ownership has decreased as a share of household tenure (i.e., owner-occupied housing units are a smaller share of total housing units than renter-occupied housing units). The only area where this was not true was in the Ocean City MSA, where home ownership is most concentrated out of all study areas. **Table 4-6** below depicts the share of housing units that are owner-occupied in each study area:

Table 4-6 Owner-Occupied Housing Unit as Percent of Total Occupied Housing Units

Geography	2010	2017	CAGR 10-17
United States	66.6%	63.8%	-2.8%
New Jersey	66.9%	64.1%	-2.8%
Allentown-Bethlehem-Easton, PA-NJ	73.1%	69.3%	-3.8%
Atlantic City-Hammonton, NJ	70.7%	67.4%	-3.3%
New York-Newark-Jersey City, NY-NJ-PA	53.0%	51.9%	-1.1%
Ocean City, NJ	74.3%	77.5%	3.2%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	69.8%	67.3%	-2.5%
Trenton-Princeton, NJ	67.9%	64.2%	-3.7%
Vineland-Bridgeton, NJ	67.4%	63.7%	-3.7%

Source: United States Census ACS 5 Year Estimate

4.6.3 Real Gross Domestic Product

Gross domestic product (GDP), also referred to as value-add, is a measure of output based on the final value of a good or service's production. GDP can be tracked based on spending or income, so long as no double counting occurs (e.g., when a set of tires is made, it cannot count towards GDP after production and after it is placed on a car). **Table 4-7** below depicts real GDP trends across the seven MSAs of this analysis in chained 2012 dollars. Real GDP is stated in chained dollars, or a dollar value that is held consistent over time. Real economic variables allow for comparisons across time without the impact of inflation.

Table 4-7 Real GDP by Geography (Chained 2012 $ in millions)

Geography	2001	2010	2017	CAGR 01-17	CAGR 10-17
United States	$13,262,079	$15,598,753	$18,050,693	1.9%	2.1%
New Jersey	$476,508	$516,589	$543,993	0.8%	0.7%
Allentown-Bethlehem-Easton, PA-NJ	$31,580	$32,422	$38,613	1.3%	2.5%
Atlantic City-Hammonton, NJ	$11,793	$12,509	$11,233	-0.3%	-1.5%
New York-Newark-Jersey City, NY-NJ-PA	$1,170,042	$1,321,890	$1,444,484	1.3%	1.3%
Ocean City, NJ	$4,017	$4,221	$4,481	0.7%	0.9%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	$300,375	$344,835	$387,217	1.6%	1.7%
Trenton-Princeton, NJ	$22,626	$24,850	$25,759	0.8%	0.5%
Vineland-Bridgeton, NJ	$4,726	$5,225	$4,988	0.3%	-0.7%

Source: Bureau of Economic Analysis (BEA)

Note: MSA GDP data is only available after 2001

In real terms, all MSAs that are in New Jersey experienced growth except for Atlantic City. One observation is that New Jersey, along with four of the seven MSAs, experienced faster real GDP growth pre-Recession than post-Recession (all MSAs where the CAGR from 01-17 is bolded). The Atlantic City and Vineland MSAs experienced decreases in real GDP post-Recession. Real GDP trends provide a more accurate assessment of production trends in a given area, since growth due to price increases is controlled for.

4.6.4 Total Employment

Employment trends in the study area have been positive in most areas. All MSAs except for Atlantic City have added jobs since 2001 and post-Recession. **Table 4-8** below depicts total employment levels and growth in all study areas.

Table 4-8 Total Employment

Geography	2001	2010	2017	CAGR 01-17	CAGR 10-17
United States	135,925,050	134,374,000	150,442,286	0.6%	1.6%
New Jersey	4,026,497	3,877,791	4,153,962	0.2%	1.0%
Allentown-Bethlehem-Easton, PA-NJ	329,052	334,111	366,570	0.7%	1.3%
Atlantic City-Hammonton, NJ	145,534	137,642	127,323	-0.8%	-1.1%
New York-Newark-Jersey City, NY-NJ-PA	8,327,377	8,249,327	9,231,731	0.6%	1.6%
Ocean City, NJ	41,992	41,923	43,250	0.2%	0.4%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	2,753,618	2,684,990	2,884,927	0.3%	1.0%
Trenton-Princeton, NJ	226,926	236,190	257,823	0.8%	1.3%
Vineland-Bridgeton, NJ	59,986	60,881	61,113	0.1%	0.1%

Source: EMSI

4.6.5 Aviation Employment

Aviation related employment is tied to aviation activity in local areas. For this analysis, all aviation occupation employment was aggregated to analyze trends by geography. All MSAs experienced increases in aviation employment following the 2008 Recession, however, in Allentown, Ocean City, and Trenton employment levels in 2017 were lower than in 2001. Across all of New Jersey, aviation employment increased at a comparable rate to the United States average. **Table 4-9** depicts total aviation employment in each geography.

Table 4-9 Aviation Related Employment

Geography	2001	2010	2017	CAGR 01-17	CAGR 10-17
United States	343,525	292,093	355,052	0.2%	2.8%
New Jersey	9,702	9,312	11,177	0.9%	2.6%
Allentown-Bethlehem-Easton, PA-NJ	271	212	233	-0.9%	1.4%
Atlantic City-Hammonton, NJ	212	163	215	0.1%	4.0%
New York-Newark-Jersey City, NY-NJ-PA	24,262	23,538	29,980	1.3%	3.5%
Ocean City, NJ	56	42	45	-1.4%	1.1%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	4,159	3,927	4,606	0.6%	2.3%
Trenton-Princeton, NJ	110	77	100	-0.6%	3.8%
Vineland-Bridgeton, NJ	45	56	62	2.1%	1.5%

Source: EMSI

4.7 Aviation Demand Forecasts

Aviation demand forecasts were estimated for a total of 42 New Jersey airports. Forecasts were developed for two types of aviation activity:

- General Aviation (forecast for all 42 study airports)
- Commercial (forecast for 3 Scheduled Service study airports)

The 42 study airports were divided into additional groups for the analysis. These groups included:

- NPIAS vs. Non-NPIAS Airports – If the airport is a NPIAS airport, it is a part of the NPIAS group, otherwise it is part of the Non-NPIAS group.
- National, Regional, Local, Basic and Unclassified – Airport roles defined within FAA's ASSET study of general aviation airports. The 24 airports with FAA ASSET roles are all NPIAS airports.
- Corporate, Personal, Commercial, and Unclassified Airports – Airport operations were analyzed to determine what type of aviation activities were generally dominant at the airport. For airports where data was lacking, the airport was labeled Unclassified. Note that this unclassified group of airports does not refer to the airports categorized as

Unclassified by the FAA ASSET study of general aviation airports. Data from the TFMSC was used to classify each airport.

- Advanced Service, Priority General Service, General Service, Basic Service, and Duplicative Basic Service – NJ State service roles assigned to all 42 study airports.
- Geographic group based on MSA the study airport was located in – Each airport inherited the MSA designation of the County it is located in.

Table 4-10 and **Table 4-11** depict all study airports that had forecasts completed, along with the groups that the airport was included in:

Table 4-10 List of NPIAS Study Airports

Airport Code	Airport Name	NPIAS / Non-NPIAS	Type
26N	Ocean City Municipal	NPIAS	Personal
39N	Princeton	NPIAS	Corporate
47N	Central Jersey Regional	NPIAS	Personal
ACY	Atlantic City International	NPIAS	Commercial
BLM	Monmouth Executive	NPIAS	Commercial
CDW	Essex County	NPIAS	Corporate
EWR	Newark Liberty International	NPIAS	Commercial
LDJ	Linden	NPIAS	Corporate
MIV	Millville Municipal	NPIAS	Personal
MJX	Ocean County	NPIAS	Corporate
MMU	Morristown Municipal	NPIAS	Corporate
N07	Lincoln Park	NPIAS	Personal
N51	Solberg-Hunterdon	NPIAS	Corporate
N87	Trenton-Robbinsville	NPIAS	Personal
4N1	Greenwood Lake	NPIAS	Unclassified
N81	Hammonton Municipal	NPIAS	Unclassified
N12	Lakewood	NPIAS	Unclassified
FWN	Sussex	NPIAS	Unclassified
SMQ	Somerset	NPIAS	Corporate
TEB	Teterboro	NPIAS	Corporate
TTN	Trenton-Mercer	NPIAS	Commercial
VAY	South Jersey Regional	NPIAS	Corporate
OBI	Woodbine Municipal	NPIAS	Unclassified
WWD	Cape May County	NPIAS	Corporate

Source: FAA, FAA TFMSC

Table 4-11 List of Non-NPIAS Study Airports

Airport Code	Airport Name	NPIAS / Not NPIAS	Type
12N	Aeroflex-Andover	Non-NPIAS	Unclassified
N85	Alexandria Field	Non-NPIAS	Unclassified
1N7	Blairstown	Non-NPIAS	Personal
00N	Bucks	Non-NPIAS	Unclassified
19N	Camden County	Non-NPIAS	Unclassified
17N	Cross Keys	Non-NPIAS	Unclassified
31E	Eagles Nest	Non-NPIAS	Unclassified
N14	Flying W	Non-NPIAS	Personal
N05	Hackettstown	Non-NPIAS	Unclassified
29N	Kroelinger	Non-NPIAS	Unclassified
2N7	Little Ferry Seaplane Base	Non-NPIAS	Unclassified
3N6	Old Bridge	Non-NPIAS	Personal
2N6	Red Wing	Non-NPIAS	Unclassified
N40	Sky Manor	Non-NPIAS	Personal
C01	Southern Cross	Non-NPIAS	Unclassified
7N7	Spitfire Aerodrome	Non-NPIAS	Unclassified
13N	Trinca	Non-NPIAS	Unclassified
28N	Vineland-Downstown	Non-NPIAS	Unclassified

Source: FAA, FAA TFMSC

The remainder of this chapter contains methodologies and results of each forecast. Whenever possible, forecast values were compared against the FAA's TAF for validation.

4.7.1 General Aviation Forecasts

General aviation is defined as all aviation other than commercial airline and military aviation. General aviation activity in New Jersey consists of a diverse range of activities including pilot training, recreational flying, law enforcement, medical/patient transport, and business aviation.

For GA activities at New Jersey airports, forecasts were created for three metrics:

- GA Based Aircraft (BA)
- GA Operations
- GA Fleet Mix (Forecast at State level)

Methodologies that were tested for each metric along with forecast results are included in the following sections.

4.7.1.1 General Aviation Based Aircraft

BA forecasts were developed for 42 New Jersey airports, of which 24 were NPIAS airports and 18 were Non-NPIAS airports. BA forecasts were intended to reasonably model GA demand for BA at each of the 42 study airports. This section of the document details the methodologies that were tested, and subsequently used, for forecasting BA, as well as the results of the forecast effort.

4.7.1.1.1 Based Aircraft Methodologies

Multiple methodologies for forecasting BA at each airport were tested to determine which method should be used. The methods that were tested included the following, along with the resulting decision on forecast methodology:

- BA Linear Trend – Calculate historic increases in based aircraft by airport. This methodology involved calculating a historic change in BA per year and applying this change in a linear fashion. For example, if airport *A* had a linear increase of 10 over 5 years, this methodology would add two BA to airport *A* every year (since 10/5 = 2). Multiple sets of linear growth rates were tested, including the following:
  - Linear growth from 2010 to 2017
  - Linear growth from 2000 to 2017
  - Linear growth from 2000 to 2007
  - Average of Linear growth from 2000 to 2007 and 2010 to 2017

The linear trend methodology was not used for the forecast due to its inconsistency with the TAF and subsequent analysis linking BA and economic growth. Following the 2008 Recession, BA trends were negatively related to economic growth, a relationship which was considered impractical for long-term forecasting.

- BA Annual Growth Rate – Calculate historic compound growth rates over set periods of time and change BA at this rate by airport. For example, if airport A added BA at a 2 percent growth rate between 2000 and 2017, airport A's starting BA value would increase at a 2 percent growth rate for its forecast. Multiple sets of annual growth rates were tested, including the following:
  - Compound growth between 2010 and 2017
  - Compound growth between 2000 and 2017
  - Compound growth between 2000 and 2007
  - Average of compound growth between 2010 and 2017 and between 2000 and 2017

The annual growth rate methodology was not used for the forecast due to its inconsistency with the TAF and historic BA trends at many New Jersey airports which hindered growth rates.

- Market Share – Calculate the share of the United States BA that New Jersey represented in a prior year and each New Jersey airport's share of the State total. Grow the United States total and allocate shares down to individual airports. For example, if the State represented 2 percent of the United States BA, this share would be allowed to drift at a growth rate over the forecast period. The United States BA would be increased at their TAF or other estimated rate, and the resulting New Jersey share of BA would be allocated to the State in each year. From there, each airport would receive its share of the expected State total. Multiple combinations of this growth rate were tested, including the following:
  - Constant market shares over the forecast period
  - Market shares that were linearly transformed over the forecast period
  - Market shares that were exponentially transformed over the forecast period

The market share methodology was not used for the forecast due to its inconsistency with the TAF and historic BA trend in the State. The New Jersey share of BA was artificially lowered due to recent BA trends.

- Group Growth Rates – Calculate annual growth rates for BA based on airport geography (i.e., the MSA it is located in) and type. Apply the resulting growth rates to all airports that are in the same MSA or of the same type. For example, if airport A is a corporate dominant airport, and the corporate growth rate was 5 percent, airport A's BA would increase at an annual rate of 5 percent. Multiple time periods and sets were tested for this methodology, including the following:
  - Geographic Groups – Group growth rates based on the MSA that the airport is located in
  - Type Groups – Group growth rates based on the type of operations that the airport typically supports
  - Growth rates from 2000 to 2017
  - Growth rates from 2010 to 2017
  - Growth rates from 2000 to 2007

– Average of growth rates from 2000 to 2017 and 2000 to 2007

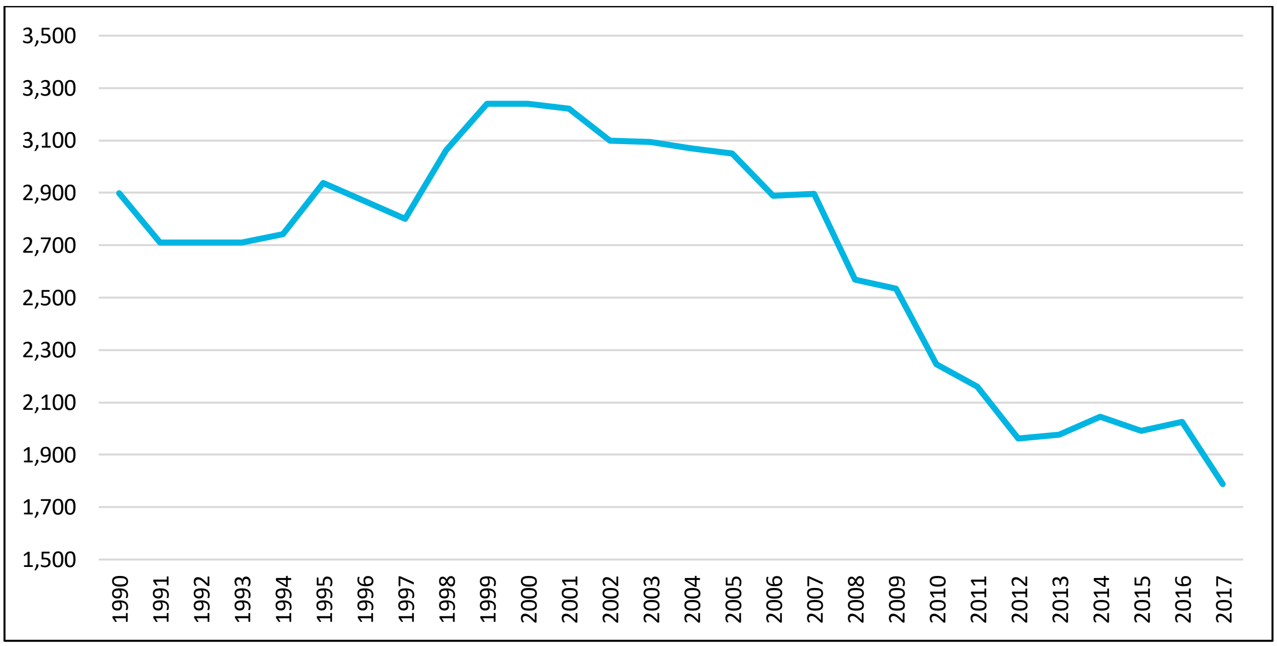
The group growth rates methodology was not used for the forecast due to its inconsistency with the TAF. BA values at smaller airports that were less representative of the group they were included in was a determining factor in dropping this methodology.

- Vector Autoregression (VAR) Models – VAR models were designed to align BA in New Jersey with other socioeconomic variables. Specifically, VAR models that aligned BA with population, GDP, and personal income were designed. For all three models, the resulting growth was found to be inconsistent with the TAF and additionally the results were not statistically significant at a 5 percent level. To conduct this analysis, summary statistics were calculated for BA and the three socioeconomic variables. The summary statistics contributed to the formulation of the GDP Linked Growth methodology.
- GDP Linked Growth – This methodology combined the group growth rate foundation and paired it with GDP growth. A statistical analysis was performed which found that real GDP (i.e., price held constant, or GDP without inflation) is positively correlated with BA growth under expansionary periods. Specifically, GDP growth was correlated to BA growth between 2001 and 2007, prior to the 2008 Recession. With this relationship, BA growth rates were linked to the GDP growth rate of each MSA in New Jersey.

To accommodate recent BA trends and long-term historic links, the average of the annual growth rate and GDP linked growth methodologies was selected for the forecast. The average yielded a result that was generally consistent with the TAF and supported by a larger number of input variables that were deemed significant (i.e., the historic trend and GDP).

4.7.1.1.2 Historical Based Aircraft

For all NPIAS airports in New Jersey, there has been a long-term decrease in BA between 1990 and 2017. **Figure 4-1** below depicts historical BA totals at the 24 NPIAS airports in New Jersey over this period:



Source: FAA TAF

Note – Historic BA Totals for 19 NPIAS Airports in New Jersey only

Figure 4-1 Historical BA Totals – 24 NPIAS Airports in New Jersey

Prior to 2005, BA totals in New Jersey were relatively stable. After 2005, BA decreased at an accelerating rate until 2012 when a recovery of BA began. The negative trend between 2005 and 2012, along with the recent decreases after 2016 contributed to the statistical challenges associated with VAR modelling. Essentially, positive metrics for economic growth exhibited negative, as well as counterintuitive, relationships with BA, which helped identify a more reasonable method for forecasting BA in New Jersey. Historic totals at Non-NPIAS airports were not included in the graphic above since they were not available from the TAF.

4.7.1.1.3 Based Aircraft Forecast

The average of GDP linked growth and annual growth rate forecast methodologies was chosen for forecasting BA at the 42 New Jersey airports included in this study. Specifically, airport by airport forecasts were conducted as follows:

- For NPIAS airports, their historic time series was used to calculate an annual growth rate and subsequent forecasts. This total was averaged with its GDP linked forecast. The 2018, BA total for all airports was determined from 2019 BasedAircraft.com data where available, and FAA 5010 data adjusted to reflect the trends observed at airports where both 2019 Basedaircraft.com data and FAA 5010 data was available. For Non-NPIAS airports, a historic trend calculation was not possible due to gaps in data. As a result, the annual growth rate for these airports was based on the growth rate of the MSA the airport is located in. For example, two Non-NPIAS airports located in the New York MSA would have the same annual growth rate and GDP linked growth rate, since both rates rely on MSA level trends. This type of estimation was required due to lack of consistent historical data.

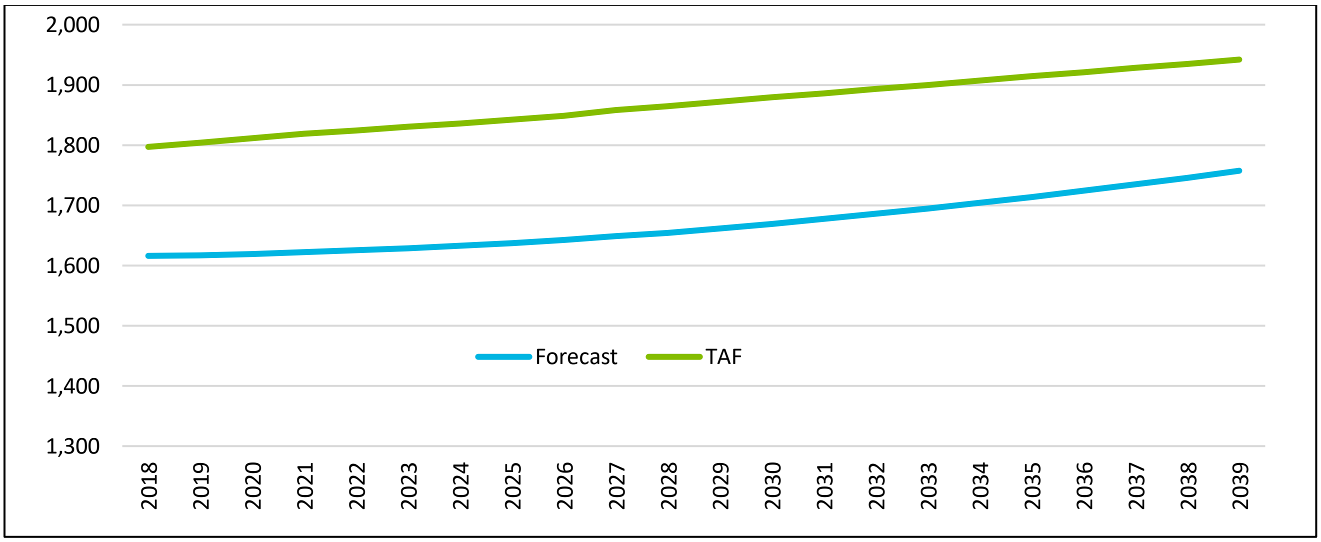
BA forecasts represented the average of a bottom-up forecast approach (the trend analysis) and a top-down approach (MSA GDP growth rates). The forecast gave equal weight to both approaches. **Table 4-12** below depicts 2018 adjusted BA totals, along with 5, 10, 15, and 20-year forecasts at all 42 New Jersey airports included in this report. A 2018-2039 growth rate is also provided to standardize growth across airports.

Table 4-12 BA Forecasts by Airport

Airport Code	Airport Name	NPIAS / Non-NPIAS	2018	2019	2024	2029	2034	2039	CAGR 19-39
12N	Aeroflex-Andover	Non-NPIAS	44	44	45	47	48	49	0.5%
N85	Alexandria Field	Non-NPIAS	85	85	88	90	93	95	0.5%
ACY	Atlantic City International	NPIAS	24	24	23	23	23	24	0.0%
1N7	Blairstown	Non-NPIAS	41	41	41	41	41	41	0.0%
00N	Bucks	Non-NPIAS	17	17	17	17	17	17	0.0%
19N	Camden County	Non-NPIAS	29	29	30	31	31	32	0.5%
WWD	Cape May County	NPIAS	39	39	38	37	37	37	-0.2%
47N	Central Jersey Regional	NPIAS	88	88	88	88	90	92	0.2%
17N	Cross Keys	Non-NPIAS	33	33	34	35	36	37	0.5%
31E	Eagles Nest	Non-NPIAS	40	40	41	42	44	45	0.5%
CDW	Essex County	NPIAS	220	221	228	236	245	254	0.7%
N14	Flying W	Non-NPIAS	102	103	105	108	111	113	0.5%
4N1	Greenwood Lake	NPIAS	34	34	34	35	37	39	0.7%
N05	Hackettstown	Non-NPIAS	21	21	21	21	21	21	0.0%
N81	Hammonton Municipal	NPIAS	10	10	10	10	11	11	0.4%
29N	Kroelinger	Non-NPIAS	4	4	4	4	4	4	0.0%
N12	Lakewood	NPIAS	57	58	61	64	68	72	1.1%
N07	Lincoln Park	NPIAS	93	93	93	93	95	97	0.2%
LDJ	Linden	NPIAS	31	31	33	34	36	38	0.9%
2N7	Little Ferry Seaplane Base	Non-NPIAS	0	0	0	0	0	0	N/A
MIV	Millville Municipal	NPIAS	43	43	41	40	39	38	-0.6%
BLM	Monmouth Executive	NPIAS	46	45	45	45	48	50	0.6%
MMU	Morristown Municipal	NPIAS	167	167	166	167	170	174	0.2%
EWR	Newark Liberty International	NPIAS	10	10	11	11	12	12	0.9%
26N	Ocean City Municipal	NPIAS	14	14	14	15	15	16	0.5%
MJX	Ocean County	NPIAS	71	71	73	75	78	81	0.6%
3N6	Old Bridge	Non-NPIAS	92	92	95	98	100	103	0.5%
39N	Princeton	NPIAS	35	34	34	35	35	37	0.4%
2N6	Red Wing	Non-NPIAS	4	4	4	4	4	4	0.0%
N40	Sky Manor	Non-NPIAS	102	103	105	108	111	114	0.5%
N51	Solberg-Hunterdon	NPIAS	42	42	42	42	43	44	0.3%
SMQ	Somerset	NPIAS	95	95	95	95	97	99	0.2%

Airport Code	Airport Name	NPIAS / Non-NPIAS	2018	2019	2024	2029	2034	2039	CAGR 19-39
VAY	South Jersey Regional	NPIAS	96	96	97	98	101	104	0.4%
C01	Southern Cross	Non-NPIAS	7	7	7	7	7	7	0.0%
7N7	Spitfire Aerodrome	Non-NPIAS	23	23	24	24	25	26	0.5%
FWN	Sussex	NPIAS	32	34	35	37	39	40	0.9%
TEB	Teterboro	NPIAS	138	138	138	139	141	144	0.2%
TTN	Trenton-Mercer	NPIAS	146	147	151	156	161	166	0.6%
N87	Trenton-Robbinsville	NPIAS	32	32	31	31	32	33	0.3%
13N	Trinca	Non-NPIAS	4	4	4	4	4	4	0.0%
28N	Vineland Downstown	Non-NPIAS	21	21	20	20	20	20	-0.2%
OBI	Woodbine Municipal	NPIAS	53	53	53	54	54	55	0.2%

Figure 4-2 below depicts total BA forecasts for all 24 NPIAS airports in New Jersey, plotted against TAF forecasts for the same 24 airports:



Source: FAA TAF, 2019 NJ SASP

Figure 4-2 BA Forecast Comparison with TAF – 24 NPIAS Airports in New Jersey

Table 4-13 below depicts forecast results for all forecast airports, NPIAS airports, and TAF values for NPIAS airports:

Table 4-13 Forecast New Jersey Totals (Airport Sums)

Year	All Forecast Airports	NPIAS Forecast	NPIAS TAF	NPIAS Percent Difference from TAF
2019	2,289	1,617	1,804	10.4%
2024	2,319	1,633	1,836	11.1%
2029	2,362	1,662	1,872	11.2%
2034	2,420	1,704	1,907	10.7%
2039	2,489	1,757	1,942	9.5%
CAGR 19-39	0.42%	0.42%	0.37%	N/A

Forecasts of BA across New Jersey increased at a slightly faster rate than TAF growth rates. The difference in growth rates is offset by a decrease of 181 BA from the 2018 Based Aircraft Survey. When broken down by airport type, BA are expected to increase fastest at corporate and commercial specialized airports. **Table 4-14**, **Table 4-15**, **Table 4-16**, and **Table 4-17** below depict BA forecasts by airport type, ownership, FAA ASSET role, and NJDOT BOA airport service role, respectively.

Table 4-14 BA Forecast New Jersey Totals by Airport Type

Airport Type	2019	2024	2029	2034	2039	CAGR 2019-2039
Personal	608	614	622	633	647	0.3%
Corporate	979	988	1,004	1,029	1,063	0.4%
Commercial	181	185	190	196	202	0.6%
Unclassified	521	532	546	561	577	0.5%

Source: 2019 NJ SASP

Table 4-15 BA Forecast New Jersey Totals by Airport Ownership

Ownership	2019	2024	2029	2034	2039	CAGR 2019-2039
Public	1,150	1,167	1,192	1,224	1,262	0.5%
Private	1,086	1,099	1,117	1,142	1,172	0.4%

Source: 2019 NJ SASP

Table 4-16 BA Forecast New Jersey Totals by Airport Asset Role

ASSET Role	2019	2024	2029	2034	2039	CAGR 2019-2039
Basic	14	14	15	15	16	0.5%
Unclassified	274	275	278	286	297	0.4%
Regional	615	623	635	652	673	0.4%
Local	175	178	184	190	197	0.6%
National	304	304	306	311	318	0.2%

Source: 2019 NJ SASP

Table 4-17 BA Forecast New Jersey Totals by NJDOT BOA Airport Service Role

NJDOT BOA Class	2019	2024	2029	2034	2039	CAGR 2019-2039
Basic Service	146	148	150	152	155	0.3%
General Service	773	789	808	831	857	0.5%
Advanced Service	821	827	838	857	881	0.4%
Scheduled Service	181	185	190	196	202	0.6%
Priority General Service	295	298	303	310	320	0.4%
Duplicative Basic Service	19	19	19	19	19	0.0%

Source: 2019 NJ SASP

4.7.1.2 General Aviation Operations

GA operations forecasts were developed to determine the operations (i.e., takeoffs and landings) that could be expected at each airport in New Jersey. GA operations were forecasted for the same 42 study airports as GA BA. Some airports in the New Jersey system, primarily the airports that provide commercial service, have airport traffic control towers that record aircraft operations by operational category. However, most general aviation airports in New Jersey lack an airport traffic control tower. As a result, historical and current annual general aviation aircraft operations for these airports are based on an estimate using industry accepted methodologies to arrive at an annualized total. This section of the document describes the methodologies that were tested for forecasting GA operations, GA operations trends, and the results of the GA operation forecast process.

4.7.1.2.1 General Aviation Operations Methodologies

Multiple GA operations forecast methodologies were tested to determine which was most appropriate. The methodologies that were tested included the following:

- Trend Analysis – Historical GA operations data at each airport was used as the input that determined future operations at each airport. Specifically, the following input time periods were tested for these methods:
  - Trend from 2000 to 2017
  - Trend from 2010 to 2017
  - Trend from 2001 to 2007

For this methodology, compound growth rates were computed for all GA operations at each airport. These growth rates were applied to start year (2018) values and projected forward. For example, if operations at airport A increased at an annual rate of 2 percent per year between 2010 and 2017, airport A's starting operation total would increase at 2 percent per year.

The trend analysis methodology was not used due to its predicted values variance with the TAF.

- Ordinary Least Squares (OLS) Linear Regression – Linear regression models using OLS assumptions were created, where the dependent variable that was being estimated was GA operations, and socioeconomic variables were tested as independent variables. Linear regression attempts to find an "all else equal" relationship between independent variables and a dependent variable. For example, the output from a linear regression model could be, "for every additional year of education, the earnings of a worker increase by $800, all else equal". The independent variables that were tested included the following:
  - Real GDP by MSA (airport inherited GDP value of its MSA)
  - Population by MSA (airport inherited population value of its MSA)
  - Employment by MSA (airport inherited employment value of its MSA)
  - Personal Income by MSA (airport inherited the personal income value of its MSA)

The linear regression modelling process did not find statistically significant relationships between GA operations at New Jersey airports and the tested explanatory variables. This process was also replicated at the State level, which also yielded no statistically defensible relationship between GA operations and the selected socioeconomic metrics. To reinforce this finding, the GA operations that resulted from the OLS models were found to be inconsistent with the TAF. This methodology was not used due to the weak statistical relationships that were found between the dependent and independent variables, which was reinforced by inconsistency with the TAF.

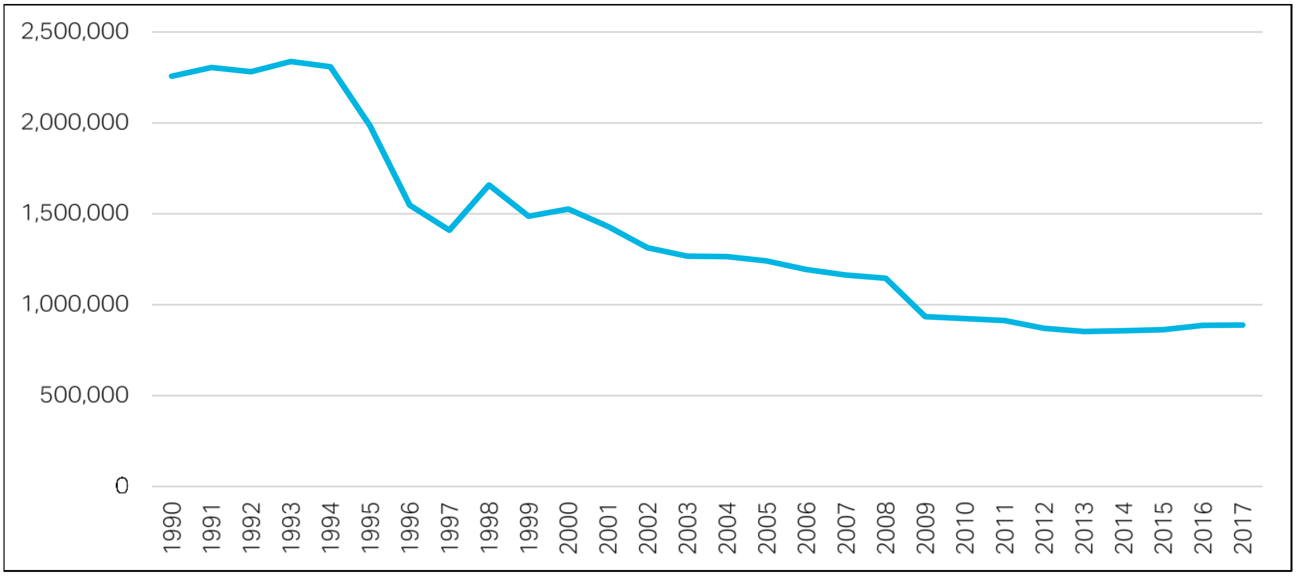
- Operations per BA (OPBA) ratios – The third methodology that was tested was using an operation per BA ratio in conjunction with BA forecasts that were previously produced. An OPBA for an airport is established by dividing total annual general aviation operations by total based aircraft. This methodology was tested in two forms:
  - Estimated future operations per BA ratios – historic ratios were projected forward to determine how many operations should be generated at each airport given BA levels. Ratios were projected through 2039 based on historical operation ratios.
  - FAA ratios from TAF – FAA operation ratios were used for each NPIAS airport through 2039, which would eliminate the error from the TAF for these airports. Similar sized Non-NPIAS airports inherited the average ratio of NPIAS airports (e.g., if a Non-NPIAS airport had 50 BA, it would inherit the average ratio of the NPIAS airports with approximately 50 BA).

The results of each methodology were compared to identify the most reasonable method. The first form was not used due to its significant differences with the TAF at several smaller airports.

After each of the methodologies was tested, their results were validated against the TAF and against the statistical output of the other methodologies. The comparison results led to the selection of the FAA operations per BA ratios being used to forecast future GA operations at each airport. Variances with the TAF were considered too large using trend analysis and estimated operations per BA ratios, and the statistical validity of the OLS models was not considered strong enough to warrant their use.

4.7.1.2.2 Historical General Aviation Operations

Prior to forecasting GA operations at individual airports and at the State level (aggregate), historical operations data was reviewed. **Figure 4-3** below depicts GA operations in New Jersey from 1990 to 2017 for all NPIAS airports:



Source: FAA TAF

Figure 4-3 GA Operations (New Jersey – Sum of NPIAS Airports)

Since 1990, there has been a general decrease in GA operations across New Jersey. Recent trends would suggest that modest growth could be accommodated in the future (operations bottomed in 2013 and have increased each year since then). The strong downward trend of the operations data contributed to the weakness of the trend and OLS methodologies that were tested.

In addition to the overall trend of GA operations, **Table 4-18** below depicts historical GA operations per BA at each New Jersey airport (NPIAS) in 1990 and 2017. GA operations per BA were calculated for all NPIAS airports by dividing total GA operations by BA:

Table 4-18 GA Operations per BA (NPIAS Airports in New Jersey)

Airport Code	Airport Name	Operations per BA				
		1990	2000	2010	2017	CAGR 1990-2017
ACY	Atlantic City International	188.4	762.8	207.2	169.3	-0.4%
WWD	Cape May County	589.3	609.4	616.3	702.3	0.7%
47N	Central Jersey Regional	170.2	171.6	253.1	273.0	1.8%
CDW	Essex County	539.5	624.4	377.6	299.3	-2.2%
4N1	Greenwood Lake	155.7	329.4	262.4	312.1	2.6%
N81	Hammonton Municipal	1,013.6	421.3	512.9	691.3	-1.4%
N12	Lakewood	497.2	306.7	324.0	276.6	-2.1%
N07	Lincoln Park	948.4	306.3	209.3	301.5	-4.2%
LDJ	Linden	1,368.7	543.0	442.5	815.5	-1.9%
MIV	Millville Municipal	1,028.0	398.8	1,111.1	1,764.7	2.0%
BLM	Monmouth Executive	1,001.4	302.1	232.6	817.6	-0.7%
MMU	Morristown Municipal	562.0	765.6	486.1	391.5	-1.3%
EWR	Newark Liberty International	0.0	0.0	0.0	0.0	N/A
26N	Ocean City Municipal	1,833.6	371.5	746.8	1,440.3	-0.9%
MJX	Ocean County	0.0	361.8	444.7	439.2	N/A
39N	Princeton	154.7	314.9	419.4	821.3	6.4%
N51	Solberg-Hunterdon	1,318.2	358.1	302.6	383.7	-4.5%
SMQ	Somerset	N/A	N/A	231.6	294.6	N/A
VAY	South Jersey Regional	0.0	274.0	325.4	242.3	N/A
FWN	Sussex	0.0	223.1	275.1	275.1	N/A
TEB	Teterboro	600.1	726.6	1,190.0	1,638.9	3.8%
TTN	Trenton-Mercer	242.0	429.2	268.7	349.1	1.4%
N87	Trenton-Robbinsville	2,403.9	642.4	539.5	405.1	-6.4%
OBI	Woodbine Municipal	1,347.7	369.3	190.4	217.1	-6.5%

Source: FAA TAF

As indicated in the table above, certain airports experienced significant historical volatility in operations per BA. Airport by airport trends that exhibited significant volatility were the primary justification for not attempting to forecast future operations per BA and instead use TAF ratios which exhibited reasonable growth rates. Historical GA operations at each airport are depicted in **Table 4-19** below:

Table 4-19 GA Operations (NPIAS Airports in New Jersey)

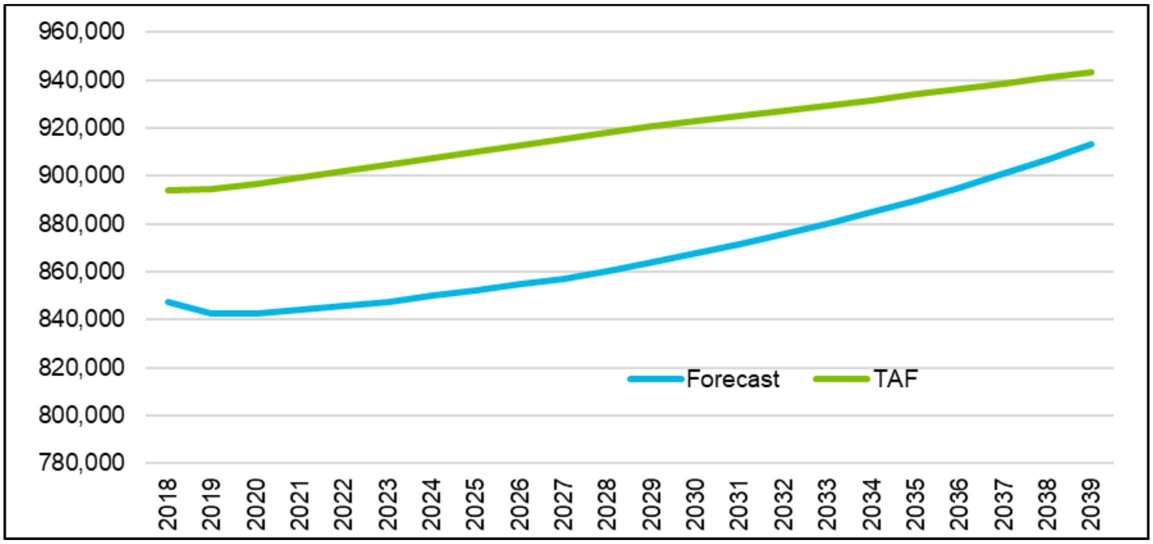
Airport Code	Airport Name	GA Operations				
		1990	2000	2010	2017	CAGR 1990-2017
ACY	Atlantic City International	12,058	29,748	9,944	3,725	-4.3%
WWD	Cape May County	42,433	39,000	30,200	30,200	-1.3%
47N	Central Jersey Regional	41,700	26,599	24,300	24,300	-2.0%
CDW	Essex County	195,834	205,438	76,649	69,441	-3.8%
4N1	Greenwood Lake	8,250	35,244	16,269	18,099	3.0%
N81	Hammonton Municipal	59,800	24,858	15,900	15,900	-4.8%
N12	Lakewood	33,810	25,454	15,226	16,040	-2.7%
N07	Lincoln Park	180,200	56,365	23,022	28,642	-6.6%
LDJ	Linden	192,992	69,499	42,925	50,559	-4.8%
MIV	Millville Municipal	110,000	43,470	60,000	60,000	-2.2%
BLM	Monmouth Executive	244,350	66,152	57,229	57,229	-5.2%
MMU	Morristown Municipal	191,626	268,734	122,990	73,597	-3.5%
EWR	Newark Liberty International	0	0	0	0	N/A
26N	Ocean City Municipal	66,008	18,205	20,164	20,164	-4.3%
MJX	Ocean County	0	37,267	30,687	31,625	N/A
39N	Princeton	23,520	47,871	39,421	39,421	1.9%
N51	Solberg-Hunterdon	87,000	36,173	21,486	21,486	-5.0%
SMQ	Somerset	170,255	7,135	30,339	30,339	-6.2%
VAY	South Jersey Regional	0	53,159	31,234	25,443	N/A
FWN	Sussex	0	34,134	19,257	19,257	N/A
TEB	Teterboro	212,424	270,301	157,076	178,636	-0.6%
TTN	Trenton-Mercer	41,873	71,247	37,077	40,500	-0.1%
N87	Trenton-Robbinsville	307,700	44,329	30,210	21,064	-9.5%
OBI	Woodbine Municipal	35,040	16,250	12,375	12,375	-3.8%

Source: FAA TAF

Since 1990, most NPIAS airports in New Jersey experienced a decrease in GA operations. Two exceptions to this trend are Princeton and Greenwood Lake, which increased its GA operations at a 1.9 percent and 3.0 percent annualized growth rate between 1990 and 2017, respectively. Note that for Princeton and Greenwood Lake, its 2000 GA operation value was higher than its 2017 value.

4.7.1.2.3 General Aviation Operations Forecast

GA operations forecasts were developed for all 42 airports where BA forecasts were made. The same airport types and MSA designations used in BA forecasts were used in the operations forecasts. Forecasts are based on operations per BA ratios described in the GA operations methodologies section of the document. For NPIAS airports, the operations per BA ratio for the specific airport was used. For Non-NPIAS airports, an operations per BA ratio was calculated based on airport size (e.g., airports with 0 to 50 BA had an operations per BA ratio of 150) and applied based on airport BA counts. GA operations forecasts for NPIAS airports are depicted in **Figure 4-4** below, compared against TAF values for GA operations:



Source: FAA TAF, 2019 NJ SASP

Figure 4-4 GA Operations Forecast (NPIAS Airports in New Jersey)

GA operations are a function of BA totals at each airport, as well as the GA operations per BA ratio that was applied. **Table 4-20** below depicts operations per BA ratios that were used for each airport.

Table 4-20 GA Operations per BA Forecast (All New Jersey Airports in Study)

Airport Code	Airport Name	NPIAS / Non-NPIAS	2019	2024	2029	2034	2039	CAGR 19-39
12N	Aeroflex-Andover	Non-NPIAS	33,849.1	34,705.6	37,348.5	38,192.5	39,095.1	0.7%
N85	Alexandria Field	Non-NPIAS	23,677.8	24,313.3	28,965.4	29,742.8	30,541.1	1.3%
ACY	Atlantic City International	NPIAS	103.2	87.9	74.2	64.1	56.5	-3.0%
1N7	Blairstown	Non-NPIAS	31,374.6	31,327.6	32,832.1	32,696.4	32,594.3	0.2%
00N	Bucks	Non-NPIAS	8,746.3	8,659.7	8,581.8	8,525.1	8,481.8	-0.2%
19N	Camden County	Non-NPIAS	22,303.7	22,837.5	24,543.9	25,065.0	25,623.2	0.7%
WWD	Cape May County	NPIAS	702.3	702.3	702.3	702.3	702.3	0.0%
47N	Central Jersey Regional	NPIAS	270.0	270.0	270.0	270.0	270.0	0.0%
17N	Cross Keys	Non-NPIAS	25,380.0	25,987.5	27,929.2	28,522.3	29,157.4	0.7%
31E	Eagles Nest	Non-NPIAS	30,771.9	31,550.5	33,953.2	34,720.4	35,541.0	0.7%
CDW	Essex County	NPIAS	304.0	286.0	266.0	247.8	231.9	-1.3%
N14	Flying W	Non-NPIAS	28,405.8	29,129.3	34,656.6	35,539.3	36,444.5	1.3%
N87	Greenwood Lake	NPIAS	386.9	404.3	414.7	425.5	436.4	0.6%
N05	Hackettstown	Non-NPIAS	10,804.2	10,697.2	10,601.1	10,530.9	10,477.5	-0.2%
4N1	Hammonton Municipal	NPIAS	312.1	312.1	312.1	312.1	312.1	0.0%
29N	Kroelinger	Non-NPIAS	2,057.9	2,037.6	2,019.3	2,005.9	1,995.7	-0.2%
N81	Lakewood	NPIAS	691.3	691.3	691.3	691.3	691.3	0.0%
N07	Lincoln Park	NPIAS	301.5	301.5	301.5	301.5	301.5	0.0%
LDJ	Linden	NPIAS	815.5	815.5	815.5	815.5	815.5	0.0%
2N7	Little Ferry Seaplane Base	Non-NPIAS	0.0	0.0	0.0	0.0	0.0	N/A
MIV	Millville Municipal	NPIAS	1,764.7	1,764.7	1,764.7	1,764.7	1,764.7	0.0%
BLM	Monmouth Executive	NPIAS	817.6	817.6	817.6	817.6	817.6	0.0%
MMU	Morristown Municipal	NPIAS	418.1	416.1	414.7	413.8	413.3	-0.1%
EWR	Newark Liberty International	NPIAS	0.0	0.0	0.0	0.0	0.0	N/A
26N	Ocean City Municipal	NPIAS	1,440.3	1,440.3	1,440.3	1,440.3	1,440.3	0.0%
MJX	Ocean County	NPIAS	453.2	476.7	499.0	499.0	499.0	0.5%
3N6	Old Bridge	Non-NPIAS	25,627.7	26,315.6	31,350.8	32,192.2	33,056.3	1.3%
39N	Princeton	NPIAS	798.1	748.0	707.0	673.1	644.7	-1.1%
2N6	Red Wing	Non-NPIAS	2,057.9	2,037.6	2,019.3	2,005.9	1,995.7	-0.2%
N40	Sky Manor	Non-NPIAS	28,413.4	29,176.0	34,758.5	35,691.4	36,649.4	1.3%
N51	Solberg-Hunterdon	NPIAS	383.7	383.7	383.7	383.7	383.7	0.0%
SMQ	Somerset	NPIAS	294.6	294.6	294.6	294.6	294.6	0.0%
VAY	South Jersey Regional	NPIAS	242.3	242.3	242.3	242.3	242.3	0.0%
C01	Southern Cross	Non-NPIAS	3,601.4	3,565.7	3,533.7	3,510.3	3,492.5	-0.2%
7N7	Spitfire Aerodrome	Non-NPIAS	11,892.9	12,075.0	12,271.3	12,500.6	20,321.8	2.7%
N12	Sussex	NPIAS	276.6	276.6	276.6	276.6	276.6	0.0%
TEB	Teterboro	NPIAS	1,582.5	1,637.4	1,694.6	1,754.0	1,816.0	0.7%
TTN	Trenton-Mercer	NPIAS	375.6	378.4	381.2	384.1	387.0	0.1%
FWN	Trenton-Robbinsville	NPIAS	275.1	275.1	275.1	275.1	275.1	0.0%
13N	Trinca	Non-NPIAS	2,057.9	2,037.6	2,019.3	2,005.9	1,995.7	-0.2%
28N	Vineland Downtown	Non-NPIAS	10,741.8	10,331.9	10,062.7	9,996.1	9,945.4	-0.4%
OBI	Woodbine Municipal	NPIAS	216.5	217.3	225.4	234.0	242.8	0.6%

Source: FAA TAF, 2019 NJ SASP

GA operations forecasts at each airport are depicted in **Table 4-21** below. These values were calculated by applying the GA operations per BA ratio to the BA forecast at each airport:

Table 4-21 GA Operations Forecast (All New Jersey Airports in Study)

Airport Code	Airport Name	NPIAS / Non-NPIAS	2019	2024	2029	2034	2039	CAGR 19-39
12N	Aeroflex-Andover	Non-NPIAS	33,849	34,706	37,349	38,192	39,095	0.7%
N85	Alexandria Field	Non-NPIAS	23,678	24,313	28,965	29,743	30,541	1.3%
ACY	Atlantic City International	NPIAS	2,435	1,944	1,652	1,463	1,319	-3.0%
1N7	Blairstown	Non-NPIAS	31,375	31,328	32,832	32,696	32,594	0.2%
00N	Bucks	Non-NPIAS	8,746	8,660	8,582	8,525	8,482	-0.2%
19N	Camden County	Non-NPIAS	22,304	22,838	24,544	25,065	25,623	0.7%
WWD	Cape May County	NPIAS	27,131	26,599	26,228	26,006	25,926	-0.2%
47N	Central Jersey Regional	NPIAS	23,703	23,705	23,910	24,318	24,927	0.3%
17N	Cross Keys	Non-NPIAS	25,380	25,988	27,929	28,522	29,157	0.7%
31E	Eagles Nest	Non-NPIAS	30,772	31,551	33,953	34,720	35,541	0.7%
CDW	Essex County	NPIAS	66,809	64,858	62,241	60,243	58,766	-0.6%
N14	Flying W	Non-NPIAS	28,406	29,129	34,657	35,539	36,444	1.3%
N87	Greenwood Lake	NPIAS	12,301	12,663	13,103	13,922	14,800	0.9%
N05	Hackettstown	Non-NPIAS	10,804	10,697	10,601	10,531	10,478	-0.2%
4N1	Hammonton Municipal	NPIAS	10,501	10,510	11,039	11,621	12,254	0.8%
29N	Kroelinger	Non-NPIAS	2,058	2,038	2,019	2,006	1,996	-0.2%
N81	Lakewood	NPIAS	6,961	7,085	7,213	7,345	7,482	0.4%
N07	Lincoln Park	NPIAS	27,972	27,974	28,216	28,697	29,417	0.3%
LDJ	Linden	NPIAS	25,720	26,888	28,161	29,547	31,057	0.9%
2N7	Little Ferry Seaplane Base	Non-NPIAS	0	0	0	0	0	N/A
MIV	Millville Municipal	NPIAS	74,727	72,109	69,847	67,909	66,268	-0.6%
BLM	Monmouth Executive	NPIAS	36,387	36,499	37,397	39,459	41,706	0.7%
MMU	Morristown Municipal	NPIAS	69,486	69,194	69,582	70,631	72,348	0.2%
EWR	Newark Liberty International	NPIAS	0	0	0	0	0	N/A
26N	Ocean City Municipal	NPIAS	20,372	20,911	21,478	22,075	22,703	0.5%
MJX	Ocean County	NPIAS	32,101	35,553	37,757	39,036	40,516	1.2%
3N6	Old Bridge	Non-NPIAS	25,628	26,316	31,351	32,192	33,056	1.3%
39N	Princeton	NPIAS	27,042	25,433	24,323	23,617	23,984	-0.6%
2N6	Red Wing	Non-NPIAS	2,058	2,038	2,019	2,006	1,996	-0.2%
N40	Sky Manor	Non-NPIAS	28,413	29,176	34,758	35,691	36,649	1.3%
N51	Solberg-Hunterdon	NPIAS	16,015	16,022	16,166	16,447	17,112	0.3%
SMQ	Somerset	NPIAS	27,916	27,918	28,160	28,639	29,357	0.3%
VAY	South Jersey Regional	NPIAS	23,286	23,500	23,937	24,603	25,503	0.5%
C01	Southern Cross	Non-NPIAS	3,601	3,566	3,534	3,510	3,493	-0.2%
7N7	Spitfire Aerodrome	Non-NPIAS	11,893	12,075	12,271	12,501	20,322	2.7%
N12	Sussex	NPIAS	16,095	16,969	17,911	18,927	20,022	1.1%
TEB	Teterboro	NPIAS	219,350	226,986	236,954	249,461	264,764	0.9%
TTN	Trenton-Mercer	NPIAS	55,573	57,705	59,975	62,385	64,951	0.8%
FWN	Trenton-Robbinsville	NPIAS	9,369	9,776	10,219	10,702	11,228	0.9%
13N	Trinca	Non-NPIAS	2,058	2,038	2,019	2,006	1,996	-0.2%
28N	Vineland Downstown	Non-NPIAS	10,742	10,332	10,063	9,996	9,945	-0.4%
OBI	Woodbine Municipal	NPIAS	11,576	11,667	12,192	12,770	13,405	0.7%

Source: 2019 NJ SASP

Table 4-22 below depicts GA operations forecasts compared against the TAF GA operations over the same period:

Table 4-22 GA Operations Forecast Comparison with TAF

Time	All Forecast Airports	NPIAS Forecast	NPIAS TAF	NPIAS Percent Difference from TAF
2019	1,144,544	842,780	894,258	5.8%
2024	1,156,738	849,953	907,190	6.3%
2029	1,201,483	864,036	920,534	6.1%
2034	1,228,291	884,848	931,651	5.0%
2039	1,270,626	913,217	943,213	3.2%
CAGR 19-39	0.52%	0.40%	0.27%	N/A

Source: FAA TAF, 2019 NJ SASP

GA operations at NPIAS airports appear mostly consistent with TAF values over the entire forecast period, as expected due to using TAF ratios to derive operations. Variance for aggregated totals ranged between 3 percent and 6 percent for all forecast years. Notably, the annualized growth rate over the entire forecast period is slightly higher in the 2019 SASP than the TAF estimates (0.40 percent compared to 0.28 percent from the TAF for NPIAS airports).

When broken down by airport type, airports that are predominantly corporate are expected to represent most GA operations throughout the forecast period. Predominantly commercial airports are expected to add GA operations at the fastest rate over the forecast period, however these airports represent a smaller share of operations than average. **Table 4-23**, **Table 4-24**, **Table 4-25,** and **Table 4-26** below depict GA operations forecasts across New Jersey by airport type, ownership, FAA ASSET role, and NJDOT BOA airport service role, respectively.

Table 4-23 GA Operations Forecast New Jersey Totals by Airport Type

Airport Type	2019	2024	2029	2034	2039	CAGR 2019-2039
Personal	273,398	273,625	290,181	292,900	296,556	0.4%
Corporate	571,440	577,371	588,204	603,891	625,869	0.46%
Commercial	57,613	59,295	61,207	63,388	65,770	0.7%
Unclassified	242,093	246,447	261,891	268,112	282,430	0.8%

Source: 2019 NJ SASP

Table 4-24 GA Operations Forecast New Jersey Totals by Airport Ownership

Ownership	2019	2024	2029	2034	2039	CAGR 2019-2039
Public	685,779	695,094	710,512	727,574	750,008	0.4%
Private	447,283	450,076	478,889	488,068	507,344	0.6%

Source: 2019 NJ SASP

Table 4-25 GA Operations Forecast New Jersey Totals by Airport Asset Role

Asset Role	2019	2024	2029	2034	2039	CAGR 2019-2039
National	287,713	294,478	304,216	317,113	333,418	0.7%
Regional	206,053	206,030	206,598	206,959	208,909	0.1%
Local	134,170	133,599	134,002	135,068	136,693	0.1%
Basic	20,267	20,801	21,362	21,953	22,575	0.5%
Unclassified	125,481	124,182	124,569	127,717	132,578	0.3%

Source: 2019 NJ SASP

Table 4-26 GA Operations Forecast New Jersey Totals by NJDOT BOA Airport Service Role

NJDOT BOA Class	2019	2024	2029	2034	2039	CAGR 2019-2039
Scheduled Service	57,613	59,295	61,207	63,388	65,770	0.7%
Advanced Service	557,167	561,018	569,059	581,358	598,635	0.4%
Priority General Service	118,178	120,037	123,933	127,195	131,372	0.5%
General Service	283,617	287,109	313,110	319,909	335,898	0.8%
Basic Service	106,713	108,033	112,500	114,263	116,198	0.4%
Duplicative Basic Service	9,775	9,678	9,591	9,528	9,480	-0.2%

Source: 2019 NJ SASP

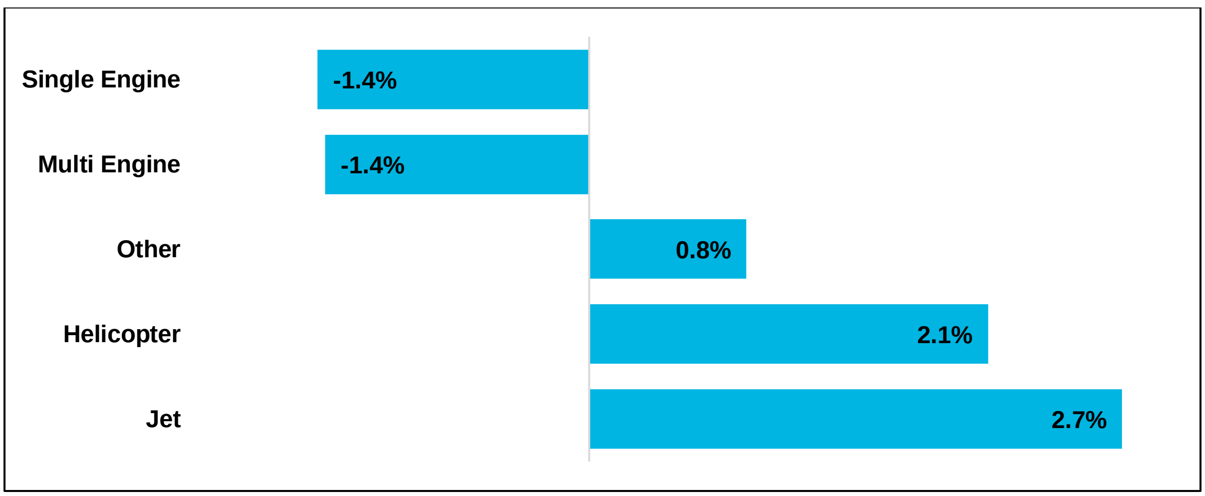
4.7.1.3 General Aviation Fleet Mix

The fleet mix forecast projects the number of based aircraft by aircraft category. GA fleet mix forecasts were developed in aggregate for the 42 study airports. Fleet mix forecasts used five categories of aircraft:

- Single-Engine Piston
- Multi-Engine Piston
- Helicopters
- Jets
- Other GA Aircraft

4.7.1.3.1 General Aviation Fleet Mix Methodologies

GA fleet mix forecasts were based on a 2018 starting distribution of aircraft by type (from the 2018 Adjustment of Based Aircraft.com and FAA Form 5010s by airport) and were adjusted based on expected growth of aircraft by type from the FAA's Aerospace Forecast. **Figure 4-5** below depicts the growth rates that were expected for each type of aircraft identified in the study:



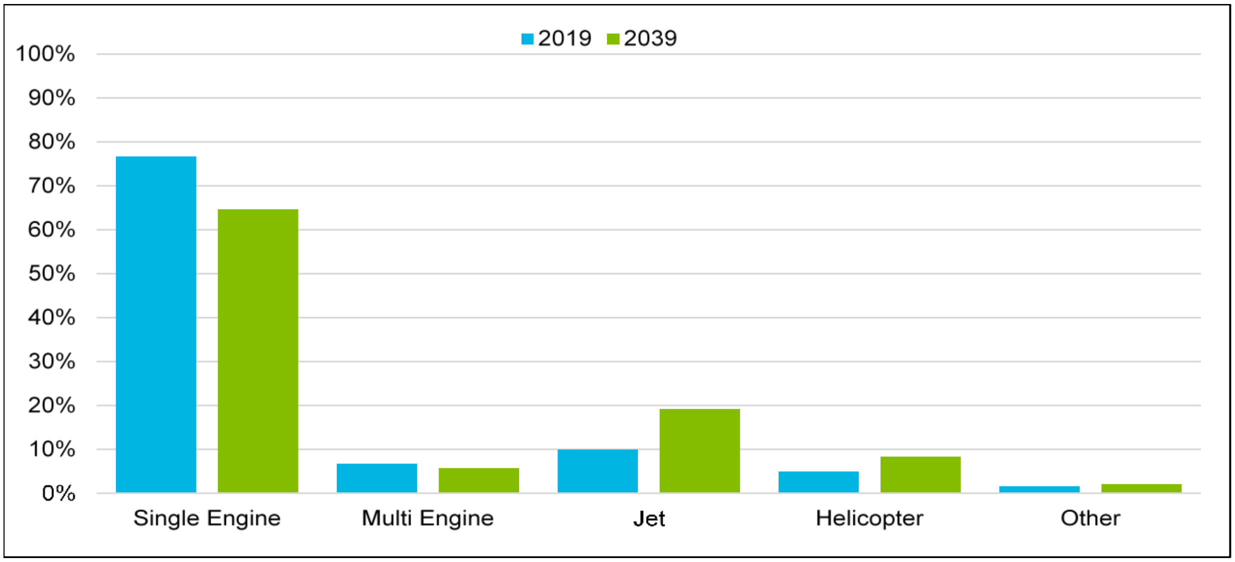
Source: FAA Aerospace Forecast

Figure 4-5 Annual Growth of Aircraft by Type (2019-2039)

Based on FAA Aerospace Forecasts, jet and helicopter aircraft are expected to increase faster than single and multi-engine piston aircraft. The growth rates identified in the graphic above were used for the forecast of GA fleet mix.

4.7.1.3.2 General Aviation Fleet Mix Forecast

Forecasts for GA fleet mix yielded the following results depicted in **Figure 4-6**, aggregated across all 42 study airports.



Source: 2019 NJ SASP

Figure 4-6 GA Fleet Mix Percent Share of Total (All 42 New Jersey Airports – 2019 & 2039)

New Jersey's GA fleet mix is expected to remain dominated by single-engine piston aircraft between 2019 and 2039 (60-80 percent of the fleet mix in all years). However, forecasts for single-engine piston aircraft in New Jersey suggest that these aircraft could represent 12 percent less of the total fleet. In contrast, jet aircraft are expected to gain 9 percent of fleet mix share between 2019 and 2039 (growing from 10 percent to 19 percent). Due to their small starting share, multi-engine piston aircraft are only expected to represent 1 percent less of New Jersey's fleet between 2019 and 2039 (shrinking from 7 percent to 6 percent). Helicopters are expected to gain 3 percent of fleet mix share, growing from 5 percent to 8 percent.

4.7.2 Commercial Aviation Forecasts

Commercial activity includes activity by scheduled and charter commercial passenger airlines. The specific types of activity included in the commercial forecasts are enplaned passengers and commercial passenger aircraft operations.

Commercial aviation forecasts in New Jersey were created for the three airports in New Jersey that provide commercial service airports:

- Newark Liberty International (EWR)
- Atlantic City International (ACY)
- Trenton-Mercer (TTN)

For each commercial service airport, forecasts were developed for future enplanements (i.e., people embarking and disembarking on a commercial flight) and commercial operations (i.e., take-offs and landings).

4.7.2.1 Commercial Enplanements

4.7.2.1.1 Commercial Enplanement Methodologies

Multiple commercial enplanement methodologies were tested and compared to determine which methodology would yield the most reasonable and seemingly accurate forecast results. The methods that were tested include the following:

- Trend analysis – Historic trends in commercial enplanements for each of the three airports were analyzed. Historic growth rates were applied to the most recent enplanement values. For example, if airport *A*'s commercial enplanements increased at an annual rate of 3 percent between 2010 and 2017, the 3 percent growth rate would be applied to the 2018 enplanement value and projected forward. This methodology was not used due to its variance with TAF enplanement values.
- GDP Linked Growth – Similar to BA forecasts, correlation between real GDP and commercial enplanements was calculated, and it was determined that a positive relationship did exist between commercial enplanements and real GDP, but this relationship was strongest between 2001 and 2007 (i.e., in non-Recession years). Regression models were developed where the enplanements at each MSA served as the dependent variable and real GDP at each MSA was the independent variable. The regression models did find that GDP has a statistically significant

relationship with enplanements. Working from this starting point, the following GDP linked forecast methods were tested:

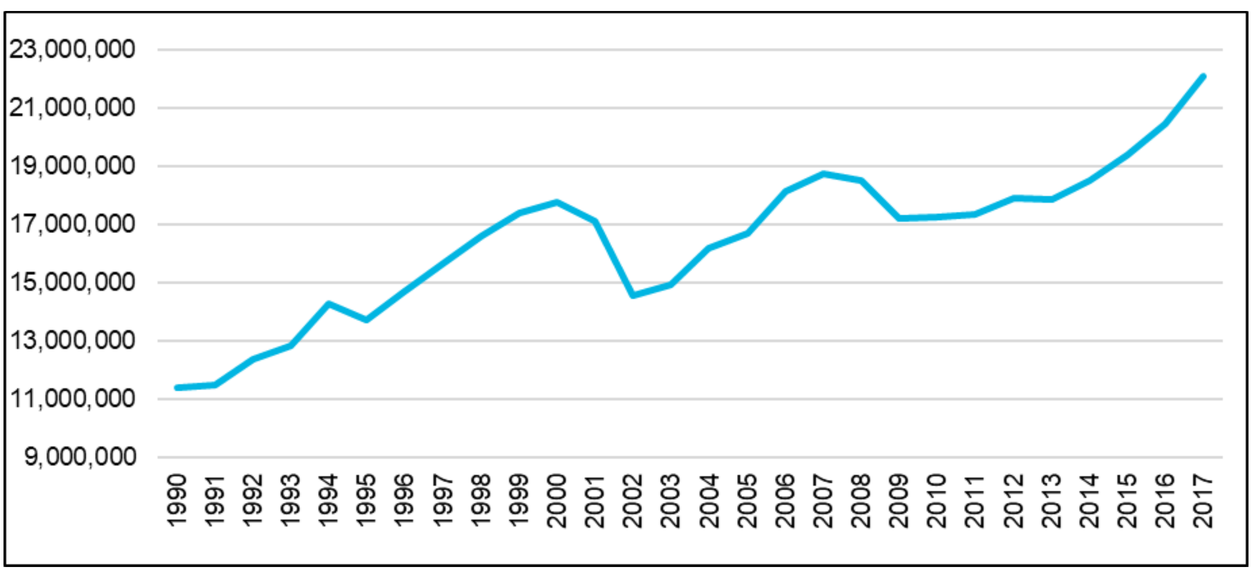
– OLS model – A linear regression model with enplanements as the dependent variable and real GDP as the independent variable was created. This method was not used due to its high variance with TAF enplanement values.

– GDP Growth Rate – Percentage changes year-over-year between 2001 and 2007 were compared with enplanement percentage changes year-over-year. The analysis found that real GDP and enplanement changes are positively correlated with each other. With the relationship confirmed, real GDP growth rates by MSA were applied to starting enplanement values in 2018. This methodology yielded a result which underestimated TAF enplanements. To compensate for this, a variable related to the price of enplanements (i.e., the price of air travel) was introduced. Jet fuel price was considered, however since data was not readily available at the MSA level, this variable was not used. Instead, the ratio of real GDP to enplanements was calculated, and trends in the ratio were analyzed between 2001 and 2017. In aggregate, the trend for the ratio closely mirrored jet fuel trends and was viewed as a reasonable proxy for the cost of air travel by MSA. For all MSAs that had a commercial service airport, the GDP to enplanement trend was negative (i.e., decrease in fuel prices), which increased the expected growth of commercial enplanements. As a result, the GDP growth rate methodology, enhanced by GDP to enplanement trends, yielded a result that was more consistent with the TAF than previous OLS models at Newark and Trenton airports. For Atlantic City International, both pre and post-Recession GDP trends were used for the forecast due to MSA level GDP trends. Specifically, Atlantic City's GDP as of 2017 was lower than its GDP in 2009. As a result, an average of pre and post-Recession trends was used for Atlantic City International's enplanement forecast. This also produced a forecast total more consistent with the TAF.

For all three commercial service airports in New Jersey, GDP linked commercial enplanement forecasts were produced. Trenton and Newark both used pre-Recession GDP trends for their enplanement forecast, while Atlantic City used an average of pre-Recession and post-Recession trends. This methodology was chosen based on reasonableness and for its higher consistency with the TAF than other enplanement forecast methodologies.

4.7.2.1.2 Historical Commercial Enplanement

Across New Jersey's three commercial service airports, commercial enplanements increased at an annual rate of 2.5 percent between 1990 and 2017. Over 95 percent of all commercial enplanements at the three commercial service airports were located at Newark in each year between 1990 and 2017. Enplanement growth does have a statistical relationship with GDP growth, with clear decreases in enplanement levels during contractionary economic periods. **Figure 4-7** below depicts commercial enplanements at New Jersey's three commercial service airports between 1990 and 2017. Trenton experienced the fastest annual growth rate of the three commercial service airports (14.2 percent growth in enplanements annually), while Atlantic City grew at a slower than average rate (1.3 percent).



Source: FAA TAF

Figure 4-7 Historical Commercial Enplanements (3 Commercial Service Airports in New Jersey)

4.7.2.1.3 Commercial Enplanement Forecast

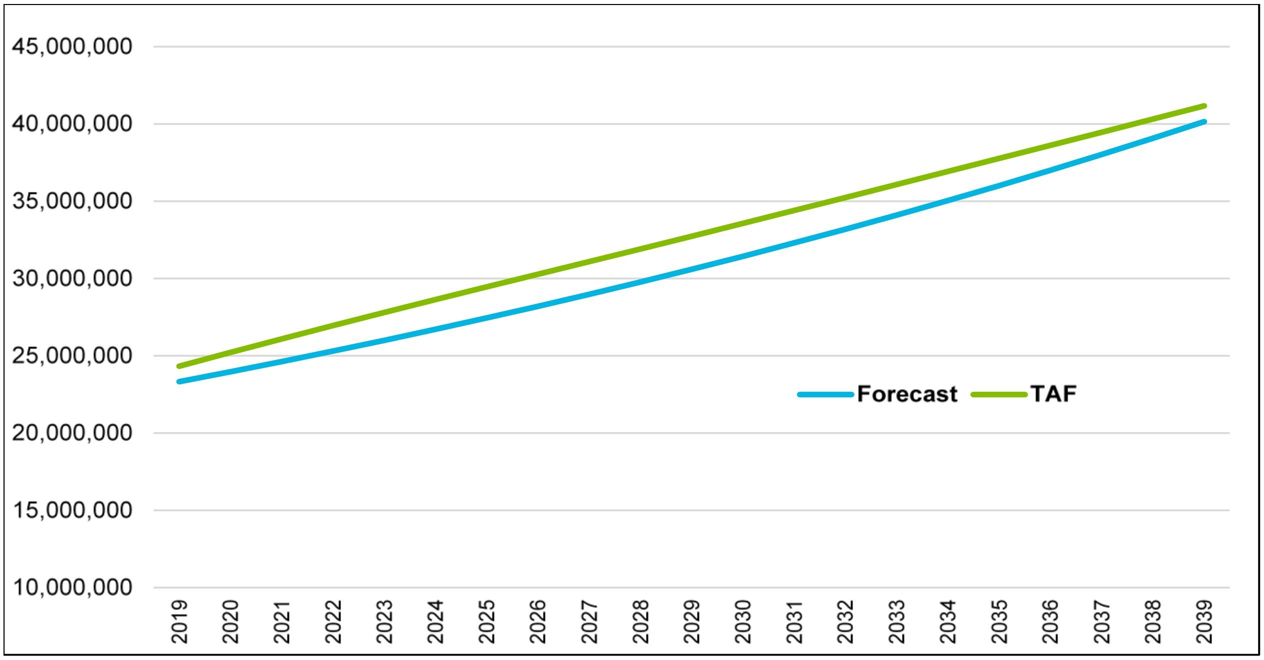
GDP based methodologies were chosen for commercial enplanement forecasts at all of New Jersey's commercial service airports. The results of the forecast for each airport are depicted in **Table 4-27** below:

Table 4-27 Commercial Enplanement Forecast (3 Commercial Service Airports in New Jersey)

Airport Code	Airport Name	2019	2024	2029	2034	2039	CAGR 19-39
ACY	Atlantic City International	548,669	584,712	623,122	664,055	707,677	1.3%
EWR	Newark Liberty International	22,419,797	25,730,610	29,530,342	33,891,194	38,896,029	2.8%
TTN	Trenton-Mercer	361,891	400,519	443,270	490,584	542,948	2.0%

Source: 2019 NJ SASP

Figure 4-8 below depicts forecasts of commercial enplanements at all three commercial service airports relative to TAF values. For all years, forecast estimates were within a 7 percent variance to the TAF:



Source: FAA TAF

Figure 4-8 Commercial Enplanement Forecast (Three Commercial Service Airports in New Jersey) & TAF Values

Commercial enplanements are expected to increase across all three commercial service airports in New Jersey in accordance with national trends and TAF estimates. Based on the selected forecast methodology, enplanement trends mirror GDP trends, therefore long-term GDP growth would be associated with long-term enplanement growth.

4.7.2.2 Commercial Operations

4.7.2.2.1 Commercial Operations Methodologies

Multiple methodologies were tested for estimating future commercial operation demand at New Jersey's three commercial service airports. Specifically, the methodologies that were tested included:

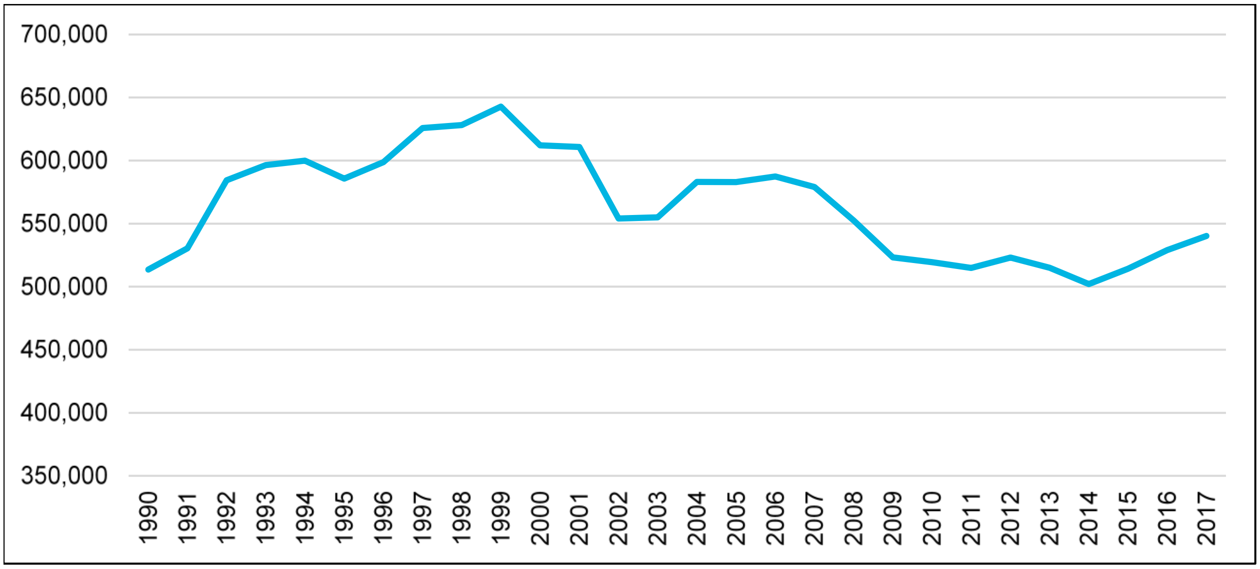
- Trend analysis – Historic trends in commercial operations for each of the three airports were analyzed. Historic growth rates were applied to the most recent operation values. For example, if airport A's commercial enplanements increased at an annual rate of 3 percent between 2010 and 2017, the 3 percent growth rate would be applied to the 2018 enplanement value and projected forward. This methodology was dismissed due to its inconsistency with TAF estimates.
- Linear Regression (OLS) – OLS regression models were tested with commercial operations as the dependent variable. Independent variables that were included in the model included based aircraft, MSA GDP, and enplanements. This methodology was not used due to its inconsistency with TAF estimates.

- Enplanements per Operation Ratios – Enplanements per operation ratios were extracted from the TAF and applied to forecast enplanement values by airport. This methodology was chosen due to its comparatively low variance with the TAF and its uniformity across airports.

After a review of methodologies, the TAF enplanements per operation ratio was used for each airport to estimate future commercial operations.

4.7.2.2.2 Historical Commercial Operations

Across New Jersey's three commercial service airports, the total number of commercial operations has increased since 1990. However, between 1990 and 2017, commercial operations peaked in 1999 at 643,000 and have not reached this level since. **Figure 4-9** below depicts historic commercial operations at New Jersey's three commercial service airports between 1990 and 2017:



Source: FAA TAF

Figure 4-9 Historical Commercial Operations (3 Commercial Service Airports in New Jersey)

Notably, between 1990 and 2017 the total number of commercial operations at Trenton and Atlantic City decreased. Over the same time period the total number of commercial enplanements at both airports increased, indicative of an increase in passengers per operation.

4.7.2.2.3 Commercial Operations Forecast

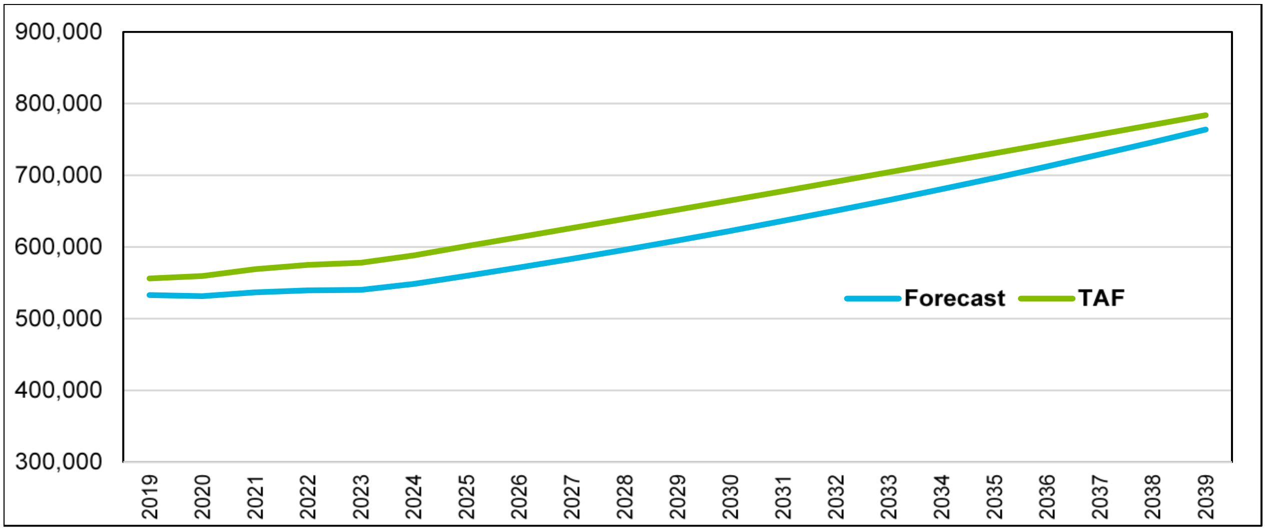
The results of the forecast process using the enplanements per operation ratios are depicted in **Table 4-28** below. All three commercial service airports are expected to increase their commercial operations based on the selected methodology:

Table 4-28 Commercial Operations Forecasts (3 Commercial Service Airports in New Jersey) by Airport

Airport Code	Airport Name	2019	2024	2029	2034	2039	CAGR 19-39
ACY	Atlantic City International	39,179	39,008	39,918	41,477	43,595	0.5%
EWR	Newark Liberty International	437,807	453,988	512,596	580,504	658,934	2.1%
TTN	Trenton-Mercer	55,885	55,445	56,586	58,579	61,364	0.5%

Source: 2019 NJ SASP

Figure 4-10 below depicts the aggregate commercial operation forecast for New Jersey's three commercial service airports against TAF commercial operation values:



Source: 2019 NJ SASP, TAF

Figure 4-10 Commercial Operations: Forecast Values & TAF

4.7.3 Summary

Analysis conducted for the aviation demand forecast finds that New Jersey's economy has increased since 2010, although growth has been slightly lower than the United States average. Growth has been driven by both increases in population and GDP. New Jersey is aging slightly more quickly than the United States average and all the MSAs that are located partially or completely within New Jersey have a higher median age than the United States average, which could have an impact on aviation demand moving forward.

Table 4-29 below depicts results of the aviation demand forecast process by metric for all airports included in the analysis (42 airports for GA based aircraft and operations, three airports for commercial enplanements and operations):

Table 4-29 Summary of NJ Aviation Demand Forecasts

Metric	2019	2024	2029	2034	2039	CAGR 2019-2039
Based Aircraft	2,289	2,319	2,362	2,420	2,489	0.4%
GA Operations	1,144,544	1,156,738	1,201,483	1,228,291	1,270,626	0.5%
Commercial Enplanements	23,330,357	26,715,840	30,596,733	35,045,833	40,146,655	2.8%
Commercial Operations	532,871	548,441	609,100	680,560	763,894	1.8%

Source: 2019 NJ SASP

Over the entire forecast period, aviation demand is expected to increase for all selected metrics. Commercial aviation activity is expected to increase more rapidly than general aviation activity, driven in part by increasing global GDP. Historical TAF data would suggest that the number of commercial enplanements that could be handled by each commercial operation has increased in recent years, which contributed to the slower growth of commercial operations than enplanements.

For general aviation, based aircraft demand is expected to increase most rapidly at General and Scheduled Service airports (NJDOT BOA Airport Service Role) and at commercial focused airports. GA operations are expected to increase most rapidly at the same airport groups, as well as at airports with a national asset role (FAA Airport Asset Role Group).

Between 2010 and 2017, general aviation activity has decreased across New Jersey. These recent trends contributed significantly to the lower growth rate for general aviation demand than commercial aviation demand. These forecasts can assist in gauging future airport needs across New Jersey.

5 FACILITY REQUIREMENTS ANALYSIS

The 2022 NJ SASP established objectives to enable airports to best fulfil their assigned role in the state airport system. Roles for all study airports were identified in **Chapter 3 Airport Roles**. Facility and service objectives apply to airports in each of these six role categories:

- Scheduled Service
- Advanced Service
- Priority General Aviation
- General Service
- Basic Service/Duplicative Basic Service
- Specialty Facilities

Facility and service objectives are based on a combination of state, industry, technology, and regulatory trends and requirements. Facility and service adequacies and deficiencies identified in this chapter provide the foundation for final system recommendations, as well as for recommendations for individual study airports.

It is worth noting that system plan facility objectives reflect the minimum level of development that is considered desirable at each airport. It is possible that the recommendations from local airport master planning efforts could result in additional or different improvements other than those identified through the system plan. It is also possible that airport-specific conditions may justify development that exceeds an airport's objectives identified in the state airport system plan. As discussed in **Chapter 3 Airport Roles**, there are 22 privately-owned airports included in the state airport system. The state recognizes that these airports are not required to meet Federal Aviation Administration (FAA) regulatory requirements and state guidelines unless they have accepted federal and/or state funding grants. However, in order to maintain a robust, safe, and efficient airport system, it is recommended that these airports meet the performance objectives shown in **Table 5-1**. Little Ferry Seaplane Base is the only facility included in the Specialty Facilities role category and its objectives mirror the objectives for Basic Service/Duplicative Basic Service in **Table 5-1**.

It is noted that Trinca (13N) closed in September 2020. At the time of the completion of this chapter, Trinca (13N) was open as a public-use airport and was included in the facility requirements analysis.

A summary of airport performance objectives for New Jersey airports, by role, is presented in **Table 5-1**.

Chapter 5 Facility Requirements Analysis analyzes and summarizes existing airside facilities, landside/apron facilities, and services at the 42 study airports. Data for these facilities are presented in **Chapter 1 Inventory**. Tables that contain detailed analysis of each facility and service objective can be found in **Appendix E**. The following sections are included in this chapter:

5.1 Airside Facilities

5.2 Landside/Apron Facilities

5.3 Services

5.4 Airport Maintenance

5.5 Safety Compliance

5.6 Planning

5.7 Security

5.8 Community Engagement

5.9 Summary

This chapter was prepared prior to the COVID-19 pandemic. Airport needs may have changed and may need to be re-evaluated in the future.

Table 5-1 Airport Performance Objectives by Airport Role

<table>
<tr><th>Facility Items</th><th>Scheduled Service</th><th>Advanced Service</th><th>Priority General Service</th><th>General Service</th><th>Basic Service/ Duplicative Basic Service*</th></tr>
<tr><td colspan="6">Airside Facilities</td></tr>
<tr><td>Airport Reference Code</td><td>C-III</td><td>C-II or greater</td><td>B-II or greater</td><td>B-I or greater</td><td>B-I small or less</td></tr>
<tr><td>Airfield Capacity</td><td colspan="5">Below 80 percent of calculated ASV</td></tr>
<tr><td>Runway Length</td><td>6,000'</td><td>5,000'</td><td>4,000’</td><td>3,500'</td><td>2,200' or greater</td></tr>
<tr><td>Runway Width</td><td>150'</td><td>100'</td><td>75’</td><td colspan="2">At least 60'</td></tr>
<tr><td>Runway Strength</td><td>Dual-wheel landing gear 60,000 lbs</td><td>Single-wheel landing gear 30,000 lbs</td><td>Single-wheel landing gear 30,000 lbs</td><td>12,500 lbs</td><td>Up to 12,500 lbs</td></tr>
<tr><td>Taxiway Type</td><td>Full parallel</td><td>Full parallel for primary runway</td><td>Full parallel for primary runway</td><td>Full parallel, partial parallel, connectors or turnarounds</td><td>Preserve existing</td></tr>
<tr><td>Approach Type</td><td>CAT II Precision approach</td><td>Precision approach or, approach with vertical guidance (e.g., LPV, LAAS/VNAV)</td><td colspan="2">Non-precision approach</td><td>Visual</td></tr>
<tr><td>Airfield Lighting</td><td>ALSF I, HIRL, CL, TDZ, MITL</td><td>HIRL, MITL</td><td>MIRL, MITL</td><td>MIRL[1], taxiway lighting/ reflectors</td><td>LIRL[1]</td></tr>
<tr><td>Visual Aid</td><td>Rotating beacon, lighted wind cone, VGSI</td><td>Rotating beacon, lighted wind cone, segmented circle, REILs, VGSI</td><td>Rotating beacon, lighted wind cone, segmented circle, REILS, VGSI</td><td>Rotating beacon, lighted wind cone[1], segmented circle, REILS, VGSI</td><td>Lighted wind cone[1]</td></tr>
<tr><td>Runway Lighting Separation</td><td colspan="5">200’ between lights</td></tr>
<tr><td>Weather Equipment</td><td colspan="3">FAA-Certified ASOS/AWOS</td><td colspan="2">Not Required</td></tr>
<tr><td colspan="6">Landside/Apron Facilities</td></tr>
<tr><td>Hangar Space</td><td>Hangars available for 75 percent of based aircraft</td><td>Hangars available for 75 percent of based aircraft</td><td>Hangars available for 50 percent of based aircraft</td><td>Hangars available for 50 percent of based aircraft</td><td>Preserve existing</td></tr>
<tr><td>Apron Space</td><td colspan="2">Apron spaces available for 25 percent of based aircraft</td><td colspan="2">Apron spaces available for 50 percent of based aircraft</td><td>Preserve existing</td></tr>
<tr><td>Auto Parking</td><td>Minimum 100 parking spaces per 100,000 enplanements as per FAA 150/5360-13</td><td colspan="2">1 space per based aircraft + additional 50 percent for employee/visitors</td><td>1 space per based aircraft + additional 25 percent for employee/visitors</td><td>1 space per based aircraft</td></tr>
<tr><td>Terminal Building</td><td>As identified in Master Plan</td><td>Terminal building recommended. Estimated peak hour operations * a factor of 2.5 people * sq footage per person = terminal sq footage</td><td colspan="3">Preserve existing</td></tr>
<tr><td>Airport Access Road</td><td colspan="5">Paved road</td></tr>
<tr><td colspan="6">Services</td></tr>
<tr><td>Fixed Base Operator</td><td colspan="3">Full service FBO (more than two services provided)</td><td>Limited service FBO (two or less services provided)</td><td>Preserve existing</td></tr>
<tr><td>Fuel</td><td colspan="3">24-7 Jet A and Avgas (100LL)</td><td>24-7 Avgas (100LL)</td><td>Avgas (100LL)</td></tr>
<tr><td>Aircraft Maintenance</td><td colspan="2">On-site major aircraft maintenance</td><td colspan="2">On-site minor aircraft maintenance</td><td>Preserve existing</td></tr>
<tr><td>Aircraft Rental Service</td><td>Not an objective</td><td colspan="4">Available</td></tr>
<tr><td>Charter Service</td><td colspan="4">Available</td><td>Not an objective</td></tr>
<tr><td>Pilot Training</td><td colspan="2">Not an objective</td><td>Full-time</td><td colspan="2">Part-time</td></tr>
<tr><td>Ground Transportation</td><td colspan="4">Available</td><td>Not an objective</td></tr>
<tr><td>Public Transit Facility</td><td colspan="2">Accessibility to public transit within a 0.5-mile radius of the airport or on-airport shuttle service available</td><td colspan="3">Not an objective</td></tr>
<tr><td>Public-Use Restroom</td><td colspan="5">Available</td></tr>
<tr><td>Food Service</td><td colspan="4">Restaurant, food/beverage vending machines, or catering services available</td><td>Not an objective</td></tr>
</table>

Facility Items	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/ Duplicative Basic Service*
Public-Use Wi-Fi	Available				
Utilities	Electricity, water, sewer				
Airport Maintenance					
Runway Pavements	Pavements to be maintained at a PCI of 70 or higher for the primary runway				
Safety Compliance					
Runway Safety Area	Maintain appropriate dimensions and grading to meet FAA Standards for the primary runway				
Runway Protection Zone (RPZ)	No incompatible land uses in the RPZ per FAA standards for the primary runway				
RPZ Ownership	Airport recommended to own 100 percent of the RPZ for the primary runway				
Approach Surfaces	Mitigated 20:1 approach surfaces				
Planning					
Master Plan	Less than 5 years old	Less than 10 years old			
Airport Layout Plan	Less than 5 years old with pen and ink changes as appropriate	Less than 10 years old with pen and ink changes as appropriate			
Airport Investment	Airport has invested money in the airport in the last 10 years				
Future Development	Airport has at least one project planned				
Security					
Perimeter Fence	Meet TSA Requirements	Preserve existing			
Electronic Gate Access System	Meet TSA Requirements	Preserve existing			
CCTV Security Camera System	Meet TSA Requirements	Preserve existing			
Community Engagement					
Community Event	Annual air show, fly in, 5K run or other public event conducted				
Marketing Strategy	Plan in place		No objective		
Educational Institution	Relationship with educational institution established				

(*)Duplicative Basic Service Airports provide duplicative coverage to other study airports and have the same facility requirements as Basic Service Airports. Specialty Facilities mirror these objectives, where applicable.

(1) Only airports with night-time operations are required to have runway or airfield lighting.

5.1 Airside Facilities

Airside facility planning is largely driven by criteria and standards developed by the Federal Aviation Administration (FAA) that emphasize safety and efficiency, while protecting federal investment in airport transportation infrastructure. The following airside facilities play a significant role in determining the ability of New Jersey airports to support system needs.

- Airport Reference Code (ARC)
- Airfield Capacity
- Runway Length
- Runway Width
- Runway Strength
- Taxiway Type
- Approach Type
- Airfield Lighting
- Visual Aids
- Runway Lighting Separation
- Weather Equipment

5.1.1 Airport Reference Code (ARC)

Airports included in the FAA's NPIAS are encouraged by the FAA to meet all applicable federal design and development standards. In its advisory circulars, the FAA provides specific guidance on which safety-related standards and dimensional requirements are applicable to airports in the federal system. Each airport's individual design standards are based on the most demanding aircraft that operates at the airport on a regular basis (minimum of 500 operations per year). This aircraft is known as the airport's critical aircraft.

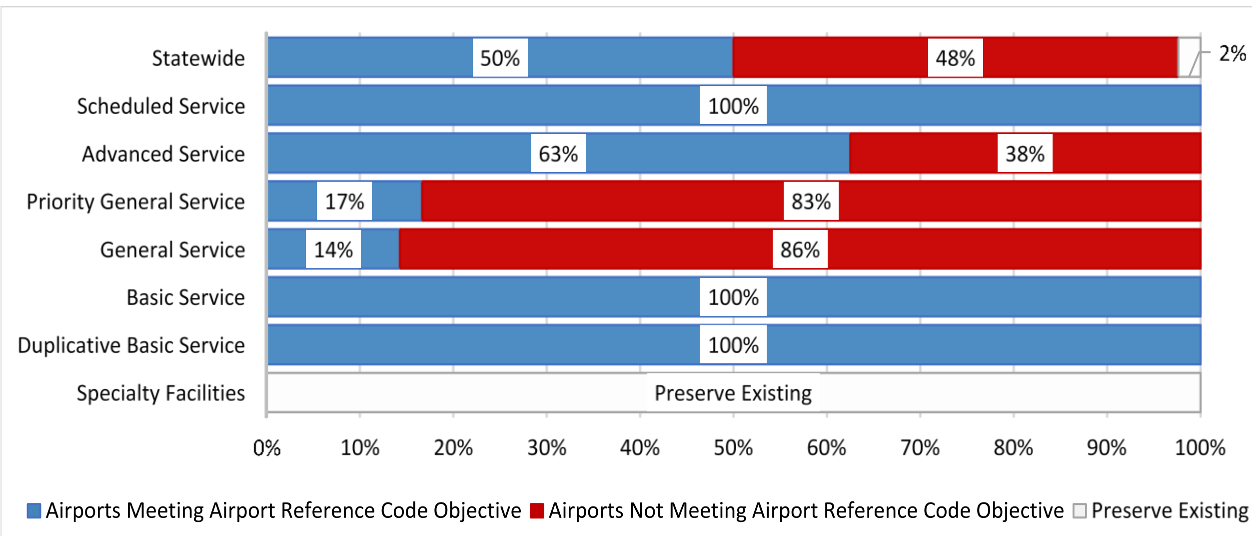
Once an airport's critical aircraft is established, during the development of an airport master plan or airport layout plan (ALP), applicable design standards related to runways and taxiways are identified. Each airport's design standards are related to the approach speed (aircraft approach category or AAC), wingspan, and tail height (airplane design group or ADG) of its critical aircraft. Within FAA's planning guidelines, these parameters are used to determine each ARC, which signifies the airport's highest runway design code (RDC) minus the visibility component. Airport master plans and associated ALPs are the appropriate forum for determining an airport's ARC and then investigating if the airport is able to achieve the dimensional and design setback requirements needed for that ARC.

The following ARC objectives apply to New Jersey airports:

- Scheduled Service: C-III
- Advanced Service: C-II or greater
- Priority General Service: B-II or greater
- General Service: B-I or greater
- Basic Service/Duplicative Basic Service: B-I small or less

A review of the ARC at each study airport is presented in Appendix E-Table 1. Some airports exceed their ARC objective. For ARCs for each airport, see Appendix C Table 3 or Airside Facilities in **Chapter 1 Inventory**.

It is important to note if an airport has undertaken planning studies during this system plan, the airport's ARC may have changed. As shown **Figure 5-1**, 50 percent of New Jersey study airports meet their ARC objective.



Source: Airport Survey Questionnaires, NJDOT BOA, FAA TFMSC.

Figure 5-1 Percentage of Airports by Role that Meet Their ARC Objective

The airports below do not meet the system plan's ARC objective for their recommended role. The objective for Little Ferry Seaplane Base (Specialty Facilities role category) is to maintain its existing standards. Future master plans for these airports should consider changing the airport's ARC if demand warrants. It is important to note that sufficient demand by a critical aircraft is needed to justify a more demanding ARC. Also, when airport's ARC is upgraded, there may be significant changes to an airport's layout and its facility dimensions and separations that are required to support an upgraded ARC. Implications and costs to upgrade an airport's ARC can only be determined through an airport master plan. Airport specific projects and costs to achieve applicable ARC objectives are not estimated as part of the system plan.

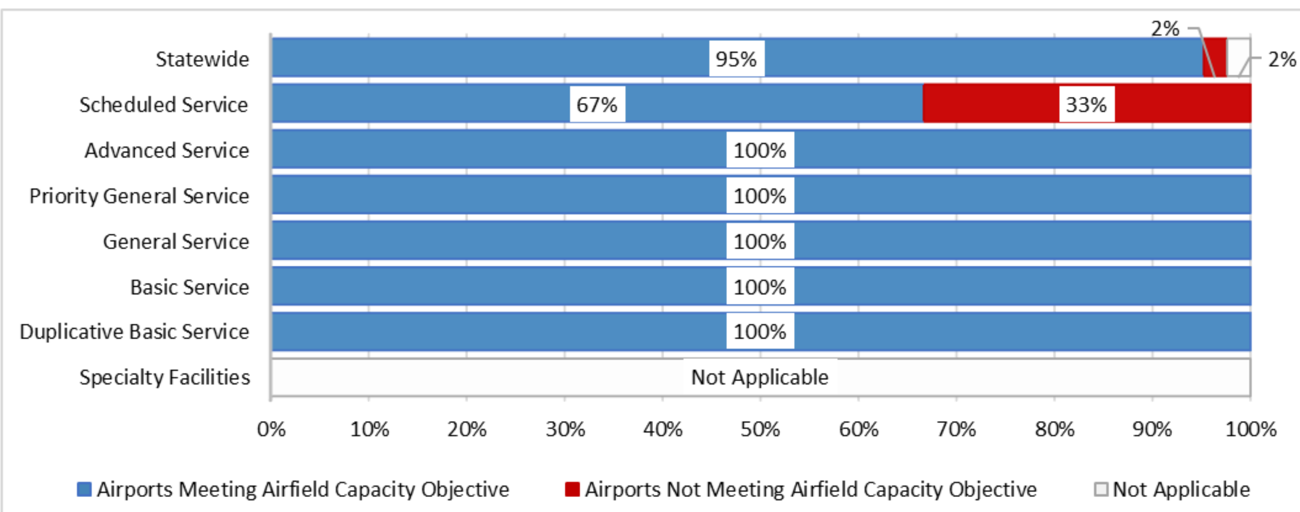
Advanced Service	**Priority General Service**	**General Service**	
Cape May County	Central Jersey Regional	Alexandria Field	Sky Manor
Essex County	Lincoln Park	Eagles Nest	Somerset
Millville Municipal	Linden	Flying W	Spitfire Aerodrome
Ocean County	Solberg-Hunterdon	Greenwood Lake	Sussex
	South Jersey Regional	Lakewood	Trenton-Robbinsville
		Old Bridge	

5.1.2 Airfield Capacity

Air travel is chosen as a transportation mode because of the timesaving that it offers. When aircraft encounter operational delays because of insufficient operational capacity, efficiencies gained through air transportation are diminished. In addition, when aircraft are forced to idle on the ground or circle in the air as a result of inadequate operational capacity, the likelihood of negative environmental impacts increases.

The airfield capacity objective for all New Jersey study airports is to remain below 80 percent of their calculation annual service volume (ASV). An analysis of the current airfield capacity for each airport is presented in **Appendix E-Table 2**. FAA Advisory Circular 150/5060-5, Airport Capacity & Delay, was used to estimate the ASV for each airport. A mix index of 0-20 was assumed for all general aviation airports. An ASV of 230,000 is based on a single runway configuration. In the case of capacity constraints, a second runway was considered for ASV calculations.

As shown in **Figure 5-2**, 95 percent of study airports meet the airfield capacity objective for their respective role. Newark Liberty International is the only airport that currently is operating above 80 percent of its calculated ASV; and therefore, this airport should be planning for capacity improvements or identifying management strategies. There is not an established objective for the Specialty Facilities role category (Little Ferry Seaplane Base).



Source: Airport Survey Questionnaires, NJDOT BOA, FAA TFMSC, FAA AC 150/5060-5.

Figure 5-2 Percentage of Airports by Role that Meet Their Airfield Capacity Objective

As described above, only one airport in the system does not currently meet the airfield capacity objective, shown below:

Scheduled Service

Newark Liberty International

5.1.3 Runway Length

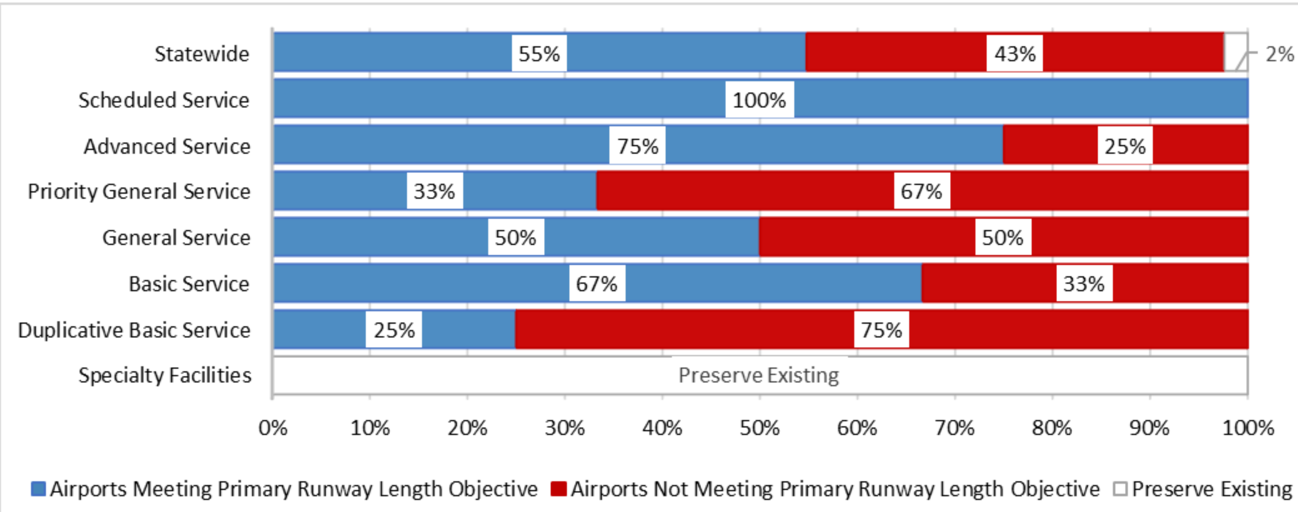
Adequate runways are key components for airports being able to fulfil their designated role in the state airport system. Runway objectives are based loosely on FAA runway length requirements for various types of planes. Actual runway length requirements are best identified through the master planning process, as lengths are determined by the critical aircraft operating at each airport.

Runway length objectives set by the system plan provide general guidance to all airports as it relates to accommodating the types of planes and users they most frequently serve. It is possible that some airports, based on local need and justification, will exceed their runway length and width objectives. System plan runway objectives are considered the minimum desirable length at each airport, based on the airport's assigned system role.

The following runway length objectives apply to New Jersey airports:

- Scheduled Service: 6,000 ft
- Advanced Service: 5,000 ft
- Priority General Service: 4,000 ft
- General Service: 3,500 ft
- Basic Service/Duplicative Basic Service: 2,200 ft or greater

A review of the primary runway lengths at each study airport is presented in **Appendix E-Table 3**. As noted in that table, some airports now exceed their minimum runway length objective. As shown in **Figure 5-3**, 55 percent of New Jersey study airports meet or exceed the length objective for their primary runway. The largest deficiencies occur in the Priority General Service, General Service, and Duplicative Basic Service roles.



Source: Airport Survey Questionnaires, NJDOT BOA, FAA.

Figure 5-3 Percentage of Airports by Role that Meet Their Runway Length Objective

The airports below do not meet the runway length objective for their system role.

Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service
Essex County	Central Jersey Regional	Alexandria Field	Aeroflex-Andover	Kroelinger
Hammonton Municipal	Cross Keys	Blairstown	Bucks	Red Wing
	Lincoln Park	Lakewood		Trinca
	South Jersey Regional	Sky Manor		
		Somerset		
		Spitfire Aerodrome		
		Woodbine Municipal		

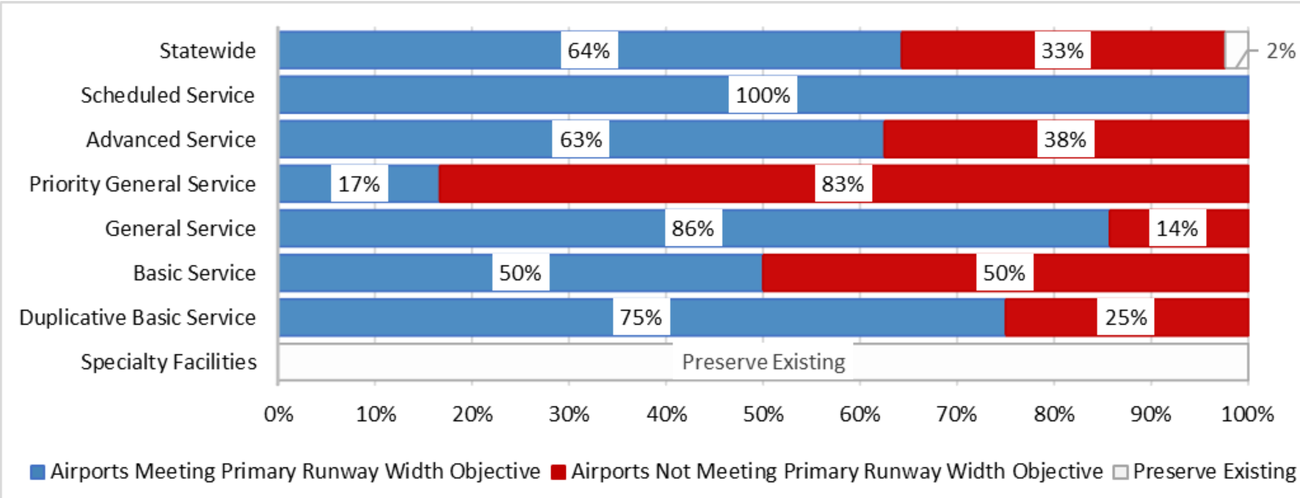
5.1.4 Runway Width

Runway width is another important component of each airport's airfield facility objectives. New Jersey's objectives for runway width are determined based on FAA design standards. Runway width objectives, as established for airports in New Jersey, include:

- Scheduled Service: 150 ft
- Advanced Service: 100 ft

- Priority General Service: 75 ft
- General Service & Basic Service/Duplicative Basic Service: At least 60 ft

Appendix E-Table 4 presents each airport's ability to meet its primary runway width objective. As shown in **Figure 5-4**, 64 percent of airports meet the runway width objectives for their respective role in the state system.



Source: Airport Survey Questionnaires, NJDOT BOA, FAA.

Figure 5-4 Percentage of Airports by Role that Meet Their Runway Width Objective

The following study airports do not meet their primary runway width objective:

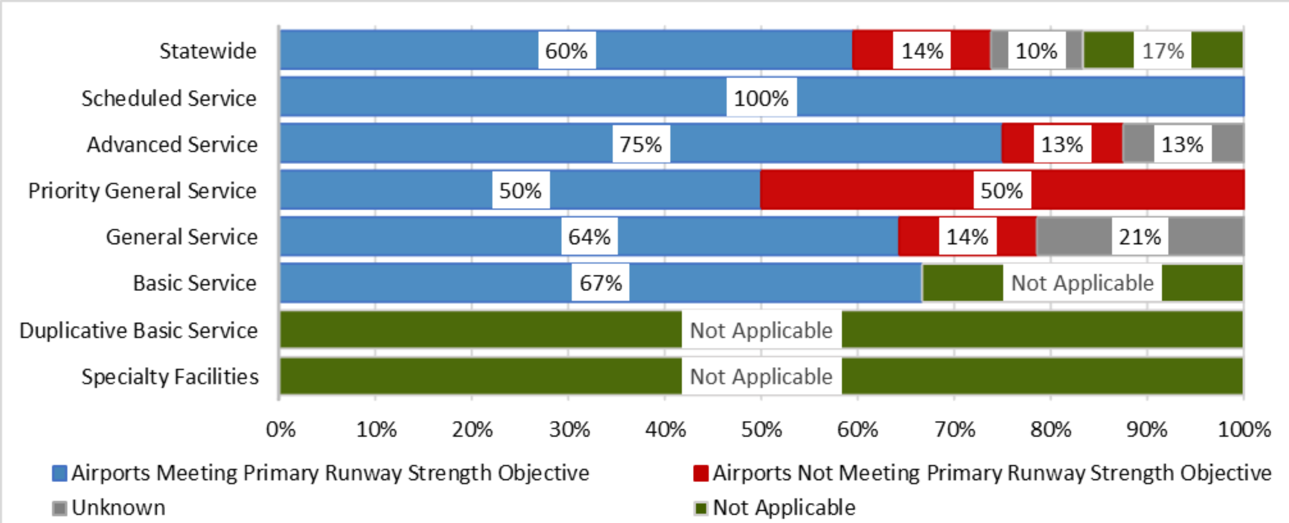
<u>**Advanced Service**</u>	<u>**Priority General Service**</u>	<u>**General Service**</u>	<u>**Basic Service**</u>	<u>**Duplicative Basic Service**</u>
Essex County	Central Jersey Regional	Old Bridge	Aeroflex-Andover	Red Wing
Hammonton Municipal	Cross Keys	Sky Manor	Camden County	
Monmouth Executive	Lincoln Park		Hackettstown	
	Solberg-Hunterdon			
	South Jersey Regional			

5.1.5 Runway Strength

The strength of runway pavement determines the weight of aircraft that may operate on a regular basis on a specific runway. Runway pavements are designed to sustain continuous aircraft operations up to the published weight bearing capacity; however, runways are capable of supporting infrequent aircraft operations in excess of their published pavement strength. Runway strengthening, in most cases, depending upon the condition and structure of the existing runway, can be accomplished by a runway overlay. The runway pavement strength is classified according to aircraft landing gear configuration and can either be single wheel landing gear (SW) or dual wheel landing gear (DW). Runway strength is presented as the landing gear gross weight strength in thousands of pounds. Runway strength is not applicable to airports with turf and water runways. The following objectives were incorporated into the NJ SASP for runway strength by airport role:

- Scheduled Service: Dual-wheel landing gear 60,000 lbs
- Advanced Service and Priority General Service: Single-wheel landing gear 30,000 lbs
- General Service: 12,500 lbs
- Basic Service/Duplicative Basic Service: Up to 12,500 lbs

The primary runway strength for each airport is presented in **Appendix E-Table 5**. As shown in **Figure 5-5,** 60 percent of study airports meet the primary runway strength objective for their respective role. During the data collection effort, four airports (Monmouth Executive, Sussex, Alexandria Field, and Flying W) did not provide pavement strength data, therefore, it is unknown if they meet their respective role objectives. It is important to note that this objective is not applicable to seven airports that have unpaved (turf or water) primary runways.



Source: Airport Survey Questionnaires, NJDOT BOA, FAA.

Figure 5-5 Percentage of Airports by Role that Meet Their Runway Strength Objective

To fully comply with system plan objectives, the following airports should be considered for projects that would increase the load bearing strength of their primary runway (airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective):

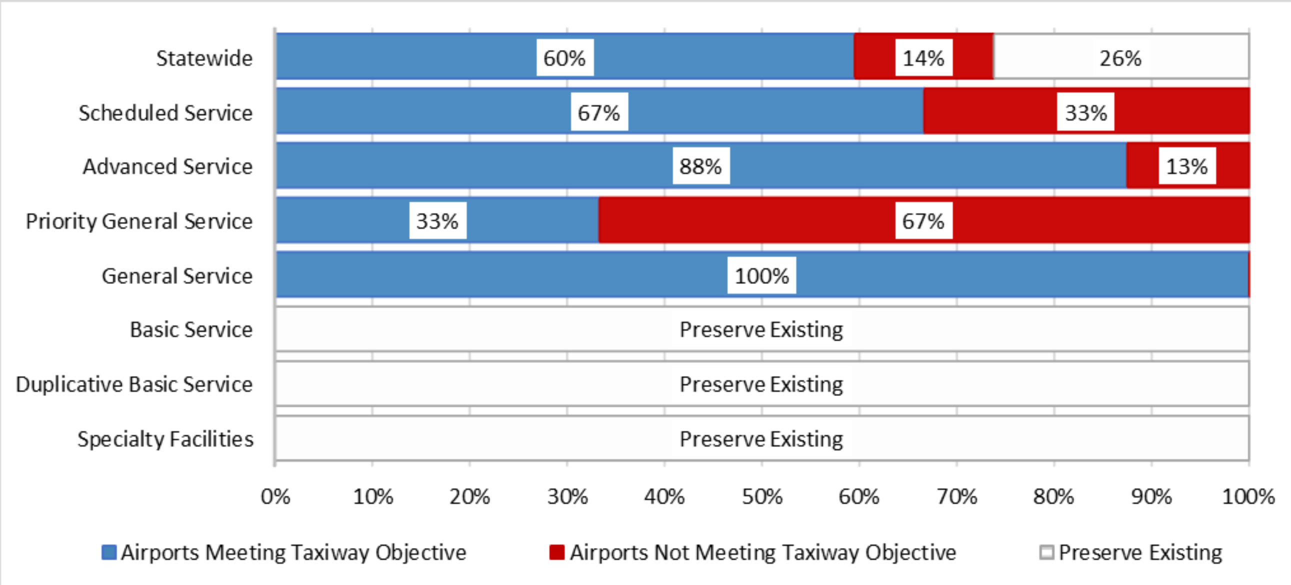
Advanced Service	Priority General Service	General Service
Hammonton Municipal	Cross Keys	Alexandria Field
Monmouth Executive	Lincoln Park	Eagles Nest
	Solberg-Hunterdon	*Flying W*
		Sky Manor
		Sussex

5.1.6 Taxiway Type

Taxiways facilitate aircraft movement to and from the runway system, allowing for safer operations and increased operational efficiency. Taxiways become extremely important as activity increases and more efficient use of the airfield is required. Taxiway exits permit aircraft to clear the runway quickly after landing and significantly increase runway capacity. Taxiways are also recommended to support certain types of instrument approaches. The following taxiway objectives, by role, apply to the New Jersey airports:

- Scheduled Service: Full parallel taxiway
- Advanced Service and Priority General Service: Full parallel taxiway for primary runway
- General Service: Full parallel, partial parallel, connectors, or turnarounds
- Basic Service/Duplicative Basic Service: Preserve existing

As presented in **Appendix E-Table 6** and summarized in **Figure 5-6**, 60 percent of study airports meet their respective objective for taxiway type.



Source: Airport Survey Questionnaires, NJDOT BOA, FAA.

Figure 5-6 Percentage of Airports by Role that Meet Their Taxiway Objective

The airports shown below do not currently meet their taxiway system objective.

Scheduled Service	Advanced Service	Priority General Service
Trenton Mercer	Monmouth Executive	Central Jersey Regional
		Lincoln Park
		Solberg-Hunterdon
		South Jersey Regional

5.1.7 Approach Type

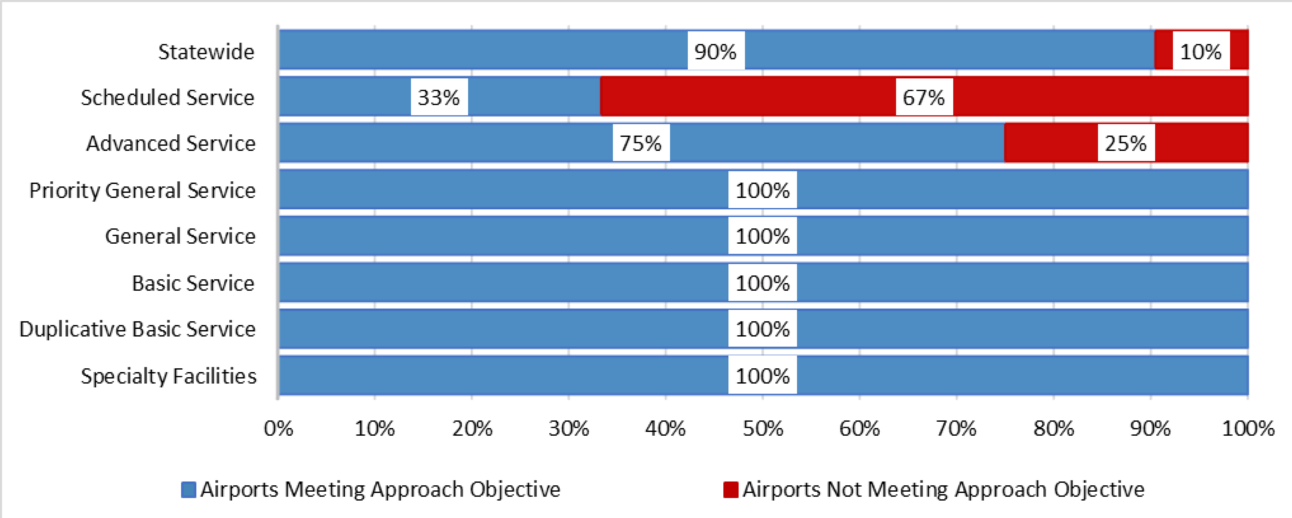
An instrument approach improves airport air access and operational efficiency and helps improve safety during a wide variety of meteorological conditions. Historically, most flight procedures have been based on land-based navigational aids requiring considerable investment for equipment and maintenance. Land-based approach equipment includes: ILS, VORs, and Non-Directional Beacons (NDBs).

In the last decade, many of the approaches using land-based equipment have been replaced with satellite-based approaches that utilize GPS. GPS procedures accommodate precision-like approaches without requiring additional land-based navigation equipment at the airport. Area Navigation (RNAV) GPS approaches offer improved accuracy and lower approach minimums without land-based equipment. LPV or LAAS/VNAV are the most popular RNAV GPS approaches and can enable a pilot to fly down to decision heights as low as 200 feet. LPV minimums offer improved accuracy with WAAS and provide both lateral and vertical guidance.

The approach objectives for study airports are as follows:

- Scheduled Service: CAT II Precision approach
- Advanced Service: Precision approach or approach with vertical guidance (e.g., LPV, LAAS/VNAV)
- Priority General Service and General Service: Non-precision approach
- Basic Service/Duplicative Basic Service: Visual approach

As shown in **Appendix E-Table 7** and **Figure 5-7**, 90 percent of airports meet their approach objectives.



Source: Airport Survey Questionnaires, FAA Digital Chart Supplements.

Figure 5-7 Percentage of Airports by Role that Meet Their Approach Objective

The airports shown below do not currently meet their approach objective.

Scheduled Service	**Advanced Service**
Atlantic City International	Hammonton Municipal
Trenton Mercer	Monmouth Executive

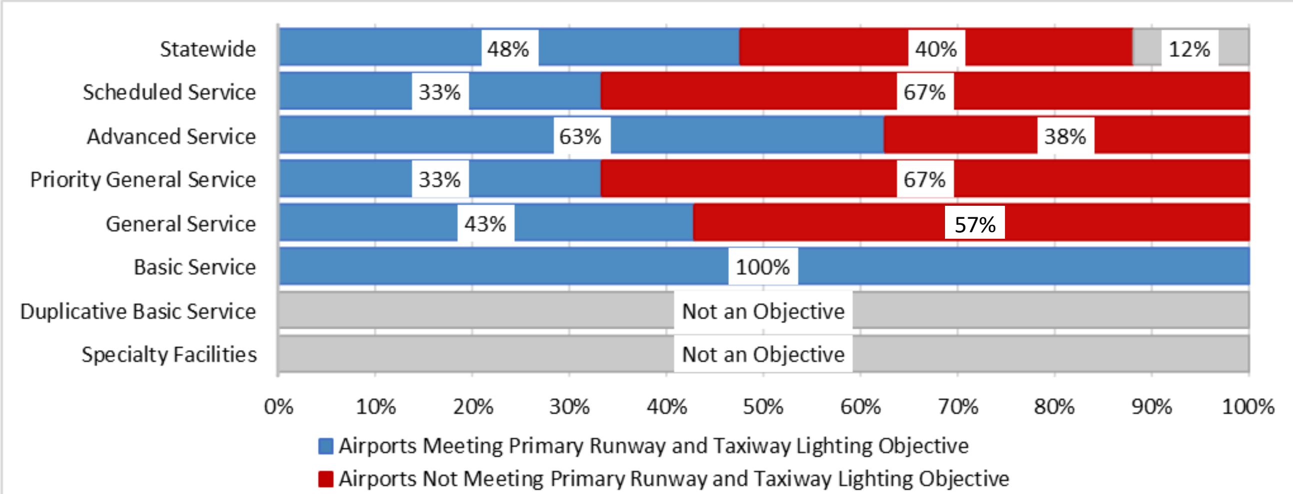
5.1.8 Airfield Lighting

Appropriate airfield lighting is essential to safe nighttime aircraft operations and those operations that occur during periods of reduced visibility. The system plan has objectives for runway lighting (edge lighting, centerline and touchdown zone), taxiway lighting, and approach lighting systems. Detailed deficiencies for each airport's lighting facilities and information on which airports meet their system objectives for lighting is presented in **Appendix E-Table 8**.

The runway and taxiway lighting objectives for study airports are as follows:

- Scheduled Service: ALSF I, HIRL, CL, TDZ, and MITL
- Advanced Service: HIRL and MITL
- Priority General Service: MIRL and MITL
- General Service: MIRL (only for airports with night-time operations), taxiway lighting/ reflectors
- Basic Service/Duplicative Basic Service: LIRL (only for airports with night-time operations)

As shown in **Figure 5-8**, 48 percent of airports meet their runway and taxiway lighting objectives. For an airport to be considered meeting the objective, they must have each of the lighting types for their role.



Source: Airport Survey Questionnaires, FAA Form 5010.

Figure 5-8 Percentage of Airports by Role that Meet Their Runway and Taxiway Lighting Objective

The airports shown below do not currently meet their runway and taxiway lighting objective.

Scheduled Service	**Advanced Service**	**Priority General Service**	**General Service**
Atlantic City International	Hammonton Municipal	Central Jersey Regional	Blairstown
Trenton Mercer	Millville Municipal	Cross Keys	Flying W
	Monmouth Executive	Lincoln Park	Old Bridge
		Solberg-Hunterdon	Sky Manor
			Somerset
			Spitfire Aerodrome
			Sussex
			Woodbine Municipal

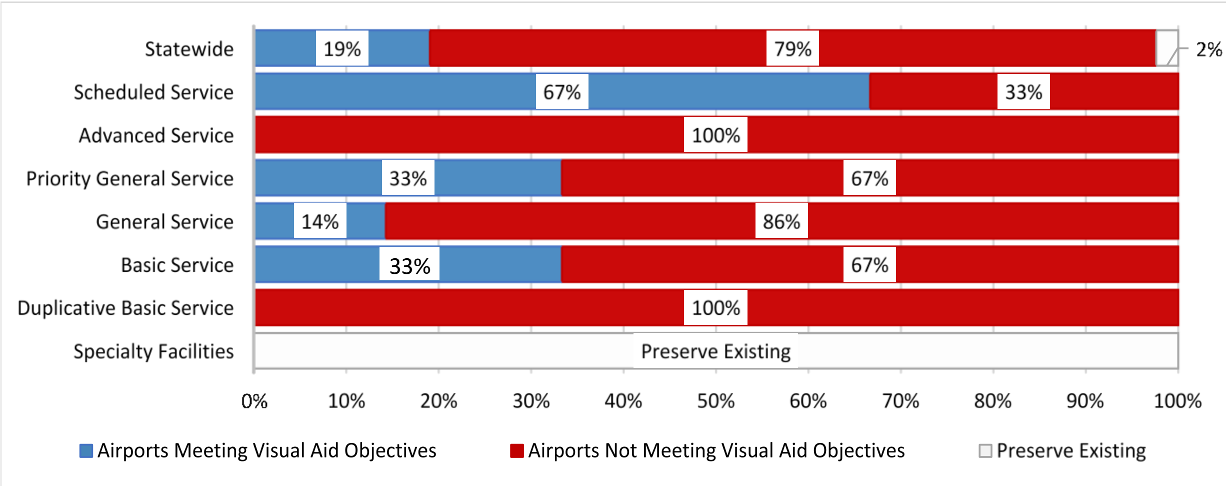
5.1.9 Visual Aids

There are several visual aids that provide navigation assistance to aircraft arriving and departing New Jersey's airports. Three common visual aids include a rotating beacon, segmented circle and lighted wind cone. Other visual aids that support instrument approaches are REILs and VGSIs; VGSI include PAPIs or VASIs. **Appendix E-Table 9** outlines detailed deficiencies for each airport's visual aids and presents which airports, by role, currently meet their system objectives for these visual aids.

The visual aid objectives for study airports are as follows:

- Scheduled Service: Rotating beacon, lighted wind cone and VGSI
- Advanced Service and Priority General Service: Rotating beacon, lighted wind cone, REILs and VGSI
- General Service: Rotating beacon, lighted wind cone (only for airports with night-time operations), REILs and VGSI
- Basic Service/Duplicative Basic Service: Lighted wind cone (only for airports with night-time operations)

Figure 5-9 shows that 19 percent of airports meet their visual aid objectives. For an airport to be considered meeting the objective, they must have each of the visual aids noted for their role. For runway-specific visual aids, the analysis examined whether the visual aids were installed on the airport's primary runway.



Source: Airport Survey Questionnaires, FAA Form 5010.

Figure 5-9 Percentage of Airports by Role that Meet Their Visual Aid Objectives

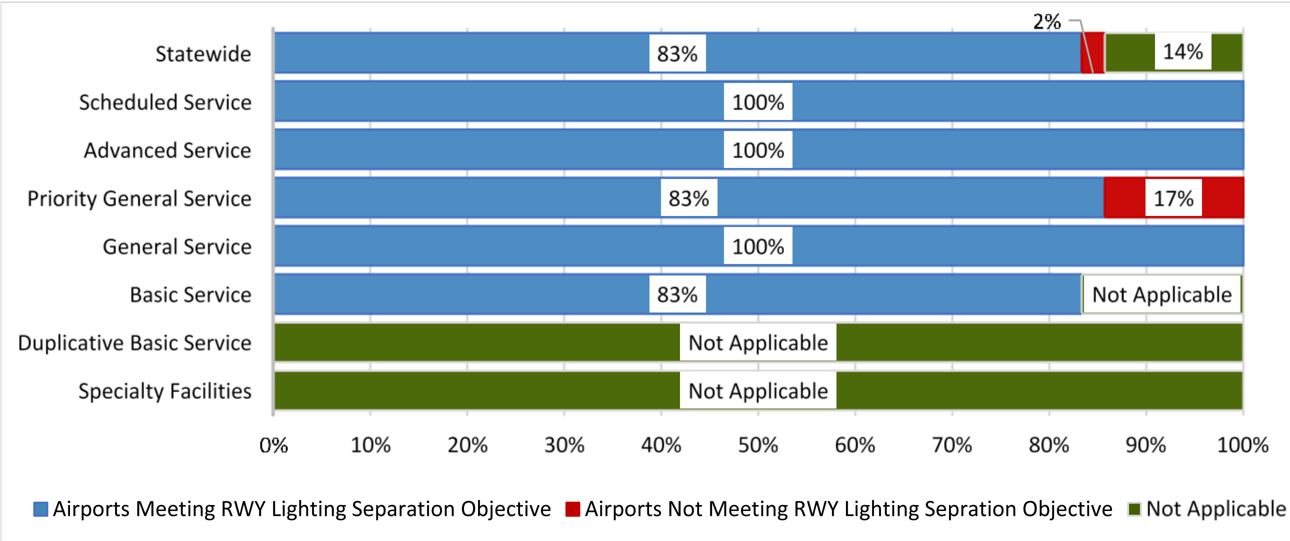
The airports shown below do not currently meet all their visual aid objectives.

Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service
Trenton Mercer	Cape May County	Central Jersey Regional	Alexandria Field	Bucks	Kroelinger
	Essex County	Cross Keys	Blairstown	Camden County	Red Wing
	Hammonton Municipal	Solberg-Hunterdon	Eagles Nest	Hackettstown	Southern Cross
	Millville Municipal	Lincoln Park	Greenwood Lake	Vineland Downtown	Trinca
	Monmouth Executive		Lakewood		
	Morristown Municipal		Princeton		
	Ocean County Airport		Sky Manor		
	Teterboro		Somerset		
			Spitfire Aerodrome		
			Sussex		
			Trenton-Robbinsville		
			Woodbine Municipal		

5.1.10 Runway Lighting Separation

FAA design guidance requires that runway lights should be spaced at defined intervals. NJDOT BOA has a licensing requirement for airports to have runway lights spaced at defined intervals as well. It is an objective for all study airports with nighttime operations to have runway lighting that meets FAA design standards which indicate a maximum spacing of 200 feet between each runway edge light. **Appendix E-Table 10** presents this information and **Figure 5-10** shows that 83 percent of applicable study airports meet this objective. This objective is not applicable to those airports that do not have nighttime operations.

Cross Keys (Priority General Service) is the only airport that does not currently meet their runway lighting separation objective.



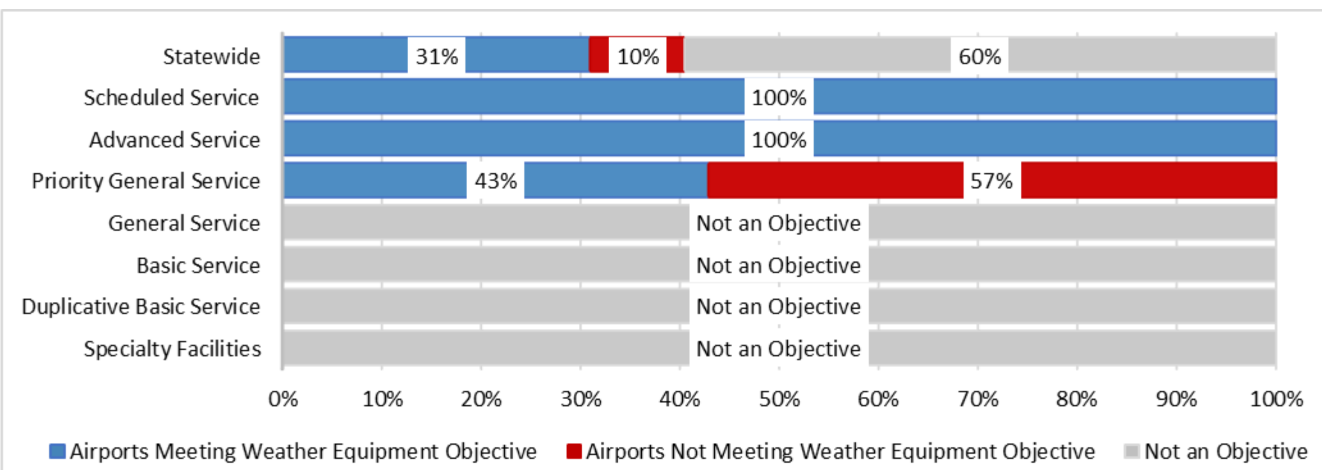
Source: Airport Survey Questionnaires, Google Earth, and AECOM.

Figure 5-10 Percentage of Airports by Role that Meet Their Runway Lighting Separation Objective

5.1.11 Weather Reporting

On-site weather reporting equipment at an airport improves operational capabilities during periods of inclement or changing weather. By providing on-site weather reporting equipment AWOS or ASOS, pilots have improved information related to weather conditions at their destination airport or other potential backup airports.

Appendix E-Table 11 presents which airports, by role, currently meet their system objective for weather reporting and which airports do not. Only Scheduled Service, Advanced Service, and Priority General Service airports have an objective for FAA-certified on-site weather reporting equipment. **Figure 5-11** shows that 31 percent of study airports currently have on-site weather reporting capabilities and meet their objective for weather reporting equipment. All Scheduled Service and Advanced Service airports meet the weather reporting objective.



Source: Airport Survey Questionnaires.

Figure 5-11 Percentage of Airports by Role that Meet Their Weather Reporting Objective

The four airports in the New Jersey system that do not currently meet their weather reporting objective are:

Priority General Service

Central Jersey Regional

Cross Keys

Lincoln Park

Solberg-Hunterdon

It should be noted that Central Jersey Regional, Cross Keys, Lincoln Park, and Solberg-Hunterdon have weather reporting systems, but they have not been certified by the FAA and therefore do not meet this facility objective, which requires an FAA-Certified AWOS.

In addition, four airports have weather reporting equipment in place that exceeds their objective. These airports include Somerset, Woodbine Municipal, and Sussex, which are all General Service airports, and Basic Service airport, Ocean City Municipal.

5.2 Landside/Apron Facilities

Landside facilities are important for serving both aircraft and airport customers. Landside facility objectives include:

- Hangar Space
- Terminal Building
- Airport Access Road
- Apron Space
- Auto Parking

5.2.1 Hangar Space

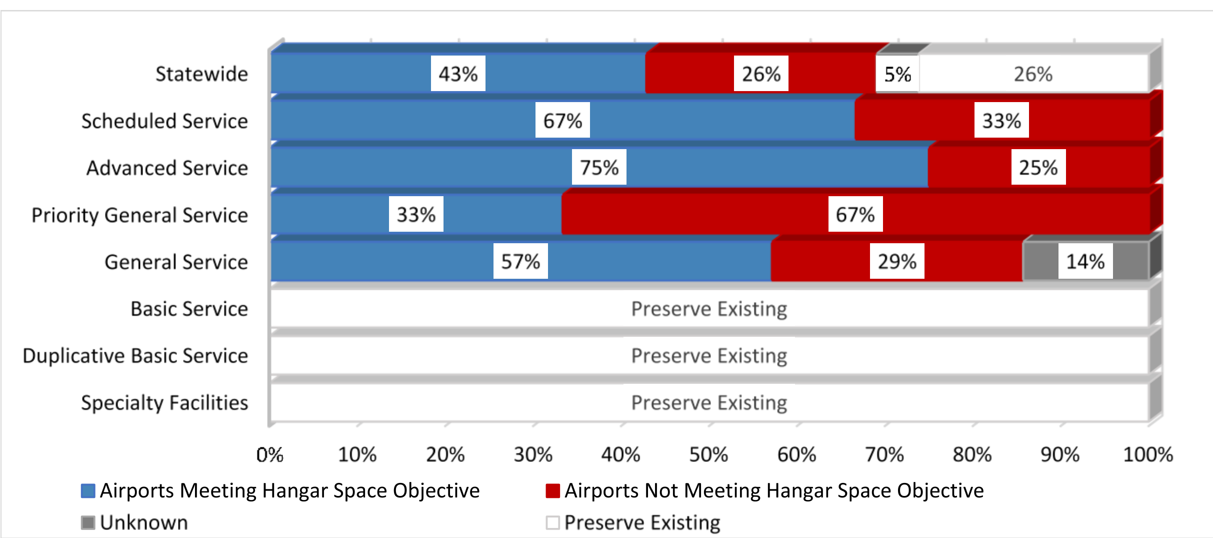
Demand for hangar space is directly related to the local climate and the type of based aircraft at each airport. Areas with severe weather conditions may have a higher demand for hangar storage facilities. In addition, larger investments for jet and turboprop aircraft also increase the demand for hangar storage. In the last decade, more and more aircraft owners want to hangar their aircraft in order to protect their investment.

As part of the inventory collection process, an effort was made to collect detailed hangar storage data to evaluate each airport's ability to meet the airport hangar storage objective. For based aircraft data for New Jersey Airports, see **Appendix C Table 8. Based Aircraft** in **Chapter 1 Inventory**.

The system objectives for hangar space include:

- Scheduled Service & Advanced Service: Hangar spaces available for 75 percent of based aircraft
- Priority General Service and General Service: Hangar spaces available for 50 percent of based aircraft
- Basic Service/Duplicative Basic Service: Preserve existing hangar spaces

An analysis of the number of hangar parking spaces at each airport and each airport's objective for current hangar spaces is presented in **Appendix E-Table 12. Figure 5-12** shows that 43 percent of study airports currently meet their hangar storage objective. Two airports (Sky Manor and Spitfire Aerodrome) did not provide data and it is unknown if they meet their objective as General Service airports.



Source: Airport Survey Questionnaires.

Figure 5-12 Percentage of Airports by Role that Meet Their Hangar Space Objective

The airports shown below need additional hangered aircraft parking spaces to meet their objective. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Scheduled Service	Advanced Service	Priority General Service	General Service
Atlantic City International	Essex County	Central Jersey Regional	Alexandria Field
	Millville Municipal	Cross Keys	Flying W
		Solberg-Hunterdon	Greenwood Lake
		South Jersey Regional	*Sky Manor*
			Spitfire Aerodrome
			Sussex

5.2.2 Apron Space

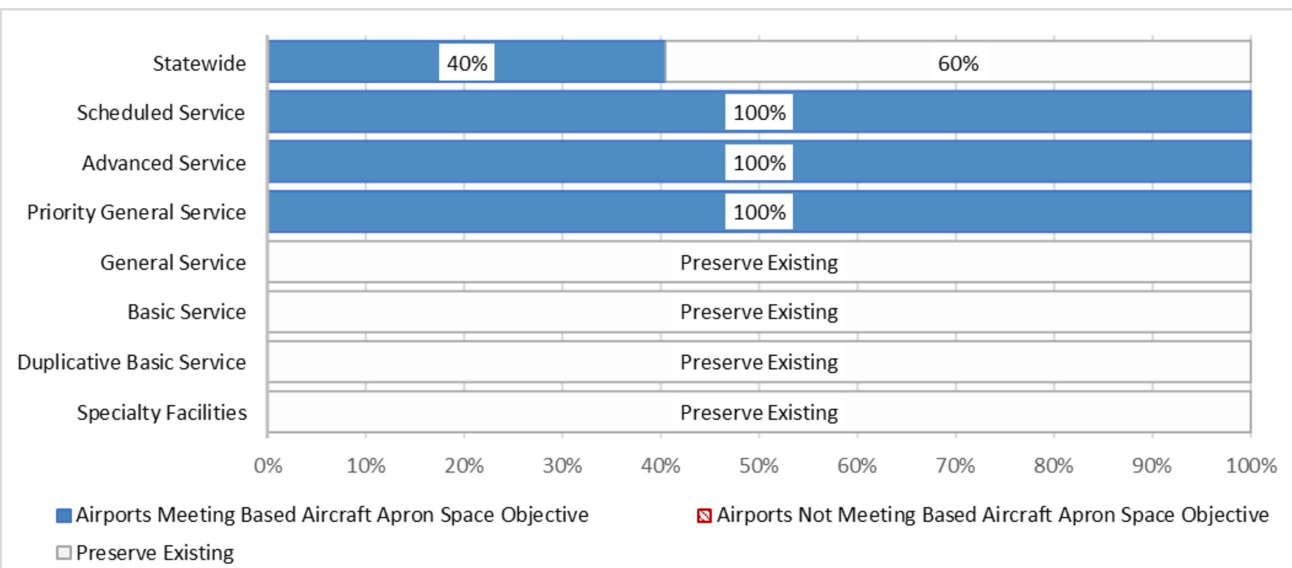
Aprons or aircraft ramps are designated surfaces typically adjacent to terminal buildings, maintenance hangars, air cargo facilities, and aircraft hangars that provide areas for parking aircraft, loading and unloading aircraft, fueling, and servicing aircraft. Apron areas typically vary in size and location based on a variety of factors including role and nature of demand, type and size of aircraft intended to use the parking area, FAA design standards, and aircraft maneuvering needs.

Paved tie-down/apron areas were calculated and developed for based aircraft. The system objectives for apron space include:

- Scheduled Service & Advanced Service: Apron spaces available for 25 percent of based aircraft
- Priority General Service and General Service: Apron spaces available for 50 percent of based aircraft

The objective for General Service & Basic Service/Duplicative Basic Service is to maintain their existing tie-down spaces. The calculations for based aircraft apron size utilized forecasts of based aircraft expected to use the apron and report number of paved and unpaved tie-downs as reported by airports.

The apron space objective for each airport is presented in **Appendix E-Table 13**. As shown in **Figure 5-13**, 40 percent of study airports meet their apron space objective. All Scheduled Service, Advanced Service, and Priority General Service airports meet or exceed their objectives for apron space.



Source: Airport Survey Questionnaires.

Figure 5-13 Percentage of Airports by Role that Meet Their Apron Space Objective

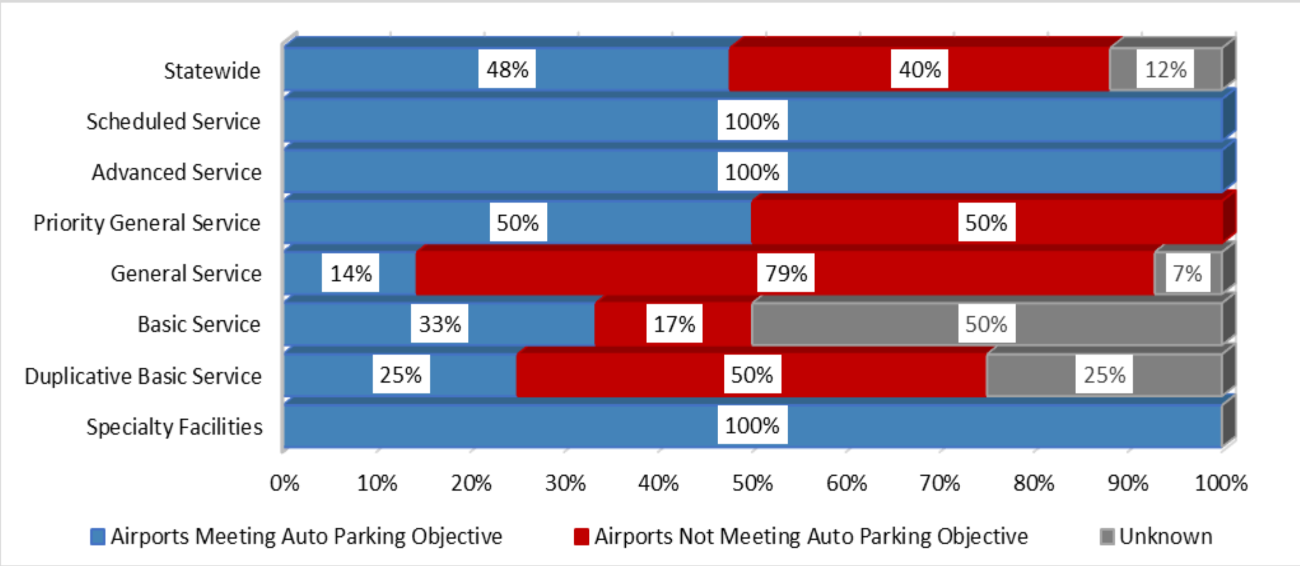
5.2.3 Auto Parking

It is important to provide adequate auto parking for both commercial service and general aviation employees, airport users, and visitors. The number of auto parking spaces at an airport varies based on demand and airport services. The system plan developed the following auto parking objectives for airports in each role:

- Scheduled Service: Minimum 100 parking spaces per 100,000 enplanements as per FAA 150/5360-13

- Advanced Service and Priority General Service: 1 space per based aircraft + additional 50 percent for employee/visitors
- General Service: 1 space per based aircraft + additional 25 percent for employee/visitors
- Basic Service/Duplicative Basic Service: 1 space per based aircraft

Auto parking is presented in **Appendix E-Table 14**. As shown in **Figure 5-14**, 48 percent of the study airports currently meet the minimum auto parking objectives. It is unknown whether five airports, or 12 percent of study airports, meet their objective as they did not provide data during the inventory collection effort.



Source: Airport Survey Questionnaires and Google Earth.

Figure 5-14 Percentage of Airports by Role that Meet Their Auto Parking Objective

The airports shown below need additional auto parking spaces to meet their objective. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Priority General Service	**General Service**	**Basic Service**	**Duplicative Basic Service**
Lincoln Park	Alexandria Field	Aeroflex-Andover	Kroelinger
Solberg-Hunterdon	Eagles Nest	*Bucks*	*Red Wing*
South Jersey Regional	Flying W	*Hackettstown*	Southern Cross
	Greenwood Lake	*Vineland Downstown*	
	Lakewood		
	Old Bridge		
	Sky Manor		
	Somerset		
	Spitfire Aerodrome		
	Sussex		
	Woodbine Municipal		

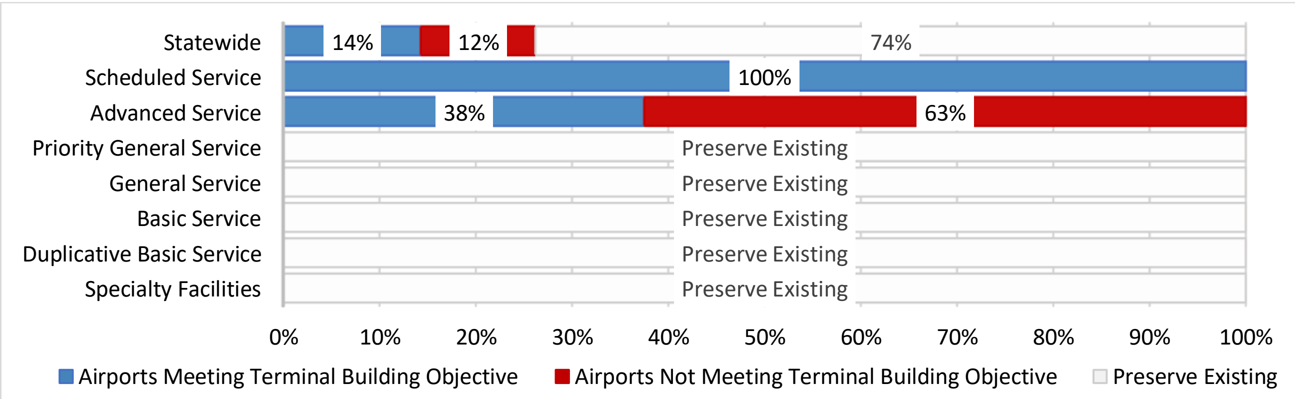
5.2.4 Terminal Building

Terminal buildings provide essential services for passengers and pilots, as well as a facility for the transfer of passengers and flight crews to and from the aircraft. Terminal facilities can range in size based upon several factors, the most important being the type of users. Buildings can range from a small pilot room for flight planning and resting to a large multi-room building that provides services for multiple uses. A terminal building provides the first impression of a community to visitors, so it is important for a terminal building to be welcoming and provide a positive experience for the visitor.

Specific areas or uses in a general aviation administration building can include: waiting areas, restrooms, pilots lounge, flight planning area, conference rooms or public meeting rooms, vending, and airport manager offices. The system objectives for terminal building are based on size of terminal. The objectives by role, are as follows:

- Scheduled Service: As per needs identified in Master Plan
- Advanced Service: Terminal building recommended. Square footage requirements calculated based on estimated peak hour operations, a factor of 2.5 people, and 100 square feet per person
- Priority General Service, General Service, and Basic Service/Duplicative Basic Service: Preserve existing

An analysis of the terminal building size objective for each airport is presented in **Appendix E-Table 15**. As shown **Figure 5-15**, 14 percent of study airports meet their objectives for terminal building size.



Source: Airport Survey Questionnaires.

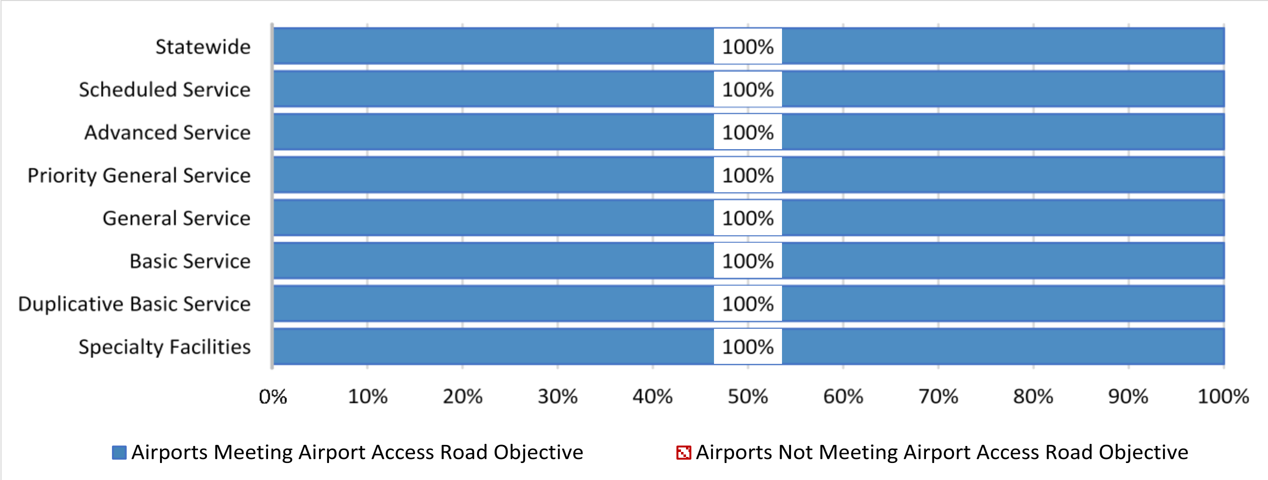
Figure 5-15 Percentage of Airports by Role that Meet Their Terminal Size Objective

The airports shown below need larger terminals to meet their objective.

<u>Advanced Service</u>
Essex County
Hammonton Municipal
Millville Municipal
Monmouth Executive
Teterboro

5.2.5 Airport Access Road

NJDOT BOA recognizes that in order to have an accessible airport system, airport users should be able to easily access airports utilizing U.S., state, and local roadways. During the inventory effort, airport managers and sponsors were asked if their access road to their airport was paved. An objective was developed for all airports to have a paved airport access road. **Appendix E-Table 16** presents which airports have paved access roads to their facility. As shown in **Figure 5-16**, all airports meet their access road objective.



Source: Airport Survey Questionnaires.

Figure 5-16 Percentage of Airports by Role that Meet Their Access Road Objective

5.3 Services

The availability of services contributes to the attractiveness of an airport and its ability to effectively serve both based and transient users. Objectives for the following services have been established as part of this system plan:

- Fixed Base Operators (FBO)
- Fuel
- Aircraft Maintenance
- Aircraft Rental
- Charter Service
- Pilot Training
- Ground Transportation
- Public Transit Facility
- Public Use Restroom
- Food Service
- Public Use Wi-Fi
- Utilities

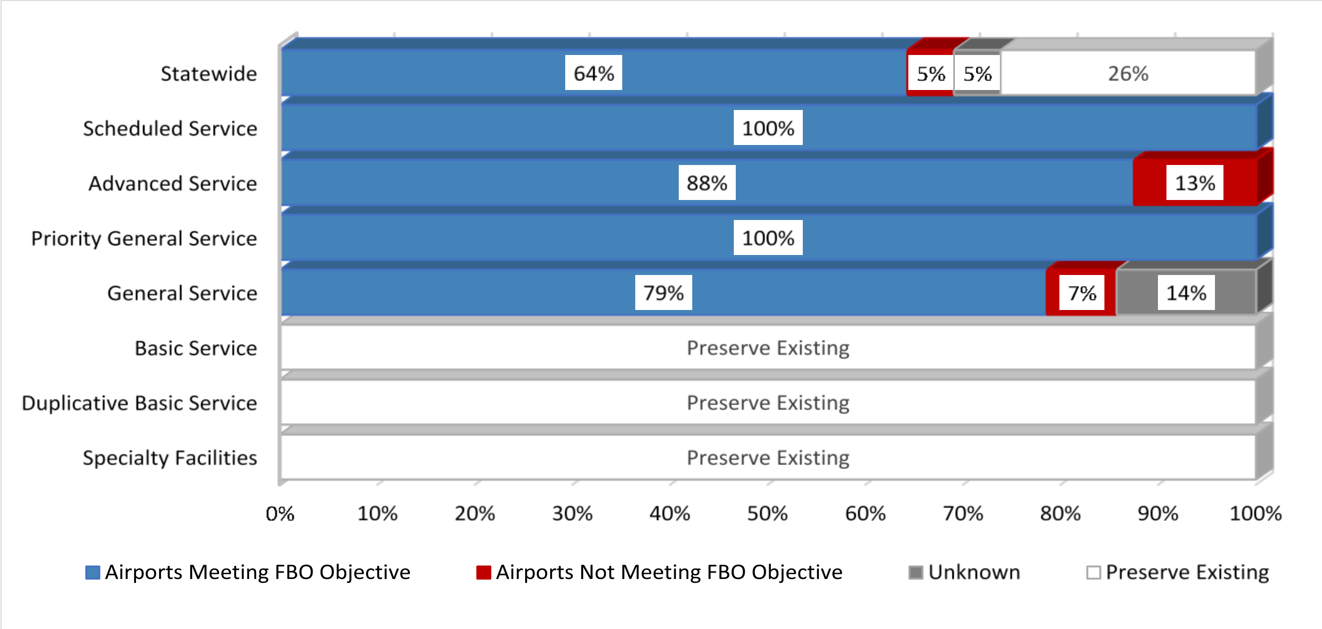
System compliance with objectives for each of these services is discussed below.

5.3.1 Fixed Base Operator (FBO) Services

Fixed base operators (FBOs) provide a variety of aviation services to both based and transient users. There are various types of FBOs, with some providing full-service and others providing more basic/limited services. Services provided by FBOs in New Jersey typically vary based on the volume of activity that the airport accommodates. Services offered by FBOs can include fuel, tie down or hangar storage, flight instruction, maintenance, charter service, ground transportation, aircraft towing, pilot's lounge, and/or conference facilities.

It is an objective for all Scheduled Service, Advanced Service, and Priority General Service airports to have at least one full service FBO or several FBOs that provides three or more services. The objective for General Service airports is to have a limited-service FBO, providing one or two FBO services such as fuel and maintenance. No FBO objective has been established for Basic Service/Duplicative Basic Service airports. It is important to note that demand for FBO services is market driven and an airport must typically have the operational levels to support a sustainable FBO business.

Appendix E-Table 17 summarizes which airports report having some type of FBO services. **Figure 5-17** shows that 64 percent of study airports meet the FBO objective. Two General Service airports (Sky Manor and Spitfire Aerodrome) did not provide data for this objective, and it is unknown if they meet their established objective.



Source: Airport Survey Questionnaires.

Figure 5-17 Percentage of Airports by Role that Meet Their FBO Objective

As shown below, four airports need additional FBO services to meet the system plan's objective. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

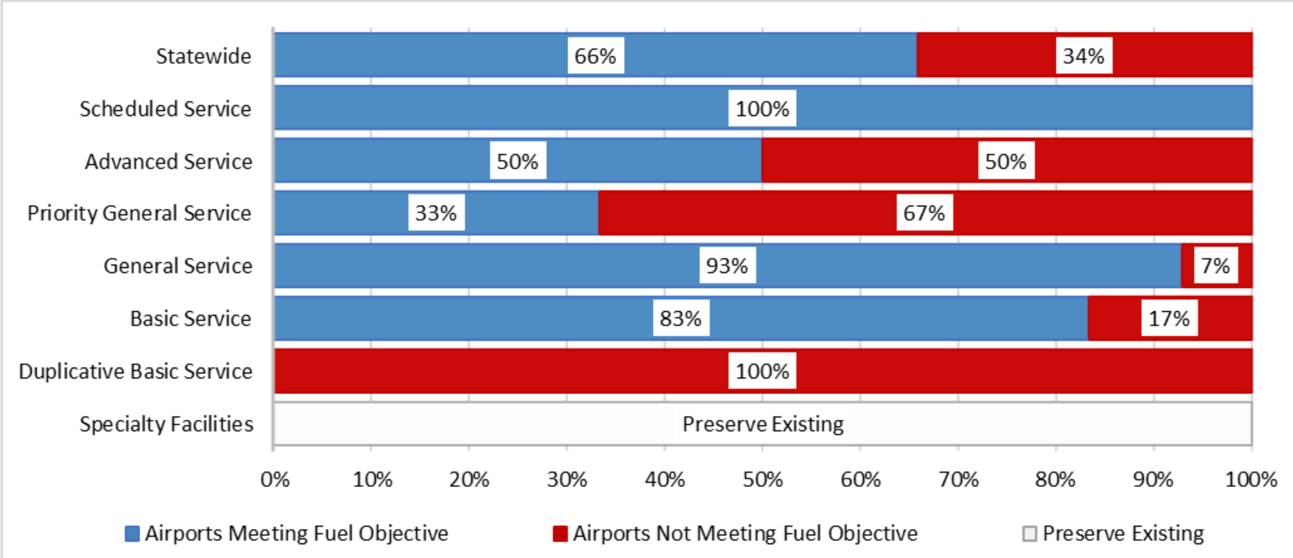
Advanced Service	General Service
Cape May County	*Sky Manor*
	Spitfire Aerodrome
	Woodbine Municipal

5.3.2 Fuel

Fuel and fueling services are important for airports in New Jersey. Piston-engine aircraft use 100LL high-octane fuel (AvGas), while jet aircraft and turboprops use kerosene-based Jet A fuel. **Appendix E-Table 18** summarizes the type of fuel available at each system airport. The following objectives were developed for New Jersey study airports:

- Scheduled Service, Advanced Service, and Priority General Service: 24/7 Jet A and AvGas (100LL)
- General Service: 24/7 AvGas (100LL)
- Basic Service/Duplicative Basic Service: AvGas (100LL)

As shown in **Figure 5-18**, 66 percent of study airports meet their fuel objective. The objective for Specialty Facilities (Little Ferry Seaplane Base) is to preserve their existing facilities.



Source: Airport Survey Questionnaires.

Figure 5-18 Percentage of Airports by Role that Meet Their Fuel Objective

As shown below, 14 airports need Jet A or AvGas to meet the system plan's objective for fuel.

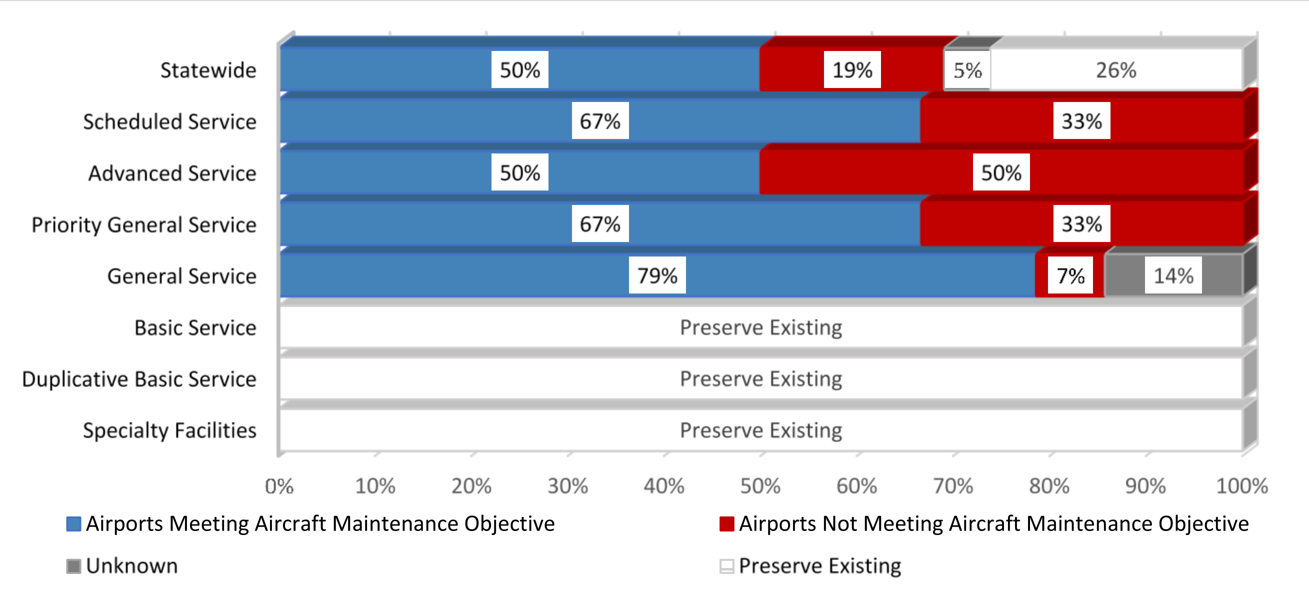
Advanced Service	Priority General Service	Basic Service	Duplicative Basic Service
Cape May County	Central Jersey Regional	Bucks	Kroelinger
Essex County	Linden		Red Wing
Ocean County Airport	Solberg-Hunterdon		Southern Cross
Millville Municipal	South Jersey Regional		Trinca

5.3.3 Aircraft Maintenance

Whether it be a minor repair or a major overhaul of aircraft engines, maintenance and repair services at airports are important. An on-site major aircraft maintenance operation is considered to offer major airframe and overhaul, as well as minor avionics repair services. An on-site minor aircraft maintenance service is any type of aircraft maintenance. The system plan objectives for aircraft maintenance are:

- Scheduled Service, Advanced Service, and Priority General Service: On-site major aircraft maintenance
- General Service: On-site minor aircraft maintenance
- Basic Service/Duplicative Basic Service: Preserve existing

Appendix E-Table 19 summarizes the type of aircraft maintenance available at each system airport. As presented in **Figure 5-19**, 50 percent of applicable study airports meet their aircraft maintenance objective. Two General Service airports (Sky Manor and Spitfire Aerodrome) did not provide maintenance data during the inventory effort, and it is unknown if they meet their objectives.



Source: Airport Survey Questionnaires.

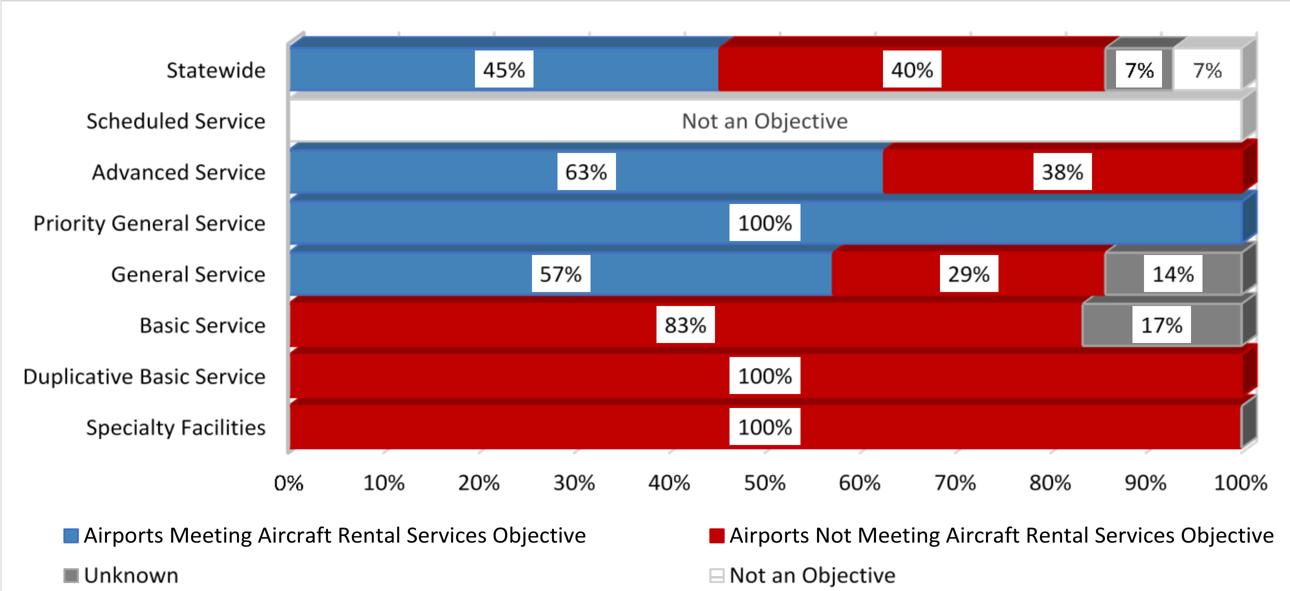
Figure 5-19 Percentage of Airports by Role that Meet Their Aircraft Maintenance Objective

As shown below, 10 airports need additional services to meet the system plan's objective for aircraft maintenance. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Scheduled Service	**Advanced Service**	**Priority General Service**	**General Service**
Atlantic City International	Cape May County	Central Jersey Regional	*Sky Manor*
	Millville Municipal	Solberg-Hunterdon	*Spitfire Aerodrome*
	Monmouth Executive		Woodbine Municipal
	Morristown Municipal		

5.3.4 Aircraft Rental and Charter Service

It is recommended that all study airports, except Scheduled Service airports, provide their customers with access to aircraft rental. Additionally, it is recommended that Scheduled Service, Advanced Service, Priority General Service and General Service airports provide aircraft charter services. There is not an established objective for Basic Service, Duplicative Basic Service, or Specialty Facilities airports to provide aircraft charter services. **Appendix E-Table 20** and **Appendix E-Table 21** indicates which airports noted the availability of aircraft rental and charter services as part of the inventory effort. As shown in **Figure 5-20** and **Figure 5-21**, 43 percent of study airports have access to aircraft rental and 29 percent of study airports have charter service available at their airport.

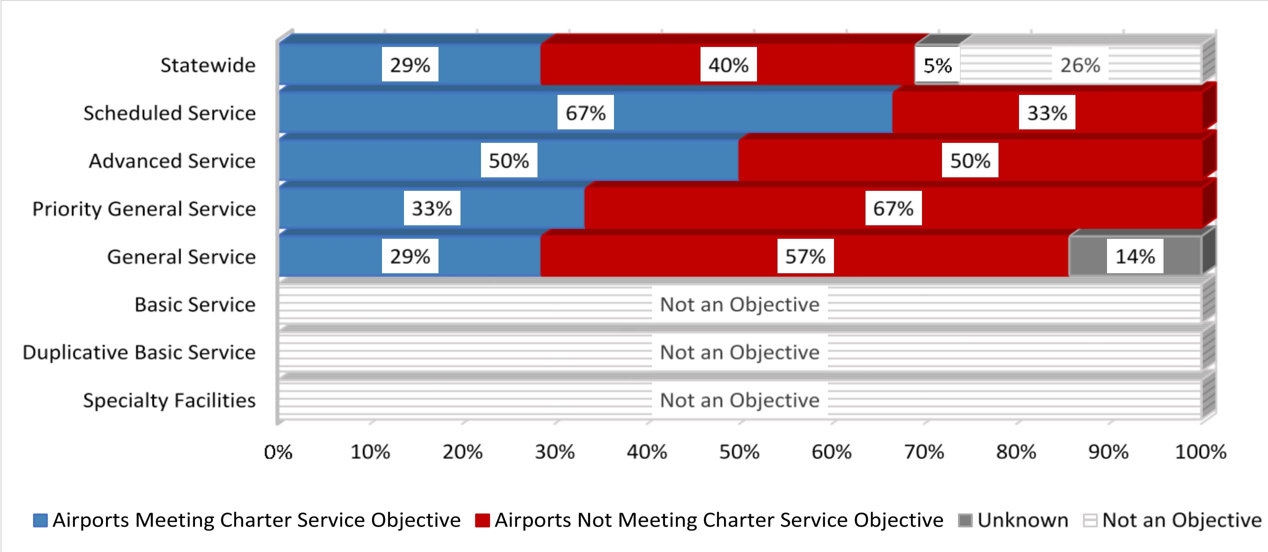


Source: Airport Survey Questionnaires.

Figure 5-20 Percentage of Airports by Role with Access to Aircraft Rental

As shown below, 20 airports do not meet their objective for aircraft rental availability. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Advanced Service	**General Service**	**Basic Service**	**Duplicative Basic Service**	**Specialty Facilities**
Cape May County	Eagles Nest	Aeroflex-Andover	Kroelinger	Little Ferry Seaplane Base
Morristown Municipal	Lakewood	Bucks	Red Wing	
Teterboro	*Sky Manor*	Camden County	Southern Cross	
	Spitfire Aerodrome	*Hackettstown*	Trinca	
	Sussex	Ocean City Municipal		
	Woodbine Municipal	Vineland Downtown		



Source: Airport Survey Questionnaires.

Figure 5-21 Percentage of Airports by Role with Access to Aircraft Charter Service

The 19 airports shown below do not meet their objective for charter service availability. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

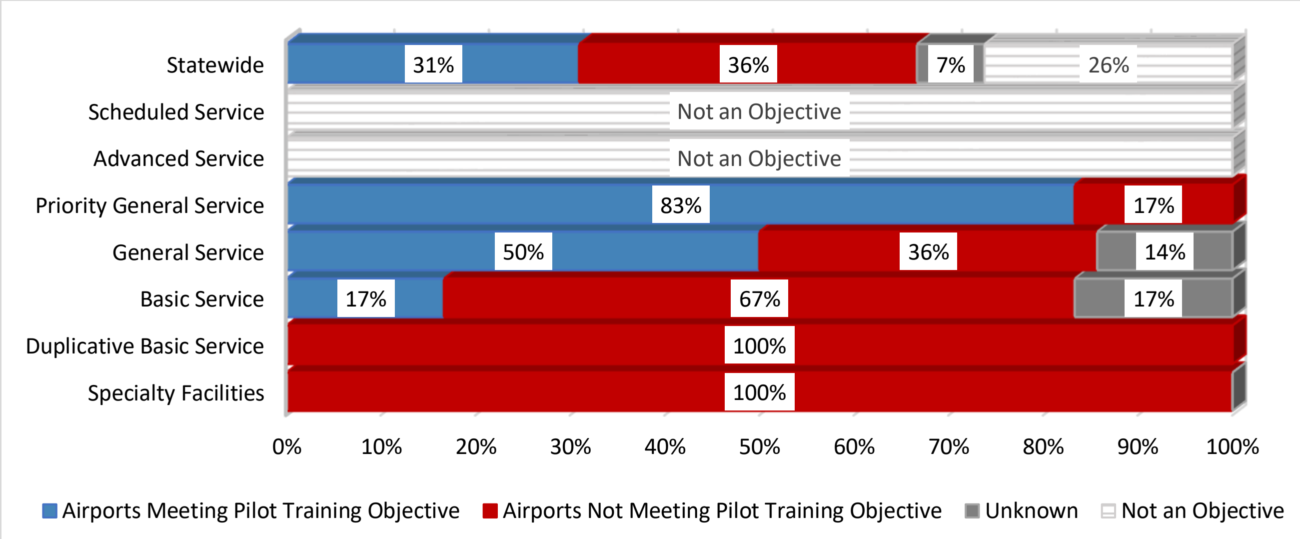
Scheduled Service	Advanced Service	Priority General Service	General Service
Atlantic City International	Cape May County	Central Jersey Regional	Alexandria Field
	Millville Municipal	Cross Keys	Eagles Nest
	Morristown Municipal	Solberg-Hunterdon	Flying W
	Ocean County Airport	South Jersey Regional	Greenwood Lake
			Lakewood
			Old Bridge
			Sky Manor
			Spitfire Aerodrome
			Sussex
			Woodbine Municipal

5.3.5 Pilot Training

Access to part-time or full-time flight instruction provides for a well-rounded airport. Similar to above this objective is informational and flight instruction is typically offered as demand allows. The objectives for pilot training by airport role are as follows:

- Scheduled Service and Advanced Service: Not an objective
- Priority General Service: Full-time flight instruction
- General Service, and Basic Service/Duplicative Basic Service: Part-time flight instruction

Appendix E-Table 22 notes which study airports currently offer full-time or part-time flight training. Currently, 31 percent of airports included in the SASP meet the objective for on-site flight school or flight instructor (see **Figure 5-22**). Several airports (7 percent of airports) did not provide information related to the availability of pilot training during the inventory effort and it is unknown if they meet their role objectives.



Source: Airport Survey Questionnaires.

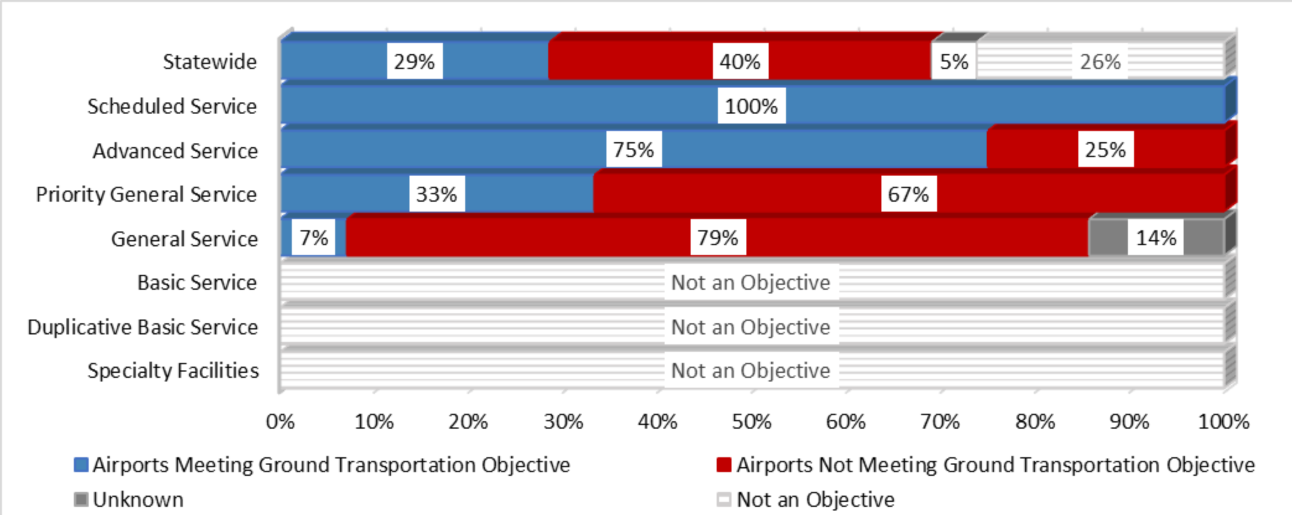
Figure 5-22 Percentage of Airports by Role that Meet Their Pilot Training Objective

The airports shown below do not meet their objective for supporting pilot training. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities
South Jersey Regional	Blairstown	Bucks	Kroelinger	Little Ferry Seaplane Base
	Eagles Nest	Camden County	Red Wing	
	Lakewood	*Hackettstown*	Southern Cross	
	Sky Manor	Ocean City Municipal	Trinca	
	Spitfire Aerodrome	Vineland Downtown		
	Sussex			
	Woodbine Municipal			

5.3.6 Ground Transportation

Having ground transportation services allows visitors to reach their final destination once they arrive at the airport. Airports that provide courtesy cars, crew cars, or a shuttle provide transient pilots with the ability to leave the airport for a short period of time. An objective was developed for Scheduled Service, Advanced Service, and Priority General Service, and General Service to have on-site rental cars, access to off-site or pre-arranged rental car services, or a courtesy car. An objective was not established for Basic Service/Duplicative Basic Service airports to have access to access to rental cars or courtesy car. **Appendix E-Table 23** presents which airports have rental car services or a courtesy. As shown in **Figure 5-23**, 29 percent of airports meet their rental car/courtesy car objective. Three General Service airports (Blairstown, Sky Manor, and Spitfire Aerodrome) did not provide ground transportation data during the inventory effort, and it is unknown if they meet their objective.



Source: Airport Survey Questionnaires.

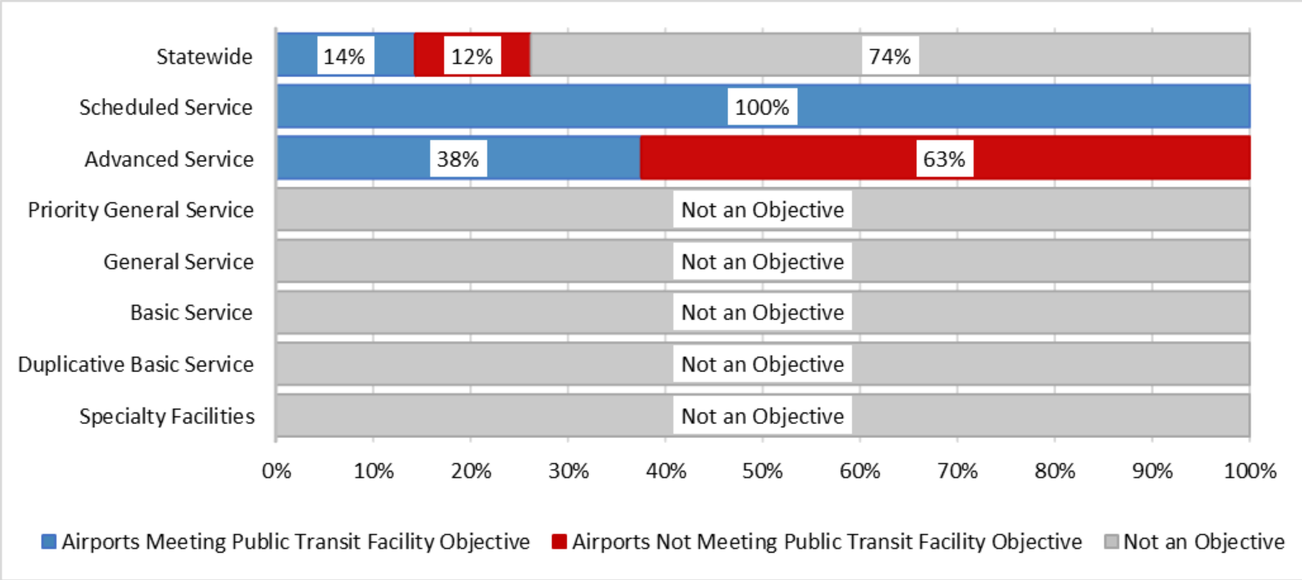
Figure 5-23 Percentage of Airports by Role that Meet Their Ground Transportation Objective

These airports do not meet their ground transportation objective. Airports noted in italics denote airports that did not provide data for the objective and it is unknown if they meet the objective.

Advanced Service	Priority General Service	General Service	
Millville Municipal	Central Jersey Regional	Alexandria Field	*Sky Manor*
Morristown Municipal	Cross Keys	Blairstown	Somerset
	Solberg-Hunterdon	Eagles Nest	*Spitfire Aerodrome*
	South Jersey Regional	Flying W	Sussex
		Greenwood Lake	Trenton-Robbinsville
		Lakewood	Woodbine Municipal
		Old Bridge	

5.3.7 Public Transit Facility

Public transportation provides easy, affordable access to visitors and employees arriving from or departing from New Jersey's airports. Just as important as courtesy cars or rental car service, bus or rail modes of public transportation provide viable economic benefits to local communities. While it may not be feasible for all airports to accommodate public transportation, especially those in rural locations, the presence of an integrated public transportation system is an important asset for future growth and development. An objective was developed for Scheduled Service and Advanced Service to have access to a public transit within ½ mile of the airport or provide an on-airport shuttle service. An objective was not established for Priority General Service, General Service, or Basic Service/Duplicative Basic Service airports to a public transit facility. **Appendix E-Table 24** presents which airports have rental car services or a courtesy. As shown in **Figure 5-4**, 14 percent of airports meet their public transit facility objective.



Source: Airport Survey Questionnaires.

Figure 5-24 Percentage of Airports by Role that Meet Their Public Transit Facility Objective

Five Advanced Service airports do not meet their public transit facility objective.

<u>Advanced Service</u>

Cape May County

Hammonton Municipal

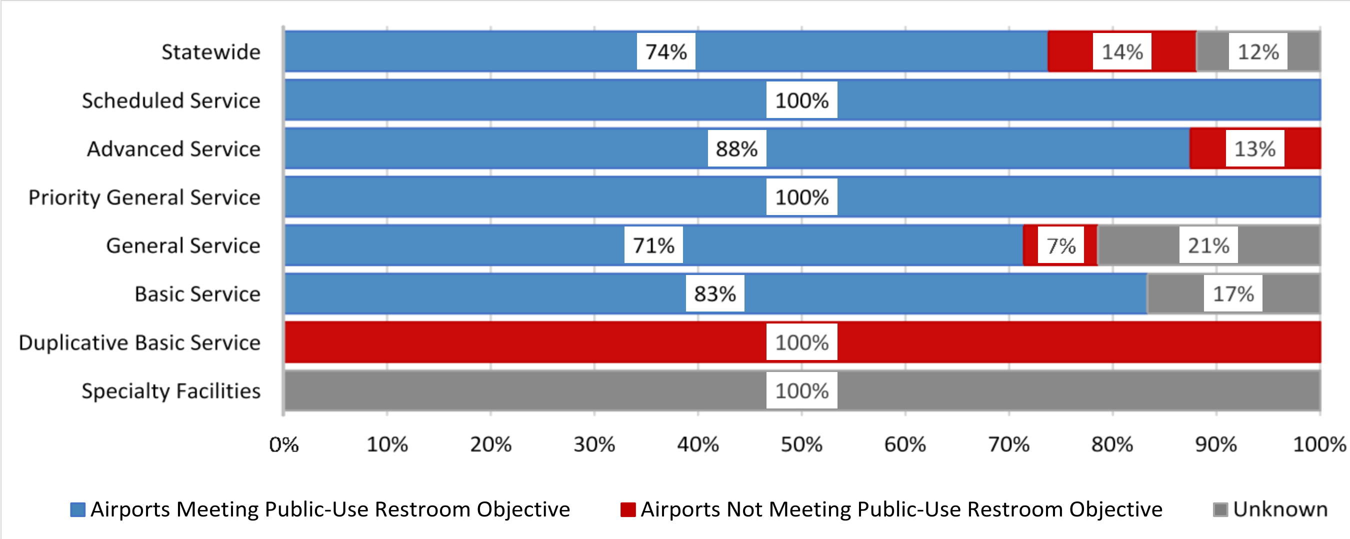
Monmouth Executive

Morristown Municipal

Ocean County Airport

5.3.8 Public-Use Restroom

As part of the system plan inventory effort, airports were asked whether public-use restrooms are available. It is an objective for all airports to have a restroom available for public-use. **Appendix E-Table 25** presents which airports reported having restrooms available. As shown in **Figure 5-25**, 74 percent of airports meet their objective. It is unknown whether 12 percent of airports meet their objective as they did not provide information during the inventory effort.



Source: Airport Survey Questionnaires.

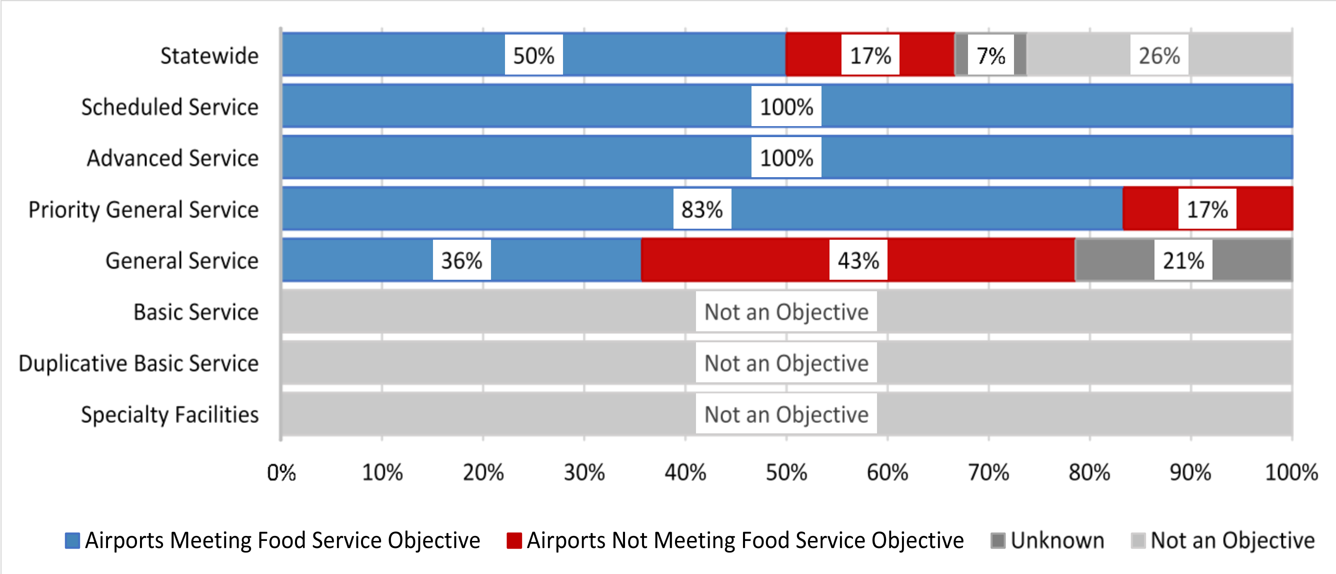
Figure 5-25 Percentage of Airports by Role that Meet Their Public Use Restroom Objective

These airports do not meet their public-use restroom objective. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Advanced Service	**General Service**	**Basic Service**	**Duplicative Basic Service**	**Specialty Facilities**
Hammonton Municipal	Blairstown	Hackettstown	Kroelinger	*Little Ferry Seaplane Base*
	Lakewood		Red Wing	
	Sky Manor		Southern Cross	
	Spitfire Aerodrome		Trinca	

5.3.9 Food Service

An objective has been established for all Scheduled Service, Advanced Service, Priority General Service and General Service airports to provide foods available for sale at their airport. Options for food service include providing a coffee shop/deli or food vending services. An objective was not established for Basic Service or Duplicative Basic Service airports to provide food services. **Appendix E-Table 26** presents which airports have food service available. As shown in **Figure 5-6**, 50 percent of airports meet their food service objective. Three General Service airports (Blairstown, Sky Manor, and Spitfire Aerodrome) did not provide information on the availability of food services at their airports, and it is unknown if they meet their objectives.



Source: Airport Survey Questionnaires.

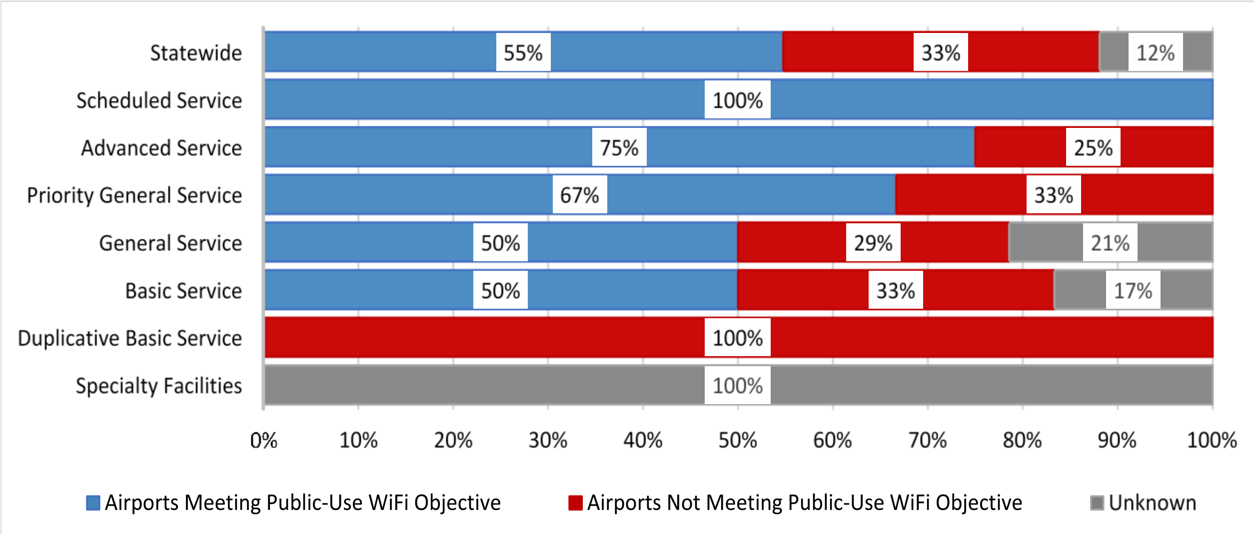
Figure 5-26 Percentage of Airports by Role that Meet Their Food Service Objective

These airports do not meet their food service objective. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Priority General Service	**General Service**	
Central Jersey Regional	*Blairstown*	*Spitfire Aerodrome*
	Eagles Nest	Sussex
	Lakewood	Trenton-Robbinsville
	Old Bridge	Woodbine Municipal
	Sky Manor	

5.3.10 Public Use WiFi

WiFi allows pilots and passengers to communicate while on the ground with non-aviation outlets. It is an objective for all airports to have WiFi available for public-use. **Appendix E-Table 27** presents which airports have WiFi available for public-use. As shown in **Figure 5-27**, 55 percent of airports meet their public use WiFi objective. It is unknown whether 12 percent of airports meet their objective as they did not provide information during the inventory effort.



Source: Airport Survey Questionnaires.

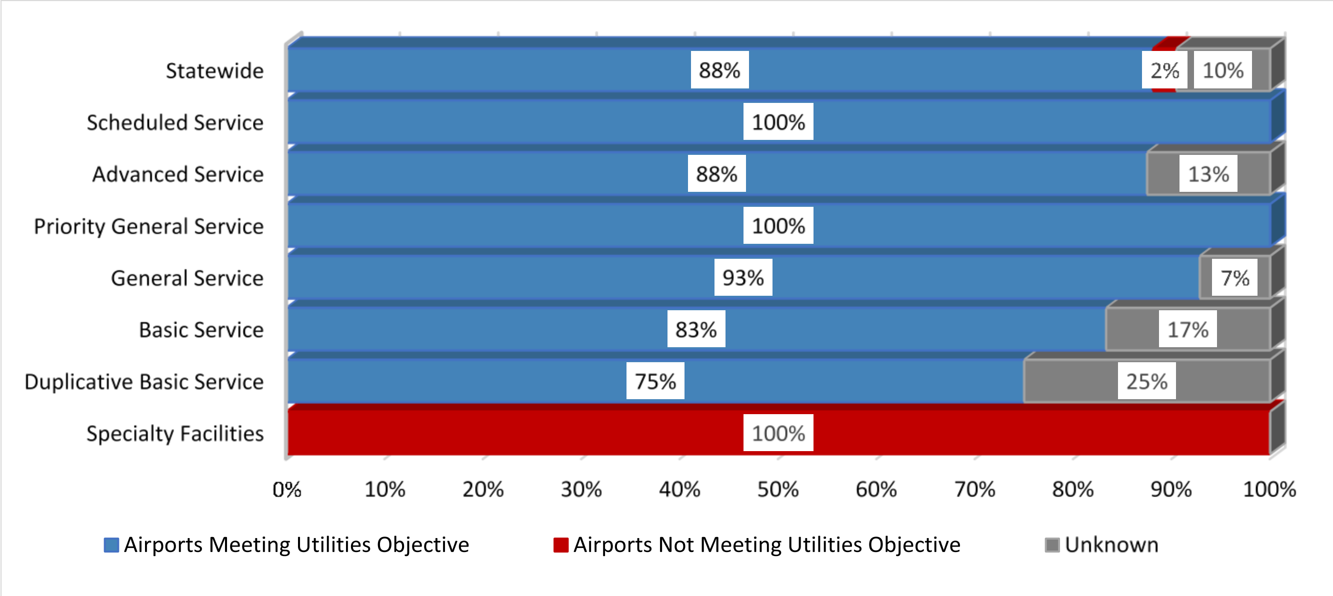
Figure 5-27 Percentage of Airports by Role that Meet Public Use WiFi Objective

These airports do not meet their WiFi objective. Airports noted in italics denote airports that did not provide data for the objective and it is unknown if they meet the objective.

Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities
Hammonton Municipal	Cross Keys	*Blairstown*	Aeroflex-Andover	Kroelinger	*Little Ferry Seaplane Base*
Millville Municipal	Lincoln Park	Greenwood Lake	Bucks	Red Wing	
		Lakewood	*Hackettstown*	Southern Cross	
		Sky Manor		Trinca	
		Spitfire Aerodrome			
		Sussex			
		Woodbine Municipal			

5.3.11 Utilities

All study airports should have electricity, water, and sewer. **Appendix E-Table 28** lists the utilities provided by each system airport. **Figure 5-28** shows that 88 percent of study airports have utilities in place to meet the objective. It is unknown whether 10 percent of airports meet their objective as they did not provide complete information related to the availability of electricity, water, and sewer during the inventory effort.



Source: Airport Survey Questionnaires.

Figure 5-28 Percentage of Airports by Role that Meet Their Utilities Objective

The following five airports need additional utilities to meet the objectives. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

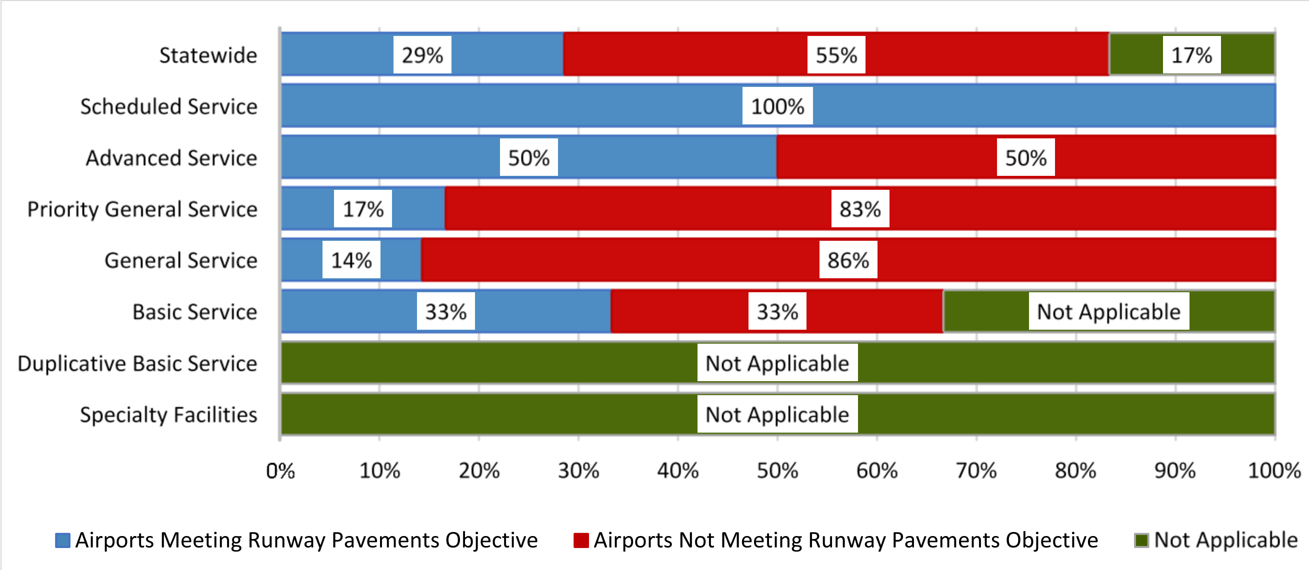
Advanced Service	**General Service**	**Basic Service**	**Duplicative Basic Service**	**Specialty Facilities**
Hammonton Municipal	Spitfire Aerodrome	Hackettstown	Kroelinger	Little Ferry Seaplane Base

5.4 Airport Maintenance

The development and maintenance of paved surfaces at all study airports requires significant and continual investment. New Jersey DOT BOA has determined that maintaining primary runway pavement to a certain standard helps to prevent major costly reconstruction projects.

The objective set for the NJ SASP is that all primary runway pavements should have a pavement condition index (PCI) of 70 or greater. PCI estimations for primary runways utilized data from the following information: NJDOT BOA pavement data from 2014, consideration for major resurfacing and/or reconstruction projects since 2014, the number of 2018 departure operations as reported by FAA, the type of pavement, and aerial map records from Google Earth. For those airports that have available 2014 PCI data, aerial maps were used to examine the condition of the runway since 2014 and then benchmarked against the 2014 PCI value. For airports that do not have available PCI data, aerial maps were used to examine the condition of the primary runway between 2014 and 2018, and considered the number of annual departures to estimate the wear on the runway. Estimated primary runway PCI values are provided in a range of five (5).

Appendix E-Table 29 details the percent of runway pavements that have a PCI of 70 or above at study airports. This objective is not applicable to turf or water runways. **Figure 5-29** shows that 29 percent of the airports have primary runway pavements with a PCI of 70 or above.



Source: NJ DOT BOA, FAA, Google Earth, and AECOM.

Figure 5-29 Percentage of Airports by Role that Meet Their Runway Pavement PCI Objective

The following airports do not meet the PCI objectives for runways:

Advanced Service	Priority General Service	General Service		Basic Service
Essex County	Central Jersey Regional	Alexandria Field	Princeton	Camden County
Monmouth Executive	Lincoln Park	Blairstown	Sky Manor	Hackettstown
Morristown Municipal	Linden	Eagles Nest	Somerset	
Ocean County Airport	Solberg-Hunterdon	Flying W	Spitfire Aerodrome	
	South Jersey Regional	Greenwood Lake	Sussex	
		Old Bridge	Trenton-Robbinsville	

5.5 Safety Compliance

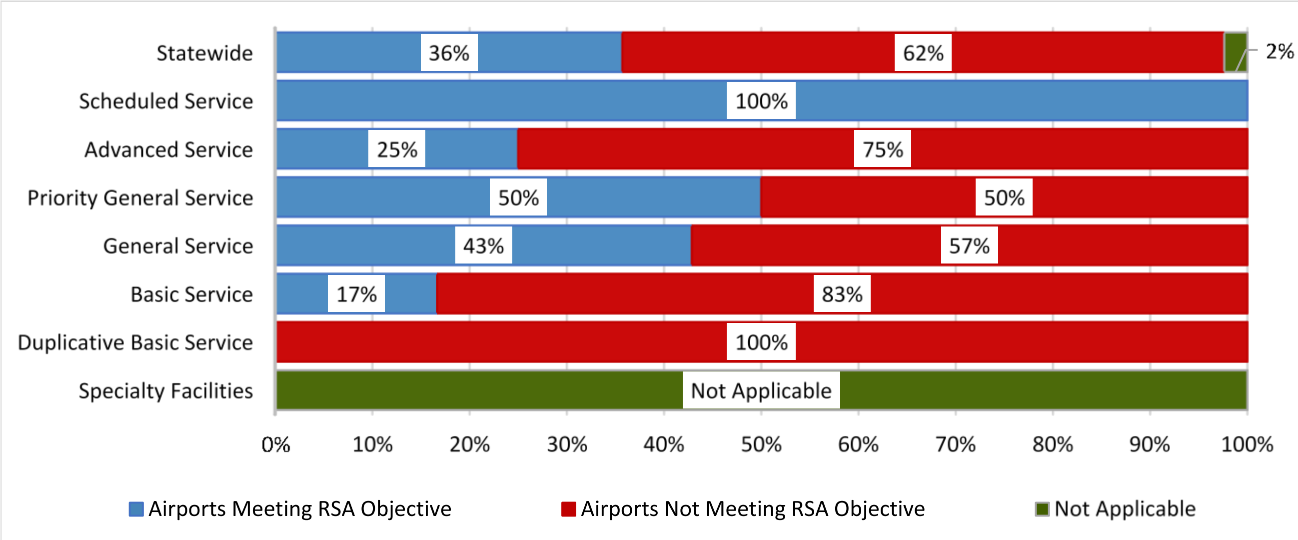
An important characteristic of a good airport system is the system's ability to meet applicable design and safety standards. Generally speaking, when airports in any system comply with such standards, this helps to promote a system of safe and efficient airports. NJDOT BOA recognizes the importance of having an airport system that operates safely. The following SASP safety compliance objectives are:

- **Runway Safety Area (RSA):** Maintain appropriate dimensions for the primary runway to meet FAA standards as determined by current ARCs for each airport
- **Runway Protection Zone (RPZs):** FAA recommends no incompatible land uses within the RPZ for the primary runway and 100 percent ownership for entire RPZ
- **Approach Surface:** Maintain clear approaches as per FAR Part 77 AND ensure minimum unobstructed approach surface of 20:1 horizontal to vertical slope at each end of the runway

As with all FAA planning standards and guidelines, only federally eligible airports (those included in the NPIAS) are required to meet FAA standards; however, guidance provided by FAA is considered to be applicable to all airports to promote safety. Each airport's current compliance with safety/compliance objectives noted above can be found in **Appendix E-Table 30** through **Appendix E-Table 33**. Each objective is discussed in more detail below.

5.5.1 Runway Safety Area

The runway safety area (RSA) is designed to promote and increase airport safety. The dimensions for the RSA are determined by the FAA based on each airport's ARC. The RSA is the area off each runway end that, in accordance with FAA standards, should be free and clear of any obstructions. The RSA should also be graded. This objective for the system plan is that airports must maintain appropriate RSA dimensions for their primary runways. All study airports were asked during the inventory process whether or not their RSAs meet FAA design standards for their respective ADG. Using airports' responses, evaluating each airport's latest ALPs to validate current ADG, where available, and Google Earth, the airports' compliance with RSA requirements was determined and listed in **Appendix E-Table 30.** As shown in **Figure 5-30**, 36 percent of study airports meet RSA objectives.



Source: Airport Survey Questionnaires, Google Earth, and AECOM.

Figure 5-30 Percentage of Airports by Role that Meet Their RSA Objective

The following airports do not currently meet their RSA objectives:

Advanced Service	**Priority General Service**	**General Service**	**Basic Service**	**Duplicative Basic Service**
Cape May County	Central Jersey Regional	Blairstown	Aeroflex-Andover	Kroelinger
Essex County	Cross Keys	Flying W	Bucks	Red Wing
Hammonton Municipal	Lincoln Park	Greenwood Lake	Camden County	Southern Cross
Monmouth Executive		Old Bridge	Hackettstown	Trinca
Morristown Municipal		Somerset	Ocean City Municipal	
Ocean County Airport		Spitfire Aerodrome		
		Sussex		
		Trenton-Robbinsville		

5.5.2 Runway Protection Zone (RPZ)

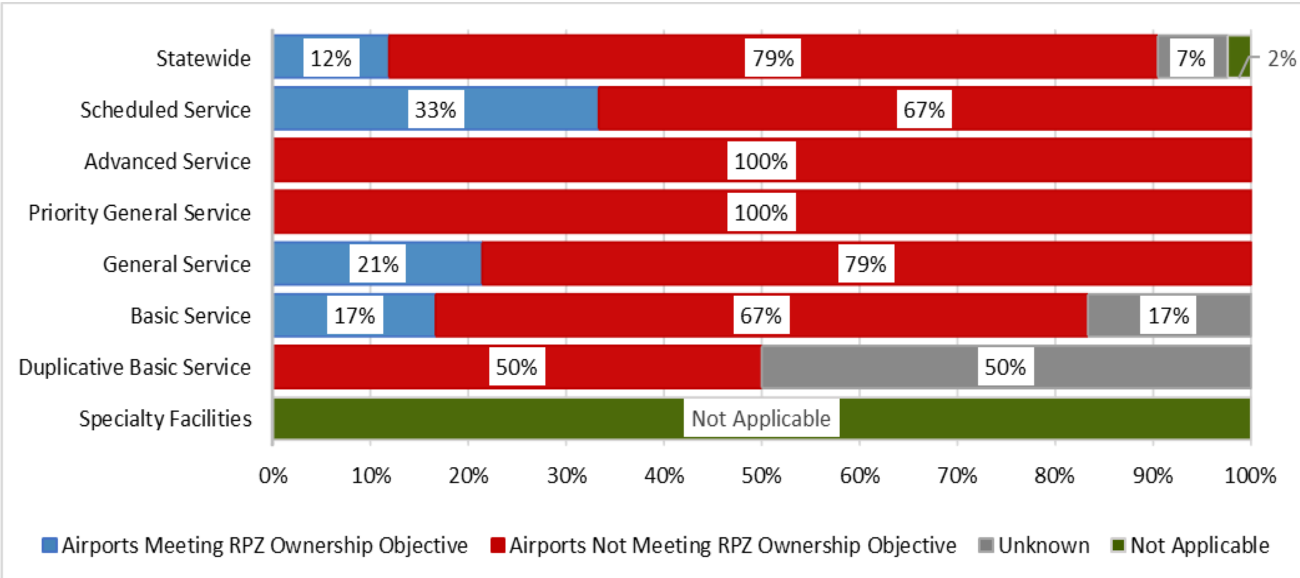
The function of the RPZ is to enhance the protection of people and property on the ground. The FAA defines the RPZ as a trapezoidal area that is centered on the extended runway centerline. The size of an RPZ will vary by airport, the type of aircraft it accommodates, and the visibility minimums of each runway. RPZs range in area from 8 acres to 79 acres of land.

The RPZ objective as set in Table 5-1 by this NJ SASP update is two-fold. First, each airport's primary runway's RPZ should contain no incompatible lands uses. Second, fee simple ownership or easements where possible, are recommended to, but not required by airport owners in order to gain and implement compatible land use principles for each runway RPZ as the optimum method of ensuring the public's safety in these areas.

Having that control of the RPZ is considered critical by NJDOT BOA to ensure incompatible development does not take place under the RPZ surface.

As part of the inventory effort, airport managers/sponsors were asked if the airport controlled the RPZs for all runway ends. Information was not gathered regarding the type of control: whether fee simple (ownership) or by means of an avigation easement. If an airport indicated it controls 100 percent of the RPZ on all runway ends, it is considered complete control and fulfils this performance measure regardless of the type of control. Airports were asked to indicate the level of control of the RPZs for each runway end.

Appendix E-Table 31 presents the reported control of each runway end RPZ by airport. **Figure 5-31** presents airports by role grouping that have complete control of the RPZs on their primary runway ends as identified by the airports. Statewide, only 12 percent of airports fully control their primary runway's RPZs by either fee simple or easement. It is unknown if three airports (Hackettstown, Kroelinger, and Red Wing) meet their objectives as they did not provide RPZ ownership data during the inventory effort.



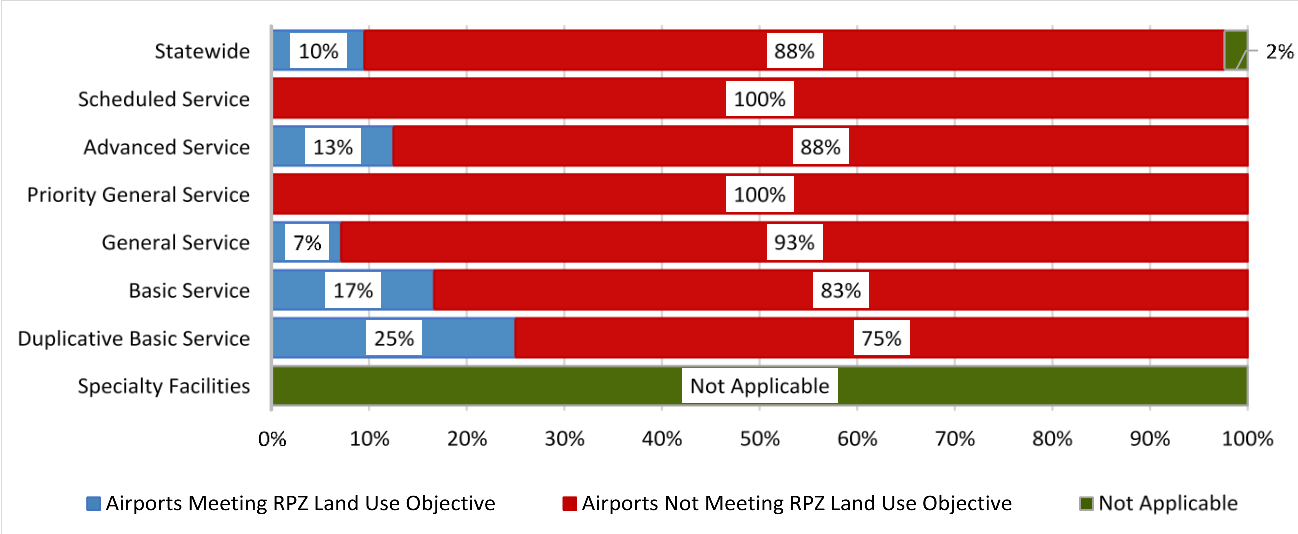
Source: Airport Survey Questionnaires.

Figure 5-31 Percentage of Airports by Role that Meet Their RPZ Ownership Objective

The following airports do not fully control the RPZs on both ends of their primary runway. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service
Newark Liberty International	Cape May County	Central Jersey Regional	Alexandria Field	Bucks	*Kroelinger*
Trenton Mercer	Essex County	Cross Keys	Blairstown	Camden County	*Red Wing*
	Hammonton Municipal	Lincoln Park	Eagles Nest	*Hackettstown*	Southern Cross
	Millville Municipal	Linden	Flying W	Ocean City Municipal	Trinca
	Monmouth Executive	Solberg-Hunterdon	Greenwood Lake	Vineland Downtown	
	Morristown Municipal	South Jersey Regional	Lakewood		
	Ocean County Airport		Sky Manor		
	Teterboro		Somerset		
			Spitfire Aerodrome		
			Sussex		
			Trenton-Robbinsville		

Appendix E-Table 32 presents the land use characteristics of each runway end RPZ by airport. **Figure 5-32** presents airports by role grouping that have no incompatible land uses within the RPZs of their primary runway ends as identified by the airports. Statewide, 10 percent of airports are free of incompatible land uses within primary runway's RPZs.



Source: Airport Survey Questionnaires.

Figure 5-32 Percentage of Airports by Role that Meet Their RPZ Land Use Objective

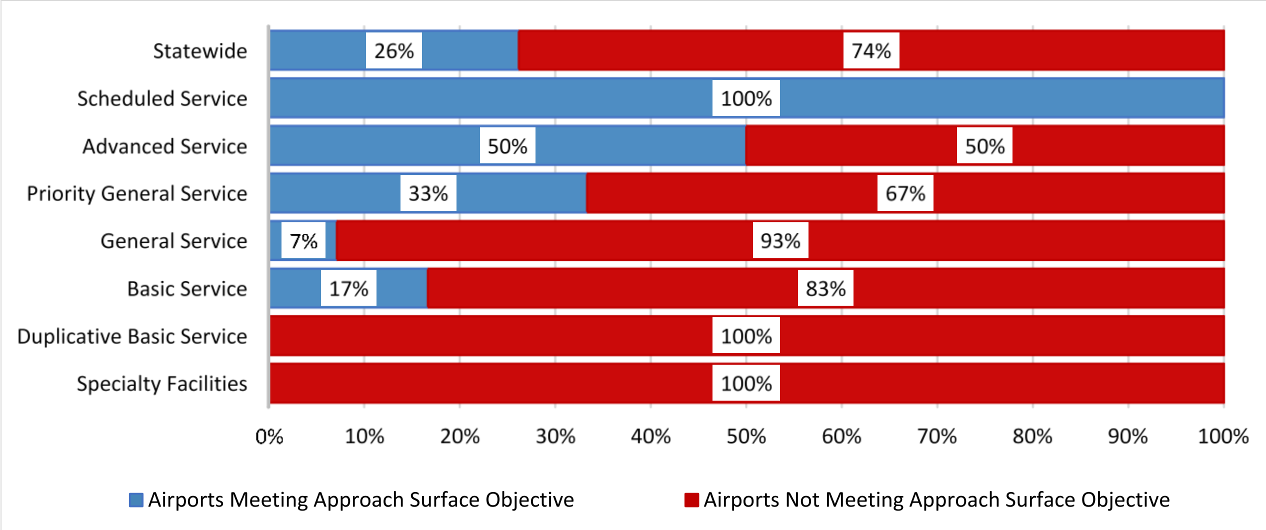
The following airports have incompatible land uses within the RPZs of their primary runway:

Scheduled Service	**Advanced Service**	**Priority General Service**	**General Service**	**Basic Service**	**Duplicative Basic Service**
Atlantic City International	Cape May County	Central Jersey Regional	Alexandria Field	Bucks	Kroelinger
Newark International	Essex County	Cross Keys	Blairstown	Camden County	Red Wing
Trenton Mercer	Hammonton Municipal	Lincoln Park	Eagles Nest	Hackettstown	Southern Cross
	Monmouth Executive	Linden	Greenwood Lake	Ocean City Municipal	
	Morristown Municipal	Solberg-Hunterdon	Lakewood	Vineland Downtown	Somerset
	Ocean County Airport	South Jersey Regional	Old Bridge		
	Teterboro		Sky Manor		
			Spitfire Aerodrome		
			Sussex		
			Trenton-Robbinsville		
			Woodbine Municipal		

5.5.3 Approach Surfaces

The objective for approach surfaces is that airports should maintain unobstructed approach surfaces of 20:1. **Appendix E-Table 33** presents the availability of night-time approaches, which is an indicator of clear 20:1 approach for each airport's primary runway ends. As shown in **Figure 5-33**, 26 percent of study airports meet these approach surface objectives. It is desired for all airports to meet this objective.

However, it is important to note that not all obstructions can be removed or relocated. Obstructions such as roads, buildings, or terrain are not likely to be removed or relocated to attain optimal approach slopes. Other obstacles, such as brush or trees, can usually be addressed, particularly with the assistance of a vegetation management or obstruction removal program.



Source: FAA Digital Approach Plates.

Figure 5-33 Percentage of Airports by Role that Meet Their Approach Surface Objective

Each airport with obstructions in their approaches should have an obstruction removal study. The airports with the ability to meet the approach surface objectives will be identified in a subsequent chapter. According to data collected as part of the inventory effort, the following airports do not currently meet their objective for optimal approach slope:

Advanced Service	**Priority General Service**	**General Service**	**Basic Service**	**Duplicative Basic Service**	**Specialty Facilities**
Cape May County	Central Jersey Regional	Alexandria Field	Aeroflex-Andover	Kroelinger	Little Ferry Seaplane Base
Essex County	Cross Keys	Blairstown	Bucks	Red Wing	
Hammonton Municipal	Linden	Eagles Nest	Camden County	Southern Cross	Somerset
Teterboro	South Jersey Regional	Flying W	Hackettstown	Trinca	
		Greenwood Lake	Vineland Downstown		
		Lakewood			
		Old Bridge			
		Princeton			
		Sky Manor			
		Spitfire Aerodrome			
		Sussex			
		Woodbine Municipal			

5.6 Planning

A key component in the success of a system airport is positioning airports to be able to respond to near and long-term development needs. An airport with a current master plan or ALP increases the likelihood of cooperation from the local community and mitigation of environmental concerns during periods of growth and development.

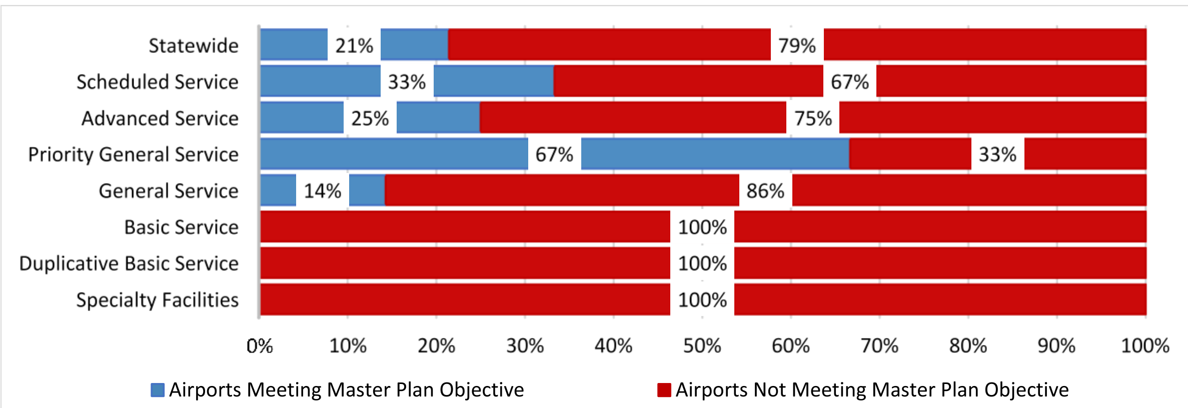
A current airport plan is important for justification and eligibility for federal and state funding for capital improvement projects. Current planning documents help New Jersey's airports document facility requirements, determine priority for potential development projects, and identify compatible land uses for areas near the airport.

5.6.1 Master Plans and ALPs

Airport planning documents should be updated regularly, or as increased demand necessitates; as conditions at an airport or community change; or as changes in federal planning and design standards warrant. For the purpose of this analysis, the following objectives have been established:

- Scheduled Service: Master Plan and ALP less than five years old
- Advanced Service, Priority General Service, General Service and Basic Service/Duplicative Basic Service: Master Plan and ALP less than 10 years old

Appendix E-Table 34 details the currency of airport planning documents at study airports as obtained from airport, FAA, and NJDOT BOA records. Planning documents are important for analyzing an airport's development potential and identifying and justifying facility improvements. In order for NPIAS airports to be eligible for federal funding, a project must appear on an FAA-approved ALP. Although it is not a requirement for airports to have an updated airport master plan or ALP to be eligible for state funding, airports are strongly encouraged to engage in such planning activities as recommended by their facility, service, and equipment objectives. **Figure 5-34** shows that 21 percent of study airports meet their objectives for having a current airport master plan and **Figure 5-35** shows that 50 percent of study airports have a current ALP.



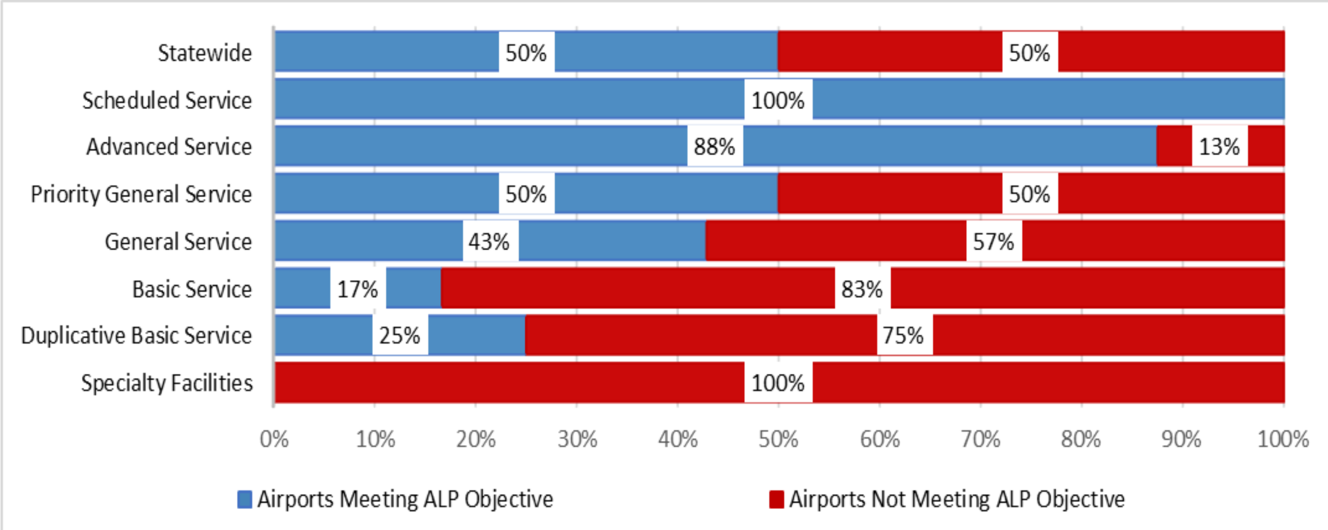
Source: Airport Survey Questionnaires and NJDOT BOA.

Figure 5-34 Percentage of Airports by Role that Meet Their Master Plan Objective

The following airports do not meet the established objective for master plans:

Scheduled Service	**Advanced Service**	**Priority General Service**	**General Service**	**Basic Service**	**Duplicative Basic Service**	**Specialty Facilities**
Atlantic City International	Cape May County	Central Jersey Regional	Alexandria Field	Aeroflex-Andover	Kroelinger	Little Ferry Seaplane Base
Newark International[49]	Essex County	Solberg-Hunterdon	Blairstown	Bucks	Red Wing	
	Millville Municipal		Eagles Nest	Camden County	Southern Cross	
	Monmouth Executive		Lakewood	Hackettstown	Trinca	
	Ocean County Airport		Old Bridge	Ocean City Municipal		
	Teterboro[50]		Princeton	Vineland Downtown		
			Sky Manor			
			Spitfire Aerodrome			
			Sussex			
			Trenton-Robbinsville			
			Woodbine Municipal			

[49], [2] The Port Authority of New York and New Jersey does not have a published master plan for Newark International Airport and Teterboro Airport; however, the Authority regularly conducts long term planning and development activities at the Airports.



Source: Airport Survey Questionnaires and NJDOT BOA.

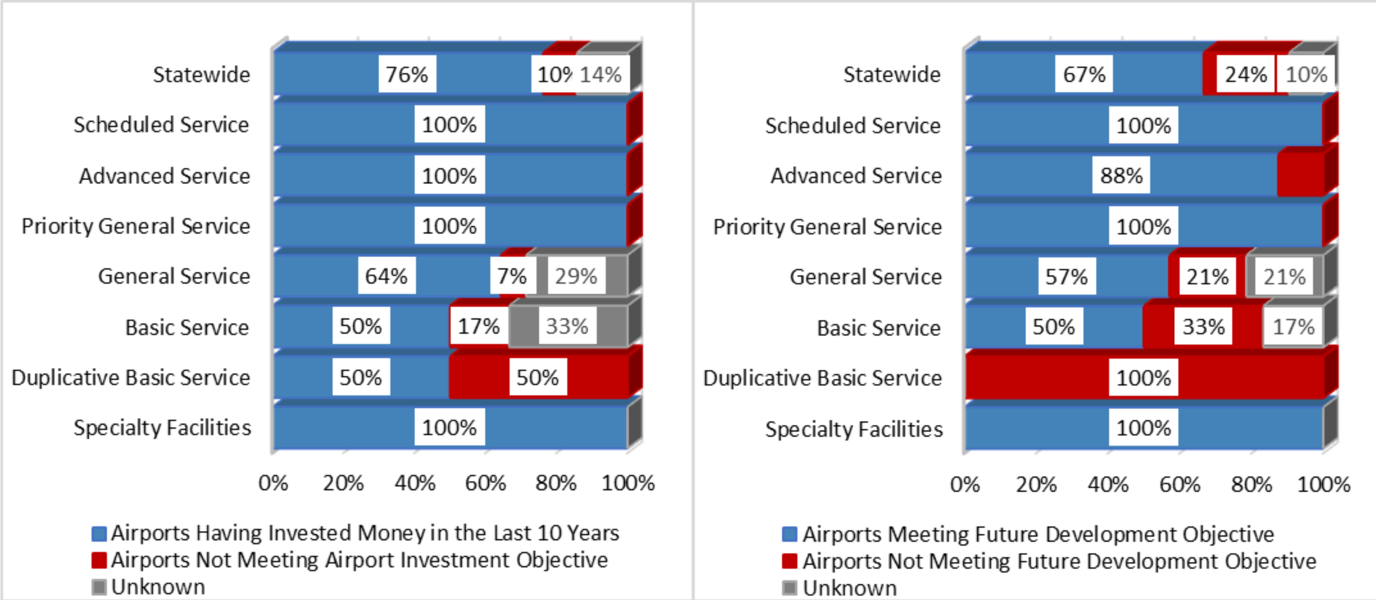
Figure 5-35 Percentage of Airports by Role that Meet Their ALP Objective

The following airports do not meet the established objective for current ALPs:

Advanced Service	**Priority General Service**	**General Service**	**Basic Service**	**Duplicative Basic Service**	**Specialty Facilities**
Monmouth Executive	Central Jersey Regional	Alexandria Field	Aeroflex-Andover Field	Kroelinger	Little Ferry Seaplane Base
	Solberg-Hunterdon	Blairstown	Bucks	Red Wing	
		Flying W	Camden County	Southern Cross	
		Old Bridge	Hackettstown		
		Princeton	Vineland Downtown		
		Sky Manor			
		Sussex			
		Trenton-Robbinsville			

5.6.2 Airport Investment and Future Development

An airport sponsor’s ability to contribute funds to the maintenance and development of its airside and landside facilities, coupled with the implementation of its planning efforts via planned development projects shows the community and aviation stakeholders that the airport is a vested partner in the development and longevity of the airport in the New Jersey system. **Appendix E-Table 35** presents the data reported by each airport during the inventory effort regarding invested monies at their airport over the last 10 years and future planned projects. It is an objective for all airports to have invested money into their airports over the last 10 years and have at least one project planned. **Figure 5-36** shows that 76 percent of study airports have invested money into their facilities over the last 10 years and 67 percent of study airports have at least planned for one future project.



Source: Airport Survey Questionnaires and NJDOT BOA.

Figure 5-36 Percentage of Airports by Role that Have Invested Money into Their Airport & Have at Least One Project Planned

The following airports have not invested money into their facilities since 1998. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

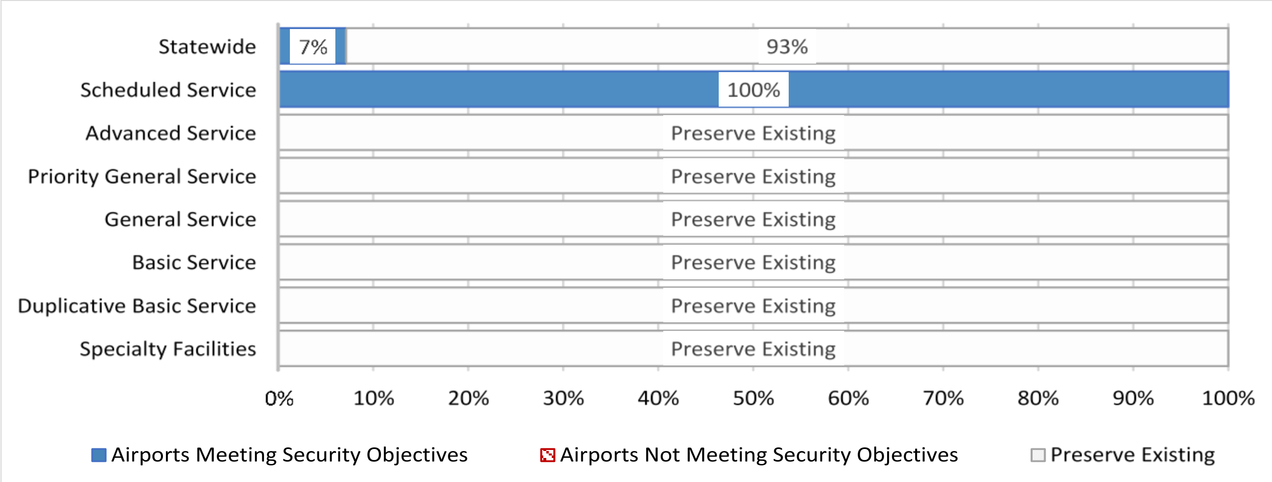
General Service	Basic Service	Duplicative Basic Service
Blairstown	*Aeroflex-Andover*	Kroelinger
Flying W	Bucks	Southern Cross
Sky Manor	*Hackettstown*	
Spitfire Aerodrome		
Trenton-Robbinsville		

The following airports reported not having a future project planned. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Advanced Service	General Service	Basic Service	Duplicative Basic Service
Monmouth Executive	Flying W	Aeroflex-Andover	Kroelinger
	Sky Manor	Bucks	Red Wing
	Spitfire Aerodrome	*Hackettstown*	Southern Cross
	Sussex		Trinca
	Trenton-Robbinsville		

5.7 Security

It is important for airports to maintain effective, efficient security measures to protect the airport against security threats. The system objective for security measure is for Scheduled Service airports to meet the requirements set forth by the Transportation Security Administration (TSA) which issues regulations governing the security of airports with commercial service to ensure aircraft operations are secure. Many general aviation airport managers and users commonly implement security measures similar to those found at commercial service airports. General aviation airports in New Jersey should preserve the security measures they currently have in place. **Appendix E-Table 36** presents information regarding existing perimeter fencing, electronic gate access controls, and CCTV security camera systems at study airports in New Jersey. **Figure 5-37** shows that 100 percent of Scheduled Service airports meet all of the security objectives that have been established.



Source: Airport Survey Questionnaires.

Figure 5-37 Percentage of Airports by Role that Meet Their Security Objectives

5.7.1 Perimeter Fence

Perimeter fencing serves dual roles. It increases safety around the airport by deterring wildlife from gaining access to the airfield causing possible runway incidents. Perimeter fencing also provides security to the airfield by deterring the public and unauthorized people from the airfield. All three (100 percent) Scheduled Service airports meet the objective.

5.7.2 Electronic Gate Access System

Any access point through a fence or other boundary should control or prevent access by unauthorized users. Electronic gate access helps prevent unauthorized access of persons and vehicles to the landside and airside areas of an airport. Security gates also help minimize the threat of improvised explosive devices (IEDs). Access controls with biometric credentials or portable smart card readers help to verify the identity of those accessing the airfield. All three (100 percent) Scheduled Service airports meet the objective.

5.7.3 CCTV Security Camera System

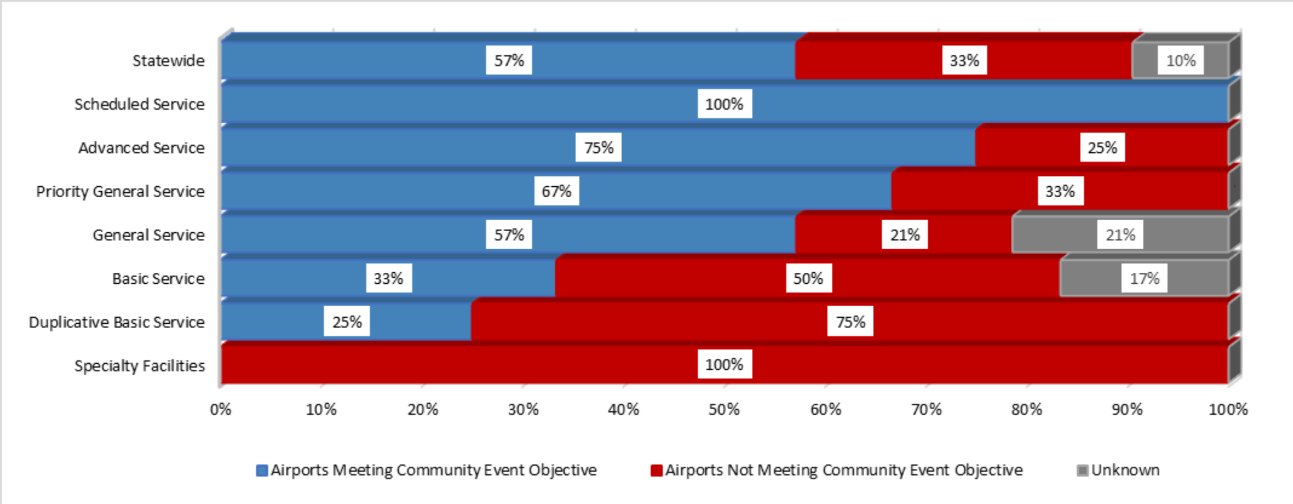
CCTV security camera systems are a surveillance technique that can help secure an airport and deter unlawful activity. Security cameras can be installed inside and outside of buildings, access points, along roadways, and along fencing. All three (100 percent) Scheduled Service airports meet the objective.

5.8 Community Engagement

Many people and communities are unaware of the many benefits an airport brings to a region. Airports must work closely and have an active partnership with their communities. It's often the airport's responsibility to carefully educate a wide variety of stakeholders and local public officials on the value of the airport. The basic building block for working with and educating the community is communication. The more an airport's benefits are communicated, and the community is informed on what is going on at the airport, the more people will understand what an essential asset the airport is to the community. **Appendix E-Table 37** presents information regarding existing community events, marketing strategy, and relationships with educational institutions at study airports in New Jersey.

5.8.1 Community Events

Supporting community events allows airports to welcome the public onto airport property to learn about aviation and enjoy the benefits of the airport. These events are coordinated with the FAA and NJDOT BOA, as some may need airspace review or NOTAMs issued by the FAA. Common examples of community events held at airports include air shows, fly-ins, 5K runs, or other public events. It is an objective for all study airports in New Jersey to support a community event at their facilities. As shown in **Figure 5-38**, more than half (24 airports) of study airports in New Jersey reported supporting a community event at their airport (see **Appendix E-Table 37**).



Source: Airport Survey Questionnaires.

Figure 5-38 Percentage of Airports by Role that Meet Their Community Event Objective

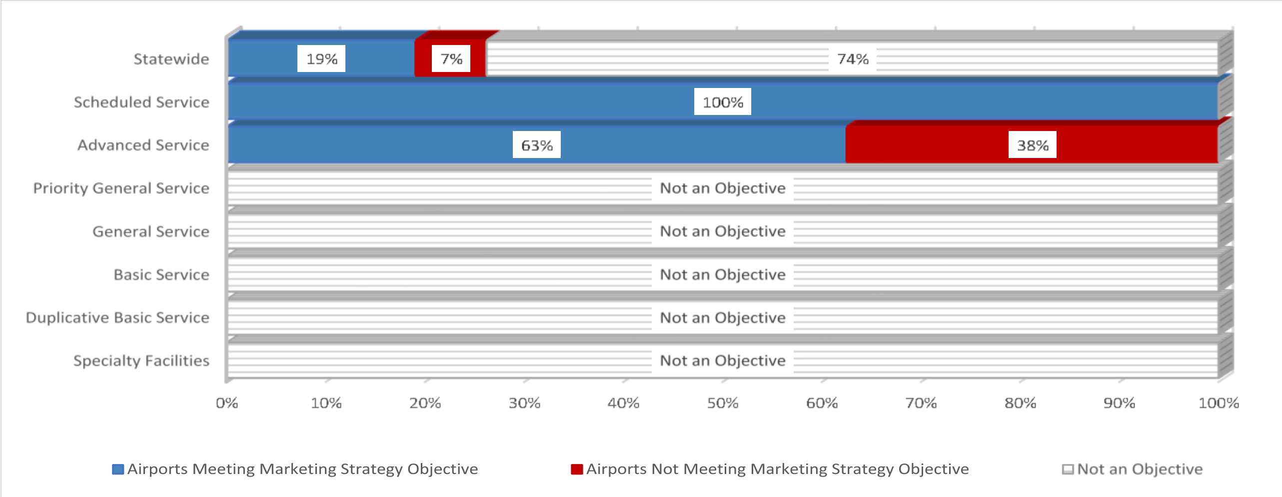
The following airports reported not supporting a community event. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities
Hammonton Municipal	Lincoln Park	Old Bridge	Bucks	Kroelinger	Little Ferry Seaplane Base
Millville Municipal	Linden	*Sky Manor*	Camden County	Red Wing	
		Somerset	*Hackettstown*	Southern Cross	
		Spitfire Aerodrome	Vineland Downstown		
		Sussex			
		Woodbine Municipal			

5.8.2 Marketing Strategy

A marketing strategy refers to an overall game plan for reaching prospective users/consumers and turning them into customers of a product or service.[51] As such, airports should have effective marketing in place to attract users (businesses, passengers, etc.) and ultimately achieve or maintain financial self-sufficiency. It is an objective to have Scheduled Service and Advanced Service airports have an adopted marketing strategy in place. It is not an objective for Priority General Service, General Service, Basic Service, or Duplicative Basic Service airports to have an adopted marketing strategy. Eight of the system's 42 airports reported having a marketing strategy in place. All of the Scheduled Service airports and 63 percent of Advanced Service airports meet their objective, as shown in **Figure 5-39.**

[51] *Marketing Strategy*, Investopedia, October 7, 2019.



Source: Airport Survey Questionnaires.

Figure 5-39 Percentage of Airports by Role that Meet Their Marketing Strategy Objective

The following airports reported not having an adopted marketing strategy in place and therefore do not meet their objective:

Advanced Service

Essex County

Morristown Municipal

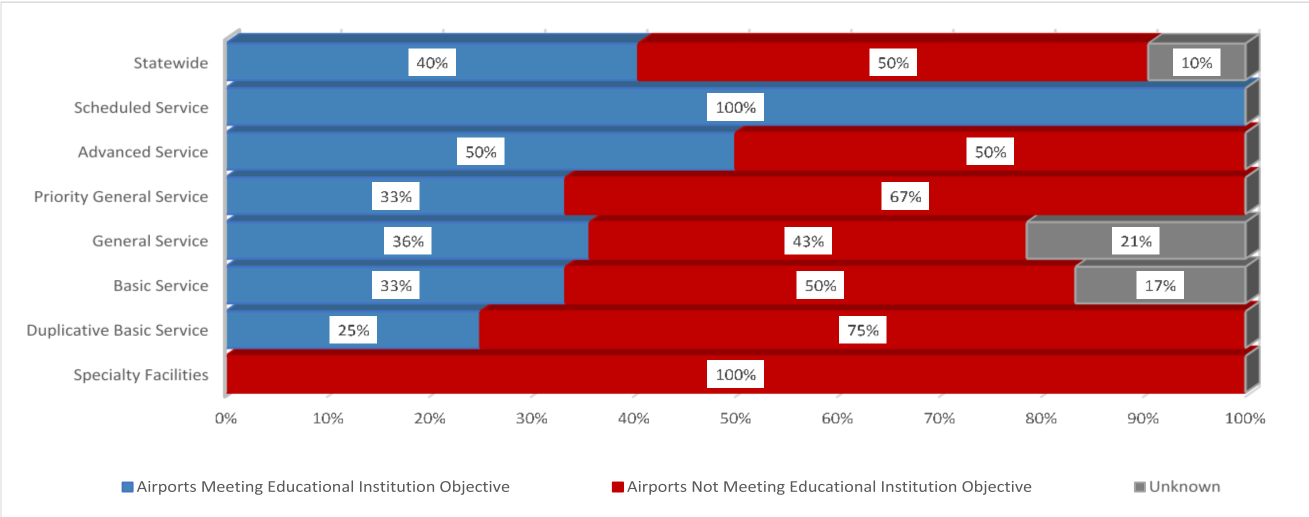
Ocean County Airport

5.8.3 Educational Institution

The aviation industry is a significant contributor to New Jersey's economy. A simple way to communicate the benefits of airports and increase the interest in aviation is for airports to partner with educational institutions. Partnerships include working with students at all levels of education from elementary schools through colleges and universities. Through these partnerships, an awareness of airports, aviation, and aerospace rises in students and the greater community as that learning experience is shared. Relationships between educational institutions and airports can include:

- Science, Technology, Engineering, and Mathematics (STEM) activities geared at students that offer lessons in flight training, aviation history, field trips to aviation-related sites, and instruction on aircraft design and maintenance; and
- Certified and accredited aviation programs at higher education institutions for students interested in a specific aviation-related career path that may require a Bachelor of Science degree in Aviation Management, Aeronautical Science, Aviation Meteorology, etc.

It is an objective for all study airports in New Jersey to have a relationship established with an educational institution. Currently, 40 percent of study airports report having a relationship with a school, college, or university as shown previously in **Figure 5-40**.



Source: Airport Survey Questionnaires.

Figure 5-40 Percentage of Airports by Role that Meet Their Educational Institution Objective

The following airports reported not having an established relationship with an educational institution. Airports noted in italics denote airports that did not provide data for the objective, and it is unknown if they meet the objective.

Advanced Service	**Priority General Service**	**General Service**	**Basic Service**	**Duplicative Basic Service**	**Specialty Facilities**
Essex County	Central Jersey Regional	Blairstown	Aeroflex-Andover	Kroelinger	Little Ferry Seaplane Base
Hammonton Municipal	Lincoln Park	Lakewood	Bucks	Red Wing	
Ocean County Airport	Linden	Old Bridge	Camden County	Southern Cross	
Teterboro	South Jersey Regional	Sky Manor	Hackettstown		
		Somerset			
		Spitfire Aerodrome			
		Sussex			
		Trenton-Robbinsville			
		Woodbine Municipal			

5.9 Summary

The current ability of New Jersey's 42 study airports to meet the facility objectives established as part of this system plan have been examined. **Figure 5-41** through **Figure** 5-47 provide a summary of the compliance with the objectives by airport role. It is possible that based on local need, airports in New Jersey may exceed their system plan objectives. Similarly, it is also possible that based on specific airport constraints, that some airports might not be able to meet all the objectives associated with their role.

Many of the airport-specific projects identified in this analysis must still be identified and supported through the master planning process. As airports in New Jersey updated their master plans and ALPs, projects identified in this analysis should be incorporated into those plans. Some projects identified in the system plan, especially those that involve airfield improvement, will require justification and detailed environmental review prior to their implementation.

In the next chapter, **Chapter 6 System Adequacy Analysis**, analysis will be conducted to determine where the existing system is adequate or deficient by aggregating the deficiencies identified in this analysis of airport facilities. Scenario-based alternatives will be developed to resolve any shortcoming and highlight the benefits of improvements that are made the New Jersey system. It is also possible that some airports may be recommended to have their roles changed due the results of this analysis and the system adequacy analysis.

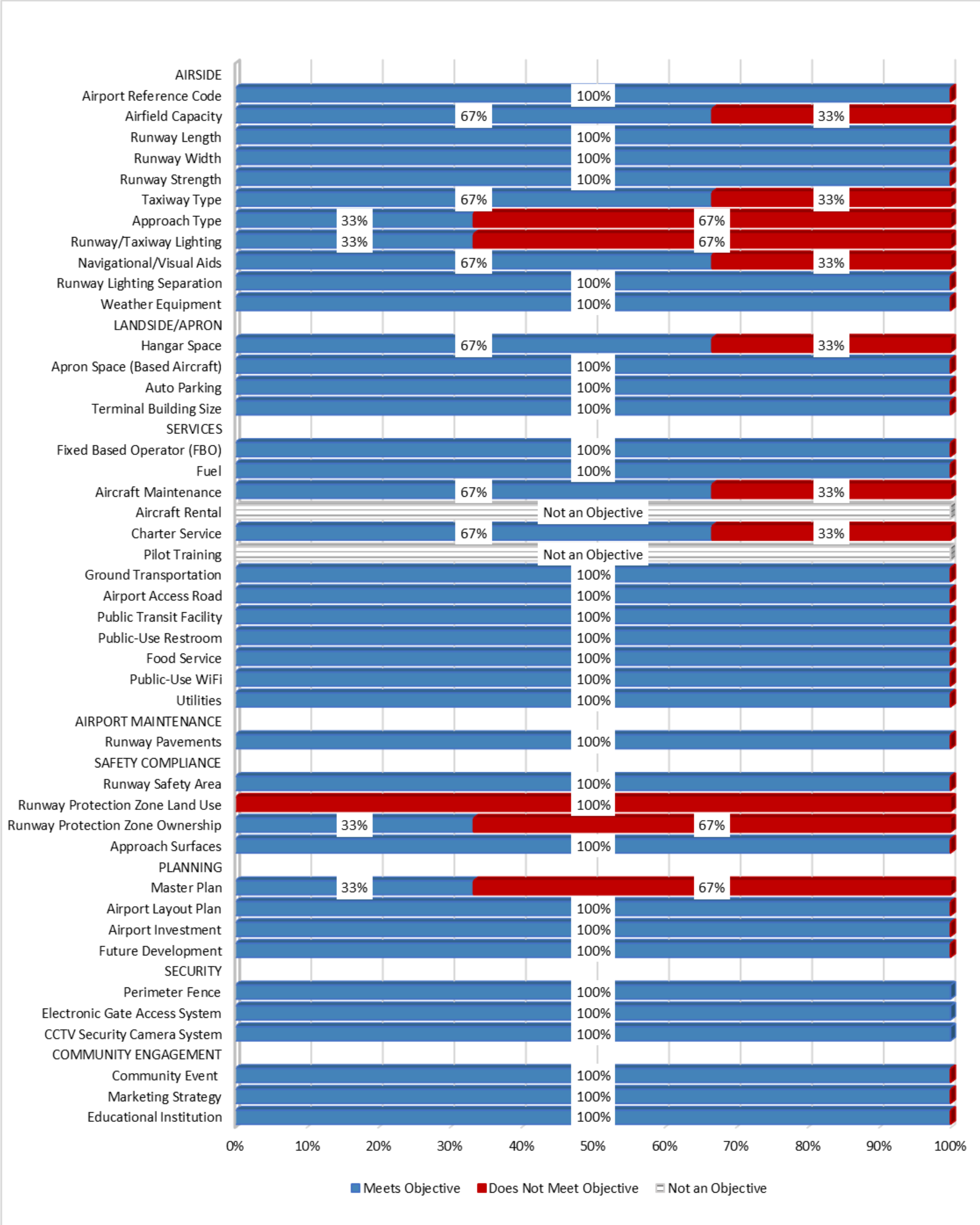


Figure 5-41 Scheduled Service Airports Compliance Summary

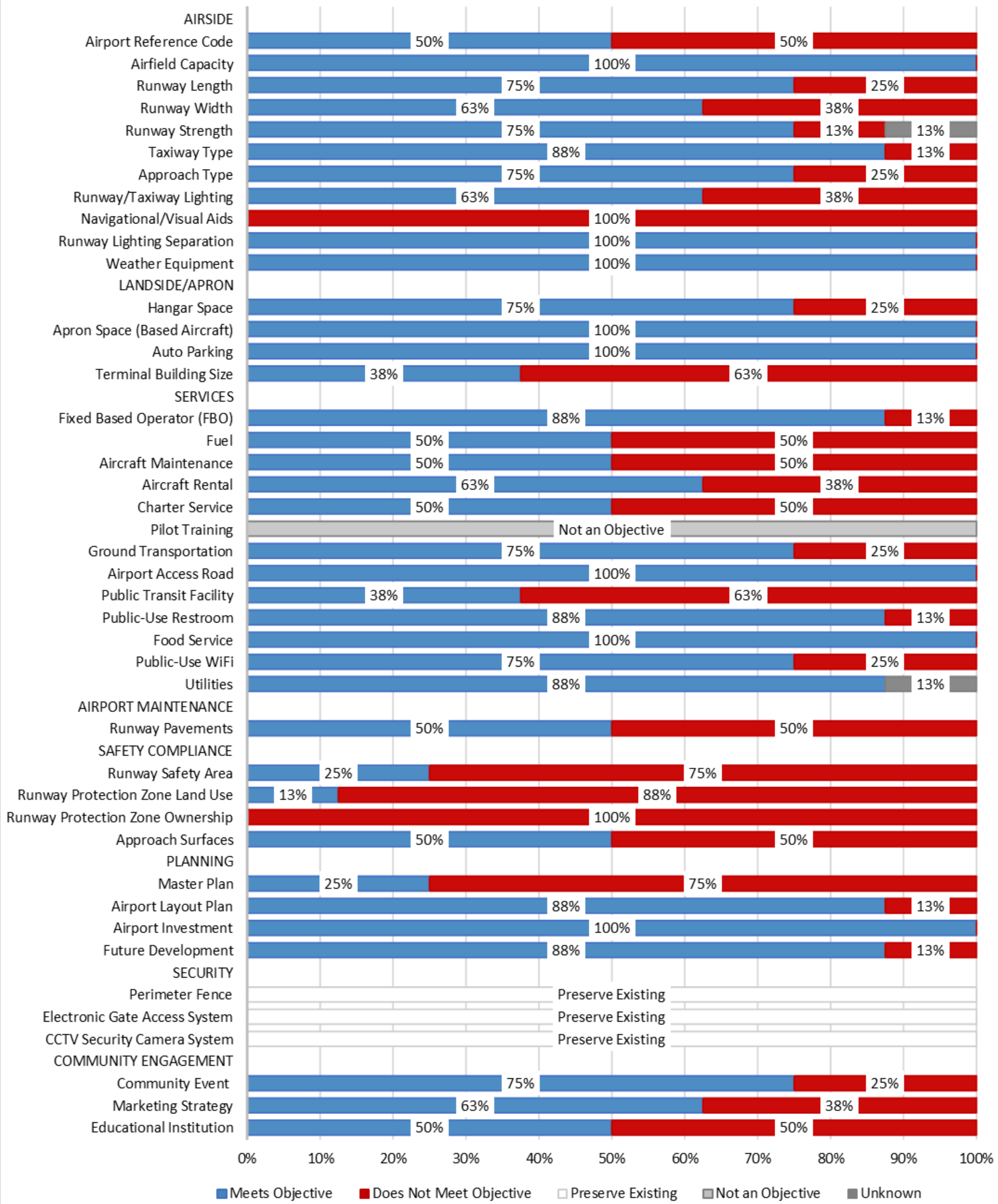


Figure 5-42 Advanced Service Airports Compliance Summary

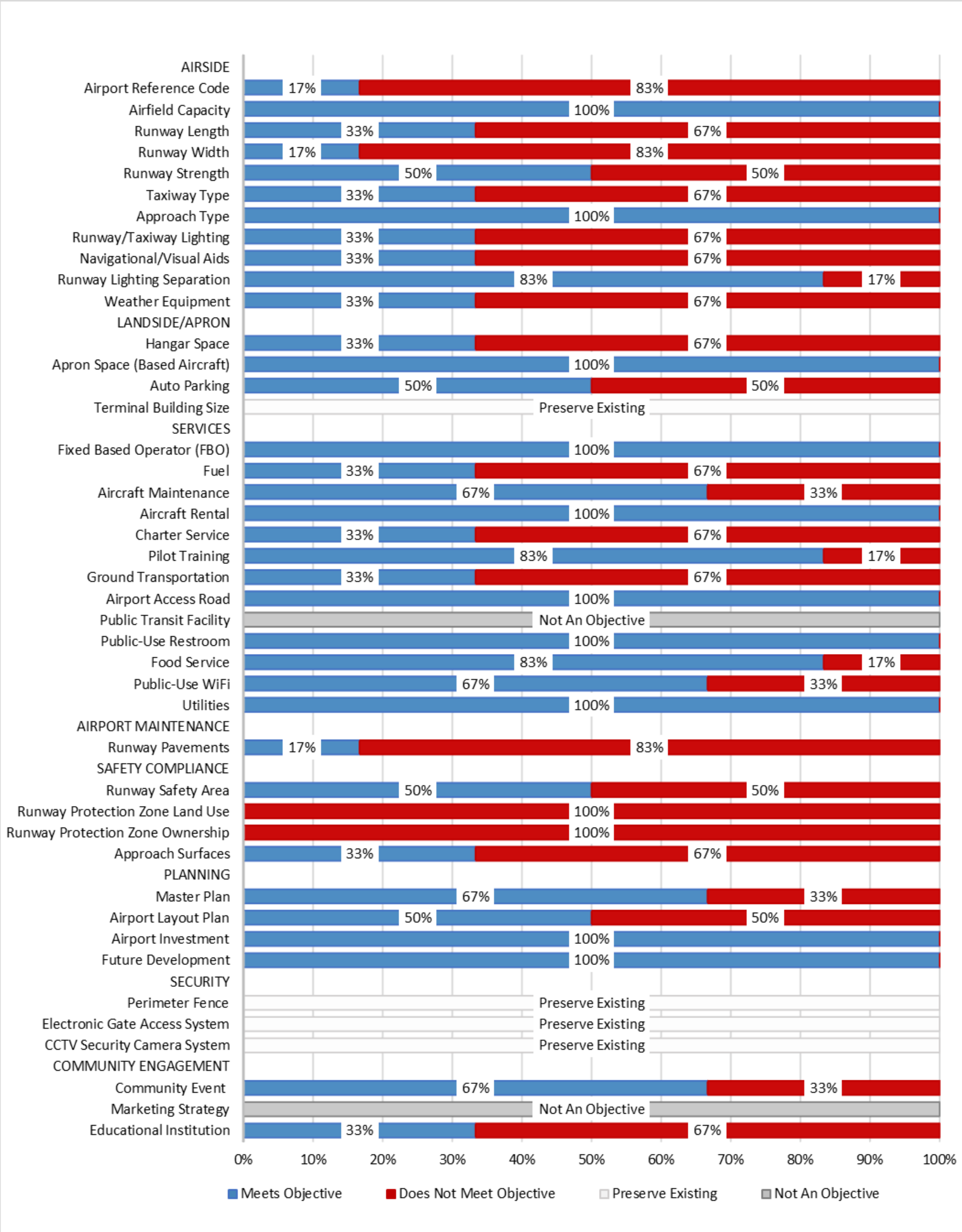


Figure 5-43 Priority General Service Airports Compliance Summary

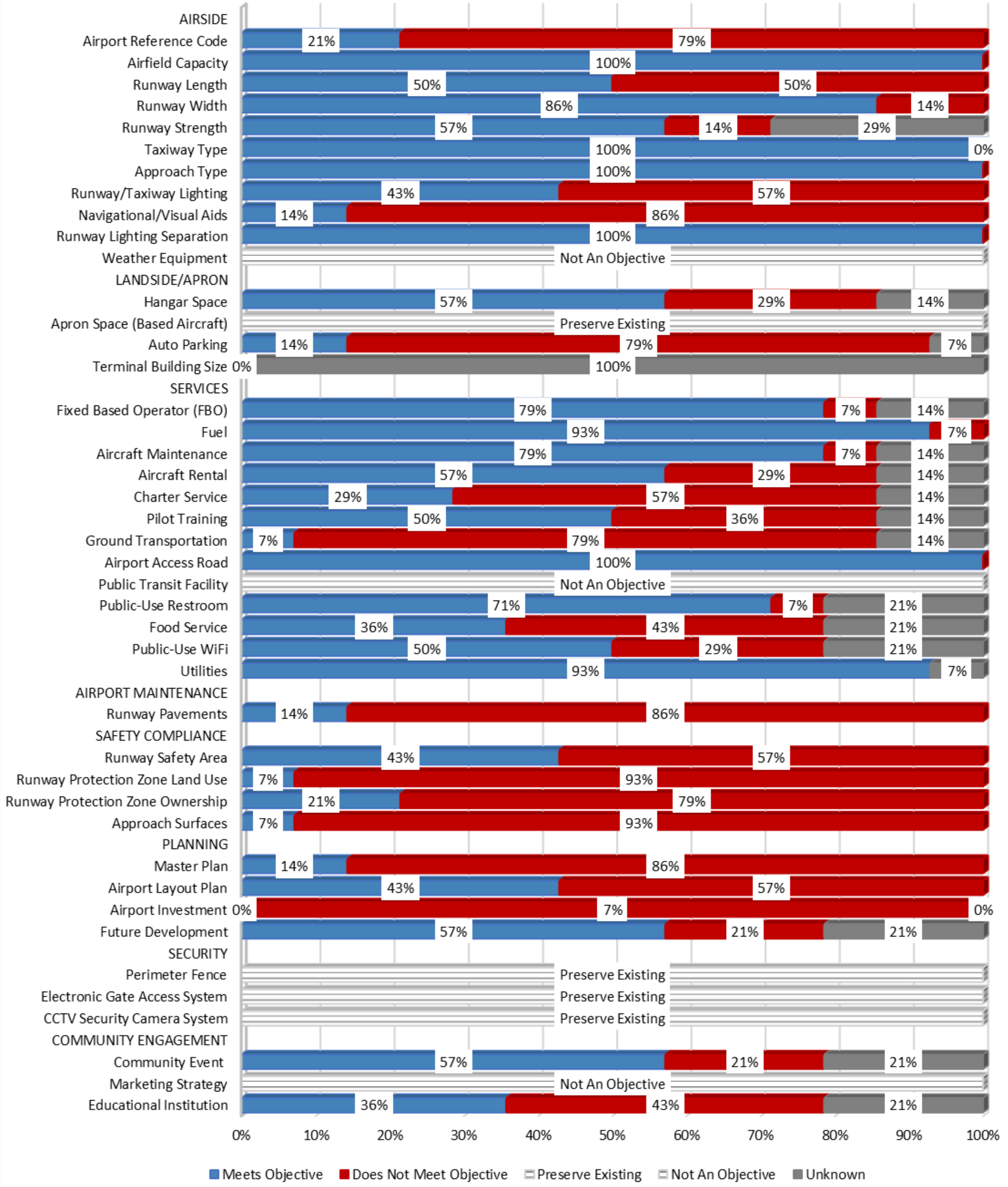


Figure 5-44 General Service Airports Compliance Summary

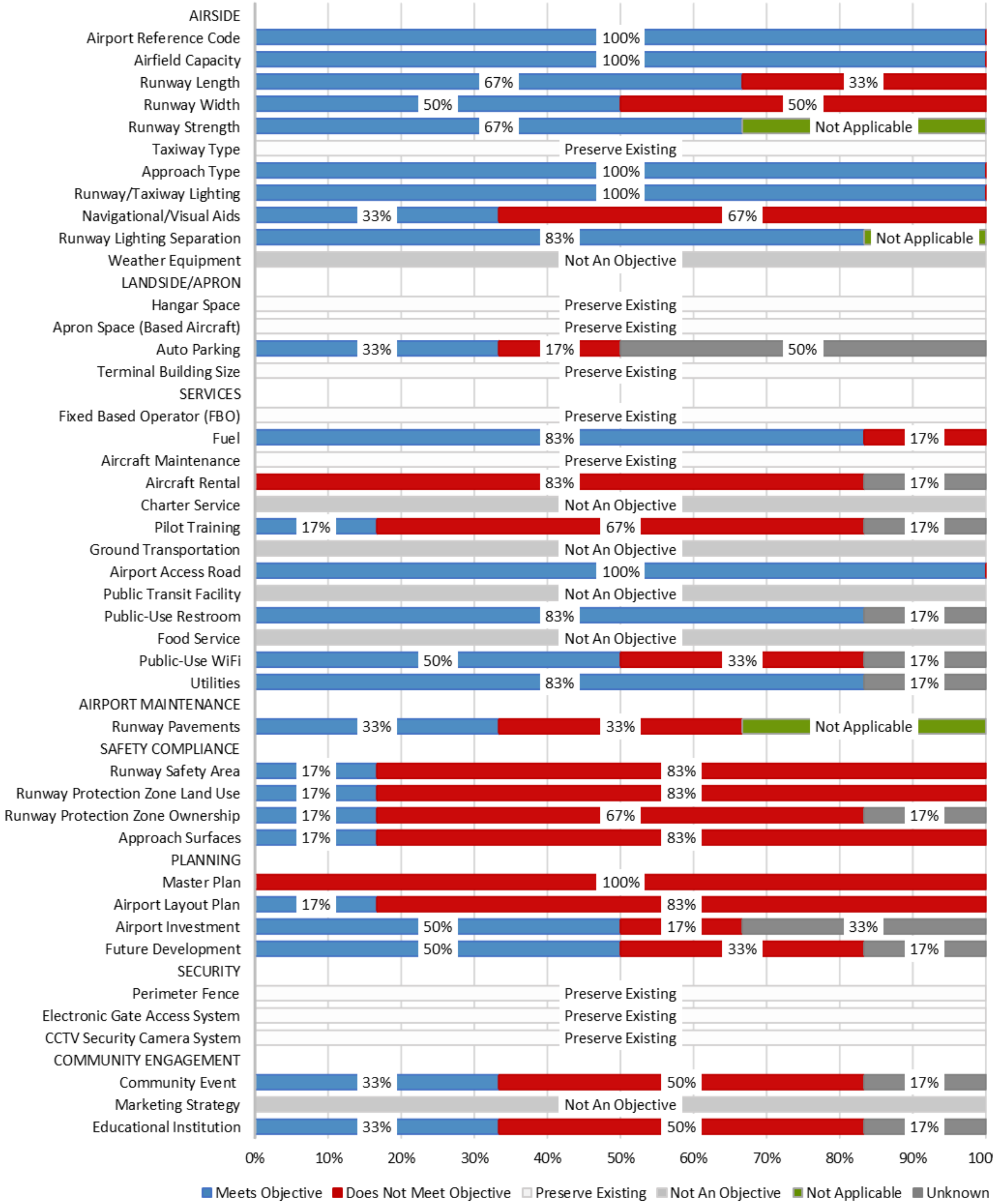


Figure 5-45 Basic Service Airports Compliance Summary

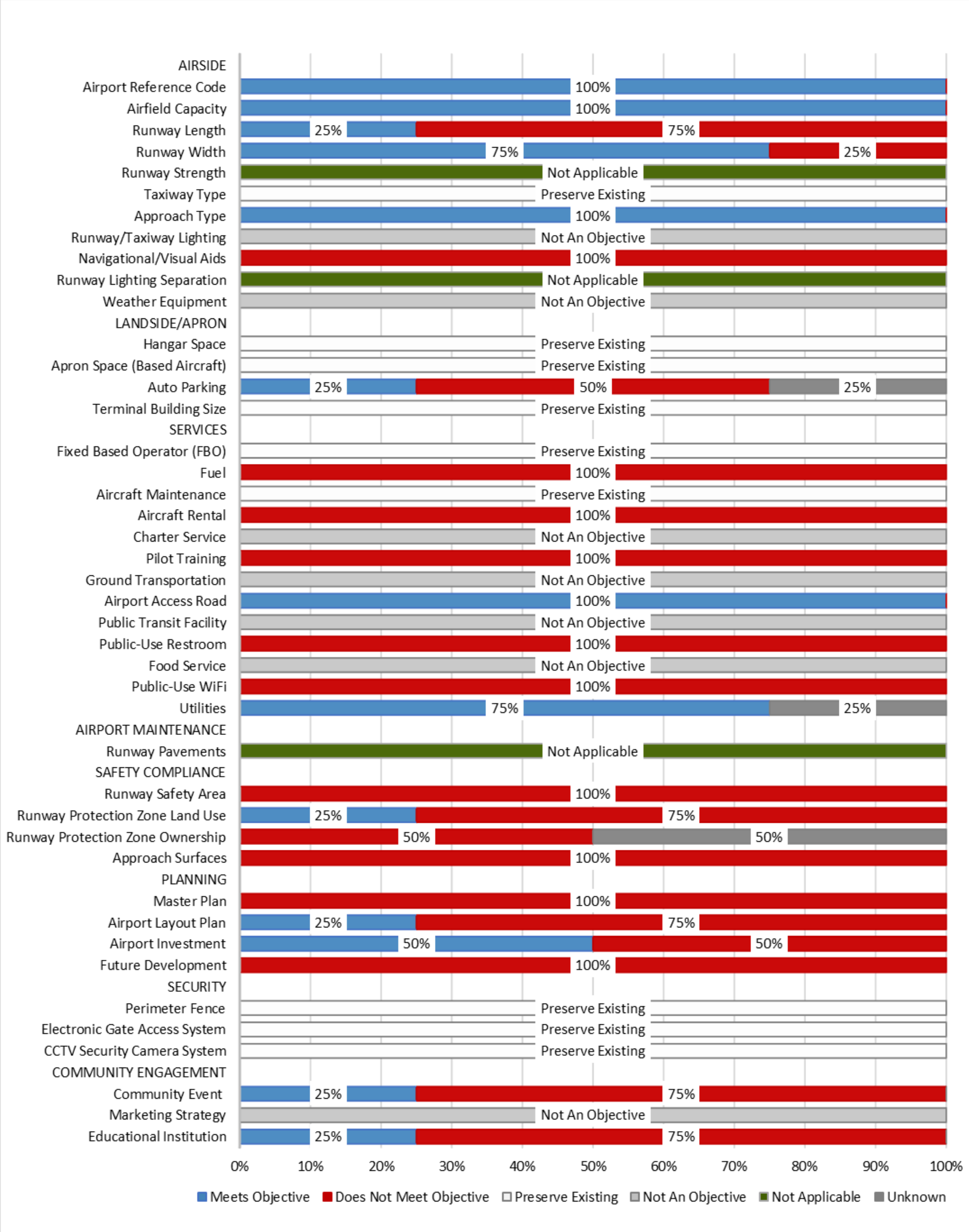


Figure 5-46 Duplicative Basic Service Airports Compliance Summary

Figure 5-47 **Specialty Facilities Compliance Summary**

6 SYSTEM ADEQUACY ANALYSIS

6.1 Introduction

The System Adequacy Analysis reviews the performance of the state airport system as a whole, based on population coverage of selected drivetimes and mileage distances, to determine deficiencies or gaps for selected evaluation measures in the current airport system. The system is then evaluated assuming that recommended facility and service objectives for each airport are implemented. It should be noted that all recommended facilities for an airport must be specifically justified during the airport master planning process and included on an approved ALP before federal funding can be considered or allocated.

The previous chapter, **Chapter 5 Facility Requirements Analysis**, established minimum objectives to enable airports to best fulfil their assigned airport role in the state airport system. Airport roles for all study airports were identified in **Chapter 3 Airport Roles**. Each airport role within New Jersey's airport system – Scheduled Service, Advanced Service, Priority General Service, General Service, Basic Service, Duplicative Basic Service, and Specialty Facility – is linked to specific facility requirements and minimum objectives, as presented in **Table 5-1** of **Chapter 5 Facility Requirements Analysis**.

It is noted here that through discussions held with the Federal Aviation Administration (FAA), New Jersey Department of Transportation (NJDOT) Bureau of Aeronautics (BOA), and Hammonton Municipal (N81) on future development potential and key components of the master plan underway for N81, NJDOT BOA determined that Priority General Service is a more realistic airport role for N81 for the current system plan. Subsequent analyses recommendations in the 2022 NJ SASP are developed based on N81's reclassification to a Priority General Service airport.

Chapter 6 System Adequacy Analysis evaluates system performance, based on population accessibility, and provides a system alternatives analysis. Based on the evaluation of system performance, options for enhancing the performance of New Jersey's airport system to mitigate potential system gaps and deficiencies are identified and reviewed. The remaining chapter is organized into the following sections:

6.2 Current System Performance
6.3 Alternatives Analysis

6.1.1 System Adequacy Evaluation Measures

To pinpoint current deficiencies or gaps within New Jersey's airport system, population coverage within drive time service areas of airports and/or airport assets were analyzed to determine accessibility to New Jersey's residents. Drive time coverages were calculated for the following system adequacy measures:

- **Access to Any Public-Use Airport** – Accessibility to any public-use airport within a 30-minute drive time.
- **Access to Any Scheduled Service Airport** – Accessibility to any airport with scheduled commercial airline service within a 60-minute drive time.
- **Access to Any Advanced Service Airport** – Accessibility to any Advanced Service airport within a 45-minute drive time.
- **Access to Any New Jersey Core Airport** – Accessibility to any Core airport within a 30-minute drive time.
- **Access to Any Airport in the National Plan of Integrated Airport Systems (NPIAS)** – Accessibility to any airport in the NPIAS within a 30-mile radius.
- **Access to Airports with Published Terminal Procedures** – Accessibility to any airport with published terminal procedures within a 30-minute drive time.
- **Access to Airports with Clear 20:1 Approach Surfaces** – Accessibility to any airport with clear 20:1 approach surfaces within a 30-minute drive time.
- **Access to Airports with a Primary Runway Length of 5,000 Feet or Greater** – Accessibility to any airport with a primary runway length of 5,000 feet or greater.

6.2 System Performance Evaluation

System Performance Evaluation is based on New Jersey population's access to these airports or airport assets. This section provides mapping and analysis that describes how New Jersey's existing system of airports is performing relative to each of the system adequacy evaluation measures listed in **Section 6.1.1 System Adequacy Evaluation Measures**. For each measure, population coverage was measured for current (2019) and future (2029) years, any additional New Jersey population covered by out-of-state airports, and the total combined population coverage were also calculated and presented.

6.2.1 System Performance Evaluation – Methodology and Data Sources

This section outlines the methodology and data sources used for the system performance evaluation.

Airport accessibility to New Jersey's population is measured within 30-, 45- and 60-minutes driving times, an acceptable national practice that was adopted by NJDOT BOA. Per Federal Aviation Administration (FAA) guidance effective September 3, 2019, public-use general aviation airports not included in the NPIAS seeking NPIAS inclusion must be located outside a 30-mile radius from the nearest NPIAS airport. Given this NPIAS/Airport Capital Improvement Program (ACIP) guidance, a 30-mile radius analysis was added to the system performance evaluation to analyze system coverage for this criterium. It is important to note, due to the geographic size of the State and certain high population density areas, it was agreed upon by NJDOT BOA and FAA to only apply a 30-mile radius for the evaluation of NPIAS eligibility and use driving time as mentioned above for all other analysis.

Driving time accessibility is measured by calculating the population of New Jersey within a coverage area, assuming average travel times. See **Appendix B. Drive Time Analyses** of **Chapter 1 Inventory**. The methodology and performance measures utilized for this system performance evaluation were developed through the identification of NJDOT BOA's key system priorities, facility requirements findings, and a one-day workshop held with NJDOT BOA and the FAA.

As mentioned, given New Jersey's geography and density, NJDOT BOA, upon discussions with the FAA, determined that using 30-minute driving time is considered an appropriate standard for measuring airport accessibility to New Jersey's population for the majority of the evaluation measures introduced in **Section 6.1.1 System Adequacy Evaluation Measures**. For select evaluation measures, different measures of proximity are used to either better reflect real-life travel behavior choices or meet FAA requirements. These exceptions are described further below.

- For measuring New Jersey population accessibility to scheduled service airports, i.e., airports that provide commercial airline service, a 60-minute driving time is used, since airport users are more likely to drive longer to access an airport with commercial airline service. This is consistent with travel behavior and national practices for system planning.
- Similarly, for measuring New Jersey's population accessibility to advanced service airports, i.e., airports that can accommodate corporate and executive business travel, a 45-minute driving time is used, since airport users are more likely to drive longer to access an airport with these capabilities. This is consistent with travel behavior and national practices for system planning.
- For evaluating population accessibility to airports included in the FAA's NPIAS, the measure of proximity used is a 30-mile radius. The FAA establishes guidance on NPIAS eligibility requirements in FAA Order 5090.5, Formulation of the NPIAS and Formulation of the ACIP, effective September 3, 2019, which states that non-NPIAS public-use general aviation airports seeking NPIAS inclusion must be located outside a 30-mile radius from the nearest NPIAS airport. As a result, a 30-mile radius instead of the previously utilized 30-minute drive time is used for measuring the access to NPIAS airports, including those located in neighboring states.

The Airport Cooperative Research Program (ACRP) Synthesis 14, Airport System Planning Practices, recommends that state aviation system plans should consider what role, if any, airports in neighboring states play in serving aviation demand. As a result, airports in neighboring states that are close enough to New Jersey's state border and provide accessibility coverage to New Jersey's residents, are included in this performance evaluation. **Figure 6-1** depicts the New Jersey airports and the out-of-state airports considered. It is noted that Trinca (13N) closed in September 2020. At the time of the completion of this chapter, Trinca (13N) was open as a public-use airport and was included in the drive time and population coverage analyses.

The population coverage numbers and percentages that were analyzed and presented in this chapter are based on 2017 New Jersey population by census tract. Growth rates for New Jersey's counties for 2010 to 2030 were utilized from New Jersey Department of Labor and Workforce Development's Population and Labor Force Projections and were applied to New Jersey's 2017 census tract populations. Using this methodology, New Jersey census tract's populations for 2019 and 2029 were developed. **Figure 6-2 and Figure 6-3** depict New Jersey's population density in 2019 and in 2029, respectively. Total population for New Jersey in 2019 and 2029 is estimated to be 9,047,511 and 9,353,238, respectively. The estimated population numbers for 2019 and 2029 were used to calculate coverage for system performance.

The drive time and distance coverage areas determine the number and proportion of New Jersey's population that is covered by New Jersey and its neighboring states airports' driving time for each system performance evaluation measure. Airports that are within close proximity of one another may provide overlapping coverage to New Jersey's population. Any overlapping coverage areas provided by two or more New Jersey airports are considered a single coverage area and the population covered was not double counted. Similarly, any overlapping coverage areas provided by New Jersey and neighboring out-of-state airports were not double-counted and are considered to be coverage provided by New Jersey airports. Any coverage of New Jersey population exclusively provided by out-of-state airports are quantified and depicted in the following sections.

The following data sources were used to collect information on New Jersey and neighboring out-of-state airports for this evaluation:

- Airport Survey Questionnaires/Airport Inventory Data
- FAA Form 5010, Airport Master Record
- FAA National Plan of Integrated Airport Systems (2019-2023)
- FAA Digital Terminal Procedures (d-TPP)
- 2021 Delaware Aviation System Plan
- 2016 Pennsylvania Statewide Airport System Plan
- 2018 New York State Airport System Plan

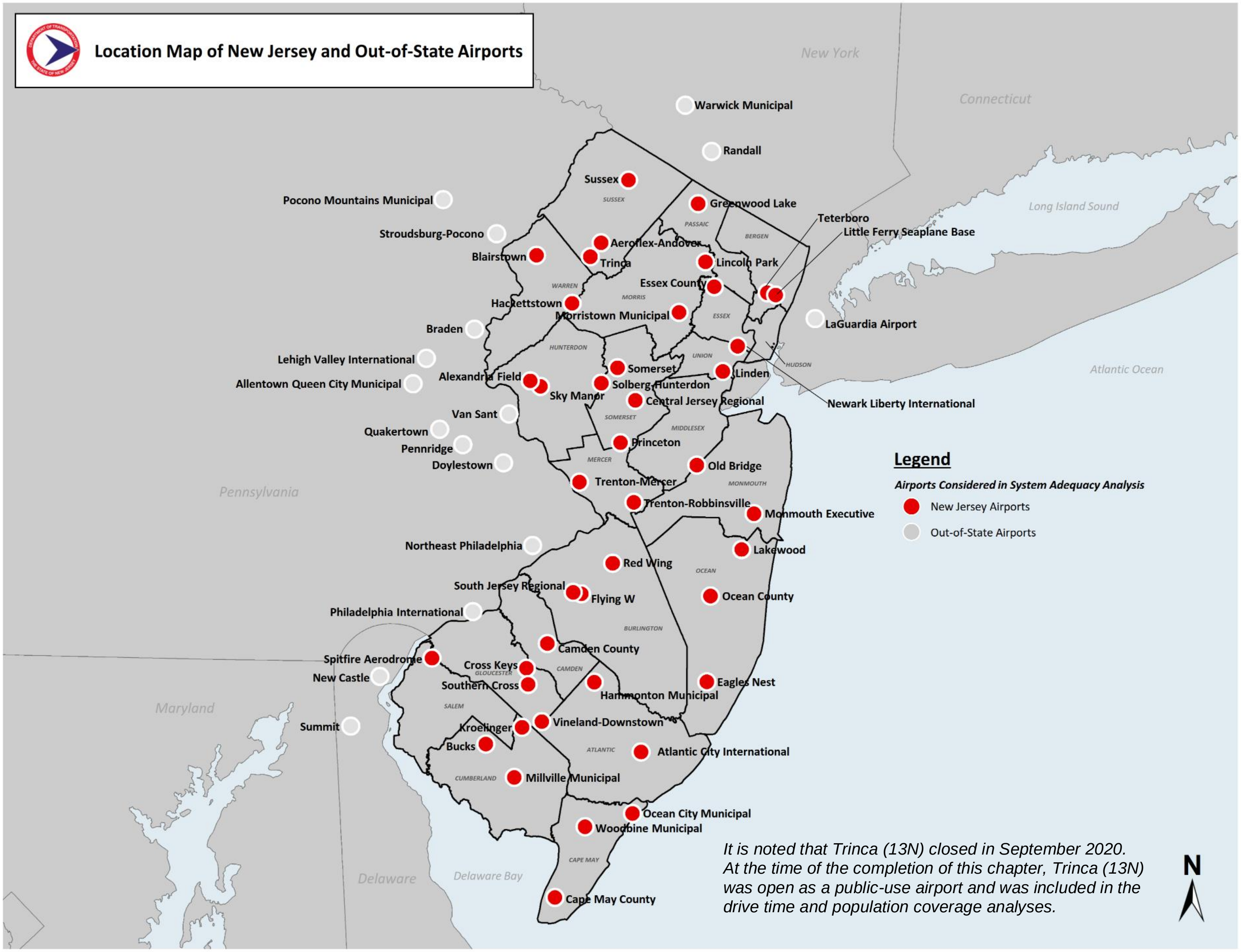


Figure 6-1 Location Map of New Jersey and Out-of-State Airports

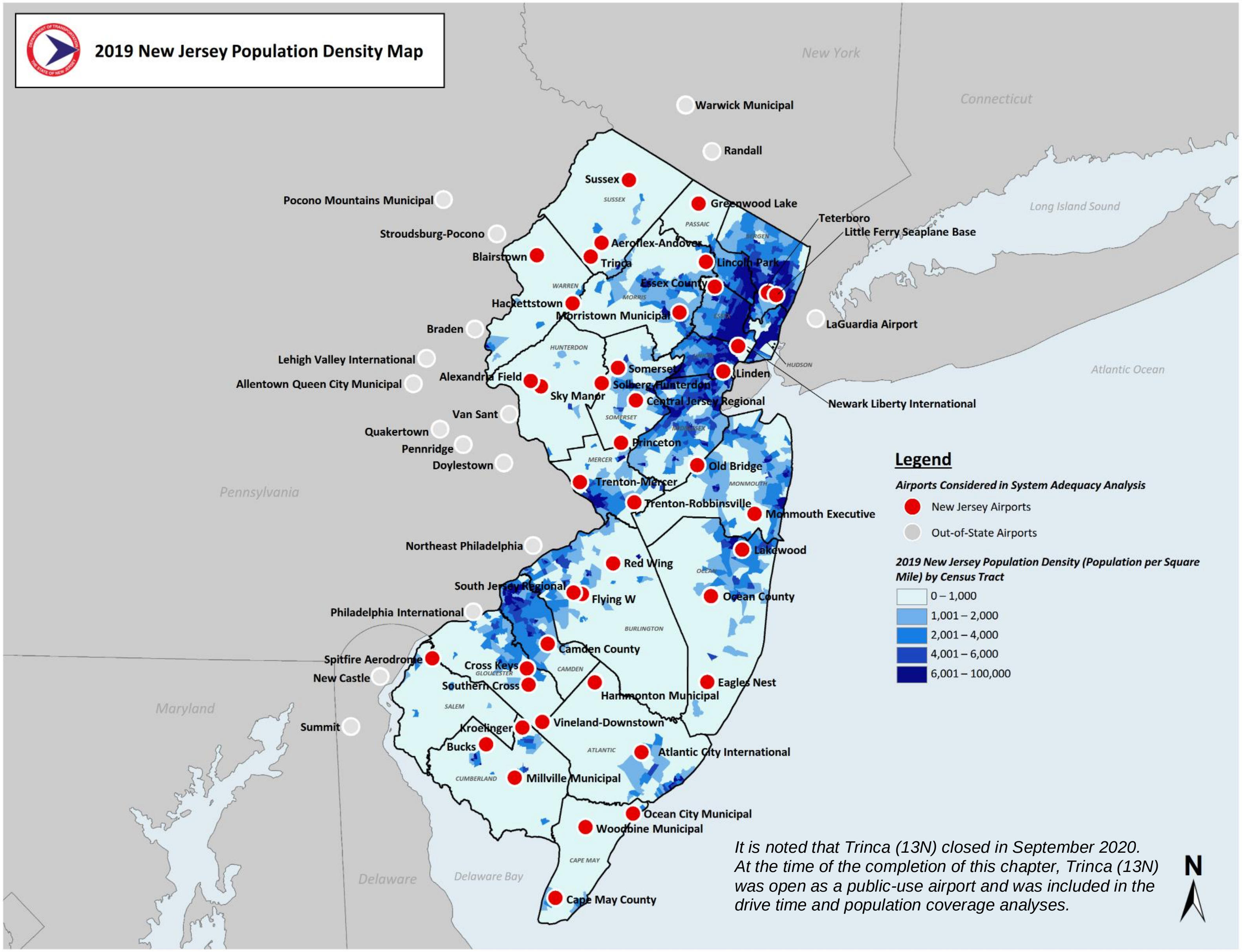


Figure 6-2 **2019 New Jersey Population Density Map**

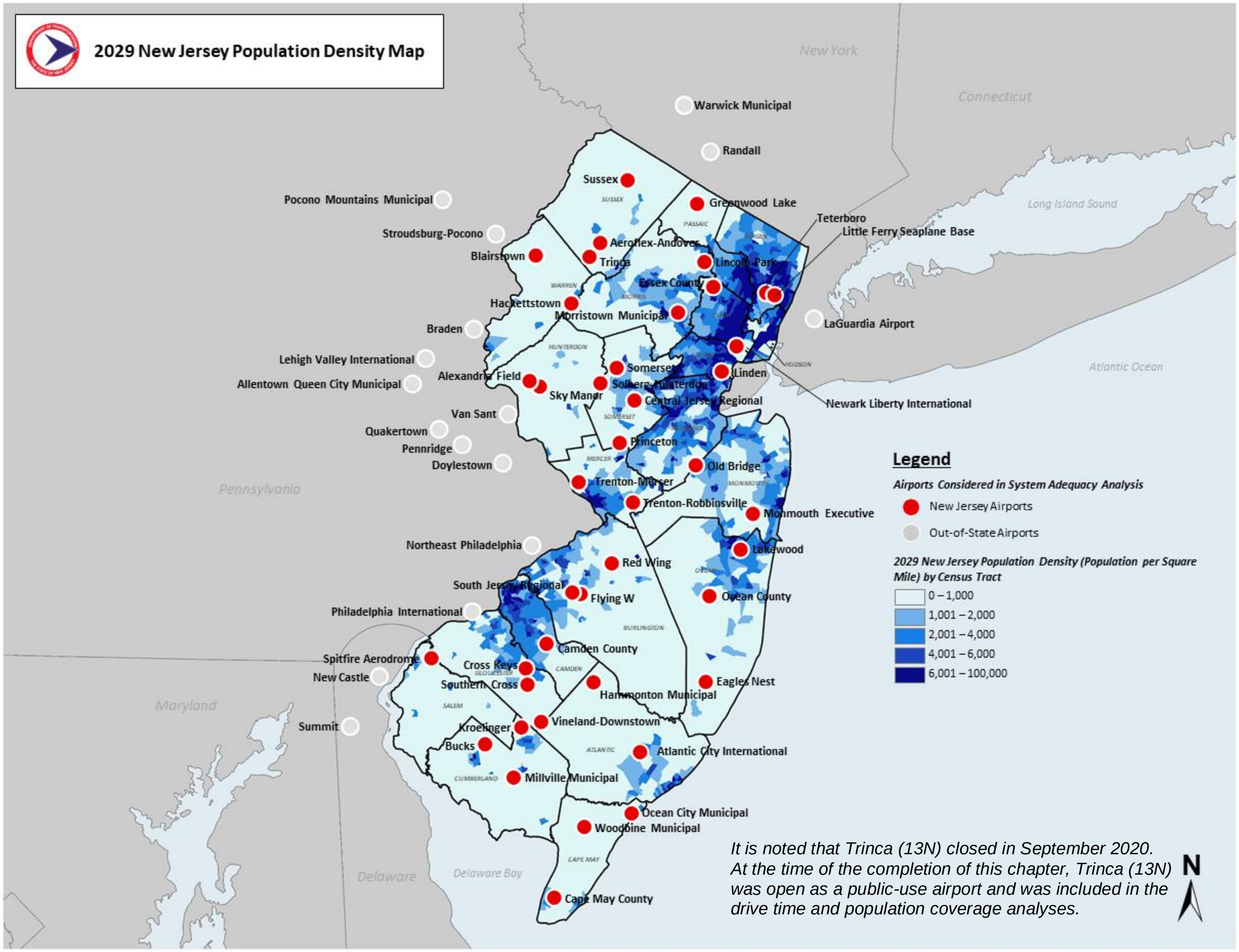


Figure 6-3 **2029 New Jersey Population Density Map**

6.2.1.1 Access to Any Public-Use Airport

Figure 6-4 demonstrates accessibility as measured by drive times to any public-use airport. In summary, 99.0 percent of New Jersey residents are currently within 30 minutes of one or more of New Jersey's public-use airports.

The analysis included coverage provided by any public-use airport in neighboring states that are within a 30-minute drive time of New Jersey. As **Figure 6-4** shows, New Jersey receives additional accessibility coverage from out-of-state airports. When adding out-of-state airport contributions to total airport accessibility coverage for New Jersey's population in 2019, coverage increases to 99.2 percent within a 30-minute drive time interval. At 30 minutes, the out-of-state airports exclusively serve approximately 22,700 New Jersey residents, or an additional 0.2 percent of the total population. New Jersey's 2019 population was estimated to be approximately 9 million. The system plan drive time analysis shows that more than 8.9 million of these residents are within 30 minutes of a system airport. **Table 6-1** shows population coverage in percent and total residents within New Jersey for 2019 and 2029 provided by in- and out of-state airports with 30-minute drive times considered for this system evaluation measure. Compared to that of 2019, the number of New Jersey's residents that are within a 30-minute driving time of any public-use airport increases slightly in 2029, with no change in percent covered.

Table 6-1 Current and Future Population Coverage for Access to Any Public-Use Airport

	New Jersey Coverage	Additional Out-of-State Coverage	Total Coverage
2019 Population **(% of State)**	8,955,855 (99.0%)	22,762 (0.2%)	8,978,617 (99.2%)
2029 Population **(% of State)**	9,258,964 (99.0%)	23,295 (0.2%)	9,282,260 (99.2%)

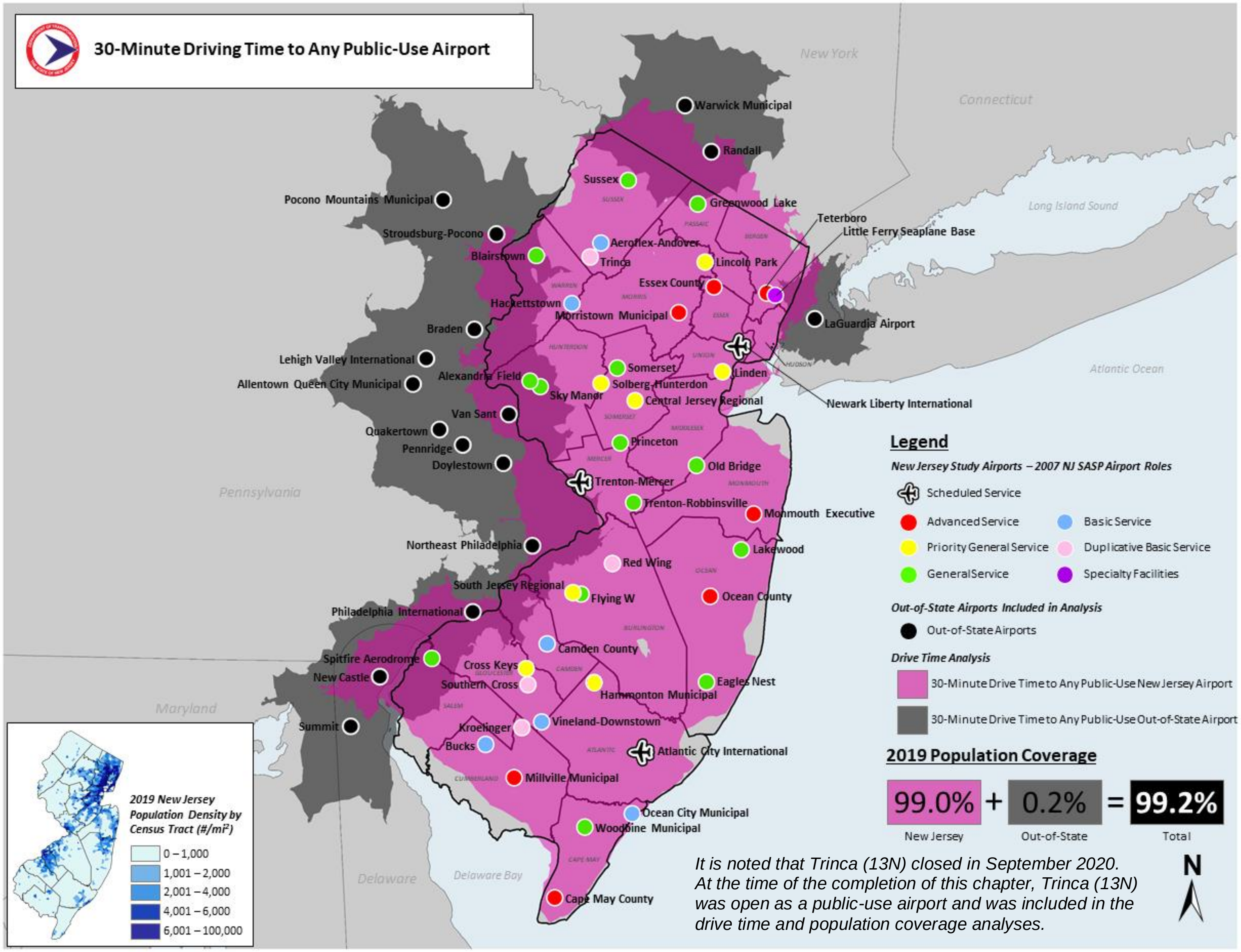


Figure 6-4 30-Minute Driving Time to Any Public-Use Airport

6.2.1.2 Access to Any Scheduled Service Airport

Access to airports that are served by scheduled commercial airlines is important to New Jersey's residents, businesses, and visitors. New Jersey has a total of three scheduled service airports: Atlantic City International (ACY), Trenton-Mercer (TTN) and Newark Liberty International (EWR). Scheduled airline service ranges from non-stop service to international destinations as provided by EWR, to service provided by a single carrier, such as Frontier Airlines at TTN. Commercial airline service is driven by market demand. While there are some incentives that communities can provide to attract carriers, ultimately, passenger demand in the marketplace determines service success. The volume of commercial airline service for any given location fluctuates in response to the presence or lack of demand. In recent years, carriers have closed some connecting hubs, reduced capacity in terms of seats available, and retired less cost-effective aircraft. These actions have all been in an attempt to improve financial performance and have resulted in fewer commercial airline flights for many markets throughout the U.S. Additionally, the COVID-19 pandemic resulted in severe losses to the aviation industry, with commercial passenger travel dropping to a record low in 2020. While commercial airline service capacity has recovered marginally in 2021, it is projected that passenger demand and airline capacity will not fully return to or grow beyond pre-pandemic levels until at least 2023.

Drive time analysis for this system plan shows that, in 2019, more than 8.5 million or 95.0 percent of the New Jersey's 9 million residents were within 60 minutes of a New Jersey airport with scheduled service. **Figure 6-5** shows 2019 accessibility to all scheduled service airports in New Jersey within a 60-minute drive time. Similar to the accessibility assessment for all public-use airports, an analysis was also completed to determine if there are scheduled service airports in neighboring states that serve residents of New Jersey. A 60-minute drive time for scheduled service airports in neighboring states was considered. As depicted in **Figure 6-5**, Philadelphia International (PHL), Lehigh Valley International (ABE) and LaGuardia (LGA) have 60-minute driving times that provide coverage to New Jersey. These out-of-state airports exclusively serve approximately 180,500 New Jersey residents, or an additional 2.0 percent of the total population. When factoring in these three additional scheduled service airports, total population coverage for accessibility to a scheduled service airport increases from 95.0 percent to 97.0 percent as shown on **Table 6-2**. The table also presents accessibility coverage to New Jersey's residents in 2029, showing a slight increase in the population covered between 2019 and 2029, with no change in percent covered.

Table 6-2 Current and Future Population Coverage for Access to Any Scheduled Service Airport

	New Jersey Coverage	Additional Out-of-State Coverage	Total Coverage
2019 Population **(Percent)**	8,598,260 (95.0%)	180,499 (2.0%)	8,778,759 (97.0%)
2029 Population **(Percent)**	9,073,598 (95.0%)	186,728 (2.0%)	9,073,598 (97.0%)

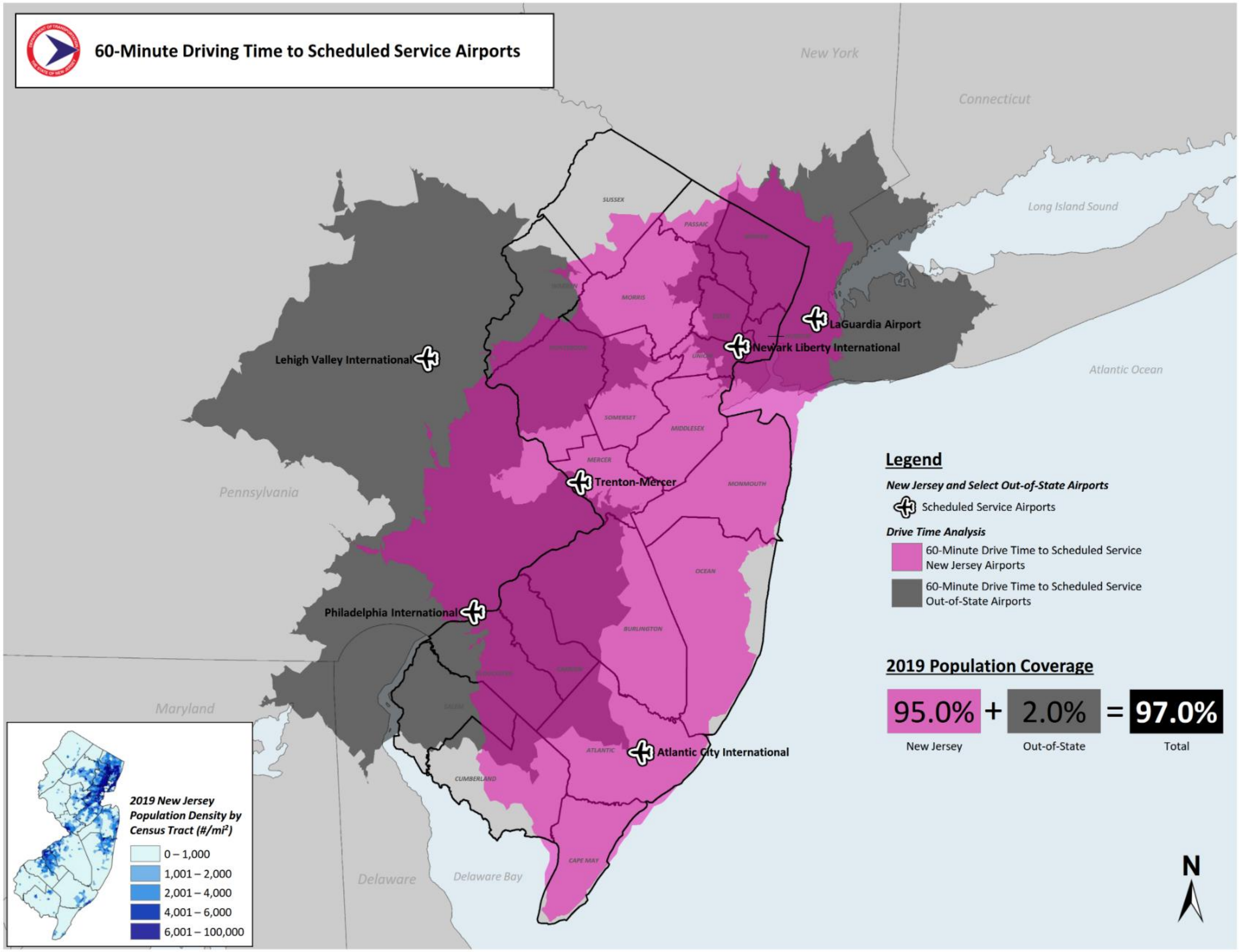


Figure 6-5 60-Minute Driving Time to Any Scheduled Service Airport

6.2.1.3 Access to Any Advanced Service Airport

To support economic growth and diversification, as well as transportation needs and connections to domestic and some international locations, the State of New Jersey needs to be sufficiently covered by advanced service airports. An advanced service airport is intended to function as a reliver to larger, more congested scheduled service airports and support corporate/executive operations.

Figure 6-6 depicts the location and coverage areas of advanced service airports in New Jersey and neighboring states. In 2019, 81.7 percent of New Jersey residents were within a 45-minute drive time from a New Jersey advanced service airport. In addition, there are four airports in neighboring states that serve the functional role of an advanced service airport, as described in each state's latest airport system plan. These airports provide a modest amount of additional coverage for New Jersey residents. They include Pocono Mountains Municipal (MPO) and Northeast Philadelphia (PNE) in Pennsylvania, and New Castle (ILG) and Summit (EVY) in Delaware. These out-of-state airports exclusively serve approximately 1,397,300 New Jersey residents, or an additional 11.0 percent of the total population. When both New Jersey airports and airports in neighboring states are considered, 92.7 percent of New Jersey's total residents are within 45-minutes of an advanced service airport. **Table 6-3** details the population coverage in 2019 and 2029 provided by all New Jersey airports along with airports in neighboring states that currently fulfil the functional role of an advanced service airport in their state. Accessibility coverage of New Jersey's population in 2029 shows a slight increase between 2019 and 2029, with no change in percent covered.

Table 6-3 Current and Future Population Coverage for Access to Any Advanced Service Airport

	New Jersey Coverage	Additional Out of State Coverage	Total Coverage
2019 Population (% of State)	7,392,600 (81.7%)	1,397,300 (11.0%)	8,389,648 (92.7%)
2029 Population (% of State)	7,643,341 (81.7%)	1,445,101 (11.0%)	8,672,717 (92.7%)

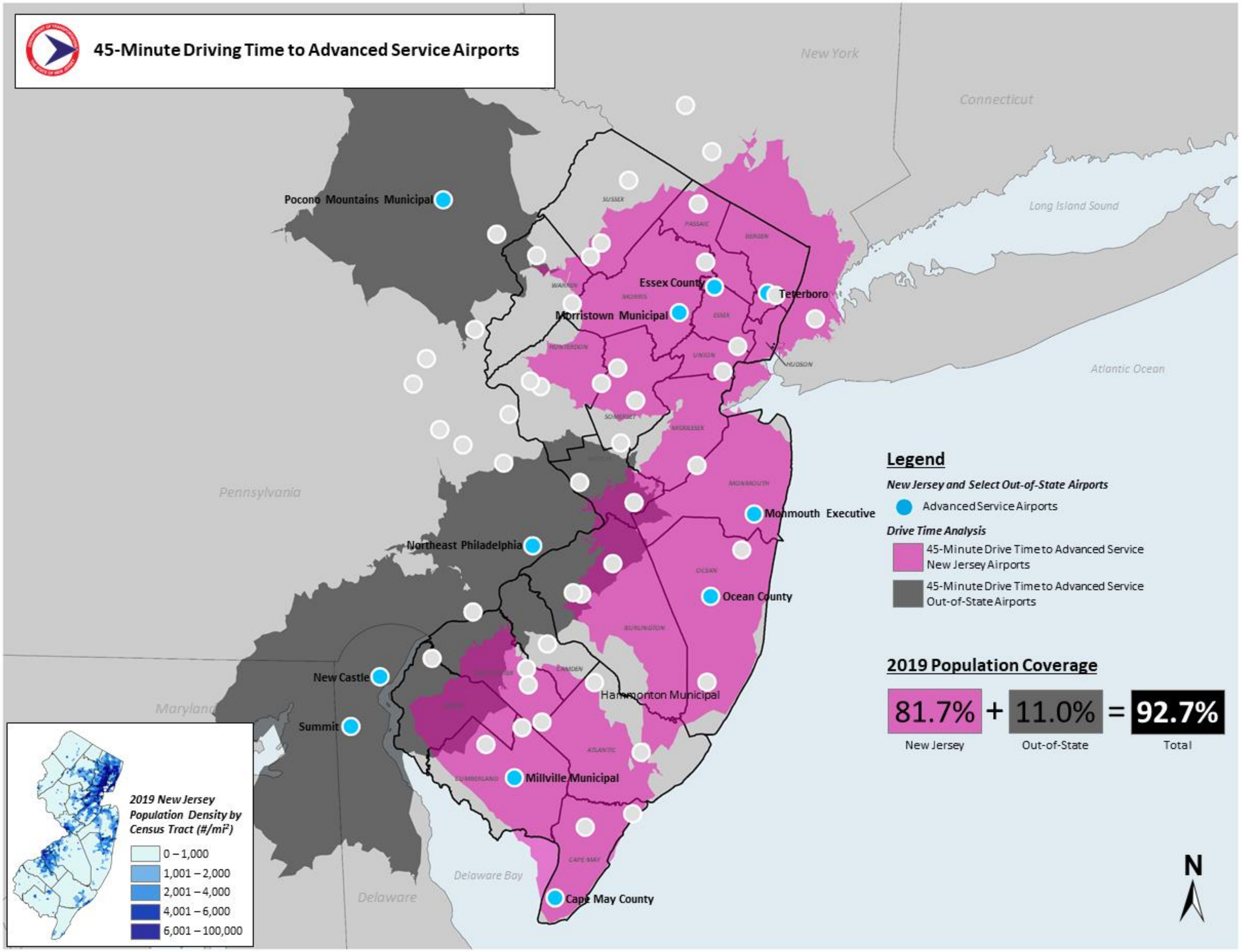


Figure 6-6 **45-Minute Driving Time to Any Advanced Service Airport**

6.2.1.4 Access to Any New Jersey Core Airport

Figure 6-7 demonstrates accessibility as measured by a 30-minute drive times to any New Jersey airport that is classified as a Core Airport. A key goal identified by NJDOT BOA is the proactive preservation of the existing public-use airports in New Jersey. NJDOT BOA has classified its study airports into Core and Core Candidate airport categories to promote preservation of specific airports. Core airports are to be preserved because of their vital importance to the airport system. Initiatives for improving and preserving Core Candidate airports are to be pursued so that they can continue to provide operational and storage capacity for aviation users.

In summary, 98.3 percent of New Jersey residents in 2019 were within 30 minutes of one or more of New Jersey's Core airports. As the Core Airport classification is unique to New Jersey, out-of-state airport coverage was not considered for this evaluation measure. **Table 6-4** details the coverage provided by all New Jersey Core airports in 2019 and 2029. Accessibility coverage to New Jersey's residents in 2029 shows a slight increase in the population covered between 2019 and 2029, with no change in percent covered.

Table 6-4 Current and Future Population Coverage for Access to Any New Jersey Core Airport

	New Jersey Coverage	Additional Out-of-State Coverage	Total Coverage
2019 Population (% of State)	8,890,884 (98.3%)	N/A	8,890,884 (98.3%)
2029 Population (% of State)	9,191,682 (98.3%)	N/A	9,191,682 (98.3%)

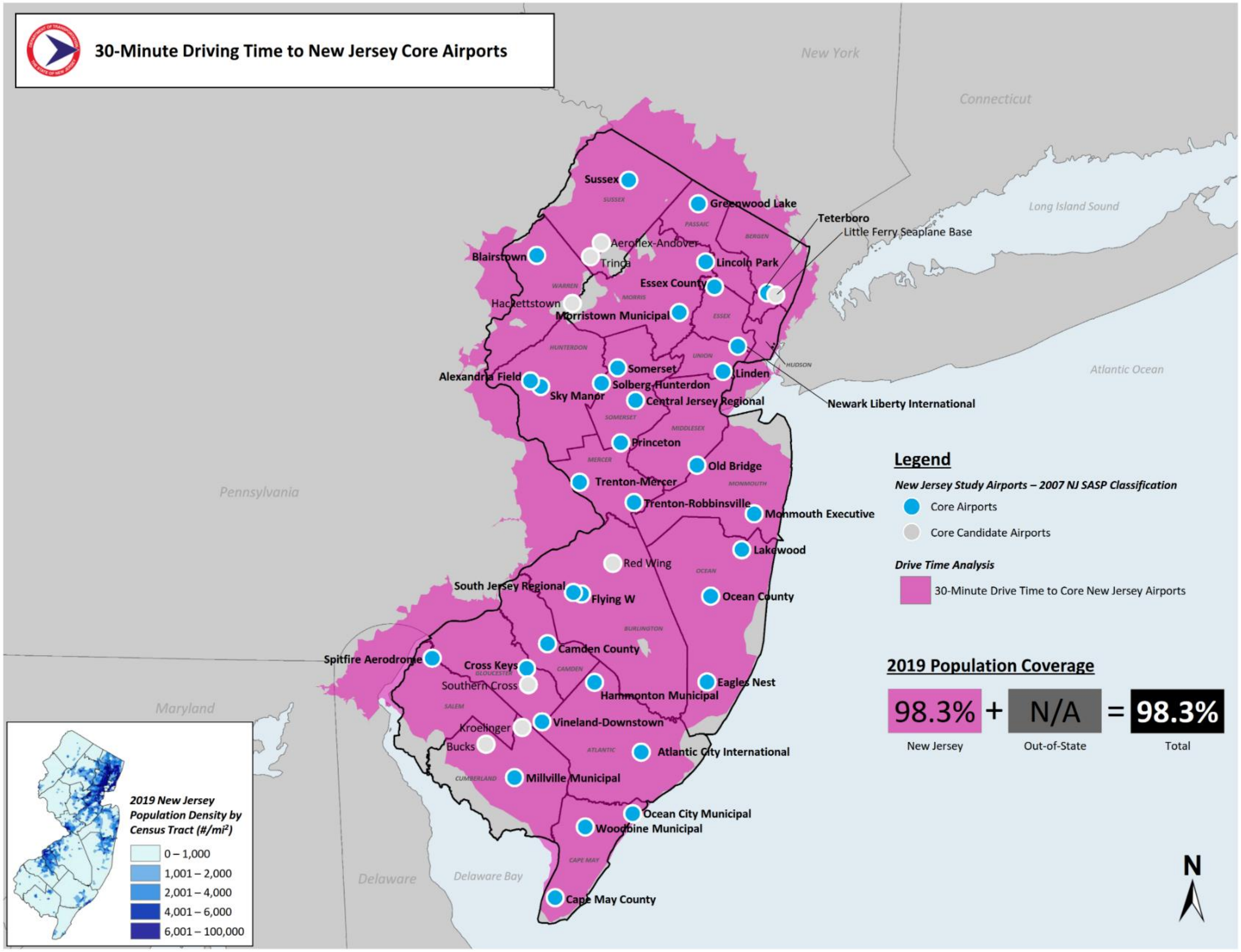


Figure 6-7 30-Minute Driving Time to Any New Jersey Core Airport

6.2.1.5 Access to Any Airport in the National Plan of Integrated Airport Systems (NPIAS)

The NPIAS is a plan used by the FAA to classify airports in the U.S. that are open to the public and fulfil certain classification criteria. See **Chapter 3 Airport Roles** for information on the NPIAS classification criteria and the federal airport roles established for New Jersey. NPIAS airports are considered significant to the national airport system and are eligible to receive federal grants for airport development to ensure the provision of a safe, efficient, and integrated system of public-use airports. Currently there are 24 NPIAS airports in the state of New Jersey.

In 2019, the FAA established revised guidance on NPIAS eligibility requirements in FAA Order 5090.5, Formulation of the NPIAS and Formulation of the NPIAS and ACIP. The major revision to the guidance is that non-NPIAS public-use general aviation airports seeking NPIAS inclusion must be located at least 30 miles from the nearest NPIAS airport. The 30-mile radius must consider all existing NPIAS airports, including those located in neighboring states. Additional NPIAS eligibility criteria can be found in FAA Order 5090.5 Table 3-3, *Initial Screening Requirements for a Facility to be Considered for Inclusion in the NPIAS*.

To comply with the FAA's updated guidance for assessing NPIAS eligibility, **Figure 6-8** demonstrates accessibility as measured by a 30-mile radius to any NPIAS airport. In 2019, 100 percent of New Jersey residents were within a 30-mile radius from NPIAS airports in New Jersey. All out-of-state NPIAS airport coverage overlaps with coverage provided by NPIAS airports in New Jersey, resulting in no additional coverage provided to New Jersey residents by out-of-state airports. **Table 6-5** details the coverage provided by NPIAS airports in 2019 and 2029. Accessibility coverage to New Jersey's residents in 2029 shows a slight increase in the population covered between 2019 and 2029, with no change in percent covered.

Table 6-5 Current and Future Population Coverage for Access to Any NPIAS Airport

	New Jersey Coverage	Additional Out-of-State Coverage	Total Coverage
2019 Population **(% of State)**	9,046,919 (100.0%)	0 (0.0%)	9,046,919 (100.0%)
2029 Population **(% of State)**	9,352,628 (100.0%)	0 (0.0%)	9,352,628 (100.0%)

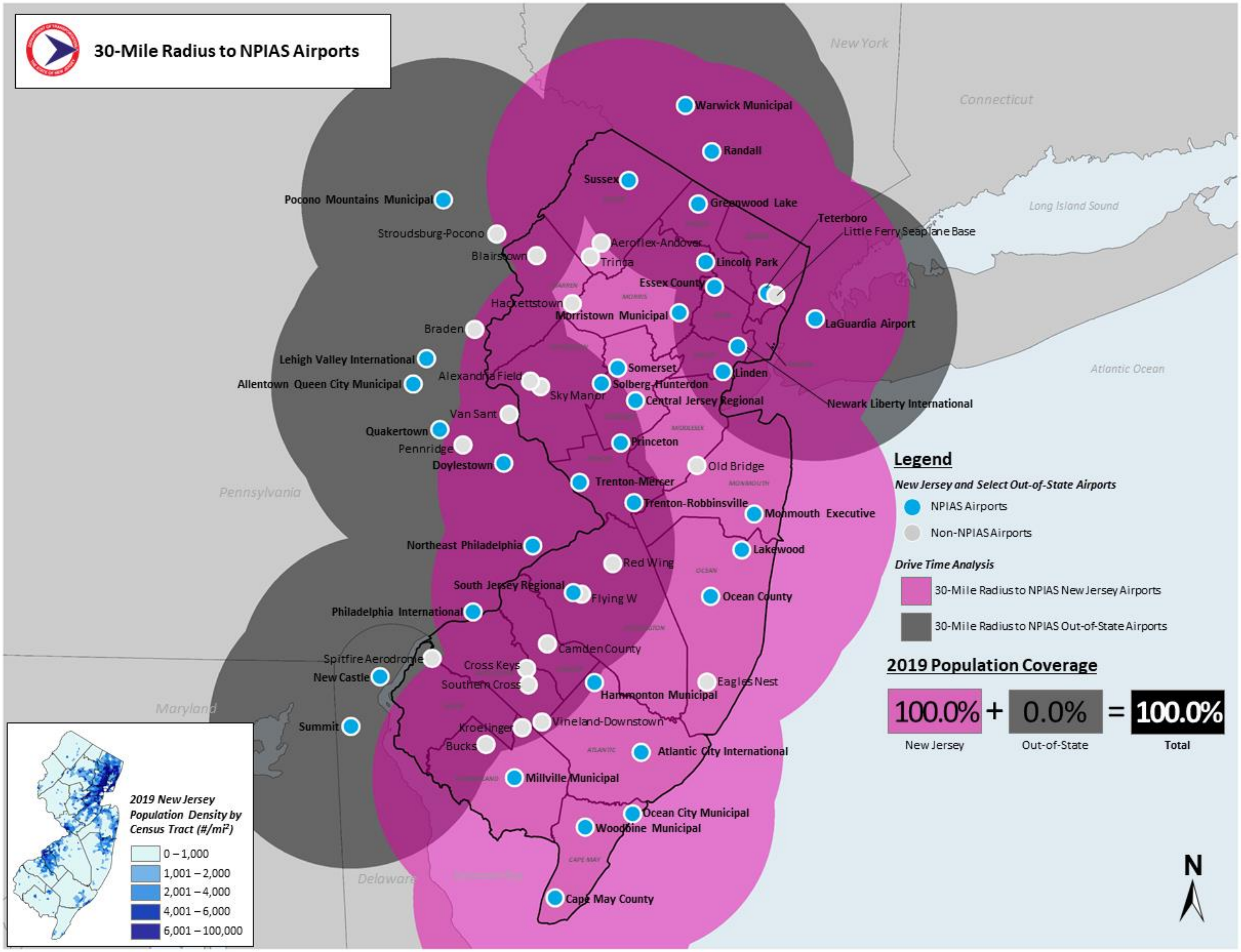


Figure 6-8 **30-Mile Radius to Any NPIAS Airport**

6.2.1.6 Access to Airports with Published Terminal Procedures

The United States Terminal Procedures Publications consist of 24 volumes of aeronautical charts covering airports located in the contiguous U.S., Puerto Rico, and the Virgin Islands. Terminal procedures guide aircraft in the airport area and consist of Instrument Approach Procedure (IAP) Charts, Departure Procedure (DP) Charts, IAP Charts, Standard Terminal Arrival (STAR) Charts, Charted Visual Flight Procedures (CVFP), and Airport Diagrams. Terminal procedures are revised every 56 days and are a valuable resource for pilots, air traffic controllers, and other airport users.

Drive time analysis for this system plan shows that in 2019, more than 8.9 million or 98.9 percent of New Jersey's 9 million residents were within 30 minutes of a New Jersey airport with published terminal procedures. **Figure 6-9** shows 2019 accessibility to all airports in New Jersey with published terminal procedures. An analysis was also completed to determine if there are airports with published terminal procedures in neighboring states that serve residents of New Jersey within a 30-minute drive time. These out-of-state airports exclusively serve approximately 23,000 New Jersey residents, or an additional 0.2 percent of the total population. When factoring in these additional airports, total population coverage for accessibility to an airport with published terminal procedures increases from 98.9 percent to 99.1 percent in 2019. **Table 6-6** details the coverage provided by these airports in 2019 and 2029. Accessibility coverage to New Jersey's residents in 2029 shows a slight increase in the population covered between 2019 and 2029, with the percentage of New Jersey's residents covered remaining unchanged.

Table 6-6 Current and Future Population Coverage for Access to Any Airport with Published Terminal Procedures

	New Jersey Coverage	Additional Out of State Coverage	Total Coverage
2019 Population (% of State)	8,946,162 (98.9%)	23,163 (0.2%)	8,969,325 (99.1%)
2029 Population (% of State)	9,248,939 (98.9%)	23,709 (0.2%)	9,272,648 (99.1%)

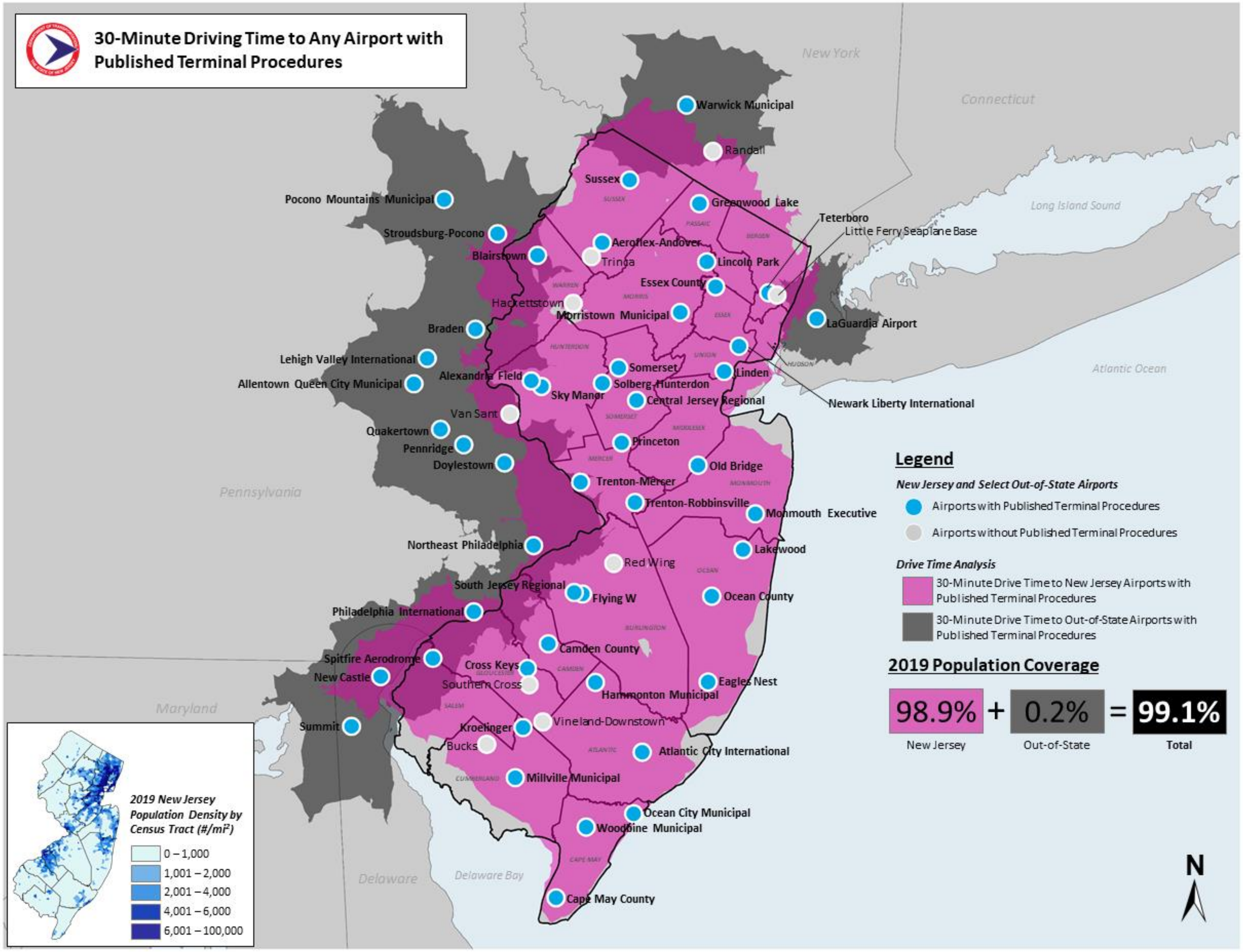


Figure 6-9 30-Minute Driving Time to Any Airport with Published Terminal Procedures

6.2.1.7 Access to Airports with Clear 20:1 Approach Surfaces

The FAA has instituted regulations, policies and procedures for protecting airspace around airports and evaluation of objects that may pose a hazard to operating aircraft in FAA Advisory Circular 150/5300-13A, Airport Design (Change 1). Objects such as trees, buildings, and powerlines located on or near airport property have the potential to penetrate approach and/or departure surfaces, and limit airport operational capability, such as night-time approach capabilities. NJDOT BOA has determined that access to airports with clear 20:1 approach surfaces is crucial to airport safety, efficiency, and utility.

Drive time analysis for this system plan shows that more than 6.8 million or 75.7 percent of the New Jersey's 9 million residents were within 30 minutes of a New Jersey airport with clear 20:1 approach surfaces in 2019. **Figure 6-10** shows current accessibility to all airports in New Jersey with clear 20:1 approach surfaces. An analysis was also completed to determine if there are airports with clear 20:1 approach surfaces in neighboring states that serve residents of New Jersey within a 30-minute drive time. These out-of-state airports exclusively serve more than 600,000 New Jersey residents, or an additional 6.7 percent of the total population. When factoring in these additional airports, total population coverage for accessibility to an airport with clear 20:1 approach surfaces increase from 75.7 percent to 82.4 percent. **Table 6-7** details the coverage provided by these airports in 2019 and 2029. Accessibility coverage to New Jersey's residents in 2029 shows a slight increase in the population covered between 2019 and 2029, with no change in percent covered.

Table 6-7 Current and Future Population Coverage for Access to Airports with Clear 20:1 Approach Surfaces

	New Jersey Coverage	Additional Out of State Coverage	Total Coverage
2019 Population (% of State)	6,849,152 (75.7%)	606,486 (6.7%)	7,455,639 (82.4%)
2029 Population (% of State)	7,079,442 (75.7%)	625,575 (6.7%)	7,705,017 (82.4%)

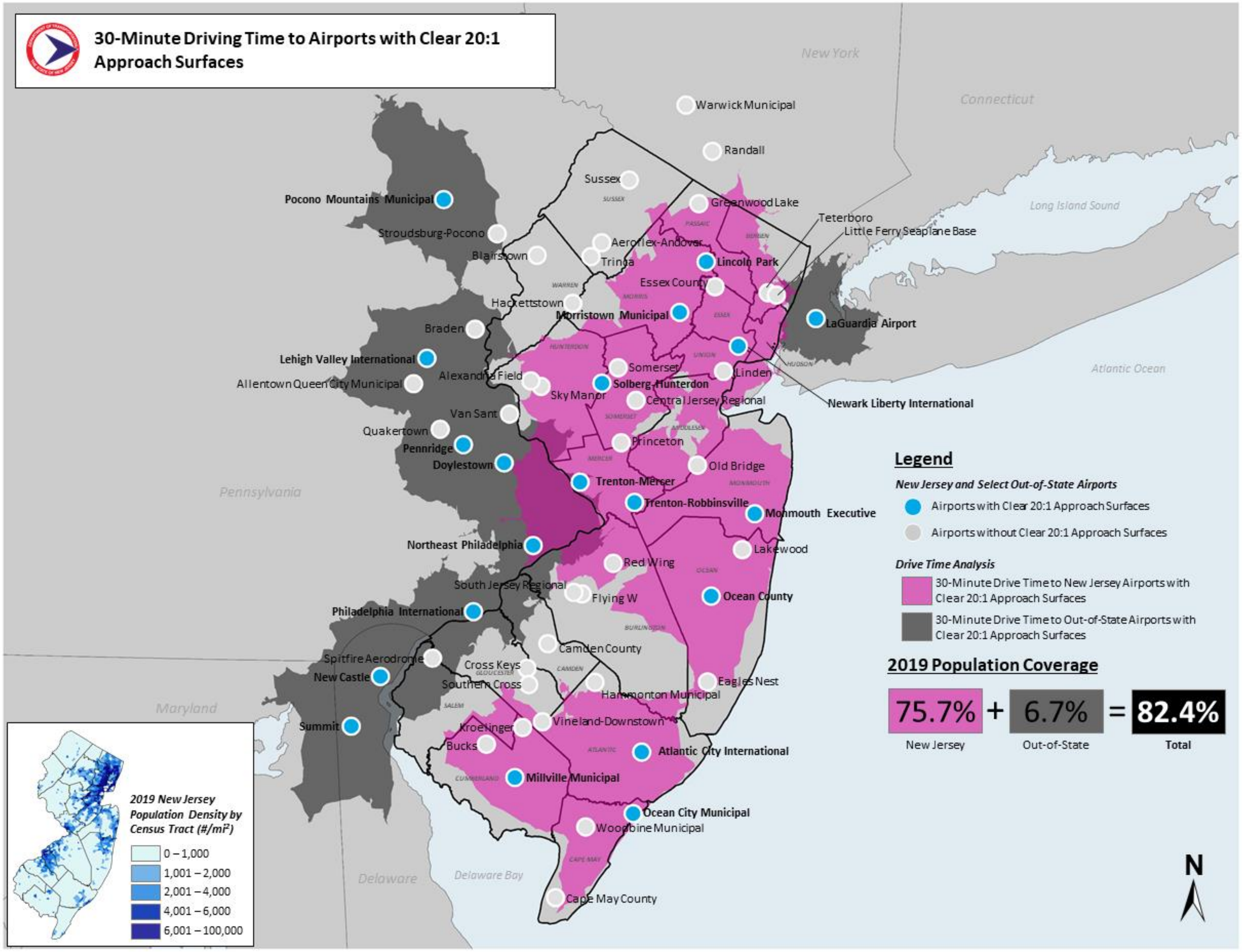


Figure 6-10 30-Minute Driving Time to Any Airport with Clear 20:1 Approach Surfaces

6.2.1.8 Access to Airports with a Primary Runway Length of 5,000 Feet or Greater

The proper number and distribution of airports with runway lengths capable of serving a full range of aircraft in the general aviation fleet are important to the viability of New Jersey's airport system, and particularly to the needs of the business aircraft community and the State's competitive edge with other neighboring states. Airports with capabilities to accommodate business class aircraft are vital to New Jersey in order to support economic growth and diversification, and further helps to fulfill transportation needs and connects New Jersey and its business community to domestic and some international locations. To determine current system adequacy, a review was undertaken to identify the percent of New Jersey's population that is within 30 minutes of one or more study airports that have a runway length of 5,000 feet or greater.

Drive time analysis for this system plan shows that more than 6.9 million or 76.9 percent of New Jersey's 9 million residents were within 30 minutes of a New Jersey airport with a primary runway length of 5,000 feet or greater in 2019. **Figure 6-11** presents the results of the drive time analysis that was conducted to determine the system performance for this measure. **Figure 6-11** demonstrates that 83.5 percent of all residents are within 30 minutes of one or more of those airports. Airports with a primary runway length of 5,000 feet or greater in neighboring states serve more than 590,000 New Jersey residents, or an additional 6.6 percent of the total population. **Table 6-8** details the coverage offered by these airports in 2019 and 2029. Accessibility coverage to New Jersey's residents in 2029 shows an increase in the population covered between 2019 and 2029, and a slight decrease in the percentage of the population covered during the same timeframe.

Table 6-8 Current and Future Population Coverage for Access to Airports with a Runway Length of 5,000 Feet or Greater

	New Jersey Coverage	Additional Out of State Coverage	Total Coverage
2019 Population (% of State)	6,961,580 (76.9%)	590,745 (6.6%)	7,552,325 (83.5%)
2029 Population (% of State)	7,194,207 (76.9%)	609,438 (6.5%)	7,803,644 (83.4%)

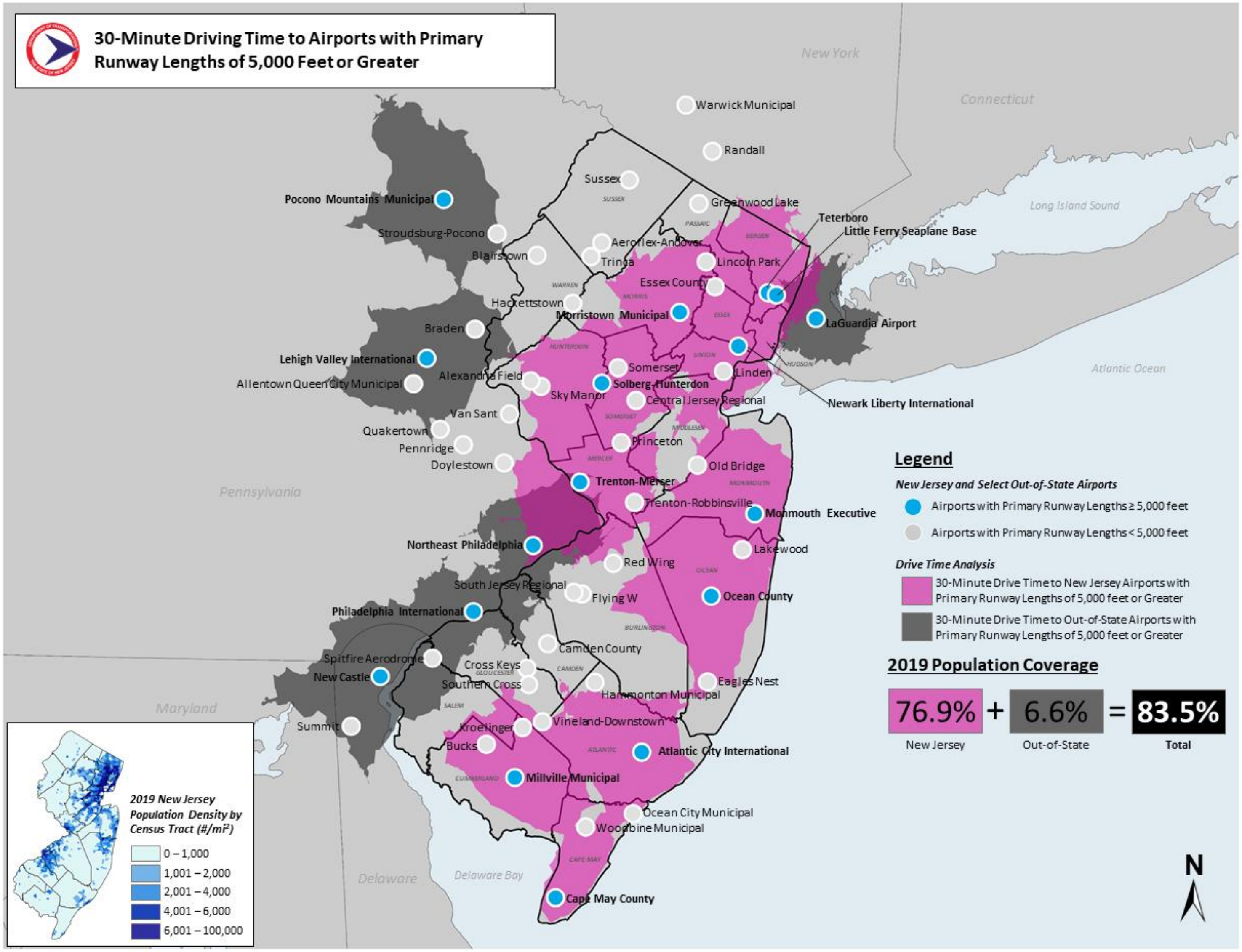


Figure 6-11 30-Minute Driving Time to Any Airport with a Primary Runway Length of 5,000 Feet or Greater

6.2.2 Summary of System Performance Evaluation Findings

Table 6-9 summarizes how New Jersey's current system is performing for each of the system evaluation measures. As expected, the most significant population coverage and accessibility is provided when all public-use airports are evaluated. This performance evaluation considered a total of 58 airports, 42 in New Jersey and 16 in the neighboring states of New York, Pennsylvania, and Delaware.

Overall, the current performance of New Jersey's airport system in terms of accessibility is relatively good, with six of the evaluation measures providing access to more than 90 percent of New Jersey's population. The lower performing evaluation measures, where less than 90 percent coverage is achieved, are airports with clear 20:1 approach surfaces and airports with runway lengths greater or equal to 5,000 feet. It is important to determine if there are viable alternative scenarios for improving the system's future performance, specifically with regard to clear 20:1 approach surfaces and primary runway lengths. Additionally, while public-use airport coverage is currently strong, there is a continuing trend in airport closures and strategies to support airport preservation should be considered. The following sections examine each of the system evaluation measures and determine alternative scenarios for improving the system and addressing deficiencies.

Table 6-9 Summary of Current System Performance (2019)

	Current Population Coverage (2019)		
	New Jersey Coverage (% of State)	Additional Out of State Coverage (% of State)	Total Coverage (% of State)
Access to Any Public-Use Airport	8,955,855 (99.0%)	22,762 (0.2%)	8,978,617 (99.2%)
Access to Any Scheduled Service Airport	8,598,260 (95.0%)	180,499 (2.0%)	8,778,759 (97.0%)
Access to Any Advanced Service Airport	7,392,600 (81.7%)	1,397,300 (11.0%)	8,389,648 (92.7%)
Access to Any New Jersey Core Airport	8,890,884 (98.3%)	N/A	8,890,884 (98.3%)
Access to Any Airport in the NPIAS	9,046,919 (100.0%)	0 (0.0%)	9,046,919 (100.0%)
Access to Airports with Published Terminal Procedures	8,946,162 (98.9%)	23,163 (0.2%)	8,969,325 (99.1%)
Access to Airports with Clear 20:1 Approach Surfaces	6,849,152 (75.7%)	606,486 (6.7%)	7,455,639 (82.4%)
Access to Airports with a Primary Runway Length of 5,000 Feet or Greater	6,961,580 (76.9%)	590,745 (6.6%)	7,552,325 (83.5%)

6.3 Alternatives Analysis

The Alternatives Analysis examines the accessibility coverage findings from the system performance evaluation and identifies whether coverage is adequate or inadequate for specific measures. The alternatives analysis presents alternative scenarios for maintaining or improving the existing New Jersey airport system to increase accessibility for New Jersey residents.

This section provides mapping and analysis that describes how New Jersey's existing system of airports can be maintained and improved and how these alternative scenarios impact future coverage. For each evaluation measure, a recommended alternative scenario is presented and changes in future coverage are described, where applicable.

6.3.1 Alternatives Analysis – Methodology and Data Sources

This section outlines the process used for the alternatives analysis.

The analysis provides viable alternative scenarios for system evaluation measures where the total population coverage percentage is below 90 percent and is considered inadequate. The alternative scenarios range from maintaining the existing New Jersey airport system to improving certain airports to expand total airport coverage to New Jersey's residents for specific evaluation measures. Similar to the methodology used in system performance evaluation, the population coverage calculations for the alternative scenarios used total New Jersey population numbers for 2019 and 2029, estimated to be 9,047,511 and 9,353,238, respectively.

While out-of-state airports from neighboring states were considered in evaluating system performance, the alternatives analysis only considers development alternatives in the context of maintaining or improving the New Jersey airport system. Drive time analysis is utilized to re-evaluate New Jersey's future system performance in 2029, under the assumption that improvements being recommended under each alternative scenario are implemented over the next 10 years.

6.3.1.1 Access to Any Public-Use Airport

As previously shown in **Figure 6-4** and **Table 6-1**, there are 42 public-use airports in New Jersey and 16 public-use airports in neighboring states that provide accessibility to New Jersey residents. In 2019, 99.2 percent of New Jersey's population (approximately nine million residents) were within 30 minutes of one of these 58 public-use airports. For this system evaluation measure, there are two alternatives NJDOT BOA should consider pursuing:

A. Maintain the Existing New Jersey Airport System

B. Consider Long-term Potential for Access to Public-Use Airports

Maintain the Existing New Jersey Airport System

By the year 2029, New Jersey's population is projected to increase from the 2017 U.S. Census count of 9,047,511 to 9,353,238. **Figure 6-12** shows that if no improvements are made to the existing system, by 2029 approximately 9.3 million residents will be within 30 minutes of these airports. While the number of New Jersey residents increases slightly by the year 2029, the percent of the state's total population with access to public-use airports remains unchanged at 99.2 percent.

Given that current coverage is sufficient and is expected to remain at 99.2 percent by the year 2029, the most viable alternative for this system evaluation measure is to maintain the existing system. The only option to allow for increased coverage in terms of access to public-use airports is to add new airports to the New Jersey airport system. New airports are most frequently developed when existing airports reach capacity and cannot be expanded to serve additional demand or when an area demonstrates aviation demand, but has no existing airport to accommodate such demand. As airport capacity and coverage needs are sufficiently met by existing public-use airports, the addition of a new public-use airport to the New Jersey airport system is not recommended at this time. Furthermore, challenges associated with the development of new aeronautical facilities in New Jersey would make the addition of a new public-use airport exceedingly difficult to pursue. Given that the addition of new public-use airports is not recommended nor feasible at this time, it is essential to preserve and maintain the existing public-use system so that by 2029 an estimated 99.0 percent of New Jersey residents will be within the 30-minute drive time of at least one New Jersey airport. Future 2029 population coverage for the existing airport system is as shown in **Figure 6-12**.

Consider Long-term Potential for Access to Any Public-Use Airport

One of NJDOT BOA's missions is to support the preservation of public-use airports in New Jersey. In the case that there is a risk of a public-use airport closing, it is important for NJDOT BOA to identify and monitor these factors and work with airport sponsors to consider preservation strategies that can contribute to an airport remaining open for public-use, so that population coverage for this evaluation measure does not decrease.

Identify Risk Factors for Closure

While the closure of specific airports cannot be definitively predicted and the impacts of such closures on system coverage are not quantified as part of this 2022 NJ SASP, there are risk factors that can be closely monitored at New Jersey's public-use airports to identify any "red flags" or signs that an airport may consider closing. These factors, outlined in the ACRP Report 44, A Guidebook for the Preservation of Public-Use Airports, are broadly categorized into grant obligation status, economic viability, community and environmental impacts, and infrastructure conditions:

- Grant obligation status refers to airports that have taken state or federal grant assistance versus those airports that have not and therefore tend to be at a greater risk of closure.[52]
- Economic factors include generational shifts or other changes in management at privately-owned airports, airports with low levels of traffic or based aircraft, fewer customer services, lower levels of generated airport revenue, among others.
- Community and environmental factors include airports that are not engaged in community outreach, those that have poor community relations, those that are not integrated in the community's vision planning process, and those that are impacted by incompatible land use or zoning and environmentally sensitive areas.
- Infrastructure factors include airports that have shorter runway lengths, or poorly maintained or deteriorating airport pavements and structures such as runways, taxiways, apron areas, hangars, terminal buildings and fuel facilities.

In order to maintain the existing public-use airport system and reduce the likelihood of airport closure, it is recommended that NJDOT BOA work with airport sponsors and continuously monitor these types of changes at all public-use airports. These factors need to be closely and continuously monitored by NJDOT BOA so that negative impacts on airport access, economic viability, infrastructure conditions, funding, as well as community and environmental issues can be identified and proactively addressed as they arise, before an airport may decide to close.

New Jersey's airport system is unique in that of the 42 public-use study airports, 18 are publicly-owned airports and 24, or more than half, are privately-owned. Historical trends of airport closures in the United States show a disproportional closure rate of privately-owned airports. Historically, publicly-owned airports have a lower closure rate than privately-owned airports.[53] Similar trends can be seen in the State of New Jersey. Since the 2007 NJ SASP, 8 airports[54] have either permanently closed or have changed from public-use to private-use, of which, 2 airports were publicly-owned: Bader Field and Trinca (13N), and the remaining 6 were privately-owned. There are multiple reasons why privately-owned airports may be more susceptible to closure, including generational shift in management or ownership, pressure from private developers, rising property taxes or other financial burdens. As privately-owned airports are subject to the individual desires of the airport sponsor, permission to sell or close an airport is not required by NJDOT BOA or any other public entity if grant obligations or federal assurances are not in place.

Consider State or Federal Funding Assistance

Federal and/or state funding assistance is one way to support an airport's overall sustainability and reduce airport closures.

The duration of an obligation for state-issued grants used for airport improvement projects begins when the grant-funded project is substantially complete and lasts for a period of 10 years. As a result, public-use airports that have utilized state grants are more likely to remain open and continue to contribute to population coverage.

Of the 42 public-use airports, 10 publicly-owned[55] and 12 privately-owned airports have received state grants within the last 10 years. Since privately-owned airports have a higher rate of closure than publicly-owned airports, a greater emphasis of this discussion is on the 12 privately-owned airports, 8 of which are obligated to remain open as public-use until their grant obligation expires.[56] Airports that are currently privately-owned and state obligated include: Alexandria Field (N85), Central Jersey Regional (47N), Eagles Nest (31E), Old Bridge (3N6), Princeton (39N), Sky Manor (N40), Sussex (FWN), and Trenton-Robbinsville (N87).[57] As of June 2020, the obligation durations for these 8 airports range from 2 to 10 years. Four of the 12 privately-owned airports, Lincoln Park (N07), Monmouth Executive (BLM), Solberg Hunterdon (N51), and Somerset

[52] It is noted that federal grant obligations and assurances vary from state grant obligations.

[53] Federal Aviation Administration, Airport Cooperative Research Program. ACRP Report 44: A Guidebook for the Preservation of Public-Use Airports, 2011. https://crp.trb.org/acrp0715/acrp-report-44-a-guidebook-for-the-preservation-of-public-use-airports/.

[54] Bader Field, Li Calzi Airpark, Marlboro, Newton, Red Lion, Rudy's, Twin Pine, and in September 2020 during the course of this analysis, Trinca (13N).

[55] Atlantic City International (ACY), Essex County (CDW), Greenwood Lake (4N1), Hammonton Municipal (N81), Lakewood (N12), Morristown Municipal (MMU), Ocean City Municipal (26N), Ocean County (MJX), Trenton Mercer (TTN), and Woodbine Municipal (OBI).

[56] If a New Jersey State grant obligated airport closes before its state grant obligation expires, the airport pays back a prorated portion of the grant based on the remaining lifetime of the grant obligation. Usually, a reduction of 10 percent per year is applied on the total grant amount minus the local match to determine a payback amount that would satisfy the State obligation.

[57] NJDOT has purchased development rights for Alexandria Field (N85) and Central Jersey Regional (47N), which requires the airports to remain open for public-use in perpetuity.

(SMQ), have accepted state funding for projects, however, before state grant obligations take effect projects need to be substantially complete.[58] This is currently not the case for these four airports and therefore obligations have not been initialized. Of the 24 privately-owned airports in New Jersey, the 12 remaining airports do not have any obligations since they have not accepted state funding within the last 10 years.

Airports that have taken federal assistance are bound by federal assurances and have varying grant obligations separate from those of NJDOT BOA. While not all airports that have accepted federal assistance may be required to remain open as a public-use airport, airports that have taken federal grants are more likely to remain open for public-use in the long-term.

Acceptance and use of state or federal funding are considered helpful incentives to preserve public-use airports for at least a limited timeframe. Looking forward, it is recommended that airports apply for state and federal grants to continue to improve airport facilities, especially for airport improvement projects identified in **Chapter 5 Facility Requirements Analysis** that bring airports to meet their airport role's facility, service, and equipment objectives. However, ultimately it is the obligation of the airport to remain sustainable with or without federal or State funding support. As mentioned earlier and to reiterate its importance, airports that accept state or federal assistance for development projects will be obligated and therefore are more likely to ensure that public-use airport coverage continues to remain strong into the foreseeable future. Privately-owned airports that have not accepted state or federal funding and are not federally or state obligated are at a greater risk of airport closure and should be continuously monitored for risk factors identified above.

Other Preservation Measures

The number of airports that have grant obligations will vary each year as state and federal governments administer new grants and as existing airports' grant obligation timeframes reach their expiration limits. Thus, NJDOT BOA should monitor all public-use airports that are obligated through grants and particularly those that are not obligated and may consider selling their facilities for non-aviation uses.

There are currently at least 3 privately-owned public-use airports in New Jersey undergoing ownership or redevelopment changes that may have the potential to result in eventual airport closures. In an instance where closure or redevelopment of a privately-owned airport for non-aviation uses may be a consideration for the airport owner, it is important for NJDOT BOA to work with owners to ensure that stakeholders involved are aware of all possible preservation options and that such actions do not have a significant negative impact on overall airport system coverage. Due to the fact that publicly-owned airport close at a much slower rate than privately-owned airports nationwide and in New Jersey, public agencies in New Jersey are encouraged to work with NJDOT BOA and assess the feasibility of public acquisition of privately-owned airports that are likely to close. It is important that airports proactively engage in their communities, promote the airport's economic impacts to surrounding communities and consider any socio-economic, environmental, and political threats.

Where public acquisition of privately-owned airports is not feasible, the purchase of development rights is another tool that has been used to preserve public-use airports in New Jersey in the past. An owner of an airport could sell a piece of property to another entity, with written restrictions that specify how the property must be used or maintained in perpetuity. In the case of New Jersey, development rights purchased at airports have stipulated that the airports must remain open for public-use in perpetuity. NJDOT BOA has previously purchased development rights for 3 privately-owned airports: Alexandria Field (N85), Central Jersey Regional (47N), and Lincoln Park (N07). The purchase of development rights is not a feasible or likely option at the time of publication of this 2022 NJ SASP due to funding constraints, so NJDOT BOA should continue to evaluate other opportunities for airport preservation through other means, if possible. Public-private partnerships, for example, may be a viable opportunity to strengthen an airport's option to remain open for public-use in the foreseeable future.

Given the challenges in New Jersey associated with the development of new aeronautical facilities, it is recommended that NJDOT BOA preserve and develop its existing public-use airports rather than build a new airport, especially since it has been suggested that preservation of airports may be less costly than building a new airfield facility.[59] Additional detailed discussion of recommendations and practical methods for NJDOT BOA to identify and address airports that show "red flags" or signs of closure are provided in **Chapter 8 Recommended System**.

[58] NJDOT has purchased development rights for Lincoln Park (N07), which requires the airport to remain open for public-use in perpetuity.

[59] 4 Federal Aviation Administration, Airport Cooperative Research Program. ACRP Report 44: A Guidebook for the Preservation of Public-Use Airports, 2011. https://crp.trb.org/acrp0715/acrp-report-44-a-guidebook-for-the-preservation-of-public-use-airports/.

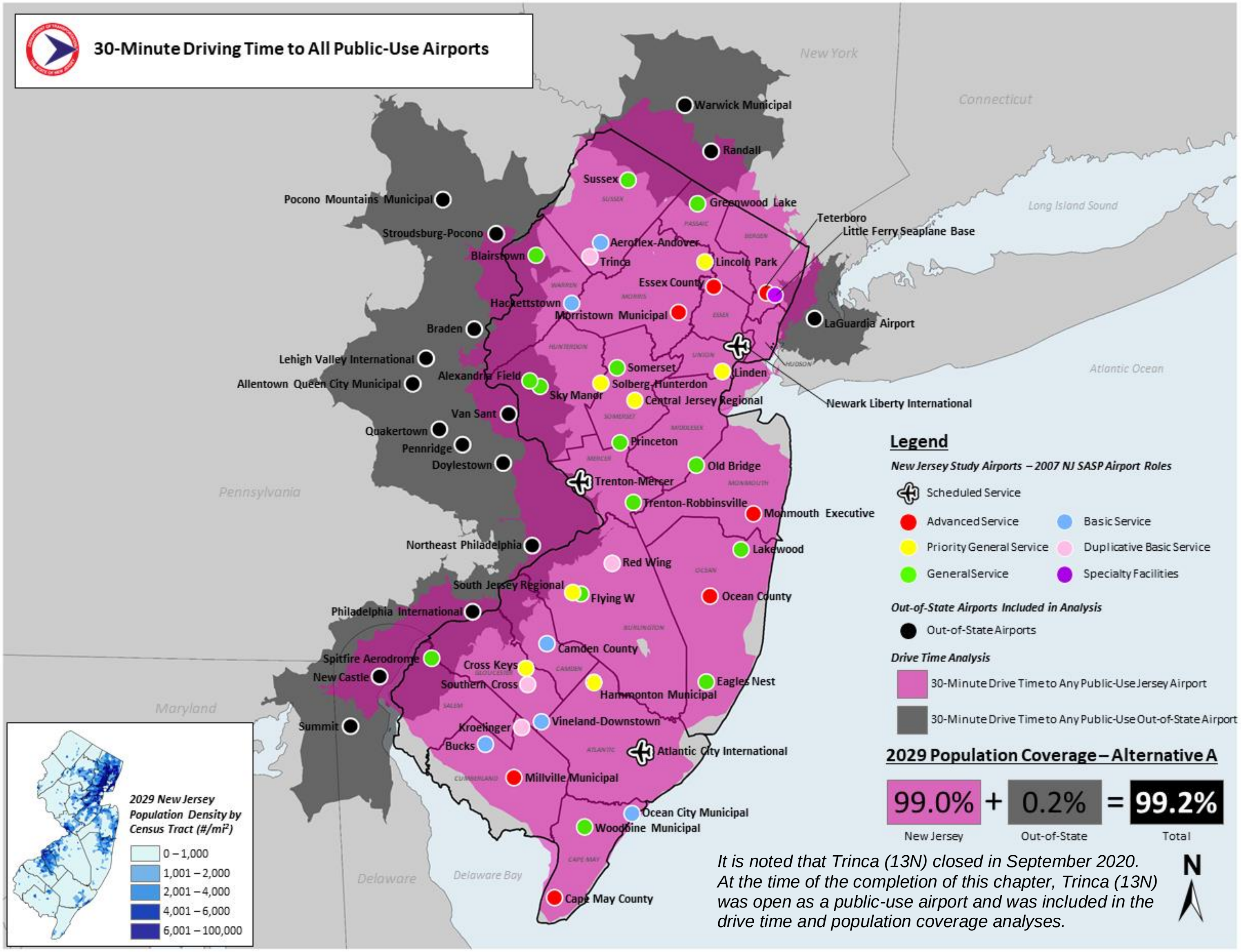


Figure 6-12 **Future Access to Public-Use Airports – Maintain Existing**

6.3.1.2 Access to Any Scheduled Service Airport

As previously shown in **Figure 6-5 and Table 6-2**, there are 3 scheduled service airports in New Jersey and 3 scheduled service airports in neighboring states that provide accessibility to New Jersey residents. In 2019, 97.0 percent of New Jersey's population (approximately 8.8 million residents) are within 60 minutes of at least one of these 6 scheduled service airports. For this system evaluation measure, there are two alternatives NJDOT BOA should consider pursuing:

A. Maintain the Existing New Jersey Airport System

B. Consider Long-term Potential for Access to Scheduled Service Airports

Maintain the Existing New Jersey Airport System

Commercial airline service is market-demand driven. The volume of commercial airline service for any given location fluctuates in response to the presence or lack of demand. For example, Frontier Airlines expanded its service offerings at Trenton Mercer Airport to meet passenger demand needs, and as a result, commercial operations have grown dramatically at the Airport in recent years. In July 2020, a new charter airline, Global Crossing Airlines, signed an agreement to operate flights out of ACY to support the regional hotel and casino business.

As a state agency, NJDOT BOA has limited influence and control over providing additional airline service to new locations in New Jersey. As a result, there is only one viable alternative for this system evaluation measure – to maintain the existing system.

With population growth projected to increase 3.3 percent in New Jersey between 2019 and 2029, scheduled service airports considered in this analysis will have an estimated 9,073,598 New Jersey residents within their 60-minute service areas. Based on projected population growth and with the existing scheduled service airport system maintained, coverage for this system evaluation measure will remain at 97.0 percent in 2029. **Figure 6-13** shows expected population coverage in 2029 using 60-minute drive times for all scheduled service airports.

Consider Long-term Potential for Access to Scheduled Service Airports

Given the important role that scheduled service airports play in the New Jersey airport system, NJDOT BOA should ensure that its three scheduled service airports continue to meet or exceed the facility, service, safety, and standard requirements necessary to provide scheduled air service as identified in **Chapter 5 Facility Requirements Analysis.**

While accessibility to scheduled service airports is sufficient, NJDOT BOA should continuously monitor commercial service capacity needs. Of the three scheduled service airports in New Jersey, currently only Newark Liberty International operates at a demand/capacity ratio of greater than 80 percent. The Port Authority of New York and New Jersey is responsible for redevelopment efforts to meet capacity needs at EWR. As the market fluctuates, passenger demand may warrant the need for additional scheduled service offerings in the future.

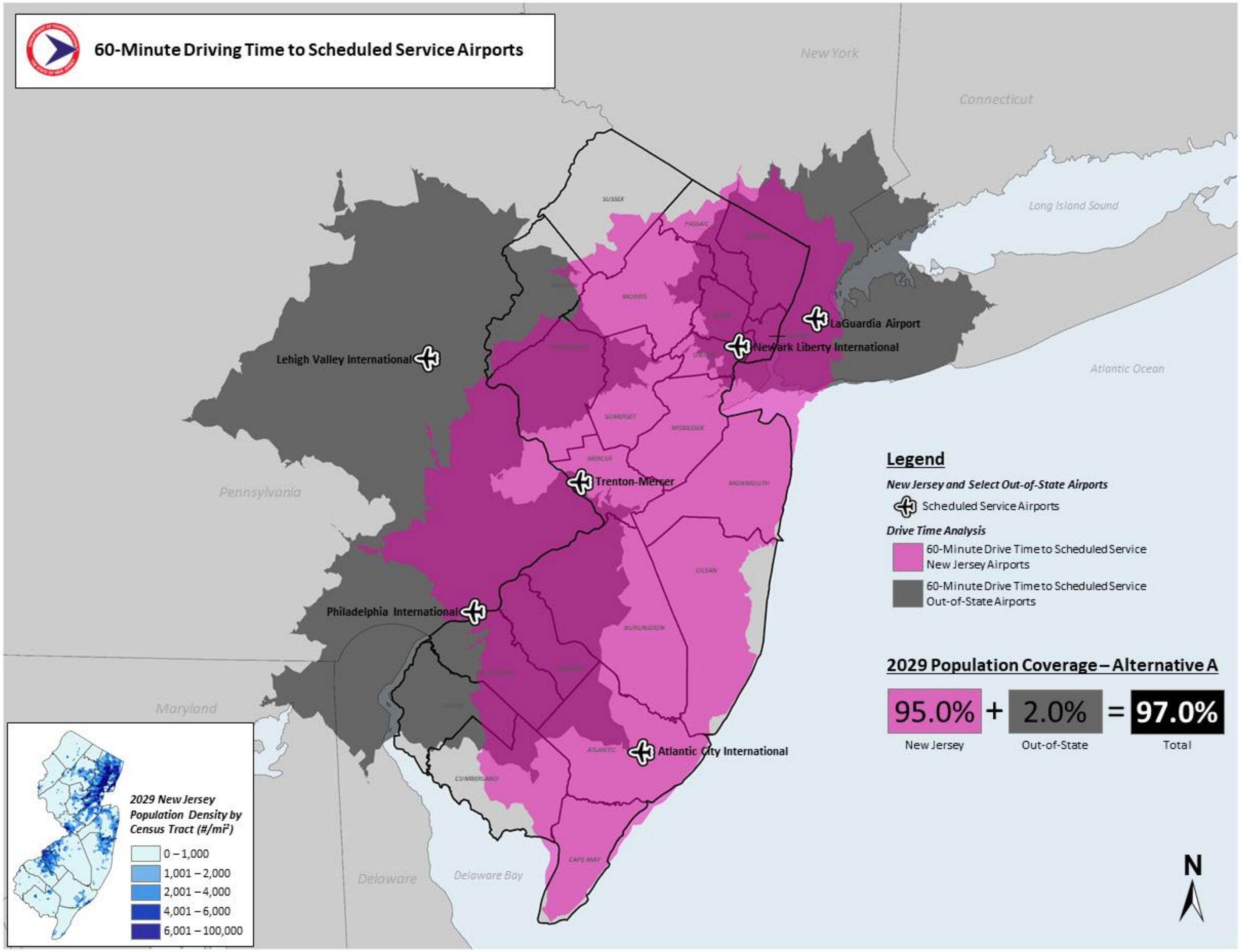


Figure 6-13 Future Access to Scheduled Service Airports – Maintain Existing

6.3.1.3 Access to Any Advanced Service Airport

As previously shown in **Figure 6-6** and **Table 6-3**, there are seven advanced service airports in New Jersey and four airports that serve the functional role of an advanced service airport in neighboring states, providing accessibility to New Jersey residents. In 2019, 94.8 percent of New Jersey's population (approximately 8.6 million residents) were within 45 minutes of one of these 11 airports. For this system evaluation measure, there are two alternatives NJDOT BOA should consider pursuing:

A. Maintain the Existing New Jersey Airport System

B. Consider Long-term Potential for Access to Advanced Service Airports

Maintain the Existing New Jersey Airport System

The existing 11 advanced service airports in New Jersey and neighboring states provide a combined coverage of 92.7 percent of the state's residents or serve 8.4 million people. As depicted in **Figure 6-14**, by 2029 if no advanced service airports are added, the number of residents served will increase to approximately 8.7 million. The percent share in 2029, however, remains unchanged at 92.7 percent coverage. As this coverage is sufficient for New Jersey, maintaining the existing New Jersey advanced service airport system is the most viable option.

Consider Long-term Potential for Access to Advanced Service Airports

A key role of advanced service airports is to serve and contribute to economic growth. For New Jersey to improve its economic environment and the infrastructure that supports business growth, NJDOT BOA should work with airport sponsors to improve advanced service airports to meet role-related facility objectives. Key objectives for the advanced service role include a runway length of at least 5,000 feet, a precision approach or approach with vertical guidance capabilities, and functioning on-airport weather reporting equipment. If New Jersey's advanced service airports are improved as recommended to meet their facility requirements identified in **Chapter 5 Facility Requirements Analysis**, key business centers in the state would be better served.

In future years, it is recommended that NJDOT BOA continue to examine the development potential at its existing priority general service airports. Priority general service airports are defined as general aviation airports that contribute significantly to the airport system and should ideally be upgraded to advanced service but have constraints that make expansion at these airports unlikely or not feasible. Hammonton Municipal (N81), for example, was classified as an advanced service airport in the 2007 NJ SASP, but has been reclassified to priority general service in this 2022 NJ SASP based on significant development and environmental constraints that will not allow the airport to reach multiple minimum facility requirements identified for advanced service airports. See **Chapter 3 Airport Roles** for reclassification justification.

South Jersey Regional (VAY) and Cross Keys (17N) are priority general service airports that may be suitable for reclassification into the advanced service role to address population coverage gaps in southern New Jersey in the long-term. However, developmental, environmental, and other constraints at these airports may pose significant challenges to meet advanced service role facility requirements, which would need to be addressed prior to reclassification. Hammonton Municipal (N81) should also continue to be revaluated in the long-term for reclassification. As noted above, Hammonton Municipal (N81) was just reclassified from an advanced service to a priority general service airport due to the airport's limited development potential within the planning period of this study.

In addition, while no new advanced service airports are proposed at this time, the following areas of New Jersey should be monitored for their need to have improved access to an advanced service airport in the future, based on socioeconomic trends found in **Chapter 2 Trends Analysis** and **Chapter 4 Aviation Demand Forecast**:

- The top GRP producing counties in the state, which as of 2017 include Bergen County, Middlesex County, Morris County and Essex County.
- The counties in the state that have growing populations and are expected to incur the greatest growth in the future, which as of 2017 include Hudson County, Bergen County, Ocean County, Union County, and Essex County.

The counties in the state where existing advanced service coverage is limited and population density is significant, which includes the southern portion of the Somerset County, the western portion of Middlesex County, and the middle portion of Camden County. These counties with coverage gaps are also the counties that are close to the state border and are being served by out-of-state airports located in Pennsylvania. As more than 10 percent of New Jersey's population is being served by out-of-state advanced service airports, it is recommended that NJDOT BOA monitor these out-of-state airports. If the out-of-state airports currently providing the capabilities of an advanced service airport close or stop fulfilling their advanced service role functions, NJDOT BOA should reevaluate how New Jersey's airports will fill the gaps in coverage, which may result in the need to invest in updates and reclassify additional airports into the advanced service role.

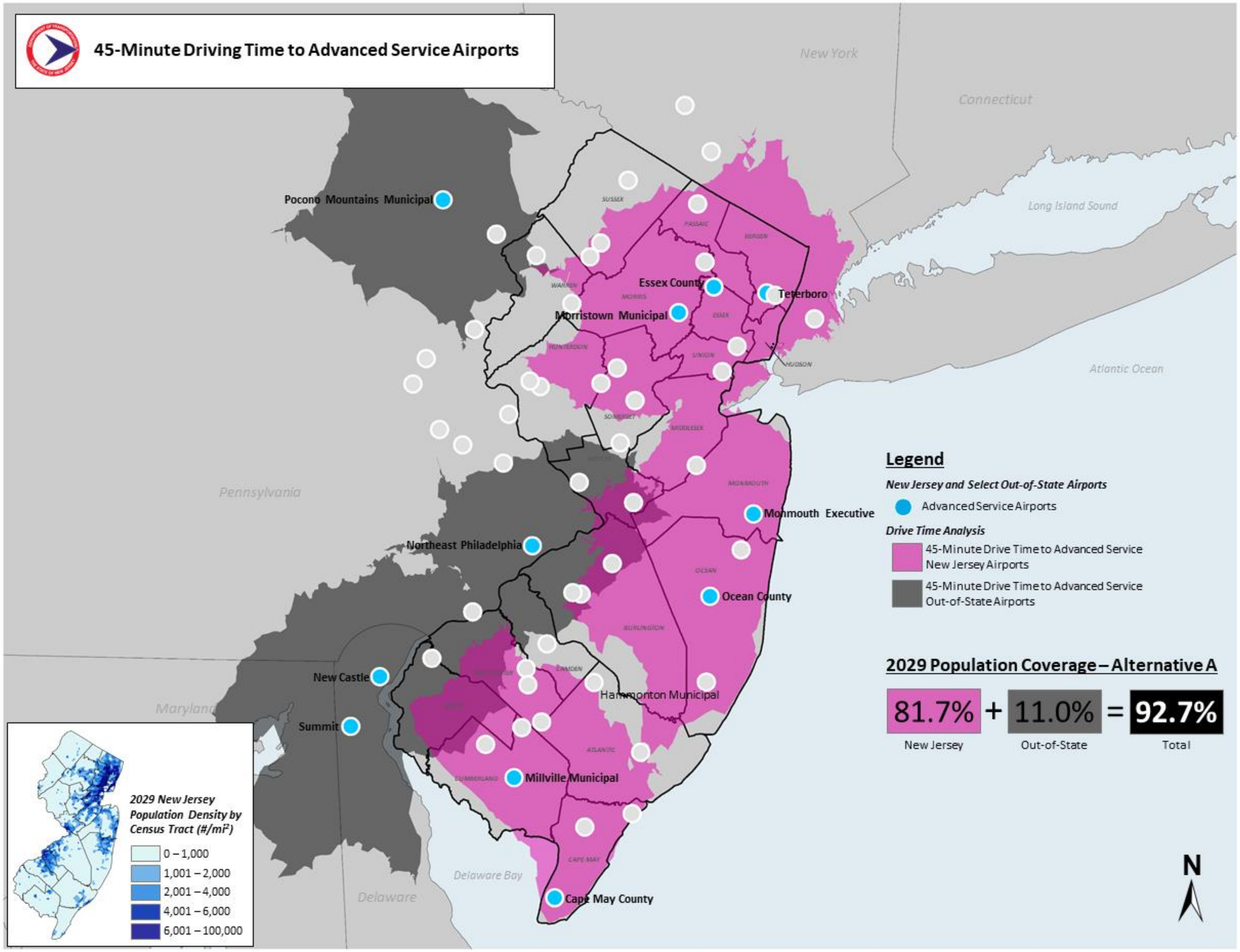


Figure 6-14 **Future Access to Advanced Service Airports – Maintain Existing**

6.3.1.4 Access to a New Jersey Core Airport

As previously shown in **Figure 6-7** and **Table 6-4**, there are 34 Core airports in New Jersey. In 2019, 98.3 percent of New Jersey's population (approximately 8.9 million residents) were within 30 minutes of a Core airport. For this system evaluation measure, there are two alternatives NJDOT BOA should consider pursuing:

A. Maintain the Existing New Jersey Airport System

B. Consider Long-term Potential for Access to Core Airports

Maintain the Existing New Jersey Airport System

The existing 34 Core airports in New Jersey provide coverage to 98.3 percent of the state's residents, or 8.9 million people. As depicted in **Figure 6-15**, by 2029 if no Core airports are added, the number of residents served will increase to 9.2 million. The percent share in 2029, however, remains unchanged at 98.3 percent coverage. As Core airport coverage is very strong, maintaining the existing New Jersey Core airport system is the most viable option.

Consider Long-term Potential for Access to Core Airports

Airports that have been designated as Core airports should be prioritized for preservation through continued investment and facility improvements using state and federal grants because of their vital importance to the airport system. In the long-term, NJDOT BOA should encourage airport sponsors of Core airports to improve their facilities through the use of federal and state funds in a manner that maximizes their efficiency, utility, and storage capacity. **Chapter 7 Development Cost Analysis** and **Chapter 8 Recommended System** identifies specific projects that are recommended to be undertaken at Core airport facilities.

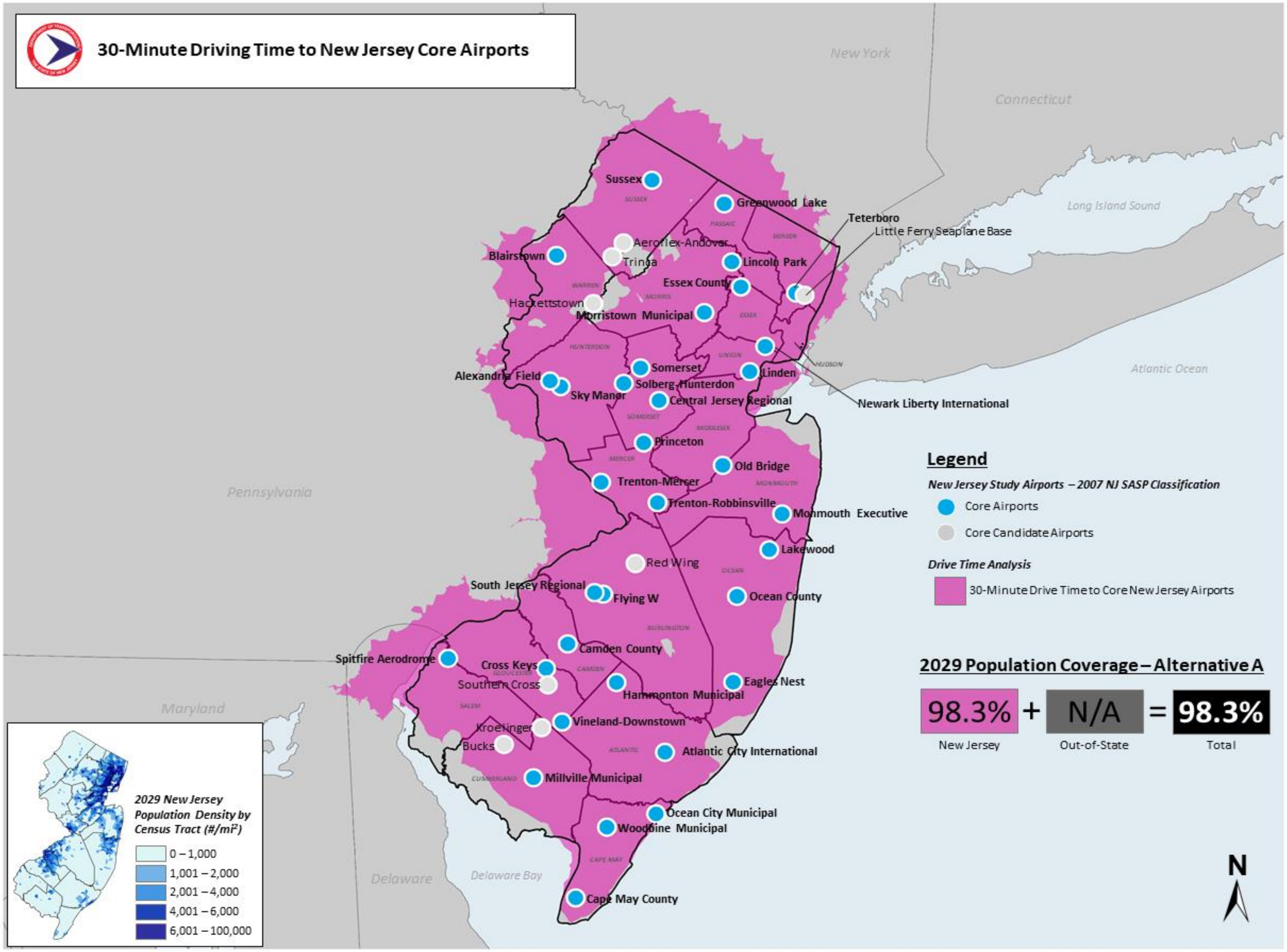


Figure 6-15 **Future Access to New Jersey Core Airports – Maintain Existing**

6.3.1.5 Access to Any Airport in the NPIAS

As previously shown in **Figure 6-8** and **Table 6-6**, there are 24 NPIAS airports in New Jersey that provide accessibility to 100 percent of New Jersey residents within a 30-mile radius. While there are out-of-state NPIAS airports located within a 30-mile radius of New Jersey, all out-of-state NPIAS airport coverage overlaps with coverage provided by NPIAS airports located in New Jersey. For this system evaluation measure, there are two alternatives NJDOT BOA should consider pursuing:

A. Maintain the Existing New Jersey Airport System

B. Consider Longer Term Potential for Access NPIAS airports

<u>Maintain the Existing New Jersey Airport System</u>

By the year 2029, the percent of the state's total population with access to NPIAS airports will remain unchanged at 100 percent, despite a slight population increase between 2019 and 2029.

Given that existing coverage is sufficient with 100 percent of New Jersey residents having access to a NPIAS airport in 2029, the most viable alternative for this system evaluation measure is to maintain the existing system. Given that NPIAS airport coverage needs are 100 percent met by existing NPIAS airports, the introduction of new airports to the NPIAS system is not warranted. Future 2029 population coverage for the existing NPIAS airport system is shown in **Figure 6-16**.

<u>Consider Long-term Potential for Access to NPIAS Airports</u>

In order to maintain the existing NPIAS system in New Jersey, airports within the NPIAS should maintain their NPIAS status. NPIAS eligibility requirements are described in FAA Order 5090.5, Field Formulation of the National Plan of Integrated Airport Systems, and detail criteria for NPIAS categories. NPIAS requirements for general aviation airports are also described in **Chapter 2 Trends Analysis** and **Chapter 3 Airport Roles** of this 2022 NJ SASP.

To further classify the general aviation airports included in the NPIAS, the FAA completed studies in 2012 and 2014 that established new roles for general aviation NPIAS airports. This classification system, FAA ASSET, applies to all reliever and general aviation airports included in the NPIAS. The FAA ASSET classifies NPIAS general aviation airports into National, Regional, Local, Basic, and Unclassified airports.

Airports that fall within the ASSET Unclassified category do not meet NPIAS eligibility. Unclassified airports are not eligible for entitlement FAA funding given their status; however, they are still eligible to compete for discretionary funding from the FAA. Unclassified airports continue to be included in the NPIAS and are revaluated for NPIAS inclusion every two years.

It is important to note that the 2019-2023 FAA NPIAS report identified six Unclassified airports in New Jersey. These airports include:

- Central Jersey Regional (47N)
- Monmouth Executive (BLM)
- Princeton (39N)
- Solberg-Hunterdon (N51)
- Sussex (FWN)
- Trenton-Robbinsville (N87)

Airports can become reclassified by meeting NPIAS eligibility requirements**,** which are discussed at length in **Chapter 3 Airport Roles**. Sponsors of Unclassified airports should identify steps that can be taken to become reclassified and maintain NPIAS status, if desired.

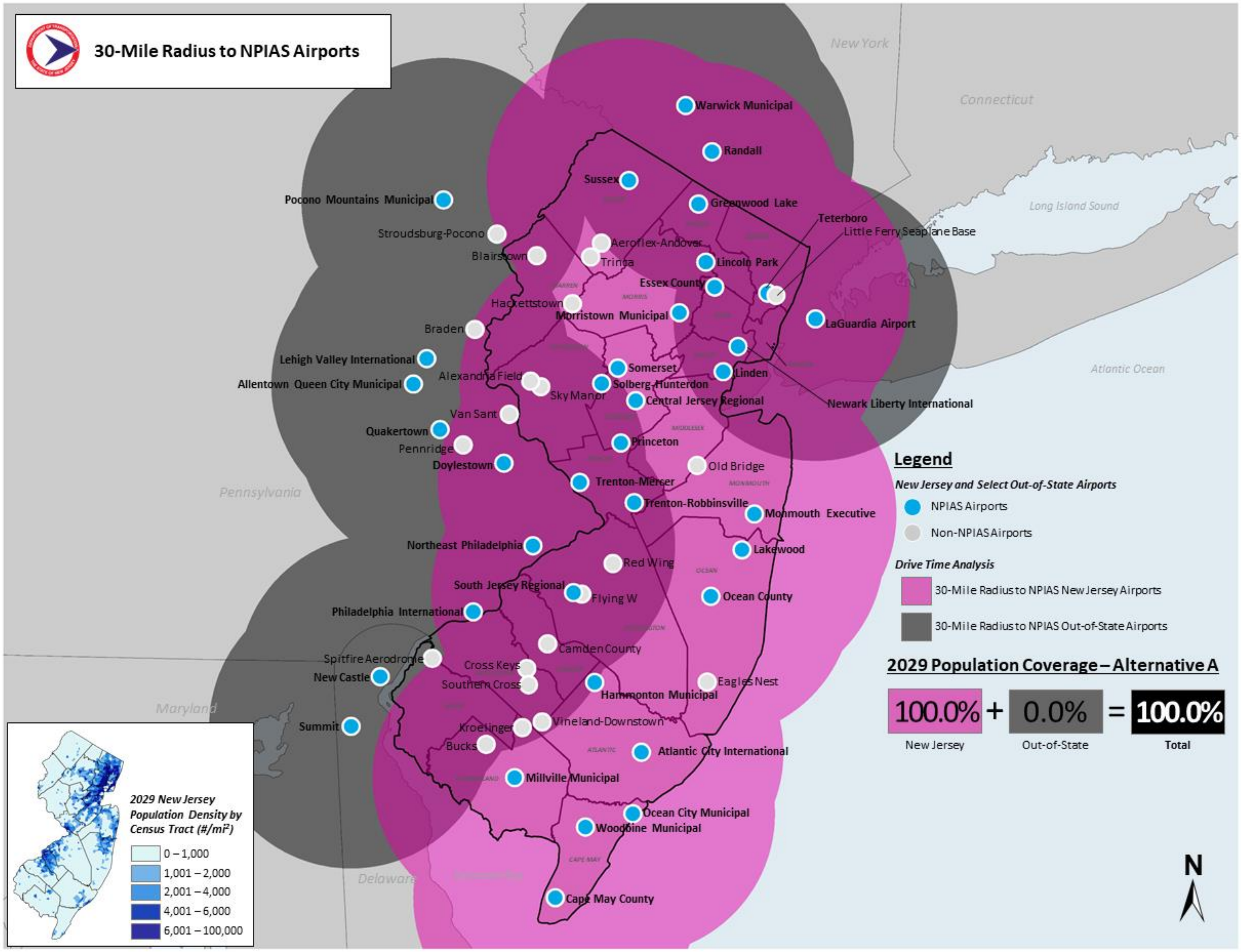


Figure 6-16 Future Access to NPIAS Airports – Maintain Existing

6.3.1.6 Access to Any Airport with Published Terminal Procedures

As previously shown in **Figure 6-9** and **Table 6-7**, there are 35 airports in New Jersey and 14 airports in neighboring states with published terminal procedures that provide accessibility to New Jersey residents. In 2019, 99.1 percent of New Jersey's population (approximately nine million residents) were within 30 minutes of an airport with published terminal procedures. For this system evaluation measure, there are two alternatives NJDOT BOA should consider pursuing:

A. Maintain the Existing New Jersey Airport System

B. Consider Long-term Potential for Access to Airports with Published Terminal Procedures

Maintain the Existing New Jersey Airport System

The existing 49 airports with published terminal procedures in New Jersey and the neighboring states, provide coverage to 99.1 percent of the state's residents, or 9 million people in 2019. As depicted in **Figure 6-17**, by 2029 if no improvements are made, the number of New Jersey residents served will increase to 9.3 million. The percent share in 2029, however, remains unchanged at 99.1 percent coverage. As coverage is very strong, maintaining the existing New Jersey airport system is the most viable option.

Consider Long-term Potential for Access to Airports with Published Terminal Procedures

Airports that have published terminal procedures should continue to maintain updated terminal procedures at their facility. This can be accomplished by ensuring airports maintain their existing approach capabilities and its related facilities.

Furthermore, it is recommended that airports that do not meet their role-related facility and service objectives for airport approach type be considered for improvement. While coverage for this accessibility measure is sufficient, four airports currently do not meet their facility requirements for approach type, as presented in **Chapter 5 Facility Requirements Analysis**. Enhanced approach capabilities provide multiple benefits, including increased air access, operational efficiency, accuracy, and safety. This applies to the two scheduled service airports, ACY and TTN, that should consider implementing facilities to achieve a CAT-II precision approach for the primary runway; and one advanced service airport, BLM, that should consider implementing facilities to achieve a precision approach or a non-precision approach with vertical guidance. It should be noted that such projects must be justified through a more detailed master plan study and accompanied by an up to date ALP. Additionally, additional conditions and approval processes may be required in order to implement the recommended approach capabilities.

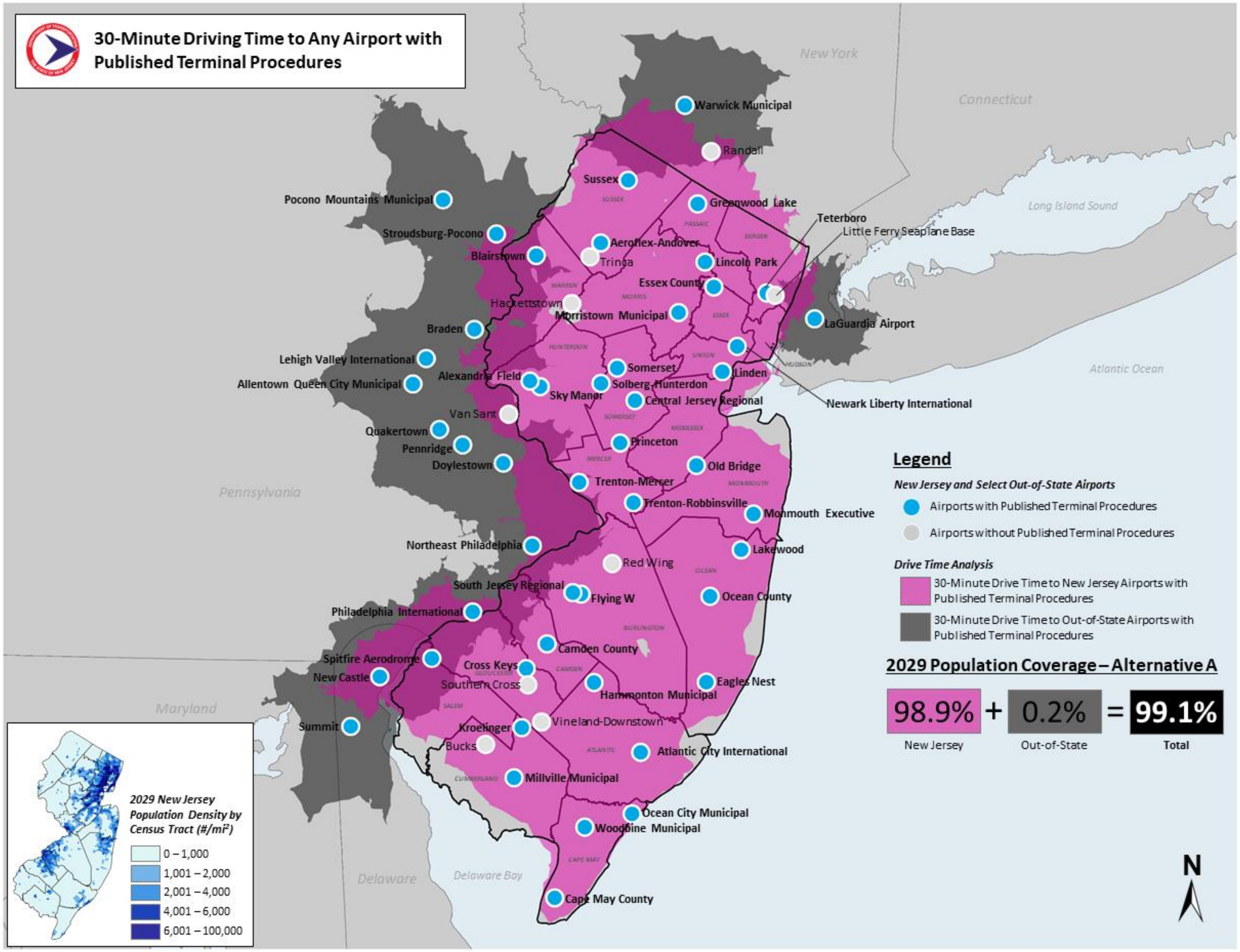


Figure 6-17 Future Access to Any Airport with Published Terminal Procedures – Maintain Existing

6.3.1.7 Access to Any Airport with Clear 20:1 Approach Surfaces

A clear 20:1 approach surface is important for maintaining an airport's operational capability, safety, and efficiency. Airports that do not have mitigated 20:1 approach surfaces lose their nighttime approach capabilities, which greatly reduces the operational capacity of individual airports and the entire New Jersey airport system. Of the 42 New Jersey airports, only 11 airports have clear 20:1 approach surfaces to date. For this system evaluation measure, there are three alternatives:

A. Maintain the Existing New Jersey Airport System

B. Improve the Existing New Jersey Airports that have Undergone Obstruction Mitigation Efforts

C. Consider Long-term Potential for Clearing 20:1 Approach Surfaces at All New Jersey Airports

Maintain the Existing New Jersey Airport System

As previously shown in **Figure 6-10** and **Table 6-8**, in 2019, 82.4 percent of all New Jersey residents (7.5 million) were within a 30-minute driving time of an airport with a clear 20:1 approach surface. **Figure 6-18** shows that if no changes are made to the existing system, by 2029, 82.4 percent of all New Jersey residents (7.7 million) will be within a 30-minute driving time of these airports. While the number of residents increases, the percent of the state's total population with access to these airports will remain unchanged at 82.4 percent. The status-quo alternative is not viable, as clear 20:1 approaches are critical to maintaining an operational, safe, and efficient airport system.

Improve the Existing New Jersey Airports that have Undergone Obstruction Mitigation Efforts

Airports typically undergo a multi-step process to mitigate obstructions to their approach surfaces. Usually, this process begins with an obstruction study or evaluation that surveys the airport, identifies obstructions, and recommends mitigation efforts. Once an airport decides to adopt the recommendations of the obstruction study, it undergoes environmental review if required. Subsequently the airport removes or mitigates obstructions once the required environmental documentation or permits are approved and obtained. As a result, it is more likely for an airport that has recently undertaken or is currently undertaking an obstruction mitigation effort to have a clear 20:1 approach surface in the future, compared to an airport that has not made these investments in obstruction removal. As such, this alternative scenario considers how coverage to New Jersey residents changes if airports that have undergone obstruction mitigation efforts between 2017 and 2020 were to have clear 20:1 approach surfaces in the future.

While the majority of New Jersey's existing study airports do not have clear 20:1 approach surfaces, many of them have recently undergone or are currently undergoing obstruction mitigation efforts. Obstruction mitigation efforts include planning studies, environmental documents, and obstruction removal projects, where the purpose is to evaluate or mitigate obstructions. In addition to airports that are currently undergoing obstruction mitigation efforts, airports that have undergone obstruction mitigation efforts between 2017 and 2020 are also considered in this alternative scenario. These airports are listed in **Table 6-10**.

Figure 6-19 shows how accessibility and coverage could change by 2029 if all of these New Jersey airports successfully mitigate obstructions to their 20:1 approach surfaces. If all nine airports listed in **Table 6-10** were to have clear 20:1 approach surfaces, 90.6 percent, or approximately 8.5 million residents will be covered within a 30-minute driving time in 2029. As NJDOT BOA is currently funding or has recently provided funding to these airports to evaluate and mitigation obstructions, this is the most viable alternative scenario that would improve accessibility to airports with clear 20:1 approach surfaces for New Jersey residents in the future.

Consider Long-term Potential for Clearing 20:1 Approach Surfaces at All New Jersey Airports

NJDOT BOA's ultimate goal is for all of New Jersey's airports to have clear 20:1 approach surfaces. As mentioned previously, a clear 20:1 approach surface for an airport's primary runway is essential, not only for safety and operational capabilities, but also for preserving the airport's approaches. Other measures can be taken to clear 20:1 approach surfaces, such as displacing runway end thresholds and increasing visual glide slope angles; however, the former mitigation measure reduces an airport's effective runway length, which negatively impacts the runway's approach capabilities. Additionally, typically these measures are taken when an airport does not own the property beyond the airport's runway ends and the airport has difficulties mitigating obstructions in these areas without an easement or property acquisition.

As such, in addition to encouraging airports to undertake obstruction studies and mitigation efforts through State and Federal grants, NJDOT BOA should consider the feasibility of providing grants to airports to acquire land or easements that lie within their primary runway approach surfaces to more freely mitigate and control these areas to the extent possible, especially since vegetative obstructions (such as trees) grow naturally and will need to be mitigated periodically.

In order to ensure land uses surrounding airports are compatible with aeronautical surfaces, it is recommended that NJDOT BOA work with municipalities to encourage and ensure compliance with the New Jersey Administrative Code Air Safety and Zoning Act of 1983. The Act established standards for land use adjacent to airports, which municipalities in the State of New Jersey should implement. The act requires that an Airport Safety Zone must be established for each runway, and each Airport Safety Zone must have a Runway Subzone, two Runway End Subzones, and two Clear Zones. These zones establish minimum standards for the control of airport and aeronautical hazards. The law should be utilized as guidance to encourage the clearing of 20:1 approach surfaces at all New Jersey study airports.

It is recommended that NJDOT BOA conduct a comprehensive study that examines the obstructions to its airports approach surfaces, identifies the key challenges and constraints for mitigating these obstructions, prioritize mitigation efforts at Core airports, and work with stakeholders (such as airport sponsors, adjacent property owners, municipalities, etc.) to identify an action plan to meet its ultimate goal for all airports to have clear 20:1 approach surfaces. It is advised that NJDOT BOA continue to monitor obstructions and evaluate airports' approach surfaces once mitigation efforts are complete, as conditions change over time with vegetation growth.

Table 6-10 New Jersey Airports with Recent or Ongoing Obstruction Mitigation Efforts

Airport Name	Obstruction Mitigation Effort	Mitigation Type	Added Future Population Coverage (% of State)
Central Jersey Regional (47N)	Yes	Obstruction Study	210,190 (2.2%)
Greenwood Lake (4N1)	Yes	Obstruction Study	21,484 (0.2%)
Hammonton Municipal (N81)	Yes	Obstruction Removal	186,351 (2.0%)
Lakewood (N12)	Yes	Obstruction Removal	1,147 (0.0%)
Linden (LDJ)	Yes	Obstruction Study	79,888 (0.9%)
Princeton (39N)	Yes	Obstruction Study	124,118 (1.3%)
Somerset (SMQ)	Yes	Obstruction Removal	89,398 (1.0%)
South Jersey Regional (VAY)	Yes	Environmental Assessment for Obstruction Removal	286,955 (3.1%)
Sussex (FWN)	Yes	Obstruction Study	114,978 (1.2%)
Woodbine Municipal (OBI)	Yes	Obstruction Removal	6,695 (0.1%)

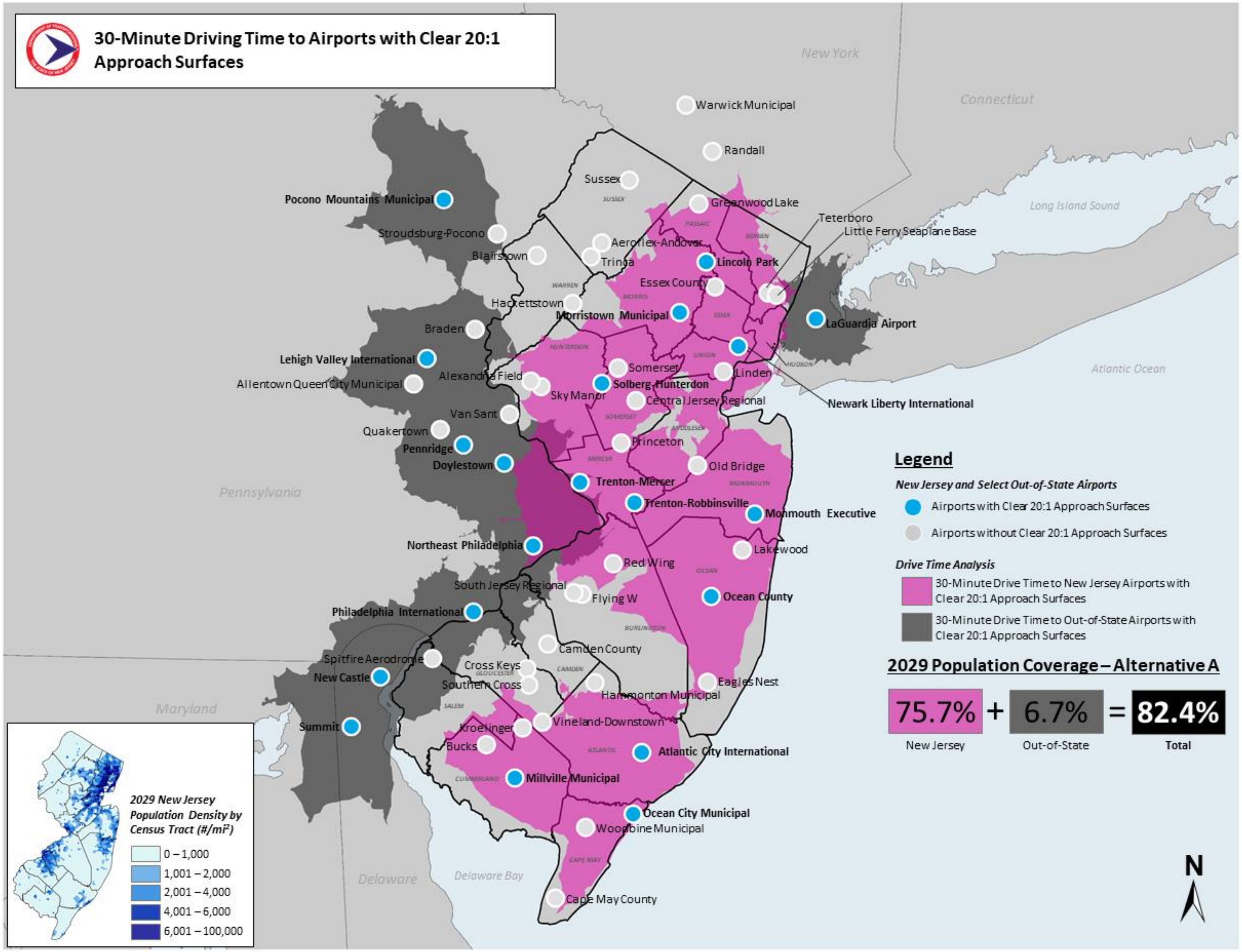


Figure 6-18 **Future Access to Any Airport with Clear 20:1 Approach Surfaces – Maintain Existing**

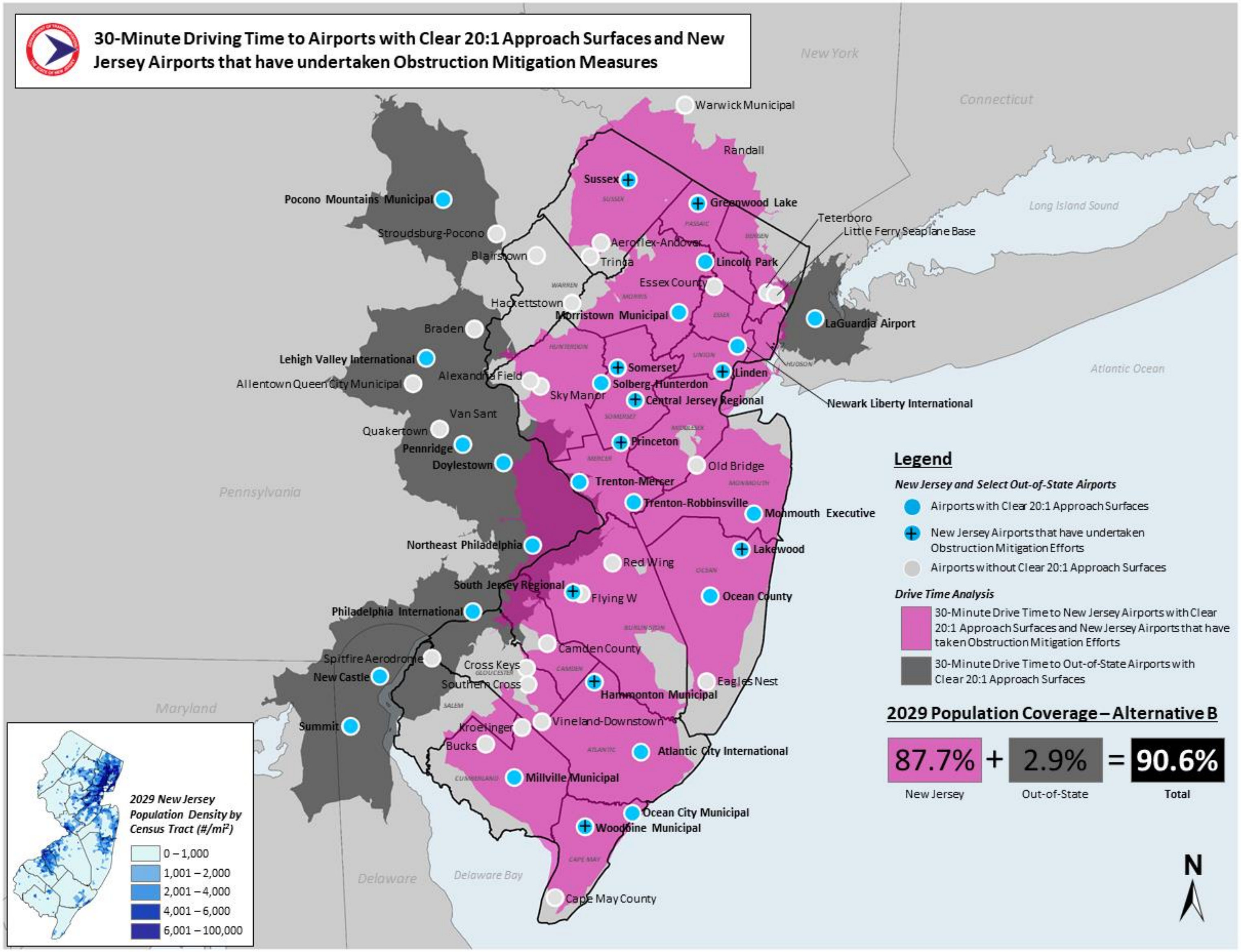


Figure 6-19 Future Access to Any Airport with Clear 20:1 Approach Surfaces – Recommended Alternative

6.3.1.8 Access to Any Airports with Primary Runway Lengths of 5,000 Feet or Greater

Adequate runway facilities are one of the most important components of an aviation system. The proper number and distribution of airports with runway lengths capable of serving a full range of aircraft in the general aviation fleet are important to the viability of New Jersey's airport system, and particularly to the needs of the business community. For access to any airports with primary runway lengths of 5,000 feet or greater, there are three alternatives:

A. Maintain the Existing New Jersey Airport System

B. Improve the Existing New Jersey Airports to Meet Airport Service Role-related Facility, Service, and Equipment Objectives

C. Consider Long-term Potential for Extending Existing New Jersey Airport Runways to 5,000 Feet or Greater

Maintain the Existing New Jersey Airport System

As previously shown in **Figure 6-11** and **Table 6-9**, in 2019, 83.5 percent of all New Jersey residents (7.6 million) were within a 30-minute driving time of an airport with a primary runway length of 5,000 feet or greater. **Figure 6-20** shows that if no changes are made to the existing system, by 2029, 83.4 percent of all New Jersey residents (7.8 million) will be within a 30-minute driving time of at least one of these airports. While the number of residents with access to 5,000-foot runways increases in 2029, the percent of the state's total population with access to these airports will decrease slightly from 83.5 percent to 83.4 percent. The status-quo alternative is not viable, as runway length is critical to maintaining a viable and efficient airport system.

Improve the Existing New Jersey Airports to Meet Airport Service Role-related Facility, Service, and Equipment Objectives

The relationship of primary runway length to positive economic development and growth highlighted this deficiency as one requiring attention. A key facility attribute to address this void is to maintain adequate runway length to support commercial and business aircraft. Per New Jersey's facility, service, and equipment objectives presented in **Chapter 5 Facility Requirements Analysis**, scheduled service and advanced service New Jersey airports are required to have primary runway lengths of 5,000 feet or greater. Currently, there is one advanced service New Jersey airport, Essex County (CDW) that does not fulfill its runway length objective. To meet its runway length objectives, this airport has been identified for a runway extension, which would improve the primary runway length to at least 5,000 feet. Implementation of this recommended runway extension project would allow CDW to better serve its intended functional role within the system. It is important to note that the need and feasibility for runway extensions must be justified and accepted at the federal and local level through special studies and/or through a master planning effort.[60] **Table 6-11** identifies the current length of the primary runway, recommended primary runway length, and additional coverage that will be provided if this alternative is pursued.

Table 6-11 New Jersey Airports Recommended for a 5,000-foot Primary Runway Length

Airport Name	Current Airport Service Role	Current Primary Runway Length	Recommended Primary Runway Length	Added Future Population Coverage (% of State)
Essex County (CDW)	Advanced Service	4,552'	5,000'	23,411 (0.3%)

When implementing this improvement at CDW as part of the future coverage alternative for airports with a primary runway length 5,000 or greater, the accessibility coverage in 2029 would increase to 83.7 percent, providing access to over 7.8 million New Jersey residents. **Figure 6-21** depicts the geographic change in coverage.

Consider Long-term Potential for Extending Existing New Jersey Airport Runways to 5,000 Feet or Greater

In the long-term, NJDOT BOA should develop strategies to further improve coverage for this performance measure. While implementing runway extensions at CDW would bring all study airports requiring 5,000-foot runways into compliance with facility and service objectives, 16.3 percent of New Jersey residents will still lack coverage in this alternative. Thus, it is recommended that NJDOT BOA continue to reevaluate the functional role and role requirements of study airports to improve

[60] At this time CDW's master plan does not indicate that a runway extension is feasible. It is recommended that NJDOT consider CDW when monitoring airfield capacity needs in the future.

accessibility for New Jersey residents in the future. NJDOT BOA and airport sponsors can monitor the need for additional 5,000-foot runways in the system through airport master plans, ALPs, and subsequent system planning studies.

Airport master plans and ALPs are essential for assessing the potential need for runway extensions, among other facility improvements.

In a recent example, Hammonton Municipal (N81)'s ALP from 2004 listed a 5,000-foot runway for Runway 03/21 in its ultimate condition. In the airport's latest master plan, which is currently underway, the need and feasibility for the 5,000-foot runway is being reassessed due to constraints and changing existing conditions at the airport. Engaging airports to evaluate their changing needs and existing conditions through regular airport master plan and ALP updates may bring to light airports that could be in a position for a runway extension. For any runway extension project to be realized at an airport, it needs to meet all FAA design standards for runway length, width, and strength of the pavement based on critical aircraft, be sufficiently justified based on the applicable critical aircraft, be identified on an approved ALP, and meet all environmental requirements. Refer to the FAA AIP Handbook for detailed guidance on runway extension projects.

Given the significant financial investment and community support that is often required to pursue runway extension projects, it is recommended that proper planning studies and/or benefit-cost analyses be conducted prior to proposing a runway extension, as part of NJDOT BOA and the airports' planning efforts.

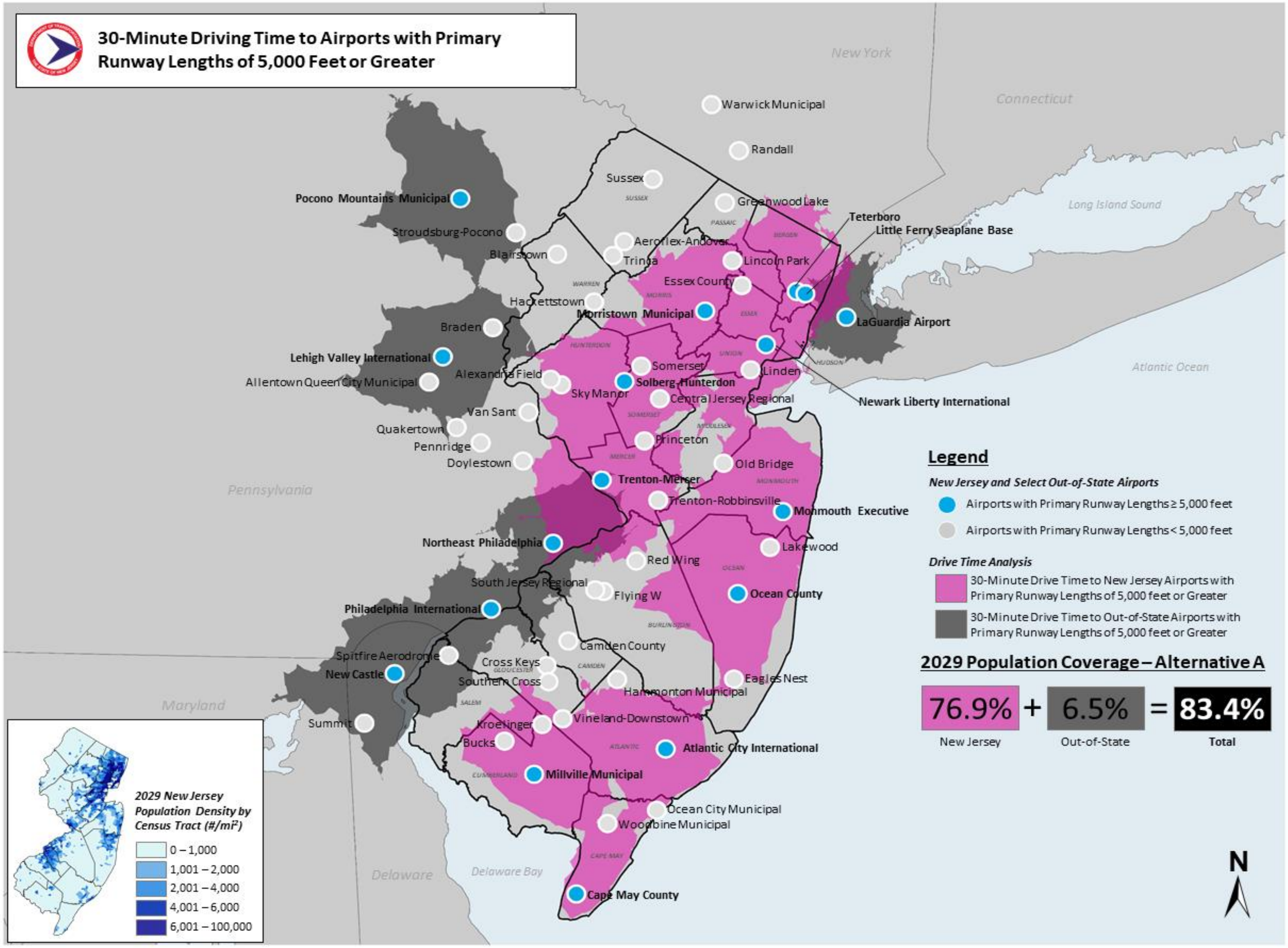


Figure 6-20 **Future Access to Any Airport with Primary Runway Lengths of 5,000 Feet or Greater – Maintain Existing**

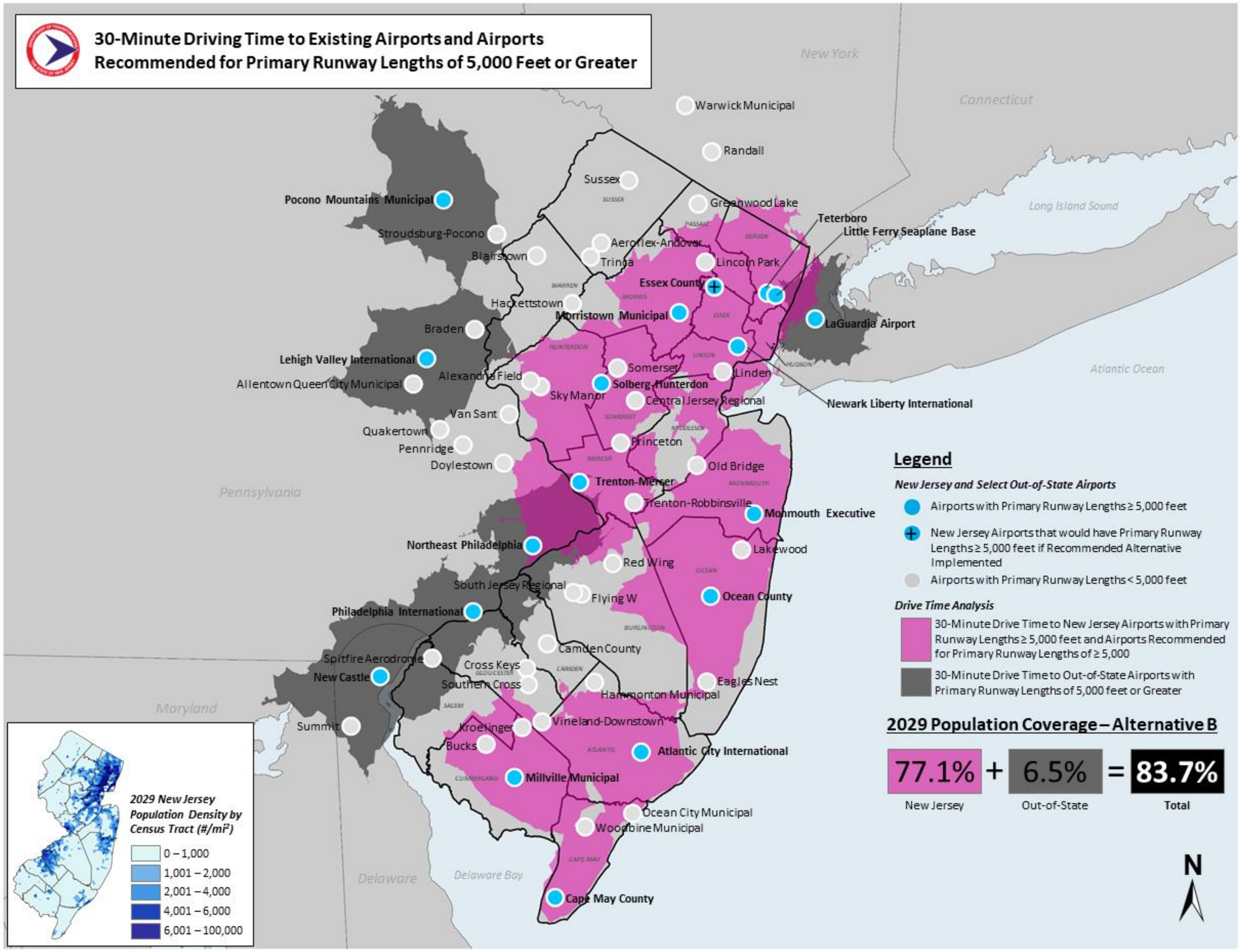


Figure 6-21 **Future Access to Any Airport with Primary Runway Lengths of 5,000 Feet or Greater – Recommended Alternative**

6.3.2 Recommended Changes

This chapter analyzed current system performance and presents viable alternative scenarios for evaluation measures where accessibility and coverage to New Jersey residents can be improved. **Table 6-12** summarizes how New Jersey's future (2029) system is expected to perform for each of the system evaluation measures. Overall, the future performance of New Jersey's airport system in terms of accessibility is relatively good, with five of the evaluation measures expected to provide coverage to more than 90 percent of New Jersey's residents. For these performance measures, the recommended alternative is to maintain the existing New Jersey airport system. For these evaluation measures where accessibility and coverage were considered adequate, this study recommends NJDOT BOA consider long-term potential for preserving coverage through improving airports to meet their airport role-related facility, service, and equipment objectives and continuing to monitor the existing New Jersey airport system and changing industry trends and demand.

The lower performing evaluation measures, where less than 90 percent coverage is achieved, are clearance of the 20:1 approach surface and airports with runway lengths greater or equal to 5,000 feet. For these evaluation measures, alternative scenarios for improving the system's performance are proposed.

To improve New Jersey's future population accessibility to airports that have clear 20:1 approach surfaces, allowing them to offer night-time approach capabilities, the following airports that have recently undertaken an obstruction study or an environmental analysis for obstruction removal should follow through the necessary regulatory processes to remove or mitigate obstructions:

- Central Jersey Regional (47N)
- Greenwood Lake (4N1)
- Linden (LDJ)
- Princeton (39N)
- South Jersey Regional (VAY)
- Sussex (FWN)

Airports that have successfully completed obstruction removal projects should continue to be monitored, since vegetative obstructions (such as trees) continue to grow over time. The following airports that have recently completed obstruction removals are listed below:

- Hammonton Municipal (N81)
- Lakewood (N12)
- Somerset (SMQ)
- Woodbine Municipal (OBI)

Airports with runway lengths of 5,000 feet or greater are more likely to accommodate needs of the business community and various types of general aviation aircraft. New Jersey's scheduled service and advanced service roles require at least a 5,000-foot runway. By enhancing the following New Jersey meet their airport service role-requirements related to runway length, accessibility for New Jersey's residents to airports with these capabilities will improve in the future:

- Essex County (CDW)

In order to improve coverage and accessibility for the evaluation measures where coverage is insufficient, it is recommended that NJDOT BOA develop tools or programs that assist the state with monitoring key capabilities at New Jersey's airports and work with airport sponsors to undertake comprehensive studies to continuously assess these issues.

Additionally, while public-use airport coverage is above 90% at the time of the publication of this 2022 NJ SASP, it is recommended that NJDOT BOA monitor changes to the system, such as airport closures, that could reduce public-use coverage in the future.

Table 6-12 Summary of Future System Performance (2029) and Recommended Changes

	Total Population Coverage (% of State)	Recommended Alternative Scenario	Total Population Coverage Resulting from Alterative Scenario (% of State)
Access to Any Public-Use Airport	9,282,260 (99.2%)	Maintain Existing New Jersey Airport System	N/A
Access to Any Scheduled Service Airport	9,073,598 (97.0%)	Maintain Existing New Jersey Airport System	N/A
Access to Any Advanced Service Airport	8,672,717 (92.7%)	Maintain Existing New Jersey Airport System	N/A
Access to Any New Jersey Core Airport	9,191,682 (98.3%)	Maintain Existing New Jersey Airport System	N/A
Access to Any Airport in the NPIAS	9,352,628 (100%)	Maintain Existing New Jersey Airport System	N/A
Access to Airports with Published Terminal Procedures	9,272,648 (99.1%)	Maintain Existing New Jersey Airport System	N/A
Access to Airports with Clear 20:1 Approach Surfaces	7,705,017 (82.4%)	Improve the Existing New Jersey Airports that have Undergone Obstruction Mitigation Efforts	8,476,728 (90.6%)
Access to Airports with a Primary Runway Length of 5,000 Feet or Greater	7,803,644 (83.4%)	Improve the Existing New Jersey Airports to Meet Airport Service Role-related Facility, Service, and Equipment Objectives	7,825,450 (83.7%)

7 DEVELOPMENT COST ANALYSIS

7.1 Introduction

The Development Cost Analysis chapter presents the cost of implementing projects that will allow New Jersey study airports to meet their functional service role objectives. This chapter depicts the unconstrained project costs associated with this system plan. Facility needs were identified in **Chapter 5 Facility Requirements Analysis** at each airport based on their functional role**.**

The purpose of this chapter is to provide estimated costs for the identified airport needs that are eligible for state and federal funding, quantifiable, and where data is available. These cost estimates will allow New Jersey Department of Transportation (NJDOT) Bureau of Aeronautics (BOA) and airport sponsors to identify, prioritize, and plan for specific projects over a 20-year planning horizon that will improve airside, terminal, landside and supporting facilities using state and/or federal funding. It is noted that certain costs that are critical to an airport's operational safety, such as runway safety area and runway protection zone improvements costs and the design and construction of obstruction removals, are not included in the costs estimated in this chapter due to the master planning-level analysis required to capture the unique circumstances at each airport.

Chapter 7 Development Cost Analysis is composed of the following subsections**:**

- 7.2 Assumptions and Methodology
- 7.3 Identified Airport Needs and Costs
- 7.4 State and Federal Funding Sources
- 7.5 Summary of Costs for Identified Airport Needs

7.2 Assumptions and Methodology

Using the facility needs findings from **Chapter 5 Facility Requirements Analysis**, unit costs were developed for each project type and applied to each airport's development needs where data was available and quantifiable, in order to estimate total project cost for applicable airports in each service role. Facility needs were identified using inventory data collected and presented in **Chapter 1 Inventory**.

Unit costs were developed based on consulting records on past planning, engineering, and construction experience from recent projects in the New Jersey region. The unit costs and cost estimates provided in this chapter are estimated costs in current (2020) dollars.

The costs estimated for each project type have not been escalated to account for inflation beyond the year 2020 because ACIPs, which determine when recommended projects at individual airports will commence, are not yet available for the 20-year planning horizon. Once ACIPs containing recommended projects are developed, for projects that are planned for a year beyond 2020, a cost escalation rate of 3.5 percent per year should be applied to account for inflation. This annual average growth of 3.5 percent was calculated by examining historical inflation rates from 2000 to 2019.[61]

Planning and environmental, design, and construction costs were factored into the unit costs, where applicable. It was assumed that project costs would be increased by 10 percent to include fees for planning and environmental analyses, 10 to 15 percent[62] for design, and 20 percent for construction. Property acquisition costs are not included in the estimates due to the many site-specific factors that would need to be analyzed to develop reasonable estimates for each individual airport facility. Furthermore, additional site-specific costs may be identified as a result of the planning and environmental analyses that are not included in the estimates herein.

Unit costs were only estimated when a project need was identified for an airport within a functional service category as presented in **Table 7-1**. In other words, if all airports in a functional service role met their established objectives for a specific facility, service, or equipment, no project cost was estimated for that service role. In these instances, a dash (—) is shown on the table to signify that a project cost is not warranted. Note that the service role objectives developed for this 2022 NJ

[61] Historical inflation rates were analyzed utilizing the RSMeans database.
[62] If the unit cost is greater than $250,000, a 15 percent design fee was applied; for unit costs below $250,000, a 10 percent design fee was applied.

SASP may differ from the FAA's requirements for safety and security standards at individual airports, as such, it is recommended that airports review FAA advisory circulars and design standards in planning and design.

Table 7-1 Unit Costs by Airport Functional Service Role

Facility Item	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities
Runway Length (per sf)	—	$ 48	$ 48	$ 48	$ 48	$ 48	—
Runway Width (per sf)	—	$ 48	$ 48	$ 48	$ 48	$ 48	—
Runway Strength (per sf)	—	$ 6.28	$ 6.28	$6.28	—	—	—
Taxiway Configuration Type (per sf)	$ 44	$ 44	$ 44	—	—	—	—
Runway Lighting (per lf)	—	$ 4,600	$ 4,600	—	—	—	—
Taxiway Lighting (per lf)	—	$ 2,875	$ 2,875	$ 345	—	—	—
Approach Lighting System (per system)	$5,000,000	—	—	—	—	—	—
Centerline Lighting (per lf)	$ 5,750	—	—	—	—	—	—
Touchdown Zone Lighting (per lf)	$ 5,750	—	—	—	—	—	—
Rotating Beacon (each)	—	—	$155,700	$155,700	—	—	—
Lighted Wind Cone (each)	—	—	$ 54,000	—	—	—	—
Segmented Circle (each)	—	$ 62,300	$ 62,300	$ 62,300	$ 62,300	$ 62,300	—
Runway End Identifier Lighting System (per system)	$ 28,750	$ 28,750	$ 28,750	$ 28,750	—	—	—
Visual Glide Slope Indicator – 4-Box PAPI System (per system)	$ 369,600	$ 369,600	$ 369,600	$ 369,600	—	—	—
Weather Equipment – FAA-Certified AWOS (each)	—	—	$ 217,400	—	—	—	—
Terminal Building (per sf)	$ 563	$ 563	—	—	—	—	—

Facility Item	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities
Hangar Storage (per sf)	$ 330	$ 270	$ 270	$ 270	—	—	—
Auto Parking (per space)	—	—	$ 708	$ 708	$ 708	$ 708	—
Fuel – 24/7 AvGas (each)	—	—	$ 290,000	$ 290,000	—	—	—
Fuel – 24/7 Jet Fuel (each)	—	$ 290,000	$ 290,000	—	—	—	—
Fuel – AvGas (each)	—	—	—	—	$ 217,500	$ 217,500	—
Public-use Restroom (each)	—	$ 57,500	$ 57,500	$ 57,500	—	$ 57,500	—
Primary Runway Pavement (per sf)	$ 6.32	$ 6.32	$ 6.32	$ 6.32	—	—	—
20:1 Approach Surface Clearance (per obstruction study)	—	$ 110,200	$ 110,200	$ 110,200	$ 110,200	$ 110,200	$ 110,200
Master Plan (per study)	$ 1,500,000	$ 750,000	$ 500,000	$ 350,000	$ 300,000	$ 250,000	$ 250,000
Airport Layout Plan (per study)	—	$ 250,000	$ 175,000	$ 175,000	$ 175,000	$ 175,000	$ 175,000

Notes: Planning and environmental, design, and construction costs were factored into the unit costs, where applicable.

7.3 Identified Airport Needs and Costs

Projects have been identified for improving study airports to meet their facility, service, and equipment objectives. For example, if an airport does not currently meet its runway length per its runway length objective, the cost associated with a runway extension project is presented. The total cost for every airport to meet its objectives within a service role is presented for each project type. Each project is categorized into an airside, landside/terminal, airport services, maintenance, safety compliance, or airport planning project, as presented in **Table 7-2**.

While development costs are presented for all airports to meet established system-wide objectives, site-specific analyses at individual airports should be undertaken to assess feasibility on a case-by-case basis. It is possible that not all identified projects will be feasible due to site limitations or other factors, such as a change in an airport's functional role in a subsequent NJ SASP.

Table 7-2 Cost Estimated Project Types

	Projects
Airside	Runway length; runway width; runway strength; taxiway configuration type; runway lighting; taxiway lighting; approach lighting system; centerline lighting; touchdown zone lighting; rotating beacon; lighted wind cone; segmented circle; runway end identifier lights; visual glide slope indicators, weather equipment
Terminal, Apron, and Landside	Terminal building; hangar space; auto parking
Airport Services	Fuel – AvGas and Jet Fuel; public-use restroom
Airport Maintenance	Primary runway pavement condition
Safety Compliance	20:1 Approach surface clearance
Airport Planning	Master plan; airport layout plan

Not all facility, service, and equipment objectives presented in **Chapter 5 Facility Requirements Analysis** have an associated project cost. For objectives where data was insufficient or master plan-level analyses is required to develop unit costs, development costs were not estimated. Additionally, facility, service, and equipment objectives that are not eligible for state or federal funding were not estimated, such as, but not limited to, airport marketing initiatives, community outreach, and fixed base operator FBO objectives. **Chapter 8 Recommended System** presents the recommended development plan for all facility, service, and equipment objectives.

Projects that are eligible for state and/or federal funding will need federal, state, and local project approvals before grants can be received. Not all NPIAS airports are eligible to apply for federal funding; for those NPIAS airports that are eligible for funding, the project must first appear on an approved Airport Layout Plan. Although it is not a requirement for airports to have an updated airport master plan or ALP to be eligible for state funding, airports are strongly encouraged to engage in such planning activities as recommended by the facility, service, and equipment objectives. Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

It is noted that Trinca (13N) closed in September 2020 and there are no development costs estimated for the airport in this chapter.

7.3.1 Airside Facilities

This section presents cost estimates for airside facility improvement projects for airports to meet their facility, service, and equipment objectives. Project description, assumptions, and development costs for the following airside facilities are presented for each airport functional role:

- Runway Length
- Runway Width
- Runway Strength

- Taxiway Configuration Type
- Runway Lighting
- Taxiway Lighting
- Approach Lighting System
- Centerline Lighting
- Touchdown Zone Lighting
- Rotating Beacon
- Lighted Wind Cone
- Segmented Circle
- Runway End Identifier Lights
- Visual Glide Slope Indicators (VGSI)
- Weather Equipment

7.3.1.1 Runway Length

Runway length is one of the most important factors in determining the classes and types of aircraft that can safely operate at an airport. For the New Jersey airport system to adequately serve its varied demands, it is important that its airports provide sufficient runway length. Runway lengths for Scheduled Service airports must be able to accommodate commercial aircraft, Advanced Service airports are recommended to accommodate aircraft for corporate and business activity, and Priority General Service, General Service, and Basic Service/Duplicative Basic Service airports are to accommodate general aviation aircraft for aviation related businesses, flight training, and recreational activities. Based on the functional service role classifications used in the SASP, the following runway length objectives were identified for New Jersey airports to meet:

- Scheduled Service – Minimum of 6,000 feet
- Advanced Service – Minimum of 5,000 feet
- Priority General Service – Minimum of 4,000 feet
- General Service – Minimum of 3,500 feet
- Basic Service – Minimum of 2,200 feet
- Duplicative Basic Service – Minimum of 2,200 feet
- Specialty Facilities – Not an objective

Table 7-3 presents summary estimates by airport functional service role of the total costs for all system airport to meet their runway length objectives. The costs associated with extending turf runways are not included in this analysis.

Table 7-3 Runway Length Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 2,172,100
Priority General Service	$ 9,341,727
General Service	$ 13,438,172
Basic Service	$ 637,085
Duplicative Basic Service	—
Specialty Facilities	—

Airport Functional Role	Estimated Cost
Total Estimated Cost	$ 25,589,083

To better meet the facility and service objectives of their functional service role, runway length improvement projects are identified for the following airports:

Advanced Service	Priority General Service	General Service	Basic Service
Essex County	Central Jersey Regional	Alexandria Field	Aeroflex-Andover Field
	Cross Keys	Blairstown	
	Hammonton Municipal	Lakewood	
	Lincoln Park	Sky Manor	
	South Jersey Regional	Somerset	
		Spitfire Aerodrome	
		Woodbine Municipal	

It is assumed that for airports where runway lengthening and widening projects are both identified, the extended runway is designed to meet the minimum runway width objectives based on the airport's functional service role. It is also assumed that the new portion of the runway is designed to meet the pavement strength objectives associated with the airport's functional service role. Those study airports that currently exceed the minimum runway length objective of their functional service role are assumed to maintain their current length. Runway pavement lengthening projects assume costs for planning and environmental, design, and construction costs.

Runway lengthening cost estimates were developed only for airports with paved primary runways. It should be noted that three study airports that have turf primary runways should also consider runway lengthening projects in order to meet their facility and service objectives. These airports are Bucks, Kroelinger, and Red Wing.

Implementation of these identified runway extension projects will allow study airports to better serve their intended functional role within New Jersey's airport system. It is important to note that in order to apply for and receive federal and/or state grants, the need and feasibility for runway extensions must be eligible, justified, and approved at the federal and state level through special studies and/or through a master planning effort. Not all NPIAS airports are eligible to apply for federal funding; for those NPIAS airports that are eligible for funding, the project must first appear on an approved ALP. Although it is not a requirement for airports to have an updated airport master plan or ALP to be eligible for state funding, airports are strongly encouraged to engage in such planning activities as recommended by the facility, service, and equipment objectives. Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.2 Runway Width

Adequate runway width is an important component of a safe runway system. Runway width objectives were developed for each functional service role, based on the types of aircraft anticipated to use the airports. Based on guidance provided in the FAA Advisory Circular 150/5300-13A (Change 1) *Airport Design*, the following runway width objectives were identified for New Jersey study airports:

- Scheduled Service – Minimum of 150 feet
- Advanced Service – Minimum of 100 feet
- Priority General Service – Minimum of 75 feet
- General Service – Minimum of 60 feet
- Basic Service – Minimum of 60 feet
- Duplicative Basic Service – Minimum of 60 feet
- Specialty Facilities – Not an objective

Table 7-4 presents summary estimates, by airport functional service role, of the total costs for all study airports to meet their runway width objectives.

Table 7-4 Runway Width Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 9,755,784
Priority General Service	$ 24,975,271
General Service	$ 3,148,575
Basic Service	$ 4,277,292
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 42,156,922

To meet the facility and service objectives of their functional service role, runway width improvement projects are identified for the following airports:

Advanced Service	Priority General Service	General Service	Basic Service
Essex County	Central Jersey Regional	Old Bridge	Aeroflex-Andover Field
Monmouth Executive	Cross Keys	Sky Manor	Camden County
	Lincoln Park		Hackettstown
	Solberg-Hunterdon		
	South Jersey Regional		

It is assumed that the widened runway is designed to meet or exceed the minimum pavement strength requirements associated with the airport's functional service role. Airports currently exceeding the minimum runway width objective of their functional service role are assumed to maintain their current runway width. Runway pavement widening projects assume costs for planning and environmental, design, and construction costs.

Runway widening cost estimates were developed only for airports with paved primary runways. It should be noted that one system airport that has a turf primary runway, Red Wing, should also consider widening its runway in order to meet facility and service objectives.

Implementation of the identified runway widening projects will allow study airports to safely accommodate the type of aircraft anticipated to operate at the facilities based on their functional service role in the system. As with other identified projects, it is important to note that in order to apply for and receive federal and/or state grants, the need and feasibility for runway widening projects must be justified and approved at the federal and state level through special studies and/or through a master planning effort. Not all NPIAS airports are eligible to apply for federal funding; for those NPIAS airports that are eligible for funding, the project must first appear on an approved ALP Although it is not a requirement for airports to have an updated airport master plan or ALP to be eligible for state funding, airports are strongly encouraged to engage in such planning activities as recommended by the facility, service, and equipment objectives. Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.3 Runway Strength

Based on the types of aircraft anticipated to use the various study airports, runway strength objectives were developed for each functional service role. These objectives identify the recommended pavement strength for runways at study airports that will allow them to accommodate the types of aircraft that they are intended to serve. The following runway strength objectives were identified for study airports based on their service role:

- Scheduled Service – Dual-wheel landing gear of 60,000 pounds
- Advanced Service –Single-wheel landing gear of 30,000 pounds
- Priority General Service – Single-wheel landing gear of 30,000 pounds
- General Service – Minimum of single-wheel landing gear of 12,500 pounds
- Basic Service – Up to single-wheel landing gear of 12,500 pounds
- Duplicative Basic Service – Up to single-wheel landing gear of 12,500 pounds
- Specialty Facilities – Not an objective

Five study airports have a primary runway that is turf and one system airport have a primary runway that is water. Cost estimates for runway strength were not developed for these airports given the inapplicable runway type. The total estimated costs of bringing all New Jersey airports into compliance with the minimum runway strength objective of their functional service role are presented in **Table 7-5**.

Table 7-5 Runway Strength Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	—
Priority General Service	$ 5,292,554
General Service	$ 2,293,751
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 7,586,305

To better meet the facility and service objectives of their functional service role, runway strength improvement projects were identified for the following airports:

Priority General Service
Cross Keys
Hammonton Municipal
Lincoln Park
Solberg-Hunterdon

General Service
Eagles Nest
Sky Manor

The cost of runway strengthening projects for airports were estimated by assuming that existing runways will be resurfaced after milling two inches of the existing pavement, applying tack coat, and placing a two-inch overlayer of asphalt pavement. Additional assumptions include the costs for pavement preparation, crack repair, pavement grooving, and site restoration. Cost escalation assumptions include planning and environmental, design, and construction costs.

Implementation of these identified runway strengthening projects will allow study airports to better serve their functional role within New Jersey's airport system. Those study airports that currently exceed the minimum runway strength objective of their recommended service role are assumed to maintain their current strength.

As with other projects, it is important to note that in order to apply for and receive federal and/or state grants, the need and feasibility for runway strengthening projects must be justified and approved at the federal and state level through special studies and/or through a master planning effort. Not all NPIAS airports are eligible to apply for federal funding; for those NPIAS airports that are eligible for funding, the project must first appear on an approved ALP; for those NPIAS airports that are eligible for funding, the project must first appear on an approved ALP Although it is not a requirement for airports to have an updated airport master plan or ALP to be eligible for state funding, airports are strongly encouraged to engage in such planning activities as recommended by the facility, service, and equipment objectives. Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.4 Taxiway Configuration Type

Taxiway systems support the safe movement of aircraft between airside and landside facilities. Aircraft must taxi to runway ends and runway exits in order to access landside facilities at the airport or to initiate a departure. Taxiways allow aircraft to complete these movements safely off of the active runway, thereby freeing runway facilities to accommodate additional demand and increase operational runway safety by minimizing potential aircraft incursions. Different types of taxiway configurations, including full parallel, partial parallel, or no taxiway, impact operational capacity to varying degrees. The following taxiway objectives were identified for study airports based on their recommended service role and anticipated activity levels:

- Scheduled Service – Full parallel for primary runway
- Advanced Service – Full parallel for primary runway
- Priority General Service – Full parallel for primary runway
- General Service – Full Parallel, partial parallel, connectors, or turnarounds
- Basic Service – Preserve Existing
- Duplicative Basic Service – Preserve Existing
- Specialty Facilities – Not an objective

System costs of implementing the minimum taxiway objective at all airports based on their recommended SASP role are presented by functional service role in **Table 7-6**.

Table 7-6 Taxiway Configuration Projects

Airport Functional Role	Estimated Cost
Scheduled Service	$ 9,896,250
Advanced Service	$ 1,478,750
Priority General Service	$ 9,823,844
General Service	—
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 21,198,844

To better meet the facility and service objectives of their functional service role, taxiway improvement projects are identified for the following airports:

Scheduled Service
Trenton Mercer

Advanced Service
Monmouth Executive

Priority General Service
Lincoln Park
South Jersey Regional
Central Jersey Regional
Solberg-Hunterdon

The taxiway configuration cost estimates presented assume a full-length parallel taxiway with the width and separation suggested based on the airport's existing ARC. All estimated taxiway project costs presented for the airports listed above include a taxiway connector at both ends of the airport's runway.

The taxiway configuration cost estimates include the cost of demolishing the existing taxiway pavement and cost escalation assumptions for planning and environmental, design, and construction. Implementation of these identified runway taxiway configuration projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum taxiway objective of their recommended service role are assumed to maintain their current configuration.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.5 Runway Lighting

Appropriate runway lighting is essential to safe night-time aircraft operations and those operations that occur during periods of reduced visibility. The following runway lighting objectives were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – HIRL for primary runway
- Advanced Service – HIRL for primary runway
- Priority General Service – MIRL for primary runway
- General Service – MIRL for primary runway (only for airports with night-time operations)
- Basic Service – LIRL for primary runway (only for airports with night-time operations)
- Duplicative Basic Service – LIRL for primary runway (only for airports with night-time operations)
- Specialty Facilities – Not an objective

Table 7-7 presents summary cost estimates of runway lighting improvement projects for study airports to meet their minimum airport lighting objectives of their functional service role.

Table 7-7 Runway Lighting Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 307,004
Priority General Service	$ 161,161
General Service	—
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 468,165

To better meet the facility and service objectives of their functional service role, runway lighting improvement projects are identified for the following airports:

Advanced Service
Millville Municipal
Monmouth Executive

Priority General Service
Central Jersey Regional
Cross Keys

The development costs for runway lighting projects for each respective service role were based on design standards in FAA AC 150/5340-30J, *Design and Installation Details for Airport Visual Aids*. This AC provides recommended layouts and spacing guidelines for different types of lighting systems. It was assumed that runway lights will be installed at a maximum of every 200 feet in order to meet FAA guidelines and licensing requirements in Chapter 54 of the NJAC. Runway lighting costs include the cost of light fixtures, base cans, transformers, grounding, and includes cost escalation assumptions for design and construction.

Implementation of these identified runway lighting projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently meet or exceed their minimum runway lighting objective of their recommended service role are assumed to maintain their current runway lighting facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.6 Taxiway Lighting

Taxiway lighting provides guidance for pilots when navigating on the taxiway. Appropriate taxiway lighting is essential to safe night-time aircraft operations and those operations that occur during periods of reduced visibility. The following taxiway lighting objectives were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – MITL for primary runway
- Advanced Service – MITL for primary runway
- Priority General Service – MITL for primary runway
- General Service – Taxiway reflectors for primary runway
- Basic Service – Not an objective
- Duplicative Basic Service – Not an objective
- Specialty Facilities – Not an objective

Table 7-8 presents summary cost estimates of taxiway lighting improvement projects for study airports to meet their minimum airport lighting objectives for their functional service role.

Table 7-8 Taxiway Lighting Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 105,584
Priority General Service	$ 223,488
General Service	$ 39,130
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 368,202

To better meet the facility and service objectives of their functional service role, taxiway lighting improvement projects are identified for the following airports:

Advanced Service	**Priority General Service**	**General Service**
Monmouth Executive	Central Jersey Regional	Blairstown
	Cross Keys	Flying W
	Lincoln Park	Old Bridge
	Solberg-Hunterdon	Sky Manor
		Somerset
		Sussex
		Woodbine Municipal

Similar to runway lighting, the cost of meeting the lighting objectives for each respective service role was determined using information from FAA AC 150/5340-30J, *Design and Installation Details for Airport Visual Aids*. It was assumed that taxiway lights will be installed at a maximum of every 200 feet in order to meet the recommended FAA AC guidelines. Taxiway lighting costs include the cost of light fixtures, base cans, transformers, grounding, and includes cost escalation assumptions for design and construction.

Implementation of these identified taxiway lighting projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum taxiway lighting objective of their recommended service role are assumed to maintain their current taxiway lighting facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.7 Approach Lighting System

Approach lighting systems guide pilots as aircraft approach the runway end. In the SASP, approach lighting system objectives are established only for Scheduled Service airports, as listed below.

- Scheduled Service – ALSF-I
- Advanced Service – Not an objective
- Priority General Service – Not an objective
- General Service – Not an objective
- Basic Service – Not an objective
- Duplicative Basic Service – Not an objective
- Specialty Facilities – Not an objective

Table 7-9 presents summary cost estimates of approach lighting improvement projects that for study airports to meet their minimum airport lighting objectives of their functional service role.

Table 7-9 Approach Lighting System Projects

Airport Functional Role	Estimated Cost
Scheduled Service	$ 20,000,000
Advanced Service	—
Priority General Service	—
General Service	—
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 20,000,000

To better meet the facility and service objectives of their functional service role, approach lighting system improvement projects are identified for the following airports:

Scheduled Service
Atlantic City International
Trenton Mercer

Similar to runway and taxiway lighting, the cost of meeting the lighting objectives for each respective service role was determined using information from FAA AC 150/5300-13A (Change 1) *Airport Design* and FAA Order Job Order 6850.2B *Visual Guidance Lighting Systems*. It was assumed for Scheduled Service airports that ALSF-I will be recommended for both ends of the primary runway. Approach lighting system costs include the cost of electrical infrastructure and power requirements, and cost escalation assumptions for design and construction.

Implementation of the identified approach lighting system projects will allow scheduled service airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum approach lighting system objective of their recommended service role are assumed to maintain their current approach lighting system facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.8 Centerline Lighting

Centerline lighting, located along the runway centerline, provides guidance to pilots when landing on a runway during adverse visibility conditions. In the SASP, centerline lighting objectives are established only for Scheduled Service airports, as listed below.

- Scheduled Service – Centerline lighting
- Advanced Service – Not an objective
- Priority General Service – Not an objective
- General Service – Not an objective
- Basic Service – Not an objective
- Duplicative Basic Service – Not an objective
- Specialty Facilities – Not an objective

Table 7-10 presents summary cost estimates of centerline lighting improvement projects for study airports to meet their minimum airport lighting objectives of their functional service role.

Table 7-10 Centerline Lighting Projects

Airport Functional Role	Estimated Cost
Scheduled Service	$ 690,690
Advanced Service	—
Priority General Service	—
General Service	—
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 690,690

To better meet the facility and service objectives of their functional service role, centerline lighting improvement projects are identified for the following airports:

Scheduled Service
Trenton Mercer

Centerline lighting costs are based on design standards in FAA AC 150/5340-30J, *Design and Installation Details for Airport Visual Aids*, which indicates that centerline lights are equally spaced along the runway centerline at 50 feet. Centerline lighting costs include the cost of light fixtures, base cans, transformers, grounding, and includes cost escalation assumptions for design and construction. escalation assumptions for design and construction are included in the costs.

Implementation of these centerline lighting system projects will allow scheduled service airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum centerline lighting system objective of their functional service role are assumed to maintain their current centerline lighting system facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.9 Touchdown Zone Lighting

Touchdown zone lighting enable pilots to identify the touchdown zone during approach for landing. The following touchdown zone lighting objectives were identified for study airports in the SASP based on their functional service role:

- Scheduled Service – Touchdown zone lighting
- Advanced Service – Not an objective
- Priority General Service – Not an objective
- General Service – Not an objective
- Basic Service – Not an objective
- Duplicative Basic Service – Not an objective
- Specialty Facilities – Not an objective

Table 7-11 presents summary cost estimates of touchdown zone lighting improvement projects that are needed to bring study airports into compliance with the minimum airport lighting objectives of their functional service role.

Table 7-11 Touchdown Zone Lighting Projects

Airport Functional Role	Estimated Cost
Scheduled Service	$ 1,840,690
Advanced Service	—
Priority General Service	—
General Service	—
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 1,840,690

To better meet the facility and service objectives of their functional service role, touchdown zone lighting improvement projects are identified for the following airports:

Scheduled Service

Atlantic City International
Trenton Mercer

Touchdown Zone lighting costs include the cost of light fixtures, base cans, transformers, grounding, and includes cost escalation assumptions for design and construction. Implementation of these touchdown zone lighting system projects will allow scheduled service airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently meet or exceed the minimum touchdown zone lighting system objective of their recommended service role are assumed to maintain their current touchdown zone lighting system facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.10 Rotating Beacon

A rotating beacon identifies the location and type of an airport on approach and is critical for wayfinding. The following rotating beacon objectives were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – Rotating beacon
- Advanced Service – Rotating beacon
- Priority General Service – Rotating beacon
- General Service – Rotating beacon
- Basic Service – Not an objective
- Duplicative Basic Service – Not an objective
- Specialty Facilities – Not an objective

Table 7-12 presents summary cost estimates of rotating beacon improvement projects that are needed to bring study airports into compliance with the minimum visual aid objectives of their functional service role.

Table 7-12 Rotating Beacon Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	—
Priority General Service	$ 155,700
General Service	$ 155,700
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 311,400

To better meet the facility and service objectives of their functional service role, rotating beacon improvement projects are identified for the following airports:

Priority General Service	General Service
Solberg-Hunterdon	Sky Manor

Design and construction costs for installing the rotating beacon are included. Implementation of these identified rotating beacon projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum rotating beacon objective of their recommended service role are assumed to maintain their current rotating beacon facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.11 Lighted Wind Cone

Wind indicators provide important information about airfield wind direction and intensity to pilots for their use in course adjustment prior to landing or after take-off. The following rotating beacon objectives were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – Lighted wind cone
- Advanced Service – Lighted wind cone
- Priority General Service – Lighted wind cone
- General Service – Lighted wind cone (only for airports with night-time operations)
- Basic Service – Lighted wind cone (only for airports with night-time operations)
- Duplicative Basic Service – Lighted wind cone (only for airports with night-time operations)
- Specialty Facilities – Not an objective

Table 7-13 presents summary cost estimates of wind indicator improvement projects that are needed to bring study airports into compliance with the minimum visual aid objectives of their functional service role.

Table 7-13 Lighted Wind Cone Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	—
Priority General Service	$ 108,000
General Service	—
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 108,000

To better meet the facility and service objectives of their functional service role, wind indicator improvement projects are identified for the following airports:

Priority General Service
Lincoln Park
Solberg-Hunterdon

Lighted wind cone costs include the cost of a new base, and associated design and construction costs for installing the lighted wind cone.

Implementation of these wind indicator projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently meet or exceed the minimum wind indicator objective of their recommended service role are assumed to maintain their current wind indicator facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.12 Segmented Circle

Segmented circles aid pilots in locating airports and provides a centralized location for important signals and indicators required on an airport. The following segmented circle objectives were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – Not an objective
- Advanced Service – Segmented circle
- Priority General Service – Segmented circle
- General Service – Segmented circle
- Basic Service – Segmented circle
- Duplicative Basic Service – Segmented circle
- Specialty Facilities – Not an objective

Table 7-14 presents summary cost estimates of segmented circle improvement projects for study airports to meet their minimum visual aid objectives of their functional service role.

Table 7-14 Segmented Circle Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 311,500
Priority General Service	$ 311,500
General Service	$ 747,600
Basic Service	$ 249,200
Duplicative Basic Service	$ 186,900
Specialty Facilities	—
Total Estimated Cost	$ 1,806,700

To better meet the facility and service objectives of their functional service role, segmented circle improvement projects are identified for the following airports:

Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service
Cape May County	Central Jersey Regional	Alexandria Field	Bucks	Kroelinger
Essex County	Cross Keys	Blairstown	Camden County	Red Wing
Millville Municipal	Hammonton Municipal	Eagle Nest	Hackettstown	Southern Cross
Monmouth Executive	Lincoln Park	Greenwood Lake	Vineland Downstown	
Teterboro	Solberg-Hunterdon	Lakewood		
		Princeton		
		Sky Manor		
		Somerset		
		Spitfire Aerodrome		
		Sussex		
		Trenton-Robbinsville		
		Woodbine Municipal		

The cost for installing a segmented circle includes design and construction costs.

Implementation of these segmented circle projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum segmented circle objective of their recommended service role are assumed to maintain their current segmented circle facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.13 Runway End Identifier Lights

Runway end identifier lights enable pilots to identify the runway threshold during approach for landing. Runway end identifier lights objectives were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – Not an objective
- Advanced Service – Runway end identifier lights
- Priority General Service – Runway end identifier lights

- General Service – Runway end identifier lights
- Basic Service – Not an objective
- Duplicative Basic Service – Not an objective
- Specialty Facilities – Not an objective

Table 7-15 presents summary cost estimates of runway end identifier lighting improvement projects for study airports to meet their minimum visual aid objectives of their functional service role.

Table 7-15 Runway End Identifier Lighting Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 230,000
Priority General Service	$ 230,000
General Service	$ 402,500
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 862,500

To better meet the facility and service objectives of their functional service role, runway end identifier lighting improvement projects are identified for the following airports:

Advanced Service	Priority General Service	General Service
Cape May County	Central Jersey Regional	Alexandria Field
Essex County	Cross Keys	Blairstown
Millville Municipal	Lincoln Park	Eagles Nest
Monmouth Executive	Solberg-Hunterdon	Greenwood Lake
Morristown Municipal		Lakewood
Ocean County		Princeton
		Trenton-Robbinsville
		Woodbine Municipal

Implementation of these runway end identifier lighting projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum runway end identifier lighting objective of their recommended service role are assumed to maintain their current runway end identifier lighting facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.14 Visual Glide Slope Indicator

Visual glideslope indicators are lighting systems which assist pilots in aligning their aircraft with the correct and safe glide path for approach for landing at an airport and include PAPI. The following VGSI objectives were identified for study airports in the SASP based on their functional service role:

- Scheduled Service – VGSI
- Advanced Service – VGSI

- Priority General Service – VGSI
- General Service – VGSI
- Basic Service – Not an objective
- Duplicative Basic Service – Not an objective
- Specialty Facilities – Not an objective

Table 7-16 presents summary cost estimates of VGSI improvement projects for study airports to meet their minimum visual aid objectives of their functional service role. For the purposes of this analysis, the installation of 4-box PAPIs at each runway end of the primary runway is assumed.

Table 7-16 VGSI Projects

Airport Functional Role	Estimated Cost
Scheduled Service	$ 369,600
Advanced Service	$ 2,217,600
Priority General Service	$ 1,848,000
General Service	$ 1,848,000
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 6,283,200

To better meet the facility and service objectives of their functional service role, VGSI improvement projects are identified for the following airports:

Scheduled Service	Advanced Service	Priority General Service	General Service
Trenton Mercer	Essex County	Cross Keys	Blairstown
	Monmouth Executive	Lincoln Park	Greenwood Lake
	Morristown Municipal	Solberg-Hunterdon	Sussex
	Teterboro		Woodbine Municipal

It is assumed that the cost for installing the PAPI assumes a 4-box PAPI system and includes the new PAPI boxes and new bases, as well as costs associated with design and construction.

Implementation of these identified VGSI projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently meet or exceed the minimum VGSI objective of their recommended service role are assumed to maintain their current VGSI facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.1.15 Weather Equipment

On-site weather reporting equipment at an airport improves operational capabilities during periods of inclement or changing weather. By providing an on-site AWOS, pilots have improved information related to weather conditions at their destination airport or other potential backup airports. The following weather system was identified for airports included in the SASP based on their recommended service role:

- Scheduled Service – FAA-Certified AWOS or ASOS
- Advanced Service – FAA-Certified AWOS or ASOS
- Priority General Service – FAA-Certified AWOS or ASOS
- General Service – Not an objective
- Basic Service – Not an objective
- Duplicative Basic Service – Not an objective
- Specialty Facilities – Not an objective

Table 7-17 presents summary cost estimates for AWOS improvement projects.

Table 7-17 Weather Equipment Projects

Airport Functional Role	Estimated Cost for AWOS
Scheduled Service	—
Advanced Service	—
Priority General Service	$ 869,600
General Service	—
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 869,600

To better meet the facility and service objectives of their functional service role, weather equipment improvement projects are identified for the following airports:

Priority General Service
Central Jersey Regional
Cross Keys
Lincoln Park
Solberg-Hunterdon

It should be noted that Central Jersey Regional, Cross Keys, Lincoln Park, and Solberg-Hunterdon have weather reporting systems, but they have not been certified by the FAA and therefore do not meet this facility objective, which requires an FAA-Certified AWOS or ASOS.

The cost of design and construction are included in the cost estimates. The cost estimates provide an estimate for AWOS-1 equipment, which can upload real-time data to the internet and an automated response to an aircraft request via radio.

Implementation of these identified weather improvement projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently meet or exceed the minimum weather equipment objective of their recommended service role are assumed to maintain their current weather equipment facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.2 Terminal, Apron, and Landside Facilities

This section presents cost estimates for terminal, apron, and landside facility improvement projects, recommended for airports to meet their facility, service, and equipment objectives. Project description, assumptions, and development costs for the following landside and terminal facilities are presented for each airport functional role:

- Terminal Building
- Hangar Space
- Auto Parking

7.3.2.1 Terminal Building

Terminal buildings provide essential services for passengers and pilots, as well as a facility for the transfer of passengers and flight crews to and from the aircraft. Terminal facilities can range in size based upon several factors, the most important being the type of users. The following terminal building requirements were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – As per needs identified in Master Plan
- Advanced Service – Terminal building recommended. Square footage requirements calculated based on estimated peak hour operations, a factor of 2.5 people, and 100 square feet per person
- Priority General Service – Preserve Existing
- General Service – Preserve Existing
- Basic Service – Preserve Existing
- Duplicative Basic Service – Preserve Existing
- Specialty Facilities – Preserve Existing

Table 7-18 presents summary cost estimates of terminal improvement projects for study airports to meet their minimum terminal building objectives of their functional service role.

Table 7-18 Terminal Building Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 24,907,500
Priority General Service	—
General Service	—
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 24,907,500

To better meet the facility and service objectives of their functional service role, terminal improvement projects are identified for the following airports:

Advanced Service
Essex County
Millville Municipal
Monmouth Executive
Teterboro

For airports that have an existing terminal, the cost of expanding the existing terminal to meet its recommended terminal size based on functional service role is presented. Estimates include costs associated planning and environmental, design, and construction.

Implementation of the identified terminal projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently meet or exceed the minimum terminal building objective of their recommended service role are assumed to maintain their current terminal building facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.2.2 Hangar Space

Aircraft hangars are important for storing aircraft at an airport and protecting aircraft from inclement weather conditions. Demand for hangar space is related to the local climate and the type of based aircraft at each airport. The hangar space requirements were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – Hangar spaces available for 75 percent of based aircraft
- Advanced Service – Hangar spaces available for 75 percent of based aircraft
- Priority General Service – Hangar spaces available for 50 percent of based aircraft
- General Service – Hangar spaces available for 50 percent of based aircraft
- Basic Service – Preserve Existing
- Duplicative Basic Service – Preserve Existing
- Specialty Facilities – Preserve Existing

Table 7-19 presents summary cost estimates of auto parking improvement projects for study airports to meet their minimum auto parking objectives of their functional service role.

Table 7-19 Hangar Space Projects

Airport Functional Role	Estimated Cost
Scheduled Service	$ 3,528,000
Advanced Service	$ 60,858,000
Priority General Service	$ 100,548,000
General Service	$ 79,380,000
Basic Service	—
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 244,314,000

To better meet the facility and service objectives of their functional service role, hangar space projects are identified for the following airports:

Scheduled Service	Advanced Service	Priority General Service	General Service
Atlantic City International	Essex County	Central Jersey Regional	Alexandria Field
	Millville Municipal	Cross Keys	Flying W
		Solberg-Hunterdon	Greenwood Lake
		South Jersey Regional	Sussex

Cost estimates for hangar space assume a pre-engineered steel frame building with metal siding or precast, metal roofing, a form of foam sprinkler system, additional support space, and concrete slab.

Implementation of these hangar space projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum hangar space objective of their recommended service role are assumed to maintain their current hangar facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.2.3 Auto Parking

It is important to provide adequate auto parking for both commercial service and general aviation employees, airport users, and visitors. The number of auto parking spaces at an airport varies based on demand and airport services. The auto parking requirements were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – Minimum 100 parking spaces per 100,000 enplanements as per FAA AC 150/5360-13A *Airport Terminal Planning*
- Advanced Service – 1 space per based aircraft + additional 50 percent for employee/visitors
- Priority General Service – 1 space per based aircraft + additional 50 percent for employee/visitors
- General Service – 1 space per based aircraft + additional 25 percent for employee/visitors
- Basic Service – 1 space per based aircraft
- Duplicative Basic Service – 1 space per based aircraft
- Specialty Facilities – Preserve Existing

Table 7-20 presents summary cost estimates of auto parking improvement projects for study airports to meet their minimum auto parking objectives of their functional service role.

Table 7-20 Auto Parking Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	—
Priority General Service	$85,708
General Service	$ 315,208
Basic Service	$ 17,000
Duplicative Basic Service	$ 7,792
Specialty Facilities	—
Total Estimated Cost	$ 425,708

To better meet the facility and service objectives of their functional service role, auto parking projects are identified for the following airports:

Priority General Service	General Service	Basic Service	Duplicative Basic Service
Lincoln Park	Alexandria Field	Aeroflex-Andover Field	Kroelinger
Solberg-Hunterdon	Eagles Nest		Southern Cross
South Jersey Regional	Flying W		
	Greenwood Lake		

Priority General Service	**General Service**	**Basic Service**	**Duplicative Basic Service**
	Lakewood		
	Old Bridge		
	Sky Manor		
	Somerset		
	Sussex		
	Woodbine Municipal		

Auto parking cost estimates include the cost for marking, signage, lighting, and curbing, as well as costs associated with planning and environmental, design, and construction.

Implementation of these auto parking projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum auto parking objective of their recommended service role are assumed to maintain their current auto parking facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.3 Airport Services

This section presents cost estimates for airport services, for airports to meet their facility, service, and equipment objectives. Project description, assumptions, and development costs for the following airport services are presented for each airport functional role:

- Fuel – AvGas and Jet Fuel
- Public-use restroom

7.3.3.1 Fuel – AvGas and Jet Fuel

For fuel facilities, it is recommended that all New Jersey airports have a fueling system. The following fuel objectives were identified for study airports in the SASP based on their functional service role:

- Scheduled Service – Self-refueling 24/7 Jet A and AvGas (100LL)
- Advanced Service – Self-refueling 24/7 Jet A and AvGas (100LL)
- Priority General Service – Self-refueling 24/7 Jet A and AvGas (100LL)
- General Service – Self-refueling 24/7 AvGas (100LL)
- Basic Service – AvGas (100LL)
- Duplicative Basic Service – AvGas (100LL)
- Specialty Facilities – Not an objective

Table 7-21 AvGas and Jet Fuel Projects

Airport Functional Role	Estimated Cost for 24/7 Jet A	Estimated Cost for 24/7 AvGas (100LL)	Estimated Cost for AvGas (100LL)
Scheduled Service	—	—	—
Advanced Service	$ 1,160,000	—	—
Priority General Service	$ 870,000	$ 290,000	—
General Service	—	$ 580,000	—
Basic Service	—	—	$ 217,500
Duplicative Basic Service	—	—	$ 652,500

Airport Functional Role	Estimated Cost for 24/7 Jet A	Estimated Cost for 24/7 AvGas (100LL)	Estimated Cost for AvGas (100LL)
Specialty Facilities	—	—	—
Total Estimated Cost	$ 2,030,000	$ 870,000	$ 870,000

To better meet the facility and service objectives of their functional service role, 24/7 Jet A fueling projects are identified for the following airports:

Advanced Service	Priority General Service
Cape May County	Central Jersey Regional
Essex County	Linden
Millville Municipal	Solberg-Hunterdon
Ocean County	

To better meet the facility and service objectives of their functional service role, 24/7 AvGas (100LL) fueling projects are identified for the following airports:

Priority General Service	General Service
Central Jersey Regional	Spitfire Aerodrome
	Trenton-Robbinsville

To better meet the facility and service objectives of their functional service role, AvGas (100LL) fueling projects are identified for the following airports:

Basic Service	Duplicative Basic Service
Bucks	Kroelinger
	Red Wing
	Southern Cross

Fueling project costs assume planning and environmental, design, and construction costs for a 15,000-gallon fuel tank. Implementation of these identified fueling projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum fueling objective of their recommended service role are assumed to maintain their current fueling facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.3.2 Public-use Restroom

All New Jersey airports are recommended to provide a public-use restroom for its airport users regardless of the airport's functional service role. **Table 7-22** presents summary cost estimates of public-use restroom projects for study airports to meet their minimum public-use restroom objectives of their functional service role.

Table 7-22 Public-use Restroom Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	—
Priority General Service	$ 57,500
General Service	$ 57,500

Airport Functional Role	Estimated Cost
Basic Service	—
Duplicative Basic Service	$ 172,500
Specialty Facilities	—
Total Estimated Cost	$ 287,500

To better meet the facility and service objectives of their functional service role, the following airports have been identified with a need for a public-use restroom:

Priority General Service	General Service	Duplicative Basic Service
Hammonton Municipal	Lakewood	Kroelinger
		Red Wing
		Southern Cross

The cost estimate for installing a public-use restroom includes the cost for all plumbing and fixtures within the new bathroom space to tie into an existing terminal building structure, and includes costs associated with design and construction.

Implementation of these identified public-use restroom projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently meet or exceed the minimum public-use restroom objective of their recommended service role are assumed to maintain their current public-use restroom facilities.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.4 Airport Maintenance

7.3.4.1 Primary Runway Pavement

Maintaining primary runway pavement to a certain standard helps to prevent major costly reconstruction projects. Pavement standards were identified for study airports in the SASP based on their recommended service role:

- Scheduled Service – Minimum PCI of 70
- Advanced Service – Minimum PCI of 70
- Priority General Service – Minimum PCI of 70
- General Service – Minimum PCI of 70
- Basic Service – Minimum PCI of 70
- Duplicative Basic Service – Minimum PCI of 70
- Specialty Facilities – Not an objective

Cost estimates for PCI were not developed for airports with an unpaved runway. Table 7-23 presents summary cost estimates of runway pavement condition improvement projects for airports to meet their minimum pavement objectives for their functional service role.

Table 7-23 Primary Runway Pavement Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 15,697,381

Airport Functional Role	Estimated Cost
Priority General Service	$ 7,465,530
General Service	$ 16,168,109
Basic Service	$ 1,575,500
Duplicative Basic Service	—
Specialty Facilities	—
Total Estimated Cost	$ 40,906,521

To better meet the facility and service objectives of their functional role, pavement projects are identified for the following airports:

Advanced Service	Priority General Service	General Service	Basic Service
Essex County	Central Jersey Regional	Alexandria Field	Camden County
Monmouth Executive	Lincoln Park	Blairstown	Hackettstown
Morristown Municipal	Linden	Eagles Nest	
Ocean County	Solberg-Hunterdon	Flying W	
	South Jersey Regional	Greenwood Lake	
		Old Bridge	
		Princeton	
		Sky Manor	
		Somerset	
		Spitfire Aerodrome	
		Sussex	
		Trenton-Robbinsville	

The cost estimates for improving runway pavement condition is assumed to include the cost of pavement preparation, crack repair, tack coat application, two-inch milling, four-inch asphalt overlay, pavement grooving, and site restoration, as well as costs associated with planning and environmental, design, and construction.

Implementation of these runway pavement projects will allow study airports to better serve their intended functional role within New Jersey's airport system. Those study airports that currently exceed the minimum primary runway pavement objective of their recommended service role are assumed to maintain their current primary runway condition. Airports shall utilize the latest data from pavement management studies either performed by the airport or performed by NJDOT BOA.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.5 Safety Compliance

7.3.5.1 20:1 Approach Surface Clearance

A clear 20:1 approach surface is important for maintaining an airport's operational capability, safety, and efficiency. Airports that do not have mitigated 20:1 approach surfaces often lose their nighttime approach capabilities, which greatly reduces the operational capacity of individual airports and the entire New Jersey airport system. It is the intent of this plan that all New Jersey airports, regardless of the airport's functional service role, have clear 20:1 approach surfaces. Since the first step an airport needs to take to mitigate its obstructions is to conduct an obstruction study, the cost for undertaking an obstruction study was estimated for all study airports that do not currently have clear 20:1 approach surfaces for its primary runway. Airports that have undertaken an obstruction mitigation project (planning, design, or construction projects related to obstruction removal) between 2017 and 2020 are not included in this estimate.

It is emphasized that the design and construction cost for airports to complete obstruction removals far exceeds the estimate provided here. The cost for an airport to undergo design and construction varies, due to environmental and other airport-specific challenges, varies greatly by airport. For example, the cost of Somerset (SMQ)'s design and construction of obstruction removal in 2022 amounted to approximately $670,000.

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

Table 7-24 presents summary cost estimates for airports that do not currently meet their approach surface objective.

Table 7-24 20:1 Approach Surface Clearance Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 330,600
Priority General Service	$ 110,200
General Service	$ 771,400
Basic Service	$ 551,000
Duplicative Basic Service	$ 330,600
Specialty Facilities	$ 110,200
Total Estimated Cost	$ 2,204,000

To better meet the facility and service objectives of their functional service role, the following airports are identified to undertake an approach surface clearance study:

<u>Advanced Service</u>	<u>Priority General Service</u>	<u>General Service</u>	<u>Basic Service</u>	<u>Duplicative Basic Service</u>	<u>Specialty Facilities</u>
Cape May County	Cross Keys	Alexandria Field	Aeroflex-Andover Field	Kroelinger	Little Ferry Seaplane Base
Essex County		Blairstown	Bucks	Red Wing	
Teterboro		Eagles Nest	Camden County	Southern Cross	
		Flying W	Hackettstown		
		Old Bridge	Vineland Downstown		
		Sky Manor			
		Spitfire Aerodrome			

7.3.6 Planning

Airport planning is a systematic process used to establish guidelines for the development of airports that is consistent with local, state, and national goals. These planning documents are tools that airports can utilize to enhance understanding of their existing facilities and identification of long-term facility needs based on forecasted demand. Master plans and ALPs are recommended for all New Jersey airports. How often an airport should undertake a master plan or ALP is determined by the airport's functional service role, and are described further in the subsequent sections.

7.3.6.1 Master Plan

A master plan is a planning document that evaluates the capability of an airport's facilities to accommodate anticipated changes in demand and presents a comprehensive development and funding plan to improve aging and/or inadequate airside and landside facilities now and in the future. The following master plan objectives were identified for study airports in the SASP based on their functional service role:

- Scheduled Service – Update master plan every five years
- Advanced Service – Update master plan every 10 years
- Priority General Service – Update master plan every 10 years
- General Service – Update master plan every 10 years
- Basic Service – Update master plan every 10 years
- Duplicative Basic Service – Update master plan every 10 years
- Specialty Facilities – Update master plan every 10 years

Cost estimates were developed for airports that do not currently meet the above master plan objectives. **Table 7-25** presents summary cost estimates of master plan projects for study airports to meet the objectives of their functional service role.

Table 7-25 Master Plan Projects

Airport Functional Role	Estimated Cost
Scheduled Service	$ 3,000,000
Advanced Service	$ 4,500,000
Priority General Service	$ 1,000,000
General Service	$ 4,200,000
Basic Service	$ 1,800,000
Duplicative Basic Service	$ 750,000
Specialty Facilities	$ 250,000
Total Estimated Cost	$ 15,500,000

To better meet the facility and service objectives of their functional service role, the need for a master plan study or update are identified for the following airports:

Scheduled Service	**Advanced Service**	**Priority General Service**	**General Service**	**Basic Service**	**Duplicative Basic Service**	**Specialty Facilities**
Atlantic City International	Cape May County	Central Jersey Regional	Alexandria Field	Aeroflex-Andover Field	Kroelinger	Little Ferry Seaplane Base
Newark Liberty International	Essex County	Solberg-Hunterdon	Blairstown	Bucks	Red Wing	
	Millville Municipal		Eagles Nest	Camden County	Southern Cross	
	Monmouth Executive		Flying W	Hackettstown		
	Ocean County		Lakewood	Ocean City Municipal		
	Teterboro		Old Bridge	Vineland Downstown		
			Princeton			
			Sky Manor			
			Spitfire Aerodrome			
			Sussex			

Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities
			Trenton-Robbinsville			
			Woodbine Municipal			

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.3.6.2 Airport Layout Plan

An ALP is a planning document through which airports depict the location and nature of existing and proposed airport facilities and structures and analyze the impact of existing and proposed developments on airspace, land use, environmental, among others. The following ALP objectives were identified for study airports in the SASP based on their functional service role:

- Scheduled Service – Update ALP every five years; pen and ink changes are acceptable
- Advanced Service – Update ALP every 10 years; pen and ink changes are acceptable
- Priority General Service – Update ALP every 10 years; pen and ink changes are acceptable
- General Service – Update ALP every 10 years; pen and ink changes are acceptable
- Basic Service – Update ALP every 10 years; pen and ink changes are acceptable
- Duplicative Basic Service – Update ALP every 10 years; pen and ink changes are acceptable
- Specialty Facilities – Update ALP every 10 years; pen and ink changes are acceptable

Cost estimates were developed for airports that do not currently meet the above ALP plan objectives. **Table 7-26** presents summary cost estimates of ALP projects for study airports to meet their minimum ALP objectives for their functional service role.

Table 7-26 Airport Layout Plan Projects

Airport Functional Role	Estimated Cost
Scheduled Service	—
Advanced Service	$ 250,000
Priority General Service	$ 350,000
General Service	$ 1,400,000
Basic Service	$ 875,000
Duplicative Basic Service	$ 525,000
Specialty Facilities	$ 175,000
Total Estimated Cost	$ 3,575,000

To better meet the facility and service objectives of their functional service role, the need for an ALP study or update is identified at the following airports is:

Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities
Monmouth Executive	Central Jersey Regional	Alexandria Field	Aeroflex-Andover Field	Kroelinger	Little Ferry Seaplane Base
	Solberg-Hunterdon	Blairstown	Bucks	Red Wing	
		Flying W	Camden County	Southern Cross	

Advanced Service	Priority General Service	General Service	Basic Service	Duplicative Basic Service	Specialty Facilities
		Old Bridge	Hackettstown		
		Princeton	Vineland Downtown		
		Sky Manor			
		Sussex			
		Trenton-Robbinsville			

Funding of any identified airport need project that meets all approval requirements is not guaranteed and is dependent on funding availability.

7.4 State and Federal Funding Sources

State and federal grant mechanisms may be utilized, if airports are eligible, to at least partially support funding the cost of identified needs presented in this chapter.

As introduced in **Chapter 2 Trends Analysis**, **Section 2.4 Funding Sources for Airport Improvements**, all study airports can apply for state grants or loans. Not all NPIAS airports are eligible to apply for federal funding. For those NPIAS airports that are eligible for funding, a project must appear on an approved airport layout plan. Project types eligible for grants include runway, taxiway and apron construction/rehabilitation, visual and navigational aids improvement, security enhancements, land acquisitions, among other types of projects that impact airport operations and compliance with FAA standards. For more details on state-eligible grants, see Title 16 Chapter 56 (16:56) of the New Jersey Administrative Code (NJAC) and for FAA-eligible projects, refer to the FAA AIP Handbook.

The project costs included in this chapter can be funded through a combination of federal, state, and airport sponsor monies. The federal, state, and airport sponsor shares of the total project cost vary for federal and state-funded projects. Typically, for federally funded projects at large and medium hub commercial airports, the federal share is 75 percent. At general aviation airports, the federal share is 90 percent, state share is 5 percent, and airport sponsor share is 5 percent. For more information on the distribution of FAA, State, and local funds for projects, refer to the FAA AIP Handbook. For projects using state grants, 90 percent of the total eligible project cost is typically funded by the state and a 10 percent local match by the airport sponsor. It is encouraged that airports, as eligible, apply for and utilize available state and federal funding to improve their facilities, services, and equipment based on the identified requirements of their functional service roles. NPIAS study airports shall review eligibility for applying for federal funding.

7.5 Summary of Costs for Identified Airport Needs

The development plan summarized in this chapter presents estimated costs for projects at study airports to improve the overall performance of New Jersey's aviation system. The total estimated cost of the development plan is **$466,030,531** over the 20-year planning horizon. This amount represents the estimated cost associated with bringing all existing study airports into compliance with the facility and service objectives of their recommended functional service role. Total estimated costs by airport functional service role, project type, airport, and NJDOT BOA strategic priority area are presented in **Table 7-27**, **Table 7-28**, **Table 7-29** and **Table 7-30**, respectively.

It is noted that runway safety area and runway protection zone improvements costs and the design and construction of obstruction removals, are not included in the costs estimated in this chapter due to the master planning-level analysis required to capture the unique circumstances at each airport. Therefore, the true cost for airports to meet all facility, service, and equipment objectives exceeds the estimated cost of **$466,030,531**.

It is recommended that development projects are prioritized in order based on NJDOT BOA's strategic goals for the aviation system identified at the onset of this 2022 NJ SASP, described below. **Table 7-30** presents total estimated costs for each NJDOT BOA strategic goal area.

1. *Safety and Security:* Implement projects that ensure a safe and secure airport system. This includes approach surface projects, weather equipment, visual aid equipment, and airfield lighting projects.

2. *Airport Preservation:* Implement projects that preserve the New Jersey airport system. This includes projects that are critical to preserving airport operations, such as PCI. This also includes the conduction of planning and development initiatives necessary to allow for future growth, such as airport master plans and ALPs.

3. *Capacity and Efficiency:* Implement projects that support an efficient airport system that maintains the flexibility to respond to changes in future demand. This includes airside projects such as runway length, width, and strengthening projects, as well as taxiway projects. It also includes landside projects such as terminal development and auto-parking capacity projects.

4. *Economic Growth:* Implement projects that support economic growth in the State of New Jersey. This includes fuel projects and other amenities that serve the public and attract visitors to the airport.

Of the total **$466,030,531** identified for New Jersey's airports improvement needs over the 20-year planning horizon, approximately 7.7 percent of the cost is for projects to improve *Safety and Security*, 12.9 percent for *Airport Preservation*, 78.6 percent for *Capacity and Efficiency*, and 0.9 percent for *Economic Growth*.

It is important to emphasize that federal and state funding of the costs presented in this chapter for the identified airport needs based on the minimum facilities, services and requirement objectives developed for this 2022 NJ SASP update are not guaranteed and need to be justified through a more detailed master plan study and accompanied by an up to date ALP.

Additionally, as stated previously, not all recommended facility and service objectives have estimated costs. For objectives where data was insufficient or master plan-level analyses were required to develop unit costs, and for objectives ineligible for state and federal funding, development costs were not estimated. Recommendations for all facility, service, and equipment objectives, are discussed at greater length in **Chapter 8 Recommended System**.

Table 7-27 Total Estimated Project Costs by Airport Functional Service Role

Airport Functional Role	Total Estimated Cost
Scheduled Service	$ 39,325,230
Advanced Service	$ 124,281,803
Priority General Service	$ 164,117,784
General Service	$ 124,945,646
Basic Service	$ 10,199,576
Duplicative Basic Service	$ 2,625,292
Specialty Facilities	$ 535,200
Total Estimated Cost	$ 466,030,531

Table 7-28 Total Estimated Project Costs by Type of Project

Facility	Project Type	Total Estimated Cost
Airside	Runway Length	$ 25,589,083
	Runway Width	$ 42,156,922
	Runway Strength	$ 7,586,305

Facility	Project Type	Total Estimated Cost
	Taxiway Configuration Type	$ 21,198,844
	Runway Lighting	$ 468,165
	Taxiway Lighting	$ 368,202
	Approach Lighting System	$ 20,000,000
	Centerline Lighting	$ 690,690
	Touchdown Zone Lighting	$ 1,840,690
	Rotating Beacon	$ 311,400
	Lighted Wind Cone	$ 108,000
	Segmented Circle	$ 1,806,700
	Runway End Identifier Lights	$ 862,500
	Visual Glide Slope Indicator	$ 6,283,200
	Weather Equipment	$ 869,600
Landside/ Terminal	Terminal Building	$ 24,907,500
	Hangar Space	$244,314,000
	Auto Parking	$ 425,708
Airport Services	Fuel – AvGas and Jet Fuel	$ 3,770,000
	Public-use Restroom	$ 287,500
Airport Maintenance	Primary Runway Pavement	$ 40,906,521
Safety Compliance	20:1 Approach Surface Clearance	$ 2,204,000
Planning	Master Plan	$ 15,500,000
	Airport Layout Plan	$ 3,575,000
Total Estimated Cost		$ 466,030,531

Table 7-29 Total Estimated Project Costs by Airport

Airport Functional Role	Airport	Airport Code	Total Estimated Cost
	Atlantic City International	ACY	$ 16,178,000

Airport Functional Role	Airport	Airport Code	Total Estimated Cost
Scheduled Service	Newark Liberty International	EWR	$ 1,500,000
	Trenton Mercer	TTN	$ 21,647,230
Advanced Service	Morristown Municipal	MMU	$ 6,455,377
	Teterboro	TEB	$ 16,749,600
	Cape May County	WWD	$ 1,270,000
	Essex County	CDW	$ 66,991,994
	Ocean County	MJX	$ 4,830,025
	Millville Municipal	MIV	$ 13,200,369
	Monmouth Executive	MMU	$ 14,784,438
Priority General Service	Hammonton Municipal	N81	$ 3,266,984
	Lincoln Park	N07	$ 11,660,174
	South Jersey Regional	VAY	$ 33,604,726
	Linden	LDJ	$ 2,907,089
	Central Jersey Regional	47N	$ 59,091,571
	Solberg-Hunterdon	N51	$ 39,818,139
	Cross Keys	17N	$ 13,769,101
General Service	Somerset	SMQ	$ 3,639,622
	Greenwood Lake	4N1	$ 7,101,451
	Lakewood	N12	$ 2,052,941
	Woodbine Municipal	OBI	$ 1,558,820
	Princeton	39N	$ 2,274,962
	Sussex	FWN	$ 18,526,181
	Trenton-Robbinsville	N87	$ 2,961,622
	Alexandria Field	N85	$ 61,432,169
	Blairstown	1N7	$ 4,075,486
	Eagles Nest	31E	$ 3,376,272

Airport Functional Role	Airport	Airport Code	Total Estimated Cost
	Flying W	N14	$ 3,627,387
	Old Bridge	3N6	$ 3,558,855
	Sky Manor	N40	$ 5,885,184
	Spitfire Aerodrome	7N7	$ 4,874,695
Basic Service	Ocean City Municipal	26N	$ 300,000
	Aeroflex-Andover Field	12N	$ 2,199,760
	Bucks	00N	$ 865,000
	Camden County	19N	$ 3,777,798
	Hackettstown	N05	$ 2,409,518
	Vineland Downstown	28N	$ 647,500
Duplicative Basic Service	Kroelinger	29N	$ 875,333
	Red Wing	2N6	$ 872,500
	Southern Cross	C01	$ 877,458
Specialty Facilities	Little Ferry Seaplane Base	2N7	$ 535,200
Total Estimated Cost			

Table 7-30 Total Estimated Project Costs by NJDOT BOA Strategic Goal Areas

NJDOT BOA Strategic Goal Areas	Total Estimated Cost
Safety and Security	$ 35,870,647
Airport Preservation	$ 59,981,521
Capacity and Efficiency	$ 366,178,363
Economic Growth	$ 4,057,500
Total Estimated Cost	$ 466,030,531

8 RECOMMENDED SYSTEM

8.1 Introduction

The Recommended System chapter presents recommendations for NJDOT BOA to improve the New Jersey airport system over a 20-year planning horizon. The recommendations set forth in this chapter were developed based on findings from prior SASP chapters, continuous input from the SASP Study Advisory Group (SAG) at key stages in the system planning process, and guidance from NJDOT BOA and the FAA on strategic priorities.

The purpose of this chapter is to present recommendations for NJDOT BOA and study airports to improve airports' facilities, services, and equipment based on service role objectives identified in the facility requirements. Additionally, programmatic and policy recommendations that can address systemwide deficiencies for NJDOT BOA are also proposed. Recommendations are organized into NJDOT BOA's four strategic goal areas: Airport Preservation, Safety and Security, Capacity and Efficiency, and Economic Growth, which were established at the onset of the SASP by NJDOT BOA with input from the FAA and the SAG, depicted in **Figure 8-1**.

Chapter 8 Recommended System is composed of the following subsections:

8.2 System Planning Process and Methodology

8.3 Recommendations to Support Airport Preservation

8.4 Recommendations to Ensure System Safety and Security

8.5 Recommendations to Enhance System Capacity and Efficiency

8.6 Recommendations to Support Economic Growth

8.7 Airport Classification

8.8 Conclusion

Figure 8-1 2022 NJ SASP Goals

8.2 System Planning Process and Methodology

This section describes the methodology undertaken to develop and refine the recommendations set forth in this chapter.

A State Airport System Plan identifies current and future air transportation needs of a state over a 20-year planning horizon and establishes recommendations that identify the development projects needed to support the airport system. FAA Advisory Circular (AC) 150/5070-8, Change 1, The Airport System Planning Process, sets forth the components and process of airport system planning.

The first step of the SASP is to set goals, objectives, and performance measures for the New Jersey study airports. **Table 8-1** describes the key strategic goal areas that were identified by NJDOT BOA.

At the onset of the study, objectives were developed for each of the four strategic goals identified by NJDOT BOA: Airport Preservation, Safety and Security, Capacity and Efficiency, and Economic Growth. For each set of objectives, specific facility, service, and equipment recommendations are provided in this chapter. These recommendations are based on facility requirements findings that identify individual airport needs (see *Table 5-1 Airport Performance Objectives by Airport Role* in **Chapter 5 Facility Requirements Analysis**. Additional recommendations linked to NJDOT BOA goals and objectives are also provided in this chapter.

Table 8-1 2022 NJ SASP Goals, Objectives, and Recommendations

2022 NJ SASP Goals	2022 NJ SASP Objectives	Recommendations
Airport Preservation **"Preserve the New Jersey Airport System"**	• Maintain airport elements critical to operations • Support aviation education • Raise public awareness of airport benefits • Promote planning and development initiatives • Enhance airport zoning and land use compatibility to support preservation and development	• Identify Alternative Airport Funding Sources and Leverage the Public Use Airports Task Force • Conduct Airport Operations Monitoring • Promote Community Engagement • Meet Primary Runway Pavement Condition Objective • Meet Master Plan and Airport Layout Plan Objectives
Safety and Security **"Provide a safe and secure airport system"**	• Enhance the safety of approach and departure procedures • Ensure conformance with key FAA Safety Standards • Ensure a secure airport environment	• Establish Obstruction Monitoring Process • Meet Airport Reference Code Objective • Meet Approach Type Objective • Meet Navigational/Visual Aid Equipment, Airfield Lighting, and Weather Equipment Objectives
Capacity and Efficiency **"Support an efficient airport system that maintains the flexibility to respond to changes in future demand"**	• Plan for sufficient airport development to meet forecasted demand and needs identified in the airport master plan • Ensure airfield capacity can accommodate user demands and needs • Ensure landside capacity can accommodate user demands and needs	• Meet Runway Length, Runway Width, Runway Strength, and Taxiway Type Configuration Objectives • Meet Terminal Building Size Objective • Meet Auto Parking Objective • Meet Annual Service Volume Objective • Meet Hangar Space Objective • Meet Public Transit Accessibility Objective
Economic Growth **"Support economic growth in the State of New Jersey through airport activity"**	• Develop and maintain airport infrastructure to attract new business • Promote job creation in the aviation sector • Identify the economic contributions of the airport system and individual airports	• Meet Public-use Restroom Objective • Meet Fuel Objective • Meet Public-use Wi-Fi Objective • Meet Food Service Objective • Meet Ground Transportation Objective • Meet Aircraft Rental Service Objective • Meet Charter Service Objective • Meet Fixed Base Operator Objective • Meet Aircraft Maintenance Objective

Following the system planning process outlined in the FAA AC and national best practices, the NJ SASP collected inventory data on each of the study airports in **Chapter 1 Inventory**, analyzed sociodemographic and aviation industry trends in

Chapter 2 Trends Analysis, assessed airport roles from the prior 2007 NJ SASP and evaluated needs for airport role changes in this 2022 NJ SASP in **Chapter 3 Airport Roles**, and forecasted aviation demand in **Chapter 4 Aviation Demand Forecast**.

In **Chapter 5 Facility Requirements Analysis**, the SASP identified improvements at each system airport to meet NJDOT BOA airport service role facility, service, and equipment requirements. **Chapter 6 System Adequacy Analysis** evaluated system performance based on population accessibility to identify deficiencies for selected performance measures in the airport system. Based on the facility needs identified, this 2022 NJ SASP quantifies development costs for projects that are eligible for public funding, where quantifiable and data is available, in **Chapter 7 Development Cost Analysis**. This chapter provides a summary of all SASP recommendations, including those not quantified in the SASP's development cost analysis.

8.2.1 NJDOT BOA Airport Service Roles

An airport classification system allows for a state agency to define and assign functional roles to each of its study airports and set specific facility, service, and equipment objectives for each airport service role. In New Jersey, the 41 public-use airports are classified into seven airport service roles and these NJDOT BOA service roles are classified into two broader categories. The airport service roles and categories are shown below in **Figure 8-2**. As part of this 2022 NJ SASP update, the 2007 NJ SASP definitions for the airport service roles and Core/Core Candidate classifications were reviewed and updated to align with NJDOT BOA's strategic priorities today.

Figure 8-2 2022 NJ SASP Airport Classification System

The 2007 NJ SASP recommendations included the addition of two new service roles that were adopted at the onset of this 2022 NJ SASP: Priority General Service and Duplicative Basic Service. In addition to the addition of two new airport service roles, the 2007 NJ SASP recommended study airports be broadly classified into two categories: Core and Core Candidate Airports. This 2022 NJ SASP reviewed the 2007 NJ SASP definitions for Core and Core Candidate airports and updated the definitions so that they align with NJDOT BOA's priorities.

- **Core Airports**: SASP functional levels included in the Core Airports category are Scheduled Service, Advanced Service, Priority General Service, and General Service. At the discretion of NJDOT BOA, airports in other service roles may be classified as Core Airports due to their importance in the airport system.
- **Core Candidate Airports**: The majority of Basic Service and Duplicative Basic Service airports identified in the SASP are in the Core Candidate Airport category. There is one Specialty Service airport in the New Jersey airport system, Little Ferry Seaplane Base, which is also included in the Core Candidate Airport category.

The SASP does not prioritize the implementation of development projects at specific airports since airports must undergo the federal and state grant approval processes to receive funding for projects. However, it is recommended that NJDOT BOA consider airports' Core and Core Candidate classifications, as well as NJDOT BOA Service Role classifications, when reviewing grant applications and establishing investment priorities.

8.2.2 Stakeholder Engagement and Public Outreach

A core component of the SASP was to establish a SAG that represented key stakeholders and experts in the New Jersey aviation industry to provide feedback, advice, expertise, and input throughout the system planning process. The SAG included airport representation from various study airports in different roles, the aviation business community, general aviation organizations, metropolitan planning organizations, NJDOT BOA, and FAA.

The key stakeholders had the opportunity to provide ideas, comments, and opinions on the future role of the New Jersey airport system in the community and aviation industry. The SAG provided valuable input identifying the challenges and opportunities that were examined during course of the SASP process.

Five SAG meetings were held throughout the duration of the study at each key stage of the planning process. The SAG's feedback was requested before moving on to the subsequent stage so input could be incorporated and reflected in the SASP.

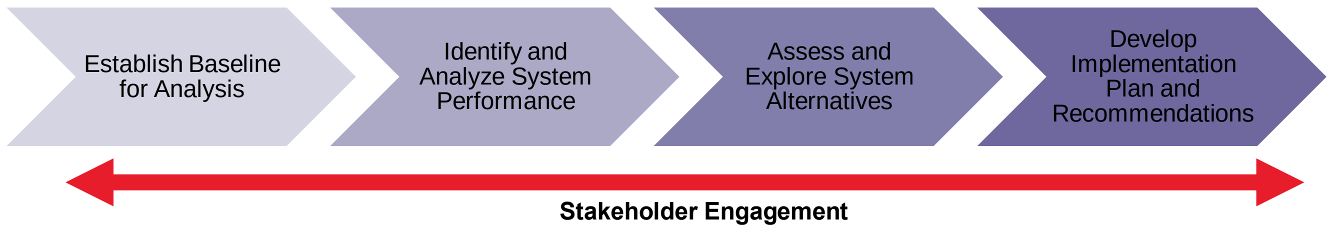


Figure 8-3 2022 NJ SASP Key Stages

8.3 Recommendations to Support Airport Preservation

The number of public-use airports in New Jersey has declined consistently over the last 70 years. In 1950, the State had 82 public-use aviation facilities. When the last SASP was published in 2007, that number was reduced to 47 public-use facilities. Today, the number of public-use facilities has reduced even further: there are only 41 public-use airports in the New Jersey airport system.[63] Since 1950, 50 percent of NJDOT BOA's public-use facilities have closed or are no longer open for public-use.

The closure of public-use airports, specifically general aviation airports, poses a threat to the viability of New Jersey's airport system. General aviation airports play a key role in alleviating demand on the State's hub airports, contributing to economic growth, increasing accessibility, and serving the transportation needs of local communities and businesses.

Given the high rate of airport closures in New Jersey, NJDOT BOA and the SAG identified airport preservation as a key goal of this 2022 NJ SASP. The following preservation objectives were identified in the study development:

- Maintain airport elements critical to operations
- Support aviation education
- Raise public awareness of airport benefits
- Promote airport planning and development initiatives
- Enhance airport zoning and land use compatibility to support preservation and development

To ensure New Jersey's air transportation needs can be met over the next 20 years, a set of recommendations to achieve preservation objectives was developed. These recommendations, described in further detail in the sections below, are proactive measures that airport sponsors can take to support system preservation.

8.3.1 State Airport Funding Sources

State airport funding is an essential requisite for airport preservation in New Jersey. As stated in the objectives for supporting airport preservation, implementing airport planning and development projects is one of the most effective methods of supporting airport preservation. Airport facility, service, and equipment improvements allow for airports to maintain elements that are critical to operations. Funding is needed for two key reasons: 1) to undertake planning studies, such as airport master plans and ALPs, that identify the need for specific airport improvements, and 2) to execute the airport improvement projects identified through the planning process. Most of New Jersey's airports, especially the smaller commercial service and general aviation airports, rely on federal and/or state funding sources for these important projects.

Throughout the system planning process, the SAG was engaged at key stages to provide input on New Jersey aviation industry trends and challenges. One of the most commonly raised challenges was the issue of insufficient state funding for planning and development projects to preserve and support airport development at New Jersey airports. This is illustrated by the cost estimates developed for New Jersey airports to meet their facility, service, and equipment improvements in

[63] It is noted that at the onset of this NJ SASP, the New Jersey airport system had 42 public-use facilities. Trinca (13N) closed in September 2020.

Chapter 7 Development Cost Analysis. A total cost of $466 million was estimated in this 2022 NJ SASP for New Jersey airports to meet their airport service role requirements over the next 20 years.[64]

The estimated $466 million, which averages to $23 million of funding needed per year, encompasses the total federal, state, and airport sponsor share of project costs. The federal, state, and airport sponsor shares of the total project cost vary for federal and state-funded projects. Typically, for federally funded projects at large and medium hub commercial airports, the federal share is 75 percent. At general aviation airports, the federal share is 90 percent, state share is 5 percent, and airport sponsor share is 5 percent. For state funded projects, the state and airport sponsor share are dependent on the project type. For example, airfield projects are typically funded 90 percent by the state and 10 percent by the airport sponsor, whereas hangar development projects are evenly split in half by the state and airport sponsor at 50 percent.

State airport funding in New Jersey is provided through the New Jersey State Transportation Trust Fund and the Airport Safety Fund. The Transportation Trust Fund is financed through New Jersey State taxes on motor fuels, petroleum gross receipts and sales taxes along with receipts from toll roads. The Airport Safety Fund is financed through revenues imposed on the sale of aircraft fuels sold for distribution at general aviation airports.

As described in **Chapter 2 Trends Analysis**, state airport funding from 2012 to 2017 averaged $5 million per year, approximately $4 million funded through the Transportation Trust Fund and $1 million funded through the Airport Safety Fund. It is anticipated that state airport funding will not be able to fund the recommended improvements identified in this NJ SASP. This is further exacerbated by the COVID-19 pandemic, which impacted travel behavior and reduced the State's existing revenue and funding streams.

Due to the limited funding available through the New Jersey State Transportation Trust Fund and the Airport Safety Fund, it is recommended that airports explore additional opportunities to increase funding. One strategy that has been successful at publicly-owned airports is the partial privatization of airport operations or on-airport facilities. ACRP Report 66, *Considering and Evaluating Airport Preservation*, sets forth various privatization models. There are three types of partial privatization models typically adopted by airports: service contracts, management contracts, and the financing and operation of facilities by private entities. These partial privatization models are described below.

- **Service Contracts**: Airport outsources non-core airport operations, maintenance, and/or management to a private entity, such as, terminal cleaning or janitorial, parking operations, shuttle bus operations, etc. Service contracts are also adopted by the airport for project development and delivery services, such as planning studies (master plans, ALP), architectural, engineering, design services, construction management, and program management. These are the most common type of privatization in the U.S. and across New Jersey's study airports. One example of a service contract is at Greenwood Lake (4N1). The airport is publicly owned by NJDOT BOA, who entered a service contract with a private entity to update the airport's master plan and ALP.
- **Management Contracts**: Airport outsources core airport operations, maintenance, and/or management to a private airport management company. For example, a private airport management company is hired for airport-wide operations and maintenance, parking, FBO, or terminal concessions. In many cases, the airport owner retains the responsibility for shaping core policies, long-range planning, grant assurance compliance, and finances. An example of a management contract in New Jersey is at Teterboro (TEB), where the airport is publicly owned by the Port Authority of New York and New Jersey (PANYNJ) and is operated, managed, and maintained by AvPorts, a private entity.
- **Developer Financing and Operation**: Airport contracts a developer to finance and operate a facility. For example, a private developer finances and operates a terminal, cargo facility, parking garage, or other general aviation services. Typically, developer financing and operation contracts are undertaken by larger commercial service airports, due to the level of investment that is needed and the profitability of the return on investment. In New Jersey, an example of this public-private partnership is seen at EWR, where the airport is publicly owned by PANYNJ, but individual terminals are financed and operated by United Airlines.

If demand is present, it is recommended that airports explore partial privatization models. These public-private partnerships could lead to meaningful revenue generating sources and spur vitalization at the airport. It is also recommended that the Public Use Airports Task Force consider partial privatization models when developing recommendations for the New Jersey airport system.

[64] Not all facility, service, and equipment objectives presented in Chapter 5 Facility Requirements have an associated project cost in **Chapter 7 Development Cost Analysis**. For objectives where data was insufficient or master plan-level analyses is required to develop unit costs, development costs were not estimated.

The Public Use Airports Task Force was established through New Jersey Statute § 6:1-44.3 in January 2020 to study and develop findings for improving the New Jersey airport system. One of the key areas the Public Use Airports Task Force will address is airport funding. The Public Use Airports Task Force is tasked with exploring policy changes to increase funding, identify specific initiatives to increase investment and public interest in aviation and the aerospace industry, and analyze current FAA assurance requirements to increase the amount of federal assistance received by public-use airports in the State, as mandated in Subparagraphs 3.a.(3), (9), and (11) of New Jersey Statute § 6:1-44.3. It is recommended that the Public Use Airports Task Force work with NJDOT BOA and consult the analyses in the NJ SASP and undertake additional detailed analyses for its report of findings and final recommendations to the Governor of New Jersey.

8.3.2 Airport Operations Monitoring

As mentioned above, the number of public-use airports in New Jersey has declined steadily over the last 70 years. During the course of this NJ SASP update alone, Trinca (13N), a publicly-owned airport, closed in September 2020, Red Lion (N73) became a private use, privately-owned airport, and Alexandria Field (N85), Flying W (N14) and Trenton Robbinsville (N87) have openly considered the possibility of selling their facilities. Numerous factors contribute to why an airport may elect to close and these factors typically develop over many years. The ACRP Report 44, *Guidebook for the Preservation of Public-use Airports*, broadly categorizes airport closure risk factors into four key categories: airport grant obligation status, community and environmental, economic, and infrastructure. **Figure 8-4** below presents the various factors in each category.

Grant Obligation Status	Community & Environmental	Economic	Infrastructure
– Airports without federal or state airport aid grant obligations are at increased risk	– Community education and outreach – Land use planning and zoning – Community relations – Environmental stewardship and noise management – Part of community economic vision	– Public/private ownership – Generational shift at privately-owned airports – Level of traffic and based aircraft – Available customer services and revenue – Business planning – Business succession and continuity planning	– Runway length and total available airport infrastructure – Condition of infrastructure; deferred maintenance

Source: ACRP Report 44, Guidebook for the Preservation of Public-use Airports, 2011.

Figure 8-4 ACRP Report 44 Primary Risk Factors for Airport Closure by Category

Risk factors can be proactively monitored to identify an airport's risk of closure over time. One potential risk management tool is an electronic questionnaire. An electronic questionnaire may include questions directly related to the risk factors identified in the ACRP Report 44, such as grant obligation status, and any other factors that are of priority to state governments, as shown in **Figure 8-5**. The questionnaire may be administered along with a state government's annual inspections, or other methods.

Airport Closure Monitoring Program
Airport Survey Questionnaire

Survey Completed By	
Airport Name	
Airport Representative	
Name	John Smith
Telephone	
Mobile Phone	
Email	

General Airport Information	
Airport Identifier	
Associated City	
Airport Ownership	Public
FAA NPIAS Role	
State Service Role	
Grant Obligation Status	State

State
Federal
State and Federal
None
Not Applicable

Figure 8-5 Preview of Sample Electronic Questionnaire for Airport Operations Monitoring

The results of airports' electronic questionnaires may then be tabulated in a matrix that considers each risk factor and assigns an overall high, medium, or low risk rating for each airport. An example is shown in **Figure 8-6**, where each airport is rated after the questionnaire is filled out. As this data can be collected annually, the findings can be used to monitor the airport's risk rating over time. **Figure 8-7** shows an example snapshot of an airport's annual overall rating and how it changes over time.

If an airport receives a "high" risk rating, the airport sponsor and manager can work to identify opportunities to address the airport's challenges and issues, utilizing guidance and/or other existing resources for airport preservation that may be provided by NJDOT BOA, ACRP, and/or the FAA.

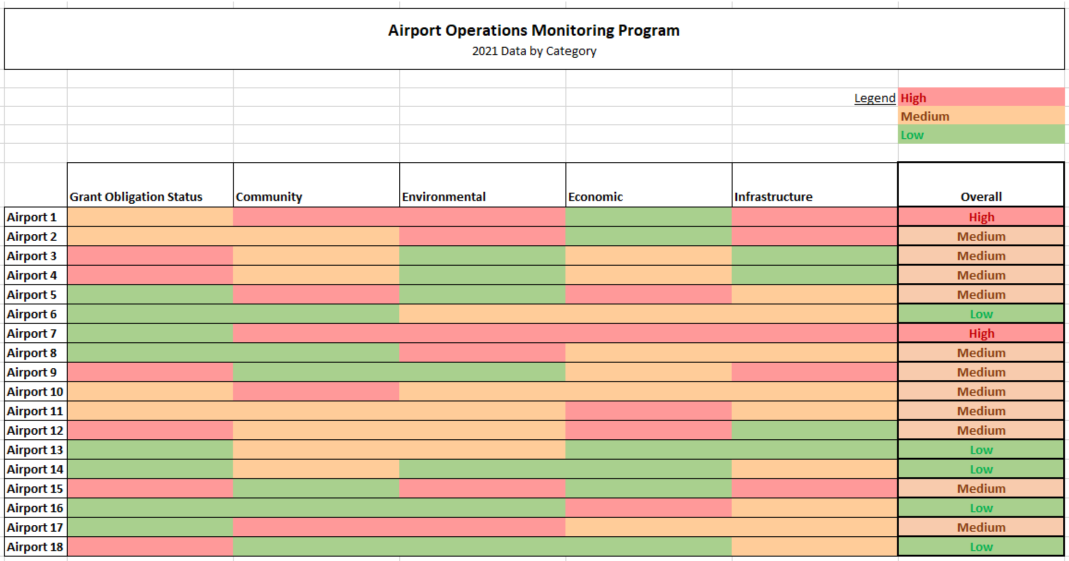


Figure 8-6 Sample Risk Rating Sheet for Airports by Risk Category

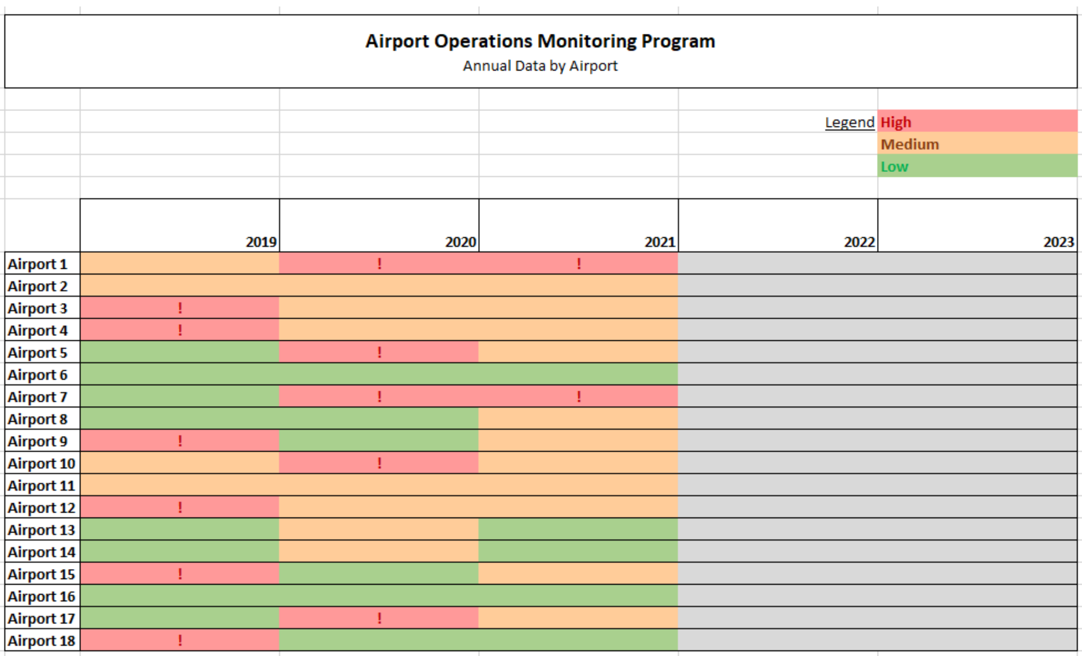


Figure 8-7 Sample Risk Tracker for Airports by Year

8.3.3 Community Engagement

New Jersey, like other states, continues to see the complexity and cost of airport development increase proportionally with the increase and proximity of community residential development. Often, this type of land use creates significant maintenance and development challenges for the airport system. Communities that do not consider the airport in their land development plans set the stage for local opposition to the airport and airport development projects. In some locations, there may be a history of mistrust between the airport and the community that exacerbates tensions. Community opposition to airports in New Jersey, coupled with trends that indicate that pilot population, based aircraft, and overall activity at general aviation airports is decreasing, endanger the public-use airport system in New Jersey.

Open and ongoing communication with the community that is designed to help airport neighbors understand the importance and benefits of "their airport" is a primary objective of every airport. Community support is critical to airport preservation and development. While there are many measurable benefits of airports, such as job growth and improved transportation access, there are many intangible benefits that airports bring to their communities. Intangible benefits of the airport are a sense of community pride, the possibility of attracting other businesses, and the support of aviation-related activities. These benefits cannot be readily expressed in dollars, but they are valued benefits to many in a community. Without the airport, the benefits would not exist or would not be easily recognized. As the benefits of airports to communities are not always apparent to residents, airports have a significant ongoing responsibility to continually raise awareness of the value of airports for their communities.

Airports can employ tools to promote community engagement initiatives to increase airport awareness, improve community relations, and support airport preservation and development in New Jersey. Some of these initiatives are detailed below.

Partnerships with Education Institutions and Pilot Training

To communicate the benefits of airports, it is recommended that airports establish partnerships with educational institutions. These partnerships can increase awareness of airports and aerospace, as well as provide necessary training for careers in aviation and contribute to the growth of the aviation sector in New Jersey. Students at all educational levels can become engaged in aviation through partnerships with local high schools, colleges, vocational schools, and aviation organizations. Potential partnerships may include:

- STEM activities geared at students that offer lessons in flight training, aviation history, field trips to aviation-related sites, and instruction on aircraft design and maintenance.
- Certified and accredited aviation programs at higher education institutions for students interested in a specific aviation-related career path that may require a Bachelor of Science degree in Aviation Management, Aeronautical Science, Aviation Meteorology, etc. For example, the County College of Morris offers aviation technology degrees and flight training, and Bergen Community College offers associate degrees in aircraft operations, aviation administration, and avionics. These academic institutions, among others, can serve as partners to study airports and help increase airport activity.
- The establishment of on-site flight schools at priority general service, general service, and basic service airports that offer part-time or full-time pilot training services. The SASP facility requirements recommend that Priority General Service airports offer full-time pilot instruction, and that General Service, Basic Service, and Duplicative Basic Service airports offer part-time instruction if demand is warranted.
- The establishment of educational aviation summer camps geared towards children and teenagers that provide hands-on experience in aviation at study airports. This initiative has been proven successful at various airports in New Jersey and neighboring states and has the potential to spark an interest in aviation in children at an early age.

Aviation educational partnerships have already started to launch successfully in New Jersey. The National Aviation Research and Technology Park (NARTP) is a non-profit organization affiliated with Stockton University dedicated to facilitating research and innovation in the aviation sector. The organization partners working closely with academic institutions to provide subject matter expertise and promote aviation workforce development in New Jersey. NARTP has established strategic partnerships with the NJ Department of Education, Embry-Riddle Aeronautical University, Atlantic County Vocational School, Atlantic County Institute of Technology, Rowan University, and Atlantic Cape Community College to expand aviation education opportunities in the state. In 2020, NARTP partnered with Atlantic Cape Community College and Rowan University to provide curriculum guidance for unmanned aircraft systems and other emerging aviation technologies.

Community Event Guidelines

Holding community events at airports can raise awareness of aeronautical facilities and provide benefits to the local community. Welcoming the nonflying public onto airport property can improve community relationships and garner support for airport preservation and development.

Community events may be aeronautical or nonaeronautical. Aeronautical events may include air shows, fly-ins, airport open houses, or aircraft displays. Typically, an aeronautical event requires 12 months of planning and organizing and extensive coordination with the FAA.[65] Non-aeronautical events are not aviation-related and occur when an airport's facilities are utilized for some other purpose, such as a community meeting or a charitable event. Both aeronautical and non-aeronautical events require advanced coordination with NJDOT BOA and the FAA to ensure all airspace, safety, and security regulations are met.

The ACRP has consolidated various resources from the FAA, AOPA, Experimental Aircraft Association (EAA), and other aviation organizations to develop a set of guidelines for hosting community events, ACRP Synthesis 41, *Conducting Aeronautical Special Events at Airports*. It is recommended that study airports utilize these resources when planning a community event. These guidelines can set a standardized process for events agreed upon with the FAA and serve as a resource to airports interested in holding community events.

Marketing

Airports should be positioned to attract new users and businesses, increase aviation activity, and garner support from local communities. The development of a marketing strategy, which includes the development and implementation of a marketing plan, is a vital tool for airports to showcase their value and importance to the local community and the greater region. For this NJ SASP, it is recommended that a marketing strategy be established for commercial service and advanced service airports. As all commercial service airports meet this objective, advanced service airports are the focus of this recommendation. Advanced service airports fill an important function as relievers to larger, more congested Scheduled Service airports, and serve the needs of a growing business community in New Jersey. The establishment of a marketing strategy can elevate these airports and position them to attract new users and businesses in the region.

8.3.4 Primary Runway Pavement Condition

PCI studies are conducted regularly to evaluate runway, taxiway, and apron pavement condition at airports. In addition to providing a detailed analysis of the condition of pavement, PCI studies provide an assessment of the significant contributing factors for pavement deterioration and distress. Maintaining runway pavement in a state of good repair is critical to supporting safe and efficient aircraft operations at airports. Additionally, maintaining pavement at a PCI of 70 or higher reduces the likelihood of runway reconstruction projects and can result in long-term cost savings for airports. The findings of the PCI study allow for an airport to plan for and identify specific portions for pavement rehabilitation efforts.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Primary Runway Pavements	Primary runway pavements to be maintained at a PCI of 70 or higher				

The last state-wide PCI study for New Jersey study airports was conducted in 2014. As of April 2021, NJDOT BOA is undertaking a state-wide PCI study for all applicable study airports. Once the PCI studies are completed, it is recommended that all study airports review the findings and assess the need to carry out pavement rehabilitation projects to maintain PCI ratings of 70 or higher for their primary runway pavement.

8.3.5 Master Plan and Airport Layout Plan

Up-to-date master plans and ALPs help airports and NJDOT BOA identify an airport's development potential and plan projects for future development. These planning studies are comprehensive and describe the short-, medium-, and long-term development plans to meet future aviation demand, guiding continuous airport development and ultimately contributing to the preservation of the airport.

[65] National Academies of Sciences, Engineering, and Medicine 2013. Conducting Aeronautical Special Events at Airports. Washington, DC: The National Academies Press. https://doi.org/10.17226/22572.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Master Plan	**Less than 5 years old**	**Less than 10 years old**			
Airport Layout Plan	**Less than 5 years old with pen and ink changes as appropriate**	**Less than 10 years old with pen and ink changes as appropriate**			

Master plans and ALPs provide the basis for airport development when airports apply for state and federal grants. For NPIAS airports to be eligible for federal funding, a project must appear on an approved ALP. Although it is not a requirement for airports to have an updated airport master plan or ALP to be eligible for state funding, study airports are strongly encouraged to engage in such planning activities as recommended by the facility, service, and equipment objectives in this 2022 NJ SASP update.

The total estimated costs for study airports to undertake master plans and ALPs are presented in *Table 7-25 Master Plan Projects* and *Table 7-26 Airport Layout Plan Projects* of **Chapter 7 Development Cost Analysis**.

8.4 Recommendations to Ensure System Safety and Security

The provision of a safe and secure airport system is a key priority for NJDOT BOA. The ability to operate safely and securely is paramount to the success and reliability of the airport system. To promote airport safety, airports should comply with applicable design standards as determined by the FAA, ensure obstruction and land-use issues are proactively addressed, and meet facility and equipment needs that ensure a safe airfield.

To continue to maintain and promote safe airport operations, NJDOT BOA and the FAA identified safety as a key strategic focus of this NJ SASP. The following safety and security objectives were identified for this study:

- Enhance the safety of approach and departure procedures
- Ensure conformance with key FAA Safety Standards
- Ensure a secure airport environment

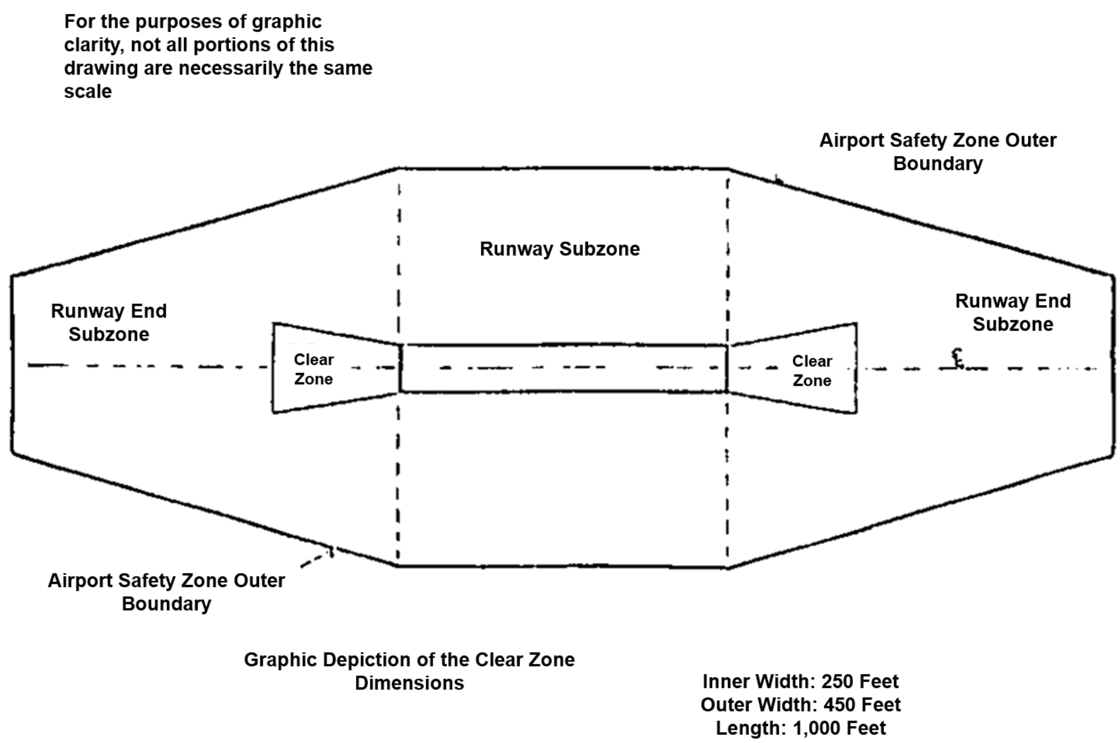
The following set of recommendations was developed to achieve safety and security objectives. These recommendations, described in further detail below, are proactive measures that airport sponsors can take to ensure the New Jersey airport system can continue to operate safely.

8.4.1 Obstruction Monitoring Process

The mitigation of obstructions to air navigation is a critical objective for the NJDOT BOA. NJDOT BOA's ultimate goal is for all of its public-use airports is to maintain clear 20:1 approach surfaces. This 2022 NJ SASP examined study airports' 20:1 approach surface clearance and found that almost 75 percent of study airports have obstructions penetrating their 20:1 approach surface (see **Chapter 5 Facility Requirements Analysis**). The findings of the coverage analysis in **Chapter 6 System Adequacy Analysis** showed that only 82.4 percent of New Jersey's population is within a 30-minute driving time of an airport with a clear 20:1 approach surface, which is below the 90 percent threshold of what this 2022 NJ SASP established as adequate population coverage.

Obstructions can vary from vegetation, structures, mobile objects, and towers. Vegetative obstructions are most common and often challenging to mitigate because they grow naturally over time. When obstructions encroach into an airport's surrounding airspace, the airport may have to implement displaced thresholds and increase glide slope angles to maintain a safe approach if obstruction removal is not possible. When an airport displaces its threshold, it reduces the airport's effective runway length, which is not only a primary infrastructure risk factor for airport closure, (see **Figure 8-4** in Section 8.3.2 Airport Operations Monitoring) but also diminishes runway approach capabilities.

Chapter 62 of the New Jersey Administrative Code (NJAC), Air Safety and Zoning, identifies minimum standards that airports must comply with to ensure safety for land use adjacent to airports. Municipalities in the State of New Jersey are required to implement and maintain land use ordinances in accordance with the provisions of Chapter 62 of the NJAC. The control of aeronautical hazards within the Air Safety and Zoning Act of 1983 are primarily through local zoning regulations, and many municipalities adopt more stringent standards for control of these areas under the Municipal Land Use Law. The act requires that an Airport Safety Zone be established for each runway, and each Airport Safety Zone must have a Runway Subzone, two Runway End Subzones, and two Clear Zones. These zones establish minimum standards for the control of the airport aeronautical hazards. It is recommended that municipalities work closely with airports to ensure that airport-adjacent communities and land uses comply with the Air Safety and Zoning Act. **Figure 8-8** presents a diagram of the New Jersey Airport Safety Zone.



Source: NJAC Chapter 62, Appendix Figure 7

Figure 8-8 New Jersey Airport Safety Zone

Airports are strongly recommended to control the land surrounding the airport if possible (their runway protection zones, at minimum) either through property acquisition or avigation easements, so that the airport can ensure the surrounding land use is compatible and can mitigate obstructions avoiding coordination with surrounding land owners. However, this may not be feasible for every airport.

The proposed Obstruction Monitoring Process recommends a 4-step mitigation approach for airports to protect their airspace as depicted in **Figure 8-9** and described in further detail below.

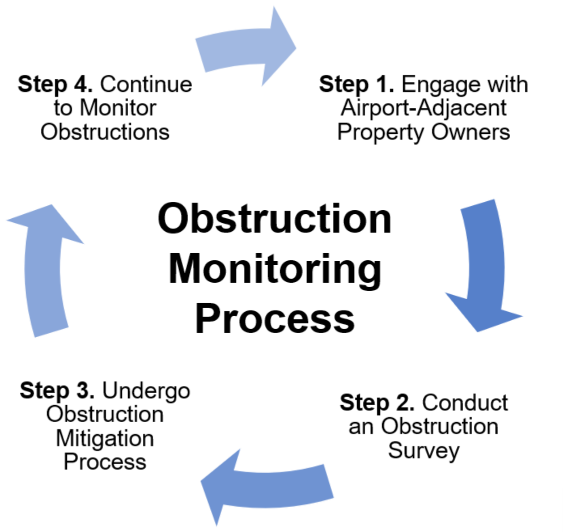


Figure 8-9 Obstruction Monitoring Process

Step 1. Engage with Adjacent Property Owners

Local community engagement is important for facilitating open dialogue and building relationships between the airport manager, sponsor, and property owners adjacent to the airport. This is especially important when airports do not have control of airport adjacent property. It is recommended that airports hold annual meetings to openly discuss obstructions, as identified from prior planning efforts, and land use issues, especially as they pertain to operational safety. Regular meetings foster two-way communication and allows for airports and property owners to build and sustain lasting relationships.

Step 2. Conduct an Obstruction Survey

Airports are typically aware if obstructions are an issue and are impacting an airport's operations. For example, an airport is unable to have night-time operations if there are obstructions to the airport's 20:1 approach surface. If an airport is not aware of such issues, it is recommended that the airport conduct an obstruction survey to identify the extent and types of obstructions present.

Step 3. Undergo Obstruction Mitigation Process

Once obstructions are identified and airports review the findings of the obstruction survey, the next step is for airports to undergo the obstruction mitigation process. The obstruction mitigation process varies for each airport, depending on where the obstructions are (on-Airport vs. off-Airport), if the airport is in an environmentally protected area, and the nature of the obstructions (vegetative vs. manmade). **Figure 8-10** outlines the obstruction mitigation process for New Jersey airports.

Step 4. Continue to Monitor Obstructions and Engage with Adjacent Property Owners

It is recommended that once an airport successfully completes the process of removing obstructions, the airport continue to monitor new development and vegetative growth in areas surrounding the airport. It is emphasized that regular meetings with adjacent property owners and airport stakeholders should continue to be held annually to ensure a smooth obstruction mitigation process for any future obstacles that may penetrate the 20:1 approach surface.

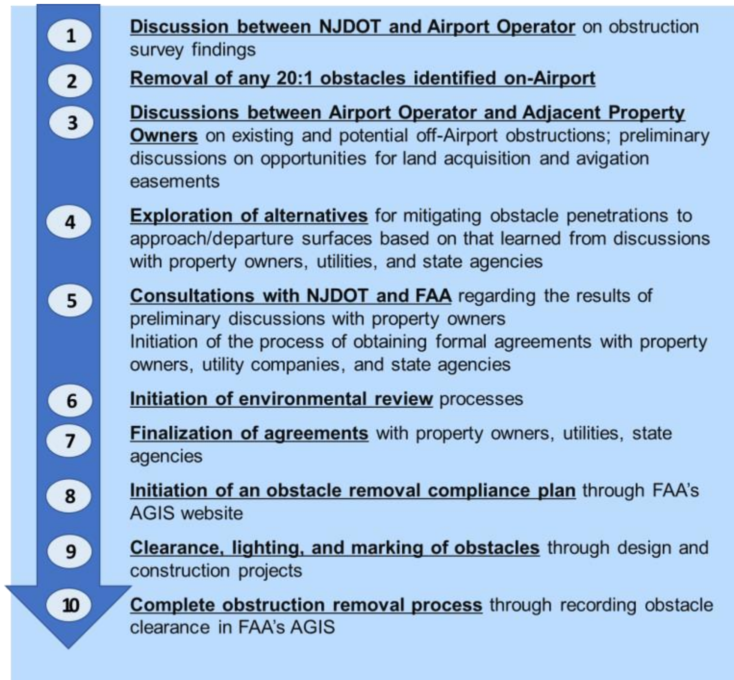


Figure 8-10 Obstruction Mitigation Process for New Jersey Airports

While it was found that nearly 75 percent of New Jersey airports do not have clear 20:1 approach surfaces, ten airports already have taken steps toward mitigating obstructions:

- Central Jersey Regional (47N)
- Greenwood Lake (4N1)
- Hammonton Municipal (N81)
- Lakewood (N12)
- Linden (LDJ)
- Princeton (39N)
- Somerset (SMQ)
- South Jersey Regional (VAY)
- Sussex (FWN)
- Woodbine Municipal (OBI)

These airports have undertaken an obstruction survey, planning study, environmental assessment, or obstruction removal projects, where the purpose is to evaluate, remove or mitigate obstructions between 2017 and 2020. It is recommended that these airports complete the obstruction mitigation process to the extent feasible. If these airports successfully complete the obstruction removal process, New Jersey's population within a 30-minute drive time of an airport with a clear 20:1 approach surface could increase to 90.6 percent by 2029.

8.4.2 Airport Reference Code

Individual airport design standards are determined by the Airport Reference Code (ARC), which is a combination of the Aircraft Approach Category (AAC) and Airplane Design Group (ADG), based on the critical aircraft, which is the most demanding aircraft that operates at the airport on a regular basis. FAA AC 150/5000-17, Critical Aircraft and Regular Use Determination, provides guidance on determining an airport's critical aircraft in airport planning and design.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Airport Reference Code	C-III	C-II or greater	B-II or greater	B-I or greater	B-I small or less

The airport reference code objectives for each NJDOT BOA service role are presented in **Chapter 5 Facility Requirements** and depicted above. The objectives in the SASP are intended to provide airports guidance. As such, an airport's ARC as determined through its airport master plan and ALP may be different from the objectives identified in the SASP. Airports are strongly encouraged to meet the applicable FAA design and development standards to maintain safety and meet capacity needs as required by their ARC determined from their airport master plan and ALP. It is important to conduct periodic reviews of the existing ARC to ensure safe aircraft operations as airport activity changes over time.

As identified in **Chapter 5 Facility Requirements Analysis**, nearly 50 percent of study airports do not meet their ARC objectives. It is recommended these airports monitor aircraft operations and demand to justify ARC needs through regular master planning and/or ALP updates.

8.4.3 Approach Type

Instrument approaches improve operational efficiency and safety during aircraft take-off and landing. Approaches are determined by the available navigational aids, lighting systems, and other equipment. Airports have historically used land-based approach equipment, such as an instrument landing system (ILS), however technological advancements have allowed airports to utilize satellite-based equipment that uses global positioning systems (GPS) to facilitate approaches.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Approach Type	CAT II Precision approach	Precision approach or, approach with vertical guidance (e.g., LPV, LAAS/VNAV)	Non-precision approach		Visual

This 2022 NJ SASP has identified approach type objectives for each NJDOT BOA service role. As identified in **Chapter 5 Facility Requirements Analysis**, 90 percent of study airports are meeting their approach type objectives. Currently, there are four Scheduled Service and Advanced Service airports that do not meet their approach type objectives. This may be because the airport does not have the capabilities to improve its approaches at this time. Precision approaches typically require multiple airside improvements, such as new navigational aids and lighting systems.

It is recommended that these airports further study the feasibility of addressing current and future approach type needs through regular master planning and/or ALP updates.

8.4.4 Navigational/Visual Aid Equipment, Airfield Lighting, and Weather Equipment

Airfield lighting is essential to safe aircraft operations, especially at night-time or during periods of reduced visibility. The navigational/visual aid equipment, airfield lighting, and weather equipment objectives are listed below. Since the presence of certain navigational/visual aid equipment and airfield lighting allow for specific instrument approach types, the objectives are closely tied to the approach type requirements for each service role.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Airfield Lighting[1]	ALSF I, HIRL, CL, TDZ, MITL	HIRL, MITL	MIRL, MITL	MIRL[2], taxiway lighting/ reflectors	LIRL[2]
Visual Aids[1]	Rotating beacon, lighted wind cone, VGSI	Rotating beacon, lighted wind cone, segmented circle, REILs, VGSI	Rotating beacon, lighted wind cone, segmented circle, REILS, VGSI	Rotating beacon, lighted wind cone[2], segmented circle, REILS, VGSI	Lighted wind cone[2]
Runway Lighting Separation	200' between lights				
Weather Equipment[1]	AWOS Available			Not required	

[1] See Chapter 7 Development Cost Analysis for project costs.

[2] Only airports with night-time operations are required to have runway lighting

Chapter 5 Facility Requirements Analysis identifies the study airports that do not currently meet their service role requirements for each of the facility, service, and equipment above. It is recommended that airports be improved to meet their navigational/visual aid equipment, airfield lighting, and weather equipment objectives to ensure safe and secure airport operations.

8.5 Recommendations to Enhance System Capacity and Efficiency

New Jersey is the most densely populated state in the country. As of 2019, New Jersey's population was estimated to be 9,047,511 and by 2029 it is expected to grow to 9,353,238. **Chapter 6 System Adequacy Analysis** evaluated system performance based on population accessibility to identify airport coverage deficiencies. The analysis found future access levels to be relatively strong, with five of the seven performance measures evaluated expected to provide population coverage to more than 90 percent of New Jersey residents. To ensure that it remains strong, the continued preservation and development of a 21st century, modern, airport system that can meet the needs of the airport users now and in the future is a strategic priority for NJDOT BOA.

Many airports in New Jersey have physical, financial, or other constraints that limit development. Where airport growth is not restricted, airport facility enhancements to meet capacity and efficiency needs are recommended. Existing airport infrastructure is aging, and at a minimum need to be brought into a state of good repair.

To maximize efficiency, improvement and/or modernization projects are recommended. The following objectives were identified at the onset of the SASP:

- Plan for airport development to meet forecasted demand and needs identified in the airport master plan
- Ensure airfield capacity can accommodate user demands and needs
- Ensure landside capacity can accommodate user demands and needs

The following set of recommendations was developed to meet capacity and efficiency objectives. These recommendations, described in further detail below, are proactive measures that NJDOT BOA and airport sponsors can take to ensure the New Jersey airport system is able to adequately meet the demands of current and future population.

8.5.1 Runway Length, Runway Width, Runway Strength, and Taxiway Type Configuration

Adequate runway and taxiway conditions are essential to airports and airport systems. Runway capacity and strength are key factors in determining the types of aircraft that can operate at an airport. To ensure there is an adequate number of airports with runway lengths and strengths capable of serving a full range of aircraft in the general aviation fleet is critical to the viability and competitiveness of New Jersey's airport system.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Runway Length	6,000'	5,000'	4,000'	3,500'	2,200' or greater
Runway Width	150'	100'	75'	At least 60'	At least 60'
Runway Strength	Dual-wheel landing gear 60,000 lbs	Single-wheel landing gear 30,000 lbs	Single-wheel landing gear 30,000 lbs	12,500 lbs	Up to 12,500 lbs
Taxiway Type	Full parallel	Full parallel for primary runway	Full parallel for primary runway	Full parallel, partial parallel, connectors or turnarounds	Preserve existing

The runway length, width, strength, and taxiway type objectives for each NJDOT BOA service role are depicted above. To ensure study airports can meet their projected demand, airports are encouraged to assess airfield capacity needs during master plan and ALP updates. Runway length, width, and strength justifications are dependent on the airport's approved critical design aircraft (or group of aircraft) expected to use the runway. For any runway or taxiway project to be undertaken at a federally funded NPIAS airport, the project needs to be identified on an approved ALP and meet all environmental requirements. Although it is not a requirement for non-NPIAS airports to have an updated airport master plan or ALP to be eligible for state funding, all airports are strongly encouraged to engage in these planning activities when considering runway or taxiway extensions.

Given the importance of runway capacity to the airport system, the SASP identified the percentage of the New Jersey population with access to airports providing primary runway lengths of 5,000 feet or greater as part of **Chapter 6 System Adequacy Analysis**. The coverage analysis found that only 83.5 percent of all New Jersey residents (7.6 million) were within a 30-minute driving time of an airport with a primary runway length of 5,000 feet or greater. Given that population coverage is under 90 percent for this metric, it is recommended that airfield capacity needs at study airports be monitored through regular master planning efforts.[66]

The total estimated costs for study airports to undertake runway length, width, strength, and taxiway configuration projects as recommended by their facility, service, and equipment objectives, are presented in *Table 7-3 Runway Length Projects, Table 7-4 Runway Width Projects, Table 7-5 Runway Strength Projects,* and *Table 7-6 Taxiway Configuration Projects* of **Chapter 7 Development Cost Analysis**.

8.5.2 Terminal Building Size

Terminal buildings provide essential services to passengers, pilots, and flight crews. Depending on the type of visitor the airport attracts, terminal facilities may range in size and use. This 2022 NJ SASP established facility requirements for scheduled service and advanced service airports only, given the importance of terminal facilities for airports with commercial and business operations.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Terminal Building Size	As per needs identified in Master Plan	Estimated peak hour operations * a factor of 2.5 people * square footage per person = terminal square footage	Preserve Existing		

[66] It is noted that Essex County (CDW) was identified as a system airport recommended to have a runway length of 5,000 feet to meet its Advanced Service designation role requirements. At this time, however, the airport's master plan does not indicate that a runway extension is feasible. It is recommended that NJDOT consider CDW when monitoring airfield capacity needs in the future.

As all scheduled service airports currently meet their terminal building requirements, and scheduled service airports' terminal needs are identified in the airport master planning process. Terminal enhancements are only recommended for select advanced service airports that do not meet this objective. It should be noted that terminal facilities are not likely to be expanded unless airport-specific demand warrants development and adequate funding sources can be secured.

The total estimated costs for study airports to undertake terminal building projects as recommended by their facility, service, and equipment objectives, are presented in *Table 7-18 Terminal Building Projects* of **Chapter 7 Development Cost Analysis**.

8.5.3 Auto Parking

Adequate landside capacity is critical to supporting airport operations. Auto parking should accommodate airport employees, visitors, and other users. Auto parking facility requirements were developed for each service role based on the number of based aircraft at the airport and the number of airport employees and visitors.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Auto Parking	Minimum 100 parking spaces per 100,000 enplanements as per FAA 150/5360-13	1 space per based aircraft + additional 50 percent for employee/visitors	1 space per based aircraft + additional 50 percent for employee/visitors	1 space per based aircraft + additional 25 percent for employee/visitors	1 space per based aircraft

As identified in **Chapter 5 Facility Requirements Analysis**, 100 percent of Scheduled Service and Advanced Service airports meet their auto parking objectives. However, a number of Priority General Service, General Service, Basic Service, and Duplicative Basic Service airports do not meet this objective. It is recommended these airports increase their auto parking capacity to better serve the needs of New Jersey's airport system.

The total estimated costs for study airports to undertake auto parking projects as recommended by their facility, service, and equipment objectives, are presented in *Table 7-20 Auto Parking Projects* of **Chapter 7 Development Cost Analysis**.

8.5.4 Airfield Capacity

In order to measure airfield capacity at each system airport, the annual service volume (ASV) was calculated. ASV measures the operational delay an aircraft experiences at a given airport. Per guidelines in FAA AC 150/5060-5, the FAA recommends that the ASV be below 80 percent.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Annual Service Volume	Below 80% of calculated ASV				

The New Jersey airport system has very good airfield capacity. The only airport that does not meet the airfield capacity requirement is Newark Liberty International. While the COVID-19 pandemic has impacted the ASV levels at EWR temporarily, ASV is expected to reach pre-COVID-19 levels again in the near future. Therefore, Newark Liberty International is currently pursuing significant redevelopment efforts which will increase the airfield capacity of the airport in the coming decade.

8.5.5 Hangar Space

The ability to safely and securely base aircraft is a key factor for general aviation airports, many of which rely on hangars to provide protective aircraft shelter. In the last decade, the need for hangar storage has increased significantly. As identified in **Chapter 5 Facility Requirements**, over 50 percent of study airports do not have adequate hangar capacity. The NJ SASP airport inventory questionnaire also found that many airports have a waiting list for hangar storage.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Hangar Space	Hangars available for 75% of based aircraft	Hangars available for 75% of based aircraft	Hangars available for 50% of based aircraft	Hangars available for 50% of based aircraft	Preserve existing

In order to meet existing hangar needs and attract new airport users, it is recommended that hangars be installed at Scheduled Service, Advanced Service, Priority General Service, and General Service Airports where this objective is unmet.

The total estimated costs for study airports to undertake hangar space projects as recommended by their facility, service, and equipment objectives, are presented in *Table 7-19 Hangar Space Projects* of **Chapter 7 Development Cost Analysis**.

8.5.6 Public Transit Accessibility

Public transportation is a vital economic driver in the state of New Jersey, providing affordable and sustainable travel options, as well as other localized benefits to communities. An integrated transportation system that links multi-modal transportation systems, such as rail and bus, to the New Jersey airport system encourages increased airport activity. To promote accessibility to study airports, this 2022 NJ SASP recommends that Scheduled Service and Advanced Service Airports have access to a public transit mode within a 0.5-mile radius or an on-airport shuttle service.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Public Transit Accessibility	Access to a public transit mode within a 0.5-mile radius of the airport or on-airport shuttle service available		Not an objective		

As identified in **Chapter 5 Facility Requirements Analysis**, 100 percent of Scheduled Service airports meet their public transportation objectives. However, 63 percent of Advanced Service airports do not meet this objective. It is recommended that local and regional transportation plans and long-range plans evaluate the feasibility of providing public transportation access to these airports. Metropolitan planning organizations are also recommended to consult the findings of the SASP to identify opportunities for integration of airport accessibility into planning efforts where applicable.

8.6 Recommendations to Support Economic Growth

Air transportation plays a vital role in New Jersey's local and state economies. Not only do airports provide accessibility to residents, businesses, and visitors, they are a key economic driver. Airports in New Jersey create thousands of jobs and have billions of dollars of impact on New Jersey's economy. In 2016, NJDOT BOA's Statewide Economic Impact Study found that New Jersey airports generate over $18.4 billion annual impact from employment and payroll.

To continue to promote New Jersey's economy, NJDOT BOA identified economic growth as a key strategic focus of this NJ SASP. The following economic growth objectives were identified in the study development:

- Develop and maintain airport infrastructure to attract new business
- Promote job creation in the aviation sector
- Identify the economic contributions of the airport system and individual airports

New Jersey's airport system can promote economic growth through both on- and off-airport activity. On-airport activities are the benefits generated by facilities and services located on airport property. This 2022 NJ SASP recommends the development of several on-airport services and facilities that can contribute economic growth in the State if implemented. It is recommended airport sponsors consider pursuing the below initiatives to attract new visitors and businesses to the airport, serve the aviation industry, and support the greater New Jersey economy.

	Scheduled Service	Advanced Service	Priority General Service	General Service	Basic Service/Duplicative Basic Service/Specialty Facilities
Public-use Restroom[1]	Facility available				
Fuel[1]	24-7 Jet A and Avgas (100LL)			24-7 Avgas (100LL)	Avgas (100LL)
Public-use Wi-Fi	Service available				
Food Service	Restaurant, food/beverage vending machines, or catering services available				Not an objective
Ground Transportation	Available				Not an objective
Aircraft Rental Service	Not an objective	Service available			
Charter Service	Service available				Not an objective
Fixed Base Operator	Full service FBO (more than two services provided)			Limited service FBO (two or less services provided)	Preserve existing
Aircraft Maintenance	On-site major aircraft maintenance			On-site minor aircraft maintenance	Preserve existing

[1] See **Chapter 7 Development Cost Analysis** for project costs.

New Jersey's airport system may also promote economic growth through off-airport activity. Off-airport activities are the benefits generated by more local and state visitors (contributing to hotels, restaurants, and recreation), job creation, new technologies, and industry growth.

For example, the southern New Jersey region is experiencing growth in aviation through the initiatives undertaken by the Atlantic County Economic Alliance (ACEA) in conjunction with the local, state and federal agencies. The Atlantic County Aviation Innovation Hub (Hub) consists of the FAA William J. Hughes Technical Center, ACY, and the NARTP. In addition to the FAA, ACY, and NARTP, the Hub has partnerships with key agencies (such as the National Institute of Aerospace) and educational institutions (such as the New Jersey Department of Education, Rowan University, Embry-Riddle Aeronautical University, Atlantic County Vocational School District, among others) to develop local skills in aviation and generate hundreds of jobs.

To further vitalize aviation in southern New Jersey, the ACEA has partnered with the Joint Base McGuire-Dix-Lakehurst and Cape May County Airport UAS Research Center to conduct research and development of new aviation technologies. New technologies like UAS and Urban Air Mobility (UAM) have the potential to revolutionize the aviation industry and will create new opportunities for airports across the United States. Conducting such research in New Jersey directly benefits the New Jersey airport system, as study airports may be used as test sites (as is the case at Cape May County Airport) and can sit at the forefront of emerging technology.

In Newark, the Council for Airport Opportunity (CAO), a nonprofit organization founded in collaboration with the Port Authority of New York and New Jersey, airlines, the Mayor's Offices of the City of Newark and the City of New York, and the FAA, connects thousands of individuals to aviation jobs in northern New Jersey. In addition to job placement initiatives, the CAO provides free aviation training programs, summer employment opportunities for students, programs for mature workers, and customer service training for New Jersey residents seeking to enter the aviation sector.

The North Jersey Transportation Planning Authority (NJTPA), the federally authorized Metropolitan Planning Association for the 13-county North Jersey region, also provides a forum for collaboration and partnership with study airports. The NJTPA conducts strategic studies that identify opportunities for northern New Jersey's various multi-modal transport systems, including freight and air cargo. Air cargo operations at EWR, for example, are critical components of the supply chain in New Jersey and offer many economic benefits to the State's economy. System airports may collaborate with NJTPA and other regional planning organizations, such as the New Jersey Economic Development Authority, to identify opportunities that would promote economic growth.

Additionally, the Delaware Valley Regional Planning Commission (DVRPC) is a Metropolitan Planning Organization that covers five New Jersey counties within the greater Philadelphia area, including Mercer, Burlington, Gloucester, Camden and Salem Counties. For more than 40 years, DVRPC has been funded by the FAA to conduct special aviation studies including periodic updates to their Regional Aviation System Plan linking New Jersey aviation activities and development with those in the surrounding States of Pennsylvania, Delaware and Maryland. DVRPC's influence on New Jersey's airport growth and development has been instrumental for many decades and continues to be a regional forum to discuss aviation issues.

These activities are not only attracting new aviation businesses and creating jobs in New Jersey, but are also focusing on developing the aviation workforce in New Jersey, which can contribute to offsetting the decreasing pilot population trends in the state and the U.S.

8.7 Airport Classification

An important component of the system planning process is evaluating NJDOT BOA and FAA NPIAS airport roles and understanding how changes to airports and airport roles can impact the airport system. **Chapter 3 Airport Roles** provides an in-depth analysis of NJDOT BOA and FAA NPIAS roles.

This section sets forth airport role considerations that should be taken into account as the recommendations of this NJ SASP are pursued over the next 20 years.

8.7.1 NJDOT BOA Airport Service Role Considerations

An airport's NJDOT BOA service role determines what types of facility, service, and equipment should be available at the airport and classifies the airport's functional role in New Jersey's airport system.

As presented in Section 8.2.1 NJDOT BOA Airport Service Roles, this 2022 NJ SASP reviewed the prior 2007 NJ SASP's NJDOT BOA airport service role definitions and updated them based on NJDOT BOA's priorities. At the onset of this 2022 NJ SASP, NJDOT BOA adopted the recommendations set forth in the 2007 NJ SASP, including the addition of two new service roles, Priority General Service and Duplicative Basic Service, and the reclassification of various airports into the seven NJDOT BOA service roles.

Through discussions with NJDOT BOA and FAA, this 2022 NJ SASP reclassified Hammonton Municipal (N81) from an Advanced Service to a Priority General Service airport. See **Chapter 6 System Adequacy Analysis** for the discussion.

It is recommended that NJDOT BOA continue to monitor changes at its study airports through NJDOT BOA's annual inspections, as airport activity, available facilities, service, and equipment, and conditions change at airports. In addition, master planning efforts and ALP updates are opportunities for airports to assess changes and identify development potential at study airports. If any substantial changes occur or changes at study airports are identified, it is recommended that NJDOT BOA consider if a change in the airport's NJDOT BOA service role is appropriate.

Based on the population coverage analysis findings in **Chapter 6 System Adequacy Analysis**, it is recommended that NJDOT BOA pay specific attention to Advanced Service airports. The population coverage and drive time maps showed a large proportion of Advanced Service airport coverage coming from out-of-state airports. In order to maintain above 90 percent coverage to Advanced Service airports in New Jersey, it is advantageous for NJDOT BOA to periodically assess if any Priority General Service airports are appropriate for reclassification to Advanced Service. This is particularly important in the case that any of the out-of-state airports fulfilling Advanced Service functions close or opt to no longer provide public-use services, as there are an increasing number of public-use airports becoming private-use only airports in New Jersey and Pennsylvania.

8.7.2 FAA NPIAS Role Considerations

As detailed in **Chapter 3 Airport Roles**, the FAA classifies airports using two mechanisms: the NPIAS which classifies commercial service and general aviation airports, and the FAA ASSET 1 (*FAA General Aviation Airports: A National Asset*) and FAA ASSET 2 (*ASSET 2: In-Depth Review of the 497 Unclassified Airports*) studies, which developed new airport role classifications for general aviation airports.

The NPIAS is the tool used by the FAA to classify airports in the U.S. based on the functional role an airport plays in the NAS and impacts the airport's eligibility to apply for federal funding. Updates to the NPIAS occur every two years, since as the roles of airports change, so can their NPIAS classifications.

NPIAS airports that have taken federal grants are tied to certain grant assurances and are typically required to remain open as a public-use airport for a set duration of time, depending on the type of airport, the useful life of the facility being developed through the grant, and other conditions stipulated in the assurances. Therefore, NPIAS airports that have taken federal grants are more likely to remain open for public-use. This 2022 NJ SASP emphasizes the importance of New Jersey airports continuing to be included in the NPIAS because they contribute to the preservation of the airport system.

While NPIAS airport coverage in New Jersey is strong based on the findings in **Chapter 6 System Adequacy Analysis**, there are six study airports that are "Unclassified" in the latest 2021-2025 NPIAS Report:

- Central Jersey Regional (47N)
- Monmouth Executive (BLM)
- Princeton (39N)
- Solberg-Hunterdon (N51)
- Sussex (FWN)
- Trenton-Robbinsville (N87)

These six "Unclassified" airports were also identified as "Unclassified" in the last 2019-2023 NPIAS Report. While NPIAS coverage is sufficient, it is recommended that these airports take the necessary steps to become reclassified by meeting the NPIAS eligibility requirements, which are detailed in **Chapter 3 Airport Roles**, to ensure they stay part of the NPIAS, maintain NPIAS coverage for the New Jersey population, and contribute to preserving the airport system in New Jersey.

8.8 Conclusion

Chapter 8 Recommended System provides strategic and actionable recommendations that NJDOT BOA and New Jersey study airports should implement to ensure NJDOT BOA's goals of Airport Preservation, Safety and Security, Capacity and Efficiency, and Economic Growth are achieved. The recommendations set forth in this chapter were developed through an extensive system planning process that consisted of setting goals, objectives, and performance measures for the New Jersey airport system, collecting inventory data, analyzing sociodemographic and aviation industry trends, reviewing and evaluating airport classification systems, projecting aviation forecasts, identifying facility requirements for each airport by NJDOT BOA airport service role, and developing high-level project cost estimates.

It is strongly recommended that NJDOT BOA advocate for additional funding to be able to better meet the programmatic and policy recommendations set forth in this 2022 NJ SASP and to ensure systemwide preservation and safe and secure airport operations. These programmatic and policy recommendations are listed below.

- Identify Airport Funding Sources
- Establish Airport Operations Monitoring Process
- Promote Community Engagement
- Establish Obstruction Monitoring Process

In addition to the programmatic and policy recommendations above, it is recommended that study airports pursue projects to upgrade their facilities, services, and equipment in conjunction with their NJDOT BOA airport service role recommendations. The SASP emphasizes the importance of maintaining up-to-date airport master plans and ALPs, as these planning documents provide airport-specific analyses and serve as a basis for funding when airports apply for grants. When airports undertake such planning studies, they should utilize the facility, service, and equipment objectives recommended by their NJDOT BOA airport service role to identify and align facility needs when proposing recommended development projects during the master planning process.

It shall be reiterated that not all NPIAS airports are eligible to apply for federal funding; for those NPIAS airports that are eligible for funding, the project must first appear on an approved ALP. Although it is not a requirement for airports to have an updated airport master plan or ALP to be eligible for state funding, airports are strongly encouraged to engage in such planning activities as recommended by the facility, service, and equipment recommendations. Thus, airports should prioritize updating their planning documents to ensure future airport development is feasible and adequate for meeting current and future demand.

A key NJDOT BOA initiative, is the establishment of the Public Use Airports Task Force. As it has not started work officially, its potential recommendations for the State's airport system may help revitalize the New Jersey aviation industry.

With advancements in technology and the introduction of new transportation modes in the industry, it is also necessary to consider the New Jersey airport system as part of a greater regional multi-modal transportation system. Thus, it is recommended that metropolitan and regional planning organizations consult the SASP when developing regional transportation plans. Such plans set forth development goals and should be coordinated with the SASP's findings and recommendations if possible. Coordination and collaboration between NJDOT BOA, metropolitan and regional planning organizations, New Jersey study airports, and the Public Use Airports Task Force to adopt this study's recommendations is important to meet NJDOT BOA's goals for the New Jersey airport system.

APPENDIX A. SAMPLE AIRPORT SURVEY QUESTIONNAIRE

New Jersey State Airport System Plan
Airport Questionnaire

Airport Inventory & Data Inventory

New Jersey Department of Transportation State Airport System Plan

NJDOT Bureau of Aeronautics requests your participation in this airport inventory and data survey. This information will be used as the basis for developing the NJDOT State Airport System Plan, which is now underway. Please complete/update this form to the best of your ability.

If you have any questions about this form or the NJDOT State Airport System Plan, please contact Kevin Bleach of AECOM (kevin.bleach@aecom.com; 732-564-3322). Your attention and time is appreciated.

Airport Code:		**Airport Name:**	

Survey Completed By	
Organization Name:	
Name:	Title/Position:
Telephone:	Mobile Phone:
Fax:	Email:

General Airport Information	
Airport Ownership (Sponsor Name)	
Number of Airport Employees	
Airport Manager Name	
Airport Manager Email	
Airport Manager Telephone	
Airport Mailing Address	
Airport Hours Attended	☐ Full-Time (24 hours) ☐ Part-Time (Indicate hours):

New Jersey State Airport System Plan

Airport Questionnaire

Please confirm if the following information is correct and note any changes or comments:

Airport Classification Information		
Items	**Best Available Data**	**Changes or Comments**
NJDOT Service Role		
General Aviation or Commercial Service?		
FAA NPIAS *(P) Commercial Service - Primary; (CS) Commercial Service - Nonprimary; (R) Reliever Airport; (GA) General Aviation*		
FAA ASSET Role *(National, Regional, Local and Basic)*		
Ownership *(Public or Private)*		
Part 139 Certificated? *(Yes or No)*		
Part 139 Class *(I, II, III, IV)*		
Notes:		

Airside Facilities – Airport-Specific		
Items	**Best Available Data**	**Changes or Comments**
Number of Runways		
Current Weather Equipment *(ASOS, AWOS)*		
Clearance Delivery Communications System? *(GCO or RCO Only)*		
Remote Transmit/Receive or Unicom Communications?		
Visual NAVAIDS: Segmented Circle?		
Visual NAVAIDS: Wind Indicator/Cone? Lighted?		
Visual NAVAIDS: Airport Beacon?		
Notes:		

New Jersey State Airport System Plan
Airport Questionnaire

Please confirm if the following information is correct and note any changes or comments:

Airside Facilities – Runway X/Y			
Items	**Best Available Data**		**Changes or Comments**
Runway Designation			
Runway Length (ft)			
Runway Width (ft)			
Runway Surface Type? *(Asphalt, Concrete, Turf, Grooved, etc.)*			
Runway Lighting Type? *(LIRL, MIRL, HIRL)*			
Runway Centerline Lights?			
Part 77 Approach Surface Clear?			
Items	**Runway End X**	**Runway End Y**	**Changes or Comments**
Approach Lights Type per Runway/Runway End? *(MALSR, ODALS, ALSF-2, SSALR, etc.)*			
Touchdown Zone Lights?			
Visual Glide Slope Indicators? *(PAPI, VASI, PVASI, etc.)*			
Runway End Identifier Lights (REILs)?			
Glide Slope?			
Localizer?			
Best Approach Type?			
Best Approach Minima?			

New Jersey State Airport System Plan
Airport Questionnaire

Please confirm if the following information is correct and note any changes or comments:

Based Aircraft at Airport **Other refers to gliders and light sport aircraft*						
Year	**Single-Engine**	**Multi-Engine**	**Jet**	**Helicopter**	**Other***	**Total**
Best Available Data						
Changes or Comments						
Notes:						

Airport Operations							
Year	**Air Carrier**	**Air Taxi**	**GA (Local)**	**GA (Itinerant)**	**Military**	**Total**	**Enplanements**
Best Available Data							
Changes or Comments							
Does the Airport have air freight totals and forecasts available for use?					◻ Yes ◻ No		
On average, how many days per year are Airport operations impacted by Temporary Flight Restrictions (TFRs)?					_______ days		
Notes:							

Please fill out the following information:

Transient Aircraft at Airport						
Year	**Single-Engine**	**Multi-Engine**	**Jet**	**Helicopter**	**Other**	**Total**
Number of Transient Aircraft						
Notes:						

New Jersey State Airport System Plan

Airport Questionnaire

Please fill out the following information:

Airside Facilities – Runway X/Y		
Current Aircraft Approach Category (AAC) *(Category A, B, C, D, or E)*		
Current Airplane Design Group (ADG) *(Group I, II, III, IV, V, or VI)*		
Standby Power for Runway and Approach Lighting Systems?		
Runway Strength? *(in 1,000 lbs)*		
Item	**Runway End X**	**Runway End Y**
Part 77 Approach Surface Clear?		
20:1 Surface Clear?		
Does the RSA meet FAA Design Standards?		
Does the ROFA meet FAA Design Standard for ADG?		
What is the acreage of the RPZ owned by airport?		
RPZ: Land use compatibility meets FAA standard?		
Airside Facilities – Taxiway		
Taxiway Type? *(Full Parallel, Partial Parallel, Turnarounds, No Taxiway)*		
Taxiway Lighting Type? *(MITL)*		

New Jersey State Airport System Plan
Airport Questionnaire

Please fill out the following information:

Landside Facilities – Hangars for Based Aircraft			
Total Number of Conventional Hangars:	_____________ Conventional Hangars		
	Number of Hangar Spaces	**Area (sf)**	**Owner** *(Airport or Private?)*
Conventional Hangar 1	_____________ spaces	_____________ sf	
Conventional Hangar 2	_____________ spaces	_____________ sf	
Conventional Hangar 3	_____________ spaces	_____________ sf	
Conventional Hangar 4	_____________ spaces	_____________ sf	
Conventional Hangar 5	_____________ spaces	_____________ sf	
Total Number of T-Hangars:	_____________ T-Hangars		
	Number of T-Hangar Spaces	**Area (sf)**	**Owner** *(Airport or Private?)*
T-Hangar 1	_____________ spaces	_____________ sf	
T-Hangar 2	_____________ spaces	_____________ sf	
T-Hangar 3	_____________ spaces	_____________ sf	
T-Hangar 4	_____________ spaces	_____________ sf	
T-Hangar 5	_____________ spaces	_____________ sf	
Is there a waitlist for Conventional Hangar or T-Hangar space? ☐ Yes ☐ No			
Notes:			

New Jersey State Airport System Plan
Airport Questionnaire

Please fill out the following information:

Landside Facilities – Apron Areas and Tie-Downs		
Item	**Area (sf)**	
Commercial Apron:	____________ sf	
Transient Apron:	____________ sf	
Based Aircraft Apron:	____________ sf	
Other Apron:	____________ sf	
	Number of Paved Tie-Downs	**Number of Unpaved Tie-Downs**
Transient Aircraft	____________ spaces	____________ spaces
Based Aircraft	____________ spaces	____________ spaces
Notes:		

Landside Facilities – Terminal	
Does the Airport have a terminal building?	□ Yes □ No
Approximate total area of the terminal building (sf):	_________________ sf
For what purpose is the terminal building used?	□ General Aviation □ Commercial Service □ Scheduled Air Charter □ Other (Please specify): _________________
What is the condition of the terminal?	□ Excellent □ Poor □ Good □ Failing □ Fair
Date(s) the terminal was constructed/rehabilitated/expanded?	_________________ _________________
Does the terminal building have the following facilities?	□ Public-Use Restrooms □ Public-Use Telephone □ Restaurant/Food Services □ Food/Beverage/Vending Machine □ Pilot Lounge □ Conference Room □ Flight Planning Room □ Public-Use Wi-Fi
Notes:	

New Jersey State Airport System Plan

Airport Questionnaire

Please fill out the following information:

Landside Facilities – Airfield Maintenance Building	
Does the Airport have an Airfield Maintenance Building?	☐ Yes ☐ No
Notes:	

Landside Facilities – Other Buildings	
Does the Airport have other aviation-related buildings?	☐ Yes ☐ No
If YES, what are they and what is their estimated square footage of the building?	Building 1: ________________ sf Building 2: ________________ sf
Notes:	

Landside Facilities – Automobile Parking	
How many paved automobile parking spaces are available for public-use?	____________ spaces
How many paved automobile parking spaces are available for employee-use?	____________ spaces
Does the Airport have sufficient paved automobile parking for all operational functions?	☐ Yes ☐ No
If NO, please explain:	
Notes:	

New Jersey State Airport System Plan

Airport Questionnaire

Please fill out the following information:

Airport Fueling Infrastructure & Services			
What types of fuel does the Airport provided?	□ AvGas □ JetA □ Other (Please specify): ________________		
	AvGas	**JetA**	**Other: ____________**
Who owns, operates, and controls the fuel farm(s) for this type of fuel?	□ Airport □ FBO(s) □ Other (Please specify): __________________	□ Airport □ FBO(s) □ Other (Please specify): __________________	□ Airport □ FBO(s) □ Other (Please specify): __________________
Does the Airport offer self fueling for this type of fuel?	□ Yes □ No	□ Yes □ No	□ Yes □ No
When are fueling services offered?	□ 24 Hours □ Part-Time □ After Hours □ Unattended/On-Call	□ 24 Hours □ Part-Time □ After Hours □ Unattended/On-Call	□ 24 Hours □ Part-Time □ After Hours □ Unattended/On-Call

New Jersey State Airport System Plan
Airport Questionnaire

Airport Services & Accommodations				
How many fixed base operators (FBOs) are at the Airport?	□ Yes □ No □ Multiple (# of FBOs: ______________)			
	Airport Sponsor	FBO #1: ________	FBO #2: ________	FBO #3: ________
Charter Service	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No
Catering Services	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No
On-Site Rental Car Facilities	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No
Courtesy Vehicle/Crew Car	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No
Pilot Training	□ Yes □ No □ Full-Time □ Part-Time	□ Yes □ No □ Full-Time □ Part-Time	□ Yes □ No □ Full-Time □ Part-Time	□ Yes □ No □ Full-Time □ Part-Time
Airframe Repairs	□ Turbine □ Piston □ None	□ Turbine □ Piston □ None	□ Turbine □ Piston □ None	□ Turbine □ Piston □ None
Power Plant Repairs	□ Turbine □ Piston □ None	□ Turbine □ Piston □ None	□ Turbine □ Piston □ None	□ Turbine □ Piston □ None
Aircraft Maintenance If YES, please specify:	□ Yes □ No □ On-site Major Aircraft Maintenance □ On-site Minor Aircraft Maintenance □ Other (Specify): _______________	□ Yes □ No □ On-site Major Aircraft Maintenance □ On-site Minor Aircraft Maintenance □ Other (Specify): _______________	□ Yes □ No □ On-site Major Aircraft Maintenance □ On-site Minor Aircraft Maintenance □ Other (Specify): _______________	□ Yes □ No □ On-site Major Aircraft Maintenance □ On-site Minor Aircraft Maintenance □ Other (Specify): _______________
FAA Part 145 Repair Station	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No
Aircraft Rental Service	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No
Aircraft Sales	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No
Aircraft Deicing	□ Chemical □ Radiant/Hangar □ None	□ Chemical □ Radiant/Hangar □ None	□ Chemical □ Radiant/Hangar □ None	□ Chemical □ Radiant/Hangar □ None
Ground Transportation Access	□ Public Bus □ Light Rail □ Train □ Taxi	□ Other (Specify): ___________________ □ Other (Specify): ___________________		
Notes:				

New Jersey State Airport System Plan

Airport Questionnaire

Please fill out the following information:

Aviation Outreach	
Is the Airport a member of the local Chamber of Commerce?	□ Yes □ No
Does the Airport actively coordinate with the local economic development agency?	□ Yes □ No
Does the Airport have any relationships with educational institutions?	□ Yes □ No
Does the Airport regularly distribute newsletters, bulletins, or brochures to the public?	□ Yes □ No
Does the Airport have a marketing strategy/plan in place?	□ Yes □ No
Does the Airport have an active community outreach program? (including residential, governmental, pilot, and business communities)	□ Yes □ No
Does the Airport engage with any aviation community group(s)?	□ Yes □ No
If YES, please list the group(s) and describe their level of engagement:	________________________________ ________________________________ ________________________________ ________________________________ ________________________________
Does the Airport host annual air shows, fly-ins, 5K runs or other public community events?	□ Yes □ No
Notes:	

Security	
Does the airport have an intact perimeter fence?	__________ ft tall
Does the airport have a card reader security gate system	□ Yes □ No
Does the airport have a CCTV security camera system	□ Yes □ No

Existing Airport Plans			
Plan/Study/Policy			**Year Published**
Airport Master Plan available for review?	□ Yes	□ No	
Airport Layout Plan (ALP)	□ Yes	□ No	
Obstacle Mitigation Plan	□ Yes	□ No	
Pavement Management Plan	□ Yes	□ No	

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New Jersey State Airport System Plan

Airport Questionnaire

Please fill out the following information:

Airport Development				
Is the municipality that the Airport is in compliant with the Air Safety and Zoning Act of 1983?	□ Yes □ No			
What is the estimated level of Airport investment (in $US) in the last 10 years?	$___________________			
Does the Airport have a CIP data sheet for review?	□ Yes □ No			
What factors may limit or restrict the future growth of your Airport? (Specifically identify them): Physical Factors/Limitations □ Yes □ No (Explain below) Environmental Factors □ Yes □ No (Explain below) Community Relations: □ Yes □ No (Explain below) Financial Shortfalls: □ Yes □ No (Explain below)				
What are your top 3 major projects?	Shown on ALP?		Included in CIP?	
1.	□ Yes	□ No	□ Yes	□ No
2.	□ Yes	□ No	□ Yes	□ No
3.	□ Yes	□ No	□ Yes	□ No
Has the Airport conducted an environmental assessment in the last 5 years?	□ Yes	□ No		
If YES, are you willing to share a copy?	□ Yes	□ No		
Does the Airport have plans to improve its instrument approaches? (Please explain and specify by runway): Classify approaches as: (P) Precision; (APV) Approach with Vertical Guidance; (NP) Non-Precision; (C) Circling; and, (V) Visual				

New Jersey State Airport System Plan

Airport Questionnaire

Please fill out the following information:

Airport Utilities				
Type	**On-Airport**	**Near Airport (within 1 mile)**	**Not Available**	**Explanation (include provider name)**
Electricity	□	□	□	
Water	□	□	□	
Sewer	□	□	□	
Other: ___________________	□	□	□	
Other: ___________________	□	□	□	
Is there adequate cell phone coverage?	□	□	□	
Notes:				

Maintenance	
What year was the last Pavement Condition Index (PCI) report conducted?	
Are you willing to share a copy?	□ Yes □ No
Indicate the date of the last time each runway was seal coated?	Runway X/Y: ____________
Indicate the date of the last time each runway had pavement milled and replaced?	Runway X/Y: ____________
Indicate the percentage of runway pavement with PCI ≥ 70	Runway X/Y: ____________%
Indicate the percentage of taxiway pavement with PCI ≥ 70	_________%
Indicate the percentage of apron pavement with PCI ≥ 70	_________%
What is the overall condition of the paved automobile parking spaces? *(Excellent, Good, Fair, Poor, Failing)*	
Notes:	

APPENDIX B. DRIVE TIME ANALYSIS METHODOLOGY

Overview

The 2022 New Jersey State Airport System Plan Update identifies and evaluates New Jersey's airport needs over a 20-year timeframe. The New Jersey State Department of Transportation (NJDOT) Bureau of Aeronautics (BOA) classifies the 42 public-use airports (study airports) in New Jersey into seven service roles: Scheduled Service, Advanced Service, Priority General Service, General Service, Basic Service, Duplicative Basic Service, and SPB Specialty. NJDOT BOA considers the operations and facilities at each study airport, as well as New Jersey's airport system as a whole, when determining airport service roles.

The drive time analyses were used to identify service areas for all study airports.

Data Sources:

- New Jersey Department of Transportation
    - Airports shapefile (https://www.state.nj.us/transportation/gis/map.shtm)
- ESRI Business Analyst
    - North America Businesses shapefile – clipped to New Jersey state boundaries
    - North America Streets shapefile
- NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS)
    - Census tract boundaries shapefile (2010 Census, 2012 release) (https://njgin.state.nj.us/NJ_NJGINExplorer/ShowMetadata.jsp?docId={84366762-B6D7-49B2-A6DA-4B463CD14FB5})
- U.S. Census Bureau
    - 2017 Cartographic state boundary shapefiles (https://www.census.gov/geo/maps-data/data/cbf/cbf_state.html)
    - 2017 American Community Survey 5-year estimates, Population by census tract

Methodology

- The drive time analysis used average travel times and driving distances towards the airport as its main assumptions.
- Service areas were calculated based on a 30-minute driving time.
- Using the sources above, New Jersey's population, business, and land area data were used to calculate what percentage of each the service area covered.

APPENDIX C. INVENTORY CHAPTER DATA TABLES

Appendix C Table 1: Airport Ownership
Appendix C Table 2: Airport Plan Information
Appendix C Table 3: Airside Facilities
Appendix C Table 4: Airport Navigational Aids and Facilities
Appendix C Table 5: Airport Lighting Systems
Appendix C Table 6: Runway Approach Characteristics
Appendix C Table 7: Aircraft Parking
Appendix C Table 8: Based Aircraft
Appendix C Table 9: Airport Activity Statistics
Appendix C Table 10: Airport Services
Appendix C Table 11: Community Engagement
Appendix C Table 12: Land Use
Appendix C Table 13: Security and Utilities
Appendix C Table 14: Airport Access

Appendix C Table 1. Airport Ownership

Code	Airport Name	Airport Sponsor	Ownership	FAA NPIAS/ASSET Role	2007 NJDOT BOA Classification
12N	Aeroflex Andover Airport	NJ Forest Fire Service	Public	Non-NPIAS	Basic Service
N85	Alexandria Field	Alexandria Airpark, LLC	Private	Non-NPIAS	General Service
ACY	Atlantic City International Airport	South Jersey Transportation Authority	Public	Small Hub	Scheduled Service
1N7	Blairstown Airport	J.D. AIR, Inc.	Private	Non-NPIAS	General Service
00N	Bucks Airport	White and Blue, LLC	Private	Non-NPIAS	Basic Service
19N	Camden County Airport	Albion Airport, Inc.	Private	Non-NPIAS	Basic Service
WWD	Cape May County Airport	Delaware River Bay Authority	Public	Regional	Advanced Service
47N	Central Jersey Regional Airport	Central Jersey Airport Services, Inc.	Private	Unclassified	Priority General Service
17N	Cross Keys Airport	Cross Keys Airport, Inc.	Private	Non-NPIAS	Priority General Service
31E	Eagles Nest Airport	Eagles Nest Airport, LLC	Private	Non-NPIAS	General Service
CDW	Essex County Airport	Essex County Improvement Authority	Public	Regional	Advanced Service
N14	Flying W Airport	Cave Holdings - Flying W, LLC	Private	Non-NPIAS	General Service
4N1	Greenwood Lake Airport	New Jersey Department of Transportation	Public	Local	General Service
N05	Hackettstown Airport	Donald Schwanda	Private	Non-NPIAS	Basic Service
N81	Hammonton Municipal Airport	Town of Hammonton	Public	Local	Advanced Service
29N	Kroelinger Airport	BDGS. Inc.	Private	Non-NPIAS	Duplicative Basic Service
N12	Lakewood Airport	Lakewood Township	Public	Local	General Service
N07	Lincoln Park Airport	Peter Derosa	Private	Regional	Priority General Service
LDJ	Linden Airport	City of Linden	Public	Local	Priority General Service
2N7	Little Ferry Seaplane Base	Anastasios G. Georgas	Private	Non-NPIAS	SPB Specialty
MIV	Millville Municipal Airport	Delaware River Bay Authority - City of Millville	Public	Local	Advanced Service
BLM	Monmouth Executive Airport	Wall Aviation	Private	Unclassified	Advanced Service
MMU	Morristown Municipal Airport	Town of Morristown	Public	National	Advanced Service
EWR	Newark Liberty International Airport	Port Authority of New York and New Jersey	Public	Large Hub	Scheduled Service
26N	Ocean City Municipal Airport	City of Ocean City	Public	Basic	Basic Service
MJX	Ocean County Airport	County of Ocean	Public	Regional	Advanced Service
3N6	Old Bridge Airport	Madison Inc.	Private	Non-NPIAS	General Service
39N	Princeton Airport	Princeton Aero Corp	Private	Unclassified	General Service
2N6	Red Wing Airport	Central Jersey R.W. Inc	Private	Non-NPIAS	Duplicative Basic Service
N40	Sky Manor Airport	Sky Manor Airport Partners, LLC	Private	Non-NPIAS	General Service
N51	Solberg-Hunterdon Airport	Solberg Aviation Company	Private	Unclassified	Priority General Service
SMQ	Somerset Airport	Somerset Air Service, Inc.	Private	Regional	General Service
VAY	South Jersey Regional Airport	New Jersey Department of Transportation	Public	Regional	Priority General Service
C01	Southern Cross Airport	Edward A. Carter	Private	Non-NPIAS	Duplicative Basic Service
7N7	Spitfire Aerodrome	Oldmans Airport, LLC	Private	Non-NPIAS	General Service
FWN	Sussex Airport	Sussex Aviation, LLC	Private	Unclassified	General Service
TEB	Teterboro Airport	Port Authority of New York and New Jersey	Public	National	Advanced Service
TTN	Trenton Mercer Airport	County of Mercer	Public	Non-hub	Scheduled Service
N87	Trenton-Robbinsville Airport	TRA, Inc.	Private	Unclassified	General Service
13N	Trinca Airport	Green Township	Public	Non-NPIAS	Duplicative Basic Service
28N	Vineland-Downstown Airport	DOWNSTOWN ARPT. INC.	Private	Non-NPIAS	Basic Service
OBI	Woodbine Municipal Airport	Borough of Woodbine	Public	Local	General Service

Notes: FAA NPIAS role is indicated for commercial service airports, and FAA ASSET role is indicated for general aviation airports. Non-NPIAS airports are noted.
Sources: FAA Form 5010, Airport Master Record. FAA 2019-2023 National Plan of Integrated Airport Systems (NPIAS) Report. FAA ASSET I Report. NJDOT BOA.

Appendix C Table 2. Airport Plan Information

Code	Airport Name	Airport Master Plan	Airport Layout Plan	Economic Impact Study	Level of Airport Investment ($US)	Planned Future Development Projects
12N	Aeroflex Andover Airport	2002	2005	2016	0	-
N85	Alexandria Field	1997	1997	2016	1,500,000	✓
ACY	Atlantic City International Airport	2010	2018	2016	47,110,852	✓
1N7	Blairstown Airport	2000	2000*	2016	Unknown	Unknown
00N	Bucks Airport	None	None	2003	0	-
19N	Camden County Airport	2002	2004	2016	2,500,000	✓
WWD	Cape May County Airport	2002	2018	2016	19,000,000	✓
47N	Central Jersey Regional Airport	2001	2001	2016	5,000,000	✓
17N	Cross Keys Airport	2019	2019	2016	75,000	✓
31E	Eagles Nest Airport	2002	2013*	2016	7,000,000	✓
CDW	Essex County Airport	1990	2017*	2016	7,645,822	✓
N14	Flying W Airport	1997	1997	2016	0	-
4N1	Greenwood Lake Airport	2019	2019	2016	3,342,137	✓
N05	Hackettstown Airport	None	None	2016	Unknown	Unknown
N81	Hammonton Municipal Airport	2019	2018	2016	4,000,000	✓
29N	Kroelinger Airport	None	None	2003	0	-
N12	Lakewood Airport	2006	2017*	2016	2,442,682	✓
N07	Lincoln Park Airport	2009	2009	2016	5,000,000	✓
LDJ	Linden Airport	2014	2018*	2016	2,000,000	✓
2N7	Little Ferry Seaplane Base	None	None	2003	Unknown	Unknown
MIV	Millville Municipal Airport	1997	2014	2016	24,000,000	✓
BLM	Monmouth Executive Airport	None	2001	2016	4,491,847	-
MMU	Morristown Municipal Airport	2010	2010	2016	23,000,000	✓
EWR	Newark Liberty International Airport	None	2016	2016	10,000,000,000	✓
26N	Ocean City Municipal Airport	1985	2012	2016	3,500,000	✓
MJX	Ocean County Airport	1992	2017*	2016	22,950,127	✓
3N6	Old Bridge Airport	2002	2004	2016	50,000	✓
39N	Princeton Airport	1996	1996	2016	1,200,000	✓
2N6	Red Wing Airport	None	None	2003	90,000	-
N40	Sky Manor Airport	1998	1997	2016	Unknown	Unknown
N51	Solberg-Hunterdon Airport	1999	1997	2016	684,290	✓

Appendix C Table 2. Airport Plan Information

Code	Airport Name	Airport Master Plan	Airport Layout Plan	Economic Impact Study	Level of Airport Investment ($US)	Planned Future Development Projects
SMQ	Somerset Airport	2015	2015	2016	4,250,000	✓
VAY	South Jersey Regional Airport	2015	2015	2016	2,321,428	✓
C01	Southern Cross Airport	None	None	2003	0	-
7N7	Spitfire Aerodrome	None	2010*	2016	Unknown	Unknown
FWN	Sussex Airport	1997	2001	2016	626,141	-
TEB	Teterboro Airport	None	2016	2016	108,361,000	✓
TTN	Trenton Mercer Airport	2018	2018	2016	68,129,133	✓
N87	Trenton-Robbinsville Airport	2000	2000	2016	0	-
13N	Trinca Airport	1996	2010	2003	1,150	-
28N	Vineland-Downstown Airport	None	2004	2016	250,000	✓
OBI	Woodbine Municipal Airport	1983	2010	2016	4,985,279	✓

Notes: (*) indicates Pen and Ink Change.
(Unknown) indicates that the airport did not provide information on Airport Survey Questionnaire and/or the information is not available through FAA or NJDOT BOA sources.
Airport Investment refers to the dollar amount invested in the airport over the last 10 years.
For planned future development projects, a (✓) indicates that the airport has at least one project planned for development; (-) indicates that an airport does not.

Sources: FAA Form 5010, Airport Master Record. NJDOT BOA. Airport Survey Questionnaires.

Appendix C Table 3. Airside Facilities

Code	Airport	Runway Designation	Primary Runway	Airport Reference Code	Runway Length (ft)	Runway Width (ft)	Airfield Capacity Estimates	Runway Surface Type	Runway Strength (1,000 lbs)	PCI Rating	Taxiway Type
12N	Aeroflex Andover Airport	03/21	✓	A-I Small	1981	50	15%	Asphalt	12.5S	75-80	Full Parallel
N85	Alexandria Field	08/26	✓	B-I Small	2550	60	10%	Asphalt	Unknown	60-65	Full Parallel
		13/31	-	-	1804	100		Asphalt/Turf	Unknown	-	None
ACY	Atlantic City International Airport	04/22	-	-	6144	150	20%	Asphalt/Con-crete-Grooved	75.0S / 175.0D	-	Full Parallel
		13/31	✓	C-IV	10000	150		Asphalt-Grooved	85.0S / 120.0D	80-85	Full Parallel
1N7	Blairstown Airport	07/25	✓	A-I Small	3152	70	14%	Asphalt	12.5S	60-65	Full Parallel
00N	Bucks Airport	18/36	✓	A-I Small	1900	150	4%	Turf	Not Applicable	Not Applicable	None
19N	Camden County Airport	05/23	✓	B-I Small	3094	45	10%	Asphalt	12.5S	65-70	Full Parallel
WWD	Cape May County Airport	01/19	✓	B-II	5252	150	12%	Asphalt	45.0S / 75.0S	85-90	Full Parallel
		10/28	-	-	4998	150		Asphalt	45.0S / 75.0S	-	Full Parallel
47N	Central Jersey Regional Airport	07/25	✓	B-I Small	3507	50	10%	Asphalt	30.0S	60-65	Partial Parallel
17N	Cross Keys Airport	09/27	✓	B-II	3500	50	11%	Asphalt	13.0S	80-85	Full Parallel
31E	Eagles Nest Airport	14/32	✓	B-I Small	3670	60	13%	Asphalt	3.64S	55-60	Full Parallel
CDW	Essex County Airport	04/22	✓	B-II	4552	80	29%	Asphalt	30.0S	40-45	Full Parallel
		10/28	-	-	3719	75		Asphalt	12.5S	-	Full Parallel
N14	Flying W Airport	01/19	✓	B-I Small	3496	75	12%	Asphalt	Unknown	50-55	Full Parallel
4N1	Greenwood Lake Airport	06/24	✓	B-I Small	3471	60	5%	Asphalt	12.5S	65-70	Partial Parallel
N05	Hackettstown Airport	05/23	✓	B-I Small	2200	50	5%	Asphalt	5.0S	40-45	None
N81	Hammonton Municipal Airport	03/21	✓	C-II	3601	75	3%	Asphalt	12.0S	85-90	Full Parallel
29N	Kroelinger Airport	10/28	✓	A-I Small	2086	190	1%	Turf	Not Applicable	Not Applicable	None
N12	Lakewood Airport	06/24	✓	B-I Small	2987	60	7%	Asphalt	25.0S	70-75	Full Parallel
N07	Lincoln Park Airport	01/19	✓	A-I Small	2942	40	12%	Asphalt	12.5S	55-60	Partial Parallel
LDJ	Linden Airport	09/27	✓	A-I Small	4140	100	11%	Asphalt	31.5S / 42.0D	55-60	Full Parallel
2N7	Little Ferry Seaplane Base	01/19	✓	None	5500	150	0%	Water	Not Applicable	Not Applicable	None
MIV	Millville Municipal Airport	10/28	✓	B-II	6003	150	33%	Asphalt	40.0S / 65.0D	85-90	Full Parallel
		14/32	-	-	5058	150		Concrete	40.0S / 65.0D	-	Full Parallel
BLM	Monmouth Executive Airport	03/21	-	-	3508	50	19%	Asphalt	Unknown	-	Full Parallel
		14/32	✓	C-II	7345	85		Asphalt	Unknown	55-60	Partial Parallel

Appendix C Table 3. Airside Facilities

Code	Airport	Runway Designation	Primary Runway	Airport Reference Code	Runway Length (ft)	Runway Width (ft)	Airfield Capacity Estimates	Runway Surface Type	Runway Strength (1,000 lbs)	PCI Rating	Taxiway Type
MMU	Morristown Municipal Airport	05/23	✓	C-III	5998	150	32%	Asphalt-Grooved	30.0S / 80.0D	50-55	Partial Parallel
		13/31		-	3997	150		Asphalt-Grooved	30.0S	-	Full Parallel
EWR	Newark Liberty International Airport	04L/22R	-	-	11000	150	128%	Asphalt/Concrete-Grooved	Runway Strength	-	Full Parallel
		04R/22L	✓	D-V	10000	150		Asphalt-Grooved	210.0D	80-85	Full Parallel
		11/29	-	-	6726	150		Asphalt-Grooved	210.0D	-	Full Parallel
26N	Ocean City Municipal Airport	06/24	✓	B-I Small	2972	60	9%	Asphalt	12.5S	75-80	Full Parallel
MJX	Ocean County Airport	06/24	✓	C-II	5950	100	14%	Asphalt	100.0S / 176.0D	55-60	Full Parallel
		14/32	-	-	3599	75		Asphalt	94.0S / 150.0D	-	Full Parallel
3N6	Old Bridge Airport	06/24	✓	B-I Small	3594	50	11%	Asphalt	12.5S	65-70	Full Parallel
39N	Princeton Airport	10/28	✓	B-I	3499	75	12%	Asphalt	15.0S	65-70	Full Parallel
2N6	Red Wing Airport	06/24	✓	A-I Small	1830	50	1%	Turf	Not Applicable	Not Applicable	None
		15/29	-	-	1590	70		Turf	Not Applicable	-	None
N40	Sky Manor Airport	07/25	✓	B-I Small	2900	50	12%	Asphalt	Unknown	65-70	Full Parallel
N51	Solberg-Hunterdon Airport	04/22	✓	B-I Small	5598	50	7%	Asphalt/Turf	12.5S	50-55	Partial Parallel
		10/28	-	-	2010	100		Turf	Not Applicable	-	None
		13/31	-	-	3444	200		Turf	Not Applicable	-	None
SMQ	Somerset Airport	08/26	-	-	1923	100	12%	Turf	Not Applicable	-	None
		12/30	✓	B-I Small	2739	65		Asphalt	12.5S	55-60	Full Parallel
		17/35	-	-	1700	150		Turf	Not Applicable	-	None
VAY	South Jersey Regional Airport	08/26	✓	B-I	3881	50	10%	Asphalt	30.0S	60-65	Partial Parallel
C01	Southern Cross Airport	09/27	✓	A-I Small	2400	80	2%	Turf	Not Applicable	Not Applicable	None
7N7	Spitfire Aerodrome	07/25	✓	B-I Small	2419	60	5%	Asphalt	12.5S	65-70	Full Parallel
FWN	Sussex Airport	03/21	✓	B-I Small	3499	75	4%	Asphalt	Unknown	55-60	Full Parallel
TEB	Teterboro Airport	01/19	-	-	7000	150	78%	Asphalt-Grooved	50.0S / 100.0D	-	Full Parallel
		06/24	✓	C-III	6013	150		Asphalt-Grooved	50.0S / 100.0D	75-80	Full Parallel
TTN	Trenton Mercer Airport	06/24	✓	C-III	6006	150	52%	Asphalt-Grooved	120.0S / 180.0S	75-80	Partial Parallel

Appendix C Table 3. Airside Facilities

Code	Airport	Runway Designation	Primary Runway	Airport Reference Code	Runway Length (ft)	Runway Width (ft)	Airfield Capacity Estimates	Runway Surface Type	Runway Strength (1,000 lbs)	PCI Rating	Taxiway Type
		16/34	-	-	4800	150		Asphalt-Grooved	120.0S / 180.0S	-	Partial Parallel
N87	Trenton-Robbinsville Airport	11/29	✓	B-I Small	4275	75	5%	Asphalt	25.0S	50-55	Full Parallel
13N	Trinca Airport	06/24	✓	A-I Small	1924	135	1%	Turf	Not Applicable	Not Applicable	None
28N	Vineland-Downtown Airport	02/20	✓	B-I Small	2251	100	5%	Turf	Not Applicable	Not Applicable	None
		12/30	-	-	1800	100		Turf	Not Applicable	Not Applicable	None
OBI	Woodbine Municipal Airport	01/19	✓	B-II	3304	75	5%	Asphalt	45.0S / 60.0D	80-85	None
		13/31	-	-	3074	75		Asphalt	35.0S / 50.0D	-	Full Parallel

Notes: Airport reference code and pavement condition index (PCI) ratings are provided for primary runways; (-) indicates a non-primary runway.
Runway strength is indicated in 1,000 lbs and is denoted by (S) for single-wheel and (D) for dual-wheel.
Runway strength and PCI rating are not applicable to turf runways.
(Unknown) indicates that the airport did not provide information on Airport Survey Questionnaire and/or the information is not available through FAA sources.

Sources: FAA Form 5010, Airport Master Record. NJDOT BOA. Airport Survey Questionnaires.

Appendix C Table 4. Airport Navigational Aids and Facilities

Code	Airport Name	Runway End	Rotating Beacon	Wind Indicator	Segmented Circle	WRS	ATCT	REIL	TDZL	VGSI	
										PAPI	VASI
12N	Aeroflex Andover Airport	03	✓	Lighted	✓	-	-	-	-	-	-
		21						-	-	-	-
N85	Alexandria Field	08	✓	Lighted	-	-	-	-	-	✓	-
		26						-	-	✓	-
		13						-	-	-	-
		31						-	-	-	-
ACY	Atlantic City International Airport	04	✓	Lighted	-	ASOS	✓	-	-	✓	-
		22						-	-	-	✓
		13						-	✓	✓	-
		31						✓	-	✓	-
1N7	Blairstown Airport	07	✓	Lighted	-	-	-	-	-	-	-
		25						-	-	-	-
00N	Bucks Airport	18	✓	Not Lighted	-	-	-	-	-	-	-
		36						-	-	-	-
19N	Camden County Airport	05	✓	Lighted	-	-	-	✓	-	-	-
		23						✓	-	-	-
WWD	Cape May County Airport	01	✓	Lighted	-	AWOS	-	-	-	✓	-
		19						-	-	✓	-
		10						-	-	✓	-
		28						-	-	✓	-
47N	Central Jersey Regional Airport	07	✓	Lighted	-	-	-	-	-	✓	-
		25						-	-	✓	-
17N	Cross Keys Airport	09	✓	Lighted	✓	-	-	-	-	-	-
		27						-	-	-	-
31E	Eagles Nest Airport	14	✓	Not Lighted	-	-	-	-	-	✓	-
		32						-	-	✓	-
CDW	Essex County Airport	04	✓	Lighted	-	ASOS	✓	-	-	-	-
		22						✓	-	✓	-
		10						-	-	-	-
		28						-	-	-	-
N14	Flying W Airport	01	✓	Lighted	✓	-	-	✓	-	✓	-
		19						✓	-	✓	-
4N1	Greenwood Lake Airport	06	✓	Lighted	-	-	-	-	-	-	-
		24						-	-	✓	-
N05	Hackettstown Airport	05	-	Not Lighted	-	-	-	-	-	-	-
		23						-	-	-	-
N81	Hammonton Municipal Airport	03	✓	Lighted	-	AWOS	-	✓	-	✓	-
		21						✓	-	✓	-
29N	Kroelinger Airport	10	-	Not Lighted	-	-	-	-	-	-	-
		28						-	-	-	-
N12	Lakewood Airport	06	✓	Lighted	-	-	-	-	-	✓	-
		24						-	-	✓	-
N07	Lincoln Park Airport	01	✓	Not Lighted	-	-	-	-	-	-	-
		19						-	-	✓	-
LDJ	Linden Airport	09	✓	Lighted	✓	AWOS	-	✓	-	-	✓

Appendix C Table 4. Airport Navigational Aids and Facilities

Code	Airport Name	Runway End	Rotating Beacon	Wind Indicator	Segmented Circle	WRS	ATCT	REIL	TDZL	VGSI	
										PAPI	VASI
		27						✓	-	-	✓
2N7	Little Ferry Seaplane Base	01	-	Not Applicable	-	-	-	-	-	-	-
		19						-	-	-	-
MIV	Millville Municipal Airport	10	✓	Lighted	-	ASOS	-	-	-	✓	-
		28						-	-	✓	-
		14						-	-	✓	-
		32						-	-	✓	-
BLM	Monmouth Executive Airport	03	✓	Lighted	-	AWOS	-	-	-	-	-
		21						-	-	-	-
		14						✓	-	-	-
		32						-	-	-	-
MMU	Morristown Municipal Airport	05	✓	Lighted	✓	AWOS	✓	✓	-	-	-
		23						-	-	-	-
		13						-	-	-	-
		31						✓	-	✓	-
EWR	Newark Liberty International Airport	04L	✓	Lighted	-	ASOS	✓	-	✓	✓	-
		22R						✓	✓	✓	-
		04R						-	✓	✓	-
		22L						-	✓	✓	-
		11						✓	✓	-	✓
		29						✓	✓	✓	-
26N	Ocean City Municipal Airport	06	-	Lighted	✓	AWOS	-	-	-	✓	-
		24						-	-	✓	-
MJX	Ocean County Airport	06	✓	Lighted	✓	AWOS	-	-	-	✓	-
		24						✓	-	✓	-
		14						✓	-	✓	-
		32						✓	-	✓	-
3N6	Old Bridge Airport	06	✓	Lighted	✓	-	-	✓	-	✓	-
		24						✓	-	✓	-
39N	Princeton Airport	10	✓	Lighted	-	-	-	✓	-	✓	-
		28						-	-	✓	-
2N6	Red Wing Airport	06	-	Not Lighted	-	-	-	-	-	-	-
		24						-	-	-	-
		15						-	-	-	-
		29						-	-	-	-
N40	Sky Manor Airport	07	-	Not Lighted	-	-	-	✓	-	✓	-
		25						✓	-	✓	-
N51	Solberg-Hunterdon Airport	04	-	Not Lighted	-	-	-	-	-	-	-
		22						-	-	-	-
		10						-	-	-	-
		28						-	-	-	-
		13						-	-	-	-
		31						-	-	-	-
SMQ	Somerset Airport	08	✓	Lighted	-	ASOS	-	-	-	-	-
		26						-	-	-	-

Appendix C Table 4. Airport Navigational Aids and Facilities

Code	Airport Name	Runway End	Rotating Beacon	Wind Indicator	Segmented Circle	WRS	ATCT	REIL	TDZL	VGSI	
										PAPI	VASI
		12						✓	-	✓	-
		30						✓	-	✓	-
		17						-	-	-	-
		35						-	-	-	-
VAY	South Jersey Regional Airport	08	✓	Lighted	✓	ASOS	-	✓	-	✓	-
		26						✓	-	✓	-
C01	Southern Cross Airport	09	-	Not Lighted	-	-	-	-	-	-	-
		27						-	-	-	-
7N7	Spitfire Aerodrome	07	✓	Lighted	-	-	-	✓	-	✓	-
		25						✓	-	✓	-
FWN	Sussex Airport	03	✓	Lighted	-	ASOS	-	✓	-	✓	-
		21						✓	-	-	-
TEB	Teterboro Airport	01	✓	Lighted	-	ASOS	✓	✓	-	-	✓
		19						✓	✓	✓	-
		06						✓	✓	-	-
		24						✓	-	✓	-
TTN	Trenton Mercer Airport	06	✓	Lighted	-	ASOS	✓	-	-	-	-
		24						✓	-	✓	-
		16						✓	-	✓	-
		34						✓	-	✓	-
N87	Trenton-Robbinsville Airport	11	✓	Lighted	-	-	-	-	-	✓	-
		29						-	-	✓	-
13N	Trinca Airport	06	-	Not Lighted	-	-	-	-	-	-	-
		24						-	-	-	-
28N	Vineland-Downstown Airport	02	-	Not Lighted	-	-	-	-	-	-	-
		20						-	-	-	-
		12						-	-	-	-
		30						-	-	-	-
OBI	Woodbine Municipal Airport	01	✓	Lighted	-	AWOS	-	-	-	-	-
		19						✓	-	✓	-
		13						-	-	✓	-
		31						✓	-	✓	-

Notes: A (✓) indicates that the navigational aid or facility is available; (-) indicates that it is not available.
Sources: FAA Form 5010, Airport Master Record. Airport Survey Questionnaires.

Appendix C Table 5. Airport Lighting Systems

Code	Airport Name	Runway End	Approach Lighting System	Runway Lighting	Runway Lighting Separation	Taxiway Lighting	Centerline Lighting
12N	Aeroflex Andover Airport	03	-	MIRL	Standard	MITL	-
		21	-				
N85	Alexandria Field	08	-	MIRL	Standard	MITL	-
		26	-				
		13	-	-	Not Applicable	Not Applicable	-
		31	-				
ACY	Atlantic City International Airport	04	-	HIRL	Standard	MITL	-
		22	-				
		13	MALSR	HIRL	Standard	MITL	✓
		31	-				
1N7	Blairstown Airport	07	-	MIRL	Standard	-	-
		25	-				
00N	Bucks Airport	18	-	LIRL	Standard	Not Applicable	-
		36	-				
19N	Camden County Airport	05	-	MIRL	Standard	MITL	-
		23	-				
WWD	Cape May County Airport	01	-	HIRL	Standard	MITL	-
		19	-				
		10	-	MIRL	Standard	MITL	-
		28	-				
47N	Central Jersey Regional Airport	07	-	LIRL	Standard	-	-
		25	-				
17N	Cross Keys Airport	09	-	LIRL	Nonstandard	-	-
		27	-				
31E	Eagles Nest Airport	14	-	HIRL	Standard	MITL	-
		32	-				
CDW	Essex County Airport	04	-	HIRL	Standard	MITL	-
		22	-				
		10	-	HIRL	Standard	MITL	-
		28	-				
N14	Flying W Airport	01	-	MIRL	Standard	Unknown	-
		19	-				
4N1	Greenwood Lake Airport	06	-	MIRL	Standard	MITL	-
		24	-				
N05	Hackettstown Airport	05	-	MIRL	Standard	Not Applicable	-
		23	-				
N81	Hammonton Municipal Airport	03	-	MIRL	Standard	MITL	-
		21	-				
29N	Kroelinger Airport	10	-	-	Not Applicable	Not Applicable	-
		28	-				
N12	Lakewood Airport	06	-	MIRL	Standard	MITL	-
		24	-				
N07	Lincoln Park Airport	01	-	-	Not Applicable	-	-
		19	-				
LDJ	Linden Airport	09	-	MIRL	Standard	MITL	-
		27	-				

Appendix C Table 5. Airport Lighting Systems

Code	Airport Name	Runway End	Approach Lighting System	Runway Lighting	Runway Lighting Separation	Taxiway Lighting	Centerline Lighting
2N7	Little Ferry Seaplane Base	01	-	HIRL	Standard	Not Applicable	-
		19	-				
MIV	Millville Municipal Airport	10	MALSR	MIRL	Standard	MITL	-
		28	-				
		14	-	MIRL	Standard	MITL	-
		32	-				
BLM	Monmouth Executive Airport	03	-	-	Not Applicable	-	-
		21	-				
		14	-	MIRL	Standard	-	-
		32	-				
MMU	Morristown Municipal Airport	05	-	MIRL	Standard	HITL	-
		23	MALSR				
		13	-	-	Not Applicable	HITL	-
		31	-				
EWR	Newark Liberty International Airport	04L	MALSR	MIRL-NSTD	Standard	MITL	-
		22R	MALSR				
		04R	ALSF2	HIRL	Standard	MITL	-
		22L	ALSF2				
		11	-	MIRL	Standard	MITL	-
		29	-				
26N	Ocean City Municipal Airport	06	-	HIRL	Standard	MITL	✓
		24	-				
MJX	Ocean County Airport	06	MALSR	HIRL	Standard	MITL	✓
		24	-				
		14	-	HIRL	Standard	MITL	✓
		32	-				
3N6	Old Bridge Airport	06	-	MIRL	Standard	-	-
		24	-				
39N	Princeton Airport	10	-	HIRL	Standard	MITL	-
		28	-				
2N6	Red Wing Airport	06	-	MIRL	Standard	Not Applicable	-
		24	-				
		15	-	MIRL	Standard	Not Applicable	-
		29	-				
N40	Sky Manor Airport	07	-	MIRL	Standard	-	-
		25	-				
N51	Solberg-Hunterdon Airport	04	-	-	Not Applicable	-	-
		22	-				
		10	-	-	Not Applicable	Not Applicable	-
		28	-				
		13	-	MIRL	Standard	Not Applicable	-
		31	-				
SMQ	Somerset Airport	08	-	MIRL	Standard	Not Applicable	-
		26	-				
		12	-	-	Not Applicable	-	-
		30	-				
		17	-	-	Not Applicable	Not Applicable	-
		35	-				

Appendix C Table 5. Airport Lighting Systems

Code	Airport Name	Runway End	Approach Lighting System	Runway Lighting	Runway Lighting Separation	Taxiway Lighting	Centerline Lighting
VAY	South Jersey Regional Airport	08	-	-	Not Applicable	MITL	-
		26	-				
C01	Southern Cross Airport	09	-	MIRL	Standard	Not Applicable	-
		27	-				
7N7	Spitfire Aerodrome	07	-	-	Not Applicable	-	-
		25	-				
FWN	Sussex Airport	03	-	MIRL	Standard	-	-
		21	-				
TEB	Teterboro Airport	01	-	-	Not Applicable	MITL	-
		19	-				
	Teterboro Airport	06	MALSR	MIRL	Standard	MITL	-
		24	-				
TTN	Trenton Mercer Airport	06	MALSR	MIRL	Standard	MITL	-
		24	-				
		16	-	HIRL	Standard	MITL	✓
		34	-				
N87	Trenton-Robbinsville Airport	11	-	HIRL	Standard	MITL	✓
		29	-				
13N	Trinca Airport	06	-	HIRL	Standard	Not Applicable	-
		24	-				
28N	Vineland-Downstown Airport	02	-	HIRL	Standard	Not Applicable	-
		20	-				
		12	-	MIRL	Standard	Not Applicable	-
		30	-				
OBI	Woodbine Municipal Airport	01	-	-	Not Applicable	Not Applicable	-
		19	-				
		13	-	LIRL	Standard	MITL	-
		31	-				

Notes: A (✓) indicates that the airport lighting system or facility is available; (-) indicates that it is not available.
(NSTD) indicates that the approach lighting system or facility does not meet FAA standards.
Sources: FAA Form 5010, Airport Master Record. Airport Survey Questionnaires. FAA Digital Chart Supplements.

Appendix C Table 6. Runway Approach Characteristics

Code	Airport Name	Runway End	ILS		VOR	DME	GPS	NDB	Approach Procedure	Approach Minima	Approach Type	Night Time Approach
			Glideslope	Localizer								
12N	Aeroflex Andover Airport	03	-	-	✓	✓	✓	-	GPS LNAV	1340-1	Non-Precision	-
		21	-	-	✓	✓	-		VOR	1560-1 1/4		-
N85	Alexandria Field	08	-	-	✓	✓	✓	-	GPS	1240-1	Non-Precision	-
		26	-	-	✓	✓	✓		GPS	1240-1		-
		13	-	-	✓	✓	-		GPS	1240-1	-	N/A
		31	-	-	✓	✓	-		GPS	1240-1		N/A
ACY	Atlantic City International Airport	04	-	-	✓	✓	✓	-	GPS LPV	318-1	-	✓
		22	-	-	✓	✓	✓		GPS LNAV/VNAV	356.875		✓
		13	✓	✓	✓	✓	✓		ILS 13	275/18	Precision	✓
		31	✓	✓	✓	✓	✓		ILS 31	264/40		✓
1N7	Blairstown Airport	07	-	-	✓	✓	✓	-	GPS LNAV	1540-1	Non-Precision	-
		25	-	-	✓	✓	✓		GPS LNAV	1260-1/4		-
00N	Bucks Airport	18	-	-	-	-	-	-	N/A	N/A	Visual	N/A
		36	-	-	-	-	-		N/A	N/A		N/A
19N	Camden County Airport	05	-	-	✓	✓	✓	-	GPS LNAV	740-1	Non-Precision	-
		23	-	-	✓	✓	✓		GPS LNAV	840-1		-
WWD	Cape May County Airport	01	-	-	✓	✓	✓	-	GPS LNAV	440-1	Approach with VG	-
		19	-	✓	✓	✓	✓		GPS LPV	269-1		✓
		10	-	-	✓	✓	✓		GPS LPV	285-7/8	-	✓
		28	-	-	✓	✓	✓		GPS LNAV	580-1		✓
47N	Central Jersey Regional Airport	07	-	-	✓	✓	✓	-	GPS LNAV	580-1	Non-Precision	-
		25	-	-	✓	✓	✓		GPS LP	480-1		-
17N	Cross Keys Airport	09	-	-	✓	-	✓	-	VOR or GPS GPS 9	760-1	Non-Precision	-
		27	-	-	✓	-	-		N/A	N/A		N/A
31E	Eagles Nest Airport	14	-	-	✓	-	✓	-	GPS	680-1	Non-Precision	-
		32	-	-	✓	-	✓		GPS	680-1		-
CDW	Essex County Airport	04	-	-	✓	✓	✓	-	GPS LP	620-1	Approach with VG	-
		22	-	✓	✓	✓	✓		GPS LPV	459-1		✓
		10	-	-	✓	✓	✓		GPS LP	600-1	-	-
		28	-	-	✓	✓	-		Visual	N/A		-

Appendix C Table 6. Runway Approach Characteristics

Code	Airport Name	Runway End	ILS		VOR	DME	GPS	NDB	Approach Procedure	Approach Minima	Approach Type	Night Time Approach
			Glideslope	Localizer								
N14	Flying W Airport	01	-	-	✓	-	✓	-	GPS LNAV	420-1	Non-Precision	-
		19	-	-	✓	-	✓		GPS LNAV/VNAV	353-1		✓
4N1	Greenwood Lake Airport	06	-	-	-	-	✓	-	GPS LP	1340-1	Non-Precision	-
		24	-	-	-	-	✓		GPS LP	1560-1		-
N05	Hackettstown Airport	05	-	-	-	-	-	-	N/A	N/A	Visual	N/A
		23	-	-	-	-	-		N/A	N/A		N/A
N81	Hammonton Municipal Airport	03	-	-	✓	✓	✓	-	GPS LNAV	480-1	Non-Precision	-
		21	-	-	✓	✓	-		VOR	560-1		-
29N	Kroelinger Airport	10	-	-	-	-	✓	-	VOR or GPS	620-1	Non-Precision	-
		28	-	-	-	-	✓		VOR or GPS	620-1		-
N12	Lakewood Airport	06	-	-	✓	-	✓	-	GPS LP	380-1	Non-Precision	✓
		24	-	-	✓	-	✓		GPS LNAV	520-1		-
N07	Lincoln Park Airport	01	-	-	✓	-	✓	-	GPS LNAV	1240-1 1/4	Non-Precision	✓
		19	-	-	✓	-	✓		GPS LNAV	1280-1 1/4		✓
LDJ	Linden Airport	09	-	-	✓	✓	✓	-	GPS	620-2 1/2	Non-Precision	-
		27	-	-	✓	✓	✓		GPS	620-2 1/2		-
2N7	Little Ferry Seaplane Base	01	-	-	-	-	-	-	N/A	N/A	Visual	N/A
		19	-	-	-	-	-		N/A	N/A		N/A
MIV	Millville Municipal Airport	10	✓	✓	✓	✓	✓	✓	GPS LPV	274-1/2	Approach with VG	✓
		28	-	-	✓	✓	✓		GPS LPV	344-1		✓
		14	-	-	✓	✓	✓		GPS LPV	377-1	-	✓
		32	-	-	✓	✓	✓		GPS LPV	381-1		✓
BLM	Monmouth Executive Airport	03	-	-	✓	✓	-	-	VOR	640-1	-	✓
		21	-	-	✓	✓	-		VOR	640-1		✓
		14	-	-	✓	✓	✓		GPS LNAV	500-1	Non-Precision	✓
		32	-	-	✓	✓	✓		GPS LNAV	560-1		✓
MMU	Morristown Municipal Airport	05	-	-	✓	✓	✓	✓	GPS LPV	879-2	Precision	✓
		23	✓	✓	✓	✓	✓		ILS 23	488-1		✓
		13	-	-	✓	✓	-		N/A	N/A	-	N/A
		31	-	-	✓	✓	-		N/A	N/A		✓
EWR		04L	✓	✓	✓	✓	✓	-	CAT I CAT I	100/1200	-	✓

Appendix C Table 6. Runway Approach Characteristics

Code	Airport Name	Runway End	ILS		VOR	DME	GPS	NDB	Approach Procedure	Approach Minima	Approach Type	Night Time Approach
			Glideslope	Localizer								
	Newark Liberty International Airport	22R	✓	✓	✓	✓	✓		CAT II CAT II	210/1800		✓
		04R	✓	✓	✓	✓	✓		CAT IIIc CAT III	None	CAT II Precision	✓
		22L	✓	✓	✓	✓	✓		CAT IIIc CAT II	None		✓
		11	✓	✓	✓	✓	✓		ILS Precision	308/5000	-	✓
		29	-	-	✓	✓	✓		GPS RNAV	461/1 1/2		✓
26N	Ocean City Municipal Airport	06	-	-	✓	✓	✓	-	GPS 6	680-1	Non-Precision	✓
		24	-	-	✓	✓	-		VOR	840-1		✓
MJX	Ocean County Airport	06	✓	✓	✓	-	✓	-	ILS or LOC ILS 6	331-3/4	Precision	✓
		24	-	-	✓	-	✓		GPS LPV	331-3/4		✓
		14	-	-	✓	-	-		N/A	N/A	-	✓
		32	-	-	✓	-	-		N/A	N/A		✓
3N6	Old Bridge Airport	06	-	-	-	-	✓	-	GPS LNAV	660-1	Non-Precision	-
		24	-	-	✓	-	✓		VOR	600-1		-
39N	Princeton Airport	10	-	-	✓	✓	✓	-	GPS LNAV	640-1	Non-Precision	-
		28	-	-	✓	✓	✓		GPS LNAV	900-1		-
2N6	Red Wing Airport	06	-	-	-	-	-	-	N/A	N/A	Visual	N/A
		24	-	-	-	-	-		N/A	N/A		N/A
		15	-	-	-	-	-		N/A	N/A	-	N/A
		29	-	-	-	-	-		N/A	N/A		N/A
N40	Sky Manor Airport	07	-	-	✓	✓	✓	-	GPS LNAV	1080-1	Non-Precision	-
		25	-	-	✓	✓	✓		GPS LP	1080-1		-
N51	Solberg-Hunterdon Airport	04	-	-	✓	✓	✓	-	GPS LNAV	700-1	Non-Precision	✓
		22	-	-	✓	✓	✓		GPS LNAV	620-1		✓
		10	-	-	✓	✓	-		N/A	N/A	-	N/A
		28	-	-	✓	✓	-		N/A	N/A		N/A
		13	-	-	✓	✓	-		N/A	N/A	-	-
		31	-	-	✓	✓	-		N/A	N/A		-
SMQ	Somerset Airport	08	-	-	✓	✓	-	-	VOR 8	700-1	-	-
		26	-	-	✓	✓	-		N/A	N/A		-
		12	-	-	✓	✓	✓		GPS LNAV	560-1	Non-Precision	-
		30	-	-	✓	✓	✓		GPS LNAV	960-1		-

Appendix C Table 6. Runway Approach Characteristics

Code	Airport Name	Runway End	ILS		VOR	DME	GPS	NDB	Approach Procedure	Approach Minima	Approach Type	Night Time Approach
			Glideslope	Localizer								
		17	-	-	✓	✓	-		N/A	0	-	-
		35	-	-	✓	✓	-		N/A	0		-
VAY	South Jersey Regional Airport	08	-	-	✓	-	✓	-	GPS LP	660-1	Non-Precision	-
		26	-	-	✓	-	✓		GPS LNAV	480-1		-
C01	Southern Cross Airport	09	-	-	-	-	-	-	N/A	N/A	Visual	N/A
		27	-	-	-	-	-		N/A	N/A		N/A
7N7	Spitfire Aerodrome	07	-	-	✓	-	✓	-	GPS LNAV	540-1	Non-Precision	-
		25	-	-	✓	-	✓		GPS LNAV	580-1		-
FWN	Sussex Airport	03	-	-	✓	-	✓	-	GPS LNAV	1300-1	Non-Precision	-
		21	-	-	✓	-	-		VOR	1820-1 1/4		-
TEB	Teterboro Airport	01	-	-	✓	✓	-	✓	VOR/DME	800-1	-	✓
		19	✓	✓	✓	✓	✓		GPS LPV	218-3/4		✓
		06	✓	✓	✓	✓	✓		ILS or LOC ILS 6	206/18	Precision	✓
		24	-	-	✓	✓	-		VOR 24	540-1		-
TTN	Trenton Mercer Airport	06	✓	✓	✓	✓	✓	✓	GPS LPV	388-1/2	Approach with VG	✓
		24	-	-	✓	✓	✓		GPS LPV	580-1 1/4		✓
		16	-	-	✓	✓	✓		GPS LPV	463-3/4	-	✓
		34	-	-	✓	✓	✓		GPS LP	520-1		✓
N87	Trenton-Robbinsville Airport	11	-	-	✓	-	✓	-	GPS LNAV	640-1	Non-Precision	✓
		29	-	-	✓	-	✓		GPS LNAV	540-1		✓
13N	Trinca Airport	06	-	-	-	-	-	-	N/A	N/A	Visual	N/A
		24	-	-	-	-	-		N/A	N/A		N/A
28N	Vineland-Downstown Airport	02	-	-	-	-	-	-	N/A	N/A	Visual	N/A
		20	-	-	-	-	-		N/A	N/A		N/A
		12	-	-	-	-	-		N/A	N/A	-	N/A
		30	-	-	-	-	-		N/A	N/A		N/A

Appendix C Table 6. Runway Approach Characteristics

Code	Airport Name	Runway End	ILS		VOR	DME	GPS	NDB	Approach Procedure	Approach Minima	Approach Type	Night Time Approach
			Glideslope	Localizer								
OBI	Woodbine Municipal Airport	01	-	-	✓	✓	✓	-	GPS LNAV	440-1	Non-Precision	✓
		19	-	-	✓	✓	✓		GPS LNAV	500-1		-
		13	-	-	✓	✓	-		VOR	620-1	-	-
		31	-	-	✓	✓	-		VOR	620-1		-

Notes: A (✓) indicates that the airport lighting system, facility, or approach is available; (-) indicates that it is not available.
Approach type is only indicated for the primary runway of each airport; (-) indicates a non-primary runway.
For approach procedure, approach minima, and night time approach, (N/A) indicates that the airport does not have published terminal procedures available.
Sources: FAA Form 5010, Airport Master Record. Airport Survey Questionnaires. FAA Digital Chart Supplements.

Appendix C Table 7. Aircraft Parking

Code	Airport Name	T-Hangar Spaces (#)	Conventional Hangar (sf)	Waitlist for Hangar Space	Total Apron Size (sf)	Based Aircraft Apron Size (sf)	Total Unpaved Tiedowns (#)	Total Paved Tiedowns (#)
12N	Aeroflex Andover Airport	0	15,000	-	100,000	100,000	38	0
N85	Alexandria Field	0	0	✓	35,000	7,000	15	20
ACY	Atlantic City International Airport	0	80,000	-	1,800,000	400,000	0	0
1N7	Blairstown Airport	Unknown	Unknown	Unknown	160,000	160,000	32	3
00N	Bucks Airport	15	4,800	-	0	0	0	0
19N	Camden County Airport	5	3,750	✓	75,000	25,000	22	12
WWD	Cape May County Airport	22	57,000	-	556,800	276,000	0	30
47N	Central Jersey Regional Airport	29	5,000	✓	320,000	300,000	10	116
17N	Cross Keys Airport	12	6,000	✓	0	0	20	38
31E	Eagles Nest Airport	36	0	✓	25,000	12,500	0	20
CDW	Essex County Airport	110	72,288	✓	751,517	687,017	0	252
N14	Flying W Airport	48	11,200	✓	128,641	71,040	20	60
4N1	Greenwood Lake Airport	12	6,000	✓	105,000	105,000	6	80
N05	Hackettstown Airport	Unknown	Unknown	Unknown	95,000	95,000	42	0
N81	Hammonton Municipal Airport	40	24,600	✓	253,650	186,000	0	33
29N	Kroelinger Airport	6	0	-	0	Unknown	0	0
N12	Lakewood Airport	36	0	✓	169,000	82,000	8	44
N07	Lincoln Park Airport	51	52,378	-	101,130	26,840	8	54
LDJ	Linden Airport	48	18,800	✓	490,000	490,000	0	115
2N7	Little Ferry Seaplane Base	0	Unknown	Unknown	0	Unknown	Unknown	Unknown
MIV	Millville Municipal Airport	10	86,200	-	519,500	101,000	0	30
BLM	Monmouth Executive Airport	147	96,000	-	1,300,000	250,000	0	110
MMU	Morristown Municipal Airport	40	425,000	-	650,000	300,000	0	90
EWR	Newark Liberty International Airport	0	302,000	-	6,015,840	100,000	0	0
26N	Ocean City Municipal Airport	8	27,000	✓	5,850	5,850	0	81
MJX	Ocean County Airport	45	45,200	✓	550,000	270,000	0	65
3N6	Old Bridge Airport	90	2,400	-	80,000	80,000	0	37
39N	Princeton Airport	80	28,120	-	122,000	122,000	0	50
2N6	Red Wing Airport	0	3,200	-	50,000	43,560	14	0
N40	Sky Manor Airport	Unknown	Unknown	Unknown	46,000	46,000	10	14
N51	Solberg-Hunterdon Airport	1	18,000	✓	3,000	1,000	30	60
SMQ	Somerset Airport	57	36,400	✓	119,525	59,500	31	38

Appendix C Table 7. Aircraft Parking

Code	Airport Name	T-Hangar Spaces (#)	Conventional Hangar (sf)	Waitlist for Hangar Space	Total Apron Size (sf)	Based Aircraft Apron Size (sf)	Total Unpaved Tiedowns (#)	Total Paved Tiedowns (#)
VAY	South Jersey Regional Airport	20	48,000	-	110,000	70,000	7	78
C01	Southern Cross Airport	4	3,840	✓	28,000	28,000	4	0
7N7	Spitfire Aerodrome	Unknown	Unknown	Unknown	28,000	28,000	0	28
FWN	Sussex Airport	1	17,390	-	103,270	103,270	0	40
TEB	Teterboro Airport	0	943,620	✓	800,000	800,000	0	Unknown
TTN	Trenton Mercer Airport	52	399,000	✓	600,000	125,000	0	36
N87	Trenton-Robbinsville Airport	18	39,133	✓	200,000	200,000	0	40
13N	Trinca Airport	0	0	-	8,000	8,000	0	14
28N	Vineland-Downstown Airport	18	13,400	✓	91,600	30,000	3	10
OBI	Woodbine Municipal Airport	45	26,917	✓	120,962	7,894	0	23

Notes: (Unknown) indicates that the airport did not provide information on Airport Survey Questionnaire.
Sources: FAA Form 5010, Airport Master Record. Airport Survey Questionnaires. FAA Digital Chart Supplements.

Appendix C Table 8. Based Aircraft

Code	Airport Name	Single Engine	Multi-Engine	Jets	Helicopters	Total Based Aircraft
12N	Aeroflex Andover Airport	43	0	0	1	44
N85	Alexandria Field	80	5	0	0	85
ACY	Atlantic City International Airport	11	0	2	11	24
1N7	Blairstown Airport	39	2	0	0	41
00N	Bucks Airport	17	0	0	0	17
19N	Camden County Airport	28	1	0	0	29
WWD	Cape May County Airport	37	2	0	0	39
47N	Central Jersey Regional Airport	86	2	0	0	88
17N	Cross Keys Airport	34	0	0	0	34
31E	Eagles Nest Airport	37	1	0	2	21
CDW	Essex County Airport	172	30	7	11	220
N14	Flying W Airport	93	6	0	3	102
4N1	Greenwood Lake Airport	34	0	0	0	34
N05	Hackettstown Airport	20	1	0	0	21
N81	Hammonton Municipal Airport	10	0	0	0	10
29N	Kroelinger Airport	4	0	0	0	4
N12	Lakewood Airport	53	2	1	1	57
N07	Lincoln Park Airport	81	6	0	6	93
LDJ	Linden Airport	24	2	0	5	31
2N7	Little Ferry Seaplane Base	0	0	0	0	0
MIV	Millville Municipal Airport	37	2	1	3	43
BLM	Monmouth Executive Airport	38	5	2	1	46
MMU	Morristown Municipal Airport	76	16	68	7	167
EWR	Newark Liberty International Airport	0	0	0	10	10
26N	Ocean City Municipal Airport	12	2	0	0	14
MJX	Ocean County Airport	59	8	3	1	71
3N6	Old Bridge Airport	85	6	0	1	92
39N	Princeton Airport	30	1	0	4	35
2N6	Red Wing Airport	4	0	0	0	4
N40	Sky Manor Airport	96	3	0	3	102
N51	Solberg-Hunterdon Airport	37	4	0	1	42
SMQ	Somerset Airport	88	6	0	1	95
VAY	South Jersey Regional Airport	86	8	0	2	96
C01	Southern Cross Airport	7	0	0	0	7
7N7	Spitfire Aerodrome	18	1	0	4	23
FWN	Sussex Airport	28	4	0	0	32
TEB	Teterboro Airport	8	2	114	14	138
TTN	Trenton Mercer Airport	83	21	25	17	146
N87	Trenton-Robbinsville Airport	30	2	0	0	32
13N	Trinca Airport	3	1	0	0	4
28N	Vineland-Downstown Airport	20	0	0	1	21
OBI	Woodbine Municipal Airport	48	3	1	1	53

Notes: Based aircraft counts from FAA Form 5010 were adjusted based on site visits and other information obtained from airports.
Sources: FAA Form 5010, Airport Master Record. FAA BasedAircraft.com.

Appendix C Table 9. Airport Activity Statistics

Code	Airport Name	Air Carrier	Air Taxi	GA (Local)	GA (Itinerant)	Military	Total Annual Operations	Temporary Flight Restrictions (Days/Year)
12N	Aeroflex Andover Airport	10,831	6,728	7,112	8,950	63	33,684	8
N85	Alexandria Field	7,594	4,718	4,987	6,275	44	23,617	45
ACY	Atlantic City International Airport	5,535	3,560	1,908	10,482	21,411	42,896	2
1N7	Blairstown Airport	9,219	5,727	7,507	8,776	157	31,387	Unknown
00N	Bucks Airport	0	0	4,397	3,957	440	8,794	0
19N	Camden County Airport	0	0	14,430	7,770	0	22,201	25
WWD	Cape May County Airport	0	0	7,256	19,953	181	27,391	0
47N	Central Jersey Regional Airport	0	0	16,819	7,208	0	24,027	30
17N	Cross Keys Airport	0	0	16,421	8,842	0	25,263	6
31E	Eagles Nest Airport	9,846	6,117	6,465	8,136	57	30,621	0
CDW	Essex County Airport	6	2,139	26,792	36,311	901	66,149	10
N14	Flying W Airport	0	0	18,421	9,919	0	28,341	6
4N1	Greenwood Lake Airport	0	0	8,488	2,122	0	10,610	8
N05	Hackettstown Airport	3,191	1,982	2,598	3,038	54	10,864	Unknown
N81	Hammonton Municipal Airport	0	0	3,652	3,261	0	6,913	0
29N	Kroelinger Airport	0	0	1,035	931	103	2,069	5
N12	Lakewood Airport	0	0	12,078	3,685	0	15,763	0
N07	Lincoln Park Airport	0	0	22,432	5,607	0	28,039	45
LDJ	Linden Airport	0	0	15,055	9,975	250	25,280	25
2N7	Little Ferry Seaplane Base	0	0	0	0	0	0	Unknown
MIV	Millville Municipal Airport	0	0	37,941	34,147	3,794	75,882	0
BLM	Monmouth Executive Airport	0	6,253	26,325	5,029	0	37,608	10
MMU	Morristown Municipal Airport	13	10,032	24,757	34,013	105	68,921	28
EWR	Newark Liberty International Airport	336,465	87,517	0	11,049	253	435,285	3
26N	Ocean City Municipal Airport	0	0	8,066	12,098	0	20,164	3
MJX	Ocean County Airport	0	0	18,964	12,717	0	31,681	0
3N6	Old Bridge Airport	8,220	5,106	5,397	6,792	47	25,562	10
39N	Princeton Airport	0	3,571	16,344	8,414	0	28,329	20
2N6	Red Wing Airport	0	0	1,345	724	0	2,069	4
N40	Sky Manor Airport	9,113	5,661	5,984	7,530	53	28,341	Unknown
N51	Solberg-Hunterdon Airport	0	0	10,475	5,640	0	16,115	45
SMQ	Somerset Airport	0	0	16,789	11,193	0	27,983	35
VAY	South Jersey Regional Airport	0	0	15,120	8,142	0	23,262	6
C01	Southern Cross Airport	0	0	2,354	1,267	0	3,621	5
7N7	Spitfire Aerodrome	0	0	7,734	4,164	0	11,898	Unknown
FWN	Sussex Airport	0	0	5,728	3,076	0	8,803	5
TEB	Teterboro Airport	153	99,608	0	122,127	434	222,323	125
TTN	Trenton Mercer Airport	4,932	5,454	48,174	51,426	1,050	111,037	28
N87	Trenton-Robbinsville Airport	0	0	8,711	3,607	0	12,318	0
13N	Trinca Airport	665	413	437	550	4	2,069	12
28N	Vineland-Downstown Airport	0	0	5,432	4,889	543	10,864	5
OBI	Woodbine Municipal Airport	0	0	7,536	4,056	0	11,592	0

Notes: See Appendix D. 2018 Airport Operations Methodology for a description of how 2018 operations for all study airports were estimated.
For Temporary Flight Restrictions, a blank cell indicates that airport did not provide information on Airport Survey Questionnaire.

Sources: FAA Form 5010, Airport Master Record.

Appendix C Table 10. Airport Services

Code	Airport Name	AvGas (24Hrs/PT)	Jet A (24Hrs/PT)	Charter Service	On-Site Rental Car Facilities	Courtesy Vehicle / Crew Car	Pilot Training (FT/PT)	Aircraft Maintenance (Major/Minor)	Aircraft Rental Service	Public-Use Restroom	Restaurant/ Food Services	Catering Services	Food/Beverage Vending Machines	Pilot Lounge	Public-Use WiFi
12N	Aeroflex Andover Airport	PT	-	-	-	-	FT	Minor	-	✓	-	-	✓	✓	-
N85	Alexandria Field	24Hrs	24Hrs	-	-	-	FT	Both	✓	✓	-	-	✓	✓	✓
ACY	Atlantic City International Airport	24Hrs	24Hrs	-	✓	✓	-	Minor	-	✓	✓	✓	✓	✓	✓
1N7	Blairstown Airport	U	U	U	U	U	U	U	U	U	U	U	U	U	U
00N	Bucks Airport	-	-	-	-	-	-	-	-	✓	-	-	-	-	-
19N	Camden County Airport	PT	PT	-	-	✓	-	Minor	-	✓	-	-	-	✓	✓
WWD	Cape May County Airport	PT	PT	-	✓	✓	-	Minor	-	✓	✓	✓	-	-	✓
47N	Central Jersey Regional Airport	24Hrs	-	-	-	-	FT	Minor	✓	✓	-	-	-	✓	✓
17N	Cross Keys Airport	24Hrs	24Hrs	-	-	-	FT	Both	✓	✓	-	-	✓	✓	-
31E	Eagles Nest Airport	24Hrs	-	-	-	-	-	Both	-	✓	-	-	-	✓	✓
CDW	Essex County Airport	PT	PT	✓	✓	✓	FT	Both	✓	✓	-	✓	✓	✓	✓
N14	Flying W Airport	PT	PT	-	-	-	FT	Major	✓	✓	✓	-	-	✓	✓
4N1	Greenwood Lake Airport	24Hrs	24Hrs	-	-	-	FT	Both	✓	✓	-	-	✓	✓	-
N05	Hackettstown Airport	U	U	U	U	U	U	U	U	U	U	U	U	U	U
N81	Hammonton Municipal Airport	24Hrs	24Hrs	✓	-	✓	FT	Major	✓	-	✓	-	-	✓	-
29N	Kroelinger Airport	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N12	Lakewood Airport	24Hrs	24Hrs	-	-	-	-	Minor	-	-	-	-	-	-	-
N07	Lincoln Park Airport	24Hrs	24Hrs	✓	-	✓	FT	Major	✓	✓	✓	✓	-	-	-
LDJ	Linden Airport	PT	PT	✓	✓	-	FT	Major	✓	✓	-	-	✓	✓	✓
2N7	Little Ferry Seaplane Base	-	U	U	U	U	U	U	U	U	U	U	U	U	U
MIV	Millville Municipal Airport	PT	PT	-	-	-	FT	Minor	✓	✓	✓	✓	-	✓	-
BLM	Monmouth Executive Airport	24Hrs	24Hrs	✓	✓	✓	FT	Minor	✓	✓	-	✓	✓	✓	✓
MMU	Morristown Municipal Airport	24Hrs	24Hrs	-	-	-	FT	Minor	-	✓	-	✓	✓	✓	✓
EWR	Newark Liberty International Airport	24Hrs	24Hrs	✓	✓	✓	-	Both	-	✓	✓	✓	✓	✓	✓
26N	Ocean City Municipal Airport	PT	-	-	-	-	-	-	-	✓	✓	-	✓	✓	✓
MJX	Ocean County Airport	PT	PT	-	✓	✓	FT	Both	✓	✓	-	✓	✓	✓	✓
3N6	Old Bridge Airport	24Hrs	-	-	-	-	FT	Major	✓	✓	-	-	-	✓	✓
39N	Princeton Airport	PT	PT	✓	✓	✓	FT	Both	✓	✓	-	-	✓	✓	✓
2N6	Red Wing Airport	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N40	Sky Manor Airport	U	U	U	U	U	U	U	U	U	U	U	U	U	U
N51	Solberg-Hunterdon Airport	24Hrs	PT	-	-	-	FT	Minor	✓	✓	-	-	✓	✓	✓
SMQ	Somerset Airport	PT	24Hrs	✓	-	-	FT	Major	✓	✓	-	-	✓	-	✓

Appendix C Table 10. Airport Services

VAY	South Jersey Regional Airport	PT	PT	-	-	-	-	Major	✓	✓	✓	✓	✓	✓	✓
C01	Southern Cross Airport	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7N7	Spitfire Aerodrome	U	U	U	U	U	U	U	U	U	U	U	U	U	U
FWN	Sussex Airport	24Hrs	24Hrs	-	-	-	-	Minor	-	✓	-	-	-	-	-
TEB	Teterboro Airport	24Hrs	24Hrs	✓	✓	✓	-	Both	-	✓	-	✓	✓	✓	✓
TTN	Trenton Mercer Airport	24Hrs	24Hrs	✓	✓	✓	PT	Both	✓	✓	✓	✓	✓	✓	✓
N87	Trenton-Robbinsville Airport	24Hrs	-	✓	-	-	FT	Both	✓	✓	-	-	-	-	✓
13N	Trinca Airport	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28N	Vineland-Downstown Airport	PT	PT	-	-	✓	-	Minor	-	✓	-	-	-	✓	✓
OBI	Woodbine Municipal Airport	24Hrs	-	-	-	-	-	-	-	✓	-	-	-	✓	-

Notes: A (✓) indicates that the airport service is available; (-) indicates that it is not available; (U) indicates that whether the airport service is available is unknown. (FT) refers to full-time and (PT) refers to part-time.

Sources: Airport Survey Questionnaires.

Appendix C Table 11. Community Engagement

Code	Airport Name	Relationship with Educational Institutions	Marketing Strategy Plan	Annual Air Shows-fly ins, 5K Runs or Other Public Community Events
12N	Aeroflex Andover Airport	-	-	✓
N85	Alexandria Field	✓	✓	✓
ACY	Atlantic City International Airport	✓	✓	✓
1N7	Blairstown Airport	Unknown	Unknown	Unknown
00N	Bucks Airport	-	-	-
19N	Camden County Airport	-	-	-
WWD	Cape May County Airport	✓	✓	✓
47N	Central Jersey Regional Airport	-	-	✓
17N	Cross Keys Airport	✓	-	✓
31E	Eagles Nest Airport	✓	-	✓
CDW	Essex County Airport	-	-	✓
N14	Flying W Airport	✓	✓	✓
4N1	Greenwood Lake Airport	✓	✓	✓
N05	Hackettstown Airport	Unknown	Unknown	Unknown
N81	Hammonton Municipal Airport	-	✓	-
29N	Kroelinger Airport	-	-	-
N12	Lakewood Airport	-	✓	✓
N07	Lincoln Park Airport	-	-	-
LDJ	Linden Airport	-	-	-
2N7	Little Ferry Seaplane Base	Unknown	Unknown	Unknown
MIV	Millville Municipal Airport	✓	✓	-
BLM	Monmouth Executive Airport	✓	✓	✓
MMU	Morristown Municipal Airport	✓	-	✓
EWR	Newark Liberty International Airport	-	-	-
26N	Ocean City Municipal Airport	✓	✓	✓
MJX	Ocean County Airport	-	-	✓
3N6	Old Bridge Airport	-	-	-
39N	Princeton Airport	✓	✓	✓
2N6	Red Wing Airport	-	-	-
N40	Sky Manor Airport	Unknown	Unknown	Unknown
N51	Solberg-Hunterdon Airport	✓	✓	✓
SMQ	Somerset Airport	-	✓	-
VAY	South Jersey Regional Airport	-	✓	✓
C01	Southern Cross Airport	-	-	-
7N7	Spitfire Aerodrome	Unknown	Unknown	Unknown
FWN	Sussex Airport	-	-	-
TEB	Teterboro Airport	Unknown	✓	✓
TTN	Trenton Mercer Airport	✓	✓	✓
N87	Trenton-Robbinsville Airport	-	-	✓
13N	Trinca Airport	✓	✓	✓
28N	Vineland-Downstown Airport	✓	-	-
OBI	Woodbine Municipal Airport	Unknown	Unknown	Unknown

Notes: A (✓) indicates that it is available; (-) indicates that it is not available.
Sources: Airport Survey Questionnaires.

Appendix C Table 12. Land Use

Code	Airport Name	Runway End	Compliance with FAA RSA Dimension Standards	Compliance with FAA ROFA Dimension Standards	Compliance with FAA RPZ Dimension Standards	Airport Ownership of RPZ Dimension Standards	Compliance with FAA Runway-Parallel Taxiway Centerline Standards	Compliance with Air Safety and Zoning Act of 1983	Airport Municipality
12N	Aeroflex Andover Airport	03	No	No	Yes	Yes	No	Unknown	Andover Township
		21	No	No	Yes	Yes			
N85	Alexandria Field	08	Yes	Yes	Yes	No	Yes	Yes	Alexandria Township
		26	Yes	No	No	No			
		13	-	-	-	-	-		
		31	-	-	-	-			
ACY	Atlantic City International Airport	04	-	-	-	-	-	Yes	Egg Harbor Township
		22	-	-	-	-			
		13	Yes	No	No	Yes	Yes		
		31	Yes	Yes	No	Yes			
1N7	Blairstown Airport	07	Yes	Yes	Yes	No	No	Unknown	Blairstown Township
		25	No	No	No	No			
00N	Bucks Airport	18	Yes	No	No	Unknown	Not Applicable	Yes	Upper Deerfield Township
		36	No	No	Yes	Unknown			
19N	Camden County Airport	05	No	No	No	No	No	Yes	Winslow Township
		23	No	No	Yes	No			
WWD	Cape May County Airport	01	Yes	Yes	No	No	Yes	Yes	Lower Township
		19	No	No	No	No			
		10	-	-	-	-	-		
		28	-	-	-	-			
47N	Central Jersey Regional Airport	07	No	No	No	No	Yes	Unknown	Hillsborough Township
		25	Yes	Yes	No	No			
17N	Cross Keys Airport	09	No	No	Yes	No	No	Yes	Monroe Township
		27	No	No	No	No			
31E	Eagles Nest Airport	14	Yes	Yes	No	No	Yes	Unknown	Eagleswood Township
		32	Yes	Yes	No	No			
CDW	Essex County Airport	04	No	No	No	No	No	Yes	Fairfield Township
		22	Yes	Yes	No	No			
		10	-	-	-	-			
		28	-	-	-	-			
N14	Flying W Airport	01	No	No	Yes	No	No	Yes	Lumbertown Township
		19	Yes	Yes	Yes	No			
4N1	Greenwood Lake Airport	06	No	No	Yes	No	No	Yes	West Milford Township
		24	No	No	No	No			
N05	Hackettstown Airport	05	No	No	No	Unknown	Not Applicable	Unknown	Mansfield Township
		23	No	No	No	Unknown			
N81	Hammonton Municipal Airport	03	No	No	No	No	No	Yes	Hammonton Town
		21	Yes	Yes	Yes	No			
29N	Kroelinger Airport	10	No	No	No	Unknown	Not Applicable	Yes	Vineland City
		28	No	No	No	Unknown			

Appendix C Table 12. Land Use

Code	Airport Name	Runway End	Compliance with FAA RSA Dimension Standards	Compliance with FAA ROFA Dimension Standards	Compliance with FAA RPZ Dimension Standards	Airport Ownership of RPZ Dimension Standards	Compliance with FAA Runway-Parallel Taxiway Centerline Standards	Compliance with Air Safety and Zoning Act of 1983	Airport Municipality
N12	Lakewood Airport	06	Yes	No	Yes	No	Yes	Yes	Lakewood Township
		24	Yes	Yes	No	No			
N07	Lincoln Park Airport	01	Yes	No	No	No	No	Yes	Lincoln Park Township
		19	No	No	No	No			
LDJ	Linden Airport	09	Yes	No	No	No	Yes	Unknown	Linden Township
		27	Yes	No	No	No			
2N7	Little Ferry Seaplane Base	01	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Unknown	Little Ferry Township
		19	Not Applicable	Not Applicable	Not Applicable	Not Applicable			
MIV	Millville Municipal Airport	10	Yes	Yes	Yes	No	Yes	Yes	Millville City
		28	Yes	Yes	Yes	Yes			
		14	-	-	-	-	-		
		32	-	-	-	-			
BLM	Monmouth Executive Airport	03	-	-	-	-	-	Unknown	Wall Township
		21	-	-	-	-			
		14	No	No	No	No	No		
		32	No	No	No	No			
MMU	Morristown Municipal Airport	05	No	No	No	No	Yes	Yes	Hanover Township
		23	No	No	Yes	No			
		13	-	-	-	-	-		
		31	-	-	-	-			
EWR	Newark Liberty International Airport	04L	-	-	-	-	-	No	Newark
		22R	-	-	-	-			
		04R	Yes	Yes	No	No	Yes		
		22L	Yes	Yes	No	No			
		11	-	-	-	-	-		
		29	-	-	-	-			
26N	Ocean City Municipal Airport	06	No	No	Yes	No	Yes	Yes	Ocean City
		24	No	No	No	No			
MJX	Ocean County Airport	06	Yes	Yes	Yes	No	Yes	Yes	Berkeley Township
		24	No	No	No	No			
		14	-	-	-	-	-		
		32	-	-	-	-			
3N6	Old Bridge Airport	06	No	No	No	No	No	Yes	Old Bridge Township
		24	No	No	No	No			
39N	Princeton Airport	10	Yes	Yes	Yes	No	Yes	Yes	Montgomery Township
		28	Yes	Yes	No	No			
2N6	Red Wing Airport	06	Yes	No	Yes	Unknown	Not Applicable	Yes	Springfield Township
		24	No	No	No	Unknown			
		15	-	-	-	-	-		
		29	-	-	-	-			

Appendix C Table 12. Land Use

Code	Airport Name	Runway End	Compliance with FAA RSA Dimension Standards	Compliance with FAA ROFA Dimension Standards	Compliance with FAA RPZ Dimension Standards	Airport Ownership of RPZ Dimension Standards	Compliance with FAA Runway-Parallel Taxiway Centerline Standards	Compliance with Air Safety and Zoning Act of 1983	Airport Municipality
N40	Sky Manor Airport	07	Yes	Yes	No	No	No	Unknown	Alexandria Township
		25	Yes	No	No	No			
N51	Solberg-Hunterdon Airport	04	Yes	Yes	No	Yes	Yes	No	Readington Township
		22	Yes	Yes	Yes	No			
		10	-	-	-	-	-		
		28	-	-	-	-			
		13	-	-	-	-	-		
		31	-	-	-	-			
SMQ	Somerset Airport	08	-	-	-	-	-	Yes	Bedminster Township
		26	-	-	-	-			
		12	Yes	Yes	Yes	No	Yes		
		30	No	No	No	No			
		17	-	-	-	-	-		
		35	-	-	-	-			
VAY	South Jersey Regional Airport	08	Yes	No	No	No	No	Yes	Lumbertown Township
		26	Yes	Yes	Yes	No			
C01	Southern Cross Airport	09	No	No	No	Unknown	Not Applicable	Yes	Monroe Township
		27	No	No	No	Unknown			
7N7	Spitfire Aerodrome	07	No	No	No	No	No	Unknown	Oldmans Township
		25	Yes	No	Yes	No			
FWN	Sussex Airport	03	Yes	Yes	No	No	Yes	Unknown	Wantage Township
		21	No	No	No	No			
TEB	Teterboro Airport	01	-	-	-	-	-	Unknown	Teterboro Township
		19	-	-	-	-			
		06	Yes	Yes	No	No	Yes		
		24	Yes	Yes	No	No			
TTN	Trenton Mercer Airport	06	Yes	Yes	No	No	Yes	Yes	Ewing Township
		24	Yes	Yes	No	No			
		16	-	-	-	-	-		
		34	-	-	-	-			
N87	Trenton-Robbinsville Airport	11	Yes	Yes	No	No	Yes	No	Robbinsville Township
		29	No	No	Yes	No			
13N	Trinca Airport	06	No	No	Yes	No	Not Applicable	Yes	Green Township
		24	Yes	Yes	Yes	No			
28N	Vineland-Downstown Airport	02	Yes	No	No	No	Not Applicable	Yes	Franklin Township
		20	Yes	Yes	No	No			
		12	-	-	-	-	-		
		30	-	-	-	-			

Appendix C Table 12. Land Use

Code	Airport Name	Runway End	Compliance with FAA RSA Dimension Standards	Compliance with FAA ROFA Dimension Standards	Compliance with FAA RPZ Dimension Standards	Airport Ownership of RPZ Dimension Standards	Compliance with FAA Runway-Parallel Taxiway Centerline Standards	Compliance with Air Safety and Zoning Act of 1983	Airport Municipality
OBI	Woodbine Municipal Airport	01	Yes	Yes	Yes	Yes	Not Applicable	Yes	Woodbine Borough
		19	Yes	Yes	No	No			
		13	-	-	-	-	-		
		31	-	-	-	-			

Notes: Compliance with FAA standards was evaluated for primary runway ends based on Google Earth and latest Airport Layout Plans; (-) indicates that it is not a primary runway end.

Sources: Google Earth. Airport Survey Questionnaires.

Appendix C Table 13. Security and Utilities

Code	Airport Name	Perimeter Fence	Electronic Security Gate System	CCTV Security Camera System	Electricity	Water	Sewage
12N	Aeroflex Andover Airport	✓	-	✓	✓	✓	✓
N85	Alexandria Field	-	-	-	✓	✓	✓
ACY	Atlantic City International Airport	✓	✓	✓	✓	✓	✓
1N7	Blairstown Airport	Unknown	Unknown	Unknown	✓	✓	✓
00N	Bucks Airport	-	-	-	✓	✓	✓
19N	Camden County Airport	✓	-	-	✓	✓	✓
WWD	Cape May County Airport	✓	✓	✓	✓	✓	✓
47N	Central Jersey Regional Airport	✓	-	-	✓	✓	✓
17N	Cross Keys Airport	✓	✓	-	✓	✓	✓
31E	Eagles Nest Airport	-	✓	✓	✓	✓	✓
CDW	Essex County Airport	✓	✓	✓	✓	✓	✓
N14	Flying W Airport	✓	-	✓	✓	✓	✓
4N1	Greenwood Lake Airport	✓	✓	-	✓	✓	✓
N05	Hackettstown Airport	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
N81	Hammonton Municipal Airport	✓	✓	✓	✓	Unknown	Unknown
29N	Kroelinger Airport	-	-	-	Unknown	Unknown	Unknown
N12	Lakewood Airport	✓	-	✓	✓	✓	✓
N07	Lincoln Park Airport	-	-	✓	✓	✓	✓
LDJ	Linden Airport	✓	✓	✓	✓	✓	✓
2N7	Little Ferry Seaplane Base	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
MIV	Millville Municipal Airport	✓	✓	✓	✓	✓	✓
BLM	Monmouth Executive Airport	-	✓	✓	✓	✓	✓
MMU	Morristown Municipal Airport	✓	✓	✓	✓	✓	✓
EWR	Newark Liberty International Airport	✓	✓	✓	✓	✓	✓
26N	Ocean City Municipal Airport	Partial	✓	✓	✓	✓	✓
MJX	Ocean County Airport	✓	✓	✓	✓	✓	✓
3N6	Old Bridge Airport	✓	✓	✓	✓	✓	✓
39N	Princeton Airport	-	-	✓	✓	✓	✓
2N6	Red Wing Airport	-	-	-	✓	✓	✓
N40	Sky Manor Airport	Unknown	Unknown	Unknown	✓	✓	✓
N51	Solberg-Hunterdon Airport	-	-	-	✓	✓	✓
SMQ	Somerset Airport	-	-	✓	✓	✓	✓
VAY	South Jersey Regional Airport	Partial	-	✓	✓	✓	✓
C01	Southern Cross Airport	-	-	-	✓	✓	✓
7N7	Spitfire Aerodrome	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
FWN	Sussex Airport	✓	✓	-	✓	✓	✓
TEB	Teterboro Airport	✓	-	✓	✓	✓	✓
TTN	Trenton Mercer Airport	✓	✓	✓	✓	✓	✓
N87	Trenton-Robbinsville Airport	✓	-	✓	✓	✓	✓
13N	Trinca Airport	-	-	-	✓	✓	✓

Appendix C Table 13. Security and Utilities

Code	Airport Name	Perimeter Fence	Electronic Security Gate System	CCTV Security Camera System	Electricity	Water	Sewage
28N	Vineland-Downstown Airport	✓	✓	-	✓	✓	✓
OBI	Woodbine Municipal Airport	Partial	✓	-	✓	✓	✓

Notes: A (✓) indicates that it is available; (-) indicates that it is not available. (Unknown) indicates that the airport did not provide information on Airport Survey Questionnaire.
Sources: Airport Survey Questionnaires.

Appendix C Table 14. Airport Access

Code	Airport Name	Number of Automobile Parking Spaces (#)	Public Transit Accessibility	Shuttle Availability	Paved Airport Access Road
12N	Aeroflex Andover Airport	20	-	-	✓
N85	Alexandria Field	25	-	-	✓
ACY	Atlantic City International Airport	3,706	✓	✓	✓
1N7	Blairstown Airport	0	-	-	✓
00N	Bucks Airport	0	-	-	✓
19N	Camden County Airport	38	-	-	✓
WWD	Cape May County Airport	106	-	-	✓
47N	Central Jersey Regional Airport	300	-	-	✓
17N	Cross Keys Airport	85	-	-	✓
31E	Eagles Nest Airport	20	-	-	✓
CDW	Essex County Airport	484	✓	-	✓
N14	Flying W Airport	120	-	-	✓
4N1	Greenwood Lake Airport	38	-	-	✓
N05	Hackettstown Airport	0	-	-	✓
N81	Hammonton Municipal Airport	16	-	-	✓
29N	Kroelinger Airport	0	✓	-	✓
N12	Lakewood Airport	24	-	-	✓
N07	Lincoln Park Airport	86	-	-	✓
LDJ	Linden Airport	80	✓	-	✓
2N7	Little Ferry Seaplane Base	0	✓	-	✓
MIV	Millville Municipal Airport	110	-	✓	✓
BLM	Monmouth Executive Airport	350	-	-	✓
MMU	Morristown Municipal Airport	0	-	-	✓
EWR	Newark Liberty International Airport	29,897	✓	✓	✓
26N	Ocean City Municipal Airport	148	✓	-	✓
MJX	Ocean County Airport	145	-	-	✓
3N6	Old Bridge Airport	60	-	-	✓
39N	Princeton Airport	100	✓	-	✓
2N6	Red Wing Airport	0	-	-	✓
N40	Sky Manor Airport	0	-	-	✓
N51	Solberg-Hunterdon Airport	50	-	-	✓

Appendix C Table 14. Airport Access

Code	Airport Name	Number of Automobile Parking Spaces (#)	Public Transit Accessibility	Shuttle Availability	Paved Airport Access Road
SMQ	Somerset Airport	50	-	-	✓
VAY	South Jersey Regional Airport	90	-	-	✓
C01	Southern Cross Airport	0	-	-	✓
7N7	Spitfire Aerodrome	0	-	-	✓
FWN	Sussex Airport	0	-	-	✓
TEB	Teterboro Airport	946	✓	✓	✓
TTN	Trenton Mercer Airport	1,530	-	✓	✓
N87	Trenton-Robbinsville Airport	40	-	-	✓
13N	Trinca Airport	10	-	-	✓
28N	Vineland-Downstown Airport	0	-	-	✓
OBI	Woodbine Municipal Airport	24	-	-	✓

Notes: A (✓) indicates that it is available; (-) indicates that it is not available.
Airport considered to be accessible to public transit if a New Jersey Transit bus, rail, light rail, or subway stop or Port Authority Trans Hudson (PATH), Port Authority Transit Corporation (PATCO), or Southeastern Pennsylvania Transportation Authority (SEPTA) rail station is located within 0.5 miles of the airport.
Sources: Airport Survey Questionnaires.

APPENDIX D. 2018 AIRPORT OPERATIONS METHODOLOGY

For all 42 airports, aviation operations were estimated for all years after 2018. Two processes were used for the computations of operations, one for NPIAS airports and one for non-NPIAS Airports.

General aviation (GA) operations were estimated using separate methodologies for NPIAS and non-NPIAS airports due to the availability of data. The methodologies that were used for each type of airport for GA operations are described below.

For NPIAS airports, the Federal Aviation Administration's (FAA) Terminal Area Forecast (TAF) operations per based aircraft (BA) ratios were retrieved from the TAF for all years available. For all years prior to 2018, TAF BA and operations data were used from the current 2018 TAF.[67] Since 2018 BA values were adjusted to better reflect observed trends, total GA operations were adjusted to maintain TAF operating ratios. In other words, since BA values at some airports changed, the total operations expected in 2018 were adjusted to keep the TAF operation per BA ratio consistent. For example, if the TAF data indicated 100 BA at an airport at a rate of 1 operation per BA (100 operations total) and the adjusted BA total for 2018 was only 50, the new total operation value for this airport would be 50, allowing the TAF operation per BA ratio to continue to be used. This method was preferable to the alternative of altering operation per BA ratios based on BA survey results.

Non-NPIAS airports do not have any data available from the TAF, and therefore all values for these airports (aside from the 2018 BA count) were estimated. BA at these airports was estimated based on the growth of BA at NPIAS airports in the same Metropolitan Statistical Area (MSA) as the non-NPIAS airport. For example, BA growth rates at non-NPIAS airports in the New York MSA would be equal to the average growth rate of NPIAS airports in the New York MSA. Operating ratios at non-NPIAS airports were based on the number of BA in 2018 at each airport. Specifically, all airports BA were rounded to the nearest 50th value (e.g. 0, 50, 100), and non-NPIAS airports inherited the average operating ratio per BA of NPIAS airports in their same size band (e.g. all non-NPIAS airports with 25 to75 BA used the operation ratio of NPIAS airports with between 25 and 75 BA). Operations to BA ratios were applied to non-NPIAS airport BA estimates to estimate general aviation operations at each of the airports.

GA operation types were estimated based on GA operation type allocations from the TAF. For all NPIAS airports, their shares of operations by type (e.g. military, local GA) were applied to total operations. For non-NPIAS airports, operations by type were based on the average operation type distribution of the MSA the airport was located in. For example, if a non-NPIAS airport was in the Atlantic City MSA, its GA operation by type would mirror the average distribution of the Atlantic City MSA. If 20 percent of GA operations were military operations at NPIAS airports in the Atlantic City MSA, 20 percent of a non-NPIAS airport's operations would be estimated to be military. Distributions of GA operations by type were computed for all 42 New Jersey study airports.

For commercial airports, the same process that was used for NPIAS GA operations was used. The resulting commercial operations by type were summed with the GA operations of the same type by airport.

[67] For more information on the current 2018 TAF and on the TAF forecast process, see https://www.faa.gov/data_research/aviation/taf/.

APPENDIX E. FACILITY REQUIREMENTS TABLE

Appendix E Table 1. ARC Objectives and Compliance
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Appendix E Table 1. ARC Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Existing Airport Reference Code (ARC)	Meets ARC Objective
Scheduled Service: C-III	Atlantic City International	ACY	C-IV	Yes
	Newark International	EWR	D-V	Yes
	Trenton Mercer	TTN	C-III	Yes
Advanced Service: C-II or Greater	Morristown Municipal	MMU	C-III	Yes
	Teterboro	TEB	C-III	Yes
	Cape May County	WWD	B-II	No
	Essex County	CDW	B-II	No
	Ocean County Airport	MJX	B-II	No
	Hammonton Municipal	N81	C-II	Yes
	Millville Municipal	MIV	B-II	No
	Monmouth Executive	BLM	C-II	Yes
Priority General Service: B-II or Greater	Lincoln Park	N07	A-I Small	No
	South Jersey Regional	VAY	B-I	No
	Linden	LDJ	A-I Small	No
	Central Jersey Regional	47N	B-I Small	No
	Solberg-Hunterdon	N51	B-I Small	No
	Cross Keys	17N	B-II	Yes
General Service: B-I or Greater	Somerset	SMQ	B-I Small	No
	Greenwood Lake	4N1	B-I Small	No
	Lakewood	N12	B-I Small	No
	Woodbine Municipal	OBI	B-II	Yes
	Princeton	39N	B-I	Yes
	Sussex	FWN	B-I Small	No
	Trenton-Robbinsville	N87	B-I Small	No
	Alexandria Field	N85	B-I Small	No
	Blairstown	1N7	B-I	Yes
	Eagles Nest	31E	B-I Small	No
	Flying W	N14	B-I Small	No
	Old Bridge	3N6	B-I Small	No
	Sky Manor	N40	B-I Small	No
	Spitfire Aerodrome	7N7	B-I Small	No
Basic Service: A-I Small Aircraft Only	Ocean City Municipal	26N	B-I Small	Yes
	Aeroflex-Andover Field	12N	B-I Small	Yes
	Bucks	00N	A-I Small	Yes
	Camden County	19N	B-I Small	Yes
	Hackettstown	N05	B-I Small	Yes
	Vineland Downstown	28N	B-I Small	Yes
Duplicative Basic Service: A-I Small Aircraft Only	Trinca	13N	B-I	Yes
	Kroelinger	29N	A-I Small	Yes
	Red Wing	2N6	A-I Small	Yes
	Southern Cross	C01	A-I Small	Yes
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	A-I	N/A

Note: N/A = Not Applicable

Source: Airport Survey Questionnaires, NJDOT BOA, FAA TFMSC.

Appendix E Table 2. Airfield Capacity Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Existing Airfield Capacity	Meets Airfield Capacity Objective
Scheduled Service: Below 80 percent of Calculated ASV	Atlantic City International	ACY	20 percent	Yes
	Newark International	EWR	128 percent	No
	Trenton Mercer	TTN	52 percent	Yes
Advanced Service: Below 80 percent of Calculated ASV	Morristown Municipal	MMU	32 percent	Yes
	Teterboro	TEB	78 percent	Yes
	Cape May County	WWD	12 percent	Yes
	Essex County	CDW	29 percent	Yes
	Ocean County Airport	MJX	14 percent	Yes
	Hammonton Municipal	N81	3 percent	Yes
	Millville Municipal	MIV	33 percent	Yes
	Monmouth Executive	BLM	19 percent	Yes
Priority General Service: Below 80 percent of Calculated ASV	Lincoln Park	N07	12 percent	Yes
	South Jersey Regional	VAY	10 percent	Yes
	Linden	LDJ	11 percent	Yes
	Central Jersey Regional	47N	10 percent	Yes
	Solberg-Hunterdon	N51	7 percent	Yes
	Cross Keys	17N	11 percent	Yes
General Service: Below 80 percent of Calculated ASV	Somerset	SMQ	12 percent	Yes
	Greenwood Lake	4N1	5 percent	Yes
	Lakewood	N12	7 percent	Yes
	Woodbine Municipal	OBI	5 percent	Yes
	Princeton	39N	12 percent	Yes
	Sussex	FWN	4 percent	Yes
	Trenton-Robbinsville	N87	5 percent	Yes
	Alexandria Field	N85	10 percent	Yes
	Blairstown	1N7	14 percent	Yes
	Eagles Nest	31E	13 percent	Yes
	Flying W	N14	12 percent	Yes
	Old Bridge	3N6	11 percent	Yes
	Sky Manor	N40	12 percent	Yes
	Spitfire Aerodrome	7N7	5 percent	Yes
Basic Service: Below 80 percent of Calculated ASV	Ocean City Municipal	26N	9 percent	Yes
	Aeroflex-Andover Field	12N	15 percent	Yes
	Bucks	00N	4 percent	Yes
	Camden County	19N	10 percent	Yes
	Hackettstown	N05	5 percent	Yes
	Vineland Downstown	28N	5 percent	Yes
Duplicative Basic Service: Below 80 percent of Calculated ASV	Trinca	13N	1 percent	Yes
	Kroelinger	29N	1 percent	Yes
	Red Wing	2N6	1 percent	Yes
	Southern Cross	C01	2 percent	Yes
Specialty Facilities: Not Applicable	Little Ferry Seaplane Base	2N7	0 percent	N/A

Notes: N/A = Not Applicable

Source: Airport Survey Questionnaires, NJDOT BOA, FAA TFMSC, FAA AC 150/5060-5.

Appendix E Table 3. Runway Length Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway Length	Meets Primary Runway Length Objective
Scheduled Service: 6,000 feet	Atlantic City International	ACY	10,000	Yes
	Newark International	EWR	10,000	Yes
	Trenton Mercer	TTN	6,006	Yes
Advanced Service: 5,000 feet	Morristown Municipal	MMU	5,998	Yes
	Teterboro	TEB	6,013	Yes
	Cape May County	WWD	5,252	Yes
	Essex County	CDW	4,552	No
	Ocean County Airport	MJX	5,950	Yes
	Hammonton Municipal	N81	3,601	No
	Millville Municipal	MIV	6,003	Yes
	Monmouth Executive	BLM	7,345	Yes
Priority General Service: 4,000 feet	Lincoln Park	N07	2,942	No
	South Jersey Regional	VAY	3,881	No
	Linden	LDJ	4,140	Yes
	Central Jersey Regional	47N	3,507	No
	Solberg-Hunterdon	N51	5,598	Yes
	Cross Keys	17N	3,500	No
General Service: 3,500 feet	Somerset	SMQ	2,739	No
	Greenwood Lake	4N1	3,471	Yes
	Lakewood	N12	2,987	No
	Woodbine Municipal	OBI	3,304	No
	Princeton	39N	3,499	Yes
	Sussex	FWN	3,499	Yes
	Trenton-Robbinsville	N87	4,275	Yes
	Alexandria Field	N85	2,550	No
	Blairstown	1N7	3,112	No
	Eagles Nest	31E	3,670	Yes
	Flying W	N14	3,496	Yes
	Old Bridge	3N6	3,594	Yes
	Sky Manor	N40	2,900	No
	Spitfire Aerodrome	7N7	2,419	No
Basic Service: 2,200 feet or greater	Ocean City Municipal	26N	2,972	Yes
	Aeroflex-Andover Field	12N	1,981	No
	Bucks	00N	1,900	No
	Camden County	19N	3,094	Yes
	Hackettstown	N05	2,200	Yes
	Vineland Downstown	28N	2,251	Yes
Duplicative Basic Service: 2,200 feet or greater	Trinca	13N	1,924	No
	Kroelinger	29N	2,086	No
	Red Wing	2N6	1,830	No
	Southern Cross	C01	2,400	Yes
Specialty Facilities: Preserve existing	Little Ferry Seaplane Base	2N7	5,500	Yes

Note: Deficiencies less than 100 feet were determined to be compliant.

Source: Airport Survey Questionnaires, NJDOT BOA, FAA.

Appendix E Table 4. Runway Width Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway Width	Meets Primary Runway Width Objective
Scheduled Service: 150 feet	Atlantic City International	ACY	150	Yes
	Newark International	EWR	150	Yes
	Trenton Mercer	TTN	150	Yes
Advanced Service: 100 feet	Morristown Municipal	MMU	150	Yes
	Teterboro	TEB	150	Yes
	Cape May County	WWD	150	Yes
	Essex County	CDW	80	No
	Ocean County Airport	MJX	100	Yes
	Millville Municipal	MIV	150	Yes
	Hammonton Municipal	N81	75	No
	Monmouth Executive	BLM	85	No
Priority General Service: 75 feet	Lincoln Park	N07	40	No
	South Jersey Regional	VAY	50	No
	Linden	LDJ	100	Yes
	Central Jersey Regional	47N	50	No
	Solberg-Hunterdon	N51	50	No
	Cross Keys	17N	50	No
General Service: At least 60 feet	Somerset	SMQ	65	Yes
	Greenwood Lake	4N1	60	Yes
	Lakewood	N12	60	Yes
	Woodbine Municipal	OBI	75	Yes
	Princeton	39N	75	Yes
	Sussex	FWN	75	Yes
	Trenton-Robbinsville	N87	75	Yes
	Alexandria Field	N85	60	Yes
	Blairstown	1N7	70	Yes
	Eagles Nest	31E	60	Yes
	Flying W	N14	75	Yes
	Old Bridge	3N6	50	No
	Sky Manor	N40	50	No
	Spitfire Aerodrome	7N7	60	Yes
Basic Service: At least 60 feet	Ocean City Municipal	26N	60	Yes
	Aeroflex-Andover Field	12N	50	No
	Bucks	00N	150	Yes
	Camden County	19N	45	No
	Hackettstown	N05	50	No
	Vineland Downstown	28N	100	Yes
Duplicative Basic Service: At least 60 feet	Trinca	13N	135	Yes
	Kroelinger	29N	190	Yes
	Red Wing	2N6	50	No
	Southern Cross	C01	80	Yes
Specialty Facilities: Preserve existing	Little Ferry Seaplane Base	2N7	150	Yes

Source: Airport Survey Questionnaires, NJDOT BOA, FAA.

Appendix E Table 5. Runway Strength Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway Strength	Meets Primary Runway Strength Objective
Scheduled Service: 60,000lb DW	Atlantic City International	ACY	85.0S / 120.0D	Yes
	Newark International	EWR	210.0D	Yes
	Trenton Mercer	TTN	120.0S / 180.0S	Yes
Advanced Service: 30,000lbs SW	Morristown Municipal	MMU	30.0S / 80.0D	Yes
	Teterboro	TEB	50.0S / 100.0D	Yes
	Cape May County	WWD	45.0S / 75.0S	Yes
	Essex County	CDW	30.0S	Yes
	Ocean County Airport	MJX	100.0S / 176.0D	Yes
	Millville Municipal	MIV	40.0S / 65.0D	Yes
	Hammonton Municipal	N81	12.0S	No
	Monmouth Executive	BLM	Unknown	Unknown
Priority General Service: 30,000lbs SW	Lincoln Park	N07	12.5S	No
	South Jersey Regional	VAY	30.0S	Yes
	Linden	LDJ	31.5S / 42.0D	Yes
	Central Jersey Regional	47N	30.0S	Yes
	Solberg-Hunterdon	N51	12.5S	No
	Cross Keys	17N	13.0S	No
General Service: 12,500lbs	Somerset	SMQ	12.5S	Yes
	Greenwood Lake	4N1	12.5S	Yes
	Lakewood	N12	25.0S	Yes
	Woodbine Municipal	OBI	45.0S / 60.0D	Yes
	Princeton	39N	15.0S	Yes
	Sussex	FWN	Unknown	Unknown
	Trenton-Robbinsville	N87	25.0S	Yes
	Alexandria Field	N85	Unknown	Unknown
	Blairstown	1N7	Unknown	Unknown
	Eagles Nest	31E	3.64S	No
	Flying W	N14	Unknown	Unknown
	Old Bridge	3N6	12.5S	Yes
	Sky Manor	N40	Unknown	No
	Spitfire Aerodrome	7N7	12.5S	Yes
Basic Service: Up to 12,500lbs	Ocean City Municipal	26N	12.5S	Yes
	Aeroflex-Andover Field	12N	12.5S	Yes
	Bucks	00N	Not Applicable	N/A
	Camden County	19N	12.5S	Yes
	Hackettstown	N05	5.0S	Yes
	Vineland Downstown	28N	Not Applicable	N/A
Duplicative Basic Service: Up to 12,500lbs	Trinca	13N	Not Applicable	N/A
	Kroelinger	29N	Not Applicable	N/A
	Red Wing	2N6	Not Applicable	N/A
	Southern Cross	C01	Not Applicable	N/A
Specialty Facilities: Not Applicable	Little Ferry Seaplane Base	2N7	Not Applicable	N/A

Notes: Unknown = Data not provided
Not Applicable = Turf runway
N/A = Not Applicable

Source: Airport Survey Questionnaires, NJDOT BOA, FAA.

Appendix E Table 6. Taxiway Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Taxiway Type	Meets Taxiway Objective
Scheduled Service: Full Parallel	Atlantic City International	ACY	Full Parallel	Yes
	Newark International	EWR	Full Parallel	Yes
	Trenton Mercer	TTN	Partial Parallel	No
Advanced Service: Full Parallel	Morristown Municipal	MMU	Full Parallel	Yes
	Teterboro	TEB	Full Parallel	Yes
	Cape May County	WWD	Full Parallel	Yes
	Essex County	CDW	Full Parallel	Yes
	Ocean County Airport	MJX	Full Parallel	Yes
	Millville Municipal	MIV	Full Parallel	Yes
	Hammonton Municipal	N81	Full Parallel	Yes
	Monmouth Executive	BLM	Partial Parallel	No
Priority General Service: Full Parallel	Lincoln Park	N07	Partial Parallel	No
	South Jersey Regional	VAY	Partial Parallel	No
	Linden	LDJ	Full Parallel	Yes
	Central Jersey Regional	47N	Partial Parallel	No
	Solberg-Hunterdon	N51	Partial Parallel	No
	Cross Keys	17N	Full Parallel	Yes
General Service: Full Parallel, Partial Parallel, Connectors or Turnarounds	Somerset	SMQ	Full Parallel	Yes
	Greenwood Lake	4N1	Partial Parallel	Yes
	Lakewood	N12	Full Parallel	Yes
	Woodbine Municipal	OBI	Partial Parallel	Yes
	Princeton	39N	Full Parallel	Yes
	Sussex	FWN	Full Parallel	Yes
	Trenton-Robbinsville	N87	Full Parallel	Yes
	Alexandria Field	N85	Full Parallel	Yes
	Blairstown	1N7	Full Parallel	Yes
	Eagles Nest	31E	Full Parallel	Yes
	Flying W	N14	Full Parallel	Yes
	Old Bridge	3N6	Full Parallel	Yes
	Sky Manor	N40	Full Parallel	Yes
	Spitfire Aerodrome	7N7	Full Parallel	Yes
Basic Service: Preserve Existing	Ocean City Municipal	26N	Full Parallel	N/A
	Aeroflex-Andover Field	12N	Full Parallel	N/A
	Bucks	00N	None	N/A
	Camden County	19N	Full Parallel	N/A
	Hackettstown	N05	None	N/A
	Vineland Downstown	28N	None	N/A
Duplicative Basic Service: Preserve Existing	Trinca	13N	None	N/A
	Kroelinger	29N	None	N/A
	Red Wing	2N6	None	N/A
	Southern Cross	C01	None	N/A
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	None	N/A

Notes: N/A = Not Applicable

Source: Airport Survey Questionnaires, NJDOT BOA, FAA.

Appendix E Table 7. Approach Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Approach Type	Meets Approach Objective
Scheduled Service: CAT II Precision	Atlantic City International	ACY	Precision	No
	Newark International	EWR	CAT II Precision	Yes
	Trenton Mercer	TTN	Precision	No
Advanced Service: Precision or Non-Precision with Vertical Guidance	Morristown Municipal	MMU	Precision	Yes
	Teterboro	TEB	Precision	Yes
	Cape May County	WWD	Approach with VG	Yes
	Essex County	CDW	Approach with VG	Yes
	Ocean County Airport	MJX	Precision	Yes
	Millville Municipal	MIV	Precision	Yes
	Hammonton Municipal	N81	Non-Precision	No
	Monmouth Executive	BLM	Non-Precision	No
Priority General Service: Non-Precision	Lincoln Park	N07	Non-Precision	Yes
	South Jersey Regional	VAY	Non-Precision	Yes
	Linden	LDJ	Non-Precision	Yes
	Central Jersey Regional	47N	Non-Precision	Yes
	Solberg-Hunterdon	N51	Non-Precision	Yes
	Cross Keys	17N	Non-Precision	Yes
General Service: Non-Precision	Somerset	SMQ	Non-Precision	Yes
	Greenwood Lake	4N1	Non-Precision	Yes
	Lakewood	N12	Non-Precision	Yes
	Woodbine Municipal	OBI	Non-Precision	Yes
	Princeton	39N	Non-Precision	Yes
	Sussex	FWN	Non-Precision	Yes
	Trenton-Robbinsville	N87	Non-Precision	Yes
	Alexandria Field	N85	Non-Precision	Yes
	Blairstown	1N7	Non-Precision	Yes
	Eagles Nest	31E	Non-Precision	Yes
	Flying W	N14	Non-Precision	Yes
	Old Bridge	3N6	Non-Precision	Yes
	Sky Manor	N40	Non-Precision	Yes
	Spitfire Aerodrome	7N7	Non-Precision	Yes
Basic Service: Visual	Ocean City Municipal	26N	Non-Precision	Yes
	Aeroflex-Andover Field	12N	Non-Precision	Yes
	Bucks	00N	Visual	Yes
	Camden County	19N	Non-Precision	Yes
	Hackettstown	N05	Visual	Yes
	Vineland Downstown	28N	Visual	Yes
Duplicative Basic Service: Visual	Trinca	13N	Visual	Yes
	Kroelinger	29N	Non-Precision	Yes
	Red Wing	2N6	Visual	Yes
	Southern Cross	C01	Visual	Yes
Specialty Facilities: Visual	Little Ferry Seaplane Base	2N7	Visual	Yes

Source: Airport Survey Questionnaires, FAA Digital Chart Supplements.

Appendix E Table 8. Runway and Taxiway Lighting Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway	Primary Runway Lighting				Taxiway Edge Lighting	Meets Runway and Taxiway Lighting Objective
				Edge Lighting	Approach Lighting System	Center-line	Touchdown Zone		
Scheduled Service: ALSF I, HIRL, Centerline, Touchdown Zone, and MITL	Atlantic City International	ACY	13/31	HIRL	MALSR/ None	Yes	TZL/None	MITL	No
	Newark International	EWR	04R/22L	HIRL	ALSF2/ ALSF2	Yes	TZL/TZL	MITL	Yes
	Trenton Mercer	TTN	06/24	HIRL	MALSR/None	None	None/ None	MITL	No
Advanced Service: HIRL and MITL	Morristown Municipal	MMU	05/23	HIRL	None/ MALSR	None	None/ None	HITL	Yes
	Teterboro	TEB	06/24	HIRL	MALSR/ None	Yes	TZL/None	MITL	Yes
	Cape May County	WWD	01/19	HIRL	None/ None	None	None/ None	MITL	Yes
	Essex County	CDW	04/22	HIRL	None/ None	None	None/ None	MITL	Yes
	Ocean County Airport	MJX	06/24	HIRL	MALSR/ None	None	None/ None	MITL	Yes
	Hammonton Municipal	N81	03/21	MIRL	None/ None	None	None/ None	MITL	Yes
	Millville Municipal	MIV	10/28	MIRL	MALSR/ None	None	None/ None	MITL	No
	Monmouth Executive	BLM	14/32	MIRL-NSTD	None/ None	None	None/ None	None	No
Priority General Service: MIRL and MITL	Lincoln Park	N07	01/19	HIRL	None/ None	None	None/ None	None	No
	South Jersey Regional	VAY	08/26	MIRL	None/ None	None	None /None	MITL	Yes
	Linden	LDJ	09/27	MIRL	None/ None	None	None/ None	MITL	Yes
	Central Jersey Regional	47N	07/25	LIRL	None/ None	None	None/ None	None	No
	Solberg-Hunterdon	N51	04/22	MIRL	None/ None	None	None/ None	None	No
	Cross Keys	17N	09/27	LIRL	None/ None	None	None/ None	None	No
General Service: MIRL[1], Taxiway lighting/ reflectors	Somerset	SMQ	12/30	MIRL	None/ None	None	None/ None	None	No
	Greenwood Lake	4N1	06/24	MIRL	None/ None	None	None/ None	MITL	Yes
	Lakewood	N12	06/24	MIRL	None/ None	None	None/ None	MITL	Yes
	Woodbine Municipal	OBI	01/19	MIRL	None/ None	None	None/ None	None	No
	Princeton	39N	10/28	MIRL	None/ None	None	None/ None	MITL	Yes
	Sussex	FWN	03/21	MIRL	None/ None	None	None/ None	None	No

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway	Primary Runway Lighting: Edge Lighting	Primary Runway Lighting: Approach Lighting System	Primary Runway Lighting: Center -line	Primary Runway Lighting: Touchdown Zone	Taxiway Edge Lighting	Meets Runway and Taxiway Lighting Objective
	Trenton-Robbinsville	N87	11/29	MIRL	None/ None	None	None/ None	MITL	Yes
	Alexandria Field	N85	08/26	MIRL	None/ None	None	None/ None	MITL	Yes
	Blairstown	1N7	07/25	MIRL	None/ None	None	None/ None	None	No
	Eagles Nest	31E	14/32	HIRL	None/ None	None	None/ None	MITL	Yes
	Flying W	N14	01/19	MIRL	None/ None	None	None/ None	Unknown	No
	Old Bridge	3N6	06/24	MIRL	None/ None	None	None/ None	None	No
	Sky Manor	N40	07/25	MIRL	None/ None	None	None/ None	None	No
	Spitfire Aerodrome	7N7	07/25	MIRL	None/ None	None	None/ None	None	No
Basic Service: LIRL[1]	Ocean City Municipal	26N	06/24	MIRL	None/ None	None	None/ None	MITL	Yes
	Aeroflex-Andover Field	12N	03/21	MIRL	None/ None	None	None/ None	MITL	Yes
	Bucks	00N	18/36	LIRL	None/ None	None	None/ None	None	Yes
	Camden County	19N	05/23	MIRL	None/ None	None	None/ None	MITL	Yes
	Hackettstown	N05	05/23	None	None/ None	None	None/ None	None	Yes
	Vineland Downstown	28N	02/20	LIRL	None/ None	None	None/ None	None	Yes
Duplicative Basic Service: LIRL[1]	Trinca	13N	06/24	None	None/ None	None	None/ None	None	Yes
	Kroelinger	29N	10/28	None	None/ None	None	None/ None	None	Yes
	Red Wing	2N6	06/24	None	None/ None	None	None/ None	None	Yes
	Southern Cross	C01	09/27	None	None/ None	None	None/ None	None	Yes
Specialty Facilities: Not Applicable	Little Ferry Seaplane Base	2N7	01/19	None	None/ None	None	None/ None	None	N/A

Notes: [1] **Only airports with night-time operations are required to have runway edge lighting.**
Not Applicable = No existing taxiway
Unknown = Data not provided
N/A = Not Applicable

Source: Airport Survey Questionnaires, FAA Form 5010.

Appendix E Table 9. Visual Aid Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Rotating Beacon Available	Wind Cone Available	Segmented Circle Available	REILs Available	VGSI Available	Meets NAVAID Objective
Scheduled Service: Rotating beacon, lighted wind cone, VGSI	Atlantic City International	ACY	Yes	Lighted	None	None/REILs	PAPI/PAPI	Yes
	Newark International	EWR	Yes	Lighted	None	None/None	PAPI/PAPI	Yes
	Trenton Mercer	TTN	Yes	Lighted	None	None/REILs	None/PAPI	No
Advanced Service: Rotating beacon, lighted wind cone, segmented circle, REILs, VGSI	Morristown Municipal	MMU	Yes	Lighted	Yes	REILs/None	None	No
	Teterboro	TEB	Yes	Lighted	None	REILs/REILs	None/PAPI	No
	Cape May County	WWD	Yes	Lighted	None	None/None	PAPI/PAPI	No
	Essex County	CDW	Yes	Lighted	None	None/REILs	None/PAPI	No
	Ocean County Airport	MJX	Yes	Lighted	Yes	None/REILs	PAPI/PAPI	No
	Hammonton Municipal	N81	Yes	Lighted	None	REILs/REILs	PAPI/PAPI	No
	Millville Municipal	MIV	Yes	Lighted	None	None/None	PAPI/PAPI	No
	Monmouth Executive	BLM	Yes	Lighted	None	REILs/None	None/None	No
Priority General Service: Rotating beacon, lighted wind cone, segmented circle, REILs, VGSI	Lincoln Park	N07	Yes	Not Lighted	None	None/None	None/PAPI	No
	South Jersey Regional	VAY	Yes	Lighted	Yes	REILs/REILs	PAPI/PAPI	Yes
	Linden	LDJ	Yes	Lighted	Yes	REILs/REILs	VASI/VASI	Yes
	Central Jersey Regional	47N	Yes	Lighted	None	None/None	PAPI/PAPI	No
	Solberg-Hunterdon	N51	None	Not Lighted	None	None/None	None/None	No
	Cross Keys	17N	Yes	Lighted	None	None/None	None/None	No
General Service: Rotating beacon, lighted wind cone[1], segmented circle, REILs, VGSI	Somerset	SMQ	Yes	Lighted	None	REILs/REILs	PAPI/PAPI	No
	Greenwood Lake	4N1	Yes	Lighted	None	None/None	None/PAPI	No
	Lakewood	N12	Yes	Lighted	None	None/None	PAPI/PAPI	No
	Woodbine Municipal	OBI	Yes	Lighted	None	None/REILs	None/PAPI	No
	Princeton	39N	Yes	Lighted	None	REILs/None	PAPI/PAPI	No
	Sussex	FWN	Yes	Lighted	None	REILs/REILs	PAPI/None	No
	Trenton-Robbinsville	N87	Yes	Lighted	None	None/None	PAPI/PAPI	No
	Alexandria Field	N85	Yes	Lighted	None	None/None	PAPI/PAPI	No
	Blairstown	1N7	Yes	Lighted	None	None/None	None/None	No
	Eagles Nest	31E	Yes	Not Lighted	None	None/None	PAPI/PAPI	No
	Flying W	N14	Yes	Lighted	Yes	REILs/REILs	PAPI/PAPI	Yes
	Old Bridge	3N6	Yes	Lighted	Yes	REILs/REILs	PAPI/PAPI	Yes
	Sky Manor	N40	None	Not Lighted	None	REILs/REILs	PAPI/PAPI	No
	Spitfire Aerodrome	7N7	Yes	Lighted	None	REILs/REILs	PAPI/PAPI	No
Basic Service: Lighted wind cone[1], segmented circle	Ocean City Municipal	26N	None	Lighted	Yes	None/None	PAPI/PAPI	Yes
	Aeroflex-Andover Field	12N	Yes	Lighted	Yes	None/None	None/None	Yes
	Bucks	00N	Yes	Not Lighted	None	None/None	None/None	No
	Camden County	19N	Yes	Lighted	None	REILs/REILs	PVASI/PVASI	No
	Hackettstown	N05	None	Not Lighted	None	None/None	None/None	No
	Vineland Downstown	28N	None	Not Lighted	None	None/None	None/None	No

Current Role & Performance Objective	Airport Name	FAA ID	Rotating Beacon Available	Wind Cone Available	Segmented Circle Available	REILs Available	VGSI Available	Meets NAVAID Objective
Duplicative Basic Service: Lighted wind cone[1], segmented circle	Trinca	13N	None	Not Lighted	None	None/None	None/None	No
	Kroelinger	29N	None	Not Lighted	None	None/None	None/None	No
	Red Wing	2N6	None	Not Lighted	None	None/None	None/None	No
	Southern Cross	C01	None	Not Lighted	None	None/None	None/None	No
Specialty Facilities: Preserve existing	Little Ferry Seaplane Base	2N7	None	None	None	None/None	None/None	N/A

Notes: [1] **Only airports with night-time operations are required to have a lighted wind cone.**
REILs are not needed if a MALSR is in place on one runway end.
N/A = Not Applicable

Source: Airport Survey Questionnaires, FAA Form 5010.

Appendix E Table 10. Runway Lighting Separation Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Existing Primary Runway Lighting Separation Distance	Meets Runway Lighting Separation Objective
Scheduled Service: 200 ft between Lights	Atlantic City International	ACY	Standard	Yes
	Newark International	EWR	Standard	Yes
	Trenton Mercer	TTN	Standard	Yes
Advanced Service: 200 ft between Lights	Morristown Municipal	MMU	Standard	Yes
	Teterboro	TEB	Standard	Yes
	Cape May County	WWD	Standard	Yes
	Essex County	CDW	Standard	Yes
	Ocean County Airport	MJX	Standard	Yes
	Hammonton Municipal	N81	Standard	Yes
	Millville Municipal	MIV	Standard	Yes
	Monmouth Executive	BLM	Standard	Yes
Priority General Service: 200 ft between Lights	Lincoln Park	N07	Standard	Yes
	South Jersey Regional	VAY	Standard	Yes
	Linden	LDJ	Standard	Yes
	Central Jersey Regional	47N	Standard	Yes
	Solberg-Hunterdon	N51	Standard	Yes
	Cross Keys	17N	Nonstandard	No
General Service: 200 ft between Lights	Somerset	SMQ	Standard	Yes
	Greenwood Lake	4N1	Standard	Yes
	Lakewood	N12	Standard	Yes
	Woodbine Municipal	OBI	Standard	Yes
	Princeton	39N	Standard	Yes
	Sussex	FWN	Standard	Yes
	Trenton-Robbinsville	N87	Standard	Yes
	Alexandria Field	N85	Standard	Yes
	Blairstown	1N7	Standard	Yes
	Eagles Nest	31E	Standard	Yes
	Flying W	N14	Standard	Yes
	Old Bridge	3N6	Standard	Yes
	Sky Manor	N40	Standard	Yes
	Spitfire Aerodrome	7N7	Standard	Yes
Basic Service: 200 ft between Lights	Ocean City Municipal	26N	Standard	Yes
	Aeroflex-Andover Field	12N	Standard	Yes
	Bucks	00N	Standard	Yes
	Camden County	19N	Standard	Yes
	Hackettstown	N05	Not applicable	N/A
	Vineland Downstown	28N	Standard	Yes
Duplicative Basic Service: 200 ft between Lights	Trinca	13N	Not applicable	N/A
	Kroelinger	29N	Not applicable	N/A
	Red Wing	2N6	Not applicable	N/A
	Southern Cross	C01	Not applicable	N/A
Specialty Facilities: Not Applicable	Little Ferry Seaplane Base	2N7	Not applicable	N/A

Notes: [1] Only airports with nighttime operations are required to have a lighted wind cone.
REILs are not needed if a MALSR is in place on one runway end.
N/A = Not Applicable

Source: Airport Survey Questionnaires, Google Earth, and AECOM.

Appendix E Table 11. Weather Equipment Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	On-Site Weather Equipment	Meets Weather Equipment Objective
Scheduled Service: FAA-Certified ASOS or AWOS	Atlantic City International	ACY	ASOS	Yes
	Newark International	EWR	ASOS	Yes
	Trenton Mercer	TTN	ASOS	Yes
Advanced Service: FAA-Certified ASOS or AWOS	Morristown Municipal	MMU	AWOS	Yes
	Teterboro	TEB	ASOS	Yes
	Cape May County	WWD	AWOS	Yes
	Essex County	CDW	ASOS	Yes
	Ocean County Airport	MJX	AWOS	Yes
	Hammonton Municipal	N81	AWOS	Yes
	Millville Municipal	MIV	ASOS	Yes
	Monmouth Executive	BLM	AWOS	Yes
Priority General Service: FAA-Certified ASOS or AWOS	Lincoln Park	N07	None	No
	South Jersey Regional	VAY	ASOS	Yes
	Linden	LDJ	AWOS	Yes
	Central Jersey Regional	47N	None	No
	Solberg-Hunterdon	N51	None	No
	Cross Keys	17N	None	No
General Service: Not an objective	Somerset	SMQ	ASOS	N/A
	Greenwood Lake	4N1	None	N/A
	Lakewood	N12	None	N/A
	Woodbine Municipal	OBI	AWOS	N/A
	Princeton	39N	None	N/A
	Sussex	FWN	ASOS	N/A
	Trenton-Robbinsville	N87	None	N/A
	Alexandria Field	N85	None	N/A
	Blairstown	1N7	None	N/A
	Eagles Nest	31E	None	N/A
	Flying W	N14	None	N/A
	Old Bridge	3N6	None	N/A
	Sky Manor	N40	None	N/A
	Spitfire Aerodrome	7N7	None	N/A
Basic Service: Not an objective	Ocean City Municipal	26N	AWOS	N/A
	Aeroflex-Andover Field	12N	None	N/A
	Bucks	00N	None	N/A
	Camden County	19N	None	N/A
	Hackettstown	N05	None	N/A
	Vineland Downstown	28N	None	N/A
Duplicative Basic Service: Not an objective	Trinca	13N	None	N/A
	Kroelinger	29N	None	N/A
	Red Wing	2N6	None	N/A
	Southern Cross	C01	None	N/A
Specialty Facilities: Not an objective	Little Ferry Seaplane Base	2N7	None	N/A

Note: N/A = Not Applicable

Source: Airport Survey Questionnaires.

Appendix E Table 12. Hangar Space Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	2018 Hangar Objective	Existing Hangar Spaces Available	Meets Hangar Space Objective
Scheduled Service: Hangars available for 75 percent of based aircraft	Atlantic City International	ACY	18	16	No
	Newark International	EWR	8	61	Yes
	Trenton Mercer	TTN	110	133	Yes
Advanced Service: Hangars available for 75 percent of based aircraft	Morristown Municipal	MMU	125	126	Yes
	Teterboro	TEB	104	192	Yes
	Cape May County	WWD	29	33	Yes
	Essex County	CDW	165	124	No
	Ocean County Airport	MJX	53	54	Yes
	Hammonton Municipal	N81	8	45	Yes
	Millville Municipal	MIV	32	27	No
	Monmouth Executive	BLM	35	166	Yes
Priority General Service: Hangars available for 50 percent of based aircraft	Lincoln Park	N07	47	61	Yes
	South Jersey Regional	VAY	48	29	No
	Linden	LDJ	16	51	Yes
	Central Jersey Regional	47N	44	30	No
	Solberg-Hunterdon	N51	21	4	No
	Cross Keys	17N	17	13	No
General Service: Hangars available for 50 percent of based aircraft	Somerset	SMQ	48	64	Yes
	Greenwood Lake	4N1	17	13	No
	Lakewood	N12	29	36	Yes
	Woodbine Municipal	OBI	27	50	Yes
	Princeton	39N	18	85	Yes
	Sussex	FWN	16	4	No
	Trenton-Robbinsville	N87	16	25	Yes
	Alexandria Field	N85	43	0	No
	Blairstown	1N7	21	76	Yes
	Eagles Nest	31E	20	36	Yes
	Flying W	N14	51	50	No
	Old Bridge	3N6	46	90	Yes
	Sky Manor	N40	51	Unknown	Unknown
	Spitfire Aerodrome	7N7	12	Unknown	Unknown
Basic Service: Preserve Existing	Ocean City Municipal	26N	N/A	13	N/A
	Aeroflex-Andover Field	12N	N/A	3	N/A
	Bucks	00N	N/A	15	N/A
	Camden County	19N	N/A	5	N/A
	Hackettstown	N05	N/A	Unknown	N/A
	Vineland Downstown	28N	N/A	20	N/A
Duplicative Basic Service: Preserve Existing	Trinca	13N	N/A	0	N/A
	Kroelinger	29N	N/A	6	N/A
	Red Wing	2N6	N/A	0	N/A
	Southern Cross	C01	N/A	4	N/A
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	N/A	2	N/A

Note: N/A = Not Applicable

Unknown = Data not provided

Source: Airport Survey Questionnaires.

Appendix E Table 13. Apron Space Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Future (2045) Based Aircraft Apron Space Objective	Total Number of Paved and Unpaved Based Aircraft Tie-Downs Available	Existing Based Aircraft (sf) Available	Meets Based Aircraft Apron Space Objective
Scheduled Service: 25 percent of based aircraft	Atlantic City International	ACY	6	0	400,000	Yes
	Newark International	EWR	3	0	100,000	Yes
	Trenton Mercer	TTN	43	36	125,000	Yes
Advanced Service: 25 percent of based aircraft	Morristown Municipal	MMU	45	90	300,000	Yes
	Teterboro	TEB	37	0	800,000	Yes
	Cape May County	WWD	9	30	276,000	Yes
	Essex County	CDW	67	252	687,017	Yes
	Ocean County Airport	MJX	21	65	270,000	Yes
	Hammonton Municipal	N81	3	33	186,000	Yes
	Millville Municipal	MIV	9	30	101,000	Yes
	Monmouth Executive	BLM	14	110	250,000	Yes
Priority General Service: 50 percent of based aircraft	Lincoln Park	N07	50	62	26,840	Yes
	South Jersey Regional	VAY	55	85	70,000	Yes
	Linden	LDJ	20	115	490,000	Yes
	Central Jersey Regional	47N	48	126	300,000	Yes
	Solberg-Hunterdon	N51	24	90	1,000	Yes
	Cross Keys	17N	19	58	81,000	Yes
General Service: Preserve Existing	Somerset	SMQ	N/A	71	59,500	N/A
	Greenwood Lake	4N1	N/A	134	105,000	N/A
	Lakewood	N12	N/A	98	82,000	N/A
	Woodbine Municipal	OBI	N/A	9	7,894	N/A
	Princeton	39N	N/A	136	122,000	N/A
	Sussex	FWN	N/A	117	103,270	N/A
	Trenton-Robbinsville	N87	N/A	242	200,000	N/A
	Alexandria Field	N85	N/A	8	7,000	N/A
	Blairstown	1N7	N/A	110	160,000	N/A
	Eagles Nest	31E	N/A	27	12,500	N/A
	Flying W	N14	N/A	84	71,040	N/A
	Old Bridge	3N6	N/A	95	80,000	N/A
	Sky Manor	N40	N/A	55	46,000	N/A
	Spitfire Aerodrome	7N7	N/A	28	28,000	N/A
Basic Service: Preserve Existing	Ocean City Municipal	26N	N/A	6	5,850	N/A
	Aeroflex-Andover Field	12N	N/A	125	100,000	N/A
	Bucks	00N	N/A	0	0	N/A
	Camden County	19N	N/A	31	25,000	N/A
	Hackettstown	N05	N/A	116	95,000	N/A
	Vineland Downstown	28N	N/A	36	30,000	N/A
Duplicative Basic Service: Preserve Existing	Trinca	13N	N/A	8	8,000	N/A
	Kroelinger	29N	N/A	Unknown	Unknown	N/A
	Red Wing	2N6	N/A	55	43,560	N/A
	Southern Cross	C01	N/A	0	0	N/A
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	N/A	2	0	N/A

Note: N/A = Not Applicable

Unknown = Data not provided

Source: Airport Survey Questionnaires.

Appendix E Table 14. Auto Parking Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	2018 Auto Parking Objective	Number of Paved Auto Parking Spaces	Meets Auto Parking Objective
Scheduled Service: Minimum 100 parking spaces per 100,000 enplanements per FAA AC 150/5360-13	Atlantic City International	ACY	569	3,706	Yes
	Newark International	EWR	22,798	29,897	Yes
	Trenton Mercer	TTN	404	1,530	Yes
Advanced Service: 1 space per based aircraft + additional 50 percent for employees/visitors	Morristown Municipal	MMU	251	700	Yes
	Teterboro	TEB	207	946	Yes
	Cape May County	WWD	59	106	Yes
	Essex County	CDW	330	484	Yes
	Ocean County Airport	MJX	107	145	Yes
	Hammonton Municipal	N81	15	16	Yes
	Millville Municipal	MIV	65	110	Yes
	Monmouth Executive	BLM	69	350	Yes
Priority General Service: 1 space per based aircraft + additional 50 percent for employees/visitors	Lincoln Park	N07	140	86	No
	South Jersey Regional	VAY	144	90	No
	Linden	LDJ	47	80	Yes
	Central Jersey Regional	47N	132	300	Yes
	Solberg-Hunterdon	N51	63	50	No
	Cross Keys	17N	50	85	Yes
General Service: 1 space per based aircraft + additional 25 percent for employees/visitors	Somerset	SMQ	119	50	No
	Greenwood Lake	4N1	43	38	No
	Lakewood	N12	71	24	No
	Woodbine Municipal	OBI	66	24	No
	Princeton	39N	44	100	Yes
	Sussex	FWN	40	0	No
	Trenton-Robbinsville	N87	40	40	No
	Alexandria Field	N85	106	25	No
	Blairstown	1N7	51	100	Yes
	Eagles Nest	31E	50	20	No
	Flying W	N14	128	120	No
	Old Bridge	3N6	115	60	No
	Sky Manor	N40	128	60	No
	Spitfire Aerodrome	7N7	29	Unknown	Unknown
Basic Service: 1 space per based aircraft	Ocean City Municipal	26N	14	148	Yes
	Aeroflex-Andover	12N	44	20	No
	Bucks	00N	17	Unknown	Unknown
	Camden County	19N	29	38	Yes
	Hackettstown	N05	21	Unknown	Unknown
	Vineland Downstown	28N	21	Unknown	Unknown
Duplicative Basic Service: 1 space per based aircraft	Trinca	13N	4	10	Yes
	Kroelinger	29N	4	0	No
	Red Wing	2N6	4	Unknown	Unknown
	Southern Cross	C01	7	0	No
Specialty Facilities: 1 space per based aircraft	Little Ferry Seaplane Base	2N7	0	16	Yes

Note: Unknown = Data not provided
Source: Airport Survey Questionnaires and Google Earth.

Appendix E Table 15. Terminal Building Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	2019 Terminal Building Objective (Square Footage)	Existing Terminal Building (Square Footage)	Meets Terminal Building Objective
Scheduled Service: As per needs identified in master plan	Atlantic City International	ACY	6,100	185,000	Yes
	Newark International	EWR	62,500	1,446,000	Yes
	Trenton Mercer	TTN	15,900	25,000	Yes
Advanced Service: Terminal building recommended. Estimated peak hour operations * a factor of 2.5 people * square footage per person = terminal square footage	Morristown Municipal	MMU	9,900	20,000	Yes
	Teterboro	TEB	31,900	4,420	No
	Cape May County	WWD	3,900	10,000	Yes
	Essex County	CDW	9,500	5,500	No
	Ocean County Airport	MJX	4,500	11,600	Yes
	Hammonton Municipal	N81	900	None	No
	Millville Municipal	MIV	10,900	1,500	No
	Monmouth Executive	BLM	5,400	2,000	No
Priority General Service: Preserve Existing	Lincoln Park	N07	N/A	None	N/A
	South Jersey Regional	VAY	N/A	9,000	N/A
	Linden	LDJ	N/A	None	N/A
	Central Jersey Regional	47N	N/A	2,500	N/A
	Solberg-Hunterdon	N51	N/A	5,000	N/A
	Cross Keys	17N	N/A	1,200	N/A
General Service: Preserve Existing	Somerset	SMQ	N/A	2,093	N/A
	Greenwood Lake	4N1	N/A	1,800	N/A
	Lakewood	N12	N/A	6,000	N/A
	Woodbine Municipal	OBI	N/A	1,450	N/A
	Princeton	39N	N/A	6,000	N/A
	Sussex	FWN	N/A	None	N/A
	Trenton-Robbinsville	N87	N/A	600	N/A
	Alexandria Field	N85	N/A	1,000	N/A
	Blairstown	1N7	N/A	None	N/A
	Eagles Nest	31E	N/A	None	N/A
	Flying W	N14	N/A	1,700	N/A
	Old Bridge	3N6	N/A	None	N/A
	Sky Manor	N40	N/A	Unknown	N/A
	Spitfire Aerodrome	7N7	N/A	Unknown	N/A
Basic Service: Preserve Existing	Ocean City Municipal	26N	N/A	5,850	N/A
	Aeroflex-Andover	12N	N/A	1,000	N/A
	Bucks	00N	N/A	None	N/A
	Camden County	19N	N/A	6,400	N/A
	Hackettstown	N05	N/A	Unknown	N/A
	Vineland Downstown	28N	N/A	3,000	N/A
Duplicative Basic Service: Preserve Existing	Trinca	13N	N/A	None	N/A
	Kroelinger	29N	N/A	None	N/A
	Red Wing	2N6	N/A	None	N/A
	Southern Cross	C01	N/A	None	N/A
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	N/A	2,000	N/A

Note: Unknown = Data not provided

N/A = Not applicable

Source: Airport Survey Questionnaires.

Appendix E Table 16. Airport Access Road Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Paved Airport Access Road Type	Meets Airport Access Road Objective
Scheduled Service: Paved	Atlantic City International	ACY	Yes	Yes
	Newark International	EWR	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes
Advanced Service: Paved	Morristown Municipal	MMU	Yes	Yes
	Teterboro	TEB	Yes	Yes
	Cape May County	WWD	Yes	Yes
	Essex County	CDW	Yes	Yes
	Ocean County Airport	MJX	Yes	Yes
	Hammonton Municipal	N81	Yes	Yes
	Millville Municipal	MIV	Yes	Yes
	Monmouth Executive	BLM	Yes	Yes
Priority General Service: Paved	Lincoln Park	N07	Yes	Yes
	South Jersey Regional	VAY	Yes	Yes
	Linden	LDJ	Yes	Yes
	Central Jersey Regional	47N	Yes	Yes
	Solberg-Hunterdon	N51	Yes	Yes
	Cross Keys	17N	Yes	Yes
General Service: Paved	Somerset	SMQ	Yes	Yes
	Greenwood Lake	4N1	Yes	Yes
	Lakewood	N12	Yes	Yes
	Woodbine Municipal	OBI	Yes	Yes
	Princeton	39N	Yes	Yes
	Sussex	FWN	Yes	Yes
	Trenton-Robbinsville	N87	Yes	Yes
	Alexandria Field	N85	Yes	Yes
	Blairstown	1N7	Yes	Yes
	Eagles Nest	31E	Yes	Yes
	Flying W	N14	Yes	Yes
	Old Bridge	3N6	Yes	Yes
	Sky Manor	N40	Yes	Yes
	Spitfire Aerodrome	7N7	Yes	Yes
Basic Service: Paved	Ocean City Municipal	26N	Yes	Yes
	Aeroflex-Andover	12N	Yes	Yes
	Bucks	00N	Yes	Yes
	Camden County	19N	Yes	Yes
	Hackettstown	N05	Yes	Yes
	Vineland Downstown	28N	Yes	Yes
Duplicative Basic Service: Paved	Trinca	13N	Yes	Yes
	Kroelinger	29N	Yes	Yes
	Red Wing	2N6	Yes	Yes
	Southern Cross	C01	Yes	Yes
Specialty Facilities: Paved	Little Ferry Seaplane Base	2N7	Yes	Yes

Source: Airport Survey Questionnaires.

Appendix E Table 17. Fixed Based Operator Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	FBO Services Available	# of FBO Providers	Type of FBO Services	Meets FBO Objective
Scheduled Service: Full Service FBO (more than 2 services provided)	Atlantic City International	ACY	Yes	1	Full Service FBO	Yes
	Newark International	EWR	Yes	1	Full Service FBO	Yes
	Trenton Mercer	TTN	Yes	2	Full Service FBO	Yes
Advanced Service: Full Service FBO (more than 2 services provided)	Morristown Municipal	MMU	Yes	1	Full Service FBO	Yes
	Teterboro	TEB	Yes	4	Full Service FBO	Yes
	Cape May County	WWD	Yes	1	Limited Service FBO	No
	Essex County	CDW	Yes	9	Full Service FBO	Yes
	Ocean County Airport	MJX	Yes	1	Full Service FBO	Yes
	Hammonton Municipal	N81	Yes	1	Full Service FBO	Yes
	Millville Municipal	MIV	Yes	1	Full Service FBO	Yes
	Monmouth Executive	BLM	Yes	3	Full Service FBO	Yes
Priority General Service: Full Service FBO (more than 2 services provided)	Lincoln Park	N07	Yes	3	Full Service FBO	Yes
	South Jersey Regional	VAY	Yes	1	Full Service FBO	Yes
	Linden	LDJ	Yes	3	Full Service FBO	Yes
	Central Jersey Regional	47N	Yes	1	Full Service FBO	Yes
	Solberg-Hunterdon	N51	Yes	1	Full Service FBO	Yes
	Cross Keys	17N	Yes	1	Full Service FBO	Yes
General Service: Limited Service FBO (2 or less services provided)	Somerset	SMQ	Yes	1	Full Service FBO	Yes
	Greenwood Lake	4N1	Yes	2	Full Service FBO	Yes
	Lakewood	N12	Yes	2	Full Service FBO	Yes
	Woodbine Municipal	OBI	No	None	N/A	No
	Princeton	39N	Yes	3	Full Service FBO	Yes
	Sussex	FWN	Yes	3	Limited Service FBO	Yes
	Trenton-Robbinsville	N87	Yes	2	Full Service FBO	Yes
	Alexandria Field	N85	Yes	3	Full Service FBO	Yes
	Blairstown	1N7	Yes	2	Limited Service FBO	Yes
	Eagles Nest	31E	Yes	1	Full Service FBO	Yes
	Flying W	N14	Yes	1	Full Service FBO	Yes
	Old Bridge	3N6	Yes	2	Full Service FBO	Yes
	Sky Manor	N40	Unknown	Unknown	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown	Unknown	Unknown
Basic Service: Preserve Existing	Ocean City Municipal	26N	Yes	1	Limited Service FBO	N/A
	Aeroflex-Andover	12N	Yes	2	Limited Service FBO	N/A
	Bucks	00N	No	None	N/A	N/A
	Camden County	19N	Yes	1	Full Service FBO	N/A
	Hackettstown	N05	Unknown	Unknown	Unknown	N/A
	Vineland Downstown	28N	Yes	1	Full Service FBO	N/A
Duplicative Basic Service: Preserve Existing	Trinca	13N	No	None	N/A	N/A
	Kroelinger	29N	No	None	N/A	N/A
	Red Wing	2N6	No	None	N/A	N/A
	Southern Cross	C01	No	None	N/A	N/A
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	No	None	N/A	N/A

Note: Unknown = Data not provided

N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 18. Fuel Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	AvGas	AvGas 24/7 Availability	Jet A	Jet A 24/7 Availability	Meets Fuel Objective
Scheduled Service: 24/7 Jet A and AvGas (100LL)	Atlantic City International	ACY	Yes	Yes	Yes	Yes	Yes
	Newark International	EWR	Yes	Yes	Yes	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes	Yes	Yes	Yes
Advanced Service: 24/7 Jet A and AvGas (100LL)	Morristown Municipal	MMU	Yes	Yes	Yes	Yes	Yes
	Teterboro	TEB	Yes	Yes	Yes	Yes	Yes
	Cape May County	WWD	Yes	No	Yes	No	No
	Essex County	CDW	Yes	No	Yes	No	No
	Ocean County Airport	MJX	Yes	No	Yes	No	No
	Hammonton Municipal	N81	Yes	Yes	Yes	Yes	Yes
	Millville Municipal	MIV	Yes	No	Yes	No	No
	Monmouth Executive	BLM	Yes	Yes	Yes	Yes	Yes
Priority General Service: 24/7 Jet A and AvGas (100LL)	Lincoln Park	N07	Yes	Yes	Yes	Yes	Yes
	South Jersey Regional	VAY	Yes	No	Yes	Yes	No
	Linden	LDJ	Yes	No	Yes	No	No
	Central Jersey Regional	47N	Yes	Yes	No	No	No
	Solberg-Hunterdon	N51	Yes	Yes	Yes	No	No
	Cross Keys	17N	Yes	Yes	Yes	Yes	Yes
General Service: 24/7 AvGas (100LL)	Somerset	SMQ	Yes	No	Yes	Yes	Yes
	Greenwood Lake	4N1	Yes	Yes	Yes	Yes	Yes
	Lakewood	N12	Yes	Yes	Yes	Yes	Yes
	Woodbine Municipal	OBI	Yes	Yes	No	No	Yes
	Princeton	39N	Yes	No	Yes	No	Yes
	Sussex	FWN	Yes	Yes	Yes	Yes	Yes
	Trenton-Robbinsville	N87	Yes	Yes	No	No	Yes
	Alexandria Field	N85	Yes	Yes	Yes	Yes	Yes
	Blairstown	1N7	Yes	Yes	No	No	Yes
	Eagles Nest	31E	Yes	Yes	No	No	Yes
	Flying W	N14	Yes	No	Yes	No	Yes
	Old Bridge	3N6	Yes	Yes	No	No	Yes
	Sky Manor	N40	Yes	Yes	No	No	Yes
	Spitfire Aerodrome	7N7	No	No	No	No	No
Basic Service: AvGas (100LL)	Ocean City Municipal	26N	Yes	No	No	No	Yes
	Aeroflex-Andover	12N	Yes	No	No	No	Yes
	Bucks	00N	No	No	No	No	No
	Camden County	19N	Yes	No	Yes	No	Yes
	Hackettstown	N05	Yes	No	No	No	Yes
	Vineland Downtown	28N	Yes	No	Yes	No	Yes
Duplicative Basic Service: AvGas (100LL)	Trinca	13N	No	No	No	No	No
	Kroelinger	29N	No	No	No	No	No
	Red Wing	2N6	No	No	No	No	No
	Southern Cross	C01	No	No	No	No	No
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	No	No	No	No	N/A

Note: N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 19. Aircraft Maintenance Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Aircraft Maintenance Available (Major, Minor, or Both)	Meets Aircraft Maintenance Objective
Scheduled Service: On-Site Major Aircraft Maintenance	Atlantic City International	ACY	Minor	No
	Newark International	EWR	Both	Yes
	Trenton Mercer	TTN	Both	Yes
Advanced Service: On-Site Major Aircraft Maintenance	Morristown Municipal	MMU	Minor	No
	Teterboro	TEB	Both	Yes
	Cape May County	WWD	Minor	No
	Essex County	CDW	Both	Yes
	Ocean County Airport	MJX	Both	Yes
	Hammonton Municipal	N81	Major	Yes
	Millville Municipal	MIV	Minor	No
	Monmouth Executive	BLM	Minor	No
Priority General Service: On-Site Major Aircraft Maintenance	Lincoln Park	N07	Major	Yes
	South Jersey Regional	VAY	Major	Yes
	Linden	LDJ	Major	Yes
	Central Jersey Regional	47N	Minor	No
	Solberg-Hunterdon	N51	Minor	No
	Cross Keys	17N	Both	Yes
General Service: On-Site Minor Aircraft Maintenance	Somerset	SMQ	Major	Yes
	Greenwood Lake	4N1	Both	Yes
	Lakewood	N12	Minor	Yes
	Woodbine Municipal	OBI	None	No
	Princeton	39N	Both	Yes
	Sussex	FWN	Minor	Yes
	Trenton-Robbinsville	N87	Both	Yes
	Alexandria Field	N85	Both	Yes
	Blairstown	1N7	Major	Yes
	Eagles Nest	31E	Both	Yes
	Flying W	N14	Major	Yes
	Old Bridge	3N6	Major	Yes
	Sky Manor	N40	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown
Basic Service: Preserve Existing	Ocean City Municipal	26N	None	N/A
	Aeroflex-Andover	12N	Minor	N/A
	Bucks	00N	None	N/A
	Camden County	19N	Minor	N/A
	Hackettstown	N05	Unknown	N/A
	Vineland Downstown	28N	Minor	N/A
Duplicative Basic Service: Preserve Existing	Trinca	13N	None	N/A
	Kroelinger	29N	None	N/A
	Red Wing	2N6	None	N/A
	Southern Cross	C01	None	N/A
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	None	N/A

Note: Unknown = Data not provided

N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 20. Aircraft Rental Service Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Aircraft Rental Services Availability	Meets Aircraft Rental Services Objective
Scheduled Service: Not an objective	Atlantic City International	ACY	No	N/A
	Newark International	EWR	No	N/A
	Trenton Mercer	TTN	Yes	N/A
Advanced Service: Facility Available	Morristown Municipal	MMU	No	No
	Teterboro	TEB	No	No
	Cape May County	WWD	No	No
	Essex County	CDW	Yes	Yes
	Ocean County Airport	MJX	Yes	Yes
	Hammonton Municipal	N81	Yes	Yes
	Millville Municipal	MIV	Yes	Yes
	Monmouth Executive	BLM	Yes	Yes
Priority General Service: Facility Available	Lincoln Park	N07	Yes	Yes
	South Jersey Regional	VAY	Yes	Yes
	Linden	LDJ	Yes	Yes
	Central Jersey Regional	47N	Yes	Yes
	Solberg-Hunterdon	N51	Yes	Yes
	Cross Keys	17N	Yes	Yes
General Service: Facility Available	Somerset	SMQ	Yes	Yes
	Greenwood Lake	4N1	Yes	Yes
	Lakewood	N12	No	No
	Woodbine Municipal	OBI	No	No
	Princeton	39N	Yes	Yes
	Sussex	FWN	No	No
	Trenton-Robbinsville	N87	Yes	Yes
	Alexandria Field	N85	Yes	Yes
	Blairstown	1N7	Yes	Yes
	Eagles Nest	31E	No	No
	Flying W	N14	Yes	Yes
	Old Bridge	3N6	Yes	Yes
	Sky Manor	N40	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown
Basic Service: Facility Available	Ocean City Municipal	26N	No	No
	Aeroflex-Andover	12N	No	No
	Bucks	00N	No	No
	Camden County	19N	No	No
	Hackettstown	N05	Unknown	Unknown
	Vineland Downstown	28N	No	No
Duplicative Basic Service: Facility Available	Trinca	13N	No	No
	Kroelinger	29N	No	No
	Red Wing	2N6	No	No
	Southern Cross	C01	No	No
Specialty Facilities: Facility Available	Little Ferry Seaplane Base	2N7	No	No

Note: Unknown = Data not provided
Source: Airport Survey Questionnaires.

Appendix E Table 21. Charter Service Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Charter Service Operator Available at Airport	Meets Charter Service Objective
Scheduled Service: Support Activity	Atlantic City International	ACY	No	No
	Newark International	EWR	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes
Advanced Service: Support Activity	Morristown Municipal	MMU	No	No
	Teterboro	TEB	Yes	Yes
	Cape May County	WWD	No	No
	Essex County	CDW	Yes	Yes
	Ocean County Airport	MJX	No	No
	Hammonton Municipal	N81	Yes	Yes
	Millville Municipal	MIV	No	No
	Monmouth Executive	BLM	Yes	Yes
Priority General Service: Support Activity	Lincoln Park	N07	Yes	Yes
	South Jersey Regional	VAY	No	No
	Linden	LDJ	Yes	Yes
	Central Jersey Regional	47N	No	No
	Solberg-Hunterdon	N51	No	No
	Cross Keys	17N	No	No
General Service: Support Activity	Somerset	SMQ	Yes	Yes
	Greenwood Lake	4N1	No	No
	Lakewood	N12	No	No
	Woodbine Municipal	OBI	No	No
	Princeton	39N	Yes	Yes
	Sussex	FWN	No	No
	Trenton-Robbinsville	N87	Yes	Yes
	Alexandria Field	N85	No	No
	Blairstown	1N7	Yes	Yes
	Eagles Nest	31E	No	No
	Flying W	N14	No	No
	Old Bridge	3N6	No	No
	Sky Manor	N40	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown
Basic Service: Not an Objective	Ocean City Municipal	26N	No	N/A
	Aeroflex-Andover	12N	No	N/A
	Bucks	00N	No	N/A
	Camden County	19N	No	N/A
	Hackettstown	N05	Unknown	N/A
	Vineland Downtown	28N	No	N/A
Duplicative Basic Service: Not an Objective	Trinca	13N	No	N/A
	Kroelinger	29N	No	N/A
	Red Wing	2N6	No	N/A
	Southern Cross	C01	No	N/A
Specialty Facilities: Not an Objective	Little Ferry Seaplane Base	2N7	No	N/A

Note: Unknown = Data not provided

N/A = Not applicable

Source: Airport Survey Questionnaires.

Appendix E Table 22. Pilot Training Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Full-Time Pilot Training Available	Part-Time Pilot Training Available	Meets Pilot Training Objective
Scheduled Service: Not an Objective	Atlantic City International	ACY	No	No	N/A
	Newark International	EWR	No	No	N/A
	Trenton Mercer	TTN	No	No	N/A
Advanced Service: Not an Objective	Morristown Municipal	MMU	Yes	Yes	N/A
	Teterboro	TEB	No	No	N/A
	Cape May County	WWD	No	No	N/A
	Essex County	CDW	Yes	Yes	N/A
	Ocean County Airport	MJX	Yes	Yes	N/A
	Hammonton Municipal	N81	Yes	Yes	N/A
	Millville Municipal	MIV	Yes	Yes	N/A
	Monmouth Executive	BLM	Yes	Yes	N/A
Priority General Service: Part-time	Lincoln Park	N07	Yes	Yes	Yes
	South Jersey Regional	VAY	No	No	No
	Linden	LDJ	Yes	Yes	Yes
	Central Jersey Regional	47N	Yes	Yes	Yes
	Solberg-Hunterdon	N51	Yes	Yes	Yes
	Cross Keys	17N	Yes	Yes	Yes
General Service: Part-time	Somerset	SMQ	Yes	Yes	Yes
	Greenwood Lake	4N1	Yes	Yes	Yes
	Lakewood	N12	No	No	No
	Woodbine Municipal	OBI	No	No	No
	Princeton	39N	Yes	Yes	Yes
	Sussex	FWN	No	No	No
	Trenton-Robbinsville	N87	Yes	Yes	Yes
	Alexandria Field	N85	Yes	Yes	Yes
	Blairstown	1N7	No	No	No
	Eagles Nest	31E	No	No	No
	Flying W	N14	Yes	Yes	Yes
	Old Bridge	3N6	Yes	Yes	Yes
	Sky Manor	N40	Unknown	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown	Unknown
Basic Service: Part-time	Ocean City Municipal	26N	No	No	No
	Aeroflex-Andover	12N	Yes	Yes	Yes
	Bucks	00N	No	No	No
	Camden County	19N	No	No	No
	Hackettstown	N05	Unknown	Unknown	Unknown
	Vineland Downstown	28N	No	No	No
Duplicative Basic Service: Part-time	Trinca	13N	No	No	No
	Kroelinger	29N	No	No	No
	Red Wing	2N6	No	No	No
	Southern Cross	C01	No	No	No
Specialty Facilities: Part-time	Little Ferry Seaplane Base	2N7	No	No	No

Note: Unknown = Data not provided

Source: Airport Survey Questionnaires.

Appendix E Table 23. Ground Transportation Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Rental Car Facilities Available	Courtesy/Crew Car Available	Meets Rental Car Objective
Scheduled Service: Rental Car or Courtesy Vehicle Available	Atlantic City International	ACY	Yes	Yes	Yes
	Newark International	EWR	Yes	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes	Yes
Advanced Service: Rental Car or Courtesy Vehicle Available	Morristown Municipal	MMU	No	No	No
	Teterboro	TEB	Yes	Yes	Yes
	Cape May County	WWD	Yes	Yes	Yes
	Essex County	CDW	Yes	Yes	Yes
	Ocean County Airport	MJX	Yes	Yes	Yes
	Hammonton Municipal	N81	No	Yes	Yes
	Millville Municipal	MIV	No	No	No
	Monmouth Executive	BLM	Yes	Yes	Yes
Priority General Service: Rental Car or Courtesy Vehicle Available	Lincoln Park	N07	No	Yes	Yes
	South Jersey Regional	VAY	No	No	No
	Linden	LDJ	Yes	No	Yes
	Central Jersey Regional	47N	No	No	No
	Solberg-Hunterdon	N51	No	No	No
	Cross Keys	17N	No	No	No
General Service: Rental Car or Courtesy Vehicle Available	Somerset	SMQ	No	No	No
	Greenwood Lake	4N1	No	No	No
	Lakewood	N12	No	No	No
	Woodbine Municipal	OBI	No	No	No
	Princeton	39N	Yes	Yes	Yes
	Sussex	FWN	No	No	No
	Trenton-Robbinsville	N87	No	No	No
	Alexandria Field	N85	No	No	No
	Blairstown	1N7	No	No	No
	Eagles Nest	31E	No	No	No
	Flying W	N14	No	No	No
	Old Bridge	3N6	No	No	No
	Sky Manor	N40	Unknown	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown	Unknown
Basic Service: Not an Objective	Ocean City Municipal	26N	No	No	N/A
	Aeroflex-Andover	12N	No	No	N/A
	Bucks	00N	No	No	N/A
	Camden County	19N	No	Yes	N/A
	Hackettstown	N05	Unknown	Unknown	N/A
	Vineland Downstown	28N	No	Yes	N/A
Duplicative Basic Service: Not an Objective	Trinca	13N	No	No	N/A
	Kroelinger	29N	No	No	N/A
	Red Wing	2N6	No	No	N/A
	Southern Cross	C01	No	No	N/A
Specialty Facilities: Not an Objective	Little Ferry Seaplane Base	2N7	No	No	N/A

Note: Unknown = Data not provided

N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 24. Public Transit Facility Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Access to a Public Transit Mode within 1/2 mile of the Airport	On-Airport Shuttle Service Available	Meets Public Transit Facility Objective
Scheduled Service: Access to a Public Transit Mode within 1/2 mile of the Airport or an On-Airport Shuttle Service Available	Atlantic City International	ACY	Yes	Yes	Yes
	Newark International	EWR	Yes	Yes	Yes
	Trenton Mercer	TTN	None	Yes	Yes
Advanced Service: Access to a Public Transit Mode within 1/2 mile of the Airport or an On-Airport Shuttle Service Available	Morristown Municipal	MMU	None	None	No
	Teterboro	TEB	Yes	Yes	Yes
	Cape May County	WWD	None	None	No
	Essex County	CDW	Yes	None	Yes
	Ocean County Airport	MJX	None	None	No
	Hammonton Municipal	N81	None	None	No
	Millville Municipal	MIV	None	Yes	Yes
	Monmouth Executive	BLM	None	None	No
Priority General Service: Not an Objective	Lincoln Park	N07	None	None	N/A
	South Jersey Regional	VAY	None	None	N/A
	Linden	LDJ	Yes	None	N/A
	Central Jersey Regional	47N	None	None	N/A
	Solberg-Hunterdon	N51	None	None	N/A
	Cross Keys	17N	None	None	N/A
General Service: Not an Objective	Somerset	SMQ	None	None	N/A
	Greenwood Lake	4N1	None	None	N/A
	Lakewood	N12	None	None	N/A
	Woodbine Municipal	OBI	None	None	N/A
	Princeton	39N	Yes	None	N/A
	Sussex	FWN	None	None	N/A
	Trenton-Robbinsville	N87	None	None	N/A
	Alexandria Field	N85	None	None	N/A
	Blairstown	1N7	None	None	N/A
	Eagles Nest	31E	None	None	N/A
	Flying W	N14	None	None	N/A
	Old Bridge	3N6	None	None	N/A
	Sky Manor	N40	None	None	N/A
	Spitfire Aerodrome	7N7	None	None	N/A
Basic Service: Not an Objective	Ocean City Municipal	26N	Yes	None	N/A
	Aeroflex-Andover	12N	None	None	N/A
	Bucks	00N	None	None	N/A
	Camden County	19N	None	None	N/A
	Hackettstown	N05	None	None	N/A
	Vineland Downstown	28N	None	None	N/A
Duplicative Basic Service: Not an Objective	Trinca	13N	None	None	N/A
	Kroelinger	29N	Yes	None	N/A
	Red Wing	2N6	None	None	N/A
	Southern Cross	C01	None	None	N/A
Specialty Facilities: Not an Objective	Little Ferry Seaplane Base	2N7	Yes	None	N/A

Note: N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 25. Public-Use Restroom Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Public-Use Restroom Available	Meets Public-Use Restroom Objective
Scheduled Service: Facility Available	Atlantic City International	ACY	Yes	Yes
	Newark International	EWR	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes
Advanced Service: Facility Available	Morristown Municipal	MMU	Yes	Yes
	Teterboro	TEB	Yes	Yes
	Cape May County	WWD	Yes	Yes
	Essex County	CDW	Yes	Yes
	Ocean County Airport	MJX	Yes	Yes
	Hammonton Municipal	N81	No	No
	Millville Municipal	MIV	Yes	Yes
	Monmouth Executive	BLM	Yes	Yes
Priority General Service: Facility Available	Lincoln Park	N07	Yes	Yes
	South Jersey Regional	VAY	Yes	Yes
	Linden	LDJ	Yes	Yes
	Central Jersey Regional	47N	Yes	Yes
	Solberg-Hunterdon	N51	Yes	Yes
	Cross Keys	17N	Yes	Yes
General Service: Facility Available	Somerset	SMQ	Yes	Yes
	Greenwood Lake	4N1	Yes	Yes
	Lakewood	N12	No	No
	Woodbine Municipal	OBI	Yes	Yes
	Princeton	39N	Yes	Yes
	Sussex	FWN	Yes	Yes
	Trenton-Robbinsville	N87	Yes	Yes
	Alexandria Field	N85	Yes	Yes
	Blairstown	1N7	Unknown	Unknown
	Eagles Nest	31E	Yes	Yes
	Flying W	N14	Yes	Yes
	Old Bridge	3N6	Yes	Yes
	Sky Manor	N40	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown
Basic Service: Facility Available	Ocean City Municipal	26N	Yes	Yes
	Aeroflex-Andover	12N	Yes	Yes
	Bucks	00N	Yes	Yes
	Camden County	19N	Yes	Yes
	Hackettstown	N05	Unknown	Unknown
	Vineland Downstown	28N	Yes	Yes
Duplicative Basic Service: Facility Available	Trinca	13N	No	No
	Kroelinger	29N	No	No
	Red Wing	2N6	No	No
	Southern Cross	C01	No	No
Specialty Facilities: Facility Available	Little Ferry Seaplane Base	2N7	Unknown	Unknown

Note: Unknown = Data not provided

N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 26. Food Service Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Restaurant or Food Service Available	Food & Beverage Vending Machines Available	Catering Services Available	Meets Food Service Objective
Scheduled Service: Restaurant, Food/Beverage Vending Machines, or Catering Services Available	Atlantic City International	ACY	Yes	Yes	Yes	Yes
	Newark International	EWR	Yes	Yes	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes	Yes	Yes
Advanced Service: Restaurant, Food/Beverage Vending Machines, or Catering Services Available	Morristown Municipal	MMU	No	Yes	Yes	Yes
	Teterboro	TEB	No	Yes	Yes	Yes
	Cape May County	WWD	Yes	No	Yes	Yes
	Essex County	CDW	No	Yes	Yes	Yes
	Ocean County Airport	MJX	No	Yes	Yes	Yes
	Hammonton Municipal	N81	Yes	No	No	Yes
	Millville Municipal	MIV	Yes	No	Yes	Yes
	Monmouth Executive	BLM	No	Yes	Yes	Yes
Priority General Service: Restaurant, Food/Beverage Vending Machines, or Catering Services Available	Lincoln Park	N07	Yes	No	Yes	Yes
	South Jersey Regional	VAY	Yes	Yes	Yes	Yes
	Linden	LDJ	No	Yes	No	Yes
	Central Jersey Regional	47N	No	No	No	No
	Solberg-Hunterdon	N51	No	Yes	No	Yes
	Cross Keys	17N	No	Yes	No	Yes
General Service: Restaurant, Food/Beverage Vending Machines, or Catering Services Available	Somerset	SMQ	No	Yes	No	Yes
	Greenwood Lake	4N1	No	Yes	No	Yes
	Lakewood	N12	No	No	No	No
	Woodbine Municipal	OBI	No	No	No	No
	Princeton	39N	No	Yes	No	Yes
	Sussex	FWN	No	No	No	No
	Trenton-Robbinsville	N87	No	No	No	No
	Alexandria Field	N85	No	Yes	No	Yes
	Blairstown	1N7	Unknown	Unknown	Unknown	Unknown
	Eagles Nest	31E	No	No	No	No
	Flying W	N14	Yes	No	No	Yes
	Old Bridge	3N6	No	No	No	No
	Sky Manor	N40	Unknown	Unknown	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown	Unknown	Unknown
Basic Service: Not an Objective	Ocean City Municipal	26N	Yes	Yes	No	N/A
	Aeroflex-Andover	12N	No	Yes	No	N/A
	Bucks	00N	No	No	No	N/A
	Camden County	19N	No	No	No	N/A
	Hackettstown	N05	Unknown	Unknown	Unknown	N/A
	Vineland Downstown	28N	No	No	No	N/A

Current Role & Performance Objective	Airport Name	FAA ID	Restaurant or Food Service Available	Food & Beverage Vending Machines Available	Catering Services Available	Meets Food Service Objective
Duplicative Basic Service: Not an Objective	Trinca	13N	No	No	No	N/A
	Kroelinger	29N	No	No	No	N/A
	Red Wing	2N6	No	No	No	N/A
	Southern Cross	C01	No	No	No	N/A
Specialty Facilities: Not an Objective	Little Ferry Seaplane Base	2N7	Unknown	Unknown	Unknown	N/A

Note: Unknown = Data not provided

N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 27. Public-Use WiFi Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Public-Use WiFi Available	Meets Public-Use WiFi Objective
Scheduled Service: Utility Available	Atlantic City International	ACY	Yes	Yes
	Newark International	EWR	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes
Advanced Service: Utility Available	Morristown Municipal	MMU	Yes	Yes
	Teterboro	TEB	Yes	Yes
	Cape May County	WWD	Yes	Yes
	Essex County	CDW	Yes	Yes
	Ocean County Airport	MJX	Yes	Yes
	Hammonton Municipal	N81	No	No
	Millville Municipal	MIV	No	No
	Monmouth Executive	BLM	Yes	Yes
Priority General Service: Utility Available	Lincoln Park	N07	No	No
	South Jersey Regional	VAY	Yes	Yes
	Linden	LDJ	Yes	Yes
	Central Jersey Regional	47N	Yes	Yes
	Solberg-Hunterdon	N51	Yes	Yes
	Cross Keys	17N	No	No
General Service: Utility Available	Somerset	SMQ	Yes	Yes
	Greenwood Lake	4N1	No	No
	Lakewood	N12	No	No
	Woodbine Municipal	OBI	No	No
	Princeton	39N	Yes	Yes
	Sussex	FWN	No	No
	Trenton-Robbinsville	N87	Yes	Yes
	Alexandria Field	N85	Yes	Yes
	Blairstown	1N7	Unknown	Unknown
	Eagles Nest	31E	Yes	Yes
	Flying W	N14	Yes	Yes
	Old Bridge	3N6	Yes	Yes
	Sky Manor	N40	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown
Basic Service: Utility Available	Ocean City Municipal	26N	Yes	Yes
	Aeroflex-Andover	12N	No	No
	Bucks	00N	No	No
	Camden County	19N	Yes	Yes
	Hackettstown	N05	Unknown	Unknown
	Vineland Downstown	28N	Yes	Yes
Duplicative Basic Service: Utility Available	Trinca	13N	No	No
	Kroelinger	29N	No	No
	Red Wing	2N6	No	No
	Southern Cross	C01	No	No
Specialty Facilities: Utility Available	Little Ferry Seaplane Base	2N7	Unknown	Unknown

Note: Unknown = Data not provided

Source: Airport Survey Questionnaires.

Appendix E Table 28. Utilities Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Electricity Available	Water Available	Sewer Available	Meets Utilities Objective
Scheduled Service: Electricity, Water, Sewer	Atlantic City International	ACY	Yes	Yes	Yes	Yes
	Newark International	EWR	Yes	Yes	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes	Yes	Yes
Advanced Service: Electricity, Water, Sewer	Morristown Municipal	MMU	Yes	Yes	Yes	Yes
	Teterboro	TEB	Yes	Yes	Yes	Yes
	Cape May County	WWD	Yes	Yes	Yes	Yes
	Essex County	CDW	Yes	Yes	Yes	Yes
	Ocean County Airport	MJX	Yes	Yes	Yes	Yes
	Hammonton Municipal	N81	Yes	Unknown	Unknown	Unknown
	Millville Municipal	MIV	Yes	Yes	Yes	Yes
	Monmouth Executive	BLM	Yes	Yes	Yes	Yes
Priority General Service: Electricity, Water, Sewer	Lincoln Park	N07	Yes	Yes	Yes	Yes
	South Jersey Regional	VAY	Yes	Yes	Yes	Yes
	Linden	LDJ	Yes	Yes	Yes	Yes
	Central Jersey Regional	47N	Yes	Yes	Yes	Yes
	Solberg-Hunterdon	N51	Yes	Yes	Yes	Yes
	Cross Keys	17N	Yes	Yes	Yes	Yes
General Service: Electricity, Water, Sewer	Somerset	SMQ	Yes	Yes	Yes	Yes
	Greenwood Lake	4N1	Yes	Yes	Yes	Yes
	Lakewood	N12	Yes	Yes	Yes	Yes
	Woodbine Municipal	OBI	Yes	Yes	Yes	Yes
	Princeton	39N	Yes	Yes	Yes	Yes
	Sussex	FWN	Yes	Yes	Yes	Yes
	Trenton-Robbinsville	N87	Yes	Yes	Yes	Yes
	Alexandria Field	N85	Yes	Yes	Yes	Yes
	Blairstown	1N7	Yes	Yes	Yes	Yes
	Eagles Nest	31E	Yes	Yes	Yes	Yes
	Flying W	N14	Yes	Yes	Yes	Yes
	Old Bridge	3N6	Yes	Yes	Yes	Yes
	Sky Manor	N40	Yes	Yes	Yes	Yes
	Spitfire Aerodrome	7N7	Unknown	Unknown	Unknown	Unknown
Basic Service: Electricity, Water, Sewer	Ocean City Municipal	26N	Yes	Yes	Yes	Yes
	Aeroflex-Andover	12N	Yes	Yes	Yes	Yes
	Bucks	00N	Yes	Yes	Yes	Yes
	Camden County	19N	Yes	Yes	Yes	Yes
	Hackettstown	N05	Unknown	Unknown	Unknown	Unknown
	Vineland Downstown	28N	Yes	Yes	Yes	Yes
Duplicative Basic Service: Electricity, Water, Sewer	Trinca	13N	Yes	Yes	Yes	Yes
	Kroelinger	29N	Unknown	Unknown	Unknown	Unknown
	Red Wing	2N6	Yes	Yes	Yes	Yes
	Southern Cross	C01	Yes	Yes	Yes	Yes
Specialty Facilities: Electricity, Water, Sewer	Little Ferry Seaplane Base	2N7	Unknown	Unknown	Yes	No

Note: Unknown = Data not provided
Source: Airport Survey Questionnaires.

Appendix E Table 29. Runway Pavements Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway Pavement Type	Primary Runway PCI	Meets Runway Pavement Objective
Scheduled Service: Maintain Primary Runway Pavement at a PCI of 70 or Higher	Atlantic City International	ACY	Asphalt/Concrete	80-85	Yes
	Newark International	EWR	Asphalt/Concrete	80-85	Yes
	Trenton Mercer	TTN	Asphalt-Grooved	75-80	Yes
Advanced Service: Maintain Primary Runway Pavement at a PCI of 70 or Higher	Morristown Municipal	MMU	Asphalt-Grooved	50-55	No
	Teterboro	TEB	Asphalt-Grooved	75-80	Yes
	Cape May County	WWD	Asphalt	85-90	Yes
	Essex County	CDW	Asphalt	40-45	No
	Ocean County Airport	MJX	Asphalt	55-60	No
	Hammonton Municipal	N81	Asphalt	85-90	Yes
	Millville Municipal	MIV	Asphalt	85-90	Yes
	Monmouth Executive	BLM	Asphalt	55-60	No
Priority General Service: Maintain Primary Runway Pavement at a PCI of 70 or Higher	Lincoln Park	N07	Asphalt	55-60	No
	South Jersey Regional	VAY	Asphalt	60-65	No
	Linden	LDJ	Asphalt	55-60	No
	Central Jersey Regional	47N	Asphalt	60-65	No
	Solberg-Hunterdon	N51	Asphalt/Turf	50-55	No
	Cross Keys	17N	Asphalt	80-85	Yes
General Service: Maintain Primary Runway Pavement at a PCI of 70 or Higher	Somerset	SMQ	Asphalt	55-60	No
	Greenwood Lake	4N1	Asphalt	65-70	No
	Lakewood	N12	Asphalt	70-75	Yes
	Woodbine Municipal	OBI	Asphalt	80-85	Yes
	Princeton	39N	Asphalt	65-70	No
	Sussex	FWN	Asphalt	55-60	No
	Trenton-Robbinsville	N87	Asphalt	50-55	No
	Alexandria Field	N85	Asphalt	60-65	No
	Blairstown	1N7	Asphalt	60-65	No
	Eagles Nest	31E	Asphalt	55-60	NO
	Flying W	N14	Asphalt	50-55	No
	Old Bridge	3N6	Asphalt	65-70	No
	Sky Manor	N40	Asphalt	65-70	No
	Spitfire Aerodrome	7N7	Asphalt	65-70	No
Basic Service: Maintain Primary Runway Pavement at a PCI of 70 or Higher	Ocean City Municipal	26N	Asphalt	75-80	Yes
	Aeroflex-Andover	12N	Asphalt	75-80	Yes
	Bucks	00N	Turf	Not Applicable	N/A
	Camden County	19N	Asphalt	65-70	No
	Hackettstown	N05	Asphalt	40-45	No
	Vineland Downstown	28N	Turf	Not Applicable	N/A
Duplicative Basic Service: Maintain Primary Runway Pavement at a PCI of 70 or Higher	Trinca	13N	Turf	Not Applicable	N/A
	Kroelinger	29N	Turf	Not Applicable	N/A
	Red Wing	2N6	Turf	Not Applicable	N/A
	Southern Cross	C01	Turf	Not Applicable	N/A
Specialty Facilities: Not Applicable	Little Ferry Seaplane Base	2N7	Water	Not Applicable	N/A

Note: N/A = Not applicable because turf and water runways do not have a pavement condition index (PCI).
Source: NJDOT BOA, FAA, Google Earth, and AECOM.

Appendix E Table 30. Runway Safety Area (RSA) Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	ARC	RSA Design Standard	Existing RSA Length	Meets RSA Objective
Scheduled Service: Maintain Appropriate RSA Dimensions	Atlantic City International	ACY	C-IV	1,000' x 500'	1,000'	Yes
	Newark International	EWR	D-V	1,000' x 500'	1,000'	Yes
	Trenton Mercer	TTN	C-III	1,000' x 500'	1,000'	Yes
Advanced Service: Maintain Appropriate RSA Dimensions	Morristown Municipal	MMU	C-III	1,000' x 500'	Not Compliant	No
	Teterboro	TEB	C-III	1,000' x 500'	1,000'	Yes
	Cape May County	WWD	B-II	300' x 150'	Not Compliant	No
	Essex County	CDW	B-II	300' x 150'	Not Compliant	No
	Ocean County Airport	MJX	B-II	1,000' x 500'	Not Compliant	No
	Hammonton Municipal	N81	C-II	1,000' x 500'	Not Compliant	No
	Millville Municipal	MIV	B-II	300' x 150'	300'	Yes
	Monmouth Executive	BLM	C-II	1,000' x 500'	Not Compliant	No
Priority General Service: Maintain Appropriate RSA Dimensions	Lincoln Park	N07	A-I Small	240' x 120'	Not Compliant	No
	South Jersey Regional	VAY	B-I	240' x 120'	240'	Yes
	Linden	LDJ	A-I Small	240' x 120'	240'	Yes
	Central Jersey Regional	47N	B-I Small	240' x 120'	Not Compliant	No
	Solberg-Hunterdon	N51	B-I Small	240' x 120'	240'	Yes
	Cross Keys	17N	B-II	300' x 150'	Not Compliant	No
General Service: Maintain Appropriate RSA Dimensions	Somerset	SMQ	B-I Small	240' x 120'	Not Compliant	No
	Greenwood Lake	4N1	B-I Small	240' x 120'	Not Compliant	No
	Lakewood	N12	B-I Small	240' x 120'	240'	Yes
	Woodbine Municipal	OBI	B-II	300' x 150'	300'	Yes
	Princeton	39N	B-I	240' x 120'	240'	Yes
	Sussex	FWN	B-I Small	240' x 120'	Not Compliant	No
	Trenton-Robbinsville	N87	B-I Small	240' x 120'	Not Compliant	No
	Alexandria Field	N85	B-I Small	240' x 120'	240'	Yes
	Blairstown	1N7	B-I	240' x 120'	Not Compliant	No
	Eagles Nest	31E	B-I Small	240' x 120'	240'	Yes
	Flying W	N14	B-I Small	240' x 120'	Not Compliant	No
	Old Bridge	3N6	B-I Small	240' x 120'	Not Compliant	No
	Sky Manor	N40	B-I Small	240' x 120'	240'	Yes
	Spitfire Aerodrome	7N7	B-I Small	240' x 120'	Not Compliant	No
Basic Service: Maintain Appropriate RSA Dimensions	Ocean City Municipal	26N	B-I Small	240' x 120'	Not Compliant	No
	Aeroflex-Andover	12N	B-I Small	240' x 120'	Not Compliant	No
	Bucks	00N	A-I Small	240' x 120'	Not Compliant	No
	Camden County	19N	B-I Small	240' x 120'	Not Compliant	No
	Hackettstown	N05	B-I Small	240' x 120'	Not Compliant	No
	Vineland Downstown	28N	B-I Small	240' x 120'	240'	Yes
Duplicative Basic Service: Maintain Appropriate RSA Dimensions	Trinca	13N	B-I	240' x 120'	Not Compliant	No
	Kroelinger	29N	A-I Small	240' x 120'	Not Compliant	No
	Red Wing	2N6	A-I Small	240' x 120'	Not Compliant	No
	Southern Cross	C01	A-I Small	240' x 120'	Not Compliant	No
Specialty Facilities: Maintain Appropriate RSA Dimensions	Little Ferry Seaplane Base	2N7	A-I	N/A	N/A	N/A

Note: N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 31. Runway Protection Zone (RPZ) Ownership Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway	Runway End Ownership	Runway End Ownership	Meets RPZ Ownership Objective
Scheduled Service: 100 percent Ownership	Atlantic City International	ACY	13/31	Full	Full	Yes
	Newark International	EWR	04R/22L	Partial	Partial	No
	Trenton Mercer	TTN	06/24	Partial	Partial	No
Advanced Service: 100 percent Ownership	Morristown Municipal	MMU	05/23	Partial	Partial	No
	Teterboro	TEB	06/24	Partial	Partial	No
	Cape May County	WWD	01/19	Partial	Partial	No
	Essex County	CDW	04/22	Partial	Partial	No
	Ocean County Airport	MJX	06/24	Partial	Partial	No
	Hammonton Municipal	N81	03/21	Partial	Partial	No
	Millville Municipal	MIV	10/28	Partial	Full	No
	Monmouth Executive	BLM	14/32	Partial	Partial	No
Priority General Service: 100 percent Ownership	Lincoln Park	N07	01/19	Partial	Partial	No
	South Jersey Regional	VAY	08/26	Partial	Partial	No
	Linden	LDJ	09/27	Partial	Partial	No
	Central Jersey Regional	47N	07/25	Partial	Partial	No
	Solberg-Hunterdon	N51	04/22	Full	Partial	No
	Cross Keys	17N	09/27	Partial	Partial	No
General Service: 100 percent Ownership	Somerset	SMQ	12/30	Partial	Partial	No
	Greenwood Lake	4N1	06/24	Partial	Partial	No
	Lakewood	N12	06/24	Partial	Partial	No
	Woodbine Municipal	OBI	01/19	Full	Full	Yes
	Princeton	39N	10/28	Full	Full	Yes
	Sussex	FWN	03/21	Partial	Partial	No
	Trenton-Robbinsville	N87	11/29	Partial	Partial	No
	Alexandria Field	N85	08/26	Partial	Partial	No
	Blairstown	1N7	07/25	Partial	Partial	No
	Eagles Nest	31E	14/32	Partial	Partial	No
	Flying W	N14	01/19	Partial	Partial	No
	Old Bridge	3N6	06/24	Full	Full	Yes
	Sky Manor	N40	07/25	Partial	Partial	No
	Spitfire Aerodrome	7N7	07/25	Partial	Partial	No
Basic Service: 100 percent Ownership	Ocean City Municipal	26N	06/24	Partial	Partial	No
	Aeroflex-Andover	12N	03/21	Full	Full	Yes
	Bucks	00N	18/36	Partial	Partial	No
	Camden County	19N	05/23	Partial	Partial	No
	Hackettstown	N05	05/23	Unknown	Unknown	Unknown
	Vineland Downstown	28N	02/20	Partial	Partial	No
Duplicative Basic Service: 100 percent Ownership	Trinca	13N	06/24	Partial	Partial	No
	Kroelinger	29N	10/28	Unknown	Unknown	Unknown
	Red Wing	2N6	06/24	Unknown	Unknown	Unknown
	Southern Cross	C01	09/27	Partial	Partial	No
Specialty Facilities: 100 percent Ownership	Little Ferry Seaplane Base	2N7	01/19	Not Applicable	Not Applicable	N/A

Note: N/A = Not applicable

Source: Airport Survey Questionnaires.

Appendix E Table 32. Runway Protection Zone (RPZ) Land Use Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway	Runway End - Land Use Characteristics	Runway End - Land Use Characteristics	Meets RPZ Land Use Objective
Scheduled Service: No Incompatible Land Uses within the RPZ	Atlantic City International	ACY	13/31	Roads, trees	Roads, trees	No
	Newark International	EWR	04R/22L	Road, Buildings	Road, Buildings	No
	Trenton Mercer	TTN	06/24	Roads, commercial/ industrial buildings, trees	Roads, trees, buildings	No
Advanced Service: No Incompatible Land Uses within the RPZ	Morristown Municipal	MMU	05/23	Roads	N/A	No
	Teterboro	TEB	06/24	Roads, commercial/industrial/ residential buildings, trees	Roads, buildings	No
	Cape May County	WWD	01/19	Road, trees, building	Road, trees	No
	Essex County	CDW	04/22	Road, trees, building	Road, trees, building	No
	Ocean County Airport	MJX	06/24	N/A	Road, open field, trees	No
	Hammonton Municipal	N81	03/21	Road	N/A	No
	Millville Municipal	MIV	10/28	N/A	N/A	Yes
	Monmouth Executive	BLM	14/32	Roads	Buildings, roads, trees	No
Priority General Service: No Incompatible Land Uses within the RPZ	Lincoln Park	N07	01/19	Road, trees, building	Road, Buildings	No
	South Jersey Regional	VAY	08/26	Apron, building, open field, trees	N/A	No
	Linden	LDJ	09/27	Roads, commercial /industrial buildings, residential building, trees	Roads, commercial/industrial buildings, trees	No
	Central Jersey Regional	47N	07/25	Railroad, trees	Road, trees, building	No
	Solberg-Hunterdon	N51	04/22	Road	N/A	No
	Cross Keys	17N	09/27	N/A	Road, trees, building	No
General Service: No Incompatible Land Uses within the RPZ	Somerset	SMQ	12/30	N/A	Road, open field, trees	No
	Greenwood Lake	4N1	06/24	N/A	Road, trees, building	No
	Lakewood	N12	06/24	Open field, trees	Roads, trees	No
	Woodbine Municipal	OBI	01/19	N/A	Railroad	No
	Princeton	39N	10/28	Open field, trees	Roads, commercial/industrial buildings, trees	No
	Sussex	FWN	03/21	Road	Road	No
	Trenton-Robbinsville	N87	11/29	Building	Trees	No
	Alexandria Field	N85	08/26	Open field, trees	Open field, trees, road	No
	Blairstown	1N7	07/25	N/A	Buildings	No
	Eagles Nest	31E	14/32	Road, trees	Road, trees	No
	Flying W	N14	01/19	N/A	N/A	Yes
	Old Bridge	3N6	06/24	Road, trees, residential buildings	Trees	No
	Sky Manor	N40	07/25	Roads, buildings, trees	Road, open field, trees	No
	Spitfire Aerodrome	7N7	07/25	Roads, open field, trees	Open field	No
Basic Service: No Incompatible Land Uses within the RPZ	Ocean City Municipal	26N	06/24	N/A	Roads, residential buildings	No
	Aeroflex-Andover	12N	03/21	Trees, pond	Trees, pond	Yes
	Bucks	00N	18/36	Building	N/A	No
	Camden County	19N	05/23	Road, trees, building	Trees	No
	Hackettstown	N05	05/23	Road, trees, building	Road, trees, building	No

Current Role & Performance Objective	Airport Name	FAA ID	Primary Runway	Runway End - Land Use Characteristics	Runway End - Land Use Characteristics	Meets RPZ Land Use Objective
	Vineland Downtown	28N	02/20	Road	Buildings, security fence	No
Duplicative Basic Service: No Incompatible Land Uses within the RPZ	Trinca	13N	06/24	Trees, open field	Open field	Yes
	Kroelinger	29N	10/28	Buildings	Buildings	No
	Red Wing	2N6	06/24	N/A	Road, trees	No
	Southern Cross	C01	09/27	Residential buildings	Residential buildings	No
Specialty Facilities: No Incompatible Land Uses within the RPZ	Little Ferry Seaplane Base	2N7	01/19	Not Applicable	Not Applicable	N/A

Note: N/A = Not applicable
Source: Airport Survey Questionnaires.

Appendix E Table 33. Approach Surface Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Runway End - Nighttime Approach Available	Runway End - Nighttime Approach Available	Meets Approach Surface Objective
Scheduled Service: Mitigated 20:1 Approach Surface	Atlantic City International	ACY	Yes	Yes	Yes
	Newark International	EWR	Yes	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes	Yes
Advanced Service: Mitigated 20:1 Approach Surface	Morristown Municipal	MMU	Yes	Yes	Yes
	Teterboro	TEB	Yes	No	No
	Cape May County	WWD	No	Yes	No
	Essex County	CDW	No	Yes	No
	Ocean County Airport	MJX	Yes	Yes	Yes
	Hammonton Municipal	N81	No	No	No
	Millville Municipal	MIV	Yes	Yes	Yes
	Monmouth Executive	BLM	Yes	Yes	Yes
Priority General Service: Mitigated 20:1 Approach Surface	Lincoln Park	N07	Yes	Yes	Yes
	South Jersey Regional	VAY	No	No	No
	Linden	LDJ	No	No	No
	Central Jersey Regional	47N	No	No	No
	Solberg-Hunterdon	N51	Yes	Yes	Yes
	Cross Keys	17N	No	No	No
General Service: Mitigated 20:1 Approach Surface	Somerset	SMQ	No	No	No
	Greenwood Lake	4N1	No	No	No
	Lakewood	N12	Yes	No	No
	Woodbine Municipal	OBI	Yes	No	No
	Princeton	39N	No	No	No
	Sussex	FWN	No	No	No
	Trenton-Robbinsville	N87	Yes	Yes	Yes
	Alexandria Field	N85	No	No	No
	Blairstown	1N7	No	No	No
	Eagles Nest	31E	No	No	No
	Flying W	N14	No	Yes	No
	Old Bridge	3N6	No	No	No
	Sky Manor	N40	No	No	No
	Spitfire Aerodrome	7N7	No	No	No
Basic Service: Mitigated 20:1 Approach Surface	Ocean City Municipal	26N	Yes	Yes	Yes
	Aeroflex-Andover	12N	No	No	No
	Bucks	00N	No	No	No
	Camden County	19N	No	No	No
	Hackettstown	N05	No	No	No
	Vineland Downstown	28N	No	No	No
Duplicative Basic Service: Mitigated 20:1 Approach Surface	Trinca	13N	No	No	No
	Kroelinger	29N	No	No	No
	Red Wing	2N6	No	No	No
	Southern Cross	C01	No	No	No
Specialty Facilities: Mitigated 20:1 Approach Surface	Little Ferry Seaplane Base	2N7	Yes	No	No

Source: FAA Digital Approach Plates.

Appendix E Table 34. Master Plan and ALP Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Master Plan (Date)	Meets Master Plan Objective	ALP (Date)	Meets ALP Objective
Scheduled Service: Master Plan less than 5 Years Old; ALP Less than 5 Years Old, with Pen and Ink Changes as Appropriate	Atlantic City International	ACY	2010	No	2018	Yes
	Newark International	EWR	None	No	2018	Yes
	Trenton Mercer	TTN	2018	Yes	2018	Yes
Advanced Service: Master Plan less than 10 Years Old; ALP Less than 10 Years Old, with Pen and Ink Changes as Appropriate	Morristown Municipal	MMU	2010	Yes	2010	Yes
	Teterboro	TEB	None	No	2016	Yes
	Cape May County	WWD	2002	No	2018	Yes
	Essex County	CDW	1990	No	2013	Yes
	Ocean County Airport	MJX	1992	No	2017*	Yes
	Hammonton Municipal	N81	2019	Yes	2018	Yes
	Millville Municipal	MIV	1997	No	2014	Yes
	Monmouth Executive	BLM	None	No	2001	No
Priority General Service: Master Plan less than 10 Years Old; ALP Less than 10 Years Old, with Pen and Ink Changes as Appropriate	Lincoln Park	N07	2019	Yes	2019	Yes
	South Jersey Regional	VAY	2015	Yes	2015	Yes
	Linden	LDJ	2014	Yes	2014	Yes
	Central Jersey Regional	47N	2001	No	2001	No
	Solberg-Hunterdon	N51	1999	No	1997	No
	Cross Keys	17N	2019	Yes	2007	No
General Service: Master Plan less than 10 Years Old; ALP Less than 10 Years Old, with Pen and Ink Changes as Appropriate	Somerset	SMQ	2015	Yes	2015	Yes
	Greenwood Lake	4N1	2019	Yes	2019	Yes
	Lakewood	N12	2006	No	2017*	Yes
	Woodbine Municipal	OBI	1983	No	2010	Yes
	Princeton	39N	1996	No	1996	No
	Sussex	FWN	1997	No	2001	No
	Trenton-Robbinsville	N87	2000	No	2000	No
	Alexandria Field	N85	1997	No	1997	No
	Blairstown	1N7	2000	No	2001	No
	Eagles Nest	31E	2002	No	2013*	Yes
	Flying W	N14	1997	No	1997	No
	Old Bridge	3N6	2002	No	2004	No
	Sky Manor	N40	1998	No	1997	No
	Spitfire Aerodrome	7N7	None	No	2010*	Yes
Basic Service: Master Plan less than 10 Years Old; ALP Less than 10 Years Old, with Pen and Ink Changes as Appropriate	Ocean City Municipal	26N	2000	No	2012	Yes
	Aeroflex-Andover	12N	2002	No	2005	No
	Bucks	00N	None	No	None	No
	Camden County	19N	2002	No	2004	No
	Hackettstown	N05	None	No	None	No
	Vineland Downstown	28N	None	No	2004	No
Duplicative Basic Service: Master Plan less than 10 Years Old; ALP Less than 10 Years Old, with Pen and Ink Changes as Appropriate	Trinca	13N	1996	No	2010	Yes
	Kroelinger	29N	None	No	None	No
	Red Wing	2N6	None	No	None	No
	Southern Cross	C01	None	No	None	No

Current Role & Performance Objective	Airport Name	FAA ID	Master Plan (Date)	Meets Master Plan Objective	ALP (Date)	Meets ALP Objective
Specialty Facilities: Master Plan less than 10 Years Old; ALP Less than 10 Years Old, with Pen and Ink Changes as Appropriate	Little Ferry Seaplane Base	2N7	None	No	None	No

Note: *Indicates pen & ink updates.

Source: Airport Survey Questionnaires and NJDOT BOA.

Appendix E Table 35. Airport Development and Future Development Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Funds Invested in Airport in Last 10 Years	Meets Airport Investment Objective	Future Projects Planned	Meets Future Development Objective
Scheduled Service: Airport Has Invested Money in the Airport in the Last 10 Years; Airport Has at Least 1 Project Planned	Atlantic City International	ACY	$47,110,852	Yes	Yes	Yes
	Newark International	EWR	$10,000,000,000	Yes	Yes	Yes
	Trenton Mercer	TTN	$68,129,133	Yes	Yes	Yes
Advanced Service: Airport Has Invested Money in the Airport in the Last 10 Years; Airport Has at Least 1 Project Planned	Morristown Municipal	MMU	$23,000,000	Yes	Yes	Yes
	Teterboro	TEB	$108,361,000	Yes	Yes	Yes
	Cape May County	WWD	$19,000,000	Yes	Yes	Yes
	Essex County	CDW	$7,645,822	Yes	Yes	Yes
	Ocean County Airport	MJX	$22,950,127	Yes	Yes	Yes
	Hammonton Municipal	N81	$4,000,000	Yes	Yes	Yes
	Millville Municipal	MIV	$24,000,000	Yes	Yes	Yes
	Monmouth Executive	BLM	$4,491,847	Yes	No	No
Priority General Service: Airport Has Invested Money in the Airport in the Last 10 Years; Airport Has at Least 1 Project Planned	Lincoln Park	N07	$5,000,000	Yes	Yes	Yes
	South Jersey Regional	VAY	$2,321,428	Yes	Yes	Yes
	Linden	LDJ	$2,000,000	Yes	Yes	Yes
	Central Jersey Regional	47N	$5,000,000	Yes	Yes	Yes
	Solberg-Hunterdon	N51	$684,290	Yes	Yes	Yes
	Cross Keys	17N	$75,000	Yes	Yes	Yes
General Service: Airport Has Invested Money in the Airport in the Last 10 Years; Airport Has at Least 1 Project Planned	Somerset	SMQ	$4,250,000	Yes	Yes	Yes
	Greenwood Lake	4N1	$3,342,137	Yes	Yes	Yes
	Lakewood	N12	$2,442,682	Yes	Yes	Yes
	Woodbine Municipal	OBI	$4,985,279	Yes	Yes	Yes
	Princeton	39N	$1,200,000	Yes	Yes	Yes
	Sussex	FWN	$626,141	Yes	No	No
	Trenton-Robbinsville	N87	Unknown	Unknown	No	No
	Alexandria Field	N85	$1,500,000	Yes	Yes	Yes
	Blairstown	1N7	Unknown	Unknown	Unknown	Unknown
	Eagles Nest	31E	$7,000,000	Yes	Yes	Yes
	Flying W	N14	$0	No	No	No
	Old Bridge	3N6	$50,000	Yes	Yes	Yes
	Sky Manor	N40	Unknown	Unknown	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown	Unknown	Unknown
Basic Service: Airport Has Invested Money in the Airport in the Last 10 Years; Airport Has at Least 1 Project Planned	Ocean City Municipal	26N	$3,500,000	Yes	Yes	Yes
	Aeroflex-Andover	12N	Unknown	Unknown	No	No
	Bucks	00N	$0	No	No	No
	Camden County	19N	$2,500,000	Yes	Yes	Yes
	Hackettstown	N05	Unknown	Unknown	Unknown	Unknown
	Vineland Downstown	28N	$250,000	Yes	Yes	Yes

Current Role & Performance Objective	Airport Name	FAA ID	Funds Invested in Airport in Last 10 Years	Meets Airport Investment Objective	Future Projects Planned	Meets Future Development Objective
Duplicative Basic Service: Airport Has Invested Money in the Airport in the Last 10 Years; Airport Has at Least 1 Project Planned	Trinca	13N	$1,150	Yes	No	No
	Kroelinger	29N	$0	No	No	No
	Red Wing	2N6	$90,000	Yes	No	No
	Southern Cross	C01	$0	No	No	No
Specialty Facilities: Airport Has Invested Money in the Airport in the Last 10 Years; Airport Has at Least 1 Project Planned	Little Ferry Seaplane Base	2N7	$18,000	Yes	Yes	Yes

Note: Unknown = Data not provided

Source: Airport Survey Questionnaires and NJDOT BOA.

Appendix E Table 36. Security Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Perimeter Fencing	Meets Fencing Objective	Electronic Gate Access System	Meets Access Gate System Objective	CCTV Security Camera System	Meets Security Camera System Objective
Scheduled Service: Meet TSA Requirements	Atlantic City International	ACY	Full Perimeter	Yes	Yes	Yes	Yes	Yes
	Newark International	EWR	Full Perimeter	Yes	Yes	Yes	Yes	Yes
	Trenton Mercer	TTN	Full Perimeter	Yes	Yes	Yes	Yes	Yes
Advanced Service: Preserve Existing	Morristown Municipal	MMU	Full Perimeter	N/A	Yes	N/A	Yes	N/A
	Teterboro	TEB	Full Perimeter	N/A	No	N/A	Yes	N/A
	Cape May County	WWD	Full Perimeter	N/A	Yes	N/A	Yes	N/A
	Essex County	CDW	Full Perimeter	N/A	Yes	N/A	Yes	N/A
	Ocean County Airport	MJX	Full Perimeter	N/A	Yes	N/A	Yes	N/A
	Hammonton Municipal	N81	Full Perimeter	N/A	Yes	N/A	Yes	N/A
	Millville Municipal	MIV	Full Perimeter	N/A	Yes	N/A	Yes	N/A
	Monmouth Executive	BLM	None	N/A	Yes	N/A	Yes	N/A
Priority General Service: Preserve Existing	Lincoln Park	N07	None	N/A	No	N/A	Yes	N/A
	South Jersey Regional	VAY	Partial Perimeter Fencing	N/A	No	N/A	Yes	N/A
	Linden	LDJ	Full Perimeter	N/A	Yes	N/A	Yes	N/A
	Central Jersey Regional	47N	Full Perimeter	N/A	No	N/A	No	N/A
	Solberg-Hunterdon	N51	None	N/A	No	N/A	No	N/A
	Cross Keys	17N	Full Perimeter	N/A	Yes	N/A	No	N/A
General Service: Preserve Existing	Somerset	SMQ	None	N/A	No	N/A	Yes	N/A
	Greenwood Lake	4N1	Full Perimeter	N/A	Yes	N/A	No	N/A
	Lakewood	N12	Full Perimeter	N/A	No	N/A	Yes	N/A
	Woodbine Municipal	OBI	Partial Perimeter Fencing	N/A	Yes	N/A	No	N/A
	Princeton	39N	None	N/A	No	N/A	Yes	N/A
	Sussex	FWN	Full Perimeter	N/A	Yes	N/A	No	N/A
	Trenton-Robbinsville	N87	Full Perimeter	N/A	No	N/A	Yes	N/A
	Alexandria Field	N85	None	N/A	No	N/A	No	N/A
	Blairstown	1N7	Full Perimeter	N/A	No	N/A	No	N/A
	Eagles Nest	31E	None	N/A	Yes	N/A	Yes	N/A

Current Role & Performance Objective	Airport Name	FAA ID	Perimeter Fencing	Meets Fencing Objective	Electronic Gate Access System	Meets Access Gate System Objective	CCTV Security Camera System	Meets Security Camera System Objective
	Flying W	N14	Full Perimeter	N/A	No	N/A	Yes	N/A
	Old Bridge	3N6	Full Perimeter	N/A	Yes	N/A	Yes	N/A
	Sky Manor	N40	Unknown	N/A	Unknown	N/A	Unknown	N/A
	Spitfire Aerodrome	7N7	Unknown	N/A	Unknown	N/A	Unknown	N/A
Basic Service: Preserve Existing	Ocean City Municipal	26N	Partial Perimeter Fencing	N/A	Yes	N/A	Yes	N/A
	Aeroflex-Andover	12N	Full Perimeter	N/A	No	N/A	Yes	N/A
	Bucks	00N	None	N/A	No	N/A	No	N/A
	Camden County	19N	Full Perimeter	N/A	No	N/A	No	N/A
	Hackettstown	N05	Unknown	N/A	Unknown	N/A	Unknown	N/A
	Vineland Downstown	28N	Full Perimeter	N/A	Yes	N/A	No	N/A
Duplicative Basic Service: Preserve Existing	Trinca	13N	None	N/A	No	N/A	No	N/A
	Kroelinger	29N	None	N/A	No	N/A	No	N/A
	Red Wing	2N6	None	N/A	No	N/A	No	N/A
	Southern Cross	C01	None	N/A	No	N/A	No	N/A
Specialty Facilities: Preserve Existing	Little Ferry Seaplane Base	2N7	Unknown	N/A	Unknown	N/A	Unknown	N/A

Note: Unknown = Data not provided
N/A = Not applicable

Source: Airport Survey Questionnaires.

Appendix E Table 37. Community Engagement Objectives and Compliance

Current Role & Performance Objective	Airport Name	FAA ID	Does the Airport Host a Public Event?	Meets Community Event Objective	Does the Airport have a Marketing Strategy in Place?	Meets Marketing Strategy Objective	Does the Airport have a Relation-ship with an Educational Institution?	Meets Educational Institution Objective
Scheduled Service: Support Annual Air Show, Fly-in, 5K Run or Other Public Event; Have a Marketing Strategy in Place; Have an Established Relationship with an Educational Institution	Atlantic City International	ACY	Yes	Yes	Yes	Yes	Yes	Yes
	Newark International	EWR	Yes	Yes	Yes	Yes	Yes	Yes
	Trenton Mercer	TTN	Yes	Yes	Yes	Yes	Yes	Yes
Advanced Service: Support Annual Air Show, Fly-in, 5K Run or Other Public Event; Have a Marketing Strategy in Place; Have an Established Relationship with an Educational Institution	Morristown Municipal	MMU	Yes	Yes	No	No	Yes	Yes
	Teterboro	TEB	Yes	Yes	Yes	Yes	Unknown	No
	Cape May County	WWD	Yes	Yes	Yes	Yes	Yes	Yes
	Essex County	CDW	Yes	Yes	No	No	No	No
	Ocean County Airport	MJX	Yes	Yes	No	No	No	No
	Hammonton Municipal	N81	No	No	Yes	Yes	No	No
	Millville Municipal	MIV	No	No	Yes	Yes	Yes	Yes
	Monmouth Executive	BLM	Yes	Yes	Yes	Yes	Yes	Yes
Priority General Service: Support Annual Air Show, Fly-in, 5K Run or Other Public Event; Have an Established Relationship with an	Lincoln Park	N07	No	No	No	N/A	No	No
	South Jersey Regional	VAY	Yes	Yes	Yes	N/A	No	No
	Linden	LDJ	No	No	No	N/A	No	No
	Central Jersey Regional	47N	Yes	Yes	No	N/A	No	No
	Solberg-Hunterdon	N51	Yes	Yes	Yes	N/A	Yes	Yes
	Cross Keys	17N	Yes	Yes	No	N/A	Yes	Yes

Current Role & Performance Objective	Airport Name	FAA ID	Does the Airport Host a Public Event?	Meets Community Event Objective	Does the Airport have a Marketing Strategy in Place?	Meets Marketing Strategy Objective	Does the Airport have a Relation-ship with an Educational Institution?	Meets Educational Institution Objective
Educational Institution								
General Service: Support Annual Air Show, Fly-in, 5K Run or Other Public Event; Have an Established Relationship with an Educational Institution	Somerset	SMQ	No	No	Yes	N/A	No	No
	Greenwood Lake	4N1	Yes	Yes	Yes	N/A	Yes	Yes
	Lakewood	N12	Yes	Yes	Yes	N/A	No	No
	Woodbine Municipal	OBI	Unknown	Unknown	Unknown	N/A	Unknown	Unknown
	Princeton	39N	Yes	Yes	Yes	N/A	Yes	Yes
	Sussex	FWN	No	No	No	N/A	No	No
	Trenton-Robbinsville	N87	Yes	Yes	No	N/A	No	No
	Alexandria Field	N85	Yes	Yes	Yes	N/A	Yes	Yes
	Blairstown	1N7	Yes	Yes	Unknown	N/A	No	No
	Eagles Nest	31E	Yes	Yes	No	N/A	Yes	Yes
	Flying W	N14	Yes	Yes	Yes	N/A	Yes	Yes
	Old Bridge	3N6	No	No	No	N/A	No	No
	Sky Manor	N40	Unknown	Unknown	Unknown	N/A	Unknown	Unknown
	Spitfire Aerodrome	7N7	Unknown	Unknown	Unknown	N/A	Unknown	Unknown
Basic Service: Support Annual Air Show, Fly-in, 5k Run or Other Public Event; Have an Established Relationship with an Educational Institution	Ocean City Municipal	26N	Yes	Yes	Yes	N/A	Yes	Yes
	Aeroflex-Andover	12N	Yes	Yes	No	N/A	No	No
	Bucks	00N	No	No	No	N/A	No	No
	Camden County	19N	No	No	No	N/A	No	No
	Hackettstown	N05	Unknown	Unknown	Unknown	N/A	Unknown	Unknown
	Vineland Downstown	28N	No	No	No	N/A	Yes	Yes
Duplicative Basic Service: Support Annual Air Show, Fly-in, 5k Run or Other Public Event; Have an Established Relationship with an Educational Institution	Trinca	13N	Yes	Yes	Yes	N/A	Yes	Yes
	Kroelinger	29N	No	No	No	N/A	No	No
	Red Wing	2N6	No	No	No	N/A	No	No
	Southern Cross	C01	No	No	No	N/A	No	No

Current Role & Performance Objective	Airport Name	FAA ID	Does the Airport Host a Public Event?	Meets Community Event Objective	Does the Airport have a Marketing Strategy in Place?	Meets Marketing Strategy Objective	Does the Airport have a Relation-ship with an Educational Institution?	Meets Educational Institution Objective
Specialty Facilities: Support Annual Air Show, Fly-in, 5k Run or Other Public Event; Have an Established Relationship with an Educational Institution	Little Ferry Seaplane Base	2N7	No	No	No	No	No	No

Note: Unknown = Data not provided

N/A = Not applicable

Source: Airport Survey Questionnaires.

APPENDIX F. PUBLIC OUTREACH PROCESS

Overview of the Public Outreach Process

The public outreach process is one of the most important elements of the 2022 New Jersey State Airport System Plan (2022 NJ SASP). Beginning in September 2018, at the onset of the 2022 NJ SASP, AECOM and New Jersey Department of Transportation Bureau of Aeronautics (NJDOT BOA) worked with the Federal Aviation Administration (FAA) to establish a committee designated as the Study Advisory Group (SAG) that represented key stakeholders and experts in the New Jersey aviation industry to provide feedback, advice, expertise, and guidance throughout the system planning process. In addition to the SAG, the 2022 NJ SASP held an official public comment period between May 23, 2022, and June 15, 2022, to receive input from the public on the study's analysis, findings, and recommendations.

Project Team

The Project Team was composed of individuals from three organizations. These organizations consisted of NJDOT BOA, the FAA, and AECOM.

Study Advisory Group

The SAG was established to provide input at key junctures of the 2022 NJ SASP. The SAG consisted of representatives from the following airports, agencies, and groups:

- Aircraft Owners and Pilots Association
- Atlantic City International Airport
- Delaware Valley Regional Planning Commission
- Essex County Airport
- Mid-Atlantic Aviation Coalition
- Millville Municipal Airport
- Morristown Municipal Airport
- New Jersey Aviation Association
- New Jersey Economic Development Authority
- North Jersey Transportation Authority
- Port Authority of New York and New Jersey
- Somerset Airport
- South Jersey Economic Development District
- South Jersey Transportation Planning Organization
- Trenton-Mercer Airport

Five SAG meetings were conducted throughout the study period. AECOM held each meeting with NJDOT BOA and FAA, and covered topics for the SAG to provide input on. Meeting minutes and responses to SAG comments were issued after each SAG meeting.

- SAG Meeting #1: December 12, 2018

  The first SAG meeting was held to set the SAG's expectations on their role for the study, introduce the SAG to state airport system planning and the scope of work of the 2022 NJ SASP, and provide background information on New Jersey's public-use airport system. The 2022 NJ SASP schedule and next steps were shared during the meeting.

- SAG Meeting #2: June 26, 2019

  The second SAG meeting was held to share findings of the following tasks.
  - Task 1: Data Collection and Airport Inventory
  - Task 2: Trends Analysis
  - Task 3: Airport Roles

- SAG Meeting #3: December 16, 2019

  The third SAG meeting was held to share findings of the following tasks.
  - Task 4: Forecast of Aviation Demand
  - Task 5: Facility Requirements

- SAG Meeting #4: October 6, 2020

The fourth SAG meeting was held to share findings of the following tasks.

- Task 6: System Adequacy Analysis

- <u>SAG Meeting #5: April 6, 2022</u>

The fifth and final SAG meeting was held to share findings of the following tasks.

- Task 7: Development Cost Analysis
- Task 8: Recommended System

Public Comment Period

The public comment period was held from May 23, 2022, to June 15, 2022. The Executive Summary of the 2022 NJ SASP was utilized to present the system planning process, analyses, findings, and recommendations for public input. The presentation was accessible on NJDOT BOA's Public Meeting website (https://www.state.nj.us/transportation/community/meetings/). Advertisements for the public comment period were published on NJDOT BOA's Twitter (https://twitter.com/NewJerseyDOT) and Facebook (https://www.facebook.com/NewJerseyDOT), as shown below.

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