CONNECTICUT STATEWIDE AIRPORT SYSTEM PLAN

Prepared For:

CAA
CONNECTICUT AIRPORT AUTHORITY

By:

AECOM

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Connecticut Statewide Airport System Plan

Final Report

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Prepared for:

Connecticut Airport Authority

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Introduction

The 2016 Connecticut Statewide Airport System Plan (CSASP) examines aviation infrastructure, activity, and trends from a statewide perspective for the purposes of allocating resources and guiding policy decisions. This plan is intended to be an update to the 2006 plan, which will serve as a baseline, and is not intended to be a comprehensive reinvestigation. As such, the update was developed as a top-down research effort compiling available reports and industry experience to form the basis of the plan recommendations. The planning included collaboration with a Study Advisory Committee of regional planners and aviation practitioners. The primary objective is to identify and address critical issues influencing aviation's contribution to the statewide economy and to prioritize and align resources accordingly. While this system plan update identifies specific projects that would support this overall objective, such inclusion is not to be interpreted as an endorsement to proceed with a project and does not represent funding availability or commitment by any party. Detailed project assessments are typically documented in an airport's master plan and subsequent environmental reports. This study focuses primarily on 20 public-use airports within the state excluding heliports, seaports, military facilities, and private-use airports. Those 20 focus airports vary by ownership and functional classification.

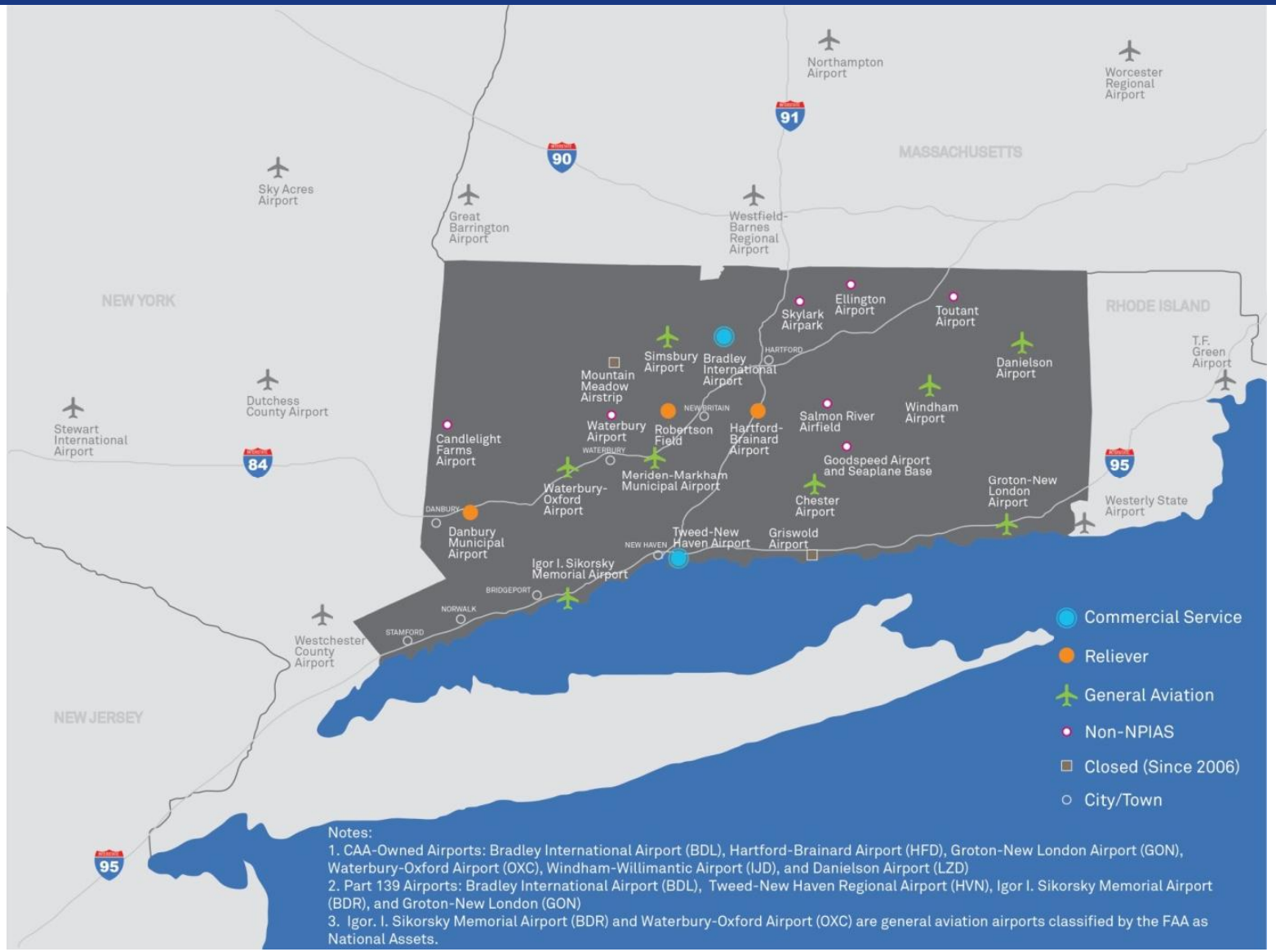
Significant change and directional shifts have occurred since 2006 that necessitated a reassessment of the planning outlook. Nationally, the economic conditions have varied significantly and the industry has seen the mergers of major carriers to produce mega-carriers. Major trends associated with general aviation (GA) have continued with growth limited to business jets and turbo-props, while airport infrastructure funding has continued to decline in real terms. At the state level, the State of Connecticut transferred its transportation oversight of aviation to the Connecticut Airport Authority (CAA) in 2011, which has the added responsibilities of operating state-owned airports and facilitating economic growth. Meanwhile, aviation development within Connecticut has been hampered by regulatory and environmental restrictions, community resistance, ownership/operating struggles, and cost sharing. Two airports have closed and the pressure to retain and attract business has increased considerably.

GOALS OF THE CONNECTICUT STATEWIDE AIRPORT SYSTEM PLAN (CSASP)

- **Identify changes since 2006 that have impacted Connecticut airports.**
- **Gain an understanding of the current aviation system and identify the major trends and influences that should guide policy and resource allocations.**
- **Evaluate the role and future of the four Part 139 airports.**
- **Identify strategies for CAA to better serve residents and businesses, and that support statewide efforts to enhance economic growth and vitality.**

The Connecticut Airport System – By Ownership

The Connecticut Airport System – By NPIAS Classification



Statewide Forecasts

Aviation forecasts included in the CSASP Update represent a compilation of existing published forecasts in lieu of an independent analysis. The primary forecasting source is the Federal Aviation Administration (FAA) Terminal Area Forecast (TAF, February 2014), which is an annual 20-year projection of aviation activity for passenger enplanements (passenger boardings), aircraft operations, and based aircraft. In cases where an airport recently completed a master plan where aviation forecasts were approved by the FAA, those projections were interpolated and extended to be consistent with this system plan's 20-year outlook and used in place of the TAF. The compiled forecasts reveal an expectation for moderate growth.

STATEWIDE FORECAST FINDINGS

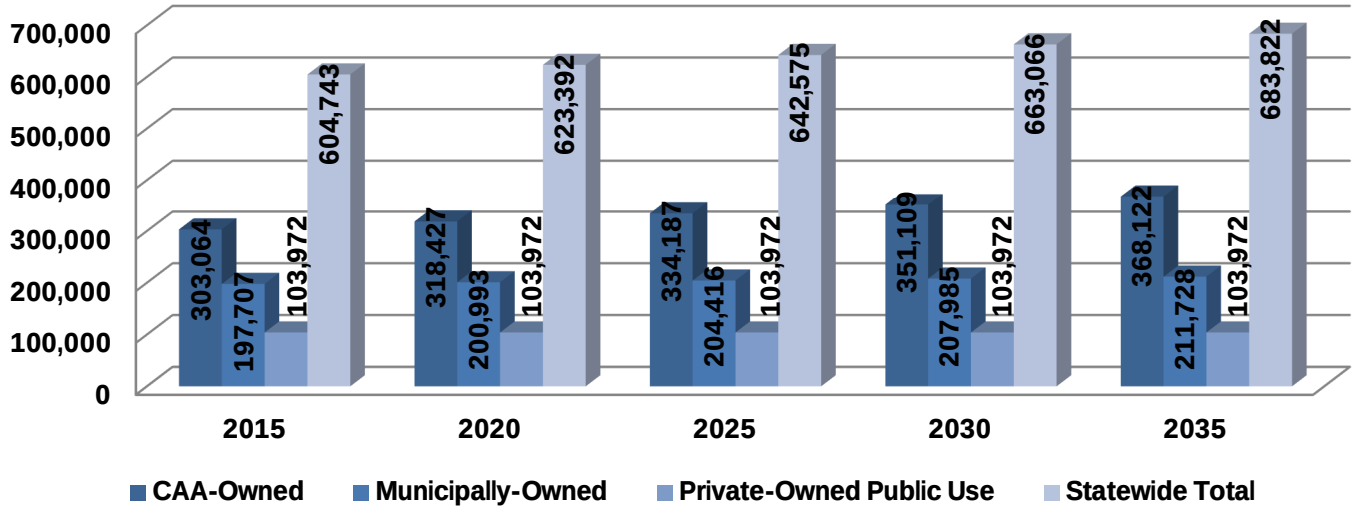
- **Total operations are forecast to grow from 604,743 in 2015 to 683,822 in 2035 for an Average Annual Growth Rate of 0.62%.**
- **Total passenger enplanements are forecast to grow from 3,081,347 in 2015 to 4,316,218 in 2035 for an Average Annual Growth Rate of 1.70%.**
- **Total based aircraft are forecast to grow from 1,452 in 2015 to 1,781 in 2035 for an Average Annual Growth Rate of 1.03%.**

The preparation of a comprehensive plan for the public-use airports in the Connecticut airport system requires a general understanding of recent and forecast trends in the aviation industry as a whole. National, regional, and statewide trends provide insights into the development of the aviation demand forecasts for the public-use airports in the Connecticut airport system. A review of the industry trends for the commercial service and general aviation are of primary importance for the Connecticut airport system. Industry trends and factors affecting future demand at Connecticut airports include the following:

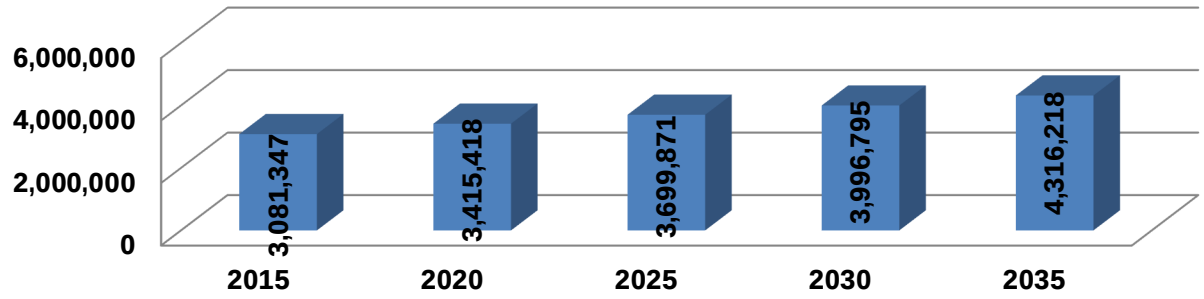
- **Economic conditions, employment/unemployment, and income/debt levels**
- **Changes in population**
- **Changes in air service patterns due to consolidation**
- **Aviation fuel prices**
- **Changes in airline and general aviation fleets**
- **Competing services in nearby states**
- **Fares and the cost of inputs**
- **Corporate profits**

The graphs on the following page show the statewide forecast findings for operations, passenger enplanements, and based aircraft.

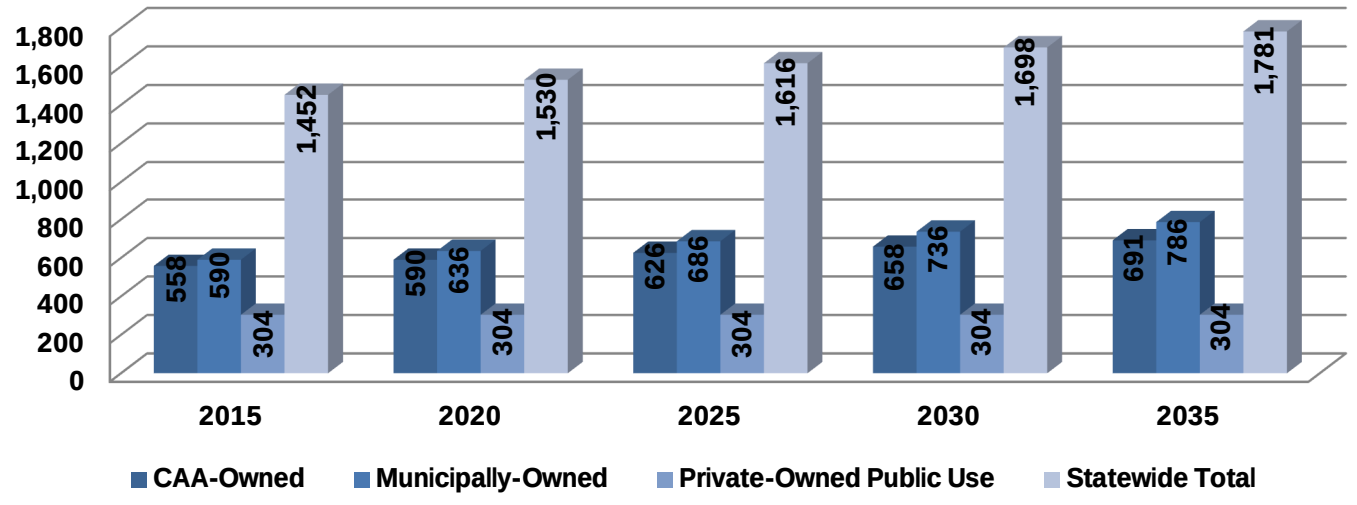
Forecast Operations



Forecast Passenger Enplanements

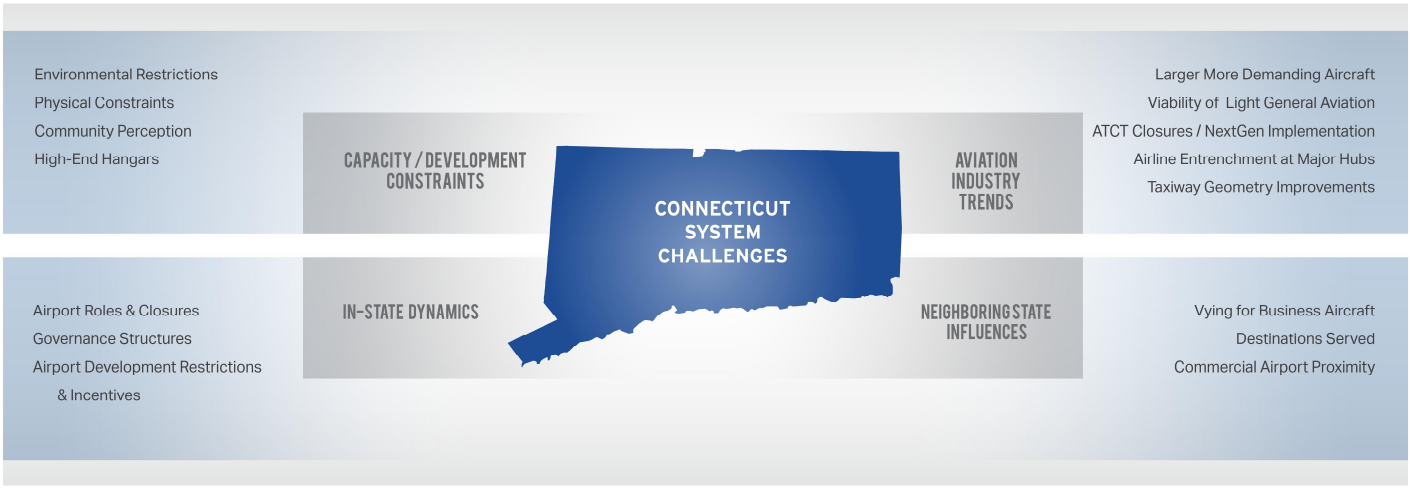


Forecast Based Aircraft



System Challenges & Needs Assessment

The CSASP identifies four distinctly different groups of influences. These groups were assessed within the context of the CAA's chartered goal of proactively fostering in-state economic growth that is consistent with statewide strategy. It is also understood that challenges and needs pertaining to aviation safety, compliance with design standards, and ongoing maintenance receive primary focus related to CAA's chartered goals transferred from the Connecticut Department of Transportation, which are continuous rather than strategic. In this update, it is expected that changes to the design standards affecting taxiway geometry will receive significant focus from the FAA and the individual airports. Primary enhancements needed to maintain the system's effectiveness as both a coordinated aviation system and an economic driver are identified, while challenges that cause constraints to the system are addressed as well.



SYSTEM NEEDS

- Air Service Market Coordination Strategy – BDL, HVN, BDR, and GON
- Increased runway length – HVN, GON, BDR, and HFD
- Prepare contingency plans – HVN, BDR, and GON (Air Service and GA)
- Passenger terminal evaluation and improvements – HVN
- Improved roadway access – HVN
- Phased implementation of future terminal – BDL
- Customs processing services and facilities – BDL and OXC
- High-end GA hangar facilities – OXC, HFD, BDL, HVN, BDR, and GON

OTHER ISSUES

- Obstruction clearance
- NAVAIDs
- Compliance with FAA standards
- Streamline environmental permitting (esp. Coastal Zone)
- Zoning guidelines
- Resolve governance / cost structures
- Evaluation of funding

Funding

CT AIRPORT FUNDING SOURCES

Airport Name	Airport Improvement Program (AIP) Grants	AIP State Apportionment	Passenger Facility Charge (PFC)	State & Local Grants	Earnings Retained by the Airport[2]
CAA-Owned Airports					
Bradley International (BDL)	X	-	X	-	X
Groton-New London (GON)	X	X	-	X	X
Hartford-Brainard (HFD)	X	X	-	X	X
Waterbury-Oxford (OXC)	X	X	-	X	X
Windham (IJD)	X	X	-	X	X
Danielson (LZD)	X	X	-	X	X
Municipally-Owned Airports					
Tweed-New Haven (HVN)	X	-	X	X[1]	X
Igor I. Sikorsky Memorial (BDR)	X	X	-	X	X
Danbury Municipal (DXR)	X	X	-	X	X
Robertson Field (4B8)	X	X	-	X	X
Meriden-Markham Municipal (MMK)	X	X	-	X	X
Privately-Owned Airports Open for Public Use					
Chester (SNC)	-	-	-	X	X
Simsbury (4B9)	-	-	-	X	X
Goodspeed Airport and Seaplane Base (42B)	-	-	-	X	X
Ellington (7B9)	-	-	-	X	X
Skylark Airpark (7B6)	-	-	-	X	X
Waterbury-Plymouth (N41)	-	-	-	X	X
Toutant (C44)	-	-	-	X	X
Candlelight Farms (11N)	-	-	-	X	X
Salmon River Airfield (9B8)	-	-	-	X	X

[1] As part of the State's annual General Fund appropriations, HVN has received an Airport Grant of $1,500,000 each fiscal year to subsidize operating costs for the airport.
[2] Includes revenue from fees, rentals, parking, fuel sales, concessions, etc.

FUNDING PRIORITIES & CHALLENGES

- Continued focus on BDL to serve all commercial service needs of CT and western MA
- Facility improvements associated with retaining and expanding air service at HVN and attracting high-end business operators.
- Improve in-state passenger and revenue retention through statewide coordination, intermodal surface enhancements, and passenger convenience enhancements.
- Concentrated support at facilities capable to support high-end business aircraft
- Market research and business development enhancements
- Improve education and outreach efforts at state level to inform legislative actions and at local level to improve community support for High End airport activity and development

State of the Airport System in Connecticut

BDL

- Primary commercial service airport for CT
- Significant catchment area overlap both in and out of state
- Comparable service offerings with PVD and HPN
- Constant attention and innovation required to maintain and extend market capture

- **STRATEGY:**
  - New city markets, international service and facilities
  - Improved in-state connectivity to reduce leakage
  - Statewide market coordination to improve leverage and extend overall in-state capture and air service availability
  - Continued convenience improvements and expansion preparation

GA AIRPORTS

- Provide aircraft storage, facilities, and services for high-end aircraft
- Focus high-end support at OXC, HFD, BDL, HVD, GON, and BDR
- Enhance legislative, environmental, promotional, land use, and community support
- Seek opportunities to enhance and diversify revenue
- Anticipate airport closures and related shift in based aircraft
- Discontinue Part 139 certification at GON and BDR if a coordinated air service niche cannot be identified and service re-acquired

HVN

- Challenging airline market conditions
- Airline challenges complicated by conversion to larger, more demanding aircraft
- Larger airline aircraft will increase pressure on runway length and terminal building facilities

- **STRATEGY:**
  - Focus on maintaining scheduled service
  - Increased airline communications
  - Develop and provide airline with market information
  - Pursue runway length improvements
  - Increased coordination with CAA
  - Enhanced community, agency, and regulatory communications
  - Develop contingency plan for airline service disruption/cessation
  - Eliminate policy restrictions on activity
  - Assess potential terminal and access enhancements

BDL, HVN, BDR, & GON OUTLOOK

- Coordinated air service platform to maximize air service and reduce out of state leakage
- Identify potentially supportable markets for each; avoid in-state service overlap
- Coordinate efforts to market new airline service
- Identify improvements to airfield, runways, terminal, and landside facilities

Recommendations

COMMERCIAL AIR SERVICE

Improve in-state passenger retention.

- Coordinate services to increase negotiating leverage and identify optimal service by airport: BDL, HVN, BDR, and GON
- Maintain low cost and high traveler convenience
- Enhance in-state intermodal connectivity
- Improve marketing and community understanding
- Continued work to meet FAA standards, ideal runway length, terminal building upgrades, and landside access

PART 139 AIRPORTS

Consider reduction or elimination of Part 139 Certification if air service cannot be attained at BDR and GON.

- BDL and HVN – required to maintain Part 139 certification as commercial service airports
- BDR and GON – not required to maintain Part 139 certification, but continue to maintain while coordinated airline discussions are under consideration or are ongoing.

GENERAL AVIATION

Attract the high-end operator growth market that help to drive economic development and enhance the State's competitive position.

- Undertake long-term efforts to reduce airport development constraints: legislative, environmental, physical, and community
- Support development and expansion of economic incentive zones near airports and establish airport land use compatibility guidelines
- Pursue runway extensions to achieve more than 5,000 feet takeoff length
- Prepare hangar and service development areas at target high-end airports
- Undertake pavement and improvements to comply with FAA design standards
- Advocacy and aviation technical contribution

Chapter 1: Study Design and Objectives

1.1 Introduction

The Connecticut Statewide Airport System Plan (CSASP) examines the interrelationships of airports in Connecticut to determine current and future statewide user needs within the context of the state and the region's changing economy and population. These trends will inform the suggested roles of the airports comprising Connecticut's system, developmental requirements and associated timeframes. The process is to result in a prioritized set of recommendations that is both responsive and adaptive. This state airport system plan update seeks to provide a vision for the next 20 years that takes into account a reasonable range of future opportunities and challenges and to explore synergies for enhancing the economic vitality of the greater region.

This CSASP was developed in collaboration with the Federal Aviation Administration (FAA), the Connecticut Airport Authority (CAA), airport managers, a study advisory committee of various stakeholders, and input received from the general public.

1.2 Purpose and Need

State airport system plans allow for coordination between regional and metropolitan transportation planning efforts and the State's airports. The CSASP provides the CAA with decision guidance for targeting statewide policy and system investment programs.

Airports are a vital part of the state's economy. Connecticut's air transportation system connects travelers, businesses, and cargo to the region, the rest of the country, and the world. The airport network serves a market that relies on air travel and a viable, balanced, and integrated airport system has the potential to generate additional jobs and revenue. This is particularly important considering that New England produces nearly 80 percent more trips per person than the rest of the nation (2.5 air passenger trips per year as compared to the national rate of 1.4). Income is also an important indicator of travel and consumer needs that rely on air transportation. According to the U.S. Department of Commerce, between 1990 and 2012, Connecticut has consistently had the highest per capita income.[1]

The purpose of this update of the CSASP is to evaluate existing and projected aviation needs and identify strategies to better serve the residents and businesses in the state and that support economic growth and responsiveness

1.3 Goals of this CSASP

- Identify changes since 2006 that have impacted Connecticut airports.
- Gain an understanding of the current aviation system and identify the major trends and influences that should guide statewide policy development and resource allocations.
- Evaluate the role and future of the four Part 139 airports.
- Identify strategies for CAA to better serve residents and businesses and that support economic growth and adaptability.

[1] Bureau of Business and Economic Research, UNM. "Per Capita Personal Income by State," revised 4/2/13. https://bber.unm.edu/econ/us-pci.htm, accessed 10/17/14.

1.4 The Connecticut System

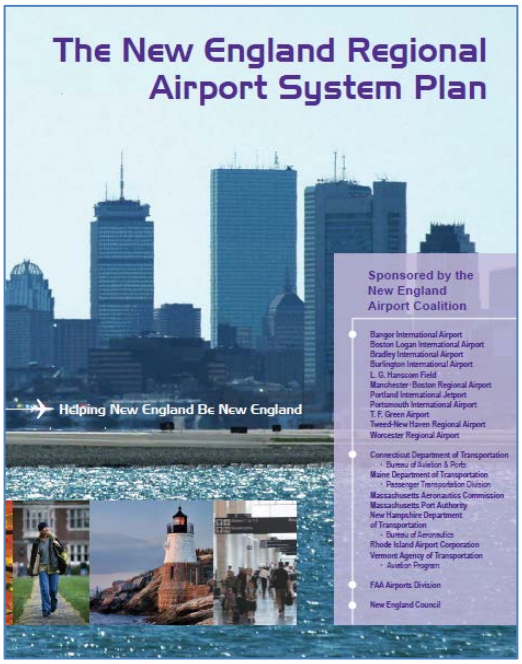
1.4.1 Airport System Planning

Airport system planning takes a long term point of view in order to better understand current passenger and regional needs as well as to prepare for anticipated future conditions. It can also lead to suggested short or medium-term decisions that affect the structure of the airport system, such as identifying airports to include in the FAA's National Plan of Integrated Airport Systems (NPIAS), which lists the airports considered fundamental to national air transportation. State system planning contributed to deciding which airports should either attain or maintain Part 139 status. These decisions are tied to available federal and state funding.

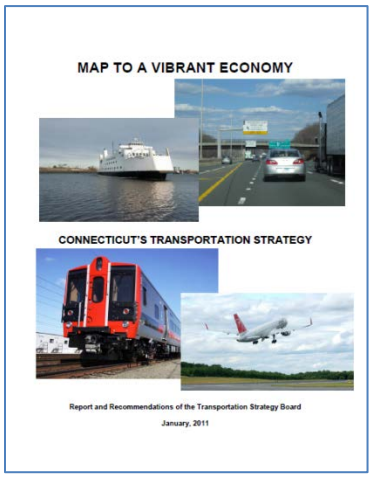
Establishing a suggested role, the associated developmental priorities, and the timing for improvements at a statewide level lays the framework for detailed individual airport master planning. The state-based perspective also considers influential airports in the surrounding states, which in this case include New York, Massachusetts, and Rhode Island. New England's regional airports have continued to evolve into a true system, a system in which increasingly overlapping service areas and improved ground access options are providing passengers with new options as they make air travel decisions.

The most recent update of the CSASP was prepared by the Connecticut Department of Transportation in 2006. The plan's forecasts predicted a growth of enplanements at Connecticut airports specifically focused at Bradley International. The main recommendations of the 2006 plan related to the airports included in the NPIAS. At that time, Connecticut had 15 airports included in the 2005-2009 NPIAS. Eleven were eligible for federal funding, three were privately owned and open to the public, and the one had closed in 2004. In the place of Mountain Meadow Airstrip, the general aviation airport that closed in 2004, the 2006 CSASP recommended including Skylark Airport in the NPIAS. Another recommended change was the designation of Simsbury Tri-Town Airport from a general aviation airport to a reliever airport. This update will utilize much of the data included in the 2006 and expand upon it to provide guidance based on the most recent trends and changed conditions.

It should also be noted that Connecticut is located within the Federal Aviation Administration's New England Region. The first New England Regional Airport System Plan (NERASP) was published in 2006 as a collaborative effort between the New England Airport Coalition, the region's 11 major airports, the six New England state aviation agencies, the Massachusetts Port Authority, the New England Council, and the FAA. This effort to improve the development of regional airport services had similar objectives to the CSASP, but on a broader scale: to match air travel service to passengers' needs, ensure an efficient and reliable system of air service development consistent with the region's growth, minimize total distance traveled to access air travel, and the additional goals of shifting passenger demand to distribute amongst commercial service airports and avoiding the need for developing a new major air passenger airport in New England. The NERASP predicted major growth for Bradley International Airport, though expressed concern for future airport access due to local highway conditions.



This update will also draw from the recent work of Connecticut's Transportation Strategy Board (TSB), which considers the entire transportation network. The TSB is required by Public Act 01-5 to publish a 20-year outlook assessment every four years. The most recent, "Map to a Vibrant Economy", was published in 2011. It made recommendations for aviation in the state that include: support for retaining private airports that are open to the public; support for reliever-class airports; support for preserving and enhancing Tweed-New Haven Airport's ability to serve southern Connecticut as a complement to service at Bradley International; and strengthening the state's major commercial airport, Bradley International, by marketing passenger and cargo service and connecting it to the major cities with improved mass transit services. This system plan update also assessed and was prepared for consistency with the aforementioned TSB studies companion document "Strategic Framework for Investing in CT's Transportation Infrastructure: Economic Growth – Infrastructure Preservation – Sustainable Communities" (January 2011). It identified a significant funding gap necessitating the need for more strategic investments in the transportation system. Specific recommendations include: emphasizing balanced multimodal approach (include bus and rail services and multimodal connections), linking transportation to economic growth and sustainability, and continued development focus on Bradley International Airport (BDL) as an economic resource. Tweed-New Haven Airport was also identified for its special transport services supporting the growth of medical and life science research.

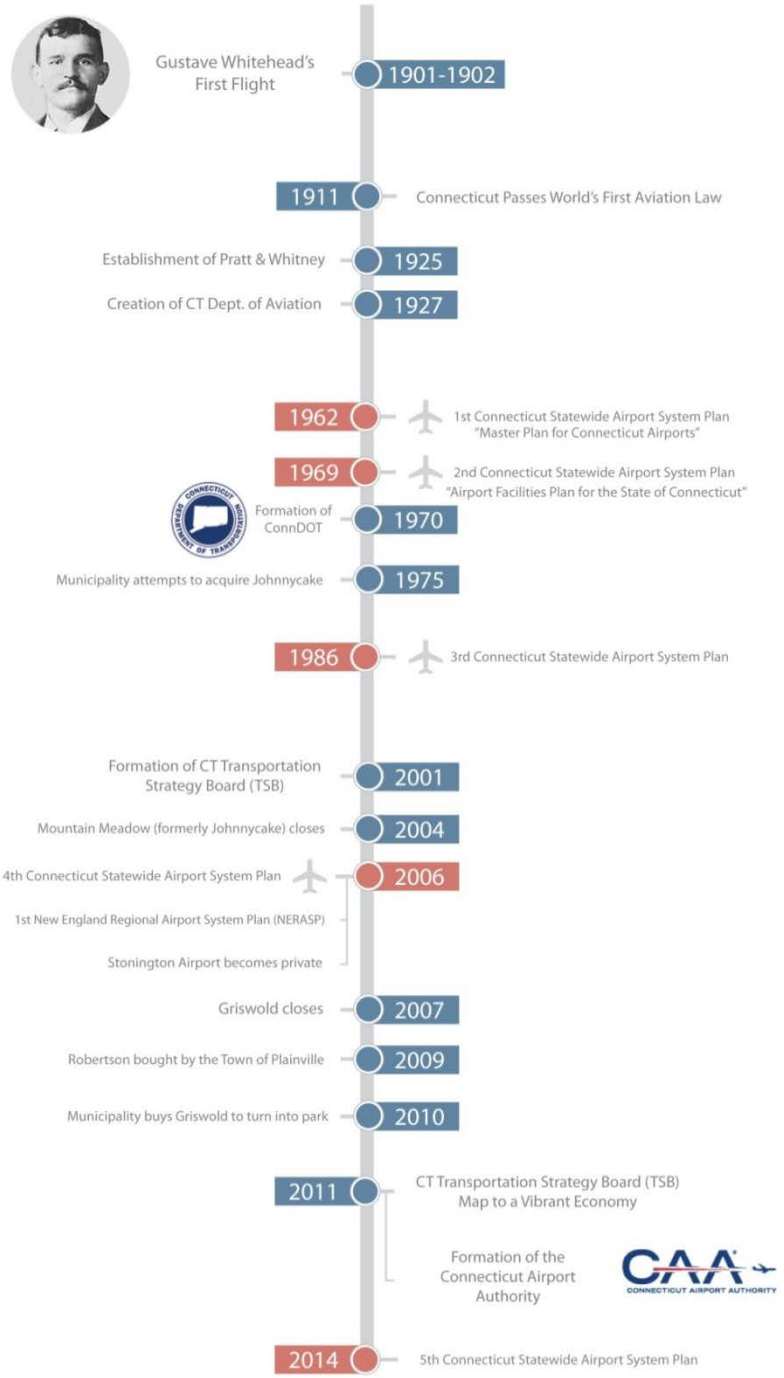


1.4.2 Planning Process and Focus

This plan is intended to be an update to the 2006 plan, which will serve as a baseline, rather than a comprehensive reinvestigation. The process involved compiling data available to the CAA, performing desktop research, applying industry knowledge (consultant, CAA, and FAA), obtaining airport input via electronic survey, and interacting with a Study Advisory Committee (SAC). The SAC included 13 individuals representing the state's nine regional councils of governments (COGs), state government, and the National Business Aircraft Association (NBAA). Three in-person meetings were conducted during the course of the plan's preparation. The focus of the study included the following concentrations (in order of priority): CAA-owned airports, scheduled commercial service, and municipally-owned airports, corporate/business aviation. Additionally, the state's privately-owned / public use airports were identified and inventoried. Similar to the 2006 plan, the update did not include an assessment of private-use only airports, heliports, seaports, or military/government-restricted facilities.

1.4.3 Historical Overview

Aeronautical flight and manufacturing were the foundation of Connecticut's early aviation history. The overall state aviation system has seen numerous changes over time. Some of these changes include municipal acquisitions of airports as well as closures or airports becoming private-use. The following below highlights historical milestones that have helped to shape Connecticut's aviation system in what is it is today.



1.4.4 Summary of Changes since the Last Plan

Change affects an airport's business, transportation, and service models in a variety of ways. Airports must continually adapt to fulfill their system role and to remain viable businesses. Primary changes affecting the system were identified from both National and Connecticut-specific perspectives.

National Perspective

Economic Outlook— The economic conditions and outlook often influence planning processes and recommendations. The plan's publication date of 2006 reveals a process that included portions of 2005 and 2006. At that time, the economy was growing and the outlook, particularly in 2005, was positive. Economic growth continued at a rapid pace during the first two quarters of 2006 and began to slow thereafter as the housing boom ended and the labor market softened as the year progressed. The full ramifications of the slow down and the subsequent 10 year "Great Recession" were certainly not envisioned. Commonly, plans conducted during this timeframe were intended to address moderate growth that turned out to be negative. In contrast, this update was produced over 2015 and early 2016 whereby the end of that 10-year slowdown is largely characterized by strong and continued economic recovery. The overall character can be described as cautiously optimistic. In such times, it is possible to underestimate the amount of growth that will occur in the short term. However, the economic conditions changed significantly more negative in early 2016 as a result of low oil prices, a slowdown in Chinese output compounded by currency-control concerns, and a comparatively strong dollar that increase the difficulty in selling US goods and services internationally. These issues are mitigated in this current update, which did not included the compilation of existing forecasts in lieu of developing independent projections. Therefore it can be expected that the general trends identified are valid with the economic implication related to how quickly they are realized.

Airline Industry Trends— A major focus of the update will document the changes occurring within the airline industry for their implications on the Connecticut system of airports. The airline industry is dynamic in that it is constantly changing. These changes are impacted by the economy as well as changes to the regulatory and worldwide political environment, but are generally more gradual. Over the past 10 years, major airline mergers have taken place resulting the emergence of the "mega carrier". The three mega-networks are: American (merged with US Airways), United (merged with Continental), and Delta (merged with Northwest). The operating fleet of the major airlines has increased to enable more people to travel on fewer flights from the major US cities. Southwest Airlines, once considered a low cost carrier (LCC) essentially operates today as a network carrier; it acquired AirTran Airways in 2011. This plan identifies other air carriers as "niche service providers" or "niche airlines" to encompass airlines having more concentrated services and more limited destination options. Other LCCs such as JetBlue have identified market niches in response to network and pricing gaps. The ten years following the 2006 plan also saw the maturity of the regional airline market. The 50-seat regional jets were quickly replaced by 70 and 90-seat models resulting in a significant increase in the aircraft size and travel distances. Similarly, the "commuter" airline segment that typically operated turbo-prop airplanes of 35-seats or less has largely disappeared with no known replacement identified for the foreseeable future. As a result, many former commuter-spoke destinations, smaller community airports, and some regional airport destinations have lost scheduled airline service with the shift to larger airplanes and longer flight routes.

General Aviation (GA) Trends— All non-airline, non-military/government aviation activity is categorized as general aviation and is the largest segment of aviation in terms of operations and the number of airports serving that segment. This plan distinguishes general aviation into two sub-categories: light general aviation and "high end" general aviation. Light general aviation includes all small-piston aircraft. Total activity for this sub-category has been declining for many years in terms of aircraft, operations, and pilots. The decline in activity combined with the moderately limited spending/ cost recuperation of the airport's servicing them has resulted in a decline in the number of small airports

nationwide. In contrast, "high end" corporate/business aircraft and operations have been increasing to comprise a higher percentage of the total general aviation fleet. This segment of GA is highly sought because of the significantly higher spending at airport facilities and considerably higher induced economic contributions. The larger aircraft impose higher design criteria and space requirements on the airports they use and incur expansion-related constraints that can restrict growth.

Funding Trends— Chapter 5 of the plan details the various programs used to fund airports and their capital improvements. Most noteworthy is that the FAA-administered Airport Improvement Program (AIP) used to fund airport infrastructure has remained nearly level for over 10 years, declining in real terms. There is a significant and growing gap in the funding available compared to the cost of the infrastructure improvements needed. Airports are responding in various ways to address the shortfall including: reducing operating costs, adjusting rates and fees, enhancing revenue by providing new services or leasing/developing/selling available properties, and/or deferring maintenance and investments.

Connecticut Perspective

Formation of CAA— The CAA was established in 2011. The newly formed organization has three primary functional roles: 1) to operate Bradley International and five general aviation airports (Danielson, Groton-New London, Hartford-Brainard, Waterbury-Oxford, and Windham), 2) to administer and oversee the state aviation programs transferred from the Connecticut Department of Transportation, and 3) to serve as an economic driver by making the airports more attractive to new routes, new commerce, and new companies.

Development Restrictions— A variety of developmental constraints and challenges have long-term implications on the responsiveness of the airports system to accommodate growth. Many of these are environmental where coastal zone and wetlands produce significant mitigation challenges. Others are legislative, policy, and community driven where restrictions to runway length or facility size has been implemented. Finally, physical constraints such as roads and rail, waterways, and concentrated development affect many airports. These implications directly affect the State's overall ability to competitively position its transportation infrastructure so as to enable business and economic growth. Over time, the trend will produce economic outflow (jobs and spending leave the state) and higher cost of living (to absorb the outflow).

Airport Operator/Ownership Structures— Issues related to cost sharing and decision-making have affected several in-state airports; one privately owned airport was acquired by a muncipality. Regardless of the ownership, the effectiveness of the airport's operation depends on its ability to grow and adapt its facilities to enhance revenue, produce and acknowledge economic benefits, and to facilitate the community understanding needed to support airport activity and development.

Competitive Business Operation— The funding gap combined with the prolonged economic downturn increased the challenges of airport operation since 2006. Significant focus was placed on cost control measures and rate/fee adjustments. As the economy began to improve additional emphasis included attracting high-end aircraft operators and leveraging the revenue or sale potential of available property.

Airport Closures— Two public-use airports have closed.

Table 1-1 identifies the airports currently comprising Connecticut's system by ownership. **Table 1-2** identifies the airports by role. As mentioned above and shown on **Table 1-3**, two of Connecticut's privately-owned, public-use airports have closed (Griswold and Mountain Meadow). Also since 2006, two privately-owned public-use airports are now available only for private use (Woodstock and Stonington Airpark) and one previously privately-owned public-use airport was acquired by a municipal

sponsor (Robertson). As a result, the total number of public-use airports in Connecticut has decreased from 24 to 20 airports.

Table 1-1: 2014 Study Airports by Ownership

CAA-Owned (6)	Municipally-Owned (5)	Privately-Owned, Public Use (9)
Bradley International	Danbury Municipal	Candlelight Farms*
Danielson	Igor I. Sikorsky Memorial	Chester
Groton-New London	Meriden-Markham Municipal	Ellington*
Hartford-Brainard	Robertson Field	Goodspeed*
Waterbury-Oxford	Tweed-New Haven Regional	Salmon River*
Windham		Simsbury Tri-Town
		Skylark*
		Toutant*
		Waterbury-Plymouth*

*Non-NPIAS Airports (7)

Table 1-2: 2014 Study Airports by Role

Commercial (2)	Reliever (3)	General Aviation 7)	Non-NPIAS (8)
Bradley International*	Danbury Municipal	Chester	Candlelight Farms
Tweed-New Haven Regional*	Hartford-Brainard	Danielson	Ellington
	Robertson Field	Groton-New London*	Goodspeed
		Igor I. Sikorsky Memorial*	Salmon River
		Meriden-Markham Municipal	Skylark
		Simsbury Tri-Town	Toutant
		Waterbury-Oxford	Waterbury-Plymouth
		Windham	

*Part 139 Airports (4)

Table 1-3: Changes since 2006 CSASP

Closed (2)	Privately Owned Private Use (2)
Griswold	Woodstock
Mountain Meadow	Stonington Airpark

In 2011, a new organization became responsible for the state's airport system. The CAA has a dual role in that it directly operates airports and is also the state's aviation agency performing the administrative roles previously held by the Connecticut Department of Transportation. Currently, the CAA's airport operational responsibilities include developing, improving, and operating Bradley International, Danielson, Groton-New London, Hartford-Brainard, Waterbury-Oxford, and Windham Airports. The CAA's administrative mission includes ensuring that the airports act as an economic driver in Connecticut by making the state's airports more attractive to new routes, new commerce, and new companies that may be considering making Connecticut their home. The CAA Board consists of eleven members with a broad spectrum of experience in aviation-related and other industries as well as the government. One such move to encourage airport related economic development was the introduction of the Bradley Airport Development Zone (BADZ) which extends enterprise zone tax incentives to manufacturers and other specified businesses that develop or acquire property in the zone and create jobs.

Chapter 2: Inventory of System Airports

This inventory includes information on each system airport within Connecticut as well as influential airports in neighboring states. A catchment area analysis supplements the data about the airports by indicating the area of influence for in-state and neighbor-state airports. Survey data, collected for this study and reported by the airports, was supplemented with research and master plan reviews to complete this facilities summary. The twenty public-use airports within Connecticut are all profiled in detail alongside summaries of the two previously public use airports (Stonington Airpark and Woodstock), made available only for private use in recent years, the two airports that closed (Griswold and Mountain Meadow Airstrip), and the influential commercial service and general aviation airports in surrounding states of New York, New Jersey, Massachusetts, and Rhode Island.

2.1 Airport Classifications

Airports are a part of transportation infrastructure and as such serve a variety of national, regional, and local roles and functions.

2.1.1 Federal Role

The Federal Aviation Administration (FAA) has the primary responsibility for ensuring the safety and efficiency of airports. The FAA typically provides funding based on a formula including activity levels and availability of other revenue sources including Passenger Facility Charges (PFCs) for airside infrastructure improvements under the Airport Improvement Program (AIP) that it administers. To help decide how to best distribute these funds, the FAA maintains the National Plan of Integrated Airport Systems (NPIAS). Every airport included in the NPIAS is placed into one of two categories: commercial service or general aviation. Each of these is broken down further into subcategories that are determined based on the volume of activity: enplanements, operations, and/or based aircraft.

Airport capital development needs are driven by demand combined with the condition and useful life of the facilities. The NPIAS identifies AIP eligible and justified airport improvements planned within the next five years. For an airport to receive these funds, it must be on the list of NPIAS airports. Of the 5,148 public use airports within the United States, 3,331 airports, or 65%, are included in the NPIAS. Thirteen of these airports are within Connecticut (*2015-2019 NPIAS Report, FAA).*

2.1.1.1 Commercial Service

In order to be considered a NPIAS commercial service airport, an airport must be publicly owned with at least 2,500 enplanements annually and scheduled passenger service. A single revenue-generating passenger boarding a departing aircraft is considered one enplanement. Commercial service airports are classified as either Primary or Nonprimary. Primary airports enplane over 10,000 passengers annually. Nonprimary airports enplane anywhere from 2,500 to 10,000 passengers annually.

Primary commercial service airports are further classified by hub type, which uses the percentage of annual passenger boardings to determine the category. **Table 2-1** explains this classification system.

Table 2-1: Hub Size Classifications

Hub Size	% of the Annual Boardings in the United States
Nonhub	1% or More
Small	.25% and up to 1%
Medium	0.05% and up to .25%
Large	less than .05%, but more than 10,000 boardings per year

Source: NPIAS 2015-2019

2.1.1.2 General Aviation

All general aviation (GA) airports included in the NPIAS are non-primary airports with at least ten based aircraft and at least twenty miles from the nearest NPIAS airports.

In May 2012, the FAA released its "General Aviation Airports: A National Asset" report. In this report, the different roles of GA airports within the national air transportation system are defined and then assigned to the general aviation airports within the NPIAS. These asset categories were designated by the FAA using the criteria summarized in **Table 2-2**.

As shown in Table 2-2, the National asset category is the highest category for GA airports within the National Asset study report. Of the nearly 3,000 U.S. airports assessed, only 84 are designated as a National Asset. The majority of National Asset airports are located near larger metropolitan areas and tend to serve general aviation's most sophisticated and demanding aircraft: high-end business jets and turbo-props. Many are classified by the NPIAS as reliever airports as they are often located near larger hub airports. National airports go beyond local support by providing connectivity of metropolitan areas with other areas, both nationally and internationally. These airports are major economic drivers, typically operators spend in excess of $50 million per year at a National Asset airport. The FAA views National airports as essential components to the aviation system, investing approximately $1.2 billion in AIP funds per National airport from 2001 through 2009. Since they are such major economic drivers supporting global commerce, National airports are of extreme importance to the GA system.

Table 2-2: Asset Categories

Category	Definition	Criteria
National	Supports the national and state system by providing access to national and international markets in multiple states and throughout the United States.	1. The airport has at least 5,000 annual IFR operations, at least 11 based jets, at least 20 annual international departures, or at least 1,000 annual interstate operations; or 2. The airport has at least 10,000 annual enplanements and at least one enplanement in the large air carrier category; or 3. The airport has at least 500 million pounds of annual landed cargo weight.
Regional	Supports regional economies by connecting communities to state and interstate markets.	1. The airport is located in a metropolitan or micropolitan statistical area, has at least 10 annual domestic IFR flights over 500 miles in radius, at least 1,000 annual IFR operations, at least one based jet, or at least 100 based aircraft; or 2. The airport is located in a metropolitan or micropolitan statistical area, and the airport meets the definition of commercial service.
Local	Supplements communities by providing intrastate and some interstate access.	1. The airport has at least 10 annual IFR operations and at least 15 based aircraft; or 2. The airport has at least 2,500 annual passenger enplanements.
Basic	Links the community with national airport system and supports general aviation activities (e.g., emergency services, charter or critical passenger service, cargo operations, flight training, and personal flying).	1. The airport has at least 10 based aircraft; or 2. Is a heliport with at least four based helicopters; or 3. The airport is a facility identified and used by either the U.S. Forest Service, U.S. Marshals Service, U.S. Customs and Border Protection (designated, international, or landing rights), U.S. Postal Service (air stops), or has Essential Air Service; or 4.The airport is a new or replacement airport activated after January 1, 2001; or 5. The airport is considered remote access (nearest NPIAS airport is at least 30 miles away) or is identified in a state aviation system plan as remote access or equivalent; and Must be publically owned or privately owned and designated as a reliever with a minimum of 90 based aircraft.

2.1.2 State Role

In Connecticut, state oversight functions have been largely consolidated within the purview of the Connecticut Airport Authority (CAA). The CAA was established in July of 2011 with the purpose of developing and improving Bradley International Airport as well as the five other general aviation airports. Goals of the CAA include serving as an economic driver in Connecticut by making the State airports more attractive to new routes, new commerce, and new companies. According to Connecticut General Statute Title 15, "the authority is authorized to fix, revise, charge and collect rates, rents, fees and charges" for Connecticut airports. Connecticut applies a highly adaptable macro-scale approach for administering the state's system of airports; airports are not classified into distinct categories used to administer formulaic-based funding programs other than NPIAS.

2.1.3 Local Role

Airports are also a part of the communities where they are located, providing the following types of benefits: access to the air transportation system, training and education, and emergency support. Airports and tenant-businesses provide direct contributions to the local economy in terms of employment and income. Airports also induce a far greater economic impact in terms of visitor spending, which when combined with employee spending, produces a multiplier effect on the local economy.

Land use controls surrounding airports are typically the responsibility of local municipalities; the FAA has no direct authority to protect an airport from incompatible development. Therefore, an effective land use control policy and continued coordination between the airport and its local municipalities are vital for protecting the infrastructure investment, sustaining growth, and reducing off-airport impacts.

2.2 Airport Design Standards

In order to maintain eligibility in the FAA's AIP, airports are to be planned, designed, and maintained in accordance with the standards developed by the FAA. Since the last system plan update in 2006, the FAA has revised its design classification system. The revision did not produce a significant change in the primary design standards affecting airport geometry and safety setbacks, but it did alter the classification names and acronyms. The primary reference document containing the standards is FAA Advisory Circular (AC) 150/5300-13A, Change 1, *Airport Design*. This AC classifies airports according to the type of airplanes using the facility. The primary design criteria include: wingspan and tail height, approach speed, and instrument approach visibility minimums.

2.2.1 Runway Design Code (RDC)

Runway Design Code (RDC) is a combination of the Aircraft Approach Category (AAC), Airplane Design Group (ADG), and the approach visibility minimums. The Aircraft Approach Category (AAC) references the approach speed of an aircraft as it is approaching to land. **Table 2-3** identifies AAC by approach speed.

Table 2-3: Aircraft Approach Category (AAC)

Aircraft Approach Category	Approach Speed
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141 knots
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

Source: FAA AC 150/5300-13A, Change 1

The second component of the RDC is the Aircraft Design Group (ADG), which is expressed by a Roman numeral and is dependent on the wingspan and the tail height of the design aircraft. The design aircraft is the most demanding aircraft (in terms of airport design standards) using the airport on a regular basis. **Table 2-4** shows Groups I through VI and the associated tail heights and wingspans.

Table 2-4: Aircraft Design Group (ADG)

Group #	Tail Height (ft [m])	Wingspan (ft [m])
I	< 20′ (< 6 m)	< 49′ (< 15 m)
II	20′ - < 30′ (6 m - < 9 m)	49′ - < 79′ (15 m - < 24 m)
III	30′ - < 45′ (9 m - < 13.5 m)	79′ - < 118′ (24 m - < 36 m)
IV	45′ - < 60′ (13.5 m - < 18.5 m)	118′ - < 171′ (36 m - < 52 m)
V	60′ - < 66′ (18.5 m - < 20 m)	171′ - < 214′ (52 m - < 65 m)
VI	66′ - < 80′ (20 m - < 24.5 m)	214′ - < 262′ (65 m - < 80 m)

Source: FAA AC 150/5300-13A, Change 1

The third component of the RDC is the visibility minimums of the individual runways. These minimums are listed in both Runway Visual Range (RVR), which is the horizontal visual distance measurement that a pilot can see down the runway (in feet), and the corresponding visibility aloft which is measured in statute miles. **Table 2-5** outlines the RVR in reference to the flight visibility category.

Table 2-5: Visibility Equivalents

RVR (ft)	Flight Visibility Category (statute miles)
4000	Lower than 1 mile but not lower than ¾ mile
2400	Lower than ¾ mile but not lower than ½ mile
1600	Lower than ½ mile but not lower than ¼ mile
1200	Lower than ¼

Source: FAA AC 150/5300-13A, Change 1

These three classifications are combined to create the RDC for a single runway end, (e.g. B-I-2400 or D-IV-1600). It is common to see multiple RDCs at one airport, with different classifications for each runway end due to the different types of approaches and resulting minimums.

These classifications are then applied to the size, setback dimensions, and safety buffers of each of the airfield design components: runways, taxiways, and aircraft parking areas/gates.

2.3 *Airport Market Areas*

Airports serve a geographic area that is determined by many factors such as: role of the airport (passenger or general aviation), proximity to residences and businesses, facilities available (e.g. runway length, width, and strength), services available (e.g. fuel, maintenance, rental car, etc.), cost (e.g. ticket prices, fuel price, and other fees), and proximity to comparable airports. This report simplifies the analysis by assessing drive times of airport market areas: catchment areas and service areas.

2.3.1 Catchment Areas

For this plan, a catchment area refers to the region from which revenue-generating passengers will be drawn from. The drive times used are based on the size of the airport as defined in the NPIAS (90 minutes for large primary hubs, 60 minutes for medium primary hubs, 45 minutes for small primary hubs, and 30 minutes for non-hub primary and for noncommercial service airports). The catchment areas of airports often overlap. Passengers within an airport's catchment area that use another airport are said to be "leaked."

2.3.2 Service Areas

Service areas represent the area that general aviation customers will be drawn from. It is important to note that there are many different types of airport users and unique operating requirements associated with the broad category of general aviation. However, because of geographic coverage, the service area size is effectively restricted to 30 minutes.

2.4 *Facilities Summary*

This section identifies the current facilities that comprise the Connecticut State Airport System or that have an influence on the State's aviation activity. **Figure 2-1** shows Connecticut public-use airports by ownership and **Figure 2-2** shows Connecticut public-use airports by NPIAS classification.

Figure 2-1: Connecticut Public-Use Airports by Ownership

Figure 2-2: Connecticut Public-Use Airports by NPIAS Classification

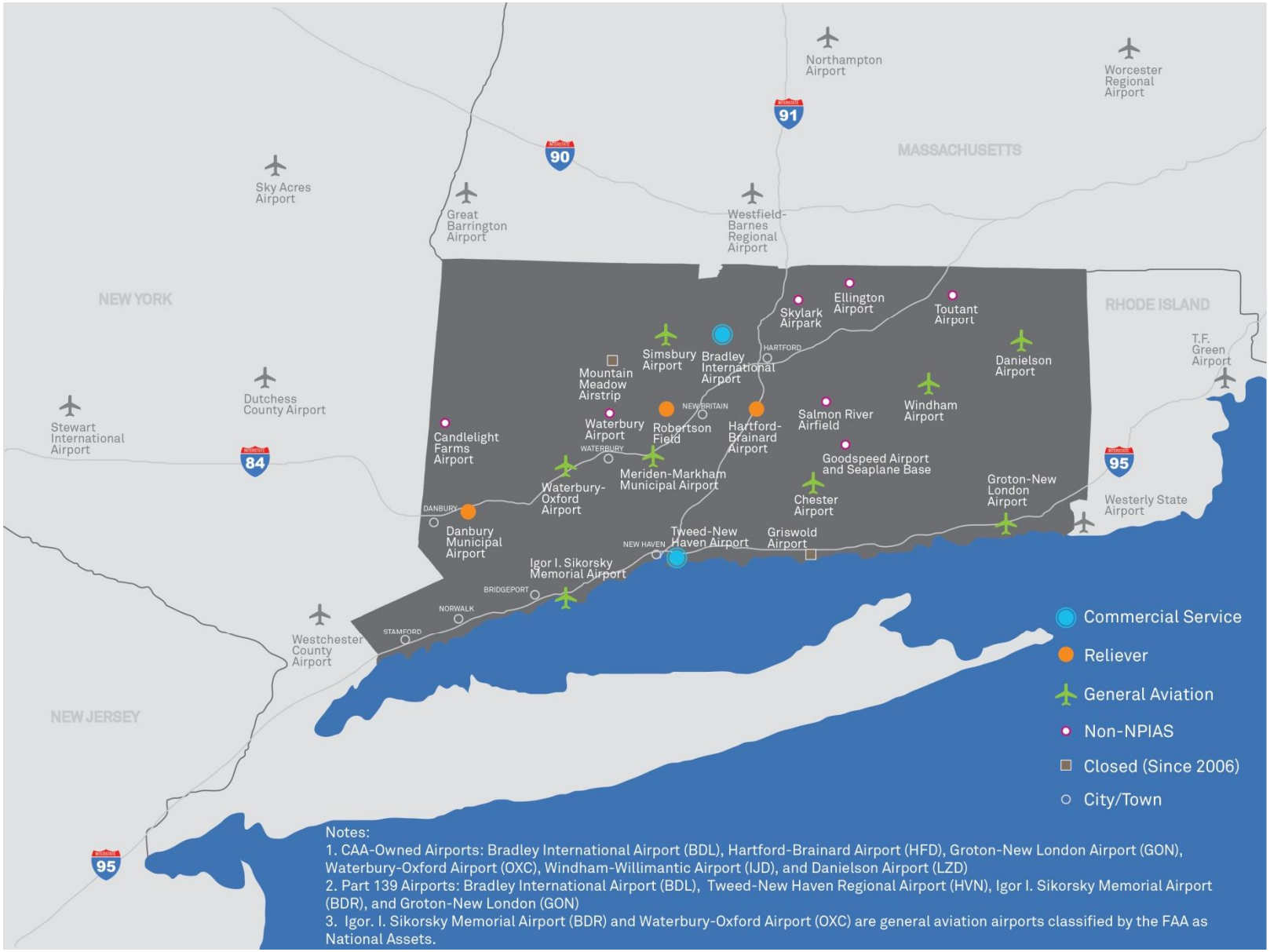


Table 2-6: NPIAS Classification and ARC of the Study Airports

Airport Name	NPIAS Role	GA Asset Role (If Applicable)	ARC*
CAA-Owned Airports			
Bradley International (BDL)	Primary Commercial Service, Medium Hub	-	D-IV
Groton-New London (GON)	General Aviation	Regional	C-III
Hartford-Brainard (HFD)	Reliever, Regional	-	B-II
Waterbury-Oxford (OXC)	General Aviation	National	D-II
Windham (IJD)	General Aviation	Local	B-II
Danielson (LZD)	General Aviation	Local	A-I
Municipally-Owned Airports			
Tweed-New Haven (HVN)	Primary Commercial Service, Non-Hub	-	C-III
Igor I. Sikorsky Memorial (BDR)	General Aviation	National	C-II
Danbury Municipal (DXR)	General Aviation	Regional	B-II
Robertson Field (4B8)	Reliever, Local	-	B-II
Meriden-Markham Municipal (MMK)	General Aviation	Local	B-II
Privately-Owned Airports Open for Public Use			
Chester (SNC)	General Aviation	Unclassified	B-II
Simsbury (4B9)	General Aviation	Unclassified	A-I
Goodspeed Airport and Seaplane Base (42B)	Non-NPIAS	-	A-I
Ellington (7B9)	Non-NPIAS	-	B-I Small
Skylark Airpark (7B6)	Non-NPIAS	-	B-I Small
Waterbury-Plymouth (N41)	Non-NPIAS	-	B-II
Toutant (C44)	Non-NPIAS	-	A-I
Candlelight Farms (11N)	Non-NPIAS	-	A-I
Salmon River Airfield (9B8)	Non-NPIAS	-	A-I

Sources: 2015-2019 National Plan of Integrated Airport Systems Report, 2014 General Aviation Airports: A National Asset (ASSET 1) and 2014 ASSET 2: In-Depth Review of 497 Unclassified Airports as well as documentation provided by the CAA including Master Plans, Airport Layout Plans, feasibility studies, and other reports.
*Airport Reference Code (approach speed and wingspan codes defined in Tables 2-3 and 2-4)

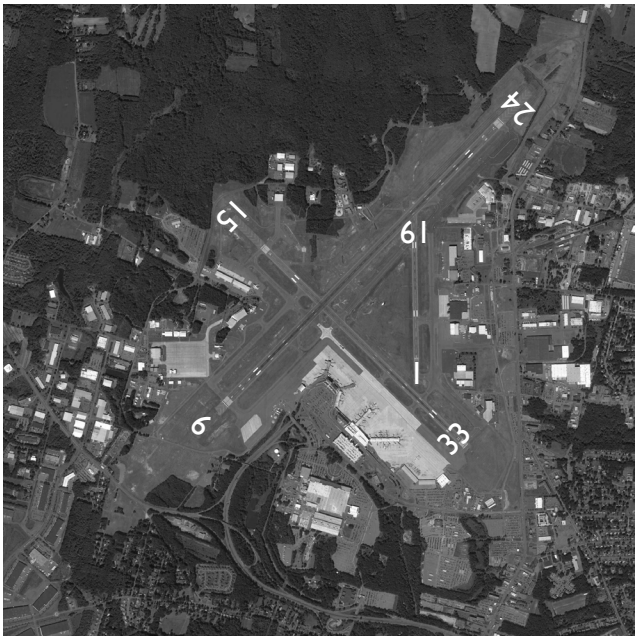
2.4.1 CAA-Owned Airports

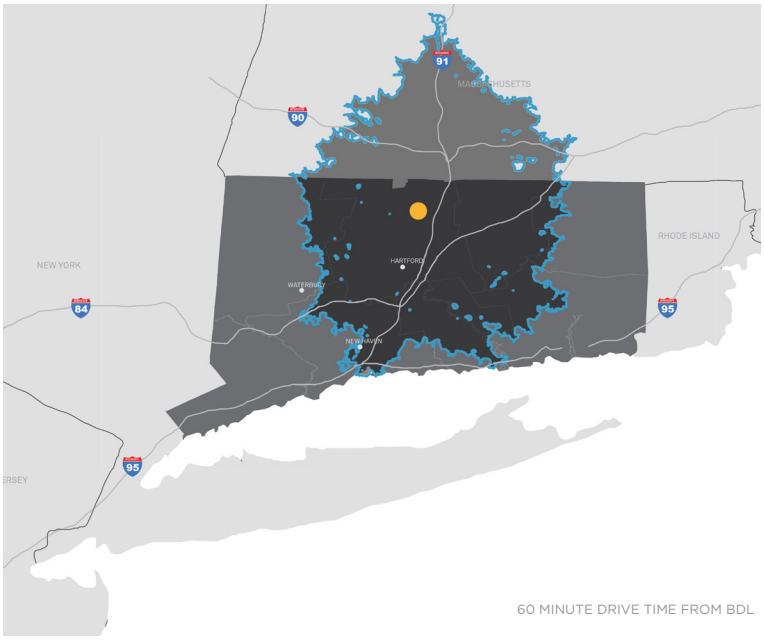
- Bradley International Airport (BDL)
- Danielson Airport (LZD)
- Groton-New London Airport (GON)
- Hartford-Brainard Airport (HFD)
- Waterbury-Oxford Airport (OXC)
- Windham Airport (IJD)

Bradley International Airport (BDL)

Windsor Locks, Hartford County
173.2FT MSL - 2,432 Acres
41-56-20.9224N/072-41-00.1366W 3 miles W of Windsor Locks

NPIAS Role: Primary Commercial Service/Medium Hub
Owner: CAA-Owned ARC: D-IV





60 MINUTE DRIVE TIME FROM BDL

RUNWAY 6-24 9,510′ x 200′ [1,2]

	Runway 6	Runway 24
Approaches	GPS/ILS	GPS/ILS
Lowest Minimums	0 - 0	100 - DA 270
Lighting	ALSF2, HIRL, PAPI	MALSR, HIRL, PAPI

RUNWAY 15-33 6,847′ x 150′ [1,2]

	Runway 15	Runway 33
Approaches	GPS	GPS/ILS
Lowest Minimums	300 - 3/4	200 - 5/8
Lighting	REIL, PAPI, HIRL	MALSF, PAPI, HIRL

RUNWAY 1-19 4,268′ x 100′ [1,2]

	Runway 1	Runway 19
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	MIRL	MIRL

STATISTICS

Based Aircraft	55 (2012)[2]
Operations	95,963 (2013)[6]
Enplanements	2,940,085 (2014)[7]

FACILITIES[1]

Passenger Terminals, corporate and GA hangars, National Guard Base

SERVICES[1,2]

ATCT (continuous), ARFF: Class I, Index D, passenger service, fuel, maintenance, car rental, air cargo, air charter

HARTFORD COUNTY

Population[3]	898,272	Growth by	2020 2.65% 2025 3.55%
Median Income[4]			$61, 804
Businesses[4]			26,224
Jobs[4]			495,009
Special Industries[5]	Insurance, Broadcasting, Transportation Equipment Manufacturing		
Access	Interstate 91, Route 401		

56% of population within 60 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]Air Traffic Activity System
[7]CAA Traffic Statistics

Bradley International Airport – BDL

Bradley International Airport (BDL) is located three miles west of Windsor Locks, on 2,432 acres of land, making it the largest airport in the state. In 2013, there were 95,963 operations at the airport. In 2014, BDL was ranked the 54th busiest airport in the country with 2,940,085 passengers enplaned, a 1.10% increase from the previous year. In addition to passenger service, the airport also handles air cargo. In 2013, BDL was ranked 27th in cargo with nearly 387,000 tons of landed weight. Readily accessible from Interstate-91; 56% of CT is within a 60-minute drive. The airport is classified in the NPIAS as a primary commercial service airport and medium hub. BDL is owned and operated by the CAA.

The airport maintains three runways; Runway 6-24 is 9,510 feet long by 200 feet wide, 15-33 is 6,847 feet long by 150 feet wide, and 1-19 is 4,268 feet by 100 feet. It has an Air Traffic Control Tower (ATCT) that is staffed continuously.

The passenger terminal is located on the south side of the airport and divided into two main buildings, Terminal A and Terminal B. Terminal A was constructed in 1985 and expanded in 2003. It encompasses 250,000 SF on three levels. Terminal B was built in 1949 and covers 224,600 SF over four floors. The airport also caters to the general aviation and corporate aircraft visitors with two Fixed Based Operators (FBOs). These facilities offer hangar space, fueling, and aircraft maintenance.

In 2014, the airport was home to six airlines which include Air Canada, American/ USAirways, Delta Airlines, United Airlines, JetBlue, and Southwest Airlines. Nonstop flights to over 25 destinations include United States hubs, Puerto Rico, and Canada. BDL is also served by dedicated cargo carriers FedEx and UPS.

The 103rd Airlift Wing of the National Guard and the 126th Aviation Regiment of the Army National Guard are also stationed at BDL. In 2012, the military accounted for approximately 3.5% of the total operations.

The Bradley Airport Development Zone extends tax incentives to airport-related firms utilizing the airport in the towns of East Granby, Windsor, Windsor Locks, and Suffield. Within this zone, if the organization acquires an idle facility or constructs a new one for manufacturing, distribution of air cargo, or other business that relies on the airport, tax credits are available. The zone was created by the CAA to increase Bradley International's force as an economic driver within the region.

Land use to the north of the airport boundary is mainly forest with a few residential homes. Industrial/commercial uses exist to the west and southeast. Directly east of the airport is industrial development with residential development beyond. Within the four adjacent towns there are over 1,000 acres of undeveloped land.

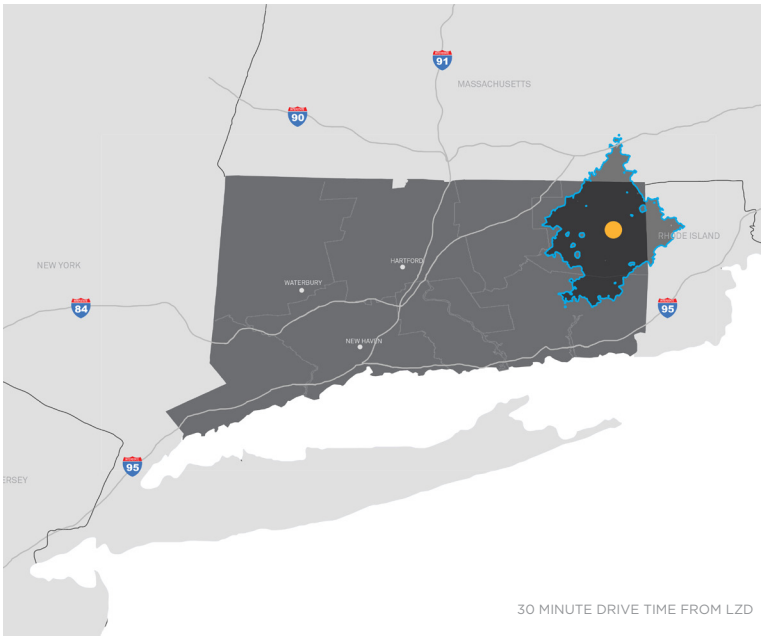
Demolition of Terminal B and the roadway viaduct is currently underway for roadway realignment.

The operation of Bradley International is entirely self-sustaining and thus does not receive funding to operate. An economic impact analysis conducted in 2005 for the airport showed that Bradley International contributes $4 billion in economic activity to the state of Connecticut and the region with $1.2 billion in wages and 18,000 full-time jobs.

Danielson Airport (LZD)

Danielson, Windham County
238.0ft MSL – 257 Acres
41-49-11.1000N/ 071-54-03.5000W 2 miles NW of Danielson Borough

NPIAS Role: General Aviation, Local
Owner: CAA-Owned ARC: A-I



30 MINUTE DRIVE TIME FROM LZD

RUNWAY 13-31 2,700' x 75' [1,2]

	Runway 13	Runway 31
Approaches	VOR A	VOR A
Lowest Minimums	900 - 1	900 - 1
Lighting	MIRL	MIRL, REIL

FACILITIES[1]

FBO, flight school, hangars and tie-downs

SERVICES[1,2]

Fueling (100LL), maintenance, and flight training, gliding, skydiving

STATISTICS

Based Aircraft	34 (2014)[2]
Operations	22,602 (2014)[2]
Enplanements	NONE

WINDHAM COUNTY

Population[3]	117,604	Growth by 2020 6.14% 2025 8.07%
Median Income[4]		$39,952
Businesses[4]		2,685
Jobs[4]		39,129
Special Industries[5]		Electrical Appliance Manufacturing, Warehousing and Storage, Plastics and Rubber Products Manufacturing
Access		Interstate 395, Route 6

3% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Danielson Airport – LZD

Danielson Airport (LZD) is located two miles northwest of Danielson and less than two miles from Route 395 and Route 6. LZD opened in 1963 as an aviation maintenance and technician training center. It now encompasses 257 acres of land that is owned and operated by the CAA. It is home to one of only two facilities in the state to provide aviation mechanics training. In 2014, the airport had 34 aircraft based on the field and generated 22,602 operations. Airport activity includes glider flights and skydiving.

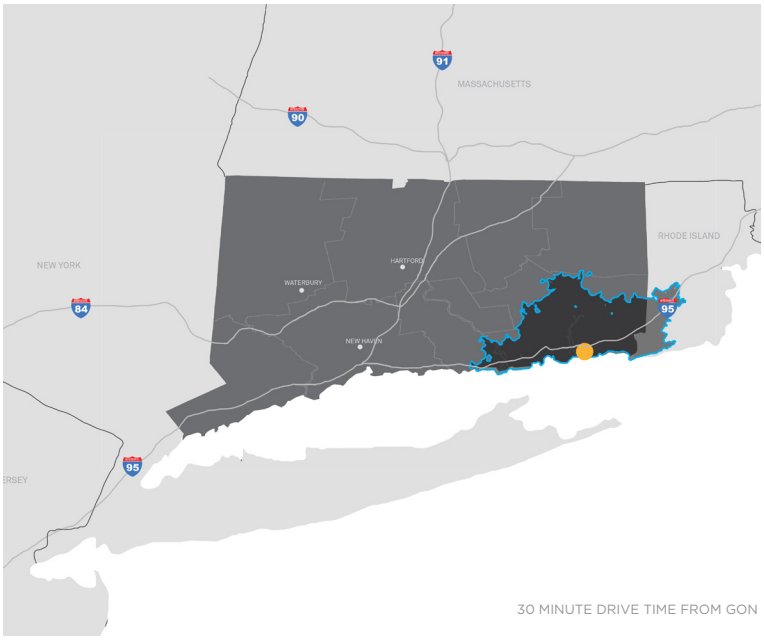
LZD has a single runway: Runway 13-31 is 2,700 feet long and 75 feet wide. It is supplemented by a full taxiway system that has four runway connectors. Since the previous system plan, Danielson has received its own weather reporting system, prompting the change of its identifier from 5B3 to LZD. Airport services include: an FBO, fuel, maintenance, flight training, hangars, and transient tie downs. LZD serves primarily light aircraft and is categorized as ARC A-I. The NPIAS identifies LZD as a general aviation airport further classified as a local asset facility by the 2012 FAA Asset Study.

Surrounding land uses consist of forest to the south and industrial and residential east. Forest areas and a school are located to the north. The Quinebaug River passes by the western boundary of the airport and snakes around to also pass through the property line.

Groton-New London Airport (GON)

Groton, New London County
9.0ft MSL – 489 Acres
41-19-48.2000N/ 072-02-42.5000W 3 miles SE of Groton

NPIAS Role: General Aviation, Regional
Owner: CAA-Owned ARC: C-III



30 MINUTE DRIVE TIME FROM GON

RUNWAY 5-23 5,000' x 150' [1,2]

	Runway 5	Runway 23
Approaches	ILS/GPS/LOC/VOR	GPS/VOR
Lowest Minimums	200 - ½	600 - 1
Lighting	MALSR, HIRL, PAPI	HIRL, VASI

RUNWAY 15-33 4,000' x 96' [1,2]

	Runway 15	Runway 33
Approaches	NONE	GPS
Lowest Minimums	N/A	500 - 1
Lighting	HIRL	HIRL, REIL, PAPI

FACILITIES[1]

Full service FBO, hangars and tie-downs, Army National Guard

SERVICES[1]

ATCT (7 AM – 10 PM), ARFF: Class IV, Index A, fuel, maintenance, flight training, air charter

STATISTICS

Based Aircraft	53 (2013)[2]
Operations	35, 479 (2013)[6]
Enplanements	NONE

NEW LONDON COUNTY

Population[3]	274,150	Growth by 2020 2.10% 2025 2.27%
Median Income[4]		$49,313
Businesses[4]		7,065
Jobs[4]		122,143
Special Industries[5]		Historical Sites and Museums, Transit and Passenger Transportation, Utilities
Access		Interstate 95, Route 12

6% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]Air Traffic Activity System

Groton-New London Airport – GON

The Groton-New London Airport (GON) is located on 489 acres three miles southeast of Groton, Connecticut. Interstate-95, two miles to the north, provides convenient access. Since opening in 1929, the airport has changed names and owners several times. From World War II to 1980, the U.S. Navy operated the facility. Currently the airport is owned and operated by the CAA.

As is typical of older military airports, Groton-New London once featured three intersecting runways. One of them has since closed. Primary Runway 5-23 is 5,000 feet long by 150 feet wide and is classified as ARC C-III. The runway safety areas of Runway 5-23 include Engineered Materials Arresting Systems (EMAS). EMAS is a crushable bed of concrete designed to safely decelerate an airplane that has overrun the runway. During an overrun event, the landing gear of the aircraft sinks deeper into the crushed pavement which slows the aircraft rapidly without substantial damage to the airplane.

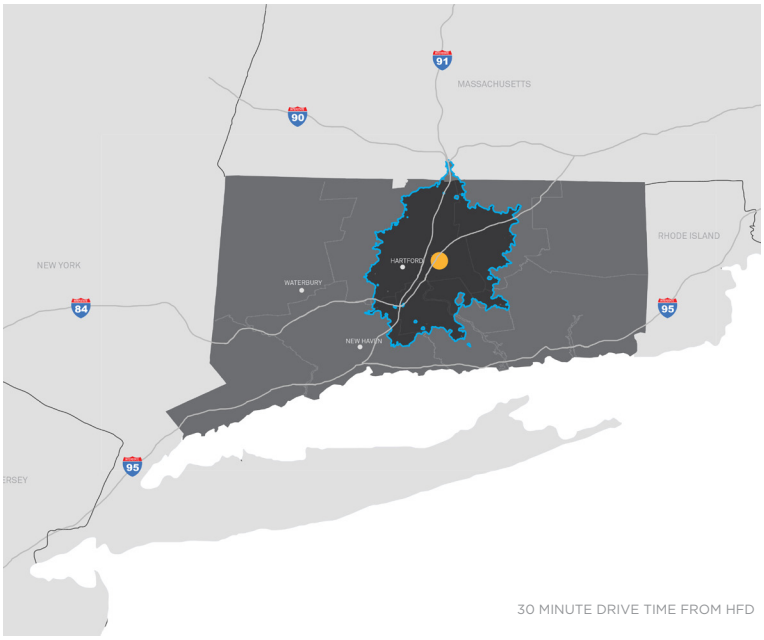
Secondary Runway 15-33 is 4,000 feet long and 96 feet wide, and classified as ARC B-II. The landing thresholds are displaced at each runway end reducing the landing length available to 3,500 feet. An ATCT is in operation at GON from 7 AM to 10 PM daily. In 2013, it was reported that the airport had 53 aircraft based on field and a total of 35,479 operations. The airport offers aircraft maintenance, fueling, flight training, and air charter. The NPIAS classifies GON as a regional airport although it has had limited scheduled airline service at various times and as recently as 2004. GON is located within the catchment area of Providence's T.F. Green Airport (PVD). PVD has a more robust airline schedule with significant operations being conducted by Southwest Airlines.

The entire northeast to southwest boundary of the airport is adjacent to the coastline. The other half of the property is surrounded by a mixture of residential homes, industrial buildings, and wetlands. The airport's close proximity to the shoreline subjects development to Connecticut Coastal Area Management (CCAM) program policies.

Hartford-Brainard Airport (HFD)

Hartford, Hartford County
18.0ft MSL – 201 Acres
41-44-12.2000N/ 072-38-58.0000W 3 miles SE of Hartford

NPIAS Role: Regional, General Aviation Reliever
Owner: CAA-Owned ARC: B-II



30 MINUTE DRIVE TIME FROM HFD

RUNWAY 2-20 4,417′ x 150′ [1,2]

	Runway 2	Runway 20
Approaches	GPS/VOR A/ LDA	NONE
Lowest Minimums	500 - 1	N/A
Lighting	PAPI, REIL,HIRL	VASI, REIL, HIRL

RUNWAY 11-29 2,314′ x 71′ [1,2]

	Runway 11	Runway 29
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	HIRL	HIRL

RUNWAY NE-SW 2,309′ x 150′ (Turf) [1,2]

	Runway NE	Runway SW
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	NONE	NONE

FACILITIES[1]

Hangars and tie-downs

SERVICES[1,2]

ATCT (24 hrs. M-F; 6 AM – 11 PM weekends), fuel, maintenance, air freight, air charter, aircraft rental and sales, flight training

STATISTICS

Based Aircraft	136 (2011)[2]
Operations	55,914 (2013)[6]
Enplanements	NONE

HARTFORD COUNTY

Population[3]	898,272	Growth by	2020 2.65% 2025 3.55%
Median Income[4]			$61, 804
Businesses[4]			26,224
Jobs[4]			495,009
Special Industries[5]	Insurance, Broadcasting, Transportation Equipment Manufacturing		
Access	Interstate 91, Route 84		

31% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]Air Traffic Activity System

Hartford-Brainard Airport – HFD

Hartford-Brainard Airport (HFD) is historically New England's first municipal airport. Located three miles to the southeast of Hartford, Connecticut, along the west bank of the Connecticut River, the 201 acre site is only ten minutes away from downtown Hartford. The airport is frequented by corporate operators (business jets and turbo-props) for its convenient access to Connecticut's major population and business centers. HFD is readily accessible from the junction of Interstate Highways 91, 84, 291, and 384.

HFD's airside infrastructure includes two paved runways, a turf runway, and two helipads. Primary Runway 2-20 is 4,417 feet long by 150 feet wide and is classified as ARC B-II. The landing thresholds for both runway ends are displaced due to close-in obstacles and activities in the approach areas. Crosswind Runway 11-29 is 2,314 feet long by 71 feet wide and is designated as ARC B-I since it serves smaller/lighter airplanes. The turf runway is located immediately east of and parallel to Runway 2-20 and measures 2,309 feet by 150 feet. An ATCT is operated 24 hours per day Monday through Friday and from 6 AM to 11 PM on weekends. In 2011, there were 136 aircraft based at HFD. Flight activity for 2014 was 55,914 operations.

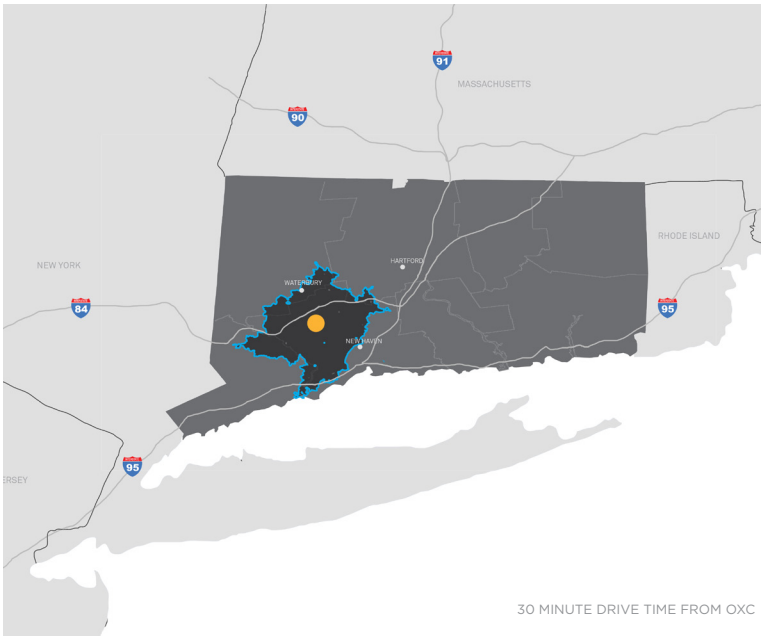
Flight operations are supported by a full-service FBO and other tenant-businesses providing fuel, aircraft maintenance, aircraft sales, flight training, tie-downs, and hangar leasing. Other amenities offered by the airport include a restaurant, an onsite aviation insurance broker, and wholesale aircraft part sales.

The airport's usable property is largely built-out for aviation and aviation-compatible uses. HFD has the capacity to support more operations but development on the airport is limited. There is a sewage treatment facility immediately off the south end of Runway 2-20 and a large commercial/industrial complex located in the airport's northwest quadrant.

Waterbury-Oxford Airport (OXC)

Oxford, New Haven County
726.0ft MSL – 424 Acres
41-28-42.8000N, 073-08-06.9000W 3 miles N of Oxford

NPIAS Role: General Aviation, National
Owner: CAA-Owned ARC: D-II



30 MINUTE DRIVE TIME FROM OXC

RUNWAY 18-36 5,800' x 100' [1,2]

	Runway 18	Runway 36
Approaches	GPS	ILS/GPS
Lowest Minimums	500 - 1½	300 - ⅞
Lighting	HIRL, VASI	REIL, HIRL, PAPI

FACILITIES[1]

Hangars and tie-downs

SERVICES[1,2]

ATCT (6 AM – 9PM), fuel, maintenance, air charter, flight training, aircraft rental and sales

STATISTICS

Based Aircraft	168 (2012)[2]
Operations	46,196 (2013)[6]
Enplanements	NONE

NEW HAVEN COUNTY

Population[3]	862,287	Growth by 2020 4.23% 2025 5.74%
Median Income[4]		$51,914
Businesses[4]		22,940
Jobs[4]		356,898
Special Industries[5]		Education services, transit and passenger transportation, fabricate metal product manufacturing
Access		Interstate 84, Route 67

12% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]Air Traffic Activity System

Waterbury-Oxford Airport – OXC

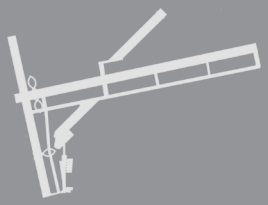
Waterbury-Oxford Airport (OXC) is located 3 miles northwest of Oxford, Connecticut. OXC is owned and operated by the CAA. The 424 acre airport has a single runway: Runway 18-36 measures 5,800 feet long by 100 feet wide and is designated ARC D-II. OXC is centrally located in Connecticut having only a ten to twenty minute drive time from downtown Waterbury, Naugatuck, and Southbury. Interstate 84 is located 1.5 miles to the north. The airport is located in a comparably wealthy area of Connecticut that has also experienced more rapid development over the past two decades.

Airport activity includes 46,196 annual operations in 2013 and 168 based aircraft in 2012. It is classified in the NPIAS as a general aviation airport and also as a National Asset by the FAA's Asset Study (2012). This classification is given to less than 100 general aviation airports in the United States. Since 2002, Waterbury-Oxford has had an ATCT that is in service from 6 AM to 9 PM daily. It receives significant operations by corporate-type aircraft: turbo-jets and turbo-props.

There are two FBOs located at the airport and a flight school. The FBOs provide fuel, maintenance, air charters, aircraft sales, and flight instruction.

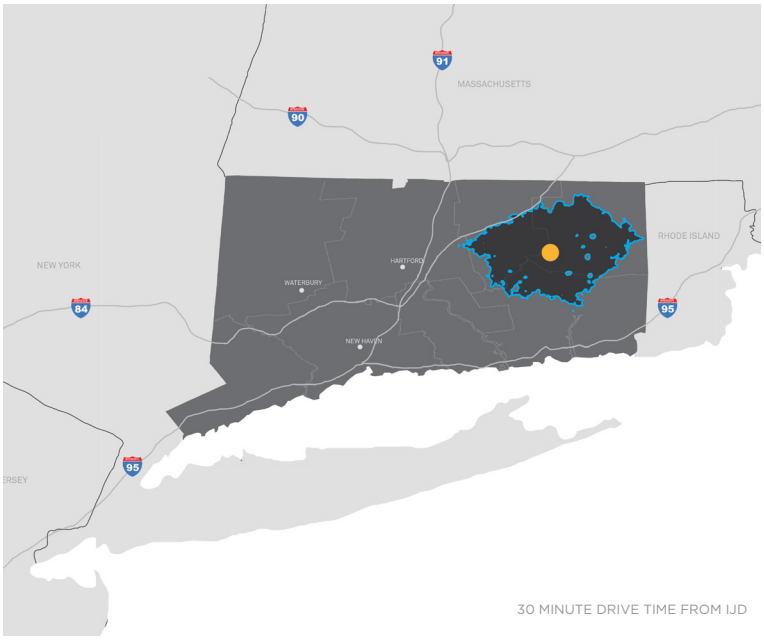
The airport has non-conforming design conditions for its ARC designation for which there are Modifications of Standards. In 2002, runway safety area distances were addressed through declared distances.

Windham Airport (IJD)



Willimantic, Windham County
246.1ft MSL – 280 Acres
41-44-38.5000N, 072-10-48.8000W 3 miles NE of Willimantic

NPIAS Role: General Aviation, Local
Owner: CAA-Owned ARC: B-II



30 MINUTE DRIVE TIME FROM IJD

RUNWAY 9-27 4,271' x 100' [1,2]

	Runway 9	Runway 27
Approaches	GPS/VOR A	GPS/VOR A
Lowest Minimums	400 - 1	700 -1
Lighting	MIRL	REIL, MIRL

RUNWAY 18-36 2,799' x 75' [1,2]

	Runway 18	Runway 36
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	NONE	NONE

FACILITIES[1]

Hangars and tie-downs

SERVICES[1,2]

Fuel, maintenance, air charter, flight training, aircraft rental

STATISTICS

Based Aircraft	68 (2014)[2]
Operations	14,300 (2013)[6]
Enplanements	NONE

WINDHAM COUNTY

Population[3]	117,604	Growth by 2020 6.14% 2025 8.07%
Median Income[4]		$39,952
Businesses[4]		2,685
Jobs[4]		39,129
Special Industries[5]		Electrical Appliance Manufacturing, Warehousing and Storage, Plastics and Rubber Products Manufacturing
Access		Route 6, Route 66

7% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]2014 Master Plan

Windham Airport – IJD

Windham Airport (IJD) is a CAA-owned facility situated on 280 acres three miles northeast of Willimantic, Connecticut. U.S. Route 6 provides ground access to the airport. When the airport was constructed in 1937, it was then known as the Willimantic Municipal Airport and included three crossing runways. Runway 6-24 was decommissioned and is now used as for aircraft parking to accommodate the 68 based aircraft on field. Activity is relatively light with approximately 14,000 operations as reported in 2011. In addition to the tie down areas, there are several large conventional hangars and 14 T-hangars.

IJD is included in the NPIAS as a general aviation airport and further classified as a Local Asset according to the FAA 2012 Asset Study. The two runways, Runway 9-27 and Runway 18-36, have dimensions of 4,271 feet long by 100 feet wide and 2,799 feet long by 75 feet wide, respectively. Both are classified as ARC B-II capable of serving midsize corporate aircraft. The FBO facility is currently closed but 100LL and Jet A fuel are available at the airport.

The airport property is developmentally constrained by the presence of existing facilities and wetlands. A housing development is located and two large “box” stores have been constructed adjacent to the airport, south of U.S. Route 6.

The ownership of the airport was transferred to the CAA in 2013 and a Master Plan Update was published in November 2014. The plan outlined future projects that enhance the safety and the services offered at the airport, including acquisition of avigation easements to expand the RPZ, construction additional hangars, and security enhancements.

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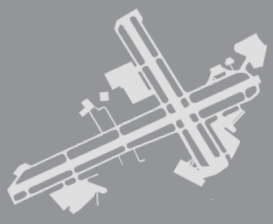
2.4.2 Municipally-Owned Airports

- Danbury Municipal Airport (DXR)
- Igor I. Sikorsky Memorial Airport (BDR)
- Meriden-Markham Municipal Airport (MMK)
- Robertson Field (4B8)
- Tweed New Haven Airport (HVN)

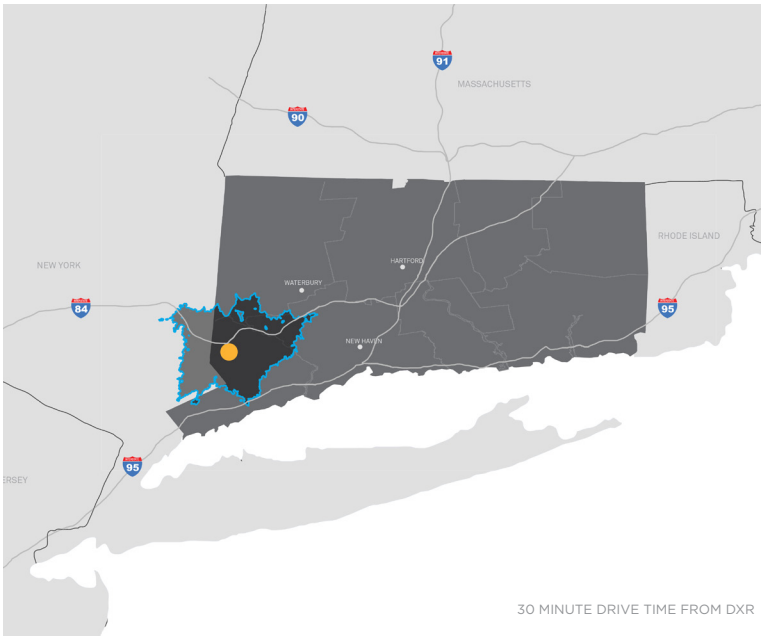
Danbury Municipal Airport (DXR)



Danbury, Fairfield County

456.8ft MSL – 248 Acres
41-22-17.5000N/ 073-28-55.9000W 3 miles SW of Danbury

NPIAS Role: Regional, Reliever
Owner: Municipally-Owned, City of Danbury ARC: B-II



30 MINUTE DRIVE TIME FROM DXR

RUNWAY 8-26 4,421' x 150' [1,2]

	Runway 8	Runway 26
Approaches	LOC/GPS A/VOR A	GPS A/VOR A
Lowest Minimums	700 - 1	1, 000 - 1¼
Lighting	REIL, MIRL	REIL, MIRL

RUNWAY 17-35 3,135' x 100' [1,2]

	Runway 17	Runway 35
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	NONE	NONE

CLOSED AT NIGHT

FACILITIES[1]

Hangars and tie-downs

SERVICES[1,2]

Fuel, maintenance, flight training, aircraft rental and sales, air charter, air freight

STATISTICS

Based Aircraft	293 (2012)[2]
Operations	67, 519 (2013)[6]
Enplanements	NONE

FAIRFIELD COUNTY

Population[3]	939,904	Growth by 2020 0.08% 2025 0.79%
Median Income[4]		$82,362
Businesses[4]		33,728
Jobs[4]		413,404
Special Industries[5]		Investments, Appliance Manufacturing, Transit & Passenger Transportation
Access		Interstate 84, Route 7

9% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]Air Traffic Activity System

Danbury Municipal Airport – DXR

Danbury Municipal Airport (DXR) is located three miles southwest of the business center of Danbury. The 248-acre airport is owned and operated by the City of Danbury. DXR is classified in the NPIAS as a reliever airport. Convenient access is provided by Interstate 84 to the north and U.S. Route 7 to the east. In 2012, Danbury Municipal had nearly 300 based aircraft and more than 67,000 operations.

Danbury Municipal is less than three miles from the New York border. As a result, a significant number of hangar tenants are New York residents or businesses. Approximately half of the total traffic is from general aviation flight training. The general aviation and corporate traffic that would otherwise fly to Westchester County Airport in White Plains, NY use Danbury Municipal as an alternative.

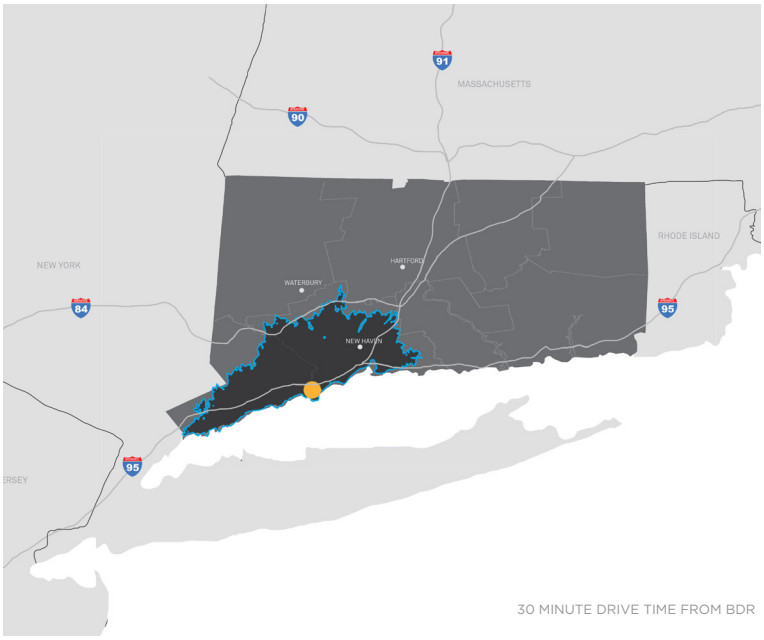
The longer of the two runways, Runway 8-26 measures 4,421 feet long by 150 feet wide and is found to be in fair condition. Runway 17-35 is 3,135 feet long, 100 feet wide, and in good condition. The ARC of the airport is B-II. Danbury has an ATCT operational from the hours of 7 AM to 10 PM. Services at the airport include: fuel, flight training, aircraft maintenance/sales/rental, air charter, and air freight.

Surrounding development consists of residential to the south, shopping malls to the north and east, and industrial development. The height of buildings immediately adjacent to the airport has required the displacement of the landing thresholds to all the runway ends. Additional obstructions also affect the instrument approach procedures minimums and nighttime operations.

Igor I Sikorsky Memorial Airport (BDR)

Bridgeport, Fairfield County
9.0FT MSL - 800 Acres
41-09-48.5000N, 073-07-34.2000W 3 miles SE of Bridgeport

NPIAS Role: General Aviation, National
Owner: Municipally-Owned, City of Bridgeport ARC: C-II



30 MINUTE DRIVE TIME FROM BDR

RUNWAY 6-24 4,677' x 150' [1,2]

	Runway 6	Runway 24
Approaches	GPS/ILS/VOR	GPS/VOR
Lowest Minimums	300 - 1	500 - 1
Lighting	PAPI, REIL, HIRL	VASI, REIL, HIRL

RUNWAY 11-29 4,761' x 150' [1,2]

	Runway 11	Runway 29
Approaches	NONE	GPS/VOR
Lowest Minimums	N/A	400 - 1
Lighting	REIL, HIRL	VASI, REIL, HIRL

FACILITIES[1]

FBO, hangars and tie-downs.

SERVICES[1,2]

ATCT (6:30 AM – 10 PM), fuel, maintenance, air freight, air charter, aircraft rental and sales, flight training

STATISTICS

Based Aircraft	190 (2010)[2]
Operations	62,929 (2013)[6]
Enplanements	NONE

FAIRFIELD COUNTY

Population[3]	939,904	Growth by 2020 0.08% 2025 0.79%
Median Income[4]		$82,362
Businesses[4]		33,728
Jobs[4]		413,404
Special Industries[5]		Investments, Appliance Manufacturing, Transit & Passenger Transportation
Access		Interstate 95, Route 25

30% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]Air Traffic Activity System

Igor Sikorsky Memorial Airport – BDR

Igor Sikorsky Memorial Airport (BDR) is located a mile and half from downtown Stratford and a 12 minute drive from downtown Bridgeport. This historic airport was the site of the country's first airshow (1911). In 1929, the airport's namesake, Igor Sikorsky decided to make the airfield the new headquarters for his budding helicopter company.

The City of Bridgeport owns and operates the airport. The facility encompasses 800 acres and provides numerous support services to a wide range of aircraft. There are three FBOs on the field that provide flight instruction, aircraft maintenance, fueling, and air charter. The airport is classified as a general aviation airport in the NPIAS.

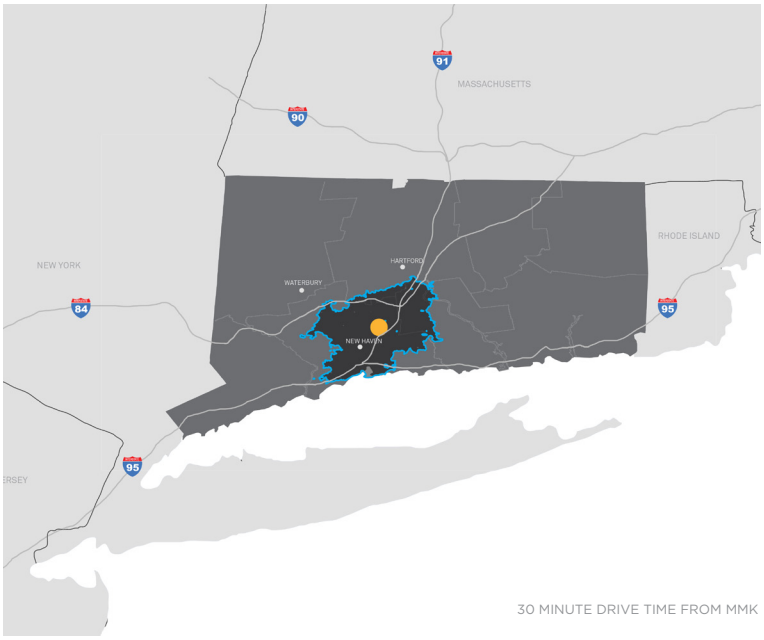
BDR has two runways designated ARC C-II. Runway 11-29 is 4,761 feet long by 150 feet wide and Runway 6-24 is 4,677 feet long by 150 feet wide. An ATCT operates daily from 6:30 AM to 10 PM. In 2010, BDR had 190 based aircraft. There were approximately 62,929 annual operations in 2013. The operating mix of aircraft includes corporate jet traffic (i.e., turbo-props and turbo jets).

Concentrated residential development is present immediately northwest and southeast of the airport. To the west is the Great Meadows Tidal Wetlands Area and to the east is an industrial complex.

Meriden-Markham Municipal Airport (MMK)

Meriden, New Haven County
103.0FT MSL - 157 Acres
41-30-31.3730N, 072-49-46.1220W 3 miles SW of Meriden

NPIAS Role: General Aviation, Local
Owner: Municipally-Owned, City of Meriden ARC: B-II



30 MINUTE DRIVE TIME FROM MMK

RUNWAY 18-36 3,100' x 75' [1,2]

	Runway 18	Runway 36
Approaches	NONE	GPS/VOR
Lowest Minimums	N/A	600 - 1
Lighting	MIRL	PAPI, MIRL, REIL

FACILITIES[1]

Hangars and tie-downs

SERVICES[1,2]

Fuel, maintenance, air charter, aircraft rental and sales, flight training

STATISTICS

Based Aircraft	65 (2009)[2]
Operations	16,226 (2009)[2]
Enplanements	NONE

NEW HAVEN COUNTY

Population[3]	862,287	Growth by 2020 4.23% 2025 5.74%
Median Income[4]		$51,914
Businesses[4]		22,940
Jobs[4]		356,898
Special Industries[5]		Education services, transit and passenger transportation, fabricated metal product manufacturing
Access		Interstate 691, Interstate 91

38% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Meriden-Markham Municipal Airport – MMK

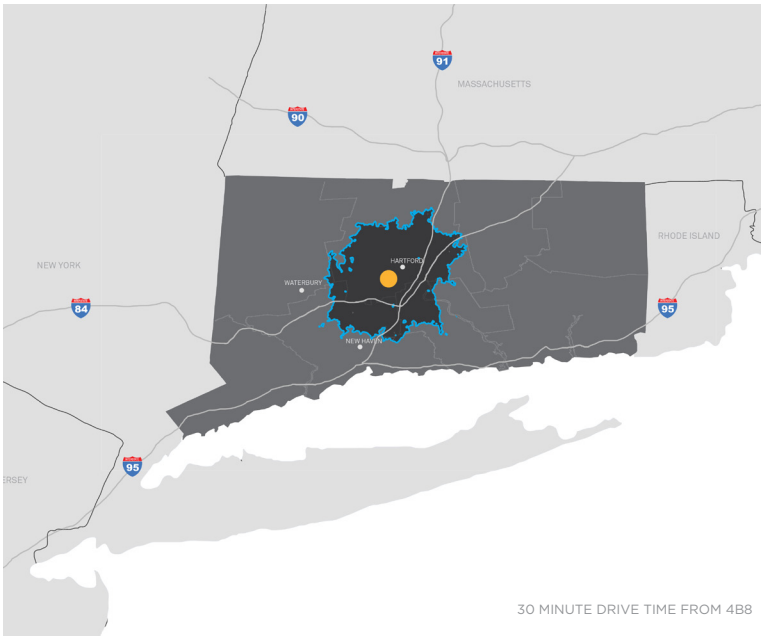
Meriden-Markham Municipal Airport (MMK) is located less than two and a half miles southwest of the City of Meriden, Connecticut. The airport is close to the major road corridors of Interstate 91, Interstate 691, SR 70, and SR 71. MMK encompasses a total of 157 acres split between the City of Meriden and the Town of Wallingford, with the majority of the acreage falling within Wallingford. The airport is owned and operated by the City of Meriden with day-to-day duties being handled by Meriden Aviation Services, the FBO on field.

MMK has a single runway designated ARC B-I. Runway 18-36 is 3,100 feet long by 75 feet wide. It has a full length parallel taxiway and five connector taxiways. Meriden-Markham is identified in the NPIAS as a general aviation facility. In 2009 it had 65 based aircraft and 16,226 operations.

Robertson Field (4B8)

Plainville, Hartford County
202.0ft MSL – 39 Acres
41-41-21.6000N, 072-51-52.9000W 2 miles N of Plainville

NPIAS Role: General Aviation, Reliever
Owner: Municipally-Owned, Town of Plainville ARC: B-II



30 MINUTE DRIVE TIME FROM 4B8

RUNWAY 2-20 3,665' x 75' [1,2]

	Runway 2	Runway 20
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	REIL	REIL

FACILITIES[1]

Hangars and tie-downs

SERVICES[1,2]

Fuel, maintenance, flight training, air charter

STATISTICS

Based Aircraft	57 (2013)[2]
Operations	21,105 (2013)[2]
Enplanements	NONE

HARTFORD COUNTY

Population[3]	898,272	Growth by 2020 2.65% 2025 3.55%
Median Income[4]		$61, 804
Businesses[4]		26,224
Jobs[4]		495,009
Special Industries[5]		Insurance, Broadcasting, Transportation Equipment Manufacturing
Access		Interstate 84, Route 552

33% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Robertson Field – 4B8

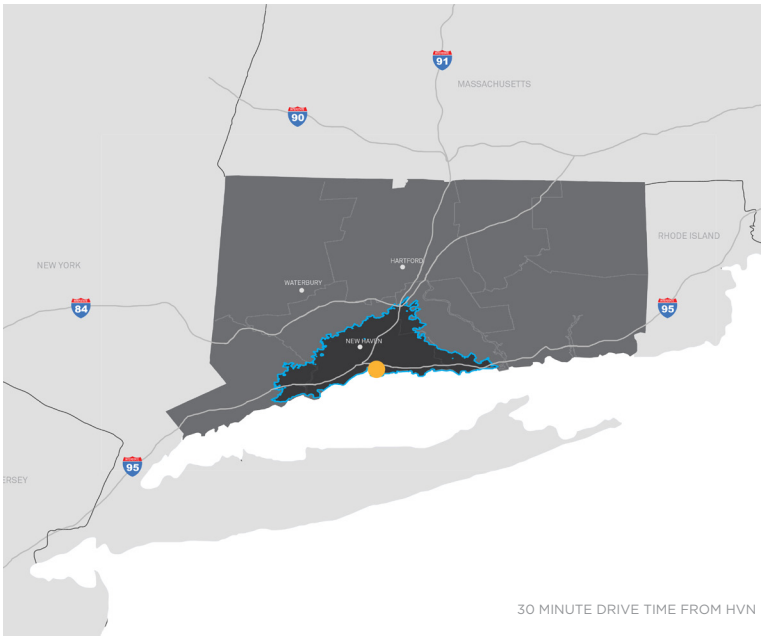
Robertson Field (4B8) is a single runway airport situated one mile northwest of Plainville, Connecticut north of Interstate 84. The airport was named after its original owner, Sanford Robertson, and was bought by Tomasso Brothers, Inc., a large construction firm. Tomasso Brothers expanded and improved the airport. After a feasibility study was done in 2008 to evaluate municipal acquisition of the airport, the Town of Plainville purchased the airport from the Tomasso Brothers in 2009. The municipally-owned airport sits on two parcels of land totaling 57 acres.

Runway 2-20 is 3,660 feet long by 75 feet wide and is classified as ARC B-II. The runway is also equipped with a full length parallel taxiway and four connector taxiways. The FBO offers a wide range of services from airframe and powerplant maintenance to fueling, flight training, and air charter. In addition to these amenities the airport offers several hangars and tie down areas as well as a helipad with an adjacent parking area. The airport has 57 based aircraft and generated 21,105 operations in 2013.

Tweed-New Haven Airport (HVN)

New Haven, New Haven County
12.0FT MSL - 394 Acres
41-15-49.5000N, 072-53-12.5000W 3 miles SE of New Haven

NPIAS Role: Commercial Service/Non-Hub
Owner: Municipally-Owned, City of New Haven ARC: C-III



30 MINUTE DRIVE TIME FROM HVN

RUNWAY 2-20 5,600' x 150' [1,2]

	Runway 2	Runway 20
Approaches	GPS/ILS/VOR	NONE
Lowest Minimums	300 - 1	N/A
Lighting	MALSF, PAPI, HIRL	VASI, HIRL

RUNWAY 14-32 3,626' x 100' [1,2]

	Runway 14	Runway 32
Approaches	NONE	VOR A
Lowest Minimums	N/A	800 - 1
Lighting	MIRL	PAPI, MIRL

FACILITIES[1]

Passenger Terminal, FBO, large hangars and tie-down areas

SERVICES[1,2]

Fuel, maintenance, air charter, flight training, aircraft rental and sales.

STATISTICS

Based Aircraft	43 (2014)[2]
Operations	46,196 (2013)[6]
Enplanements	37,434 (2013)[7]

NEW HAVEN COUNTY

Population[3]	862,287	Growth by	2020 4.23% 2025 5.74%
Median Income[4]			$51,914
Businesses[4]			22,940
Jobs[4]			356,898
Special Industries[5]			Education services, transit and passenger transportation, fabricated metal product manufacturing
Access			Interstate 95, Interstate 91

26% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]Air Traffic Activity System
[7]FAA Air Carrier Activity Information System

Tweed New Haven Airport – HVN

Tweed New Haven Airport (HVN) is located three miles southeast of New Haven, Connecticut on a 394 acre parcel. It is approximately two miles south of Interstate 95 and a ten minute drive from downtown New Haven. The airport was opened in 1931 and three years later it hosted both air mail and passenger service operations from American Airlines. HVN received its name from its first airport manager, Jack Tweed. The airport is owned by the City of New Haven and operated by the Tweed New Haven Airport Authority.

The airport is classified in the NPIAS as a non-hub, commercial service airport, which is typically indicative of limited scheduled service with significant general aviation activity. Approximately 13% of HVN's operations are air carrier activity. Scheduled commercial flights are provided by US Airways/American Airlines that conducts four to five flights per day to Philadelphia. HVN has 43 based aircraft.

HVN has two runways: Runway 2-20 is 5,600 feet long by 150 feet wide and Runway 14-32 is 3,626 feet long by 100 feet wide. An ATCT is staffed daily from 6 AM to 10 PM. There are several FBOs at the airport that offer fueling, parking, maintenance, air charter, and flight instruction.

The airport is bordered on three sides by concentrated residential development. Wetlands are present in the southeast quadrant. Commercial and industrial development is present south and southwest of the airport. HVN is within the Connecticut Coastal Area Management (CCAM) boundary which subjects proposed development to additional scrutiny. HVN applies noise abatement procedures and other mitigations to reduce impacts on the surrounding neighborhoods.

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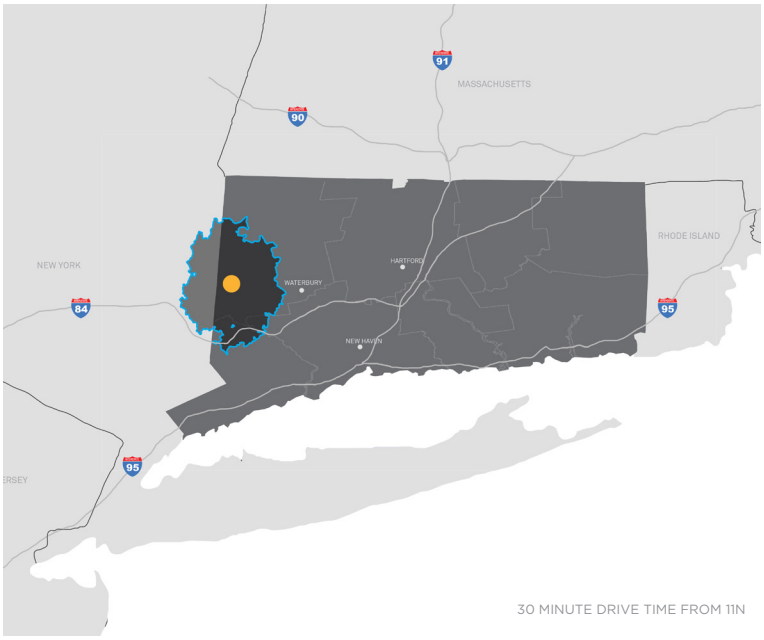
2.4.3 Privately Owned, Public Use Airports

- Candlelight Farms Airport (11N)
- Chester Airport (SNC)
- Ellington Airport (7B9)
- Goodspeed Airport and Seaplane Base (42B)
- Salmon River Airfield (9B8)
- Simsbury Airport (4B9)
- Skylark Airpark (7B6)
- Toutant Airport (C44)
- Waterbury Airport (N41)

Candlelight Farms Airport (11N)

New Milford, Litchfield County
675ft MSL – 35 Acres
41-34-09.0000N/073-27-43.5000W 3 miles SW of New Milford

NPIAS Role: Non-NPIAS
Owner: Privately-Owned, Public Use ARC:A-I



30 MINUTE DRIVE TIME FROM 11N

RUNWAY 17-35 2,900' x 50' (Turf) [1,2]

	Runway 17	Runway 35
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	NONE	NONE

FACILITIES[1]

NONE

SERVICES[1,2]

Gliding Club, Flight Training, Aircraft Rental

STATISTICS

Based Aircraft	14 (2011)[2]
Operations	11,000 (2011)[2]
Enplanements	NONE

LITCHFIELD COUNTY

Population[3]	186,924	Growth by 2020 3.48% 2025 3.39%
Median Income[4]		$42, 419
Businesses[4]		5,892
Jobs[4]		60,589
Special Industries[5]		Textile Product Mills, Electrical Appliance Manufacturing, Transit and Passenger Transportation
Access		Route 39, Route 202

4% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Candelight Farms Airport – 11N

Located three miles west of New Milford, Candlelight Farms Airport (11N) is a small, privately owned airport operated for public use. Its single turf runway, Runway 17-35, measures 2,900 feet long by 50 feet wide. The facility has remained largely undeveloped since it opened and does not offer any maintenance or fueling services. In 2011, the airport reported 14 aircraft based on the field and 11,000 operations.

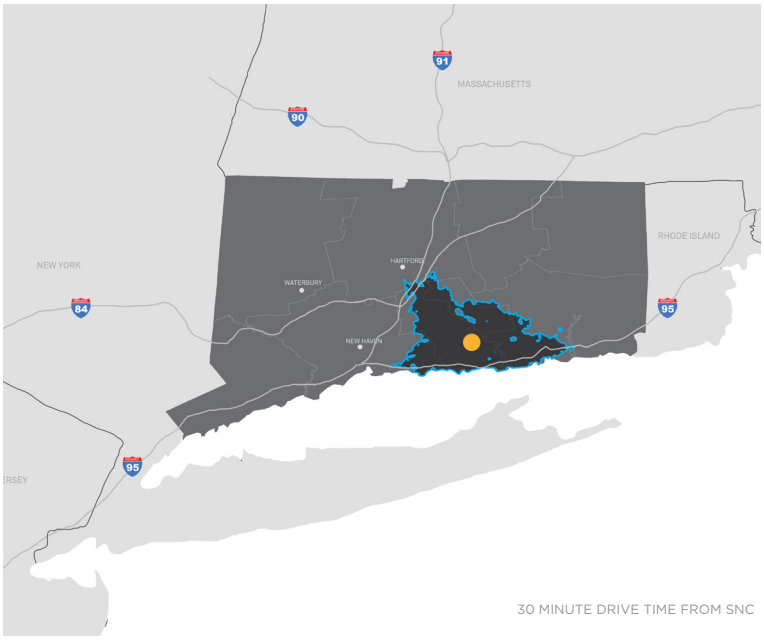
A large part of these operations are accounted for by local traffic. There is a 100-member gliding club that is very active during the summer months and a few vintage aircraft pilots that prefer the grass field to a paved runway. Due to the airport having solely a turf runway, the airport is closed to transient traffic in the winter months.

A row of residential homes aligned with Green Pond Road are present west of the runway and some additional homes are east of the runway.

Chester Airport (SNC)

Chester, Middlesex County
416ft MSL – 146 Acres
41-23-01.3540N/ 072-30-20.8340W 3 miles SW of Chester

NPIAS Role: General Aviation, Unclassified
Owner: Privately-Owned, Public Use ARC: B-II



30 MINUTE DRIVE TIME FROM SNC

RUNWAY 17-35 2,722' x 50' [1,2]

	Runway 17	Runway 35
Approaches	GPS/VOR	GPS/VOR
Lowest Minimums	600 - 1	500 - 1
Lighting	REIL, MIRL	REIL, MIRL

FACILITIES[1]

FBO, hangars

SERVICES[1]

Fuel, maintenance, flight training, air charter, aerial sightseeing

STATISTICS

Based Aircraft	105 (2014)[2]
Operations	12,100 (2014)[2]
Enplanements	NONE

MIDDLESEX COUNTY

Population[3]	165,562	Growth by 2020 3.47% 2025 4.19%
Median Income[4]		$49, 416
Businesses[4]		5,013
Jobs[4]		67,199
Special Industries[5]		Transportation Equipment Manufacturing, Fabricated Metal Product Manufacturing, Transit and Passenger Transportation
Access		Route 9, Interstate 95

8% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Chester Airport – SNC

Chester Airport (SNC) is found nestled in the woods, three miles southwest of Chester, Connecticut. This privately owned, public-use airport, set on 146 acres of land, is home to 122 based aircraft. The airport is located two miles to the west of SR 9, only a ten minute drive from Essex and a twenty minute drive from Middletown.

The airport has one recently extended runway; Runway 17-35 is 2,722 feet long and 50 feet wide. The landing threshold to Runway 17 is displaced to clear Winthrop Road. Since the 2006 system plan update, SNC also obtained weather reporting capabilities that changed the airport's identifier from 3B9 to SNC.

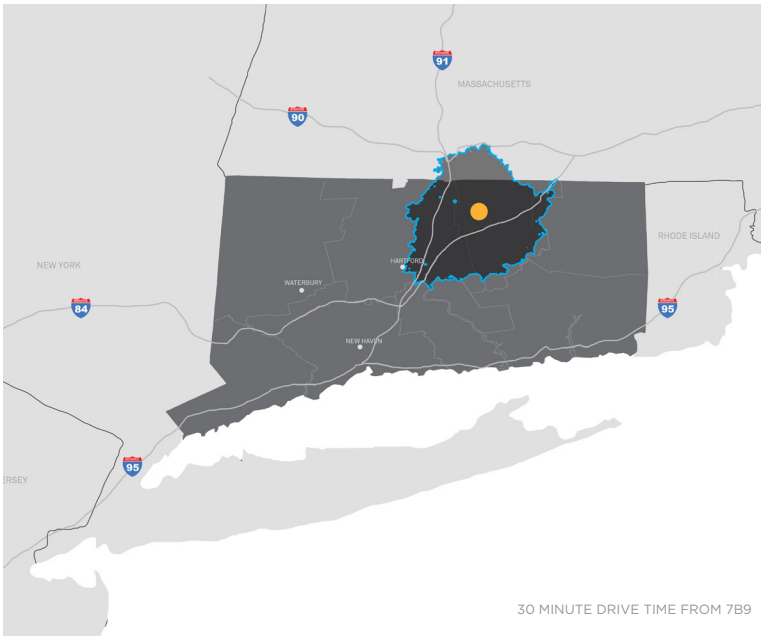
The airport caters almost exclusively to small general aviation aircraft. In 2014, airport activity was estimated at 12,100 operations. The airport also provides fueling, maintenance, a flight school, air charters, and scenic bi-plane rides. Under the NPIAS, Chester is categorized as a general aviation airport and is one of the two Connecticut Airports that remained unclassified in the 2014 FAA Asset Study.

Land use surrounding the airport is light manufacturing immediately east and commercial/industrial west. Woods surround the majority of the airport property, some of which are monitored by the FAA for airspace clearance requirements.

Ellington Airport (7B9)

Ellington, Tolland County
253.0ft MSL – 125 Acres
41-55-31.5000N/ 072-27-25.6000W 2 miles N of Ellington

NPIAS Role: Non – NPIAS
Owner: Privately-Owned, Public Use ARC: B-I Small



30 MINUTE DRIVE TIME FROM 7B9

RUNWAY 1-19 1,800' x 50' [1,2]

	Runway 1	Runway 19
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	LIRL	LIRL

FACILITIES[1]

FBO, tie-downs

SERVICES[1,2]

Fuel, maintenance, flight school with helicopter training, skydiving

STATISTICS

Based Aircraft	34 (2012)[2]
Operations	27,120 (2012)[2]
Enplanements	NONE

TOLLAND COUNTY

Population[3]	151,377	Growth by	2020 5.76% 2025 7.88%
Median Income[4]			$42,714
Businesses[4]			3,043
Jobs[4]			40,549
Special Industries[4]	Educational Services		
Access	Route 83, Interstate 84		

16% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator
[6]Air Traffic Activity System

Ellington Airport – 7B9

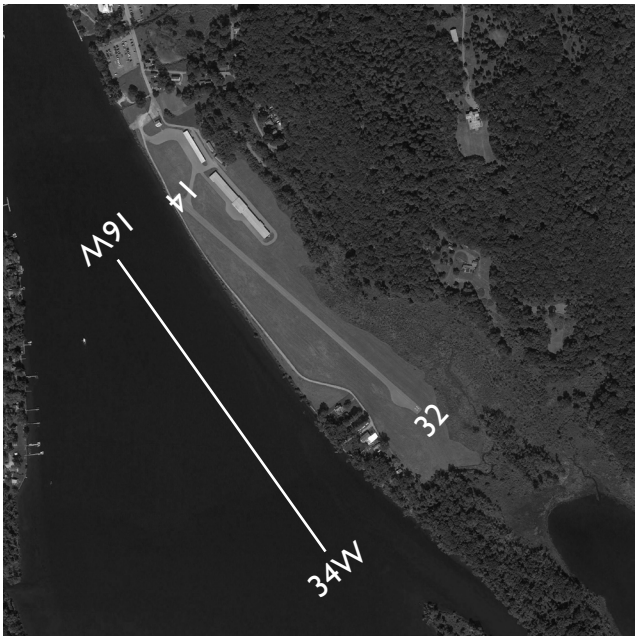
Ellington Airport (7B9) encompasses 125 acres two miles north of Ellington, Connecticut. It is a small privately owned airport with a single runway. Runway 1-19 measures 1,800 feet long by 50 feet wide. Services offered at the airport include fueling, hangars and tie downs, and aircraft maintenance. Activity is dominated by light piston-engine airplanes and a skydiving operator that uses twin engine turbo-props. In 2012, there were 34 aircraft based at the field and over 27,000 operations.

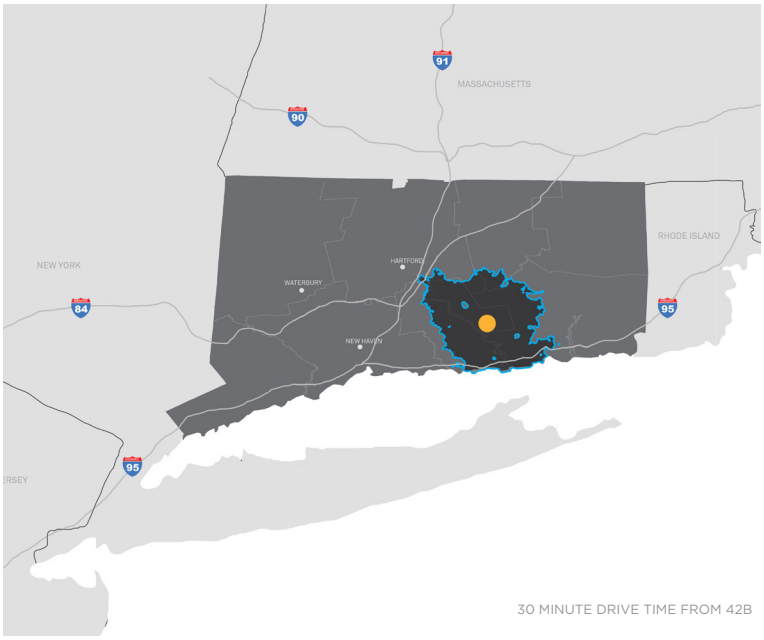
The land uses bordering the airport are agriculture to the north and west, commercial/industrial to the east and multi-family homes to the south.

Goodspeed Airport and Seaplane Base (42B)

East Haddam, Middlesex County
9.0ft MSL – 60 Acres
41-26-44.3560N / 072-27-20.3130W 1 mile SE of East Haddam

NPIAS Role: Non – NPIAS
Owner: Privately-Owned, Public Use ARC: A-I





30 MINUTE DRIVE TIME FROM 42B

RUNWAY 14-32 2,120' x 50' [1,2]

	Runway 14	Runway 32
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	LIRL	LIRL

RUNWAY 16W-34W 4,500' x 1,000' (Water) [1,2]

	Runway 16W	Runway 34W
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	NONE	NONE

FACILITIES[1]

Two large hangars, tie-downs

SERVICES[1,2]

NONE

STATISTICS

Based Aircraft	33 (2014)[2]
Operations	6,230 (2014)[2]
Enplanements	NONE

MIDDLESEX COUNTY

Population[3]	165,562	Growth by 2020 3.47% 2025 4.19%
Median Income[4]		$49, 416
Businesses[4]		5,013
Jobs[4]		67,199
Special Industries[5]		Transportation Equipment Manufacturing, Fabricated Metal Product Manufacturing, Transit and Passenger Transportation
Access		Route 9, Route 82

6% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Goodspeed Airport – 42B

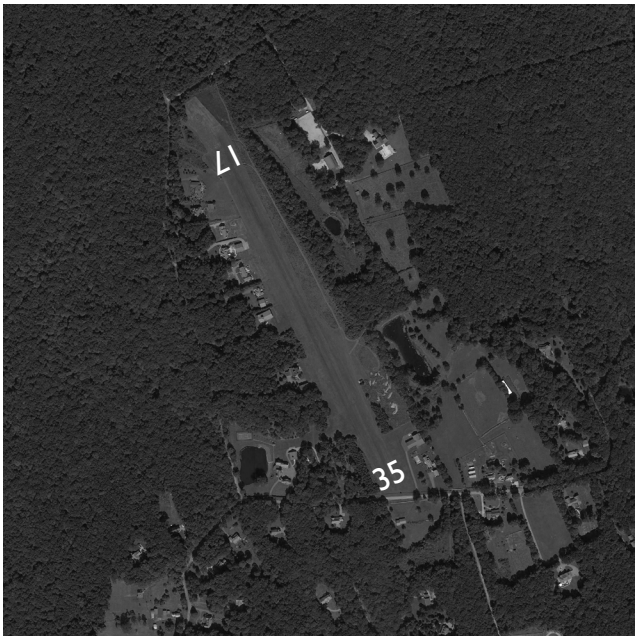
Goodspeed Airport and Seaplane Base (42B) is a small, privately owned, public-use airport located on the eastern bank of the Connecticut River, three miles southeast of Haddam, Connecticut. It is situated on 60 acres of land. The airport has two runways: one paved and one water. The paved runway, 14-32, is 2,120 feet long and 50 feet wide. The length of the runway and the lack of a taxiway system or instrument approach make this airport suitable only for small general aviation aircraft. The water runway is designated Runway 16W-34W and is 4,500 feet long by 1,000 feet wide, making it the largest designated water runway in Connecticut. In 2014, the airport had 33 based aircraft and supported 6,230 operations. Goodspeed is unattended and does not offer fuel or services besides aircraft tie down areas.

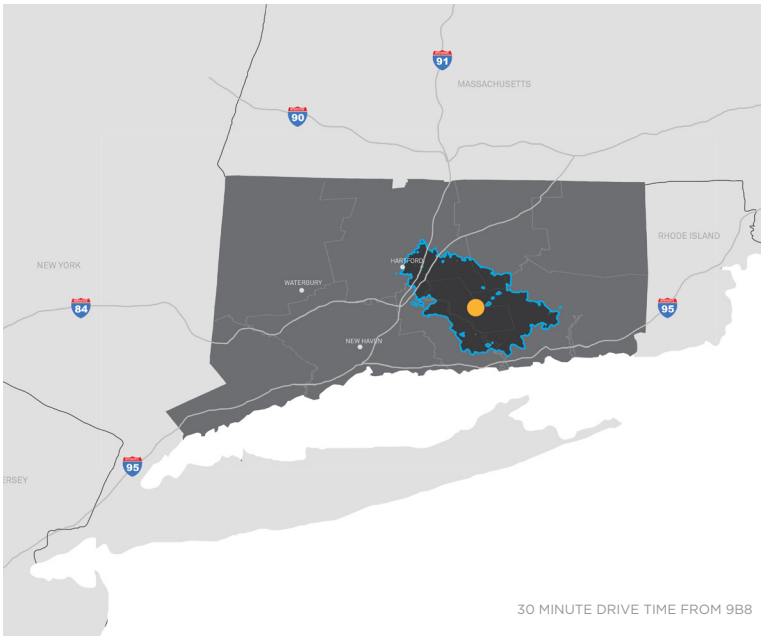
The paved runway is bordered by the Connecticut River on the west and wooded areas east. The terrain rises sharply just a few hundred feet east of the airport.

Salmon River Airfield (9B8)

Marlborough, Hartford County
540.0ft MSL – 60 Acres
41-35-22.3560N, 072-26-32.3080W 3 miles S of Marlborough

NPIAS Role: Non-NPIAS
Owner: Privately-Owned, Public Use ARC: A-I





30 MINUTE DRIVE TIME FROM 9B8

RUNWAY 17-35 2,000' x 60' (Turf) [1,2]

	Runway 17	Runway 35
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	NONE	NONE

FACILITIES[1]
Tie-downs

SERVICES[1]
NONE

STATISTICS

Based Aircraft	9 (2014)[2]
Operations	800 (2014)[2]
Enplanements	NONE

HARTFORD COUNTY

Population[3]	898,272	Growth by 2020 2.65% 2025 3.55%
Median Income[4]		$61, 804
Businesses[4]		26,224
Jobs[4]		495,009
Special Industries[5]		Insurance, Broadcasting, Transportation Equipment Manufacturing
Access		Route 2, Route 66

14% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Salmon River Airfield – 9B8

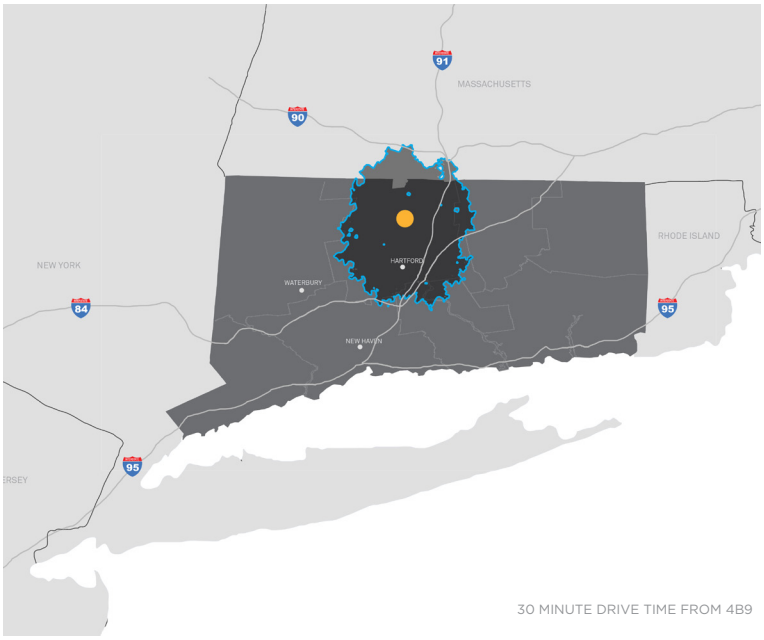
Salmon River Airfield (9B8) consists of a turf runway located just over three miles south of Marlborough, Connecticut. It is operated by the Salmon River Airfield Association and is Connecticut's only fly-in community. Property owners in the Association live in houses surrounding the airport and all share a partial ownership of the airport property.

Its single turf runway, 17-35, is 2,000 feet long and 60 feet wide. Due to the nature of the ownership of the airfield, no services are offered to transient aircraft, and only tie-down space is available. The airfield sits on 60 acres of land. As of 2014 there were nine based aircraft and 800 annual operations.

Simsbury Airport (4B9)

Simsbury, Hartford County
195.0ft MSL – 103 Acres
41-54-58.3000N, 072-46-37.0000W 3 miles NE of Simsbury

NPIAS Role: General Aviation, Unclassified
Owner: Privately-Owned, Public Use ARC: A-I



30 MINUTE DRIVE TIME FROM 4B9

RUNWAY 3-21 2,205' x 50' [1,2]

	Runway 3	Runway 21
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	MIRL	MIRL

FACILITIES[1]

11 small hangars, 2 large hangars, tie-downs

SERVICES[1,2]

Fuel, maintenance, flight training

STATISTICS

Based Aircraft	13 (2013)[2]
Operations	12,775 (2013)[2]
Enplanements	NONE

HARTFORD COUNTY

Population[3]	898,272	Growth by	2020 2.65% 2025 3.55%
Median Income[4]			$61, 804
Businesses[4]			26,224
Jobs[4]			495,009
Special Industries[5]	Insurance, Broadcasting, Transportation Equipment Manufacturing		
Access	Interstate 95, Route 10		

15% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Simsbury Airport – 4B9

Simsbury Airport (4B9) is located approximately three miles north of the Town of Simsbury and about five miles southwest of Bradley International Airport on 101 acres of land. The land is owned by Airport Realty Association Inc. and leased to the Simsbury Flying Club to oversee the airport's operation.

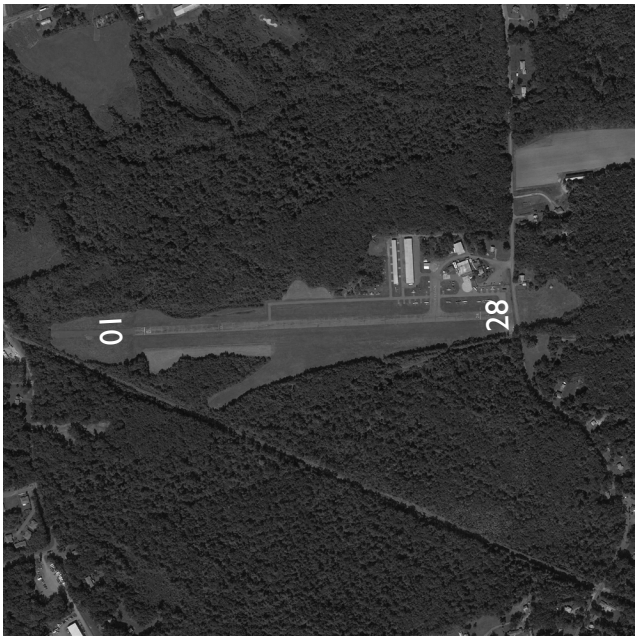
Runway 3-21 is 2,205 feet long by 50 feet wide. There are 13 aircraft based at the field and the airport reported 12,775 operations in 2012. Airport facilities include 15 hangars of various sizes, most privately owned, an office, and a 24/7 self-service fuel farm. The airport is included in the NPIAS as a general aviation airport, but is one of the two unclassified facilities in the 2014 FAA Asset Study.

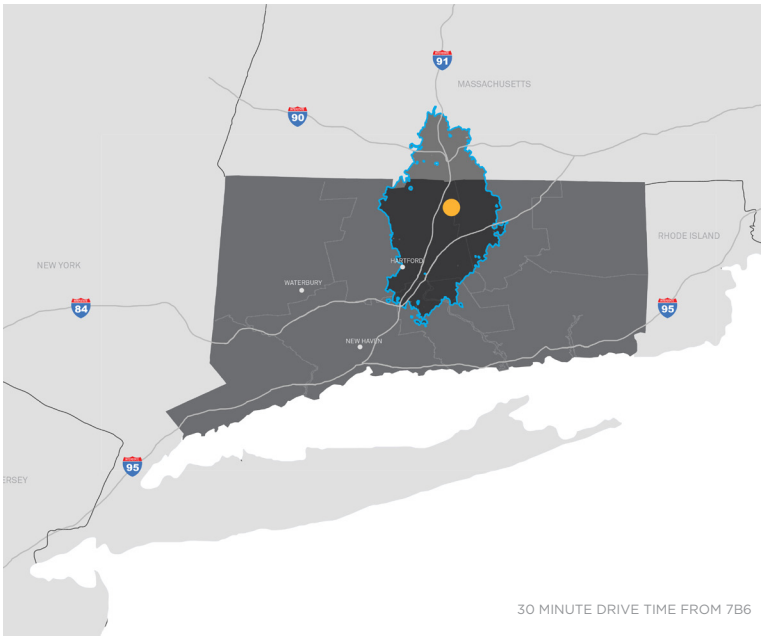
Skylark Airpark (7B6)

Warehouse Point, Hartford County

120.0ft MSL – 150 Acres
41-55-42.3000N, 072-34-35.0000W 2 miles E of Warehouse Point

NPIAS Role: Non-NPIAS
Owner: Privately-Owned, Public Use ARC: B-I Small





30 MINUTE DRIVE TIME FROM 7B6

RUNWAY 10-28	3,242' x 60'	[1,2]
	Runway 10	Runway 28
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	LIRL	LIRL

FACILITIES[1]

T-hangars, tie-downs

SERVICES[1,2]

Fuel, maintenance, flight training, aircraft rental and sales

STATISTICS

Based Aircraft	61 (2012)[2]
Operations	15,920 (2012)[2]
Enplanements	NONE

HARTFORD COUNTY

Population[3]	898,272	Growth by	2020 2.65% 2025 3.55%
Median Income[4]			$61, 804
Businesses[4]			26,224
Jobs[4]			495,009
Special Industries[5]	Insurance, Broadcasting, Transportation Equipment Manufacturing		
Access	Interstate 91, Route 140		

20% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Skylark Airpark – 7B6

Skylark Airpark (7B6) is in the Warehouse Point Section of East Windsor, Connecticut. It is within an Agricultural/Residential zoning district and is almost entirely surrounded by woods. Skylark sits on five parcels of land totaling 130 acres and is owned by the Skylark Realty Company. In 2013, a feasibility study for public acquisition by the municipality was completed. Based on the study, it was determined that the municipality would not acquire the airport. Therefore, the airport is not eligible to be included in the NPIAS.

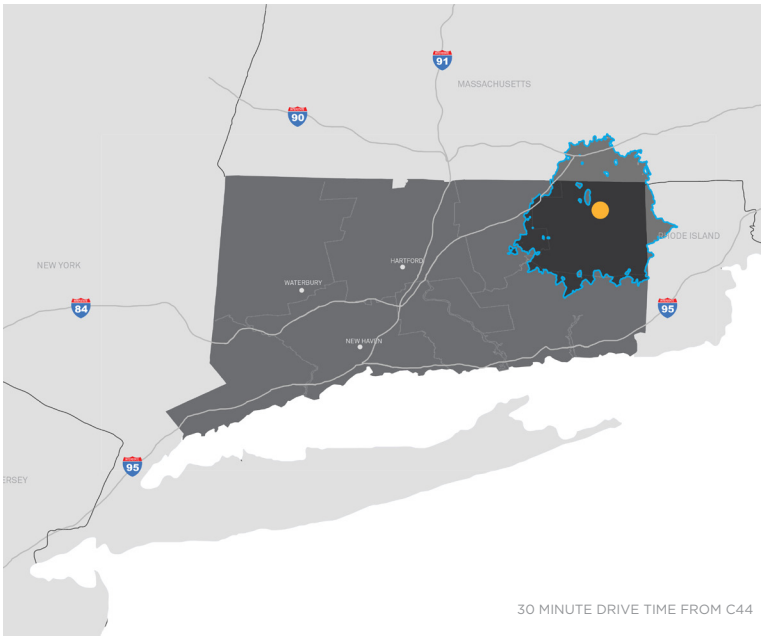
The facility consists of a single ARC B-I runway, Runway 10-28, that is 3,242 feet long by 60 feet wide. The airport falls under the lower rung of Bradley International's Class C airspace which has resulted in a notch being taken from the 10 mile ring to allow for operations at Skylark without contacting Bradley International's ATCT.

Services offered at the airport include airframe and powerplant maintenance, 100LL fuel, flight instruction, and banner towing.

Toutant Airport (C44)

Putnam, Windham County
770.0ft MSL – 40 Acres
41-57-20.5000N, 072-03-15.7000W 6 miles NW of Putnam

NPIAS Role: Non-NPIAS
Owner: Privately-Owned, Public Use ARC:A-I



30 MINUTE DRIVE TIME FROM C44

RUNWAY 17-35 1,756' x 60' [1,2]

	Runway 17	Runway 35
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	Non-Standard	Non-Standard

FACILITIES[1]
Hangar

SERVICES[1]
NONE

STATISTICS

Based Aircraft	3 (2011)[2]
Operations	200 (2011)[2]
Enplanements	NONE

WINDHAM COUNTY

Population[3]	117,604	Growth by 2020 6.14% 2025 8.07%
Median Income[4]		$39,952
Businesses[4]		2,685
Jobs[4]		39,129
Special Industries[5]		Electrical Appliance Manufacturing, Warehousing and Storage, Plastics and Rubber Products Manufacturing
Access		Interstate 84, Route 171

2% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Toutant Airport – C44

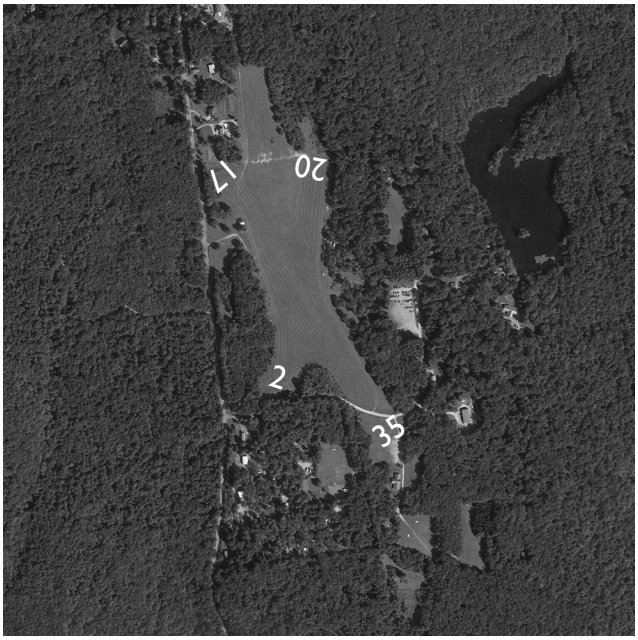
Toutant Airport (C44) is a privately owned, public-use airport located six miles northwest of Putnam, Connecticut. Toutant is located on 40 acres of land and surrounded by woods with some residential dwelling units located on the west side of the airport. Runway 17-35 measures 1,756 feet long by 60 feet wide.

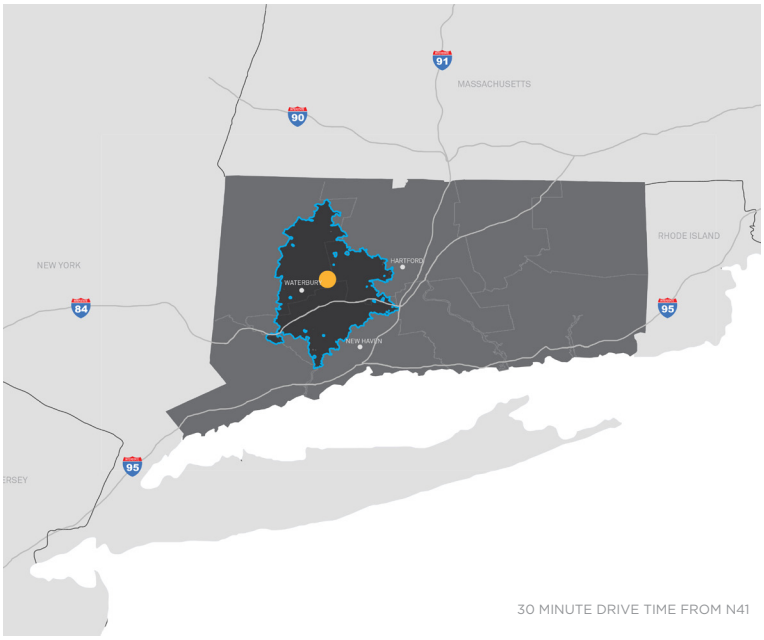
Three aircraft are based at the airport. In 2011, there were 200 operations.

Waterbury Airport (N41)

Waterbury, Litchfield County
850.0ft MSL – 62 Acres
41-38-00.3490N, 073-02-48.3860W 4 miles N of Waterbury

NPIAS Role: Non-NPIAS
Owner: Privately-Owned, Public Use ARC: B-II





30 MINUTE DRIVE TIME FROM N41

RUNWAY 17-35 2,005' x 135' (Turf) [1,2]

	Runway 17	Runway 35
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	NONE	NONE

RUNWAY 2-20 1,600' x 250' (Turf) [1,2]

	Runway 2	Runway 20
Approaches	NONE	NONE
Lowest Minimums	N/A	N/A
Lighting	HIRL	HIRL

FACILITIES[1]

Tie-downs

SERVICES[1]

NONE

STATISTICS

Based Aircraft	12 (2013)[2]
Operations	14,100 (2013)[2]
Enplanements	NONE

LITCHFIELD COUNTY

Population[3]	186,924	Growth by 2020 3.48% 2025 3.39%
Median Income[4]		$42, 419
Businesses[4]		5,892
Jobs[4]		60,589
Special Industries[5]		Textile Product Mills, Electrical Appliance Manufacturing, Transit and Passenger Transportation
Access		Route 39, Route 202

19% of population within 30 minute drive time

[1]FAA Airport/Facility Directory
[2]Airport Master Record, FAA Form 5010
[3]United States Census State and County Quickfacts
[4]Connecticut Department of Labor, Quarterly Census of Employment and Wages
[5]Bureau of Labor Statistics, Quarterly Census of Employment and Wages, Location Quotient Calculator

Waterbury Airport – N41

Waterbury Airport (N41) encompasses 62 acres four miles north of the City of Waterbury, Connecticut. Previously referred to as Waterbury-Plymouth Airport in the 2006 System Plan, the airport is one of the state's oldest.

In 2013, there were 12 aircraft based on the field, amongst these are two gliders and two ultralights. During the same year, the airport was home to 14,100 operations. Waterbury Airport features two turf runways: Runway 17-35 and Runway 2-20. Runway 17-35 is 2,005 feet long by 135 feet wide. Runway 2-20 measures 1,600 feet long by 250 feet wide. The airport is unattended and offers no services.

The property is surrounded by trees with a few houses to the north and the east ends of Runway 2-20.

2.4.4 Restricted Landing Areas (RLAs)

A restricted landing area is an airstrip, usually turf, that is recognized by Connecticut but not open for public use. As of 2014, Connecticut has thirty-two airports and four seaplane bases that are designated for private use only. These Restricted Landing Area Airports (RLAs) have seen a significant amount of fluctuation in the years since the previous CSASP in 2006. The previous system plan had thirty-eight RLAs, with thirty-two airports and six seaplane bases. Though the total number of airports and seaplane bases is not significantly different, these numbers reflect thirteen closures, nine openings, two previously public airports now becoming RLAs, and one airport name change. **Table 2-7** highlights these changes.

Table 2-7: Restricted Landing Areas in Connecticut

Airport Name	Airport Code	Category	Associated Town	Runway Orientation	Runway Dimension	Runway Surface	Years Operating	Status Update Since 2006 CSASP
Bancroft	CT14	Airport	East Windsor Hill	13-31	2,400' x 100	Turf	52	Existing
Bee Field	24CT	Airport	Jewett City	01-19	1,700' x 50'	Turf	7	New
Bootlegger's	CT87	Seaplane Base	Enfield	02-20	5,000' x 500'	Water	22	Existing
Buell Farm Flight Park	5CT6	Airport	Eastford	03-21	1,100' x 45'	Turf	16	Existing
Devils Hopyard Field	CT11	Airport	East Haddam	18-36	1,250' x 200'	Turf	42	Existing
Docktors Field	CT51	Airport	New Milford	N-S	2,000' x 100'	Turf	53	Existing
Fetske	CT16	Seaplane Base	Essex	18-36	5,000' x 200'	Water	40	Existing
Flying Ridge Airstrip	CT52	Airport	Newtown	N-S	2,000' x 200'	Turf	53	Existing
Gager Field	CT36	Airport	Bozrah	02-20	2,150' x 50'	Turf	38	New
Gallup Farm	CT32	Airport	Voluntown	N-S	2,000' x 200'	Turf	43	Existing
Good Hill Farm	CT59	Airport	Roxbury	N-S	2,700' x 200'	Turf	42	Existing
Green Acres Airstrip	CT96	Airport	Bristol	16-34	1,800' x 24'	Asphalt	27	Existing
Heckler Field	CT09	Airport	Coventry	16-34	1,360' x 120'	Turf	53	New
Irish Hills Farms	33CT	Airport	Bethlehem	16-34	1,450' x 100'	Turf	6	New
Laurie Field	CT19	Airport	Hazardville	03-21	1,800' x 100'	Turf	50	Existing
Long View Landing	CT66	Airport	Washington	13-31	1,400' x 50'	Turf	-	Name Change (from Clouds Hill)
Lord Creek	CT78	Seaplane Base	Lyme	15-33	2,900' x 100'	Water	35	New
Maplewood Farm	CT39	Airport	Durham	15-33	1,400' x 50'	Turf	38	Existing
Mile Creek	5CT7	Airport	Old Lyme	02-20	1,800' x 100'	Turf	16	Existing
North Canaan Aviation Facilities	CT24	Airport	North Canaan	03-21	3,100' x 75'	Turf	43	Existing
Rankl Field	CT20	Airport	Marlborough	NW-SE	1,600' x 200'	Turf	-	Existing
Ripley Field	CT44	Airport	Litchfield	17-35	2,000' x 100'	Turf	41	Existing
Roberts Farm	CT85	Airport	East Windsor	08-26	2,000' x 50'	Turf	29	Existing
Seavair's Landing	08CT	Seaplane Base	Winsted	01-19	4,700' x 1,400'	Water	12	New
Skis Landing Area	CT07	Airport	Colchester	09-27	1,500' x 75'	Turf	49	Existing
Spruce	CT43	Airport	Jewett City	16-34	1,725' x 150'	Turf	37	Existing

Airport Name	Airport Code	Category	Associated Town	Runway Orientation	Runway Dimension	Runway Surface	Years Operating	Status Update Since 2006 CSASP
Stonington Airpark	CT80	Airport	Stonington	04-22	1,700' x 50'	Turf	35	Closed to the public
Thomson Field	5CT5	Airport	Bethlehem	01-19	1,600' x 100'	Turf	16	New
Valley Farms	CT29	Airport	Somers	18-36	2,500' x 45'	Asphalt	41	New
Westford Airstrip	CT74	Airport	Ashford/Westford	N-S	1,300' x 200'	Turf	37	Existing
Whelan Farms	CT01	Airport	Bethlehem	01-18	2,050' x 100'	Turf	26	Existing
Wings Ago Airstrip	CT42	Airport	Goshen	18-36	1,600' x 40'	Turf	61	Existing
Woodstock	64CT	Airport	South Woodstock	01-19	2,200' x 75'	Asphalt	-	Closed to the public
Wychwood Field	CT48	Airport	Mystic	18-36	1,800' x 30'	Turf	37	New
Wysocki Field	CT15	Airport	Ellington	18-36	1,800' x 50'	Turf	42	Existing
Yankee Airstrip	CT13	Airport	East Killingly	02-20	1,700' x 90'	Turf	53	Existing
Closed RLAs Since 2006 CSASP								
Camp Rell		Airport	Niantic	-	-	-	-	Closed
Eastford		Airport	Eastford	13-31	1,800' x 40'	Gravel	-	Closed
Gardner Lake		Airport	Cholchester	16-34	1,900' x 60'	Turf	2	Closed
Grass Land Air Field		Airport	North Cannan	17-35	1,800' x 100'	Turf	80	Closed
Hillside Field		Airport	North Cannan	12-30	1,800' x 100'	Turf	150	Closed
Island Cove		Seaplane Base	Glasgo	NW-SE	3,500' x 500'	Water	65	Closed
Nayaug Seaplane Landing Area		Seaplane Base	Glastonbury	03-21	3,000' x 400'	Water	10	Closed
Norwalk Seaplane Base		Seaplane Base	Norwalk	-	-	Water	40	Closed
Quaddick Lake		Seaplane Base	Thompson	N-S	4,000' x 2,000'	Water	-	Closed
Sharon Airstrip		Airport	Sharon	03-21	2,500' x 100'	Turf	-	Closed
Stone's Ranch		Airport	East Lyme	-	-	-	-	Closed
Swift		Airport	Stafford Springs	12-30	2,600' x 60'	Asphalt	-	Closed
Windward Heights Airstrip		Airport	Mansfield	E-W	1,200' x 200'	Turf	6	Closed

2.4.5 Influential Airports in Surrounding States

Though Connecticut is without any large hub commercial service airports, it is surrounded by some of the busiest airports in the United States: Boston Logan International Airport, Newark Liberty International Airport, John F. Kennedy International Airport, and LaGuardia Airport. The competitive air fares and numerous destinations offered by these airports affect passenger choices within Connecticut.

In addition to the four large hub airports mentioned above, T.F. Green and Westerly Airports in Rhode Island as well as Stewart International and Westchester County in upstate New York also draw Connecticut travelers and general aviation operators. The characteristics of each of these airports and their influence on Connecticut activity profiles and airport roles are discussed in **Table 2-8**.

Table 2-8: Influential Out of State Airports

Airport Name	ID	City	State	NPIAS Role	ATCT	# of Runways	Longest Runway	Additional Influential Factors
LaGuardia	LGA	New York	NY	Primary Commercial Service, Large Hub	Y	2	7,003'	A part of the greater New York airport system, it contributes to make the system the second largest in the world in terms of passenger traffic and the largest in total flight operations. In 2013, the airport handled 26.7 million domestic passengers.
John F. Kennedy International	JFK	New York	NY	Primary Commercial Service, Large Hub	Y	4	14,511'	The largest airport in the Greater New York Area, it carries double its share of the region's international passengers while also acting as a hub for American Airlines, Delta Air lines, and JetBlue Airways.
Newark Liberty International	EWR	Newark	NJ	Primary Commercial Service, Large Hub	Y	3	11,000'	The second largest airport in the greater New York area. It is a hub for United Airlines along with 24 additional airlines. In 2010, FedEx committed to a 20 year lease extension to continue operating at EWR. In 2012, they handled 820,000 tons of cargo.
Boston Logan International	BOS	Boston	MA	Primary Commercial Service, Large Hub	Y	6	10,083'	The largest airport in New England with 94 gates, 4 passenger terminals, and more than 40 airlines. In 2013 the airport handled 278,000 tons of cargo along with carrying more than 30 million passengers to over 100 domestic and international destinations.
Stewart International	SWF	Newburgh	NY	Primary Commercial Service, Non-Hub	Y	2	11,817'	Niche carriers JetBlue Airways and Allegiant operate at Stewart International Airport. Stewart also functions as both a military airfield and a commercial service airport; it handled 17,500 tons of cargo and nearly 164,000 enplanements in 2013. In the next five years the airport will receive a $20 million terminal expansion and a $100 million runway rehabilitation.
Westchester County	HPN	White Plains	NY	Primary Commercial Service, Small Hub	Y	2	6,549'	Westchester County is served by US Airways/ American Airlines, Delta, and United as well as niche carriers JetBlue and Cape Air. In 2013, HPN reported nearly 151,000 operations.
Theodore Francis Green State	PVD	Providence	RI	Primary Commercial Service, Small Hub	Y	2	7,166'	T.F. Green is the only airport in Rhode Island providing scheduled commercial service by major airlines and a strong presence by Southwest Airlines. In 2013, PVD reported over 1,885,000 enplanements. PVD has also undertaken significant improvements to passenger facilities in recent years.

Table 2-8: Influential Out of State Airports (Continued)

Airport Name	ID	City	State	NPIAS Role	ATCT	# of Runways	Longest Runway	Other Influential Factors
Westerly State	WST	Westerly	RI	Primary Commercial Service, Non-Hub	Y	2	4,010'	Westerly State Airport provides the only scheduled air service to and from Block Island, RI. It sees most of its operations due to tourists traveling in the warmer months between Memorial Day and Labor Day.
Dutchess County	POU	Poughkeepsie	NY	General Aviation, Regional	Y	3	4,999'	This well maintained airport is only a 45 minute drive from the Candlelight Farms Airport, and 40 minutes from Danbury Municipal Airport. There is an F.B.O. on site and numerous services offered including 100LL and Jet A full, hangars and tie-downs available, and air charter services.
Sky Acres	44N	Millbrook	NY	Reliever, Unclassified	N	1	3,830'	This small general aviation airport reported 48,300 operations in 2014. It lies approximately 25 miles away from the Candlelight Farms Airport and is over a 30 minute drive to reach the Connecticut boarder.
Westfield-Barnes Municipal	BAF	Westfield	MA	General Aviation, National	Y	2	9,000'	In 2012 this airport was identified by the FAA in their Asset Study as a National Asset, a distinction given to less than 100 general aviation airports The airport has a military presence in addition to offering charter services, flight instruction at two separate FAA approved flight schools, and aircraft rentals and sales offered by two FBOs. In 2013, operations were reported over 44,000.
Northampton	7B2	Northampton	MA	General Aviation, Unclassified	N	1	3,335'	In 2011 this airport reported over 30,000 operations. Home to both a flight school and an aircraft maintenance shop It is located approximately 20 miles north of the Connecticut boarder and shares part of its service area with both Ellington and Skylark Airpark.
Worcester Regional	ORH	Worcester	MA	General Aviation, National	Y	2	7,001'	While Worcester is primarily a general aviation airport, it offers two nonstop routes to Orlando and Fort Lauderdale through JetBlue as of November 2014. The airport is less than 17 miles from the Connecticut boarder and shares part of its service area with the Toutant Airport.
Walter J. Koladza	GBR	Great Barrington	MA	General Aviation, Unclassified	N	1	2,579'	The area of Connecticut closest to Walter J. Kolzada Airport is rural and sparsely populated. This northwest corner of the state is currently not well covered by airports within Connecticut. This airport provides a connection to otherwise underserved areas in the state with access to aviation facilities.

Chapter 3: Statewide Forecasts

3.1 Introduction

The objective of the aviation activity forecasts[1] presented in this chapter is to collect current available forecasts for the 20 public-use airports[2] within Connecticut. A broad assessment of the aviation and socio-economic trends directly affecting the Connecticut airport system as a whole was also performed. The projections will be used to confirm the role of the 20 public-use airports within the Connecticut airport system, evaluate the ability of the existing system to accommodate the forecast aviation demand, and plan future airside and landside facilities for the system.

The preparation of a comprehensive plan for the public-use airports in the Connecticut airport system requires a general understanding of recent and forecast trends in the aviation industry as a whole. National, regional, and statewide trends provide insights into the development of the aviation demand forecasts for the public-use airports in the Connecticut airport system. A review of the industry trends for the commercial service and general aviation are of primary importance for the Connecticut airport system.

The following sections describe historical and ongoing trends in the aviation industry and present the forecasts of aviation demand at each airport and system wide. The 20 public-use system airports consist of six CAA-owned airports, five municipally-owned, and nine private airports. Using 2013 as the base year, the following components of aviation demand were forecast for the planning horizons 2015, 2020, 2025, 2030, and 2035:

- Commercial Passenger Enplanements
- Based General Aviation Aircraft
- Aircraft Operations

3.2 Industry Trends and Factors Affecting Future Demand

3.2.1 Background Information

The demand for air carriers and general aviation transportation from airports within Connecticut is a function of several factors, including:

- Economic conditions, employment/unemployment, and income/debt levels
- Changes in population
- Changes in air service patterns due to consolidation
- Aviation fuel prices
- Changes in airline and general aviation fleets
- Competing services in nearby states

[1] All forecasts are subject to uncertainty. The above forecast is based on information that is available as of the Report's date. Various factors, other than those included in the forecast model, can influence the future demand for air travel. Unexpected events may occur, and some of the underlying forecast assumptions may not materialize. Therefore actual performance may differ from the forecast, and the difference may be significant." … Unison Consulting, Inc.

[2] Since the 2006 CSASP, Mountain Meadow Airport closed in 2004, Griswold Airport closed in 2007, and Woodstock Airport's use designation changed from public to private use only. Hence, the total number of public-use airports within Connecticut was reduced from 23 to 20 since the 2006 CSASP.

- Fares and the cost of inputs
- Corporate profits

Since the year 2000, the United States has experienced two severe recessions, a major terrorist attack, and a historic unprecedented increase in the real price of aviation fuel. All of these factors have served to depress the demand for aviation both nationwide and within Connecticut.

3.2.2 Summary of Factors Affecting Future Demand

Over the past 13 years, growth in aviation activity in Connecticut, like the rest of the nation, has been dominated by a series of one-time events (terrorism, recessions, fuel spikes, and industry consolidation). Such events have adversely altered some traditional drivers of activity (economic growth) and overwhelmed others (demographics). Each of these one-time events has worked its way through the economy and the aviation industry and stunted demand. However, the industry is now in a period of recovery, albeit with a changed competitive environment in the commercial sector and very different prospects for high-end general aviation versus the rest of the general aviation fleet going forward.

3.2.2.1 Commercial Aviation

Partly in reaction to those factors listed in **Section 3.2.1**, there has been substantial consolidation in the airline industry resulting in an over-all cutback in service and significant realignment of air services away from medium, small hub, and non-hub airports. During the past decade:

- Virtually all major U.S. carriers (with the exceptions of Southwest Airlines and Continental, which merged with United Airlines in 2010) have been reorganized in bankruptcy
- Through mergers, the number of major carriers competing in the marketplace has been cut in half, resulting in the closure of several hubs
- Non-network carriers expanded to partially offset the cutbacks in major carrier capacity specifically at outlying airports and non-hub airports.
- Regional aircraft with 50 to 90 seats that were popular in the last decade are no longer being manufactured and therefore, it has become necessary for small airports to accommodate aircraft with 70 or more seats or risk losing service.

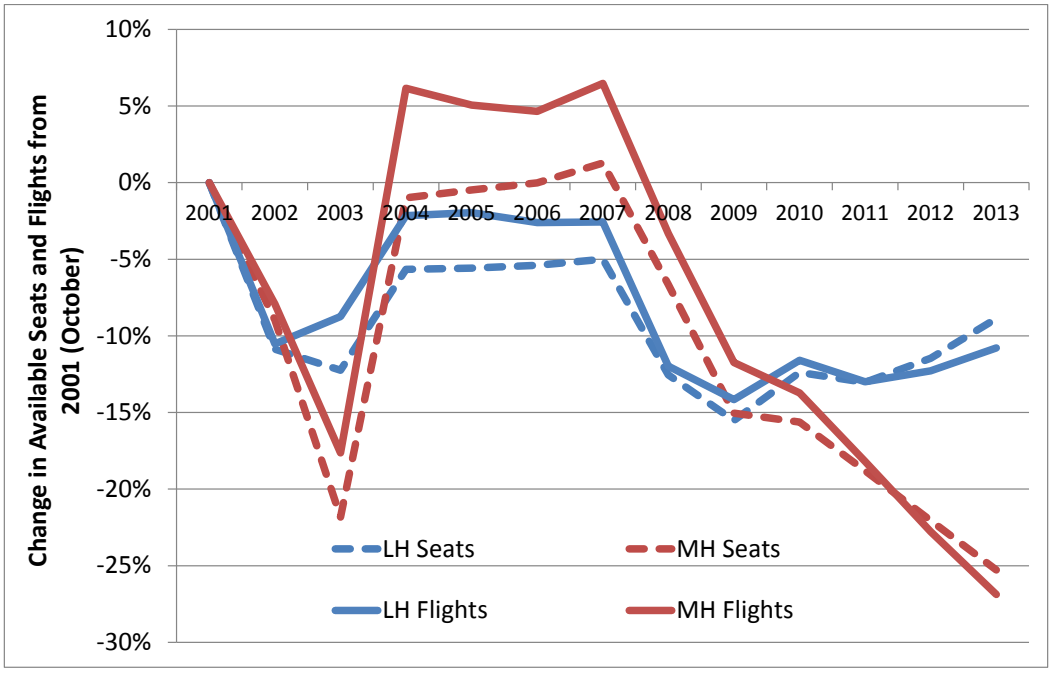
Over the last ten years, fuel prices were particularly high and in reaction to economic pressures and soaring fuel prices, major airlines have substantially reduced the use of code-share regional jets with 50 to 75 seats in their operations. This change has made air service to some communities uneconomic. While the fuel prices are currently at historic lows, it is anticipated that there will be a significant lag before a change in business case materializes in the industry.

The combination of these factors kept the growth in U.S. airline enplanements since 2000 at an average annual compound growth rate (AAGR) of 0.3 percent, with the overall growth flat nationwide since 2006. Connecticut's enplanements have been more adversely affected compared to the national average, with average growth rates of -2.1 percent and -3.4 percent since 2000 and 2006 respectively[3]. In part, Connecticut's performance can be attributed to the fact that it has substantial air carrier activity only at Bradley International Airport (BDL or Bradley International), which accounts for over 98 percent of enplanements within Connecticut. Bradley International is classified by the FAA's National Plan of Integrated Airport Systems (NPIAS) as a medium hub airport. As shown in **Figure 3-1**, medium hub airports are most and continuously affected by the factors noted above.

[3] Connecticut total enplanement is updated with BDL airport traffic statistic report 2013.

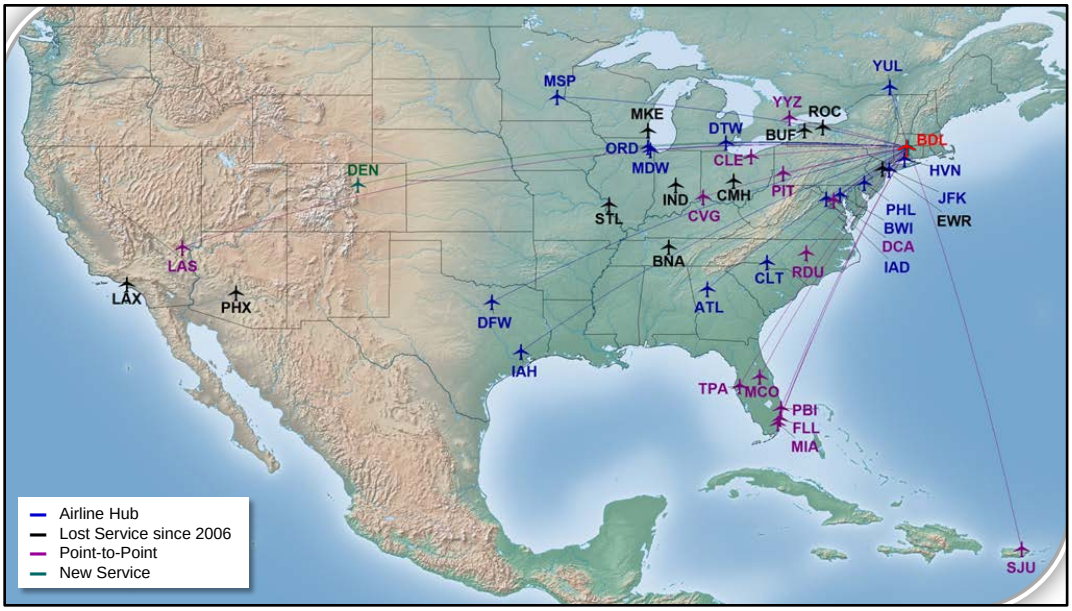
At Bradley International, weekly flights declined from 898 in 2006 to 640 in 2014. In that same time period, weekly seats fell from 87,980 to 67,005. Legacy carriers eliminated most point-to-point flying, with the consequence that BDL lost service to Nashville (BNA), Buffalo (BUF), Indianapolis (IND), Los Angeles (LAX), Milwaukee (MKE), Rochester (ROC), and St. Louis (STL). Delta cut back its flights at BDL as it redeployed aircraft to consolidate its Atlanta (ATL) hub. Jet Blue then entered BDL in 2010 and became a substitute for Delta, in several leisure markets, such as San Juan (SJU), West Palm Beach (PBI), Orlando (MCO), and Ft. Lauderdale (FLL). The resulting change in commercial air service at BDL is shown in **Figure 3-2**.

Figure 3-1: Annual Changes in Seats and Flights at Large Hub (LH) and Medium Hub (MH) Airports



Source: GRA, Inc.

Figure 3-2: Changes in Air Service Pattern at Bradley International



Source: GRA, Inc.

At Tweed-New Haven Regional Airport (HVN or Tweed-New Haven), commercial flights in both 2006 and 2014 were exclusively to US Airways' Philadelphia (PHL) hub. Official Airline Guide (OAG) data shows that service in both time periods were dominated by Dash-8 aircraft, with weekly service cut from 41 to 26 flights, and seats falling from 1,534 per week to 962.

As the negative influences of the various one-time factors have largely diminished, the question now is how future capacity and frequencies will track economic growth in this consolidated competitive environment.

In the past three years, network airlines have been able to consolidate their operations into fewer hubs, and have capped capacity growth even as demand has grown. Part of this effort has been to upsize regional aircraft, cut frequencies from outlying stations, and upgauge flights from hubs into larger cities. It is anticipated that network carriers will continue to benefit from this strategy, with the result that their operations and deployed seat capacity to medium hubs like Bradley International will trail economic growth.

Partially offsetting the network carrier strategy, point-to-point operators such as Jet Blue, Southwest, Spirit, Frontier, and Allegiant will continue to replace network carrier capacity, especially in high density routes. This trend is already established at Bradley International, particularly for the large Florida markets. It is not clear if there are any more such markets to exploit from BDL. Because of this, it is anticipated that point-to-point operators' seat availability would increase in alignment or above economic growth rates, whereas the frequency of flights will be less than the economic growth rates.

Overall in the commercial sector in Connecticut, one would expect seat capacity to grow at about the rate of economic growth, but frequencies to trail it so aircraft are getting larger.

Future commercial aviation enplanements will grow with incomes, but at a slower rate than previously. The airline market in the U.S. is mature, and consolidation in the industry means higher fares, fewer flights and higher load factors (full flights). In Connecticut, most airline activity takes place at Bradley International which has been affected by the cutbacks in service resulting from consolidation and

reductions in the use of smaller regional jet aircraft. Medium hubs, such as BDL, are likely to grow at a slower rate than large hubs in the future. This trend is anticipated at BDL.

3.2.2.2 General Aviation

Future general aviation operations should be separated into high-end general aviation aircraft operations and light general aviation (GA). These markets are different and both show variations across airports.

High-end general aviation operations include both general aviation turbine (turbojet and turboprop) and fractional operations. Turbojet operations are dominated by large corporate operators, which locate close to corporate headquarters. As a result many high end general aviation operations for Connecticut corporations actually operate out of Westchester County (HPN) in New York. Providence (PVD) and Stewart (SWF) also show relatively high numbers of such operations. According to the 2013 FAA-Enhanced Traffic Management System (ETMS) data, two Connecticut airports account for more than 50 percent of turbine operations in the state – BDL and Groton-New London (GON). Bradley International and Igor I. Sikorsky Memorial (BDR) account for 50 percent of fractional operations in the state. Fractional and turboprop operations are likely to grow at about the rate of real economic growth. Turbojet operations are anticipated to grow at a rate greater than the general economy. Therefore, overall high-end general aviation operations are assumed to grow at a faster rate than the general economy.

Light GA operations include single or twin engine piston aircraft and have declined more rapid nationally and statewide within Connecticut over the past decade. A significant portion of this decline is represented by retirement of aging aircraft that have reached the end of their useful lives. This trend is forecast to continue well into the next decade, according to the Federal Aviation Administration (FAA). In the period between 2006 and 2013, piston aircraft hours flown decreased nationally at an annual rate of 3.6 percent. Light GA operations, dominated by piston operators, decreased by almost 6 percent in Connecticut. There are wide variations in performance among Connecticut airports due to local factors. The top five Connecticut airports, Danbury Municipal (DXR), Igor I. Sikorsky Memorial (BDR), Hartford-Brainard (HFD), Waterbury-Oxford (OXC), and Groton-New London (GON) account for almost 70 percent of total light GA flights in the state. Close attention to local factors affecting these airports future operations is recommended. Overall, the FAA is forecasting an annual national decline in hours flown by piston aircraft. Based on recent history, piston aircraft hours flown in Connecticut are likely to decline.

The growth in total general aviation activities will be the balance of the growth in high-end general aviation and the decline in light GA operations. It is anticipated that the growth in high-end general aviation activities will outweigh the contraction in light GA operations and stay close to the national trend with an overall average annual growth rate of 0.4 percent as projected by the FAA.

3.3 Socioeconomic Trends

As previously mentioned, socioeconomic trends play a significant role in the aviation industry. The following table, **Table 3-1**, provides forecasts for annual growth in population and income within the 30-minute drive time area for each Connecticut airport. The 30-minute drive time area represents the primary service area for most airports, with the exception of BDL.

Table 3-1: Forecast Five Year Income and Population Annual Growth Rates within 30 Minute Drive Times of Connecticut Airports

Airport Name	Within 30 Minute Drive Time	
	Population Growth	Income Growth
CAA-Owned Airports		
Bradley International (BDL)	0.06%	1.1%
Groton-New London (GON)	-0.22%	1.8%
Hartford-Brainard (HFD)	0.06%	1.1%
Waterbury-Oxford (OXC)	0.12%	1.4%
Windham (IJD)	-0.17%	1.6%
Danielson (LZD)	-0.07%	1.3%
Municipally-Owned Airports		
Tweed-New Haven Regional (HVN)	0.07%	1.2%
Igor I. Sikorsky Memorial (BDR)	0.49%	1.5%
Danbury Municipal (DXR)	0.67%	1.4%
Robertson (4B8)	0.00%	1.1%
Meriden-Markham Municipal (MMK)	-0.06%	1.2%
Privately-Owned Airports Open for Public Use		
Chester (SNC)	0.06%	1.6%
Simsbury (4B9)	0.06%	1.1%
Goodspeed and Seaplane Base (42B)	0.08%	1.7%
Ellington (7B9)	0.03%	1.2%
Skylark Airpark (7B6)	0.05%	1.1%
Waterbury-Plymouth (N41)	-0.17%	1.2%
Toutant (C44)	0.05%	1.5%
Candlelight Farms (11N)	0.45%	1.5%
Salmon River Airfield (9B8)	0.06%	1.5%

Source: GRA analysis of Census Bureau and AGS Inc. Forecasts

3.4 Forecasts of Connecticut Aviation Demand

The assumptions and methodologies used to develop the aviation demand forecasts for Connecticut are discussed in this section.[4]

3.4.1 Forecasts Considerations and Methodology

The general approach for developing aviation demand forecasts is to identify historical relationships between statewide, regional, and national aviation activities, i.e. the trend method. For the purposes of this analysis, the historical trend focuses on the years between 2000 and 2013. The New England Region

[4] AECOM are making projections/recommendations based upon limited information that has been made available; such projections/recommendations are subject to factors that are beyond the control of AECOM; and AECOM thus make no representations or warranties with respect to such projections/recommendations and disclaim any responsibility for the accuracy of any estimates, projections and recommendations.

is considered in the analysis which includes the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

In addition to the trend method, correlation to socioeconomic conditions can also be made by regression models. By evaluating the correlation between aviation activity and socioeconomic conditions in Connecticut, the aviation demand forecasts will be linked to the economic growth and changes in socioeconomic conditions.

It is important to note that the accuracy and availability of historical aviation activity data has a significant role in any forecast analysis. Greater confidence can be placed in the data reported by the individual airports if available. The lack of accurate, long-term historic data at most of the private airports in Connecticut highlights the importance of the discussion on the national aviation trends in understanding how Connecticut's aviation activity may grow in the future. Historical and projected AAGR are presented in the following paragraphs for both the nation and Connecticut. This comparison of AAGR provides an indication of an appropriate projection methodology for based aircraft and operation activities within Connecticut.

3.4.1.1 Enplanement Trends

Table 3-2 presents the historical enplanements for Connecticut, the New England Region, and the United States from 2000 to 2013. Enplanements reflect the number of revenue passenger boardings for the commercial airlines operating at commercial service airports for both scheduled and non-scheduled services.

Table 3-2 also includes Connecticut's share of all U.S. enplanements, of all New England enplanements, and New England's share of all U.S. enplanements. Total enplanements have declined since 2000. Likewise, the market share of Connecticut enplanements in both the U.S. and in the New England Region declined from 2000 through 2013.

Table 3-2: Historical Enplanements in Connecticut, New England Region and the United States

	Enplaned Passengers			Percentage Share		
Year	**Connecticut (CT)**	**New England (NE)**	**U.S.**	**CT within U.S.**	**CT within NE**	**NE within U.S.**
2000	3,618,070	23,526,668	704,847,677	0.51%	15.38%	3.34%
2001	3,629,825	22,967,120	693,148,020	0.52%	15.80%	3.31%
2002	3,192,956	20,009,536	627,651,689	0.51%	15.96%	3.19%
2003	3,121,703	20,228,583	643,224,649	0.49%	15.43%	3.14%
2004	3,300,356	22,269,223	690,967,755	0.48%	14.82%	3.22%
2005	3,658,121	23,973,228	733,406,043	0.50%	15.26%	3.27%
2006	3,520,687	23,594,120	732,886,414	0.48%	14.92%	3.22%
2007	3,293,687	23,721,439	756,525,465	0.44%	13.88%	3.14%
2008	3,131,867	22,825,924	747,466,798	0.42%	13.72%	3.05%
2009	2,723,091	21,045,102	695,488,533	0.39%	12.94%	3.03%
2010	2,605,815	21,199,291	702,818,621	0.37%	12.29%	3.02%
2011	2,831,258	22,367,970	722,970,112	0.39%	12.66%	3.09%
2012	2,701,209	22,244,268	730,827,137	0.37%	12.14%	3.04%
2013	2,757,301	22,290,604	732,627,253	0.38%	12.37%	3.04%
Period			**AAGR**			
2000-2006	-0.5%	0.0%	0.7%	-1.1%	-0.5%	-0.6%
2006-2013	-3.4%	-0.8%	0.0%	-3.4%	-2.6%	-0.8%
2000-2013	-2.1%	-0.4%	0.3%	-2.4%	-1.7%	-0.7%

Source: FAA Terminal Area Forecast (TAF), February 2014. Connecticut enplanement is updated with BDL airport traffic statistic report 2013. AECOM analysis.

Enplanements for Connecticut airports decreased at an average annual rate of -2.1 percent from 3.62 million in 2000 to 2.76 million in 2013 as shown in Table 3-2. The enplanements for all New England airports also decreased over the past 13 years, but at a slower rate than Connecticut airports averaging -0.4 percent per year. The AAGR of Connecticut and New England enplanements over the total U.S. enplanements decreased by -2.4 percent and -1.7 percent respectively. Due to the higher rate of decrease in Connecticut enplanements, the overall New England enplanements also decreased at an average annual rate of -0.7 percent.

Table 3-3 shows the total enplanements and their percentage share in Connecticut in 2013 for each airport with commercial passenger boardings. Danbury Municipal had enplanements recorded in 2011 and 2012 but none were reported in the 2013 FAA TAF. Bradley International provides most of the enplanements in the state and its maintained market share of over 98 percent of the total enplanements in the Connecticut airport system between 2000 and 2013. Only BDL and Tweed-New Haven Regional (HVN) have scheduled commercial services at present. The enplanements reported by Groton-New London, Harford-Brainard, Waterbury-Oxford and Igor I. Sikorsky Memorial represent less than 0.01 percent of the total enplanements in Connecticut and they are mostly non-scheduled flights by commuter air carriers or air taxi.

Table 3-3: 2013 Connecticut Enplanement Market Share by Airport

Airport	Enplanements	Percentage
Bradley International Airport (BDL)	2,719,655	98.63%
Groton-New London Airport (GON)	18	0.0007%
Hartford-Brainard Airport (HFD)	12	0.0004%
Waterbury-Oxford Airport (OXC)	86	0.0031%
Tweed-New Haven Regional Airport (HVN)	37,443	1.36%
Igor I. Sikorsky Memorial Airport (BDR)	87	0.0032%
Total	2,757,301	100.00%

Source: FAA Terminal Area Forecast (TAF), February 2014. BDL enplanements are based on the airport traffic statistic report 2013. AECOM analysis.

3.4.1.2 Based Aircraft Trends

Table 3-4 shows a comparison of historical and forecast based aircraft numbers and AAGR developed by the FAA in the FAA Aerospace Forecasts FY2014-2034 and the 2013 TAF. FAA projections presented in Table 3-4 are prepared on national, regional, and statewide levels, based largely on historic growth trends and industry dynamics.

Table 3-4: Comparison of Based Aircraft Growth Rates in Connecticut, New England Region and the United States

Year	FAA Aerospace Forecasts	FAA TAF Based Aircraft		
	U.S. Active GA Aircraft	Connecticut	New England	U.S.
2000	217,533	1,360	6,724	179,740
2006	221,942	1,558	7,400	197,314
2013	202,865	1,211	5,859	164,671
2014	203,020	1,228	5,915	166,016
2015	203,270	1,247	5,969	167,349
2020	205,780	1,339	6,273	174,642
2025	210,170	1,434	6,599	182,442
2030	217,560	1,529	6,935	190,278
2035	n.a.	1,624	7,284	198,617
Period		**Historic AAGR**		
2000-2006	0.3%	2.3%	1.6%	1.6%
2006-2013	-1.3%	-3.5%	-3.3%	-2.6%
2000-2013	-0.5%	-0.9%	-1.1%	-0.7%
Forecast		**Forecast AAGR**		
2015-2020	0.2%	1.4%	1.0%	0.9%
2015-2025	0.3%	1.4%	1.0%	0.9%
2015-2035[1]	0.5%	1.3%	1.0%	0.9%

Source: FAA Aerospace Forecasts, FY2014-2034. FAA Terminal Area Forecast (TAF), February 2014. AECOM analysis.
Note: 1. AAGR for FAA Aerospace Forecasts was estimated for the period 2015 to 2034 instead of 2015 to 2035.

FAA Aerospace Forecasts, FY2014-2034

The FAA Aerospace Forecasts, FY2014-2034, includes projections of the total U.S. active fleet of general aviation aircraft. As shown in Table 3-4, this fleet grew from 217,533 to 221,942 active aircraft between 2000 and 2006 in the U.S., and then declined to 202,865 by 2013. The historical average annual growth rate for based aircraft at all Connecticut airports is 2.3 percent. This was greater than the total U.S. active general aviation fleet recorded at 0.3 percent between 2000 and 2006. From 2006 to 2013, the historical average annual growth rate in based aircraft for all Connecticut airports declined at a greater rate of -3.5 percent than the total U.S. active general aviation fleet at a rate of -1.3 percent. Over the past 13-years the based aircraft at all Connecticut airports declined at an AAGR of -0.9 percent which is slightly higher than the decline of the total U.S. active general aviation fleet at -0.5 percent. The rate of change in the based aircraft at all Connecticut airports is generally greater than the change of the total U.S. active general aviation fleet based on the historical trend.

The national growth in total U.S. active general aviation fleet is projected to slow over the five and ten-year forecast period, but it indicates an increase to an average annual growth rate of 0.5 percent over the 20-year forecast period.

FAA Terminal Area Forecasts (TAF)

FAA TAF provides the official projections of aviation activity demand at individual FAA facilities, and all airports included within the NPIAS. Many of the smaller general aviation airports and privately-owned, public-use airports do not submit their aviation activity to the FAA regularly. Out of the 20 public-use airports included in the CSASP forecast, 13 airports are included in the NPIAS, while 7 are non-NPIAS airports. Between 2000 and 2006, based aircraft at all U.S. airports and all New England airports recorded in the TAF grew at an average annual growth rate of 1.6 percent while the based aircraft at Connecticut airports recorded a higher average annual growth rate of 2.3 percent. However, during the period between 2006 and 2013, the based aircraft at Connecticut airports recorded in the TAF also declined at a higher average rate of -3.5 percent as compared to the based aircraft at all New England airports at -3.3 percent and at all U.S. airports at -2.6 percent. Over the past 13-years the based aircraft at all Connecticut airports declined at an AAGR of -0.9 percent. During the same period based aircraft at all New England airports declined at an AAGR of -1.1 percent and at all U.S. airports at -0.7 percent.

The FAA TAF projections for based aircraft are updated annually but the actual historical records generally lag behind by one year. Based on the latest FAA TAF, issued February 2014 which includes through 2013, the FAA projects average annual growth rates for based aircraft at all U.S. airports, all New England airports and all Connecticut airports (NPIAS airports only) at 0.9 percent, 1.0 percent, and 1.3 percent respectively for the 20-year forecast period.

3.4.1.3 Aircraft Operations Trends

Table 3-5 presents a comparison of historical and forecast aircraft operations and the AAGR developed by the FAA on the national, regional, and statewide levels. The FAA has prepared national operations forecast under the FAA Aerospace Forecasts, FY2014-2034, as well as annual forecasts under the TAF. These aircraft operations forecasts include breakdowns into general aviation, air carrier, and air taxi/commuter operations. These projections provide a comparison for the Connecticut airport system plan and aircraft operation forecasts.

Table 3-5: Comparison of Aircraft Operation Growth Rates in Connecticut, New England Region, and the United States

Year	FAA Aerospace Forecasts				FAA TAF Aircraft Operations			
	U.S. Towered Airports (thousands)				Connecticut			
	Total Operations	Total Air Carrier	Total Air Taxi/Commuter	Total GA	Total Operations	Total Air Carrier	Total Air Taxi/Commuter	Total GA
Historical:								
2000	68,686	15,159	10,761	39,879	950,802	82,706	71,439	784,152
2006	61,072	13,256	11,968	33,073	697,492	70,611	66,590	546,935
Forecast:								
2013	49,941	12,776	8,804	25,809	494,602	49,342	49,344	387,973
2014	50,346	12,951	8,668	26,174	497,320	54,447	45,471	389,459
2015	50,908	13,299	8,768	26,290	500,299	55,591	46,119	390,646
2020	53,814	15,080	9,298	26,884	515,908	62,036	49,256	396,673
2025	56,516	17,313	9,145	27,506	531,123	69,708	50,614	402,858
2030	59,481	20,564	8,208	28,157	547,332	80,493	49,691	409,205
2035	n.a.	n.a.	n.a.	n.a.	563,409	87,212	52,520	415,734
Period	**Historic AAGR**				**Historic AAGR**			
2000-2006	-1.9%	-2.2%	1.8%	-3.1%	-5.0%	-2.6%	-1.2%	-5.8%
2006-2013	-2.8%	-0.5%	-4.3%	-3.5%	-4.8%	-5.0%	-4.2%	-4.8%
2000-2013	-2.4%	-1.3%	-1.5%	-3.3%	-4.9%	-3.9%	-2.8%	-5.3%
Forecast	**Forecast AAGR**				**Forecast AAGR**			
2015-2020	1.1%	2.5%	1.2%	0.4%	0.6%	2.2%	1.3%	0.3%
2015-2025	1.1%	2.7%	0.4%	0.5%	0.6%	2.3%	0.9%	0.3%
2015-2035[1]	1.0%	2.7%	-0.1%	0.5%	0.6%	2.3%	0.7%	0.3%

Source: FAA Aerospace Forecasts, FY2014-2034. FAA Terminal Area Forecast (TAF), February 2014. AECOM analysis.
Notes: 1. AAGR for FAA Aerospace Forecasts was estimated for the period 2015 to 2034 instead of 2015 to 2035.
2. n.a. denotes not available.

Table 3-5: Comparison of Aircraft Operation Growth Rates in Connecticut, New England Region, and the United States (Continued)

Year	FAA TAF Aircraft Operations							
	New England				U.S. (thousands)			
	Total Operations	Total Air Carrier	Total Air Taxi/ Commuter	Total GA	Total Operations	Total Air Carrier	Total Air Taxi/ Commuter	Total GA
Historical:								
2000	5,517,391	469,218	859,444	3,995,417	121,891	15,262	14,266	87,079
2006	4,879,512	402,340	797,904	3,545,649	113,419	13,467	14,827	80,154
Forecast:								
2013	3,632,142	414,667	540,441	2,561,027	98,760	13,109	11,488	69,388
2014	3,648,750	442,048	528,823	2,561,872	99,336	13,287	11,357	69,917
2015	3,669,300	454,503	533,595	2,565,195	100,067	13,635	11,462	70,194
2020	3,776,682	519,529	559,043	2,582,103	103,845	15,420	12,023	71,624
2025	3,880,557	589,675	575,408	2,599,467	107,498	17,660	11,904	73,154
2030	3,994,232	680,639	580,268	2,617,318	111,505	20,919	11,001	74,802
2035	4,109,730	749,662	608,374	2,635,687	115,718	22,843	11,508	76,583
Period	**Historic AAGR**				**Historic AAGR**			
2000-2006	-2.0%	-2.5%	-1.2%	-2.0%	-1.2%	-2.1%	0.6%	-1.4%
2006-2013	-4.1%	0.4%	-5.4%	-4.5%	-2.0%	-0.4%	-3.6%	-2.0%
2000-2013	-3.2%	-0.9%	-3.5%	-3.4%	-1.6%	-1.2%	-1.7%	-1.7%
Forecast	**Forecast AAGR**				**Forecast AAGR**			
2015-2020	0.6%	2.7%	0.9%	0.1%	0.7%	2.5%	1.0%	0.4%
2015-2025	0.6%	2.6%	0.8%	0.1%	0.7%	2.6%	0.4%	0.4%
2015-2035	0.6%	2.5%	0.7%	0.1%	0.7%	2.6%	0.0%	0.4%

Source: FAA Terminal Area Forecast (TAF), February 2014. AECOM analysis.

FAA Aerospace Forecasts, FY2014-2034

The FAA Aerospace Forecasts, FY2014-2034, include projections for aviation activity at combined FAA and contract towered airports. Between 2000 and 2013, total operations at towered airports in the U.S. declined at an average annual rate of -2.4 percent, which was less than the decline experienced in general aviation operations at -3.3 percent on average. The historic AAGR for air carrier operations and air taxi/commuter operations at towered airports in the U.S. declines at a rate of-1.3 and -1.5 percent respectively. Both decline rates are significantly lower than those reflected for total operations or total general aviation operations. The historic decline in total operations, general aviation, air taxi/commuter, and air carrier operations at Connecticut airports are reported at -4.9, -5.3, -2.8 and -3.9 percent respectively, and they are all higher than the decline in towered airports in the U.S. for the period between 2000 and 2013.

The FAA Aerospace Forecasts, FY2014-2034, projected the total operations to grow at an average annual growth rate of 1.0 percent for towered airports in the U.S. The growth of air carrier operations will be strong and is expected to grow at 2.7 percent annually while general aviation operations will grow at 0.5 percent per year. The increase in general aviation operations reflects the impact of an improving economy on flight hours and operations. The increase in air carrier activity is driven by a combination of mainline carriers increasing capacity in response to growing demand and an increase in the operations of 70 to 90-seat jets which are counted in the air carrier category. Air taxi/commuter will experience growth in the near-term, but the overall trend is projected to reduce slightly at an overall average annual rate of -0.1 percent in the 20-year forecast period as regional jets with less than 50-seats are expected to exit the industry.

In Connecticut, there is one FAA-operated air traffic control tower located at BDL and six airports with federal contracted air traffic control towers, including BDR, DXR, GON, HFD, HVN and OXC. Since April 2013, the FAA has ceased funding to 149 contract towers around the nation which include those at the six aforementioned airports in Connecticut. The projected trend for towered airports in the U.S. may need to be revised in the future with the reduction of towered airports.

FAA Terminal Area Forecasts (TAF)

The FAA develops annual forecasts on operations for airports in the NPIAS and includes the data in their annual TAF. From 2000 to 2013, the decline in total activity of general aviation, air taxi/commuter and air carrier operations in Connecticut airports are recorded at -4.9, -5.3, -2.8 and -3.9 percent per year respectively. They all exceed total U.S. airport operations, but do not outpace New England airports in air taxi/commuter operations, which is recorded at a -3.5 percent decline per year.

The FAA TAF projects total operations at Connecticut airports to grow at a moderate rate of 0.6 percent per year over the next 20-years. The same accounts for all airports in New England. The projected AAGR for all NPIAS airports in the U.S. is slightly ahead at a projected growth rate of 0.7 percent per year. The TAF projects the general aviation activity at Connecticut airports to grow annually at 0.3 percent, which is above the growth of all New England airports projected at 0.1 percent and slightly below the growth of all U.S. airports projected at 0.4 percent. The TAF anticipates growth in air taxi/commuter operations for all Connecticut airports and all New England airports to be at an equal rate of 0.7 percent per year, slightly higher than the total growth rate of 0.6 percent at all U.S. airports in the future 20-year forecast period. The TAF forecasts the air carrier operations at all Connecticut airports to be 2.3 percent annually, which is slightly less than the forecast annual growth of 2.5 percent at all New England airports or the 2.6 percent for all U.S. airports.

3.4.2 Commercial Passenger Enplanement Forecasts

Enplanement forecasts for Connecticut's six existing commercial service airports were developed based on the FAA TAF. The FAA uses their national forecast as a base for projecting activity, but also applies statistical techniques as linear multiple regression analysis, to develop aviation activity forecasts for the airports included in the TAF. Aviation planners typically use the forecasts as a gauge of anticipated aviation activity, including enplanements for commercial service airports.

Table 3-6 presents the enplanement forecasts for each of the six commercial service airports and the total enplanements in Connecticut based on the TAF projections.

Table 3-6: Enplanement Forecasts for Connecticut and Individual Commercial Service Airports

Year	Connecticut	BDL	GON	HFD	OXC	HVN	BDR
Historical:							
2000	3,618,070	3,567,224	11,207	0	0	39,582	57
2006	3,520,671	3,475,144	11	7	9	45,461	39
Forecast:							
2013	2,757,301	2,719,655	18	12	86	37,443	87
2014	3,019,286	2,980,614	18	12	86	38,469	87
2015	3,081,347	3,041,624	18	12	86	39,520	87
2020	3,415,418	3,369,977	18	12	86	45,238	87
2025	3,699,871	3,647,889	18	12	86	51,779	87
2030	3,996,795	3,937,322	18	12	86	59,270	87
2035	4,316,218	4,248,166	18	12	86	67,849	87
Period			**Historic AAGR**				
2000-2006	-0.5%	-0.4%	-68.5%	n.a.	n.a.	2.3%	-6.1%
2006-2013	-3.4%	-3.4%	7.3%	8.0%	38.1%	-2.7%	12.1%
2000-2013	-2.1%	-2.1%	-39.0%	n.a.	n.a.	-0.4%	3.3%
Forecast			**Forecast AAGR**				
2015-2020	2.1%	2.1%	0.0%	0.0%	0.0%	2.7%	0.0%
2015-2025	1.8%	1.8%	0.0%	0.0%	0.0%	2.7%	0.0%
2015-2035	1.7%	1.7%	0.0%	0.0%	0.0%	2.7%	0.0%

Source: FAA Terminal Area Forecast (TAF), February 2014. Updated with BDL airport traffic statistic report 2013. AECOM analysis.

Bradley International is projected to grow from 2.72 million enplanements in 2013 to approximately 4.25 million enplanements by 2035 at an AAGR of 1.7 percent. BDL's 2005 Master Plan Update forecasted the enplanements to grow from 3.26 million in 2002 to 6.16 million in 2022 at an AAGR of 3.2 percent. Since the 2005 Master Plan Update was completed nearly ten years ago and their forecasts for recent years from 2007 (4.08 million) to 2012 (4.75 million) are significantly higher than the actual enplanements at BDL (actual 3.26 million to 2.66 million). It is recommended to adopt the FAA TAF for enplanements at BDL.

Tweed-New Haven Regional (HVN) is projected to experience the highest average annual growth rate in enplanements over the 20-year planning period at 2.7 percent and the enplanements will grow from 37,443 in 2013 to 67,849 in 2035. The remaining four airports, Groton-New London (GON), Harford-Brainard (HFD), Waterbury-Oxford (OXC) and Igor I. Sikorsky Memorial (BDR), do not have scheduled commercial services and their enplanements recorded in the TAF are mainly non-scheduled flights by

commuter air carriers or air taxi. They contribute less than 0.01 percent of total enplanements to the Connecticut airport system. Their enplanement forecasts are projected to remain the same as 2013.

Over the 20-year planning period, when the individual airport enplanement forecasts are summed, the Connecticut statewide enplanements are projected to increase from 2.76 million in 2013 to 4.32 million in 2035 at an overall average annual growth rate of 1.7 percent based on the FAA TAF.

3.4.3 Based Aircraft Forecasts

Both "bottom-up" and "top-down" approaches were used to project based aircraft for the Connecticut airport system. The first methodology adopted a "bottom-up" approach and combined the forecast based aircraft from recent Airport Master Plans, if available, referencing the 2013 FAA TAF based aircraft forecast for the remaining airports. The second methodology applied is also a "bottom-up" approach and used the historical trend of based aircraft identified at each airport to forecast future based aircraft. The other two methodologies used in this forecast, adopt a "top-down" approach, which projected based aircraft for the entire Connecticut airport system relative to a number of factors including the historic market share, and various socioeconomic parameters for the State. **Figure 3-3** and **Table 3-7** present the statewide based aircraft projections for the NPIAS airports as they were derived by applying different methodologies and the FAA TAF forecasts included for comparison purposes. Each different methodology is discussed in the following paragraphs.

For the seven non-NPIAS airports, it is estimated that there are 189 based aircraft in 2013. Forecast based aircraft at these airports will remain at the same level.

Figure 3-3: Based Aircraft Forecast Scenarios (NPIAS Airports)

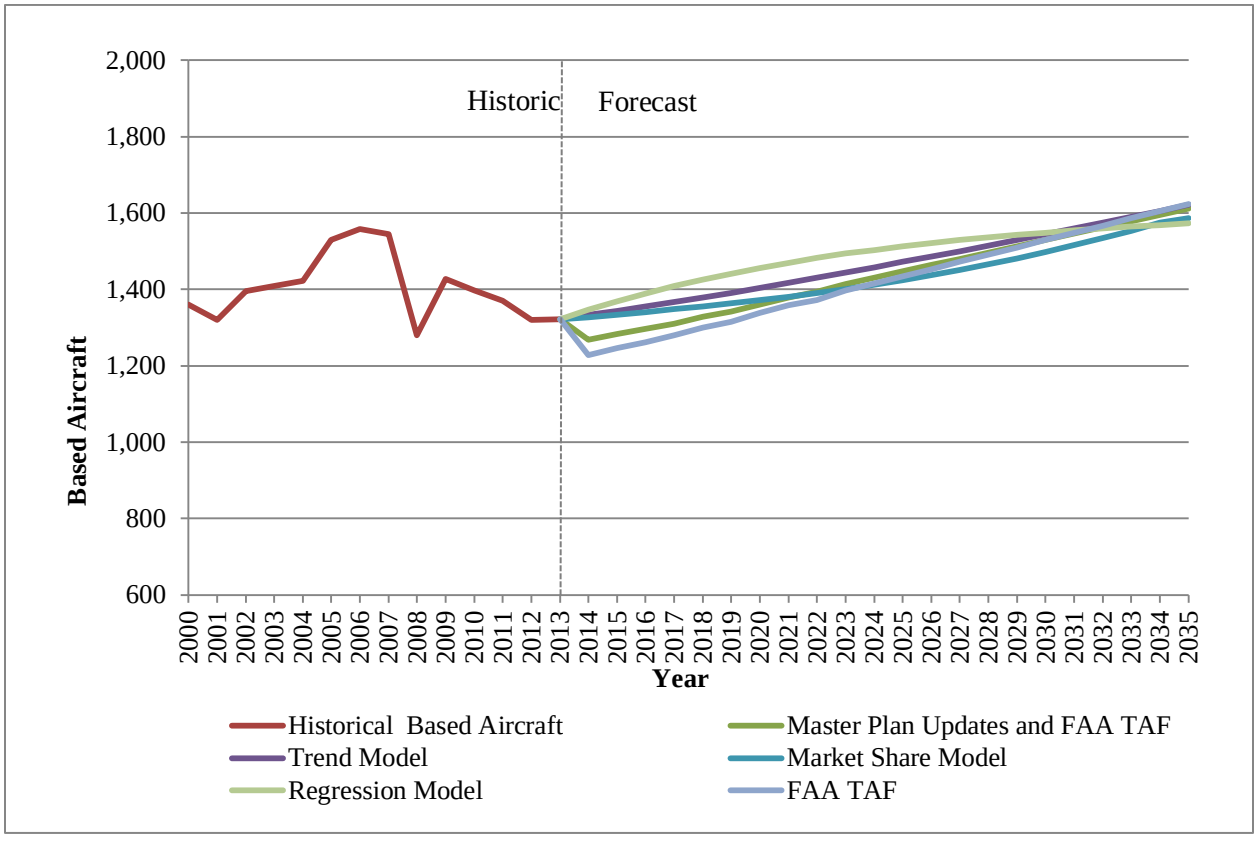


Table 3-7: Based Aircraft Forecast Scenarios

Year	NPIAS Airports						Non-NPIAS Airports
	Historical	Master Plan Updates & FAA TAF	Trend Model	Market Share Model	Regression Model	FAA TAF	Historical and Forecast
Historical:							
2000	1,360						n.a.
2006	1,558						n.a.
2007	1,544						n.a.
2008	1,280						n.a.
2009	1,427						n.a.
2010	1,398						n.a.
2011	1,370						n.a.
2012	1,320						n.a.
2013	1,322						189
Forecast:							
2014		1,268	1,333	1,328	1,348	1,228	189
2015		1,283	1,344	1,334	1,369	1,247	189
2020		1,361	1,404	1,372	1,456	1,339	189
2025		1,447	1,472	1,424	1,513	1,434	189
2030		1,529	1,544	1,498	1,549	1,529	189
2035		1,612	1,621	1,587	1,573	1,624	189
Period	**Historic AAGR**						
2000-2006	2.3%						
2006-2013	-2.3%						
2000-2013	-0.2%						
Forecast	**Forecast AAGR**						
2015-2020		1.2%	0.9%	0.6%	1.2%	1.4%	0.0%
2015-2025		1.2%	0.9%	0.7%	1.0%	1.4%	0.0%
2015-2035		1.2%	0.9%	0.9%	0.7%	1.3%	0.0%

Source of historical data: 2000-2012 FAA TAF; 2012 and 2013 data is updated with FAA Form 5010-1 record except HVN, GON, HFD and IJD. HVN is updated with Form 5010-1 for 2013 only since its Form 5010-1 is dated March 2014. GON is updated with the latest 2013 Master Plan with 55 based aircraft in 2010, 53 based aircraft in 2012 based on Form 5010. HFD is updated with the latest Master Plan with 154 based aircraft in both 2010 and 2011. IJD is updated with the latest 2013 Master Plan with 68 based aircraft in 2012 and 2013.
Note: n.a. denotes not available.

Forecasts based on Master Plan Updates and FAA TAF

The methodology implemented to estimate the forecast based aircraft for the Connecticut airport system is based on a combination of recent Airport Master Plan Updates and the FAA TAF. Available recent Airport Master Plan Updates incorporated in this methodology include the following:

- Groton-New London (GON): Master Plan Update, May 2013 (GON 2013 Master Plan Update)
- Hartford-Brainard (HFD): Airport Master Plan Update, Working Paper #1, February 2012 (HFD 2012 Master Plan Update)
- Windham (IJD): Master Plan Update, Draft Working Paper #1, December 2013 (IJD 2013 Master Plan Update)

The forecast based aircraft in the Airport Master Plan Update for Danielson Airport (LZD), December 2008, was reviewed and the estimated based aircraft deviate significantly from the historic FAA TAF and FAA Form 5010-1 record for the recent five years. Hence, the based aircraft forecast in the LZD 2008 Airport Master Plan is not recommended. There is no based aircraft forecast in the Bradley International (BDL) 2005 Master Plan Update.

The FAA TAF based aircraft forecast for Bradley International (BDL), Waterbury-Oxford (OXC), Danielson (LZD), Tweed-New Haven Regional (HVN), Igor I. Sikorsky Memorial (BDR), Danbury Municipal (DXR), Robertson (4B8), Meriden-Markham Municipal (MMK), Chester (SNC), and Simsbury (4B9) are incorporated into this study.

This bottom-up approach sums the based aircraft for individual airports and projects Connecticut's based aircraft to increase from 1,322 in 2013 to 1,612 in 2035 for all State NPIAS airports. It represents an annual average growth rate of 1.2 percent for the plan period between 2015 and 2035. This growth rate is slightly higher than the FAA TAF's forecast average growth for based aircraft in New England at 1.0 percent per year and in the U.S. at 0.9 percent per year.

Forecasts based on Historical Trend

This methodology is also a "bottom-up" approach and uses the historic growth rates of the recorded numbers of based aircraft at airports without recent Airport Master Plan Updates as discussed above. For airports with recent Airport Master Plan Updates, including Groton-New London (GON), Hartford-Brainard (HFD) and Windham (IJD), the forecast based aircraft recommended in the Airport Master Plan Updates are adopted.

Based on the historic growth rates from 2000 to 2013, the airports that have experienced continue decline in based aircraft, including Bradley International (BDL), Tweed-New Haven Regional (HVN), Robertson (4B8) and Simsbury 4B9), are projected to remain at similar levels as the existing based aircraft levels. Projected moderate growth rates are estimated for the remaining airports, including Waterbury-Oxford (OXC), Danielson (LZD), Igor I. Sikorsky Memorial (BDR), Danbury Municipal (DXR), Meriden-Markham Municipal (MMK) and Chester (SNC) based on their historical growth rates. The statewide based aircraft forecast is the total using the estimate for each of these airports.

This historical trend model projects Connecticut's total based aircraft to increase from 1,322 in 2013 to 1,621 in 2035 for the States NPIAS airports, and represents an average annual growth rate of 0.9 percent over the 20-year planning period. This growth rate is the same as the FAA TAF's forecast for based aircraft in the U.S. but slightly below the forecast for New England projected at 1.0 percent per year.

Forecast based on Market Shares

Statewide projections of based aircraft are developed based on Connecticut's share of the entire U.S. active general aviation aircraft fleet. Connecticut's historic market share of the U.S. fleet is studied and the future market share is projected based on the historic market share growth rate from 2000 to 2013. This approach recognizes the growing percentage of Connecticut's aircraft fleet relative to the U.S. fleet from 0.63 percent in 2000 to 0.65 percent in 2013. Connecticut's share of the U.S. fleet is projected to increase to 0.71 percent in 2035. The statewide based aircraft forecast increases from 1,322 in 2013 to 1,587 in 2035 for all State NPIAS airports, which represents an average annual growth rate of 0.9 percent.

Forecast based on Socioeconomic Parameters

This methodology established the historic relationship between socioeconomic parameters such as per capita personal income, real GDP, nonfarm employment, and the historic based aircraft in Connecticut. Among the different socioeconomic parameters for Connecticut, multiple linear regression analysis establishes the correlation between the real GDP of Connecticut, based aircraft, and an autoregressive factor with a correlation coefficient (r^2) at 0.77, which indicates a fairly strong correlation between the dependent and independent variables. The regression model established is then applied to the forecast of real GDP of Connecticut through the year 2035 to obtain the forecast based aircraft in the State. The forecast real GDP of Connecticut makes reference to the U.S. long term economic forecasts in the FAA Aerospace Forecast, FY 2014-2034, and assumes an average growth rate of 2.7 percent between 2013 and 2023, and 2.5 percent from 2024 to 2035. The results of the regression model estimates Connecticut's based aircraft will increase from 1,322 in 2013 to 1,573 in 2035. The average annual growth rate will be higher at 1.2 percent in the first five-year period, and will retract to 1.0 percent over the 10-year period and 0.7 percent over the 20-year period. The decreasing year-over-year growth rates of the based aircraft in Connecticut from the regression model reflect the forecast decreasing growth rate of real GDP from 2.7 percent to 2.5 percent per year.

Recommended Based Aircraft Forecast

A review of the various methodologies discussed in the preceding narrative indicates that they all result in a close range of based aircraft for the Connecticut airport system. The forecast based aircraft by 2035 ranges between 1,573 and 1,624, which represents an approximate 3.2 percent difference. When compared to the FAA TAF forecast growth of based aircraft in New England and in the entire U.S., both, the trend model and market share model, predict the average annual growth rate of based aircraft in Connecticut to be similar to the growth in the U.S. and slightly behind the growth in New England. The regression model projects the overall average annual growth rate in the 20-year period to be lower than both, the U.S. and New England AAGRs. Only the combined Airport Master Plan Update with the methodology supplemented by 2013 FAA TAF results projects an average annual growth higher than both the growth in New England and in the U.S. This "bottom-up" combined Airport Master Plan Update and FAA TAF projection is selected as the recommended based aircraft forecast since this methodology includes the latest updated forecasts from recent airport master plans for three airports and it reflects the predicted growth rate in based aircraft in Connecticut to be higher than the regional and national forecast, which is in line with the 2013 FAA TAF forecast.

Table 3-8 summarizes the forecast based aircraft for the 20 public-use airports in Connecticut, including both NPIAS and non-NPIAS airports. The forecast total based aircraft in Connecticut's airport system for both NPIAS and non-NPIAS airports will be 1,781 by 2035.

Table 3-8: Based Aircraft Forecasts for Connecticut and Individual Airports

Airport Name	2000	2006	2013	2014	2015	2020	2025	2030	2035
	Historical			Forecast					
CAA-Owned Airports									
Bradley International (BDL)	81	73	55	57	58	66	74	79	84
Groton-New London (GON)	37	69	55	55	55	61	67	73	80
Hartford-Brainard (HFD)	168	129	155	156	157	159	163	168	173
Waterbury-Oxford (OXC)	203	254	168	181	183	199	215	230	245
Windham (IJD)	64	67	68	68	68	68	70	71	72
Danielson (LZD)	61	66	37	37	37	37	37	37	37
Municipally-Owned Airports									
Tweed-New Haven Regional (HVN)	72	72	43	43	44	48	53	58	63
Igor I. Sikorsky Memorial (BDR)	213	244	190	199	205	230	258	288	318
Danbury Municipal (DXR)	233	227	293	269	271	281	291	301	311
Robertson (4B8)	110	110	57	57	57	57	57	57	57
Meriden-Markham Municipal (MMK)	64	78	65	68	70	77	84	89	94
Privately-Owned Airports Open for Public Use									
Chester (SNC)	0	115	123	123	123	123	123	123	123
Simsbury (4B9)	54	54	13	12	12	12	12	12	12
Goodspeed and Seaplane Base (42B)	n.a.	n.a.	33	33	33	33	33	33	33
Ellington (7B9)	n.a.	n.a.	34	34	34	34	34	34	34
Skylark Airpark (7B6)	n.a.	n.a.	61	61	61	61	61	61	61
Waterbury-Plymouth (N41)	n.a.	n.a.	14	14	14	14	14	14	14
Toutant (C44)	n.a.	n.a.	4	4	4	4	4	4	4
Candlelight Farms (11N)	n.a.	n.a.	14	14	14	14	14	14	14
Salmon River Airfield (9B8)	n.a.	n.a.	9	9	9	9	9	9	9
Total Connecticut Based Aircraft	**1,360**	**1,558**	**1,491**	**1,437**	**1,452**	**1,530**	**1,616**	**1,698**	**1,781**

Source: 2013 historic based aircraft for non-NPIAS airports are based on FAA Form 5010-1 records. 2000 to 2013 historic based aircraft for NPIAS airports refer to Table 3-7 above. AECOM analysis.
Note: n.a. denotes not available.

3.4.4 Aircraft Operations Forecasts

3.4.4.1 Commercial Operations

Commercial airline operations include operations by commercial air carriers certified under Federal Aviation Regulation (FAR) Part 121 or 127 to conduct scheduled services on specific routes. These commercial air carriers include major and regional airlines as well as commuter air carrier. Commuter air carriers are those carriers that operate aircraft of 60 or fewer seats, or a maximum payload capacity of 18,000 pounds or less. These commuter air carriers hold a certificate issued under section 298C of the Federal Aviation Act. Some of the commuter air carriers hold certification under both FAR Part 121 and 135, while some of them may hold only FAR Part 135 certification if their fleet consists only of small aircraft below 30-seats. Air taxi refers to the air carriers that transport persons, property, and mail using small aircraft which are under 30 seats or a maximum payload capacity of 7,500 pounds. Air taxi air carriers typically hold FAR Part 135 certification and provide on-demand services. For the purpose of this

study, commercial airline operations include the activities by commercial air carriers, including commuter air carriers with FAR Part 121 certification, which provide scheduled services on specific routes. These commercial air carriers may also provide non-scheduled or charter services as a secondary operation. The air taxi operations are analyzed together with the general aviation activities in the next section.

The existing commercial airline operations at the six commercial airports with FAA TAF recorded enplanements are studied. Only Bradley International (BDL) and Tweed-New Haven Regional Airport (HVN) have scheduled commercial services at present. The enplanements reported by Groton-New London (GON), Harford-Brainard (HFD), Waterbury-Oxford (OXC) and Igor I. Sikorsky Memorial (BDR) represent less than 0.01 percent of the total enplanements in Connecticut and they are all non-scheduled services provided by small aircraft with average seats per departure between 8 to 10 based on the U.S. DOT T-100 database analysis. The Groton-New London (GON) Master Plan Update, May 2013, assessed the potential for reintroduction of scheduled commercial service at GON and concluded that it is unlikely in the short-term. The forecast aviation activities at GON do not include commercial operations through 2030. The Harford-Brainard (HFD) Master Plan Update, February 2012, also does not include commercial operations forecast.

Forecast commercial airline operations in Connecticut include Bradley International (BDL) and Tweed-New Haven Regional (HVN) only.

Commercial operations at these two Connecticut airports have decreased historically from 137,285 in 2000 to 82,172 in 2013, which represents an average annual decline of -3.9 percent. Projections of commercial operations at Connecticut's airports are developed in two approaches. The first one is developed by forecasting the average number of seats per operation and the average load factor at BDL and HVN based on their historical data extracted from the U.S. DOT T-100 database and the forecast national trend on aircraft seat capacity and load factor from the FAA Aerospace Forecast, FY2014-2034. Is it anticipated that by 2025, regional turbojet aircraft with 70 to 90 seats will replace the existing fleet mix at HVN. By combining these forecast parameters with the previously forecast enplanements, the forecast commercial operations for passenger flights are obtained. Based on the historical data at BDL in 2000, there were approximately 14 percent of all-cargo operations. The forecast commercial passenger operations are increased accordingly to include the all-cargo operations. There is no all-cargo service at HVN in 2013 and it is forecast to remain the same throughout the planning period. The second methodology is based on the total of FAA TAF forecast air carrier and commuter/air taxi operations for BDL and HVN.

Table 3-9 presents the historical and forecast commercial operations for BDL and HVN. By the year 2035, combined commercial operations for these two Connecticut airports are projected to increase to 110,838 using the first methodology as compared to an increase to 121,307 using the FAA TAF. They represent an average annual growth rate of 1.02 percent and 1.85 percent respectively.

Table 3-9: Forecast Commercial Operations for Connecticut, BDL, and HVN

	2000	2006	2013	2014	2015	2020	2025	2030	2035	AAGR 2015-2035
CAA-Owned Airport										
Bradley International (BDL)										
Methodology 1										
Enplanements	3,567,224	3,475,144	2,719,655	2,980,614	3,041,624	3,369,977	3,647,889	3,937,322	4,248,166	
Total Departure Seats	n.a.	4,584,018	3,292,561	3,608,492	3,679,825	4,063,097	4,383,091	4,714,638	5,069,411	
Seat Capacity	n.a.	96	98	98	98	101	103	106	109	
Load Factor	n.a.	75.81%	82.60%	82.60%	82.66%	82.94%	83.23%	83.51%	83.80%	
Operations by Methodology 1	**132,062**	**110,624**	**78,172**	**85,673**	**86,932**	**93,622**	**98,508**	**103,350**	**108,390**	**1.11%**
Methodology 2 FAA TAF	**132,062**	**110,624**	**78,172**	**78,166**	**79,842**	**88,819**	**97,184**	**106,319**	**115,059**	**1.84%**
Municipally-Owned Airport										
Tweed-New Haven Regional (HVN)										
Methodology 1										
Enplanements	39,582	45,461	37,443	38,469	39,520	45,238	51,779	59,270	67,849	
Total Departure Seats	n.a.	86,411	49,404	50,757	52,105	59,421	67,759	77,273	88,127	
Seat Capacity	n.a.	33	25	27	30	48	70	71	72	
Load Factor	n.a.	52.61%	75.79%	75.79%	75.85%	76.13%	76.42%	76.70%	76.99%	
Operations by Methodology 1	**5,196**	**5,177**	**4,000**	**3,738**	**3,491**	**2,480**	**1,936**	**2,177**	**2,448**	**-1.76%**
Methodology 2 FAA TAF	**5,196**	**5,177**	**4,000**	**4,083**	**4,167**	**4,607**	**5,097**	**5,638**	**6,248**	**2.05%**
Statewide Total Commercial Operations										
Methodology 1	**137,258**	**115,801**	**82,172**	**89,411**	**90,423**	**96,102**	**100,444**	**105,527**	**110,838**	**1.02%**
Methodology 2	**137,258**	**115,801**	**82,172**	**82,249**	**84,009**	**93,426**	**102,281**	**111,957**	**121,307**	**1.86%**

Source: BDL enplanements are based on the airport traffic statistic report 2013. BDL operations are based on aircraft operational count 2000 to 2013. U.S. DOT T-100 database. FAA Terminal Area Forecast (TAF), February 2014. AECOM analysis.

3.4.4.2 General Aviation and Air Taxi Operations

Two approaches are used for projecting the general aviation and air taxi operations for the Connecticut airport system. The first methodology combined the latest available Airport Master Plan Updates, FAA TAF for NPIAS airports, and the FAA Form 5010-1 record for non-NPIAS airports. Similar to the based aircraft forecast, the available recent Airport Master Plan Updates incorporated in this methodology include the following:

- Groton-New London (GON): Master Plan Update, May 2013 (GON 2013 Master Plan Update)
- Hartford-Brainard (HFD): Airport Master Plan Update, Working Paper #1, February 2012 (HFD 2012 Master Plan Update)
- Windham (IJD): Master Plan Update, Draft Working Paper #1, December 2013 (IJD 2013 Master Plan Update)

The second methodology combines the FAA TAF for thirteen NPIAS airports and the FAA Form 5010-1 records for the remaining seven non-NPIAS airports.

Table 3-10 summarizes the historical and forecast general aviation and air taxi operations for both methodologies. The existing 2013 operations for the two approaches are different because the first one applies the forecast between 2010 to 2013 for GON and HFD and 2013 forecast for IJD based on their airport master plan updates. The second approach follows the existing records from FAA TAF in 2013.

The general aviation and air taxi activities are projected to increase from 510,571 in 2013 to 554,884 operations in 2035 for the first methodology, and increase from 480,960 in 2013 to 509,509 operations in 2035 for the second methodology. The average annual growth rates for the 20-year planning period are 0.39 percent and 0.26 percent for these two methodologies respectively.

Table 3-10: Forecast General Aviation and Air Taxi Operations for Connecticut and Individual Airports

	2000	2006	2013	2014	2015	2020	2025	2030	2035	AAGR 2015-2035
CAA-Owned Airports										
Bradley International (BDL)										
FAA TAF	37,862	34,548	15,208	15,471	15,505	15,675	15,845	16,016	16,191	0.22%
Groton-New London (GON)										
Master Plan Update			38,215	38,207	38,200	42,020	46,031	50,424	55,237	1.86%
FAA TAF	70,833	50,675	31,762	30,848	31,038	32,006	33,003	34,030	35,092	0.62%
Hartford-Brainard (HFD)										
Master Plan Update			80,258	80,479	80,700	81,800	83,700	85,600	87,543	0.41%
FAA TAF	127,415	74,955	57,350	58,578	58,809	59,981	61,179	62,400	63,646	0.40%
Waterbury-Oxford (OXC)										
FAA TAF	146,950	51,483	45,497	45,351	45,556	46,592	47,654	48,740	49,851	0.45%
Windham (IJD)										
Master Plan Update			14,300	14,352	14,403	14,663	14,916	15,152	15,383	0.33%
FAA TAF	30,440	30,440	14,050	14,050	14,050	14,050	14,050	14,050	14,050	0%
Danielson Airport (LZD)										
FAA TAF	20,464	24,124	22,072	22,072	22,072	22,072	22,072	22,072	22,072	0%
Municipally-Owned Airports										
Tweed-New Haven Regional (HVN)										
FAA TAF	54,256	51,702	28,138	26,999	27,040	27,250	27,460	27,675	27,890	0.15%
Igor I. Sikorsky Memorial (BDR)										
FAA TAF	89,588	72,807	61,335	61,813	61,981	62,828	63,693	64,580	65,495	0.28%
Danbury Municipal (DXR)										
FAA TAF	115,303	69,446	64,338	66,086	66,436	68,225	70,083	72,009	74,012	0.54%
Robertson (4B8)										
FAA TAF	59,145	59,145	21,050	21,050	21,050	21,050	21,050	21,050	21,050	0%
Meriden-Markham Municipal (MMK)										
FAA TAF	18,008	18,008	16,208	16,208	16,208	16,208	16,208	16,208	16,208	0%

	2000	2006	2013	2014	2015	2020	2025	2030	2035	AAGR 2015-2035
Privately-Owned Airports Open for Public Use										
Chester (SNC)										
FAA TAF	20,800	20,800	15,827	15,827	15,827	15,827	15,827	15,827	15,827	0%
Simsbury (4B9)										
FAA TAF	9,452	9,452	12,775	12,775	12,775	12,775	12,775	12,775	12,775	0%
Goodspeed and Seaplane Base (42B)										
FAA Form 5010-1	n.a.	n.a.	6,230	6,230	6,230	6,230	6,230	6,230	6,230	0%
Ellington (7B9)										
FAA Form 5010-1	n.a.	n.a.	27,120	27,120	27,120	27,120	27,120	27,120	27,120	0%
Skylark Airpark (7B6)										
FAA Form 5010-1	n.a.	n.a.	15,900	15,900	15,900	15,900	15,900	15,900	15,900	0%
Waterbury-Plymouth (N41)										
FAA Form 5010-1	n.a.	n.a.	14,100	14,100	14,100	14,100	14,100	14,100	14,100	0%
Toutant (C44)										
FAA Form 5010-1	n.a.	n.a.	200	200	200	200	200	200	200	0%
Candlelight Farms (11N)										
FAA Form 5010-1	n.a.	n.a.	11,000	11,000	11,000	11,000	11,000	11,000	11,000	0%
Salmon River Airfield (9B8)										
FAA Form 5010-1	n.a.	n.a.	800	800	800	800	800	800	800	0%
Statewide Total General Aviation and Air Taxi Operations										
Methodology 1	n.a.	n.a.	**510,571**	**512,040**	**513,103**	**522,335**	**532,663**	**543,478**	**554,884**	**0.39%**
Methodology 2	n.a.	n.a.	**480,960**	**482,478**	**483,697**	**489,889**	**496,249**	**502,782**	**509,509**	**0.26%**

Source: BDL enplanements are based on the airport traffic statistic report 2013. BDL operations are based on aircraft operational count 2000 to 2013. U.S. DOT T-100 database. FAA Terminal Area Forecast (TAF), February 2014. AECOM analysis.
Note: n.a. denotes not available.

3.4.4.3 Military Aircraft Operations

Historical military operations were identified in the Connecticut airport system. Six CAA-owned airports, five municipally-owned airports, and one private airport have military operations based on the FAA TAF, FAA Form 5010-1 record, and available statistic report from airports as presented in **Table 3-11**. The FAA TAF issued in February 2014 includes historical records up to 2012, and the 2013 data is an estimate. The military operations for 2013 are compiled based on the estimate from FAA TAF for 2013 and updated if there is a more recently issued Form 5010-1 record or airport statistic report. The number of annual military operations at Connecticut airports was projected to remain at the same level as the base year. Military activity varies with many unpredictable factors such as the political climate and the variation in government funding on military activities. Without any specific information from the military, it is recommended to assume the military activity will remain constant throughout the planning period for each Connecticut airport. The total operations forecast include the constant military aircraft operations as presented in **Table 3-10**.

Table 3-11: Military Aircraft Operations for Connecticut and Individual Airports

Airports	Military Aircraft Operations Based Year 2013
CAA-Owned Airports	
Bradley International Airport (BDL)	2,558
Groton-New London Airport (GON)	2,456
Hartford-Brainard Airport (HFD)	117
Waterbury-Oxford Airport (OXC)	1,425
Windham Airport (IJD)	200
Danielson Airport (LZD)	30
Municipally-Owned Airports	
Tweed-New Haven Regional Airport (HVN)	455
Igor I. Sikorsky Memorial Airport (BDR)	186
Danbury Municipal Airport (DXR)	111
Robertson Airport (4B8)	55
Meriden-Markham Municipal Airport (MMK)	18
Privately-Owned Airports Open for Public Use	
Skylark Airpark (7B6)	20
Total Military Aircraft Operations	**7,631**

Source: All NPIAS airports are based on FAA TAF issued February 2014 except BDL and HVN. BDL record is based on the airport statistic report while HVN record is based on Form 5010-1 dated March 2014. Non-NPIAS airport 7B6 record is based on Form 5010-1 dated November 2012.

3.4.4.4 Total Aircraft Operations

The total forecast aircraft operations for the airports in Connecticut are obtained by the summation of the commercial, air taxi, general aviation and military aircraft operations for the different methodologies described above. The total operations for NPIAS airports and total Connecticut airports including non-NPIAS airports were reviewed. This plan applies the second methodology for commercial operations based on FAA TAF and the first methodology for general aviation and air taxi operations based on available Airport Master Plan Updates, FAA TAF and Form 5010-1 records with a combined overall average annual growth rate of 0.62 percent for total operations in the Connecticut airport system. This

growth of 0.62 percent per year in total operations is in line with the FAA forecast for Connecticut at 0.6 percent, which is similar to the growth in New England and slightly lower than the 0.7 percent growth for the entire national airport system. The results are summarized in **Table 3-12**. The total statewide airport operations for the 20 public-use airports are projected to increase from 600,374 in 2013 to 683,822 in 2035 with an AAGR of 0.62 percent over the 20-year planning period.

3.5 Summary of Aviation Demand Forecast

Tables 3-12, **3-13**, and **3-14** summarize the total operations, enplanements and based aircraft for the Connecticut statewide airport system and the 20 public-used airports within the planning horizons 2015, 2020, 2025, 2030, and 2035 respectively.

Table 3-12: Summary of Total Forecast Operations for Connecticut and Individual Airports

	Total Forecast Operations					
	2015	2020	2025	2030	2035	AAGR 2015-2035
CAA-Owned Airports						
Bradley International (BDL)						
	97,905	107,052	115,587	124,893	133,808	1.57%
Groton-New London (GON)						
	40,656	44,476	48,487	52,880	57,693	1.77%
Hartford-Brainard (HFD)						
	80,817	81,917	83,817	85,717	87,660	0.41%
Waterbury-Oxford (OXC)						
	46,981	48,017	49,079	50,165	51,276	0.44%
Windham (IJD)						
	14,603	14,863	15,116	15,352	15,583	0.33%
Danielson (LZD)						
	22,102	22,102	22,102	22,102	22,102	0%
Subtotal	**303,064**	**318,427**	**334,187**	**351,109**	**368,122**	**0.98%**
Municipally-Owned Airports						
Tweed-New Haven Regional (HVN)						
	31,662	32,312	33,012	33,768	34,593	0.15%
Igor I. Sikorsky Memorial (BDR)						
	62,167	63,014	63,879	64,766	65,681	0.28%
Danbury Municipal (DXR)						
	66,547	68,336	70,194	72,120	74,123	0.54%
Robertson (4B8)						
	21,105	21,105	21,105	21,105	21,105	0%
Meriden-Markham Municipal (MMK)						
	16,226	16,226	16,226	16,226	16,226	0%

	Total Forecast Operations					
	2015	2020	2025	2030	2035	AAGR 2015-2035
Subtotal	**197,707**	**200,993**	**204,416**	**207,985**	**211,728**	**0.34%**
Privately-Owned Airports Open for Public Use						
Chester (SNC)						
	15,827	15,827	15,827	15,827	15,827	0%
Simsbury (4B9)						
	12,775	12,775	12,775	12,775	12,775	0%
Goodspeed and Seaplane Base (42B)						
	6,230	6,230	6,230	6,230	6,230	0%
Ellington (7B9)						
	27,120	27,120	27,120	27,120	27,120	0%
Skylark Airpark (7B6)						
	15,920	15,920	15,920	15,920	15,920	0%
Waterbury-Plymouth (N41)						
	14,100	14,100	14,100	14,100	14,100	0%
Toutant (C44)						
	200	200	200	200	200	0%
Candlelight Farms (11N)						
	11,000	11,000	11,000	11,000	11,000	0%
Salmon River Airfield (9B8)						
	800	800	800	800	800	0%
Subtotal	**103,972**	**103,972**	**103,972**	**103,972**	**103,972**	**0%**
Statewide Total						
Connecticut Total Operations	**604,743**	**623,392**	**642,575**	**663,066**	**683,822**	**0.62%**

Table 3-13: Summary of Forecast Enplanements for Connecticut and Individual Airports

	Forecast Enplanements					
	2015	2020	2025	2030	2035	AAGR 2015-2035
CAA-Owned Airports						
Bradley International (BDL)						
	3,041,624	3,369,977	3,647,889	3,937,322	4,248,166	1.68%
Groton-New London (GON)						
	18	18	18	18	18	0%
Hartford-Brainard (HFD)						
	12	12	12	12	12	0%
Waterbury-Oxford (OXC)						
	86	86	86	86	86	0%
Subtotal	**3,041,740**	**3,370,093**	**3,648,005**	**3,937,438**	**4,248,282**	**1.68%**
Municipally-Owned Airports						
Tweed-New Haven Regional (HVN)						
	39,520	45,238	51,779	59,270	67,849	2.74%
Igor I. Sikorsky Memorial (BDR)						
	87	87	87	87	87	0%
Subtotal	**39,607**	**45,325**	**51,866**	**59,357**	**67,936**	**2.73%**
Statewide Total						
Connecticut Enplanement	**3,081,347**	**3,415,418**	**3,699,871**	**3,996,795**	**4,316,218**	**1.70%**

Table 3-14: Summary of Forecast Based Aircraft for Connecticut and Individual Airports

	Forecast Based Aircraft					
	2015	2020	2025	2030	2035	AAGR 2015-2035
CAA-Owned Airports						
Bradley International (BDL)						
	58	66	74	79	84	1.87%
Groton-New London (GON)						
	55	61	67	73	80	1.89%
Hartford-Brainard (HFD)						
	157	159	163	168	173	0.49%
Waterbury-Oxford (OXC)						
	183	199	215	230	245	1.47%
Windham (IJD)						
	68	68	70	71	72	0.29%
Danielson Airport (LZD)						
	37	37	37	37	37	0%
Subtotal	**558**	**590**	**626**	**658**	**691**	**1.07%**
Municipally-Owned Airports						
Tweed-New Haven Regional (HVN)						
	44	48	53	58	63	1.81%
Igor I. Sikorsky Memorial (BDR)						
	205	230	258	288	318	2.22%
Danbury Municipal (DXR)						
	271	281	291	301	311	0.69%
Robertson (4B8)						
	0	0	0	0	0	0%
Meriden-Markham Municipal (MMK)						
	70	77	84	89	94	1.48%
Subtotal	**590**	**636**	**686**	**736**	**786**	**1.44%**
Privately-Owned Airports Open for Public Use						
Chester (SNC)						
	123	123	123	123	123	0%
Simsbury (4B9)						
	12	12	12	12	12	0%
Goodspeed and Seaplane Base (42B)						
	33	33	33	33	33	0%
Ellington (7B9)						
	34	34	34	34	34	0%
Skylark Airpark (7B6)						
	61	61	61	61	61	0%
Waterbury-Plymouth (N41)						
	14	14	14	14	14	0%
Toutant (C44)						
	4	4	4	4	4	0%
Candlelight Farms (11N)						
	14	14	14	14	14	0%
Salmon River Airfield (9B8)						
	9	9	9	9	9	0%
Subtotal	**304**	**304**	**304**	**304**	**304**	**0%**
Statewide Total						
Connecticut Based Aircraft	**1,452**	**1,530**	**1,616**	**1,698**	**1,781**	**1.03%**

Chapter 4: System Challenges and Needs Assessment

4.1 System Challenges

This chapter presents the challenges facing the Connecticut airport system and identifies the primary enhancements needed to maintain the system's effectiveness as a coordinated aviation system and as an economic driver. Aviation industry trends, various state-specific dynamics, neighboring state influences, and capacity/development constraints impact the Connecticut aviation system. These impacts affect the ability of individual airports to handle changes in activity consistent with their functional roles, which in turn, affects the adequacy of the statewide system. Because airports serve comparably higher-end economic contributors than other transportation infrastructure, the economic advantages of airport improvements are often disproportionate. For this reason, actions that restrict, or contrastingly, incentivize aviation activity affect overall economic vitality and competitive position of a region or an entire state. In order to maximize aviation's economic benefit to Connecticut, potential solutions to the various challenges and needs of the system will be addressed in this chapter.

Key challenges associated with each of the system impact categories are highlighted in **Table 4-1** and discussed with regard to specific airports throughout the chapter.

Table 4-1: Connecticut System Challenges

Category	Challenges or Influences
Aviation Industry Trends	• Aircraft Size and Performance • Cargo Growth • Viability of General Aviation • Airport Traffic Control Tower Closures • Socioeconomic Conditions
In-State Dynamics	• Airport Development Restrictions and Incentives • Airport Roles & Closures • Governance Structures
Neighboring State Influences	• Commercial Airport Proximity • Destinations Served • Competition for Cargo • Vying for Business Aircraft
Capacity/Development Constraints	• System Capacity • Physical Constraints • Environmental Regulations • Varying Political/Municipal Viewpoints • Community Perception

4.2 Aviation Industry Trends

As described in Chapter 3, the demand for aviation transportation and the resulting facilities needed to support that demand stem from several factors. Commercial air service operations as well as enplanements, cargo, and general aviation activity are influenced by a variety of socioeconomic conditions such as employment, income, and population. Economic conditions in the past several years have depressed the overall demand for aviation, both nationwide and in Connecticut, but the current economic outlook is much more positive and various sectors of aviation activity are expected to grow with the economy. The longer term trends will occur incrementally over time and are specific to the different types of aviation activity. Over time, the incremental changes in activity will alter the facility needs of individual airports, and thus, can be reasonably anticipated and planned. The trends are also important for airport strategic business planning purposes such as targeting specific niche markets and developing competitive strategies to gain advantage relative to competing airports. In some cases, it will be necessary to develop innovative approaches to revenue generation in order to maintain the business viability of an airport or to maintain the comparable levels of subsidy. In other cases, the challenge will be placed on how or where to accommodate projected growth in activity. By understanding the current and projected industry trends and how they impact demand, Connecticut can better prepare for and manage the resources required to meet the aviation needs of the state. The following sections break out the aviation industry trends by specific market segment: commercial air service, air cargo, general aviation, and recent developments.

4.2.1 Commercial Air Service

Since 2000, enplanements in the United States grew at an average annual growth rate (AAGR) of 0.3% while operations decreased by 1.6%. Commercial air service faced substantial consolidation in the airline industry resulting in a significant realignment of air services. In order to compete in a new consolidated market environment, the airlines are reducing the number of network hubs, concentrating heavily on high population cities and destinations while reducing frequency elsewhere, increasing the size of aircraft to increase the seats available per flight, eliminating service on non-profitable routes and at “spoke” airports, and modifying price structures to increase yield (i.e., profit per seat). The trend toward larger aircraft influences runway length requirements, terminal gate configuration and interior space requirements, and passenger processing support needs. The combining of the large airlines has also affected passenger flow through the airline terminal with passengers now transiting between gates for which a secure connection was previously not needed and may not yet exist. The shift toward user-fees, or add-on services, can produce an impact on terminal system requirements and function (e.g., checked and carry-on baggage fees). Changes in technology, particularly telephone applications have altered passenger flow, potentially reducing the space needed in the non-secure area. Finally, security enhancements have trended toward increased terminal space requirements. It should also be noted that some of the urgency for airside capacity improvements, particularly new parallel runways, was reduced as additional passengers are being accommodated on fewer flights. Many airports have either deferred implementation of these planned major improvements or are altering airport plans to identify other improvements for the areas previously protected.

Dramatic changes have also occurred in the "regional" airline market, which was previously known as the "commuter" or "feeder" networks. During the late 1990s and early 2000s, the small (30 seats or less) turbo-prop commuter planes were largely replaced with smaller "regional jets" of 30 to 70 seats that are more efficient on longer routes. The small turbo-prop aircraft are no longer being manufactured and have mostly exited the system. Those regional jets are also no longer in production and are being phased out in preference for 90+ seat small jets. The trend impacted the traditional "commuter terminal" design model by replacing lower-level apron boarding through a common holdroom to a modified loading bridge and apron space more consistent with a mainline carrier operation. Throughout the U.S. today, overcrowding is occurring in former "commuter" sections of the terminal designed for use by smaller turbo-props such as lower-level holdrooms, upper-level connecting corridors between concourses, and dedicated "commuter" terminals. The impact on regional airports has been dramatic: service discontinuation and reduction at many airports and major airside and terminal improvements at others. The impact to regional airports is ongoing, not yet having been fully realized with additional smaller regional jets still in operation.

The airline trend implications are particularly important for the Connecticut System of Airports, which currently includes only two airports with scheduled commercial service: Bradley International Airport (BDL) and Tweed-New Haven Regional Airport (HVN). From a statewide perspective, Connecticut's total passenger demand is projected to increase (see Chapter 3, Section 3.2.2.1). The increase will largely be accommodated at BDL. HVN in particular has challenges that need to be resolved to retain and also attract scheduled air service:

- Aircraft model retirement— HVN has one airline (US Airways; now American) serving one city (Philadelphia) flying a 30-seat Bombardier Q200. The aircraft is no longer being manufactured and the model is being retired by the airline. All potential replacement aircraft are larger: 70-seat Bombardier Q400 (which US Airways does not operate) and regional/small jets (50-110 seat aircraft manufactured by Bombardier and Embraer; the 50-70 seat-size aircraft are also no longer in production).

- Threshold passenger demand— the volume of passenger activity at HVN may be insufficient to retain service by the larger aircraft assuming a break-even level of activity to operate a station is 3 to 4 departures per day. An optimistic (i.e., low) threshold of retention is 61,320 annual enplanements, which assumes a 70-seat replacement airplane, 3 departures per day, 80% load factor and could be as high as 118,260 (90-seat, 4 departures, 90% average passenger load). HVN had just over 37,400 enplanements in 2013.

- Airside facilities— HVN's primary runway is 5,600 feet long. The Q400 turbo-prop requires 5,800 feet or more (during winter conditions). Commercial jet aircraft (depending on the length of haul) would require at least 6,000 feet. The technical feasibility of accommodating an extension is unknown given environmental restrictions pertaining to coastal zone and wetlands; HVN's policy restrictions to airport activity and development are also a factor in determining the level of community and carrier support that could be garnered.

- Terminal facilities— the doubling (or tripling) of seats on each flight would dramatically increase the amount of terminal building space required to house them. This would be true even if the number of flights and total passengers were to decline. Assuming reasonably full airplanes, investment in the terminal facility would be necessary to provide adequate functional and processing space.

- Airline and route considerations— Because of the shift toward larger, jet aircraft, the distance between average city-pair routes has been increasing. Current short-haul regional routes can be expected to range between 500 and 1,000 miles. Since Philadelphia is only 150 miles away, it is possible that continued scheduled service would be to a more distant destination.

Chapter 6 will explore potential HVN air service scenarios in addition to the potential of air service returning to Igor Sikorsky (BDR) and Groton-New London (GON). These two airports would be expected to encounter similar facility challenges if they were to reacquire airline service. HVN's geographic location is advantageous given its central-shore location in southern Connecticut and its proximity from competing airports in neighboring states. Potential niche markets that are underserved by BDL and Westchester County Airport could be coordinated at the statewide level for air service entry into BDR. Similarly, market transportation gaps in the eastern portion of the state can be improved with the entry of air service to GON. From a statewide perspective, given the significant market overlap, the ability to reacquire and maximize airline service potential may only be feasible if coordinated within the state's system of airports.

Air Service at BDL is expected to increase. BDL serves a largely "regional" market and functioning as a "spoke" within the airline networks. In this role, BDL serves a large regional base bounded by competing airport catchments offering overlapping services with some overlapping capture areas. As aircraft size continues to increase, it is possible that the air carriers could elect to reduce service in those overlapping markets. In the extreme, one airline competitive models could be reflected in the airports themselves (e.g., Airline A consolidates operations at Airport A, discontinuing service at B and C; and vice versa). To maintain and increase market share, BDL may concentrate on: airline cost and service structures, maintaining frequent communications with its air carriers to obtain a deep understanding of their strategies in relation to BDL's role, actively promoting the airport and it's services, improving intra-state transport to/from BDL, maintaining a customer service emphasis to improve passenger convenience over the competing airports, and by aggressively establishing new markets (e.g., international, west coast non-stop). The best system-wide response for capturing of the state's passenger demand may be to strengthen mainline service growth opportunities at BDL while targeting specific niche markets at HVN and potentially BDR and GON.

4.2.2 Air Cargo

Air cargo traffic continues to recover following the prolonged economic slowdown and high fuel prices. ACI-NA forecasts cargo traffic, measured in ton-miles, to triple in growth from 2009 to 2029, with domestic cargo traffic projected to increase at a rate of 2.9% per year through 2029 and international traffic anticipated to increase at a rate of 5.8% per year. The upsurge in domestic and international activity, after more than a decade of flat growth, is spurred largely by: a strengthening economy having positive growth expectations, low fuel prices, and rapid growth of e-commerce. E-commerce, which focuses fundamentally on small-package express service, is particularly helpful in supporting U.S.

duopoly carriers FedEx and UPS. The anticipated growth in air cargo is reflected in projected new aircraft development strategies, Boeing anticipates 70% of new airplanes scheduled for delivery will be large freighters such as the B-747-8 and 777 in addition to significant passenger-jet-to-freight conversions that combined will produce a 48% growth in carrying capacity by 2033. In order to attract and promote cargo growth at BDL, a potential redevelopment into a consolidated cargo area should consider accommodations for these aircraft as well as airfield modifications to standards for the safe operation of Aircraft Design Groups (AGD) V and/or VI aircraft. Passenger carriers are expected to have minor impact due to the limited "belly capacity" associated with narrowbody aircraft. Transport between regional air cargo hubs (e.g., BDL) is typically conducted by a combination of trucking and small air couriers. BDL is in close proximately to highways including I-91, I-84, and I-90 to accommodate trucking operations. Additionally, a new Amazon facility located near BDL may afford BDL increased cargo opportunities. It is unclear if new entrants will enter the air cargo market or if Unmanned Aerial Vehicles (UAVs) may have an application as recently advocated by Amazon Prime Air.

Three quarters of BDL's air freight currently moves on flights operated by U.S. domestic integrated carriers including FedEx and UPS. It is expected that BDL's strategic location between two international gateways, JFK and BOS, will result in cargo tonnage continuing to increase. BDL offers a less congested alternative to major passenger hub airports.

4.2.3 General Aviation

The anticipated growth in general aviation (GA) activities is in "high-end" general aviation activity dominated by turbine aircraft (e.g., 8+-seat turbo-jets and turbo-props) often operated by fractional operators or large corporations. Meanwhile, light GA operations (e.g., piston-engine single and multi-engine having 6 seats or less) are predicted to decline. As a result of these trends, small GA airport operators (e.g., those having a maximum runway length less than 5,000 feet) must adapt new revenue structures in order to remain operationally viable. Potential options include airport modifications to capture more lucrative "higher end" aircraft operations, undertaking non-aviation business development on surplus airport property, and airport closure. Airports having longer runways may increase business development activities to attract business operators to their communities, undertake educational outreach programs to increase community support for expanded economic development opportunities, and developing land use and site planning strategies intended to maximize revenue and support (or establish) local industry.

In Connecticut, BDL and Groton-New London Airport (GON) account for more than 50 percent of turbine operations. BDL and Igor I. Sikorsky Memorial (BDR) account for 50 percent of fractional operations in the state. Waterbury-Oxford (OXC) has seen increased based aircraft over the past several years and operations have also increased, most notably in the "high end" market, or corporate jet activity. New York's Dutchess County Airport (POU) specifically credits OXC for attracting "high end" operators desired by POU (Dutchess County Airport Operational and Financial Assessment, December 2013).

Five Connecticut airports, BDR, GON, Danbury Municipal (DXR), Hartford-Brainard (HFD), and OXC account for nearly 70 percent of total light GA flights in the state. These airports are key assets for harnessing the economic contribution of the state aviation system forming a proactive response in support of high-end GA activity. The needs of these assets may include: additional runway length; meeting current safety standards; pavement strengthening, approach/departure corridor protection; advanced

navigational aids, weather reporting systems, and communications systems; on and off-airport land use compatibility planning, establishing minimum operational/development standards, promotional outreach efforts, and community/statewide outreach efforts, and strategic business planning.

4.2.4 Recent Developments

This section identifies a number of trending developments that could have an impact on the national and statewide airport system. Although the outlook for each of the developments identified is speculative, active monitoring is advisable for purposes of deliberating potential responses for minimizing risk, identifying new opportunities for economic growth, and identifying potential competitive advantages within Connecticut's aviation system and contributing infrastructure.

- **NextGen Component Rollout -** The Next Generation Air Transportation System (NextGen) is a new National Airspace System (NAS) being incrementally rolled out over an extended number of years. NextGen replaces the current system that is dependent on radar surveillance, ground-based navigational aids, and radio communications. The systemic transition to NextGen includes: satellite-based navigation, data-link communications, and greatly enhanced on-board informational displays that largely transform the system to self-contained on-board equipment. The intention is to significantly enhance overall safety, capacity, and efficiency of the NAS. Many elements of NextGen, such as GPS-based flight procedures, are in place. It may be advantageous for Connecticut to encourage and support the implementation of NextGen components as they are rolled out in order to realize the performance benefits. Benefits may include: increased all-weather access at new locations, reduced potential for operational error, increased airport and airspace capacity, environmental benefits particularly for noise and air quality, and as a potential attractant of "high-end" operators. NextGen implications to the individual airports comprising the system include the need for improved mapping accuracy and obstacle tracking, reduced navigational aid setback restrictions, reduced on-airport infrastructure improvements and maintenance, and a potential need for additional weather reporting and increased safety setbacks associated with new instrument procedures.

- **Control Tower Closures -** Historically in the U.S., the Federal Aviation Administration (FAA) provides air traffic control services through a system of facilities, including airport traffic control towers (ATCTs). Towers are categorized as Level I through Level V with Level I having the lowest activity. Level I towers are a budgetary challenge for FAA. Many Level I towers were operated as "contract towers" to reduce (or eliminate) the FAA's financial burden. Regardless of the near-term decisions specific to "contract" and "low activity" towers, multiple avenues of pressure will continue to reduce the number of staffed ATCTs. Examples include: continued progress toward the NextGen navigation platform intended to automate many navigation, reporting, and control functions into onboard equipment; declining activity at many GA airports; and potential emerging privatized control systems such as remote/ multi-airport control. Six ATCTs are at risk in Connecticut: Igor I. Sikorsky Memorial, Danbury Municipal, Groton-New London, Hartford-Brainard, Tweed-New Haven, and Waterbury-Oxford.

- **Unmanned Aerial Vehicles (UAVs) -** Pilotless or remote piloted aircraft, sometimes referred to as "drones", are being introduced to the airspace system. The implications are not fully understood at this time but have the potential to significantly alter the airspace traffic dynamics in a short timeframe

given the significant interest in a wide variety of potential applications: police and fire, news coverage, utility inspection, environmental reconnaissance and survey, aerial photography and mapping, organ transport, weather observation, aerial advertising, and express parcel delivery. State transportation agencies will likely be called upon to facilitate education and understanding while simultaneously supporting the growth of the emerging industry applications.

- **Commercial Space Industry -** There are fourteen active and six proposed launch sites (Spaceports) in eleven states and two additional proposed offshore sites under U.S. regulation. No commercial spaceports are currently planned for Connecticut. Should interest emerge, the FAA licenses spaceports according to the types of launch and reentry vehicles to be used. As part of the permitting process, protected airspace protection zones are established to support launch and recovery so as to minimize risk to the public (e.g., over water corridors are common). Spaceport facilities are also commonly defined within the boundaries of an existing airport.

4.3 In-State Influences and Challenges

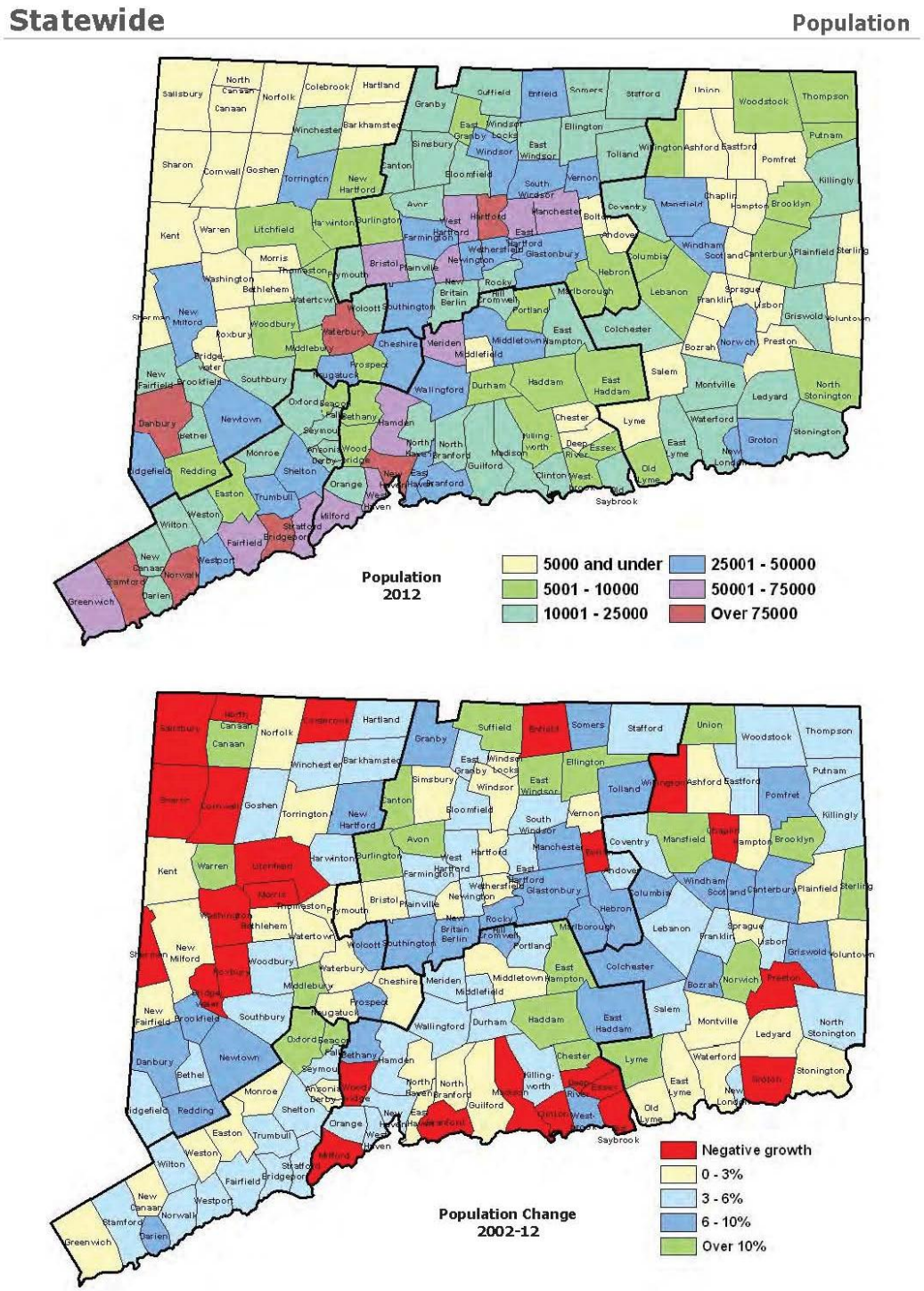
In addition to industry trends, in-state influences and challenges impact the aviation system. Growth and development incentives, airport roles, and governance structures all contribute to the outlook of the state's aviation system as well as how the system can react to industry trend challenges.

4.3.1 Socioeconomic Trends

Socioeconomic trends affect the demand for transportation, including aviation. Regions that are expected to experience economic growth tend to have increased air travel needs. National, regional, and local socioeconomic conditions influence aviation demand, affecting the roles and needs of the individual airports within the state system.

Connecticut's current population is approximately 3.6 million and is anticipated to grow minimally to 3.7 million by 2025. The population is more heavily in the southwest portion of the state closest to New York, the north and south central areas, and generally along the coast while the northwest and northeast areas have lower densities. Between 2002 and 2012 the populations of the central and eastern areas experienced higher growth rates while populations in the northwest and central coastal areas are declining. During that period, the growth was not overly disproportionate by area, particularly given the low overall increase in population, but trended more towards the northeast and center, filling in areas of comparatively low density. The trend is generally indicative of higher activity at BDL and central GA airport that would seemingly support aviation activity retention. The housing market is beginning to recover and is being led in the southwest and northwest sections that could result in aviation activity leakage to New York airports.

Figure 4-1: Connecticut Population (2002-2012)



Source: Connecticut Department of Labor, 2013 Information for Workforce Investment Planning

4.3.2 Growth and Development Incentives

The Connecticut Airport Authority (CAA), Bradley Development League, the MetroHartford Alliance, Department of Economic and Community Development, and key state legislators developed the Bradley Airport Development Zone (BADZ) in 2010. The BADZ is land available for development both on airport property and on surrounding property. The available BADZ land boosts tax incentives to companies that develop or acquire property. The BADZ for BDL extends into East Granby, Windsor, Windsor Locks, and Suffield. To date, five companies, Multi-Mode Logistics, LLC (logistics and supply chain management), Nufern (optical fibers, fiber sensors, and fiber lasers), Merchandising Partners LLC (merchandising needs including packaging, fabrication, and distribution), International Transfer Service Inc. (trucking, warehousing, and crating), and Metal Finish Equipment and Supply Co. (metal finishing equipment manufacturer), have taken advantage of the BADZ to either grow or expand their operations.

These companies as well as future companies that capitalize on the tax incentivized land provide increased investments in the region, job creation, and additional state revenue.

In order to expand the BADZ and encourage business growth in Connecticut, the law which created the BADZ was expanded to boost development around all CAA-owned and operated GA airports. The Town of Oxford's Economic Development Commission identified 2,500 acres of industrial land in the vicinity of the Waterbury-Oxford Airport (OXC) that will have tax incentives for development. Groton-New London Airport (GON) is also exploring the potential of extending their current zone beyond the existing specified airport radius.

Through the creation of the BADZ and similar zones, the CAA and Connecticut have successfully leveraged the advantages associated with boosting transportation gateways and capitalizing on undeveloped land surrounding an airport to support economic growth and development. Development on the tax incentivized land will improve the economic vitality of the state and in turn, Connecticut's aviation system.

4.3.3 Airport Roles

The FAA categorizes airports into roles based on the availability of commercial air service as well as activity levels. Each airport within the National Plan of Integrated Airport Systems (NPIAS) contributes to the overall aviation system in the United States. The various assigned roles determine the need for facilities and services at each airport. As such, this state system plan recognizes the airports and their roles that contribute to the state aviation system in Connecticut in order to evaluate the individual and statewide airport needs.

Figure 4-2: Airport Roles

Thirteen of the 20 state system airports in Connecticut are included in the NPIAS. The NPIAS classifies two as commercial-service airports (BDL and HVN) and 10 as general aviation airports. Waterbury-Oxford and Igor I. Sikorsky Memorial are the only general aviation airports identified within the state that have been classified by the FAA as national assets, denoting their very high value to the national airport system. Currently, CAA is working with Waterbury-Oxford and the U.S. Customs and Border Protection to provide inspection and processing facilities as a port of entry. The remaining seven public-use GA airports are not included in the FAA's NPIAS. These non-NPIAS airports generally have limited facilities and services that support predominantly light-weight (i.e., small aircraft) general aviation activities.

Overall, the NPIAS-defined roles are sufficient and may not change over the short term. HVN, BDR, and GON are the most likely to experience NPIAS role changes within the system based on commercial air service. If air service were to end at HVN, the airport NPIAS role would change from commercial service to reliever or general aviation. Additionally, if air service were to resume at BDR and/or GON, these airports would become commercial service airport roles rather than general aviation.

Some of the non-NPIAS airports, in particular, may be at risk for closure with further declines in light general aviation activity. Functional activity changes may include: scheduled international service at BDL and physical accommodations at larger airports (e.g., runway enhancements, paved apron, and hangar development) that support additional "high end" (corporate) aircraft. Over time, most airports will seek to increase and diversify revenue, which will likely result in additional non-aviation development near airports. While the revenue enhancements may be necessary to support continued viability and also provide localized economic value, the compatibility of the development with aviation activity should be closely monitored.

4.3.4 Part 139 Certification

Within Connecticut, four airports (BDL, HVN, BDR, and GON) maintain Part 139 certificates. Part 139 operating certificates are required by the FAA at airports that:

- Serve scheduled and unscheduled air carrier aircraft with more than 30 seats;
- Serve scheduled air carrier operations in aircraft with more than 9 seats but less than 31 seats;

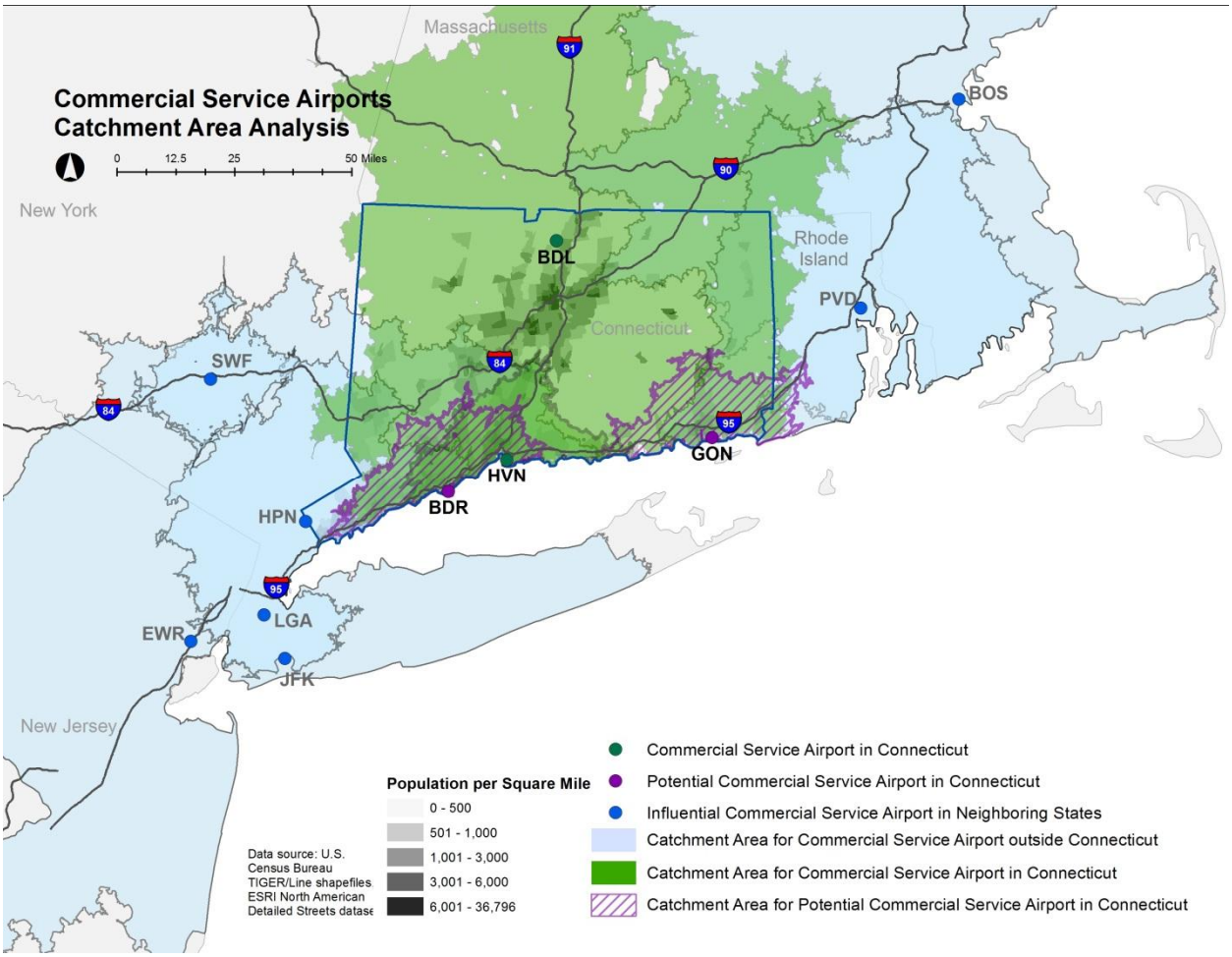
Airports certificated under Part 139 must maintain certain safety standards. These include aircraft firefighting and rescue services and equipment including stringent emergency response times; the conduct of full-scale emergency response simulations every two years; and daily safety inspections and repair of key safety and security features (e.g., pavement, fences/access gates, lighting, signage, marking, debris clearing, etc.) The Airport Certification Manual (ACM) documents the details about how the airport complies with the FAA certification requirements.

The ACM is developed and maintained by the airport operator. The airport is annually inspected by FAA certification inspectors to confirm compliance and correct deficiencies. Maintaining the certification results in increased airport operating costs to support the additional operations and emergency response staff and maintenance/ repair schedules. The additional safety benefits, particularly the rescue and firefighting capabilities, are desired by all operators even though the purpose is to support common carrier operations involving the flying public. Some airports maintain Part 139 certification as a marketing tool to attract “high end” operators even when it is not required to support airline service. Generally, many airports catering to “high end” operators, particularly airports that had airline service that was subsequently discontinued and unlikely to return, elect to operate a non-certificated safety program that retains certain safety elements at a reduced cost. Further discussions on funding are in Chapter 5.

BDL and HVN serve the NPIAS role of primary commercial service airports and are required to have a Part 139 certificate. BDR and GON, both GA NPIAS airports, do not currently handle scheduled air service but continue to maintain their Part 139 certifications since the cessation of air carrier service at those locations. **Figure 4-3** approximates the catchment areas for commercial service airports affecting the state, including the potential areas to be serviced by GON and BDR. Given the market overlap, the desire to retain passengers within the state, and the facility upgrades needed to reacquire and maintain passenger service beyond BDL would require systemwide coordination that streamlines marketing, negotiation, and development objectives. Regardless of the level of coordination, so long as GON and BDR continue to seek passenger service, they should maintain their Part 139 certification. Likewise, the certification should be dropped upon the removal of that objective from the operator’s strategic vision for the facility.

As indicated above, the facilities needed to satisfy the objective of acquiring and retaining air service are significant as both would require a runway extension and passenger terminal development. At BDR, the existing infrastructure is significantly constrained by surrounding land use and numerous environmental factors. The existing runway infrastructure is in need of significant repair and will likely occur after the current runway safety area improvements and State Route 113 relocation are completed.

Figure 4-3: Commercial Service Airports Catchment Area Analysis



4.3.5 Airport Closures

Airport closures pose a major risk to the state aviation system. When an airport closes, its aircraft and operations must be redistributed. The magnitude of activity at the closed airport would determine if nearby airports could absorb the activity. The primary consideration is aircraft storage. Light GA aircraft in particular have relatively low volumes of flight activity and that rate of activity has also been declining. In addition, the capacity of individual airport's to accommodate additional stored aircraft is generally much more limiting than the airfield operating capacity to accommodate additional operations. Several airports have evaluated or are presently considering closure and conversion to non-aviation use.

- **Simsbury Airport (4B9)** - The Airport is located in the Town of Simsbury and is currently owned by Airport Realty Association, Inc., a privately-owned company based in West Hartford. According to a 2009 Feasibility Study, the Airport provides some GA relief to BDL. Municipal acquisition by the Town of Simsbury has been considered. Acquisition of the Airport involves a degree of financial "risk" and is dependent on stable aviation demand. There was no recommendation for municipal acquisition outlined in the 2009 report. If the Airport were to close, its activity including recreational, flight training, and some business use would likely be

diverted to Bradley International Airport, Hartford-Brainard Airport, and Robertson Field. Simsbury Airport currently remains operational under private ownership.

- **Ellington Airport (7B9) -** The airport is privately owned by JLM Associates and serves recreational, flight training, and some business use. The Town of Ellington conducted a feasibility study in 2010 to assess potential transfer to the municipality. It concluded that the Airport operates at a "break-even" status and is at risk of closing based on the future stability of aviation demand. It also concluded that the Airport is only a modest economic benefit to the town, not an economic driver, but that it does support the economy. If the Airport were to close, its activity would likely be diverted to Bradley International and Hartford-Brainard airports.

- **Skylark Airpark (7B6) –** Skylark Airpark is currently owned by Skylark Airpark, Inc., and caters to private, corporate, and charter aircraft. The Town of East Windsor conducted a Feasibility Study in 2013 to operate the airport and concluded that it operates at a "break-even" status. If the Airport were to close, its based aircraft would likely seek relocation to Hartford-Brainard or Ellington Airports.

- **Danbury Airport (DXR)** - The City of Danbury implemented a Task Force in 2012 that explored the process of airport closure to expand opportunities for economic development. DXR is classified in the NPIAS as a reliever airport and had nearly 300 based aircraft and more than 67,000 operations in 2012. The Task Force highlighted the significant level of activity and importance of the airport to the region and therefore, recommended that the airport remain operational. The Task Force also recognized the desirability for continued growth of the airport. Additionally, Chapter 5 of this report identifies DXR potential for acquiring additional "high end" activity sought by Connecticut given its proximity to important Connecticut and New York markets. DXR's runway length and approach/departure obstructions may, however, limit its competitive capability. Efforts to lower/remove obstructions and overcome development restrictions would help support the task force goals for enhancing this airport's contribution.

Chapter 6 includes a discussion of future scenarios including the effects of potential closures on the statewide system.

4.3.6 Governance

The governance structure of an airport determines how the airport is operated, maintained, and funded. Six airports in Connecticut are owned and operated by the CAA. Five airports are under their respective municipalities' ownership and nine are privately owned.

Table 4-2 summarizes the ownership for the airports in the Connecticut airport system and their associated cities.

Table 4-2: Ownership of Public Use Airports

Airport Name	Associated City	Owner/Operator
CAA-Owned Airports		
Bradley International (BDL)	Hartford	CAA
Groton–New London (GON)	Groton / New London	CAA
Hartford–Brainard (HFD)	Hartford	CAA
Waterbury–Oxford (OXC)	Oxford	CAA
Windham (IJD)	Willimantic	CAA
Danielson (LZD)	Danielson	CAA
Municipally Owned Airports		
Tweed-New Haven Regional (HVN)	New Haven	City of New Haven
Igor I. Sikorsky Memorial (BDR)	Bridgeport	City of Bridgeport
Danbury Municipal (DXR)	Danbury	City of Danbury
Robertson Field (4B8)	Plainville	Town of Plainville
Meriden-Markham Municipal (MMK)	Meriden	City of Meriden
Privately-Owned, Public Use Airports		
Chester (SNC)	Chester	Whelen Aviation
Simsbury (4B9)	Simsbury	Airport Realty Assoc. LLC
Goodspeed and Seaplane Base (42B)	East Haddam	Goodspeed Aprt LLC
Ellington (7B9)	Ellington	J.L.M. Assoc.
Skylark Airpark (7B6)	Warehouse Point	Skylark Airpark, Inc.
Waterbury (N41)	Waterbury	Killcourse, Shade & Seymour
Toutant (C44)	Putnam	Roland J. Toutant
Candlelight Farms (11N)	New Milford	Terry McClinch
Salmon River Airfield (9B8)	Marlborough	Salmon River Airfield Assoc.

The CAA was established in July 2011 to take on the role of owner and operator of six airports (BDL, LZD, GON, HFD, OXC, and IJD). Prior to the development of the CAA, operation of these airports was administered by the Connecticut Department of Transportation (ConnDOT). Oversight of the CAA includes an 11-member board of directors consisting of business, aviation, and government representatives; CAA's current focus is to capitalize on the economic opportunities available at and around these six airports in order to continue their growth as economic generators within the state.

Tweed-New Haven (HVN) is owned by the City of New Haven and located in both New Haven and the Town of East Haven. The airport is operated by the Tweed New Haven Airport Authority which is overseen by a 14-member Board of Directors. The City of New Haven and the State financially support the airport. A 2009 Memorandum of Agreement (MOA) between the City of New Haven, the Town of East Haven, and the Tweed-New Haven Airport Authority limits Runway 02-20 to 5,600 feet and establishes operational limitations on scheduled commercial air service. The established operational limitations are as follows:

- 30 commercial departures per day
- 180,000 commercial enplanements per year
- 700 parking spaces
- Six commercial service counters

In addition to the MOA, a state statute exists (Title 15, Chapter 267a) which also limits the runway length. The operational limitations have little impact on growth. However, as mentioned previously, the runway length restriction is significant in that it limits the type of aircraft that can serve HVN. While this report is being completed, there are ongoing discussions related to amending the state statute at HVN to allow to a runway extension which could alter the air carrier environment and open up new opportunities for HVN.

Igor I. Sikorsky Memorial (BDR) Airport, located in the Town of Stratford, is owned by the City of Bridgeport. An Airport Commission, comprised of the Council President as well as the two mayors from Bridgeport and Stratford, provide oversight. A challenge that has faced ownership is FAA recommended Runway Safety Area improvements. These improvements are currently underway after a 20-year planning and environmental process that was heavily contested and delayed due to area concerns to limit airport growth and to minimize off-airport impacts associated with the realignment of a state road in the Town of Stratford.

Danbury Airport (DXR) is owned and operated by the City of Danbury through an Aviation Commission. DXR is a self-sustaining airport that generates revenue from facilities and services at the airport which include aircraft maintenance, flight instruction, charters, hangars, and tie-down spaces. The governance challenge for Danbury includes zoning on and around the airport that has been evaluated by the City of Danbury in order to provide more flexibility for growth and development.

Robertson Airport (4B8) has been owned and operated by the Town of Plainville since the municipality purchased the airport in 2009. An Aviation Commission made up of seven regular members and two alternate members provide operating oversight such as fiscal management and capital improvements. The airport is leased by the Town to Interstate Aviation which operates four hangars. The Town continues to make enhancements to improve the airport including the addition of an instrument approach system to increase safety and encourage more operators to use the facility. The economic benefits of revenue and job creation as well as the public support for the airport help to drive its growth.

Meriden-Markham Municipal Airport (MMK) is owned by the City of Meriden. Operations are overseen by the Meriden Aviation Commission. The airport is considered a city asset and provides maintenance services that generate revenue.

The nine privately owned, public use airports vary in ownership structure from individual ownership, partnerships, or incorporated business and limited liability corporations. The management decision making and financial responsibilities associated with the airport are solely the obligation of the private owner.

4.4 Neighboring State Influences

Individual states vary considerably in their efforts to retain and attract aviation activity to facilitate economic growth; local governments and airport operators also vary along similar lines. Agencies that have proactive economic growth policies have a competitive advantage over neighboring agencies attractive to aviation industry operators. For example, taxes and overall cost structures are critical to any business or individual considering multiple locations. Other considerations that are cost related are also important factors: employment pool qualifications, transportation access, ability to expand, and proximity to customers, suppliers, and partner organizations. Common aviation-specific incentives include:

- **Economic Development Zone Establishment** - Usually tax incentivized areas set aside for certain transportation-dependent businesses.

- **Intermodal Connectivity** - Particularly bus and rail service between airports and downtown areas and also between airports. Smaller GA and commercial airport facilities are good transportation centers for accessing larger hub airports.

- **Land Use Protection Policies** - The federal government lacks the ability to directly control land surrounding airports needed to support growth, protect airport investment, promote safety, and support airport-community relations. State and local governments must fill this role, but these efforts vary significantly from non-existent to detailed programs of legal policies, oversight, and enforcement.

- **Direct Promotional Support** - Governing agencies recognizing aviation synergies often participate directly in airport business strategy initiatives. These include sponsoring (or co-sponsoring) market analysis studies and materials targeting certain operators, businesses, and industries and conducting "sales" meetings to lure these activities. The efforts produce actionable numeric data not previously collected or considered by the candidate operator. Advertising airline service (and new service, in particular) in catchment overlap areas is another example as airline marketing has largely been eliminated by the airlines themselves and is now an airport operator responsibility.

- **Direct Financial Support** - Cost is a significant factor for any operator, including aviation ones. Attracting large-scale operations is a significant and competitive undertaking for a community and/or airport operator. Options include airline incentives for new service including revenue guarantees and promotion, unencumbered land purchases and long-term lease, planning and design support for build-to-suit tenants, and development loans.

- **Low Cost Structures** - Aviation tenants shop around and compare operating and lease rates. Operators vary in terms of facility needs and form versus function so finding a balance that generally maintains a low cost or optimizes the cost-value duality.

- **Aviation-specific Taxes** - Most states charge a fee for aircraft registration, fuel distribution, and airport facility use. These factors tend to factor into final selection for aircraft operational decisions. Often an operator will locate in an adjacent state that has more favorable aviation cost structures, but that is close to a business interest in another state.

Many states continue to collect sales and use taxes. During the recent economic downturn and faced with significant budget deficits, many states became more aggressive in collecting the taxes. The states vary in how the use of the collected revenue can be spent: reinvest into the statewide aviation system or general fund. The extent to which tax structures and incentives are effective is largely dependent on the degree of flexibility that an operator or business has to locate a business in one state versus another and the net cost difference to relocate from one state to another in order to realize a tax advantage. Taxes are often an important consideration, but are not typically the first. Proximity to intended market (i.e. customers), employment base, total cost assessments (including taxes and incentives) are typically more prominent decision-making factors. For business operations, access to efficient transportation (including air travel) also features prominently revealing that the overall efficiency in travel with fewer restrictions; a business operating an aircraft would therefore take into account the effectiveness of the airport facilities.

New York recently passed the "New York Aviation Jobs Act", a general aviation sales and use tax exemption intended to specifically "level the playing field" with Connecticut, Massachusetts, and New Jersey. Passage of the new exemptions implicates a desire to reclaim aviation-related business activity lost to neighboring states. With the bill's passage, New York anticipates that existing aircraft maintenance facilities will expand their operations; companies would look to locate or relocate their business jets and operations to the state. The creation of additional jobs and induced economic activity is projected to offset and enhance state tax revenues.

Rhode Island's airport system is in many ways comparable to Connecticut. The state directly owns and operates 6 airports through the Rhode Island Airport Corporation (RIAC), which includes one primary commercial service airport, T.F. Green Airport (PVD), and general aviation airports. RIAC has, at times, contracted with commercial businesses to manage its five general aviation airports in order to focus organizationally on the development of PVD. The State Airport System Plan was completed in 2011 and includes seven goals, the first of which is to contribute to the state's economic growth while maintaining self-sufficiency. The state does not operate several privately-owned public-use airports and does not incorporate those facilities into its system plan other than for identification purposes. The state added some additional airport land use protections that include airport zoning requirements with airport hazard areas intended to protect the FAA-defined approach corridors. In 2005, the state eliminated sales and use taxes on general aviation aircraft to support aviation-related economic growth. Two of its airports (Westerly and Block Island) have limited commuter service utilizing small 9-seat twin engine aircraft providing scheduled transportation between the two airports.

Connecticut's approach to its airport system is progressive in its understanding and desire to foster the economic influence to benefit the state as a whole. Similar to Rhode Island, Connecticut has established a quasi-governmental authority in order to improve its operational and business effectiveness. Also similar to Rhode Island, the CAA directly operates several airports which enables a more efficient and coordinated system, but significant resources are largely attributed to one primary commercial-service airport. Many other states, including New York and Massachusetts, have state aviation departments through the state's Department of Transportation that tend to provide procedural oversight. In most states,

the coordination between different transportation modes and a focus on improving intermodal connectivity, land use planning, and economic development synergy is limited, though this is beginning to change as more states incorporate these elements into various transportation plans.

In addition to the above common strategies for maximizing aviation economic synergy, fourteen airports in New York, New Jersey, Massachusetts, and Rhode Island are considered influential to the Connecticut air system. Neighboring state commercial service and general aviation airports have overlapping service areas that draw activity across state lines. For example, Bradley International Airport is a primary choice for passengers living in Springfield, Massachusetts. Because Connecticut is a relatively small state, the issues of cross-state influences are comparatively pronounced. The following sections assess the characteristics of these neighboring airports and their influence on the Connecticut statewide airport system.

4.4.1 Commercial Service Airports

Airports in surrounding states having scheduled commercial service include New York metroplex airports of LaGuardia Airport, John F. Kennedy International, and Newark Liberty International. These airports are among the busiest airports in the U.S. through which connectivity throughout the world is available. Similarly, Boston Logan International Airport provides service to major domestic and international destinations. Increased domestic, specifically west coast, and international service at BDL could reclaim a portion of Connecticut passengers leaked to these large-hub airports.

BDL's catchment includes nearly all of Connecticut, particularly the central portion associated with Hartford and a significant portion of Springfield, Massachusetts. The passenger catchment area of Rhode Island's Theodore Francis (T.F.) Green State Airport (PVD) encompasses portions of eastern Connecticut and has similar airline-city offerings drawing passengers that would otherwise use BDL that find the commute to PVD more convenient. At the southwest panhandle is a similar situation associated with Westchester County Airport (HPN) in White Plains, New York. HPN also has overlapping, although it has fewer airline choices than BDL. Passengers in the southwest quadrant of the state likely elect this airport over BDL where the travel options are similar. There is likely very little leakage when comparing HPN to Tweed New Haven (HVN) since the destination choices do not currently overlap as (HVN) only offers Philadelphia service. A comparatively small number of Connecticut passengers located in the northeast quadrant of the state may utilize Worcester Regional Airport (ORH), Massachusetts, which has JetBlue service to Fort Lauderdale, Florida. Worcester is not a significant factor given the same service availability at PVD, BDL, and BOS that all overlap ORH's catchment area. The continued viability of scheduled service at ORH is questionable, so the limited leakage that occurs will likely reduce.

Opportunity may exist to reduce passenger leakage to neighboring states by acquiring new entrant air service at BDR and/or GON. Such an effort would have the highest likelihood for success if coordinated with BDL so as to enhance the state's combined competitive position that identify specific service markets with the highest probably for success. Additionally, significant upgrades to the runways and terminal facilities would be necessary to commence the new service. Such improvements would be expected to require a comprehensive environmental review and approval process.

In addition to commercial passenger service, cargo operations are also impacted by neighboring state commercial airports. Stewart International Airport in New York is proposing to increase their cargo facilities. This may have an effect on the cargo operations at BDL if sufficient cargo facilities are not available to handle the forecast demand at BDL.

4.4.2 Reliever Airports

Reliever airports alleviate traffic at nearby commercial service airports and support general aviation activities. Westchester County Airport is located in close proximity to New York City (about 50 miles) which makes it extremely attractive for corporate use. This airport competes with Waterbury-Oxford, Igor I. Sikorsky Memorial, and Danbury Municipal airports for "high end" corporate users.

4.4.3 General Aviation Airports

In Rhode Island, Westerly State Airport (WST) has similar runway facilities as nearby Groton-New London Airport. Due to its close proximity to GON and the services that it offers pilots and airport users, WST and GON compete for some aviation users. Major advantages of GON over WST is all weather access associated with more approaches including a precision approach, weather reporting, and the presence of an air traffic control tower. These advantages may also help GON attract commercial service in the long run.

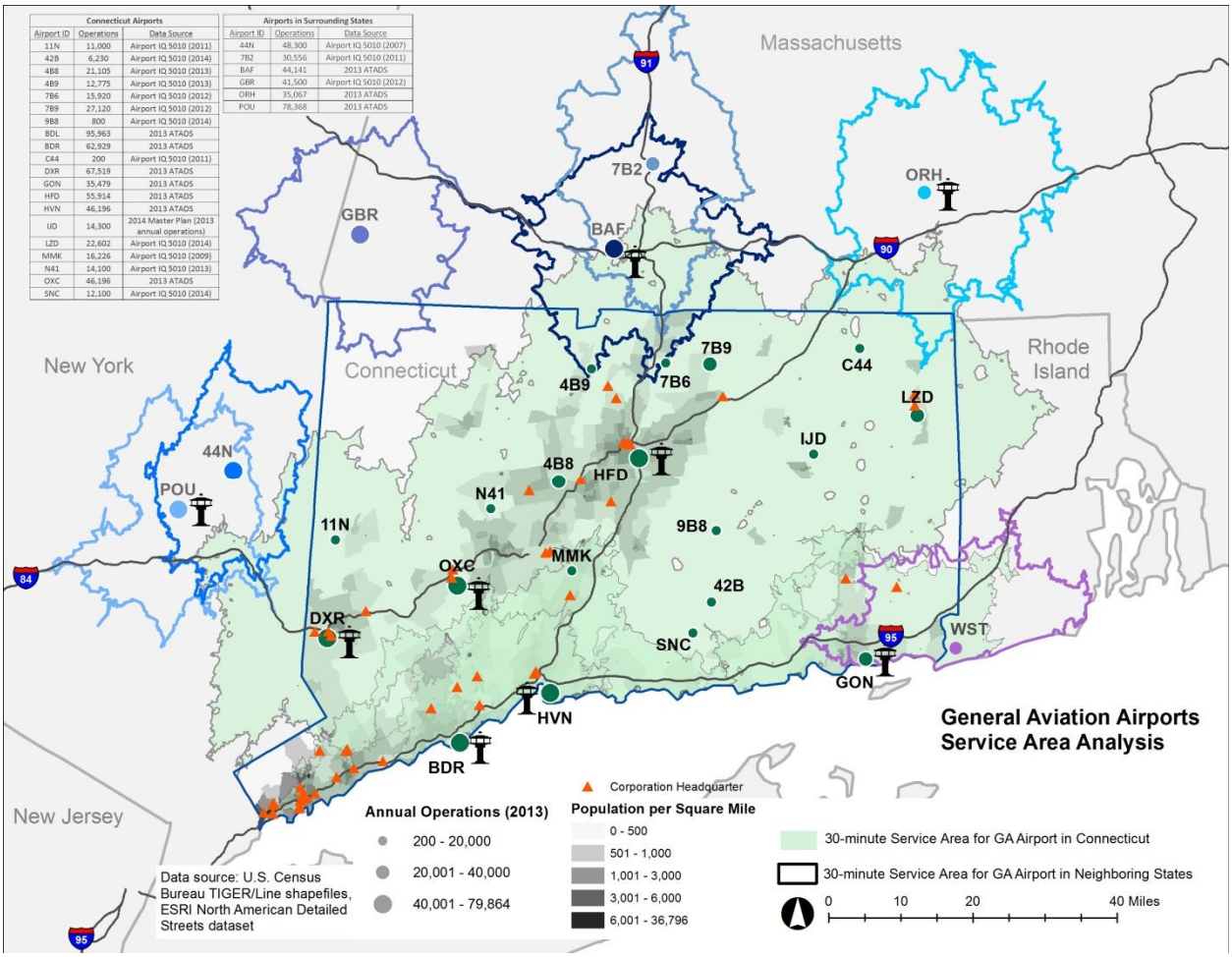
Dutchess County Airport (POU), in Poughkeepsie, New York, considers both Danbury Municipal (DXR) and Waterbury-Oxford (OXC) Airports to be direct competitor-peer airports. POU conducted an analysis in 2013 intended to improve its competitive position in order to improve financial performance and maximize its economic contribution to the area. The report identified key emphasis areas: branding, marketing, real estate development, rates and charges, and airport infrastructure. The report specifically identified Waterbury-Oxford' success in attracting corporate tenants desired by POU and credited the airport for its understanding of its customer needs. All three airports have control towers; OXC has the longest runway and the most corporate jet activity while POU has the minimum jet-threshold length of 5,000 feet; OXC and POU have all-weather approach options including a precision approach. DXR and POU are more closely located to population centers than OXC. OXC has the least residential encroachment. The CAA is also working with U.S. Customs and Border Protection to provide facilities for processing international passengers and goods.

Westfield-Barnes Regional (BAF) Airport is located west of Springfield, Massachusetts boasts a 9,000 foot runway, solid all-weather support facilities including a precision approach, and a control tower. It caters to "high end" business users and large military aircraft. The long length makes it a particularly attractive resource for the combined Springfield-Hartford region. BAF advertises to permanent corporate tenants by offering build-to-suit development with competitive land lease rates. Northampton Airport (7B2) north of Springfield is a GA airport with minimal influence on Connecticut aviation activity; small airports along the MA-CT border could impact the system should they close and also offer opportunities to absorb the activity in the generally smaller service areas associated with GA airports.

Connecticut is also home to headquarters of major corporations, such as United Technologies, the Hartford Financial Services Group, and Aetna, Inc.. The ability to retain these businesses and attract new ones that will help drive economic growth is a key consideration. The headquarter locations of major corporations were identified. As indicated in **Figure 4-4**, many of these headquarters are clustered in the

southwest region and then also along the major Interstate corridors connecting the southwest with Hartford. Connecticut facilities that can concentrate specifically on the corporate aviation needs include: BDR, HVN, DXR, OXC, and HFD. Additionally, GON's facilities may be valuable for promoting new business growth in the southeast quadrant of the state.

Figure 4-4: General Aviation Airports Service Area Analysis



4.5 System Capacity

An integral part of state system planning involves ensuring that the airports within the state are capable of providing sufficient operational capacity to accommodate the current and forecasted aviation activity levels. When aircraft encounter operational delays at airports due to insufficient capacity, efficiencies gained through air travel are reduced. In addition, when aircraft idle on the ground or are required to circle the airport as a result of inadequate capacity, there is an increase in negative environmental and financial impacts. Available developable land area is also a key factor for accommodating increased terminal/gate space, cargo support areas, and aviation tenant space such as hangars. The following sections outline the anticipated issues facing airports in Connecticut based on airside, passenger terminal, storage, and landside demand.

This section will review the Connecticut's overall ability to accommodate the projected activity during the 20-year planning period. Using the operational forecasts outlined in Chapter 3, the most critical demand-drivers will be reviewed for airside, terminal, aircraft storage, and landside airport components.

4.5.1 Airside

The number of flights that can be accommodated at an airport is most affected by prevailing weather conditions and the degree of dependency between operations. Over time, new technologies will likely be introduced that increasingly mitigate the delay effects of inclement weather to more closely mirror that of visual/clear operations. Beyond weather, operational dependencies are reduced by minimizing and avoiding converging activities. In this regard, maximum capacity benefit is derived by adding a parallel runway and reducing the number of runway-runway and runway-taxiway intersections. Other enhancements can be obtained by optimizing ground flow between terminal/parking areas and the runways, improving taxiway circulation, and improving winter operations and deicing. Because the effort involved to increase airside capacity often involves the construction of a new runway or other significant reconfiguration that can take about ten years to complete, it is generally recommended that capacity planning initiate when demand reaches 60 percent of capacity and to begin implementation at 80 percent.

As illustrated in **Table 4-3**, airside capacity is not a significant factor affecting the system. This is to be expected given the trend toward larger aircraft replacing frequency of flights allowing the system to accommodate additional commercial passengers while reducing the number of flights. At the same time, the declines in light GA activity, the dominant component of total flight activity, is outpacing the modest increases in corporate/business activity that currently represents only a small segment of total takeoffs and landings.

Table 4-3: Airside Demand/Capacity

Airport Name	2015 Operations	2035 Operations	Annual Service Volume[1]	2015 Demand/ Capacity Ratio (%)	2035 Demand/ Capacity Ratio (%)
CAA-Owned Airports					
Bradley International (BDL)	97,905	133,808	270,000	36.26	49.56
Groton-New London (GON)	40,656	57,693	230,000	17.68	25.08
Hartford-Brainard (HFD)	80,817	87,660	230,000	35.14	38.11
Waterbury-Oxford (OXC)	46,981	51,267	230,000	20.43	22.29
Windham (IJD)	14,603	15,583	125,000	11.68	12.47
Danielson (LZD)	22,102	22,102	107,400	20.58	20.58
Subtotal	**303,064**	**368,113**	**1,192,400**	**25.42**	**30.87**
Municipally-Owned Airports					
Tweed-New Haven Regional (HVN)	31,662	34,593	230,000	13.77	15.04
Igor I. Sikorsky Memorial (BDR)	62,167	65,681	200,000	31.08	32.84
Danbury Municipal (DXR)	66,547	74,123	180,000	36.97	41.18
Robertson (4B8)	21,105	21,105	148,000	14.26	14.26
Meriden-Markham Municipal (MMK)	16,226	16,226	118,000	13.75	13.75
Subtotal	**197,707**	**211,728**	**876,000**	**22.57**	**24.17**
Privately-Owned Airports open for Public Use					
Chester (SNC)	15,827	15,827	99,000	15.99	15.99
Simsbury (4B9)	12,775	12,775	64,000	19.96	19.96
Goodspeed and Seaplane Base (42B)	6,230	6,230	62,600	9.95	9.95
Ellington (7B9)	27,120	27,120	156,000	17.38	17.38
Skylark Airpark (7B6)	15,920	15,920,	110,100	14.46	14.46
Waterbury-Plymouth (N41)	14,100	14,100	37,400	37.70	37.70
Toutant (C44)	200	200	28,000	0.71	0.71
Candlelight Farms (11N)	11,000	11,000	59,600	18.46	18.46
Salmon River Airfield (9B8)	800	800	37,500	2.13	2.13
Subtotal	**103,972**	**103,972**	**654,200**	**15.89**	**13.46**
Statewide Totals	**604,743**	**683,822**	**2,722,600**	**22.21**	**24.53**

[1] 2006 Connecticut Statewide Airport System Plan; Annual Service Volume (ASV) is defined as a reasonable estimate of the airport's annual capacity accounting for runway use, aircraft mix, and weather conditions.

Although not a direct capacity consideration, HVN will need a runway length of between 6,000 and 7,000 feet to accommodate regional jet aircraft and retain scheduled service following the near-term retirement of the 32-seat Q200 turbo-prop. Similarly, should air service return to GON or BDR, the runway for each of these airports would require an extension. Currently, GON Runway 5-23 is 5,000 feet and BDR Runway 6-24 is 4,677 feet.

In addition to BDL, HVN, and GON having runway lengths of 5,000 feet or longer, OXC has a runway length of 5,800 feet. A runway length of 5,000 feet or greater is an important threshold for "high end" corporate aircraft. Those airports provide good coverage throughout the state although some of the "high end" operators may only be able to operate at BDL or BAF. It is also noted that Hartford-Brainard Airport (HFD) has been identified by CAA as a primary location to focus corporate/business activity and has completed a Master Plan Update which includes a proposed runway extension to obtain 5,000 feet. In order to maximize the role that HFD has in capturing "high end" corporate jets, facilities should be constructed so as not to preclude occasional operations by aircraft wingspans of 95 feet or more. Such preservation would also enable the airport's design code to be more readily upgraded should aircraft operations by larger corporate jets increase to more than 500 operations per year, the FAA's design threshold. Additionally, if the length and setback requirements recommended by the master plan are challenging to implement, then additional consideration should be given to accommodating the corporate jets at BDL by incorporating corporate hangar development sites.

4.5.2 Passenger Terminal Facilities

Bradley International Airport

BDL has two passenger terminal buildings. Terminal A is a 250,000 square-foot, three-level building. Two concourses exist within Terminal A: 11-gate Concourse C and 12- gate East Concourse. Terminal B, formerly referred to as the Murphy Terminal, was built in 1952.That terminal is currently closed and being demolished. The concourse apron of this former terminal is being used for overnight parking of aircraft. A 28,000 square Federal Inspection Station (FIS) is located near Terminal B and can process over 300 passengers per hour.

BDL has completed a schematic design for a 19-gate terminal, shown in **Figure 4-5**. The proposed terminal will include two international gates for wide-body aircraft. The proposed facility will be constructed in phases when demand warrants at the site being prepared through the demolition of the old Murphy Terminal. Based on the established activity triggers and published forecasts, the first phase of the new terminal will be initiated by about 2024. The airport will continue to monitor growth and update forecasts as required. Construction of new facilities will be based on demand.

Figure 4-5: BDL Terminal Schematic

Source: Hartford Courant

Tweed-New Haven Airport

The terminal at Tweed-New Haven, shown in **Figures 4-6 and 4-7**, is approximately 12,000 square feet. The terminal facility currently serves four daily Dash-8 air carrier flights on US Airways to PHL with a maximum load of 38 passengers per flight.

Figures 4-6 and 4-7: HVN Terminal

Source: Jetphotos.net

A terminal planning study completed in 2007 identified capacity inadequacies including passenger screening, baggage make-up and screening facilities, inbound bag claim space, and limited growth potential. The 2007 study projected a 2030 need for an 8-gate, 133,000 square foot terminal. The proposed site is partially in wetlands, requires closure of the crosswind runway, construction of a new access road, utilities, and a new apron to accommodate the space requirements. However, several other factors should first be considered. Two primary considerations include: is the passenger market sufficient for airline service retention and can HVN's runway accommodate regional aircraft that will replace the current turbo-prop flights.

Since the Bombardier Q-200 (formerly Dash-8) is no longer in production and there is no comparable replacement aircraft, HVN will need to evaluate the scenarios of accommodating larger aircraft. Larger regional aircraft include the 72-seat Bombardier Q-400 turbo-prop and several 70-110 seat regional jets predominantly manufactured by Bombardier (Canadair) and Embraer. The Q-400 would potentially be able to operate on HVN's 5,600 foot runway (possibly with winter weight restrictions) although the current airline does not operate or plan to operate that aircraft. Regional jets generally require between 6,000 and 7,000 feet of runway.

In either case, the terminal would need significant capacity enhancements. In addition to the items described in the 2007 study, the size of the holdrooms (both secure and non-secure), check-in, and security processing areas require validation. The shift to the larger aircraft effectively doubles (or more than doubles) the volume of passengers that would flow through the terminal building at the same time (even with fewer flights). The doubling of functional space, potentially at the site proposed in the 2007 report is not specific to that study's gate recommendation.

Groton-New London Airport

Groton-New London Airport has not received commercial air service since 2004. The existing 10,500 square foot terminal building is centrally located on the airport. The building is structurally sound but underutilized since air carrier service ceased operations. Depending on the possibility of return of service and frequency, terminal enhancements and updates would be required. The building can potentially be converted to another use or the site redeveloped, preferably for "high end" corporate jet hangars.

Igor I. Sikorsky Memorial Airport

Igor I. Sikorsky Memorial Airport does not currently receive commercial air service. The existing 39,000 square foot administrative and terminal facility has been recommended to be re-allocated for non-aviation services since commercial air service no longer exists at the airport. General aviation terminal facilities are offered through Atlantic Aviation (north area) and VoloAviation (west area). VoloAviation has plans for additional phased development after runway and runway safety area improvements are implemented. Should commercial air service return to BDR, terminal improvements would be necessary to accommodate passengers.

4.5.3 Aircraft Storage

Small airport hangar storage capacity was not studied in detail; the expectation is that the need to provide new hangar storage capacity at these locations will be minimal. However, additional hangar facilities are anticipated at the larger airports. The based aircraft forecast for CAA- and municipally-owned airports are shown in **Table 4-4**.

Table 4-4: Based Aircraft Forecasts

Airport Name	2015	2035
CAA-Owned Airports		
Bradley International (BDL)	58	84
Groton-New London (GON)	55	80
Hartford-Brainard (HFD)	157	173
Waterbury-Oxford (OXC)	183	245
Windham (IJD)	68	72
Danielson (LZD)	37	37
Municipally-Owned Airports		
Tweed-New Haven Regional (HVN)	44	63
Igor I. Sikorsky Memorial (BDR)	205	318
Danbury Municipal (DXR)	271	311
Robertson (4B8)	57	57
Meriden-Markham Municipal (MMK)	70	94

Source: AECOM analysis.

As can be seen from the table above, Bradley International, Groton-New London, Waterbury-Oxford, Sikorsky, and Danbury are projected to have based aircraft increase by 25 or more aircraft during the planning period. Increased storage space was considered for the most recent Master Plan for Groton-New London and deemed unnecessary during the 20-year planning period. Increasing storage space at Waterbury-Oxford was considered and accounted for in the 2007 airport layout plan. Bradley International should consider increasing storage space and specifically assess how to accommodate "high end" demand that may be based there instead of Hartford-Brainard. Based on the activity projections, demand is thought to exist at both Igor I. Sikorsky Memorial and Danbury Airports. However, BDR may have significant environmental constraints and requires approvals in order to realize future construction projects. To accommodate forecast demand for large "high end" aircraft at Waterbury-Oxford Airport may require the preparation of additional sites: environmental studies, tree removal, utility extensions, grading/drainage, and taxiway construction.

4.5.4 Airport Access and Parking

The following section provides a summary of airports experiencing challenges associated with access, circulation, and parking.

Table 4-5 shows the dominant routes used to access airports in Connecticut. The distance to the nearest intersection denoted in the table is the distance to the first major highway listed in the Access Route column.

Table 4-5: Airport Accessibility

Airport Name	Airport ID	Access Route	Nearest Intersection
CAA-Owned Airports			
Bradley International Airport	BDL	Interstate 91, Route 401	3.5 Miles
Groton–New London Airport	GON	Interstate 95, Route 1	2.5 Miles
Hartford–Brainard Airport	HFD	Interstate 91, Route 384	1,000 Feet
Waterbury–Oxford Airport	OXC	Interstate 84, Interstate 395, Route 67	3,000 Feet
Windham Airport	IJD	Interstate 384, Route 6	500 Feet
Danielson Airport	LZD	Interstate 395, Route 6	1.5 Miles
Municipally-Owned Airports			
Tweed-New Haven Regional Airport	HVN	Interstate 95, Interstate 91	2 Miles
Igor I. Sikorsky Memorial Airport	BDR	Interstate 95, Route 25	3,000 Feet
Danbury Municipal Airport	DXR	Interstate 84, Route 7	3,000 Feet
Robertson Field	4B8	Interstate 84, Route 552, Route 372	2.5 Miles
Meriden-Markham Municipal Airport	MMK	Interstate 691, Interstate 91	3.5 Miles

In addition to private vehicle, transportation to and from BDL is served by taxis, car rental, buses, limousines, and off-airport valet parking. BDL has limited public transportation options to and from the airport. Connecticut Transit (CTT) operates the Bradley Flyer (Route 30) bus line between BDL and downtown Hartford approximately every hour. In early 2015, ConnDOT started CTfastrak Bus Rapid Transit system in central Connecticut. CTfastrak created designated transportation corridors throughout the region to enhance transit service and provide connections to local bus service and Amtrak stations. CTfastrak's connection in Hartford allows riders to board the Bradley Flyer for access to the Airport. However, ridership on the Bradley Flyer remains low and is mainly commuters who work at BDL. The lack of ridership, including by passengers, may be due to limited marketing and promoting of the bus line. ConnDOT is also working with multiple agencies to implement a plan for intercity rail service between New Haven, Hartford, and Springfield, MA. The Commuter Rail Study identifies a stop in Windsor Locks whereby a connection (either shuttle bus or rail) to BDL could be provided. The initial phases of the recently initiated Terminal B redevelopment project include proposed construction of a Ground Transportation Center which will include new public parking, bus service, and a future transit center that could support rail or bus rapid transit services. The Bradley Development Zone preserves a corridor for a future rail/bus route transit between future transportation centers to be developed at BDL and near the Harford Amtrak station.

Vehicular access to the Tweed-New Haven Airport is challenging in that the two mile drive from the I-95 interchange to the terminal building area on Burr Street is entirely residential roadways having 30 mph speed limits and no airport wayfinding signs. The airport website also directs traffic to Townsend (RT 337) which is west of the airport to Fort Hale to Burr. Access to the east side hangar area is less constrained as Hemmingway Avenue (RT 142) is a four-lane boulevard, although the final 0.6 miles is residential (Dodge and Thompson Avenues). A local public bus, Route G2, is also available to and from the City of New Haven. An Amtrak station, approximately 5 miles from the Airport, provides direct rail access to destinations in New York and Massachusetts. The Airport does not have well defined landside accessibility from its nearby interstates and the existing infrastructure is significantly constrained by surrounding land use and numerous environmental factors to improve access.

The access route to and from Groton-New London Airport and Interstate 95 has changed little since the last airport master plan update in 2013. The route uses Exit 87 from I-95 to U.S. Route 1, then via Poquonnock Road to High Rock Road, then Tower Avenue, which serves as the main feeder road to all airport facilities and services. This route is congested because of Route 1 and extensive commercial development.

Vehicle access to Hartford-Brainard Airport is provided via I-91 and Routes 5 and 15 to Maxim Road and Lindbergh Drive. These two streets provide access to the west side of the airfield for all existing tenants. Vehicle access is not available from other locations due to the Clark Dike and Connecticut River, and existing development. The existing access is considered adequate, but a second access directly from Brainard or Murphy Road would be beneficial. Currently, access is provided by taking a left on Maxim Road and looping around to Lindbergh Drive. Access directly from Brainard or Murphy Road would be more direct than having to loop around the property. The overall number of automobile parking spaces is considered adequate for the number of peak daily operations expected by 2030 (i.e., approximately 120 operations). However, the parking is concentrated near the Midfield Ramp and FBO. Parking is considered to be inadequate near the South Ramp and T-hangar area.

Roadway access to Danielson Airport is currently provided from Airport Road off Upper Maple Road. As identified in the 2008 Master Plan, Airport Road is cumbersome in its length and number of turns and may be problematic for emergency and large construction vehicles. To address these issues, a potential secondary access road alternative was identified and focuses on providing a shorter and more visible route to the Airport, forming a complete loop roadway for efficient access. In addition to the secondary access road alternative, a potential emergency access gate located by Ellis Tech is also proposed. The gate would provide emergency access to the Airport through use of the high school's roadway and parking network. The gate would only be used in emergency situations, and would not serve as a secondary access road to the Airport.

Danbury Municipal Airport has the highest volume of GA traffic in Connecticut and has six fixed based operators. However, the airport is currently only served through several bus route schedules. The Airport would like Housatonic Area Regional Transit (HARTransit) to commit more explicitly to serving the Airport in future schedules.[1] Currently there aren't any direct routes to DXR; the closest bus stops are for the Danbury Mall to the north of the airport.

4.6 Planned Major Improvements

This section identifies the major improvements that are either underway or proposed to be initiated within a year of this plan's completion. The major projects planned and currently accounted for within Connecticut are as follows:

Bradley International Airport: Design for Ground Transportation Center, and continued terminal demolition, and infrastructure improvements

Tweed-New Haven Airport: Taxiway and runway rehabilitation, potential runway extension to retain airline service, lighting systems, sound insulation, and security enhancements

Igor I. Sikorsky Memorial Airport: Construction of runway safety areas and runway rehabilitation

4.7 Development Challenges and Constraints

Table 4-6 highlights some development constraints and challenges encountered by each airport as identified in the 2006 Connecticut Statewide Airport System Plan (CSASP), individual feasibility studies, and an aerial analysis of the airports. The terminology used in the table is explained as follows:

- **Physical Constraints** - geographic features that limit further growth of the airport including roads, buildings, hills, and rivers.
- **Land Availability** – additional land needed to accommodate airport development.
- **Geological Features** - natural features such as plateaus, hills, bodies of water, wetlands, and rivers that constrain or influence airport development.
- **Conflicting Development Limiting Airport Growth** - surrounding development (such as roads and buildings) constrains or influences airport development.
- **Airport Accessibility** – airport access is challenging because of distance to major roadway, circuitous routing, and inadequate signage.

[1] Danbury Mayor's Task Force, 2013

- **Runway Length** – physical length of runway is limiting to target aircraft types.

Environmental constraints can include protected wetlands that lie on or near the airport property, wildlife attracted to the airport, or endangered species living near or on the airport. The Sensitive Areas field indicates that environmentally sensitive areas or areas of historical/archeological significance lie on or near the airport. In most of these cases, the airport will need some type of permitting to proceed with expansion.

Under the political category, Neighborhood Concerns indicates that the need for enhanced service must be balanced with community concerns. The Role Opinion Difference field refers to an airport being physically located in two different towns that have differing ideas on what the airport's role should be. In these cases, the airport may have to go through legal complications or proceedings to proceed with expansion.

Part 77 obstructions can be either man-made or natural. Part 77 obstructions penetrate the Part 77 imaginary surfaces that protect the airspace and enhance the safety of the airport. These obstructions include trees, power lines and poles, structures, smoke stacks, and fences that penetrate the imaginary safety surfaces at the airport.

Several developmental challenges were identified in the 2006 CTSASP that have since been resolved including:

- Obstructions at HFD and DXR
- Available land for development at BDL
- Construction of RSAs at BDR

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Table 4-6: Developmental Challenges

Airport Name	Physical Constraints					Environmental					Political				Part 77	Noise
	Land Availability	Geological Features	Conflicting Development Limiting Airport Growth	Airport Accessibility	Runway Length	Wetlands	Costal management Zone Penetration	Wildlife	Incompatible Land Use	Sensitive Areas	Neighborhood Concern	Role Opinion Differences	City-Owned In Different Town	Located In Two Different Towns	Part 77	Noise
CAA-Owned Airports																
Bradley International (BDL)										X						X
Groton–New London (GON)		X			X	X	X	X	X							X
Hartford–Brainard (HFD)			X		X			X								X
Waterbury–Oxford (OXC)		X			X			X	X						X	X
Windham (IJD)			X	X		X			X						X	X
Danielson (LZD)				X	X				X							
Municipally-Owned Airports																
Tweed-New Haven Airport (HVN)	X	X		X	X	X	X	X	X		X	X	X	X	X	X
Igor I. Sikorsky Memorial Airport (BDR)	X				X	X	X		X				X		X	X
Danbury Municipal Airport (DXR)		X	X			X			X							X
Robertson Field (4B8)	X		X			X										
Meriden-Markham Municipal Airport (MMK)				X					X					X	X	X
Privately-Owned Airports																
Chester Airport (SNC)																
Simsbury (4B9)						X		X	X	X						
Goodspeed Airport (42B)		X														X
Ellington Airport (7B9)						X		X		X						X
Skylark Airpark (7B6)						X		X								
Waterbury Airport (N41)			X													X
Toutant Airport (C44)			X													X
Candlelight Farms Airport (11N)								X								X
Salmon River Airfield (9B8)																

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4.8 Summary

This chapter identified the challenges facing the system and solutions to those challenges, which were then translated into specific needs at the airports. Primary statewide needs identified in this chapter include: greater airline service coordination to increase statewide capture and improve service offerings, significant facility improvements at HVN to retain airline service, planning for potential return of air service at BDR and/or GON and the associated improvements that would be necessary, "high end" aircraft facilities at multiple airports that have runway lengths of 5,000 feet or greater, establishment of a U.S. Customs processing facility at OXC, a runway extension assessment at Hartford-Brainard in support of its functional role to accommodate business jet aircraft, expanded aircraft storage facilities at the larger GA airports (particularly Waterbury- Oxford), and rail/bus connectivity to BDL including potential use of GA facilities as bus transportation centers to support BDL connectivity. Other airside improvements at various airports include obstruction removal, navigational and lighting aids, and compliance with FAA standards. Cargo development and expansion is a focus at BDL and HVN. Legislative improvements are recommended for all airports and private operator funding should be explored at many. **Table 4-7** summarizes all of the findings and potential solutions identified in this chapter and **Table 4-8** outlines the specific needs of the aviation system.

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Table 4-7: State System Challenges & Solutions

	Challenge/Constraint	Potential Impact(s) on System	Potential Solution(s)
Aviation Industry Trends	Aircraft Size and Performance	• Demand increases/decreases • Airport role changes	• Airfield improvements • Terminal improvements
	Cargo Growth	• Ability to capture and accommodate anticipated demand	• Cargo improvements/Marketing/New Facilities
	Viability of General Aviation	• Demand increases / decreases	• Airport role changes • Airfield improvements • GA services and amenity improvements
	Airport Traffic Control Tower Closures	• Demand increases / decreases	• Operations taken over by the airport • Accommodate demand at other CT airports
	Socioeconomic Conditions	• Demand increases / decrease • Role changes	• Manage anticipated economic changes and their effects on the system
In-State Dynamics	Airport Development Restrictions & Incentives	• Restrictions limit growth • Incentives to make the available land around airports attractive to businesses	• Evaluate and manage restrictions as practical • Continue to market and promote BADZ areas
	Airports Role Changes & Closures	• Demand increases / decreases	• Feasibility assessment for municipal purchases • Non-aviation development revenue • Ensuring the system can support potential closures
	Governance Structures	• Dual governance with competing goals for the airport	• Memorandums of Agreement or other legal resolution
Neighboring State Influences	Commercial Airport Proximity	• Loss of CT residents to airports in other states	• Enhance air service and/or incentives to mitigate residential passenger leakage
	Destinations Served	• Loss of CT residents to airports in other states	• Increase commercial air service options
	Cargo Capabilities	• Loss of cargo to airports in other states	• Enhanced cargo capabilities in CT
	Push for Business Aircraft	• Role changes	• Airfield improvements • Amenities and facility improvements • US Customs facility at OXC.
Capacity / Development Constraints	System Capacity	• Loss of activity to neighboring states	• Ensure that capacity can be accommodated
	Physical Constraints	• Limits development and airport improvements	• Evaluate development requirements and constraints on an airport by airport basis
	Intermodal Connectivity	• Demand Increases	• Improve airport access via mass transit services to commercial service airports
	Political Challenges	• Role changes • Limitations on development	• Legal proceedings • Improved stakeholder involvement
	Community Perception	• Limitations on development	• Community Outreach

Table 4-8: Needs Assessment

	Airport	Ownership	Recommendation
Airside	• Hartford-Brainard (HFD)	CAA	• Runway 2-20 Extension
	• Windham (IJD)	CAA	• RPZ Ownership/Easements • Obstruction clearance
	• Tweed-New Haven (HVN)	Municipal	• Potential Runway 2-20 extension to retain air service
	• Groton-New London (GON)	CAA	• Runway 5-23 extension to accommodate the potential return of air service
	• Igor I. Sikorsky Memorial (BDR)	Municipal	• Runway 6-24 extension to accommodate the potential return of air service
	• Robertson (4B8)	Municipal	• Navigational and lighting aids • Compliance with FAA standards
	• Skylark Airpark (7B6) • Ellington (7B9) • Simsbury (4B9)	Private	• Navigational and lighting aids • Compliance with FAA standards
Terminal	• Bradley International (BDL)	CAA	• Regularly update & monitor forecasts
	• Tweed-New Haven (HVN)	Municipal	• Terminal modification needed to support scheduled service by a mainline carrier
	• Groton-New London (GON)	CAA	• Terminal enhancement/expansion to accommodate the potential return of air service
	• Igor I. Sikorsky Memorial (BDR)	Municipal	• Terminal enhancement/expansion to accommodate the potential return of air service
General Aviation / Based Aircraft	• Hartford-Brainard (HFD)	CAA	• Storage expansion (T-hangars) • Implement improvements/needs to support high-end GA activity
	• Groton-New London (GON)	CAA	• Storage expansion • Implement improvements/needs to support high-end GA activity
	• Waterbury-Oxford (OXC)	CAA	• Storage expansion (T-hangars and conventional) • Implement improvements/needs to support high-end GA activity
	• Danielson (LZD)	CAA	• Storage expansion
	• Windham (IJD)	CAA	• Storage expansion (2 T-hangars)
	• Igor I. Sikorsky Memorial (BDR)	Municipal	• Storage expansion • Implement improvements/needs to support high-end GA activity
	• Danbury Municipal (DXR)	Municipal	• Implement improvements/needs to support high-end GA activity
	• Robertson Field (4B8)	Municipal	• Storage expansion (T-hangars and conventional)
Cargo	• Bradley International (BDL)	CAA	• Cargo expansion
	• Tweed-New Haven (HVN)	Municipal	• Explore potential cargo options
Part 139 Certification	• Groton-New London (GON)	CAA	• Consider reduction or elimination of Part 139 certification if air service cannot be attained
	• Igor I. Sikorsky Memorial (BDR)	Municipal	• Consider reduction or elimination of Part 139 certification if air service cannot be attained
Air Service Development	• Bradley International (BDL)	CAA	• Increase air service offers to compete with neighboring states, especially non-stop west coast and international destinations
	• Statewide coordination: support BDL growth, target niche services at HVN (and potentially GON and BDR) to expand total offerings and statewide capture.	CAA/Municipal	• Coordinate air service development initiatives with the primary intent to maximize passenger capture within the state.
Public Transportation	• Bradley International (BDL)	CAA	• Enhance public transportation options • Market existing public transportation routes
Municipal Ownership Feasibility Studies	• Chester (SNC)	Private	• Conduct a feasibility study for municipal ownership
Legislative	• All	CAA, Municipal, and Private	• Capitalize on tax incentivized land development • Streamline the existing environmental permitting processes • Develop standard zoning guidelines and easements • Work to resolve dual municipality conflicts
Funding	• Chester (SNC) • Simsbury (4B9) • Goodspeed Airport and Seaplane Base (42B) • Ellington (7B9) • Skylark Airpark (7B6) • Waterbury-Plymouth (N41) • Toutant (C44) • Candlelight Farms (11N) • Salmon River Airfield (9B8)	Private	• Evaluation of funding available to private operators as well as options for additional aviation and non-aviation revenue

Chapter 5 – Funding

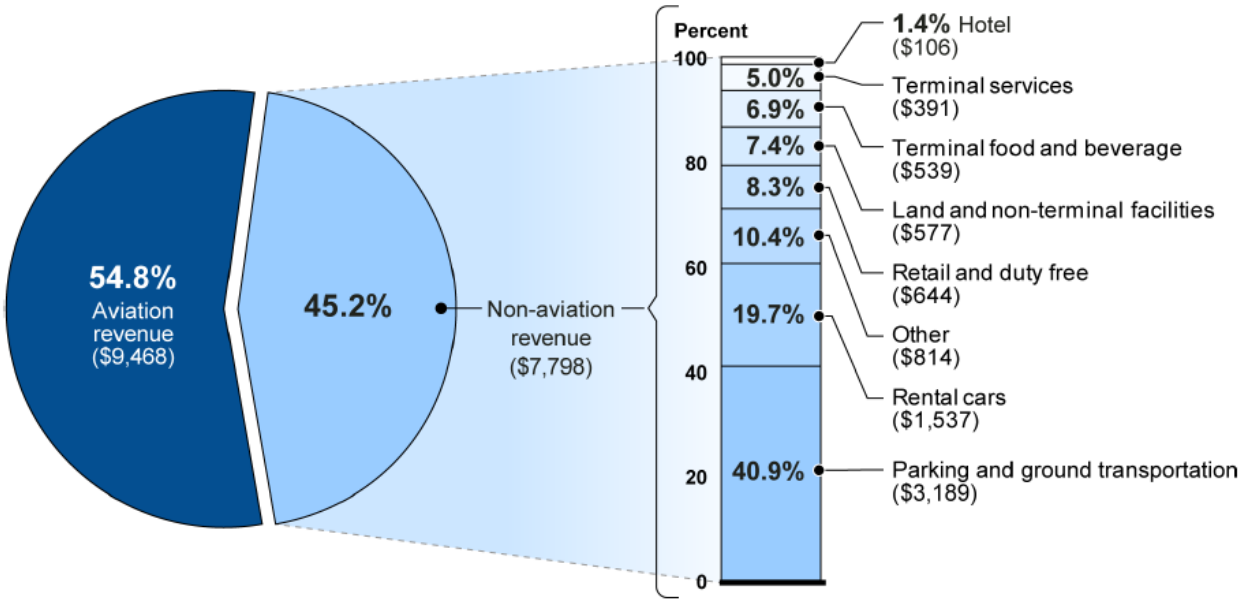
5.1 Funding Overview: Review of Recent Changes to Federal/State Funding Programs

The capital and operating/maintenance for U.S. airports varies widely depending on multiple factors, including the physical size of the airport, the number and type of operations/passengers the airport serves, and the condition of the airport infrastructure. To ensure their continued safe and efficient operations, often times pursuant to assurances made in exchange for access to federal funding programs, airports develop comprehensive capital improvement programs. According to Airport Council International – North America (ACI-NA), *Airport Capital Development Needs: 2015-2019*, U.S. airports have a collective funding need of approximately $75.7 billion over the next five years, or $15.1 billion per year.

Airports fund their operating, maintenance, and capital expenses from a variety of sources, including:

- Cash flow from airport revenue sources;
- Bond proceeds (including both general airport revenue bonds, which are supported solely by airport revenues, and general obligation bonds, which are supported by the general taxing powers of the municipal issuer);
- Tenant investments in specific facilities;
- Passenger Facility Charges (PFCs); and,
- Federal and state grants, including the Federal Aviation Administration's (FAA) Airport Improvement Program (AIP).

Figure 5-1: Total Airport Revenue Sources
(Dollars in Millions)



Source: GAO analysis of Airports Council International—North America data. | GAO-14-658T

The mix and availability of each of these sources depends upon several factors, including the size and market position of the airport as well as the specific regulatory structure of the AIP grant and PFC programs.

Commercial service airports, such as Bradley International Airport (BDL), are typically financially self-sustaining (including AIP grant monies), but some smaller commercial service airports and most general aviation airports count on local government subsidies using general fund accounts to fund ongoing airports operations and on general obligation bonds (whose debt service is funded through local tax receipts) to subsidize capital improvements.

5.1.1 AIP Grant Background & History

Prior to 1970, federal funding of the airport and airways system was provided by the general fund of the U.S. Treasury[1]. In 1970, the Airport and Airways Trust Fund (AATF) and the Airport Development Aid Program (ADAP) were established utilizing revenues derived from passenger ticket and other excise taxes. The authority to issue grants under these two programs expired in 1981, with grants totaling $4.5 billion approved under ADAP.

The Airport and Airway Improvement Act of 1982 (AAIA) established the Airport Improvement Program (AIP) as the current framework for federal funding of certain airport capital projects. Since then, the AIP program has been amended several times. **Table 5-1** summarizes the current tax structure that funds the AATF and AIP program

Table 5-1: Current Aviation Excise Tax Structure

Aviation Taxes	Tax Rate
Domestic Passenger Ticket Tax	7.5% of ticket price
Domestic Flight Segment Tax	$4.00 per passenger segment*
Passenger Ticket Tax for Rural Airports	7.5% of ticket price, but flight segment fee does not apply
International Arrival & Departure Tax	$17.50 head tax*
Flights between continental U.S. and Alaska or Hawaii	$8.70 international facilities tax + applicable domestic tax rate*
Frequent Flyer Tax	7.5% of value of miles
Domestic Cargo/Mail	6.25%
General Aviation Fuel Tax	AvGas: $0.193/gallon Jet Fuel: $0.218/gallon
Commercial Fuel Tax	$0.043/gallon

***** Amounts shown are for CY2014; rate is indexed to CPI and adjusted annually

Source: http://www.faa.gov/about/office_org/headquarters_offices/apl/aatf/

[1] The Federal Airport Act of 1946 authorized and established the Federal Airport Aid Program (FAAP) to promote the development of a system of airports to meet the nation's needs after the end of World War II.

5.1.2 AIP Overview

The overall objective of the AIP is to assist in the safety, security and development of the nationwide airport and airway system to ensure the system is adequate to meet the current and projected growth of aviation. FAA priorities include maintaining the current airport infrastructure; increasing capacity to meet the growing passenger and cargo demands; developing reliever and cargo hub airports; reducing flight delays; and keeping funding available to small hub and general aviation airports.

AIP funding is usually spent on projects that support aircraft operations, with runway, taxiway, and apron projects receiving approximately 50% of the funding. Projects vying for the remaining 50% are as follows: lighting, noise abatement, and land purchase as well as safety, emergency and snow removal equipment and any professional services that are necessary for eligible projects, such as planning, surveying, and design. Ineligible projects include improvements for commercial enterprises, landscaping, office equipment and revenue producing portions of terminals, and parking garages. Beginning with FY2004, some support facilities such as fuel farms and hangars may be eligible for federal funding, if certain provisions are met. All projects must be justified and meet federal environmental and procurement requirements before a grant can be issued. The project also must be depicted on a current airport layout plan (ALP), which is a product of an airport's master plan.

The FAA oversees the AATF which supports four areas of funding:

- Operations [2]: Used for air traffic control facilities and services; aviation regulation and certification; and maintenance, repair and engineering of over 64,000 facilities and equipment comprising the National Airspace System (NAS).

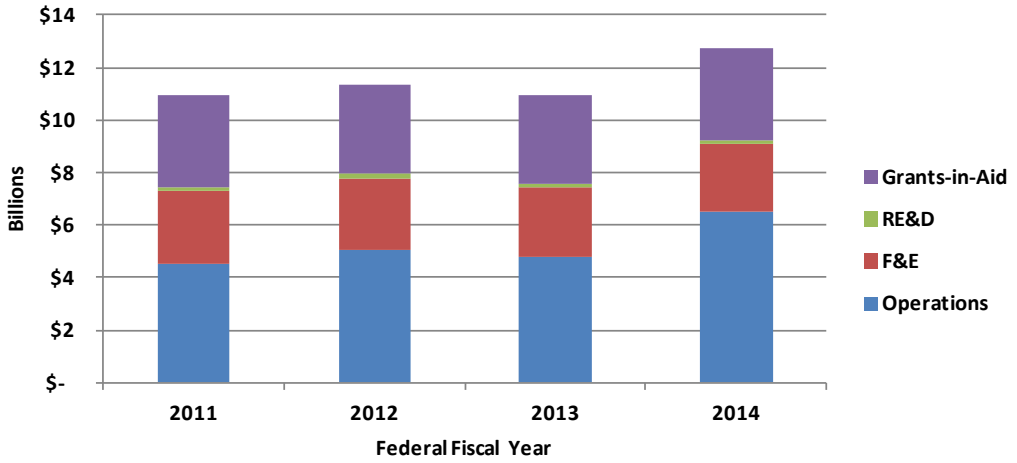
- Facilities and Equipment (F&E): Includes funding for planned facility improvements, equipment development and procurement, and the necessary technical support for systems installation. This funding supports FAA's Capital Investment Plan to replace or modernize aging facilities, expand the air traffic control system, increase aviation services, maximize operational efficiency and constrain costs.

- Research, Engineering and Development (RE&D): Contributions to aviation research that assures the safety, capacity, and cost effectiveness of the air transportation system to meet increasing demands. Some examples include flight safety improvements and research of noise reduction technology.

- Grants-in-Aid for Airports: Funds grants (including the AIP program) to eligible airports for safety, security, capacity enhancement, and noise mitigation projects.

[2] The FAA Operations fund also receives general tax funds from the U.S. Treasury.

Figure 5-2: Breakdown of AATF Funding – FFYs 2011-2014



Most airports use AIP grants to fund airport projects. The AIP provides grants to public agencies — and, in some cases, to private airport sponsors and entities — for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS). AIP grants for planning, development, or noise compatibility projects are at or associated with individual public-use airports (including heliports and seaplane bases). A public-use airport is an airport open to the public that also meets the following criteria:

- Publicly owned, or
- Privately owned but designated by FAA as a reliever, or
- Privately owned but having scheduled service and at least 2,500 annual enplanements

Furthermore, to be eligible for a grant, an airport must be included in the NPIAS. The NPIAS, which is prepared and published every 2 years, identifies public-use airports that are important to public transportation and contribute to the needs of civil aviation, national defense, and the Postal service.

Recipients of grants are referred to as "sponsors." The description of eligible grant activities is described in the authorizing legislation and relates to capital items serving to develop and improve the airport in areas of safety, capacity, and noise compatibility. In addition to these basic principles, a sponsor must be legally, financially, and otherwise able to carry out the assurances and obligations contained in the project application and grant agreement.

Eligible projects include those improvements related to enhancing airport safety, capacity, security, and environmental concerns. In general, sponsors can use AIP funds on most airfield capital improvements or repairs and in some specific situations, for terminals, hangars, and non-aviation development. Any professional services that are necessary for eligible projects — such as planning, surveying, and design — are eligible. Aviation demand at the airport must justify the projects, which must also meet federal environmental and procurement requirements.

Projects related to airport operations and revenue-generating improvements are typically not eligible for funding. Operational costs — such as salaries, equipment, and supplies — are also not eligible for AIP grants. The demand for AIP funds is greater than the availability. The distribution system for AIP grants

is elaborate and based on a combination of formula grants and discretionary funds. Each year formula grants, sometimes referred to as apportionments or entitlements, are divided into four categories: primary airports, cargo service airports, general aviation airports, and Alaska supplemental funds. Each category distributes AIP funds by a different formula. The amount for primary commercial airports is based on the number of passenger boardings (enplanements) from the previous year. 3.5% of AIP funds are apportioned for cargo service airports. This allocation of funds is the proportion of the individual airport's landed weight to the total landed weight of all cargo service airports. General aviation airports, including reliever airports, receive a total of 20% of AIP funds. Each of these airports receives the lesser of $150,000 or one-fifth of the estimated 5-year costs published in the NPIAS to a maximum of $200,000 per year. Each state receives apportionment funding which is based on population and total square miles of the state. The funds are allocated to the state, which then allocates the funds to toward approved general aviation airports' capital improvement plan projects.

FAA Discretionary Funds

After all these entitlements are funded any remaining money can be spent by the FAA at their own discretion. Discretionary grants are approved by FAA based on project priority. Despite its name, this fund is subject to three set-asides, which are airport noise, military airport program and grants for reliever airports. At least 35% of discretionary grants are set-aside for noise compatibility planning and noise abatement programs. At least 4% of discretionary funds are earmarked for converting current or former military airports to public use airports or dual use airports. There is a discretionary set-aside of 2/3 of 1% for reliever airports in metropolitan areas suffering from flight delays.

The federal (FAA) share for both entitlement and discretionary grants is as follows: large and medium hub airports (i.e., BDL) are eligible for 75% federal funding, with noise program implementation being eligible for 80%; and small hub, reliever and general aviation airports are eligible for 90% funding. The airport sponsor is responsible for the remaining amount. CAA supplies the entire match for the CAA-owned airports using a combination of bond funds for the general aviation airports and PFCs plus airport funds for BDL. PFCs are also collected directly by the BDL and HVN airports and applied to eligible project costs at those airports.

Airport sponsors who accept a grant offer make specific obligations to the federal government for a period of the useful life of the project (typically 20 years). These obligations, generally referred to as grant assurances, include but are not limited to; operating and maintaining the airport in a safe and serviceable condition for public use, overseeing the proper use of airport revenue, not allowing any activity that would interfere with its use as an airport, and not granting exclusive rights to those providing aeronautical services.

5.1.3 AIP Program Status Update

From 2007 through February 2012, federal aviation program authorities and AATF revenue collections continued under 23 short-term legislative extensions[3] until the passage of the FAA Modernization and Reform Act of 2012. That legislation authorized the AATF taxes and AIP program through September 30, 2015 (the end of federal fiscal year 2015). The 2012 Reform Act authorized AIP funding through the end

[3] The authority to collect Trust Fund revenue lapsed on July 23, 2011. On August 5, 2011, Congress passed an extension of the FAA authorization. FAA estimates indicate that this lapse in the authority reduced Trust Fund revenues by about $400 million.

of Federal FY 2015 at $3.35 billion per year, representing a compromise between the Senate bill (recommended increasing AIP authorization up to $4.1 billion) and the House bill (recommended lowering AIP to $3 billion). At the beginning of Federal FY 2014 (October 1, 2013), the AATF had a cash balance of $13.2 billion.

The President's Budget for Federal FY 2016 has proposed authorizing the AIP program at $2.86 billion, a 15% decrease from FY 2015. However, large hub airports will no longer be guaranteed AIP entitlement money, which means that additional grant funds would be available for distribution to smaller airports.

FAA Entitlement Funds

Of the six airports owned and operated by the CAA, BDL is the only commercial service airport. In Federal FY 2015, BDL received approximately $2.1 million in entitlement money from the FAA. Approximately $1.428 million was apportioned on the basis of passenger boardings and approximately $614,000 was apportioned on the basis of landed cargo weight and cargo operations. An AIP grant to BDL consists of 75% AIP entitlement or sometimes entitlement and discretionary funding. The 25% match to these funds comes from BDL revenue or PFCs. PFCs can be used as the Federal share or Airport share with an approved application. Projects at BDL can also be 100% funded with PFCs with FAA approval on eligibility.

HVN received entitlement money totaling $1 million (the minimum for primary airports, as defined by NPIAS) from the FAA in FY 2015. These funds are used for capital improvements and the grants cover 90% of the total cost. The municipality is responsible for the remaining 10% and is eligible for some grant-in-aid funds which are outlined below to assist HVN.

FAA Apportionment Funds

Connecticut received approximately $1.607 million in AIP state apportionment money from the FAA in FY 2015. CAA distributes these funds to state and municipally owned non-primary airports that are not directly eligible for entitlement money based on square miles and population of the state. The funds are allocated to projects based on approved CIPs with the FAA. Airports eligible for these funds include the following CAA-owned GA airports as well as all municipal airports in Connecticut: GON, HFD, OXC, DXF, BDR, MMK, 4B8, LZD, and IJD. Tweed-New Haven does not receive FAA apportionment funding although it is municipally owned. AIP funding to these nine airports is 90% Federal and 10% Sponsor. The CAA matches these funds at GA airports with State Bond Funds. The CAA receives $2 million per year in funds for the airport share of Federal projects and for other capital improvements. The CAA funds the entire 10% sponsor portion for CAA grants. The $2 million bond funds allocated also includes $200,000 in grant-in-aid to municipalities. This funding is divided among the five municipal airports for Federal eligible projects. The CAA participation in a municipal airport project is 75% of the non-federal share or 7.5%. All municipal airports are responsible for the 10% match and are eligible for grant-in-aid to assist in the matching funds. The grant-in-aid funds are allocated to the airports through an agreement with the CAA.

FAA Non-Primary Entitlement

In addition to FAA apportionment funds, the CAA-owned GA airports and all municipal airports also receive $150,000 in annual FAA non-primary entitlement funding to support capital improvements at their airports. The airports may elect to roll over their entitlements for up to three years in order to complete a larger project having higher costs.

FAA Funding Considerations

In order to allocate the available funds to eligible projects, it is recommended that these airports have a CIP in place showing improvements they have programmed, how much each improvement is expected to cost, and a schedule for these projects. It is important to note that a significant shortfall exists between the funding needed to complete capital improvements and the annual AIP authorizations. For example, Connecticut's annual apportionment of about $1.6 million must be allocated to support approved projects at 9 airports. The allocation is only enough to support a portion of total capital needs; as a result, airport improvements are often limited to pavement rehabilitation cycles, with some of that deferred, and options to fund growth nearly non-existent. While Congress authorizes the AIP funding levels, they also restrict local ability to set passenger charges. Raising or removing such restrictions would support additional infrastructure projects at commercial-service airports while providing formulaic flexibility for allocating development flexibility at other airports. Similarly, consideration for reducing grant restrictions on airport property usage could provide additional revenue flexibility that could support infrastructure investment and growth at many airports and reduce the rate of airport closures largely resulting from operational deficits.

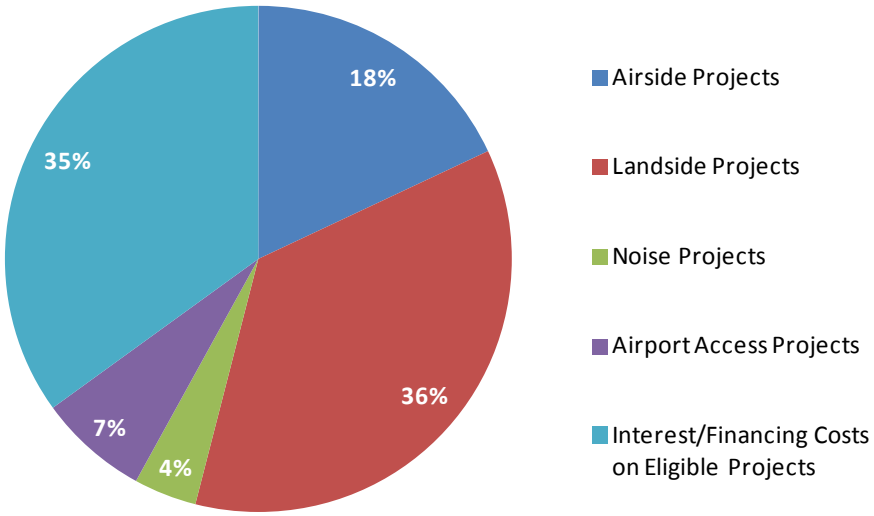
5.1.4 Overview and History of the PFC Program

Passenger Facility Charges (PFCs), a federally authorized source of funding for airport development projects, are an airport-imposed fee of up to a maximum of $4.50 per boarded passenger per flight segment. A passenger may be charged no more than two PFCs on a one-way trip or four PFCs on a round trip (with a maximum charge of $18). The fee is collected by the airline on the passenger ticket and remitted to the airports (minus a small administrative fee retained by the airline). Airports use these fees to fund FAA-approved projects that achieve at least one of the following PFC program objectives: preserving and/or enhancing safety, security, or capacity; reducing noise; or increasing air carrier competition. PFC collections can be used to fund the same types of projects as AIP grants, but are also allowed to fund certain project costs that are typically not eligible for AIP, including certain terminal improvements and debt service (principal and interest) and financing costs for debt issued for PFC-eligible projects.

In 2000, the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21) raised the ceiling for the PFC to $4.50 per eligible enplaned passenger; the maximum-allowable PFC level has not been increased since then. In return for imposing a PFC of more than $3.00, large and medium hub airports are required to give back 75% of their AIP entitlement funds. The funds that are given back (87.5%) are then made available to smaller airports, with the remaining 12.5% going to the discretionary fund.

According to the FAA, 390 commercial service airports were approved to collect PFCs as of April 2015, 338 of which currently collect at the maximum $4.50 level. Collections totaled $2.8 billion in calendar year 2014. To date, the FAA has approved PFC funding for over $90 billion of eligible project costs. ACI-NA estimates that at least 30% of all U.S. airport capital investment is attributable to PFCs.

Figure 5-3: Breakdown of Approved PFC Funding by Project Type Through March 1, 2015 (excluding Denver)



5.1.5 PFC Program Status Update

There has been little in the way of substantive changes to the PFC program since the last Connect State Aviation System Plan was updated in 2006. The most significant change made the streamlined non-hub application process, introduced in 2005 as a pilot program, permanent. The expiration of the 2012 Reform Act on September 30, 2015 represents an opportunity for airports to lobby for the significant changes they would like to see implemented for the PFC program in the Reauthorization bill, including an increase to the maximum PFC level in advance of FAA Reauthorization; as a Federal program governed by statute and regulation, any major modifications to the PFC program would require legislative action.

Leading up to the FAA Modernization and Reform Act of 2012, early versions of bills in Congress included a pilot provision that would have allowed up to six airports to impose an unlimited PFC so long as the charge was not collected as part of the ticketed price paid to the airlines by the passengers; this proposed provision was not implemented in the final Act.

The President's Budget for Federal FY 2016 has proposed increasing the maximum PFC level to $8.00, with the proposed increase coming at the expense of guaranteed AIP entitlement money for large hub airports. The primary U.S. airport trade associations ACI-NA and the American Association of Airport Executives (AAAE) have instead proposed an increase in the maximum PFC to $8.50, as well as the introduction of an annual inflation adjustment to the PFC cap. Airports have generally argued that a higher PFC cap is necessary to allow airports flexibility to meet their increasing funding needs and to account for the impacts of construction inflation over the past 15 years that has eroded the value of the

current $4.50 PFC. For example, an increase in PFC to $8.50 at BDL would generate more funding for capital improvements even given the possible loss of entitlement funding as a result of the increased PFC. However, the airlines, as represented by Airlines for America (A4A), have vigorously opposed any increase in the PFC cap, claiming that airports have sufficient financial resources to meet their funding needs and that PFCs are "taxes" rather than local user charges. Considering this airline opposition, which is similar in nature to previously successful efforts to remove any proposed PFC increases from FAA Reauthorization bills in years past, it is uncertain as to whether the PFC cap will be increased in the next FAA reauthorization legislation.

Recently, the General Accounting Office (GAO) has studied several merits of the PFC program, including the viability of alternative PFC collection methods and the impact of an increase in the PFC level on commercial aviation industry stakeholders. While noting the potential benefits of a PFC increase for airports, GAO would not endorse an increase, citing the uncertain impacts such an increase would have on demand for air travel.

In addition to any statutory/regulatory change that may occur as part of the upcoming Reauthorization, the FAA is currently undertaking an update of Order 5500.1 (the PFC Handbook), the primary policy document for the PFC program, which has not been revised since its original publishing in 2001. This effort is expected to result in the incorporation in the Order of several PFC program policy improvements, based on input gathered through outreach to and consultation with FAA PFC specialists, airports, airlines, and other industry stakeholders. Currently, the FAA expects a draft of the revised Order to be available for public comment by the end of 2015. Though this revision may implement process improvements for airports in the application and PFC program administration processes, changes that could impact airport funding levels, in terms of an increased PFC or expanded eligibility, are beyond the scope of this effort. There are currently two airports in the state that are collecting PFCs: BDL and HVN. PFC funding can be used for CAA as well as airport share of the project at these airports.

5.1.6 State/Local Funding Programs

After the downturns in traffic and economic activity that originated with the 2008 financial crisis, a number of smaller general aviation airports around the country have closed due to financial strain. Certain states have realized the value these airports bring to the community and therefore have tried to identify solutions to keep them operating, including finding funding sources to cover the major expense of airport safety and maintenance programs. For example, Massachusetts and Maine have 80/20 state/local funding programs for safety and maintenance for all public use airports. Rhode Island owns and operates all the public use airports in their state.

Connecticut General Assembly, Public Act No. 13-239 entitled "An Act Authorizing and Adjusting Bonds of the State for Capital Improvements, Transportation, Elimination of The Accumulated GAAP Deficit and Other Purposes" states, in part, that the CAA receives up to $2 million for development and improvements of general aviation airport facilities (excluding BDL). As previously mentioned for municipal airports, the CAA contributes 75% of the non-federal share which is 7.5% of the total project amount, leaving the sponsor responsible for 25% or 2.5% of the total project amount. For CAA-owned airports, the CAA funds the entire remaining share through general bond funds. Funding is provided to airport sponsors based on an FAA-approved CIP. A CIP based on an FAA-approved capital program is still helpful to both the airport and the State for financial planning purposes.

As part of the State's annual General Fund appropriations, HVN has received an Airport Grant of $1,500,000 each fiscal year since FY2010 and is scheduled to receive the grant again in FY2015 according to Public Act No. 14-47. These monies are used to subsidize operating costs for the airport.

5.1.7 Funding Summary

Connecticut's public-use airports have up to five potential funding sources for airport development – AIP grants, revenue and general obligation bonds, PFCs, and state and local grants. The following recaps the aforementioned sources and funding structure in the State of Connecticut:

- AIP Grants:
  - FAA-approved projects that support safe and secure aircraft operations at NPIAS airports
  - Entitlement Funds
    - BDL receives 75% AIP Entitlement or Entitlement/Discretionary then 25% comes from BDL revenue or PFCs – Approximately $2.1 million/year
    - HVN receives $1 million/year of entitlement funds
  - Discretionary Funds
    - After all these entitlements are funded any remaining money can be spent by the FAA at their own discretion.
    - Discretionary grants are approved by FAA based on project priority.
    - Large and medium hub airports (i.e., BDL) are eligible for 75%-80% federal funding
    - Small hub, reliever and general aviation airports are eligible for 90% funding
    - The airport sponsor is responsible for the remaining amount.
  - Apportionment Funds
    - 9 airports in CT that are either CAA-owned GA airports or municipally-owned airports, excluding HVN – Approximately $1.6 million/year
    - 90% Federal funding, 10% Sponsor funding
    - CAA Matching funds come from the state bond funds
  - Non-Primary Entitlement
    - $150,000 per year allocated to the 9 airports in CT that are either CAA-owned GA airports or municipally-owned airports, excluding HVN
    - Can be carried over for three years
- Earnings retained by the airport:
  - Revenue from fees, rentals, parking, and fuel sales, concessions, etc.
- Revenue and obligation bonds:
  - Bonds supported by the airport generated revenues
- PFCs:
  - FAA-approved airport projects that enhance safety, security, or capacity
  - $4.50 at BDL and HVN
- State & Local:
  - The CAA receives up to $2 million for development and improvements at GA airports and includes grant-in-aid to municipality
    - The CAA funds the entire 10% match for CAA grants.
    - The CAA participation in a municipal airport project is 75% or 7.5%.

- The $2 million bond fund includes $200,000 for grant-in-aid funding issued through an agreement with the CAA to the five municipalities as the sponsor is responsible for the 10% match.

- HVN receives $1.5 million per year through the State's annual General Fund appropriations for operating subsidy

Table 5-2: Airport Funding Sources

Airport Name	AIP Grants	AIP State Apportionment	PFCs	State & Local Grants	Earnings Retained by the Airport
CAA-Owned Airports					
Bradley International (BDL)	X	-	X	-	X
Groton-New London (GON)	X	X	-	X	X
Hartford-Brainard (HFD)	X	X	-	X	X
Waterbury-Oxford (OXC)	X	X	-	X	X
Windham (IJD)	X	X	-	X	X
Danielson (LZD)	X	X	-	X	X
Municipally-Owned Airports					
Tweed-New Haven (HVN)	X	-	X	X[4]	X
Igor I. Sikorsky Memorial (BDR)	X	X	-	X	X
Danbury Municipal (DXR)	X	X	-	X	X
Robertson Field (4B8)	X	X	-	X	X
Meriden-Markham Municipal (MMK)	X	X	-	X	X
Privately-Owned Airports Open for Public Use					
Chester (SNC)	-	-	-	X	X
Simsbury (4B9)	-	-	-	X	X
Goodspeed Airport and Seaplane Base (42B)	-	-	-	X	X
Ellington (7B9)	-	-	-	X	X
Skylark Airpark (7B6)	-	-	-	X	X
Waterbury-Plymouth (N41)	-	-	-	X	X
Toutant (C44)	-	-	-	X	X
Candlelight Farms (11N)	-	-	-	X	X
Salmon River Airfield (9B8)	-	-	-	X	X

[4] As part of the State's annual General Fund appropriations, HVN has received an Airport Grant of $1,500,000 each fiscal year to subsidize operating costs for the airport.

5.1.8 Future of Airport Funding

As discussed in Sections 5.1.3 and 5.1.5, the proposals for the PFC and AIP programs contained in the President's Budget for Federal FY2016 could represent a significant shift in the amounts and distribution of airport capital funding sources. Considering the level of airline opposition to any increase in the PFC level, as well as varying levels of support for the PFC and AIP proposals amongst airports, the fate of the these proposals is far from certain; it is possible that they could be enacted as currently proposed, redesigned, or rejected in whole. In short, the future of these critical funding programs remains unclear. What can be said with some level of certainty is that, in absence of a PFC increase or additional grant funding through the AIP program, airports of all sizes will need to optimize existing sources of revenue (especially non-airline revenues such as terminal concessions, automobile parking, rental car operations) or to identify new, alternative revenue sources (such as real estate development) in order to meet their capital needs.

5.2 Maintenance of Part 139 Certification

The requirements for obtaining and/or maintaining an Airport Operating Certificate under 14 CFR 139, Certification of Airports (Part 139) are derived from the requirement to comply with the various administrative, safety, maintenance, and operational standards mandated for certified commercial service airports.

There four classes of airports: Class I, II, III, and IV. The classifications are based on two components; the type of air carrier operations served (scheduled or unscheduled), and the size of air carrier aircraft served (large, which is at least 31 passenger seats, or small, which is at least nine). The classification given on the Airport Operating Certificate determines the level of safety, operational, and administrative requirement for each airport. These requirements specify the types, scope, and ultimately cost, of the services required to comply with Part 139.

Table 5-3 summarizes the various Part 139 requirements and an estimated range of initial and ongoing costs of compliance with each requirement. The cost ranges are defined as follows: Minimal ($0-$10,000), Moderate ($10,000-$30,000), Moderate High ($30,000-$50,000), and High (>$50,000). The cost of each requirement is based on experience with airport management and administrative costs at commercial service airports across the country, ranging in size from large hub international airports to non-hubs and other small commercial service airports.

Table 5-3: Part 139 Requirements Under 14 CFR 139

Requirement	Estimated Initial/Ongoing Cost
Airport Operating Certificate (Part 139.101-115)	Minimal upfront cost; see ongoing costs associated with maintenance of required standards in sections 6.2.C-6.2.D.
Airport Certification Manual (Part 139.201-205)	Moderate upfront cost; minimal cost for ongoing updates.
Records (Part 139.301)	Cost of recordkeeping assumed to be included in relevant Part 139 subsections.
Personnel (Part 139.303)	Moderate for Initial Training, minimal for ongoing annual updates.
Paved Areas (Part 139.305)	May vary widely depending on airfield size and difference between existing airfield condition and required airfield condition (for initial certification)
Unpaved Areas (Part 139.307)	May vary widely depending on airfield size and difference between existing airfield condition and required airfield condition (for initial certification).
Safety Areas (Part 139.309)	Minimal per annum
Marking, Signs and Lighting (Part 139.311)	Minimal to Moderate per annum
Snow and Ice Control (Part 139.313)	Moderate to High per annum (varies by year)
Aircraft Rescue and Firefighting (ARFF) (Part 139.315-319)	Moderate to High annual costs for ARFF staffing (depending on ARFF Index), plus Moderate High costs for initial training, and Moderate costs for annual training.
Handling and Storing of Hazardous Substances and Materials (Part 139.321)	Minimal per annum
Traffic and Wind Indicators (Part 139.323)	Minimal per annum
Airport Emergency Plan (Part 139.325)	Moderate Initial costs for development of plan; minimal cost for annual updates and training
Self-Inspection Program (Part 139.327)	Minimal per annum
Pedestrians and Ground Vehicles (Part 139.329)	Minimal per annum
Obstructions (Part 139.331)	Minimal per annum
Protection of NAVAIDs (Part 139.333)	Minimal per annum
Public Protection (Part 139.335)	Moderate to Moderate High Initial cost for airports not currently in compliance; minimal ongoing cost per annum
Wildlife Hazard Management (Part 139.337)	May vary widely depending on proximity to wildlife population centers
Airport Condition Reporting (Part 139.339)	Minimal per annum
Identifying, Marking, and Reporting Construction and Other Unserviceable Areas (Part 139.341)	Minimal per annum
Noncomplying Conditions (Part 139.343)	No direct costs, but possibility of reduced/foregone revenue from air carrier operations not served due to conditions

While the exact costs of maintaining Part 139 certification at BDL, HVN, GON, and BDR were not evaluated, it is anticipated that the cost is greatest at BDL given its class in comparison to the other airports. Industry studies have indicated that the cost of Part 139 at smaller airports is most significantly attributed to requirements associated with ARFF, perimeter fencing, snow and ice control, and the airport

certification manual.[5] Lower level ARFF operations are estimated to cost an airport between $0.2 million and $0.4 million per year in personnel and depreciation costs. [6] Determining whether or not achieving or maintaining Part 139 certification is beneficial for a particular airport depends on an each airport's individual assessment of multiple factors that are unique to its operation and business model, including:

- the existing and future demand for commercial air service;
- the level of commitment from air carriers to provide the commercial service to meet existing and future demand;
- the financial costs for implementing and/or maintaining compliance with all Part 139 requirements; and
- the administrative ability to successfully implement and/or maintain compliance with all Part 139 requirements.

Connecticut's total commercial service market is likely to increase although it is anticipated to be concentrated heavily at BDL. Increased coordination between BDL and HVN may increase the leverage available for growing and expanding air service within Connecticut while also supporting HVN's ability to attract and retain service. Should air service cease at HVN, the airport should consider divesting its Part 139 certification if it is determined that the return of air service is no longer viable. Groton-New London (GON) and Igor Sikorsky (BDR) Airports should maintain their existing Part 139 certifications while the viability for re-establishing scheduled air service is explored. Similar to HVN, should it be determined that air service is not likely to resume at one or both airports, maintaining Part 139 certification can potentially be eliminated to the extent that a significant cost savings could be obtained.

Not specifically assessed as part of this system plan are the individual tenant-lease agreements and operational policies at GON and BDR that may incorporate certain airport operational requirements similar to those associated with Part 139 certification. A number of airports maintain safety and operational procedures at or close to Part 139 standards either due to a policy requirement or to comply with specific tenant leasing terms. For these airports, the incremental costs of obtaining/maintaining certification could be minimal. One airport sponsor may decide that any potential savings should be taken and choose to forego Part 139 certification. Another may decide that the ability to serve commercial air carriers, regardless of how likely they are to attract such service, is worth the minimal expense to maintain certification. The political climate and need to support employment at the airport by maintaining the certification can also be a factor.

A final consideration is that Part 139 certificated airports are considered for the distribution of discretionary AIP grant monies ahead of non-certificated airports. This preferential status could help defray or eliminate any incremental costs of certification in the form of grants for capital spending on eligible airport projects, including pavement, lighting/signage, snow removal and ARFF buildings/equipment. This potential benefit is likely to decline as the FAA continues to move toward activity measures as a primary basis for funding, perhaps relying on plans similar to the FAA GA Asset study.

[5] Airport Cooperative Research Program (ACRP), Impact of Regulatory Compliance Costs on Small Airports, 2013.

[6] ACRP Web-Only Document; *How Proposed ARFF Standards Would Affect Airports, June 2009. http://onlinepubs.trb.org/onlinepubs/acrp/acrp_webdoc_007.pdf*

5.3 Funding Priorities and Challenges

Based on the system needs and challenges of the previous chapter, Connecticut's primary strategic issues from which to consider funding allocations can be described as follows:

- Focus on BDL to serve all commercial service needs of Connecticut and western Massachusetts.
- Efforts and facility improvements associated with retaining and expanding air service at HVN and attracting air service to BDR and/or GON
- Support "High End" (e.g., business jet capable) airports that help foster business development and economic activity of Connecticut.
- Market Research and Business Development
- Undertake education and outreach efforts at the State level to inform legislative action and at the local level to improve community support for "high end" airport activity and development.

5.3.1 Focus on Bradley

Although BDL's passenger and airline activity has fluctuated, enplanements have begun to trend upward. Enplanements have increased from calendar year 2013 to calendar year 2014 by an overall average of 8.22% and the trend has continued through calendar year 2015 with a positive increase. Aircraft operations have experienced negative growth during the same time frame. As mentioned in previous chapters, this is attributable to airlines upgauging aircraft to accommodate more passengers. BDL retains a high-service level compared to the economy (measured as Gross Domestic Product [GDP] for the area). This means that the area is well connected to the rest of the world. However, BDL is the dominant of Connecticut's two existing air carrier airports. Continued effort is needed to maintain the high level of service and minimize leakage, particularly to Providence (PVD) and Westchester County Airport (HPN). Allocating appropriate financial resources to the following areas will enhance BDL's ability to serve all of Connecticut:

- Maintain low airline operator cost— Primary support for this effort is to enhance other revenues. This may be accomplished, in part, by harnessing available property for a combination of aviation and non-aviation development. In all cases, rates should be set at the price point that maximizes total return (for airline and non-airline businesses). Regular research must be accomplished to stay ahead of market conditions for purposes of adjusting price.

- Enhance ground transportation— Increase capture rates in overlapping catchment zones by providing convenient transportation from the major population centers, particularly along the coast. Such passengers (and other airports) may realize a benefit to establishing BDL pick-up service with locations at BDR, HVN, and GON where already convenient parking exists. The option may reduce leakage, particularly to PVD and HPN. The possibility of direct operation of such service may be advantageous to CAA.

- Airline terminal— Enhance and market BDL's convenience/ cost influences: convenient road and/or transportation options, parking, speedy processing, cost, and amenities. Maintain low operational costs by consolidating processing functions and incorporating sustainable design principals.

- West Coast and International service— Construct flexible terminal facilities that can process domestic and international passengers, conduct the market research and capture plan, and obtain a carrier. The following chapter will include scenario-based assessments. The acquisition of non-stop west coast and/or international service is helpful for capturing additional revenue and increasing BDL's overall competitive position so as to increase its geographic coverage and market share within the area covered.

- Cargo facilities— Work with cargo providers and major stakeholders (e.g., Amazon) to determine BDL's role in air cargo. The recently initiated master plan may study this in more detail. A potential roadblock to relocating and/or expanding cargo facilities relates to obtaining the cargo-operator financial support needed to relocate to a new/upgraded facility as cargo carriers will typically opt for network redistribution. A creative approach to financing and recouping the initial investment may be incumbent upon BDL.

- Revenue enhancements— By increasing total revenue, BDL would have greater flexibility for maintaining low air carrier operator costs and/or making customer-valued improvements to the BDL facilities. These objectives may be accomplished by leveraging developable airport land by providing available revenues, providing additional fee-based services that can operate profitably, and by optimizing/re-balancing existing rate structures.

- Market research and business development— Airline and cargo operators will increasingly depend on airport operators to promote the airport and even specific airline destinations. Additionally, to increase activity, it may be desirable for the airport to conduct city-pair analysis and/or cargo market studies to capture these services at BDL. It should be assumed that competing airports will be providing such support.

The discussions related to BDL ground transportation enhancements provoked a related discussion about intrastate air connectivity that could accomplish the same objective. Certainly any connective enhancements that are convenient and cost effective would benefit Connecticut's traveling public. Potential scenarios could include an air taxi operation, charter service, or possibly a corporate air shuttle operating on a regular basis. It is unclear whether such a market exists given typical passenger tolerances related to price and convenience. CAA may wish to explore this further with local air taxi/charter services, particularly if airline cessation occurs at HVN. It may also be possible to operate a ground service at the same time to capture passengers that would otherwise elect to use another airport instead of a "commuter" flight.

5.3.2 Commercial Air Service at HVN, BDR, and/or GON

The State of Connecticut is focused on maximizing commercial air service options available within the state. The state's interests may best be served through more formalized coordination between BDL and HVN and potentially at BDR and GON. The objective would be to identify the types of services to be sought for each specific service area that could be viable with coordination given the significant market overlap. The systematic approach would support the development of business cases for the airlines, development objectives for each airport, statewide pursuit prioritization, and supporting a unified marketing strategy. Currently HVN has four daily American Airlines flights to/from Philadelphia International Airport (PHL), an American Airlines hub. As an example, retaining service at HVN could

be a statewide priority above pursuing new entrant service at BDR, but the efforts need to be coordinated so as to increase statewide service as opposed to shifting demand within the state or introducing new risks of split service that could result in a statewide loss. As previously mentioned, runway and terminal improvements are needed at HVN in order to accommodate imminent changes to the airline fleet.

5.3.3 "High End" General Aviation Airports

It is generally desirable to attract "high end" corporate aircraft operators, and even more desirable to encourage corporations that operate business aircraft to establish headquarters, or operational centers that will help expand the economic base of an area. It is also noted that during the course of this System Plan Update, the State of New York changed its general aviation tax structure specifically for the purpose of "restoring competitiveness" with New Jersey, Massachusetts, and Connecticut. New York's assessment calculates that each business jet contributes five on-airport jobs and $1 million in annual economic activity. New York acknowledges the jobs created as desirable careers ($50,000 - $100,000 / year).

Based on Connecticut's population distribution, planning and development efforts supportive of "high end" business jets should be concentrated on the following four focus airport and two secondary ones. The secondary airports should be assessed to determine the market and development feasibility for accommodating "high end" demand.

"High End" Focus Airports

Connecticut's primary airports provide "high end" support today. Strategically, these airports are important for capturing this important growth markets and obtaining the economic and job-related growth associated with that market. For this reason, continued investment and support is needed to foster continued growth.

- Bradley International Airport—BDL is located close to the primary population center, has the necessary aviation support services and facilities needed to serve the ultra-high end (e.g., largest) corporate user, and has available land for potential development. Because BDL's primary focus is commercial air service, non-commercial efforts should concentrate on: the largest aircraft types; aircraft manufacturing, maintenance and repair operations; build-to-suit corporate tenants; and potentially, build-to-lease facilities. The recently initiated master plan should consider on-airport land use development options and possibly a re-developed east area development plan that closes small Runway 1-19 to support future aviation related development. Enhanced business development supportive of "high-end" general aviation development would further enhance Connecticut's competitive position.

- Waterbury-Oxford Airport— OXC is already functioning as a "high end" facility experiencing competition with neighboring New York airports in this market, particularly with Dutchess County Airport (POU) and Westchester County Airport (HPN). Continued support in terms of airside development including site preparation is critical in supporting growth of this key market segment. Statewide marketing efforts to attract new business operations should include OXC as an optimal choice.

- Igor Sikorsky Memorial Airport— BDR provides "high end" support along Connecticut's western coast. There are 33 based jets at BDR and annual operations of over 68,000. BDR is located in close

proximity to the panhandle population area. BDR's two runways are 4,761 feet and 4,677 feet for Runways 11-29 and 6-24, respectively. A 5,000 foot runway would meet high end insurance threshold requirements. However, the relatively short extensions required to meet the threshold-length of 5,000 feet for Runway 6-24 is impacted by roads, water channels, wetlands, and residential development. Despite the current runway length limitations, BDR could support high end growth through continued hangar development and necessary improvements to the existing airfield including pavement rehabilitation. While the state explores the potential of reinstating commercial air service at BDR, the opportunity to use BDR as a transportation center that would allow passengers to transition from BDR to BDL could enhance BDL's capture rate by giving Connecticut residents more options rather than using New York's HPN and New York Port Authority Airports

- Tweed-New Haven Airport—HVN provides additional geographic coverage to support business and high-end growth along the central Connecticut coast and also has the necessary aviation facilities and services to support additional "high end" activity.

- Groton-New London Airport— GON provides "high end" support to the east coastal area of the state, extending its reach into Westerly, Rhode Island. Such activity is likely restricted at Westerly State Airport (WST) due to inadequate runway length and residential development. The north quadrant can support additional hangars and the terminal building portion can likely be redeveloped to provide additional hangars or service support. The former terminal building and related facilities could also be converted into a transportation center to support BDL's capture of air service passengers by providing convenient parking and transportation if it were to be determined that air service would not resume at GON.

Secondary Airport

A secondary airport provides "high end" support currently to some level, but would require potentially significant improvements to maximize the role. The feasibility of implementing the improvements may be challenging. At DXR, it may be advisable to assess a long-term initiative for overcoming development constraints to enhance the State's competitive position.

- Danbury Municipal Airport— DXR provides limited "high end" support for the western portion of the state competing directly with HPN and POU. Runway 8-26 is 4,421 feet long, which is shorter than the insurance requirements for many "high end" operators. As a consequence, OXC absorbs the majority of such demand and DXR activity is concentrated more heavily on lighter general aviation aircraft. The feasibility and benefit that can be extracted by extending Runway 8-26 to the west should be further explored. A similar assessment of providing an instrument procedure to the primary runway should also be assessed since the shorter crosswind runway is the primary instrument runway and is only 3,135 feet long. Such a project would involve modifications to two public roads and the acquisition of additional property: business and residential.

5.3.4 Market Research and Business Development

The aviation industry and its various sub-sector markets are becoming increasingly competitive. In the past, emphasis was on system capacity that would support growth. Today, growth is limited to certain sectors. Furthermore, aircraft operators, aviation business, and aviation dependent businesses tend to "shop around". To gain advantage in acquiring these enterprises, a proactive approach to business development is necessary. In many cases, conducting market research and presenting the findings to prospective business operations will gain advantage, particularly if the effort is continuous and supportive of a business-friendly reputation. The prospective businesses will at a minimum, include the new information into their decision-making and the effort itself will have an influence increasing the likelihood of continued dialogue, specific term negotiation, and successful acquisition. Examples of common aviation business development activities include:

- Airline city-pair analysis
- Cargo demand-case analysis
- Airport property assessments and parcel marketing
  - Build-to-suit
  - Build-to-lease
- Employee-base research
- Tax-incentivized development zones
- Facility financing support
- Revenue guarantees

5.3.5 Education and Outreach Efforts

Some of Connecticut's airports are constrained by airport-specific development restrictions, perceived environmental challenges, and community resistance. Such challenges are difficult to overcome since they require significant and continuous communication. However, systematic education and outreach programs have proven to be effective in converting oppositional barriers into collaborative partnerships. Two specific areas of concentration are recommended: Statewide/legislative and airport support.

Statewide Outreach

The focus of the statewide outreach program is largely to inform State legislative decisions and policy actions although there is some benefit to industry in having a visibly proactive business-favorable industry perception. It is important to have both a response to emerging issues and also to promote new policies to gain statewide economic advantage. Examples include:

- Commercial air service needs— Focused understanding and development of statewide initiatives and efforts to meet commercial air service passenger needs within Connecticut and to protect the overall aviation interests of the state.

- Analysis of proposed legislative actions— identify the range of reaction to proposed legislative action quantified as a net cost or gain in terms of economic activity and jobs.

- Regular reporting— develop and submit regular reports focusing on the system's contributions to the economy and identify the system's competitive advantages and disadvantages. Include a description of non-legislative policies being implemented to encourage growth and identify specific enabling actions for legislative consideration. Legislative actions potentially helpful include: statewide preemption on airport-specific development restrictions, airport land use compatibility controls, and environmental streamlining.

- Develop and distribute promotional material— identify the economic benefits of the airport's system in terms of direct jobs and payroll, dependent jobs and payroll, and induced (i.e., multiplied) impacts. Identify the industries being targeted and the implications they have on the economic outlook.

- Consider social media— enhancing or developing web forums and soliciting input is a low cost way for increasing interest and support for ongoing activities.

Airport Support

Additional outreach support for the specific airports identified in Sections 5.3.1 and 5.3.2 would augment the efforts of the individual airport operator. This can include conducting specific market research, attending meetings with the airport operator and proponent business operators, targeting incentive support, and participate in community matters and assist in the development of local outreach programs. The primary goal is to support local efforts that attract industry and economic growth to the state. An important statewide goal is also to improve airport-community understanding to promote a cooperative synergistic approach supportive of on and near-airport development that mutually supports the area's economy.

Chapter 6 – The State of the Airport System in Connecticut

6.1 CAA Role and Function

The Connecticut Airport Authority (CAA) was created via legislation signed into law in July 2011. One important goal of the CAA was to transform Bradley International Airport (BDL) and the five general aviation (GA) airports owned by the state into drivers of economic development. Connecticut DOT transferred ownership of the facilities and associated functions to manage operate and regulate airports to CAA, which in turn is operated by an Executive Director and a Board of Directors. CAA retains funds from services it provides at airports and also has bonding authority.

The ultimate outcome of the creation of the CAA is an organization that is tightly focused on its mission to enhance the airport facilities in the state and using them to drive economic growth. For example, CAA has been instrumental in the continued development of the Bradley Airport Development Zone (BADZ) that provides a property tax holiday and a 10 year corporate business tax credit for businesses that create or substantially renovate facilities in the zone consistent with overall development goals. The zone encompasses the towns of Suffield, East Granby, Windsor and Windsor Locks. Eligible uses include manufacturing, Research & Development directly related to manufacturing and servicing, overhauling or rebuilding machinery and equipment for industrial uses. Businesses that qualify include air cargo, aerospace, transportation-related services and manufacturing. In July 2015, responsibility for managing the BADZ was transferred from CAA to the Connecticut Department of Economic and Community Development. A new zone has recently been created around the Waterbury-Oxford Airport using a similar concept.

CAA has also created a strategic plan to make BDL the airport of choice in the region by focusing on:

- Air service development
- Facility and service excellence
- Regional economic development
- Planning for the future.

A key to this plan is expanding the air service to include international and west coast markets. The CAA may, in some instances, provide incentives to air carriers for new service consistent with Federal Aviation Administration (FAA) guidelines. Air cargo is an important and growing part of this plan, with the BADZ playing an important role.

The CAA has also undertaken a terminal redevelopment project, featuring the removal of Terminal B and the realignment of the roadway system which will create a space for a future Ground Transportation Center (GTC). The GTC will include a consolidated rental car facility, public parking, and transit center.

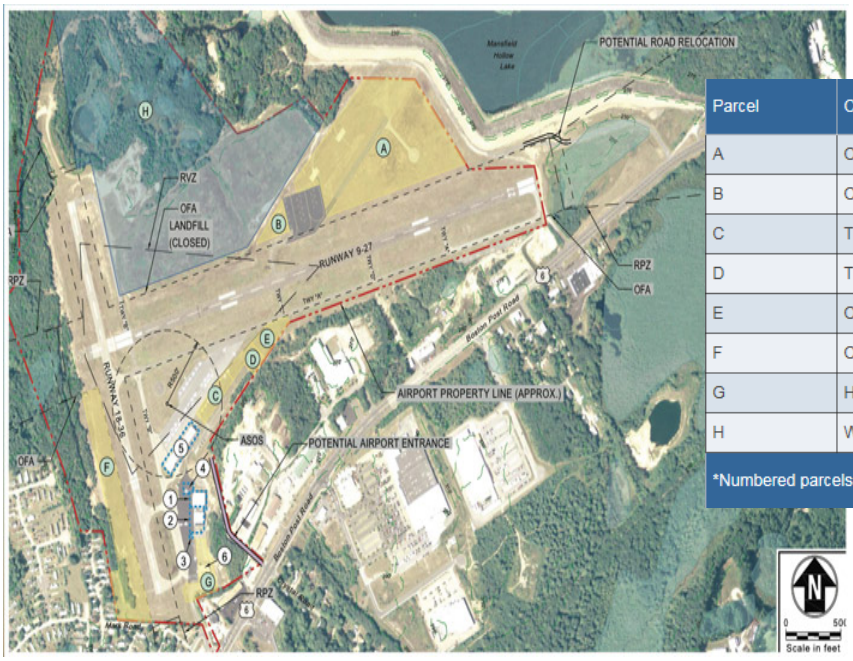
Consistent with its stance as a more business-like organization, CAA has also modernized budgeting and financial management of the airport to improve bottom line performance.

At the same time, the CAA has worked to identify and promote development opportunities at its GA airports. Following is a brief summary for each airport:

- Danielson: sites identified for T-hangars, skydiving, and open space/land preservation
- Groton-New London: hangars, tie-down areas, National Guard facilities, general development
- Hartford-Brainard: hangar and tie-down areas including corporate opportunities, Runway Safety Area (RSA) and Runway Protection Zone (RPZ) and other aviation and non-aviation developments
- Waterbury-Oxford: U.S. Customs inspection and processing facilities, hangars, aviation support functions, and non-aviation development
- Windham: tie-downs and hangars (including private opportunities) as well as non-aviation development

Figure 6-1 is an example of the presentation of development opportunities at Windham Airport

Figure 6-1: Development Opportunities at Windham Airport



Parcel	Current Use	Recommended Use
A	Open Space	Aviation- Tie-downs/Private Hangars
B	Open Space	Aviation- Tie-downs/Private Hangars
C	Turf Tie-dow	Aviation- Hangars
D	Turf Tie-down	Aviation- Hangars
E	Open Space	Aviation- Hangars
F	Open Space	Aviation- Tie-downs/Private Hangars
G	Hanger & Parking	Aviation or Non-Aviation Development
H	Wooded & Landfill	Wooded & Landfill
*Numbered parcels represent existing airport leaseholds		

6.2 Status of Connecticut Airport System

This section reviews the ability of commercial airports to handle expected landside and airside demand by airlines, and the ability of the state's airports to support based aircraft and especially higher end turbojet aircraft that are critical to business functions.

6.2.1 Commercial Airports

BDL is a medium hub, as designated by the FAA. Since the great recession, BDL has begun to recover air service, albeit in a changed environment. The consolidation of the airline industry in the United States means that there are only three traditional hub and spoke carriers (American, Delta, and United) and Southwest who dominate the industry. Two intermediate-sized carriers (jetBlue and Alaska) provide some competition on the east and west coasts respectively, and three ultra-low cost airlines (Allegiant, Frontier,

and Spirit) offer primarily point to point services. The airport operator, CAA, has mounted an aggressive campaign to enhance air service, with the primary objectives of obtaining non-stop service to the west coast and Europe. CAA has developed attractive incentive packages to encourage additional air service. Meanwhile the airport has also put into place a process to expand terminal and ramp capacity when warranted, by demolishing the existing Terminal B and developing a plan for a new facility to include a new Federal Inspection Services (FIS) with connectivity to existing terminal facilities.

Presently, the airport has 23 gates in Terminal A. Assuming that all of them remain in service, and the composition of flying remains about the same, new gates may not be needed until sometime in the 2025 to 2030 time frame based on the forecast in Chapter 3. [1] However, new service with aircraft having wider wing spans may reduce the availability of gates during the peak hour (17:00) which would necessitate new terminal capacity in the 2020-2025 period, or possibly earlier if there was a significant entry in the European theater with more than one wide-body aircraft. The peak hour at 17:00 is particularly attractive for gate time for service destined for both Europe and the west coast – primary targets of the CAA's strategic plan.

The state's other commercial airport is Tweed New Haven (HVN) which serves the New Haven region. Runway 02-20 is 150 feet wide and 5,600 feet long, and is the primary instrument runway at HVN. US Air/American offers up to four flights daily to its Philadelphia hub with Bombardier Dash 8 aircraft with 37 seats. HVN's development of additional commercial passenger and freight operations is hindered by the length of the primary runway.

HVN should continue to focus efforts on maintaining commercial air service. Recently, the city announced plans to extend the runway by 1,000 feet to increase the feasibility of operating modern jet aircraft.[2] Increases in air service at HVN probably depend mainly on addressing the runway issue. Thereafter, depending on the size of the aircraft introduced, the terminal building may also have to be modernized. HVN is operated by an independent authority that depends on state-level funding for its operations and non-federal capital programs. The airport is not self-sustaining.[3] While it is not state owned and operated, any improvements or new air service at HVN should be coordinated with the CAA.

Overall, air service is particularly challenging for Connecticut, a small state that does not host its own major US city helpful in obtaining new airline markets and to attract new businesses. Therefore, airline service offerings will reach those of the major metropolitan hubs. Instead, Connecticut currently competes in a regional market with airports that have similar airline, destinations, convenience, and cost factors. Connecticut has an advantage to capitalize on the those particular strengths and potentially enhance the service offerings on a statewide basis using through system wide coordination. As such, a major goal established by the CAA through this planning effort is to improve in-state passenger retention. Focus

[1] This outcome is based on applying the terminal planning method in FAA 150/5360-13 para 26 to the June 2015 schedule, the growth for BDL forecast in Chapter 3 and assuming no change in average aircraft size.
[2] Letter from the Mayor (April 28,2015) http://www.flytweed.com/community-regulations/#future-of-tweed
[3] Ibid "There has been a misconception since the creation of the Airport Authority that the airport can be self-sustaining. That goal, while desirable, is not realistic for the foreseeable future."

areas identified that could improve retention include: coordinated data gathering and marketing, enhanced community outreach, acquiring scheduled international destinations, enhancing statewide intermodal connectivity, and progressive investments in airport facility infrastructure to meet FAA design standards of larger aircraft and passenger facilities.

Airside capacity does not appear to be a problem for either commercial service airport. As was shown in Chapter 4, the two commercial service airports in the state are operating well below their Annual Service Volumes. BDL is at 36.3 percent today and is forecast to approach 50 percent in 2035, while the figures for HVN are 13.8 percent and 15 percent respectively.[4]

6.2.2 General Aviation Airports

As was shown in Table 4-5, airside capacity is not a problem at Connecticut's GA airports. By 2035, among CAA owned airports, Hartford-Brainard (HFD) is forecast to have the highest demand to capacity ratio at 38 percent. For municipally owned airports, Danbury is forecast to have the highest ratio by 2035 of 41 percent. For private airports, the forecast highest demand capacity ratio by 2035 is at Waterbury Plymouth –38 percent. Statewide, among all airports including commercial service, the total demand capacity ratio is forecast to increase from 22 percent in 2015 to 25.5 percent in 2035.

An important question for Connecticut is whether the existing airport system can accommodate growth in the based GA fleet. What is most important in terms of supporting business growth and economic development is the availability of hangar space for higher end GA aircraft.

Overall demand for based aircraft accommodations in the state will vary. Table 3-13 forecasts a 1.07 percent annual increase in based airport at CAA airports, 1.44 percent at municipally owned facilities, and no growth at private airports. As was noted above, all of the CAA airports have identified and are promoting areas for further GA development. For example, Table 3-7 shows that Waterbury Oxford will grow from 183 based aircraft in 2015 to 243 in 2035, an increase of 34 percent. This airport has an active FBO that promotes basing jet and other aircraft. It should be able to accommodate the forecast increase in fleet

The story is mixed at the municipally-owned airports. Table 3-7 forecasts a 55 percent increase in based aircraft at Sikorsky (BDR) from 190 to over 300 aircraft. About a quarter of BDR's current fleet of aircraft is turbojets. BDR seems to be able to attract private capital to support growth in based aircraft. A private firm recently completed one 40,000 square foot hangar facility and has plans for another. Future development is based on runway safety area improvements and runway rehabilitation.

The City of New Haven has made public a plan to extend HVN's main runway by 1,000 feet in an effort to attract additional air service. This extension could also make the airport more attractive as a base for turbojet aircraft. Table 3-7 forecasts a 47 percent increase in the based fleet by 2035. HVN has identified areas to house additional aircraft which are under option for further private development. There are environmental and political constraints to overcome for expansion and growth at HVN.

[4] See Table 4-5.

Meriden-Markham (MMK) is forecast to show a 34 percent increase in based aircraft by 2035. The airport has an active program to build additional hangar capacity as demand requires.

The main concern for future accommodation of the GA fleet in Connecticut relates to airport closures. The facilities likely to see additions to their based fleets appear to have adequate programs in place for accommodation. There is no forecast increase in basing at private airports, but all such airports nationwide are exposed to higher risk of closure. Airport closure scenarios are discussed later in this chapter.

6.2.3 Attracting and Keeping Based High End Jet Aircraft

Turbojet aircraft are often important instruments used by large corporations to extend the span of control of senior executives. The flexibility and capabilities of a private jet aircraft makes it possible to visit multiple customers and corporate locations in a single day. The largest jets are capable of long distance international operations. In fact, the airport in the United States with the most international departures is Teterboro Airport in nearby New Jersey.[5] For these reasons, Connecticut has an interest in insuring that its airport system is capable and competitive in basing jet aircraft. For corporations located in Connecticut or in nearby cities in other states, ease of access, the quality of the facilities and the cost to base, service and fuel aircraft and house crews will dominate the location decision.

There is a second characteristic of the demand for basing facilities that is important for Connecticut which widens the geographic competition for basing aircraft considerably. New York City has the largest concentration of major corporations using business jets in the U.S. Furthermore, it is home to many wealthy individuals who use private jets for their personal use. The same is true, but to a much lesser extent, of the Boston metropolitan area. Because close-in airports especially in New York are more fully developed, there is a shortage of capacity to house private jets in hangars at airports in the immediate vicinity of the city. Thus Connecticut airports also compete to base jet aircraft that transition to a New York airport to pick up passengers. For example, the Waterbury-Oxford Airport Master Plan Update cites a survey showing that 90 percent of the multi-engine turboprop and 54 percent of the turbojet departures transition to pick up passengers, primarily at Westchester and Teterboro airports.[6] Some operations to and from Connecticut airports involve fractional and jet card operators making transition flights.

The economics of operating a business jet for corporate travel is complex. Average hangar rents for a large business jet aircraft can be approximately $20,000 per month at Westchester County Airport and approximately $15,000 monthly at Teterboro Airport, both of which are relatively close to New York. The average monthly rental for the same type of aircraft at the outlying airports including those in Connecticut has been reported to be about one third as much. The savings in rental fees is offset in part either by the higher operating cost to transition the aircraft from the remote facility that is closest to the origination point of the passengers or added ground access time for passengers. Operating conditions at remote facilities may be more favorable in terms of uncongested airspace (i.e., reduced potential for

[5] Forbes Magazine: " Thirty Amazing Facts About Private Jets" (February 13, 2013)
http://www.forbes.com/sites/davidewalt/2013/02/13/thirty-amazing-facts-about-private-jets/
[6] Appendix A Waterbury-Oxford Airport Master Plan Update (2012)

departure and arrival delays), less aircraft apron congestion and the availability of more modern facilities. However, the congestion in New York airspace and at its nearby airports also means that inbound transition flights to pick up or drop off passengers may be delayed, which reduces the attractiveness of remote basing. It is less expensive for crew members to live in Connecticut than in the New York metropolitan area as well. But because most trips from a remote base involve a transition flight, remote basing often requires more crew hours and fuel to perform the same trip.

Finally, it is important to note that the state tax liability is a very important factor in basing aircraft. Until very recently, New York state airports were at a severe disadvantage in this dimension. According to one political interest group, New York lost 698 private aircraft in the period 2002-2012, primarily due to sales taxes on plane purchases, fuel, repair and use of aircraft. The same group estimates that Connecticut gained 31 aircraft in that same period.[7]However, this is about to change. Beginning September 1, 2015, all GA aircraft became exempt from such taxes in New York State. This will increase the competition faced by Connecticut airports.

An aircraft owner will consider the total cost of basing an aircraft at an airport, to include:

- Tax liability
- Availability of storage/hangar space
- Storage costs
- Maintenance and fuel costs
- Landing fees
- Crew costs
- Value of access time for passengers
- Costs of delays and cancellations
- Trip origination place of senior decision-makers
- Runway length (at least 5,000 feet for turbojets)
- Precision approaches
- Tower present and operating hours
- Availability of FIS for international operations
- Airspace and airport congestion
- Availability of crew and business support services and their quality
- Part 139 certification (ARFF facilities and runway inspection/maintenance programs)

Table 6-1 compares the physical and service characteristics of Connecticut's airports serving turbojet aircraft to prominent competing airports in nearby states. Potential disadvantages for an airport relative to the competition are in bold. Among Connecticut's airports, the following have a shorter than ideal primary runway for turbojet operations: Hartford-Brainard, Windham, Sikorsky, Danbury and Robertson. In addition, Robertson lacks a tower, and Hartford-Brainard, Groton-New London, Windham, Danbury and Robertson do not have regular FIS (Customs and Border Protection) services available for

[7] No Plane No Gain , "Latest News " (June 14 2012)

international operations; a Customs facility is under consideration at Waterbury-Oxford. These physical or service items should be further evaluated and monitored as factors in future basing decisions.

Table 6-1: Characteristics of Connecticut Airports Regarding Turbine Aircraft Basing

Connecticut Airports		Locid	FAA Role	No Based Turbojet Aircraft	Tower	FIS Regularly Available	Longest Runway
CAA Owned Facilities							
	Bradley	BDL	Medium Hub	26	Yes	Yes	9510
	Groton New London	GON	Regional GA	6	Yes	**No**	5000
	Hartford Brainard	HFD	Regional GA	4	Yes	**No**	**4418**
	Waterbury-Oxford	OXC	National GA	31	Yes	**No**	5800
	Windham	IJD	Local GA	3	**No**	**No**	**4278**
Municipally Owned							
	Tweed New Haven	HVN	Non Hub	4	Yes	Yes	5600
	Sikorsky	BDR	National GA	33	Yes	Yes	**4677**
	Danbury	DXR	Regional GA	10	Yes	**No**	**4422**
	Robertson	4B8	Local GA	2	**No**	**No**	**3655**
Competing Out of State Airports							
Massachusetts							
	Barnes	BAF	National GA	11	Yes	Yes	9000
	Westover	CEF	Regional GA	2	Yes	Yes	11598
	Worchester	ORH	National GA	0	Yes	Yes	7001
New York							
	Plattsburgh	PBG	Non-Hub	2	**No**	Yes	11758
	Albany	ALB	Small Hub	18	Yes	Yes	8500
	Republic	FRG	National GA	43	Yes	Yes	6833
	Macarthur	ISP	Small Hub	51	Yes	Yes	7006
	Stewart	SWF	Non-Hub	52	Yes	Yes	11817
	Westchester	HPN	Small Hub	82	Yes	Yes	6549
New Jersey							
	Morristown	MMU	National GA	73	Yes	Yes	5998
	Teterboro	TEB	National GA	93	Yes	Yes	7000
	Trenton	TTN	National GA	18	Yes	Yes	6006
Rhode Island							
	Providence	PVD	Small Hub	6	Yes	Yes	7163

The overall goal of attracting high-end aircraft operators will require significant investment both in terms of direct infrastructure enhancements and also in terms of resource allocations. The infrastructure needs include pavement maintenance, obstruction clearing, projects to comply with design standards, and preparing new large aircraft hangar sites. More significant investment is required over a prolonged timeframe will be necessary to address development constraints. Establishing economic development

zones combined with new legislative, environmental, and community initiatives would be helpful in aligning the developmental growth efforts needed.

6.2.4 Part 139 Airports

Four Connecticut airports are certificated under Part 139 for scheduled or large aircraft charters. Both BDL and HVN are licensed as Class I, meaning they are capable of accepting large aircraft. BDL is equipped with appropriate Airport Rescue and Firefighting (ARFF) equipment and personnel to accept such aircraft today while HVN's ARFF rating is for smaller aircraft.

GON and BDR are Class IV airports under Part 139 and may accept charter aircraft with more than 30 seats. Both airports have the lowest ARFF index (A).

Both GON and BDR are among the leading airports in the region for "high end" operations. As shown in **Table 6-2,** combined operations by GA turbine operators and Part 135 non-scheduled operators (e.g., fractionals) are comparatively high. One important question is whether it makes sense for GON and BDR, which no longer have scheduled passenger service, to maintain their Part 139 certification including maintaining ARFF operations. According to a recent ACRP report, the lower level of ARFF operations are likely to cost the airports between $0.2 million and $0.4 million per year in personnel and depreciation costs.[8] This system plan suggest that they both should retain the certification as long as air service continues to be sought. Conversely, these airports should divest Part 139 certification if a policy conclusion is reached deeming air service to be no longer viable. Divestiture of the certification requirements would then enable a programmatic restructuring of airport operational, inspection and maintenance, and emergency response programs to more appropriate levels of service and cost structures.

[8] Figure 9: ACRP Web only Document 9 *How Proposed ARFF Standards Would Affect Airports* http://onlinepubs.trb.org/onlinepubs/acrp/acrp_webdoc_007.pdf

Table 6-2: ETMS Flights by Selected User Groups 2014

Airport	Fractionals / Non-Sched Part 135 Subtotal	General Aviation-Turbine	Total
TEB	82,885	49,472	132,357
HPN	21,597	11,211	32,808
BDL	2,858	3,072	5,930
PVD	2,067	2,040	4,107
SWF	1,339	1,491	2,830
BDR	1,673	1,090	2,763
OXC	1,151	983	2,134
GON	746	1,374	2,120
HVN	1,245	837	2,082
BAF	553	932	1,485
DXR	776	319	1,095
HFD	412	493	905
ORH	468	349	817
POU	335	235	570
WST	209	69	278
4B8	182	26	208
SNC	82	29	111

Source: GRA analysis of FAA ETMS 2014

6.3 Scenarios Affecting Air Service in Connecticut

This section discusses scenarios that may affect air service at BDL, HVN, and the GA airports.

6.3.1 Scheduled Airline Passenger Service

Air Service Metrics

Since 2007, there have been seismic shifts in the airline industry in the United States. The U.S. has gone from six network carriers to three. In addition, Southwest merged with AirTran and Ultra Low Cost Carriers (ULCCs)–Allegiant, Frontier and Spirit—have become more prominent. But what has happened to air service? Are we better off or worse off?

Every community has an interest in having better connectivity to major commercial cities in the U.S. and overseas where much of the world's Gross Domestic Product (GDP) is either produced or managed. This includes capitals and major financial and industrial centers. For example, almost a quarter of the U.S. economy is accounted for by the federal government, which is managed in Washington D.C. Every community in the U.S. has an important interest in having easy commercial connections to D.C. Similarly, every community has an interest in access to New York, Los Angeles, Chicago and other major commercial centers which produce a large portion of the nation's wealth and manage many private enterprises. The same logic applies to London, Shanghai, or Paris.

One way to capture this effect is to measure the quality of service to 100 of the world's most important cities (nonstop, one or two stops, online or codeshare, frequency and seats) weighted by the relative economic output of the destinations.

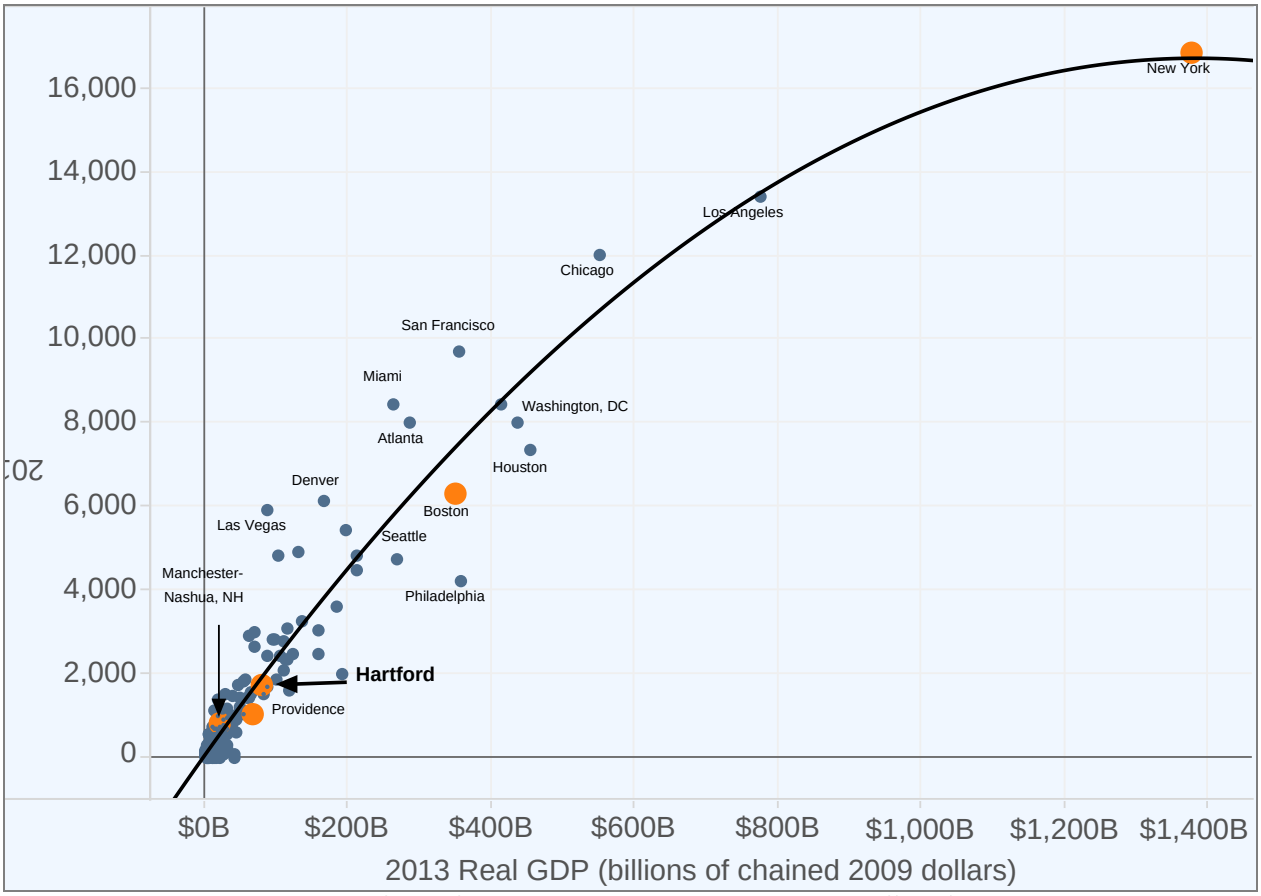
There is a very tight relationship between each U.S. community's quality of air service and the size of its economy. It is generally true that a U.S. city with higher GDP also has better quality air service. However, some cities do much better than expected while others do much worse. GRA, Inc. has developed an index for assessing air service quality expectations given the economic output of the passenger catchment area. **Figure 6-2** shows the results of the GRA Air Service Index (GRASi) for selected cities in 2014. The line represents expected air service quality; the points are actual quality levels for cities in the U.S.

New York and Los Angeles have the best air service by this metric; they also have the highest GDP's among U.S. cities. Chicago is substantially above the trend line, and so are other cities with major hubs--Miami, Atlanta and San Francisco. Surprisingly, some cities with major hubs are far below the trend line – Philadelphia, Houston, and Washington D.C.

Figure 6-3 shows what has happened to air service since 2007 and before the Great Recession and airline consolidation. The quality of air service across all U.S. commercial airports is down an average of 7 percent. It reached a nadir in 2009 when it was down an average of 11 percent, and has had a choppy recovery since then. Large Hubs (FAA designation), as a group, have almost fully recovered air service quality to pre-recession levels. However, the quality of air service at Small and Medium Hubs, some of which were formerly connecting hubs for major carriers, has not recovered from recession levels.

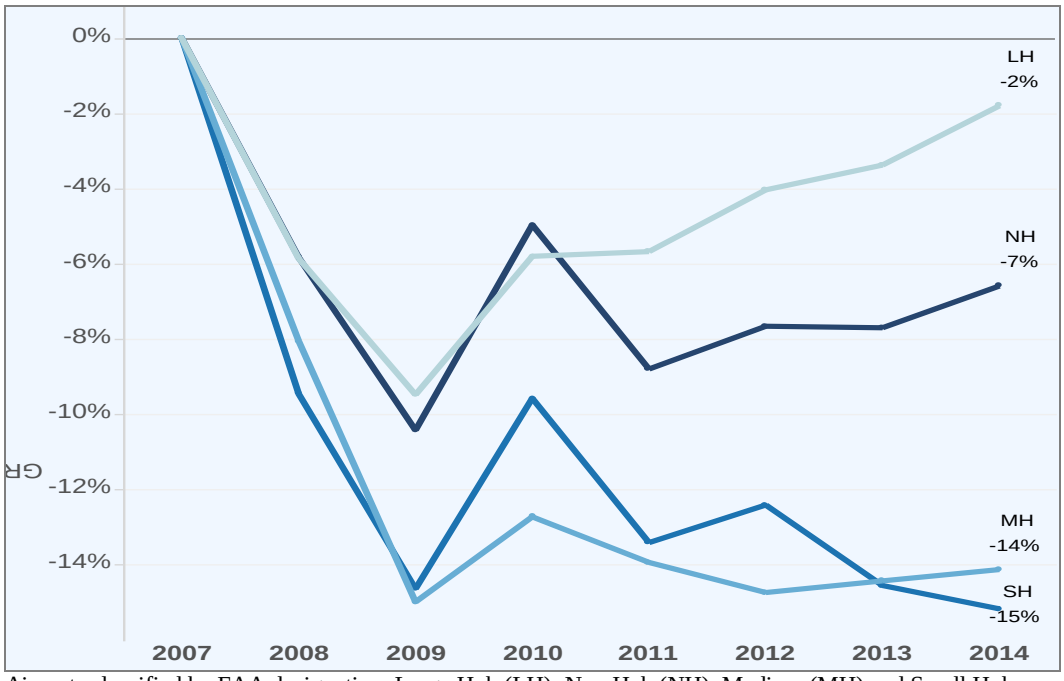
The quality of air service will affect a city's future in a connected world economy.

Figure 6-2: Quality of Air Service to U.S. Cities in 2014



GRASi: GRA Air Service Index. GDP figures for each US city (CBSA) published by US Office of Management & Budget; multiple airports in some cities.

Figure 6-3: Change in Air Service Quality Since 2007



Airports classified by FAA designation: Large Hub (LH), Non Hub (NH), Medium (MH) and Small Hub (SH) in 2014

BDL Air Service Performance

Each city's air service depends on a unique set of factors. Section 3 reviewed the major exogenous factors (two recessions, fuel price spikes, and airline consolidation) that have conspired to cause both airline enplanements and operations to fall at most airports since 2007. But an important question is how air service quality has been affected at BDL. **Table 6-3** shows that BDL has consistently under-performed expected air service quality by approximately 10 percent, relative to the size of its economy. This is to be expected in part because of the city's proximity to New York, which dominates air service in both domestic and international markets. BDL's air service quality remains better relative to its economic size than levels in either Boston or Providence. Manchester has lost two-thirds of its extraordinary air service premium relative to expectations since 2007.

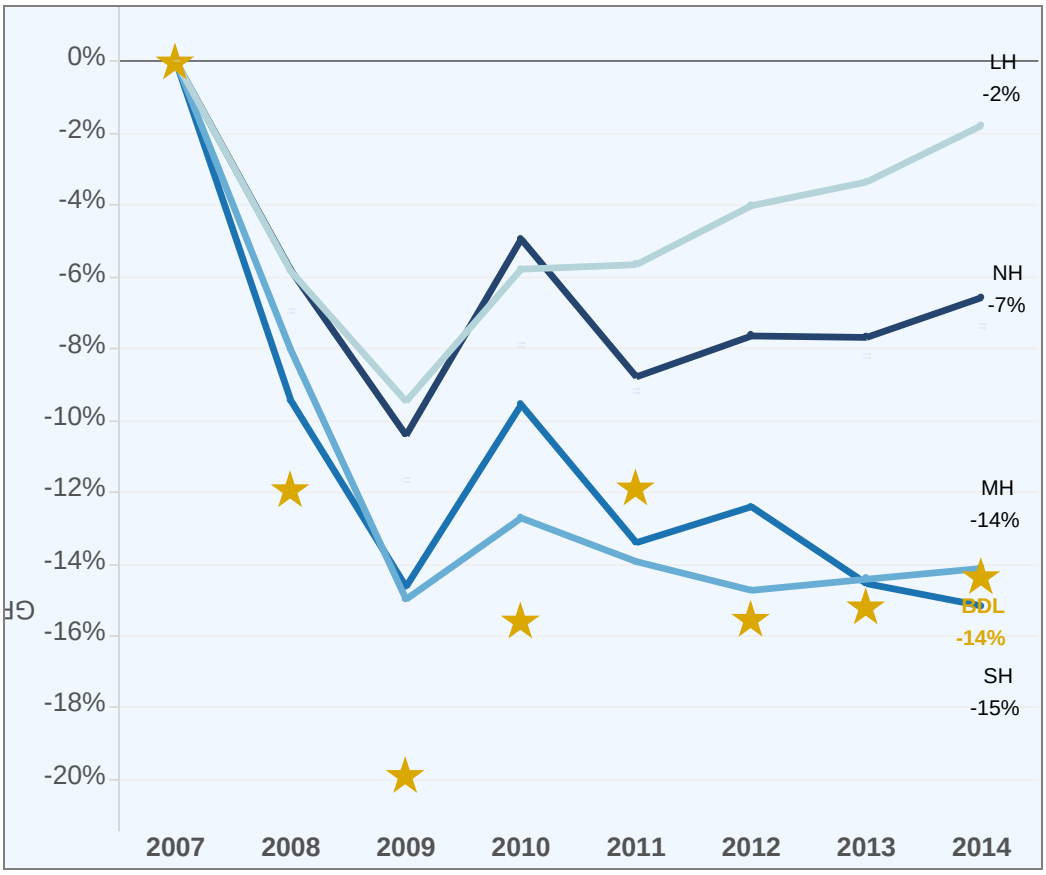
Table 6-3: Regional Commercial Air Service Quality vs. Expectations

CBSA	2007 Actual GRASi Relative to Predicted	2014 Actual GRASi Relative to Predicted
Boston	-19%	-15%
Hartford	**-11%**	**-10%**
Manchester	140%	45%
New York	2%	1%
Providence	-7%	-39%

Figure 6-4 shows that BDL's air service recovery between 2007 and 2014 has generally mirrored the choppy experience of other FAA medium hubs. The absolute level of air service at BDL has fallen by 14 percent during that period, which is identical to the experience at the average medium hub. **Figure 6-5** shows that BDL has fared better than Providence and White Plains in terms of preserving the quality of its air service, but that large metropolitan airports in Boston and New York have done better. Although not reflected in the year-end data described here, passenger volumes to date for 2015 are tracking higher than 2014 at BDL.

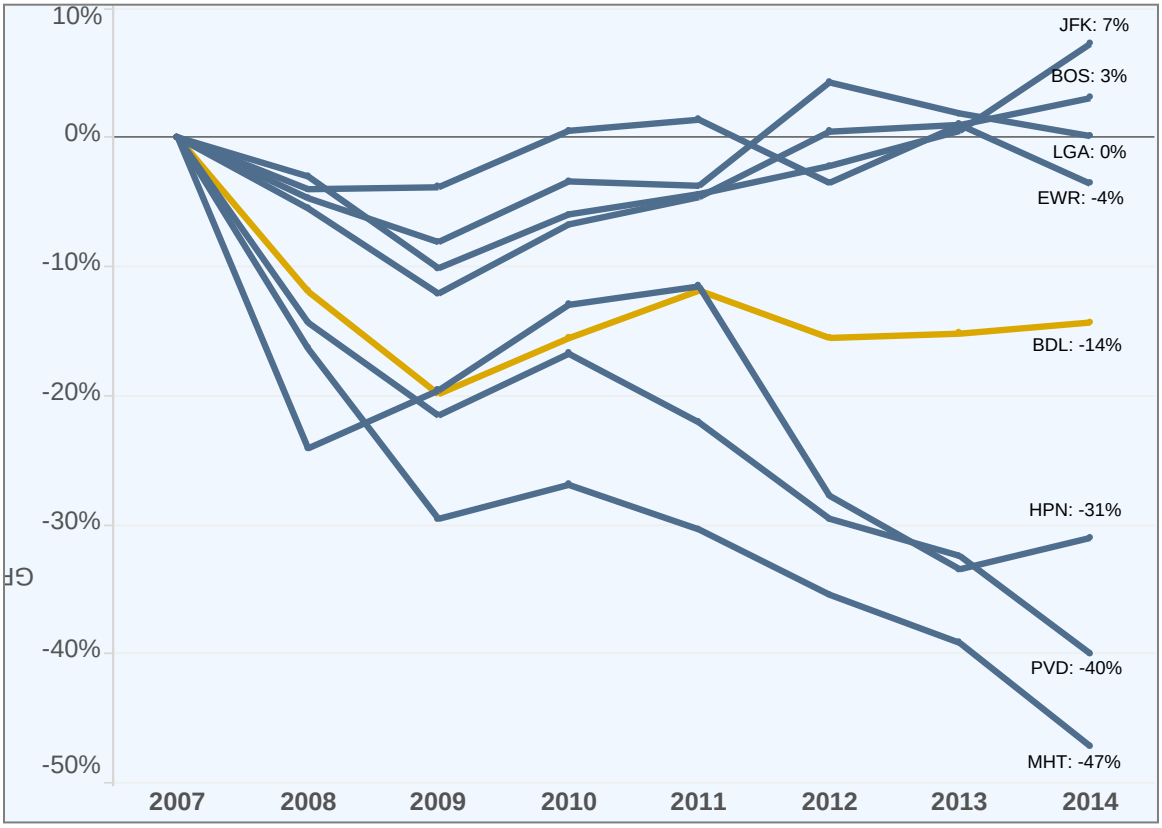
BDL's air service performance has mirrored that of other medium hubs. Consolidation of the airline industry has resulted in concentration of activity into the largest airports. This is not necessarily a permanent outcome because as the major carriers pull back, they may leave opportunities for new business model airlines like the Ultra-Low Cost Carriers. Ultimately the future attractiveness of BDL for new services will depend importantly on its economic catchment area, discussed immediately below.

Figure 6-4: Hubs in Terms of Air Service Quality



LH = Large Hub	**MH** = Medium Hub	**SH** = Small Hub	**NH** = No Hub

Figure 6-5: GRASi Percent Change from 2007 to 2014

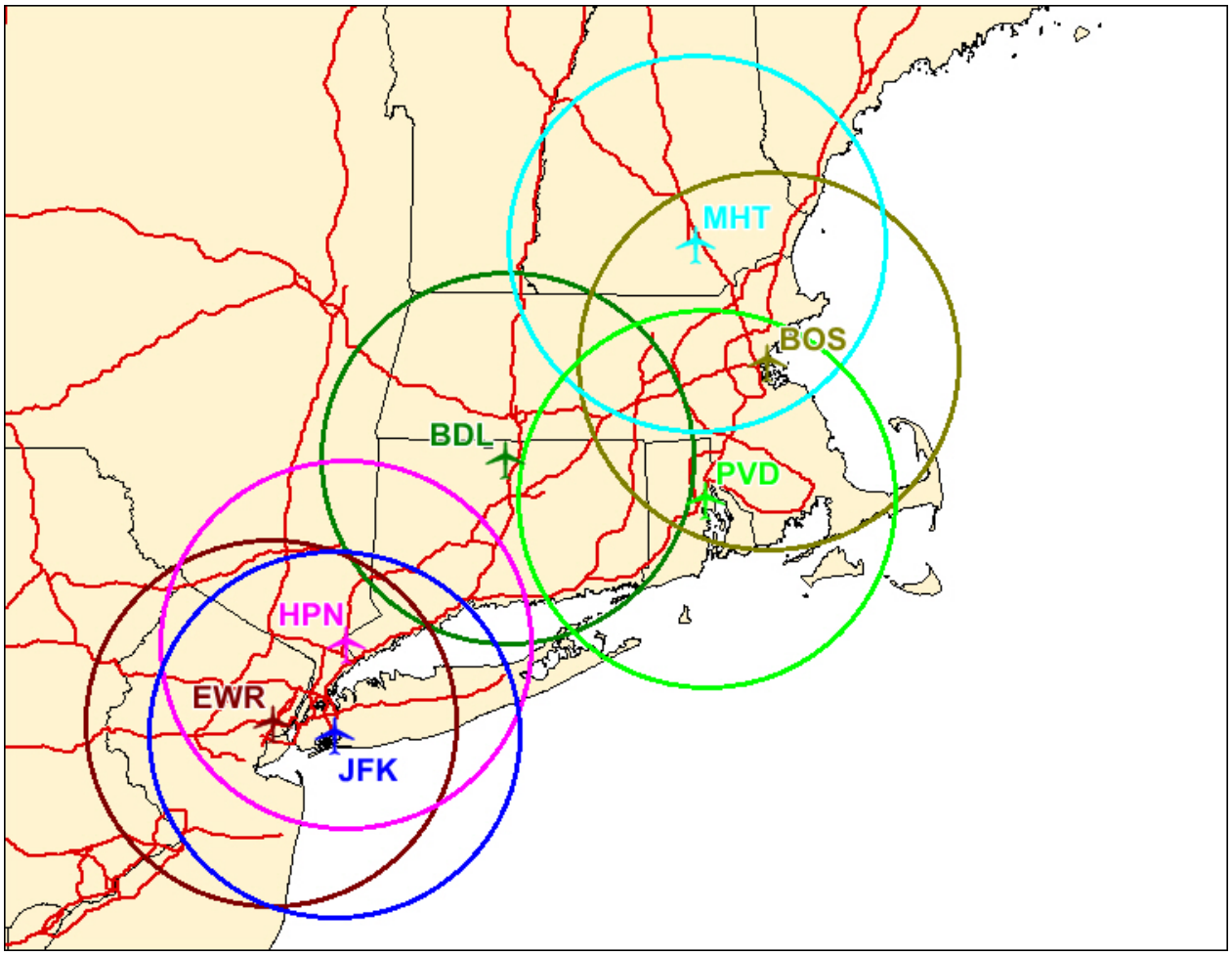


JFK - John F. Kennedy International Airport	**BDL** - Bradley International Airport
BOS - Logan International Airport	**HPN** - Westchester County Airport
LGA - LaGuardia Airport	**PVD** - T. F. Green Airport
EWR - Newark Liberty International Airport	**MHT** - Manchester–Boston Regional Airport

BDL's Economic Catchment Area-- Defined

Figure 6-6 shows the 60-mile areas around each of the major commercial service airports in the Connecticut, New York, New Jersey, Rhode Island and Massachusetts region. There is substantial overlap with the BDL 60-mile radius indicating the high level of competition among airports. Connecticut residents can travel via BDL, but also the three major New York airports, Westchester, Providence, and Boston nearby. There are secondary airports like Manchester, Albany, and Stewart that also impinge on BDL's catchment area.

Figure 6-6: 60-Mile Areas Around Major Commercial Airports



The 60-mile areas identified in Figure 6-6 supply only a limited sense of how the airports compete. To get this sense, one needs to consider how an air traveler decides among travel options, a process that is best described in the context of the full price of travel.

The key variables a generic intercity traveler assesses when choosing between travel options are the value of time and out-of-pocket costs. An intercity traveler first selects a mode of travel for his or her trip, whether it is via air, rail, bus, or automobile. The first mode choice is dictated primarily by the availability of travel options, time, and cost. Today, most long distance travel is made by air, while the vast majority of short trips (fewer than 300 miles point-to-point) are made by automobile. As the distance traveled increases, the speed advantage of air travel becomes preferred.

If air travel is the first choice, the traveler faces another decision if multiple airport options are available. A traveler residing or working in Connecticut can travel from BDL, but as Figure 6-6 shows, he or she has numerous other options in the region. In the present context, the focus will be on BDL and the major airports it competes with, all of which have good air service to major destinations, and each offering multiple carriers to many of those destinations.

All air travelers weigh the same variables, predominantly:

- Out-of-pocket costs
- Time of air travel from origin airport to destination airport
- Time of surface travel to the origin airport.

In the present analysis, the focus is on all markets served non-stop from BDL as of July 2015. **Table 6-4** shows average fares to these destinations from BDL and the several competing airports in the region. The weighted average fare for each airport is the average in each city-pair weighted by BDL's weekly nonstop seats in that market. Essentially this says that the fare for the average seat departing BDL is $202 in its nonstop markets; that same seat from Newark would cost a traveler $218, while at Boston it would cost just $184.

Table 6-4: Average Fares in Markets Served Non-Stop from BDL

	Departure Airport						
Arrival Airport	BDL	EWR	HPN	JFK	LGA	PVD	BOS
ATL	$198.71	$260.56	$253.47	$215.72	$219.81	$229.15	$227.37
BWI	$134.64	$196.72	$296.02	$229.38	$251.42	$123.38	$120.23
CLE	$216.22	$251.09	$210.46	$213.74	$213.42	$246.35	$283.09
CLT	$216.50	$219.60	$203.31	$144.98	$176.29	$159.22	$151.11
CVG	$291.24	$331.40	$292.89	$257.79	$329.20	$319.89	$289.05
DCA	$143.97	$193.88	$222.01	$138.16	$223.47	$173.16	$155.33
DEN	$240.32	$246.10	$269.30	$213.96	$211.17	$247.21	$236.64
DFW	$296.58	$334.27	$258.82	$256.02	$279.09	$247.95	$218.37
DTW	$264.35	$253.56	$280.57	$215.91	$186.78	$220.61	$192.48
EWR	$107.53	$0.00	$0.00	$0.00	$0.00	$184.11	$169.08
FLL	$156.31	$192.13	$199.85	$187.28	$163.29	$154.89	$184.27
IAD	$169.77	$211.48	$218.00	$140.70	$209.89	$172.32	$151.75
IAH	$286.03	$296.04	$253.47	$233.31	$286.53	$242.75	$240.18
LAS	$253.95	$306.70	$290.55	$282.46	$253.94	$242.74	$266.68
MCO	$153.68	$180.06	$174.30	$171.13	$173.40	$145.52	$190.59
MDW	$209.35	$162.47	$248.66	$211.74	$158.19	$174.67	$147.32
MIA	$171.88	$219.14	$224.09	$202.69	$204.04	$264.04	$221.07
MSP	$308.29	$357.35	$273.05	$231.68	$305.21	$266.75	$269.62
ORD	$251.90	$258.20	$288.07	$191.34	$206.52	$231.99	$180.01
PBI	$178.43	$188.55	$215.45	$187.04	$189.05	$184.00	$193.43
PHL	$252.14	$65.86	$132.74	$181.32	$90.34	$207.84	$145.59
PIT	$186.59	$229.20	$202.81	$230.03	$260.49	$182.31	$150.21
RDU	$182.25	$217.44	$201.91	$157.74	$177.97	$188.07	$156.40
SJU	$224.49	$220.96	$232.97	$199.49	$221.44	$200.02	$238.74
TPA	$142.60	$183.65	$177.01	$166.31	$167.26	$155.60	$183.37
Wt'ed Avg	$202	$218	$232	$192	$202	$192	$184

On average, a traveler will pay a bit more to fly nonstop from BDL than Boston, but less than from Newark. The traveler will also be concerned about:

- The quality of the schedule – time between flights to each destination
- Time to access the airport
- The cost to park and drive to the airport

More flights with larger aircraft are to the traveler's advantage because there will more seats available in more timeframes. The traveler will also want to minimize the amount of time and expense of driving to the airport and parking.

The decisions a traveler makes about which airport to choose depend on where they are on the map. A resident of Middletown will have easier access to competing airports to the southwest including Westchester, LaGuardia and JFK. A resident of Springfield will have easier access to Boston and Providence.

All of these factors can be summarized in the full price of travel which is equal to:

Fare + other out of pocket costs + value of access time + value of schedule quality.

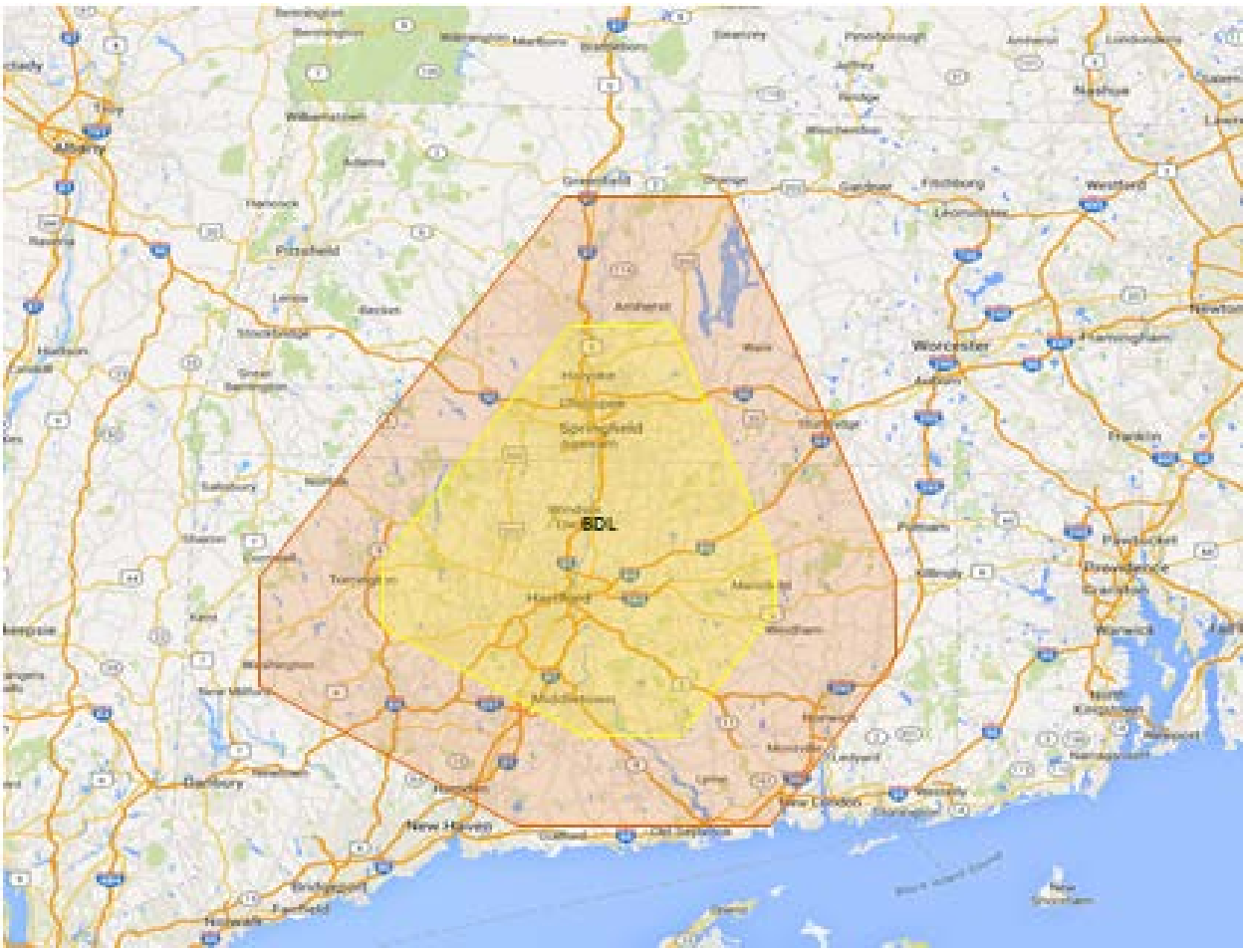
The traveler will want to minimize these costs. Because the full price of travel will vary depending on where on the map the traveler begins or ends his or her trip, it is possible to define an economic catchment area – the outline of which is the approximate line of indifference between using BDL or a nearby competing airport.

Figure 6-7 shows the economic catchment area for BDL nonstop services as of June 2015. The irregular shape reflects how the competition among airports depends on the access times from different points on the map. The extra shaded area to the northwest reflects additional service area where BDL likely competes with Albany.

Figure 6-7: BDL Economic Catchment Area in Non-Stop Markets

BDL's economic catchment area would be dramatically increased if it had the same average fare as Boston Logan (in BDL's nonstop markets). **Figure 6-8** shows the expanded area due to a 9 percent across the board reduction in nonstop fares from BDL (assuming no changes in fares from other airports and excluding the additional area to the northwest to make the comparison easier.)

Figure 6-8: Expanded BDL Economic Catchment with 9 Percent Lower Fares



The maps immediately above do not characterize all of the air service available from BDL. The airport has frequent service to airline hubs where onward connections are also possible. However, BDL's economic catchment area collapses in many connect markets because travelers have to make connections via a hub airport and incur at least an additional hour of time in transit. For many Connecticut travelers, accessing the nonstop from a hub may be about as convenient as flying from BDL and connecting via a hub.

However, the maps do show a very well defined area for air service that potentially can be expanded substantially with additional activity by low cost operators. The size of the area and its relatively strong population and income characteristics also mean that airlines may be tempted to incrementally add service. Air service incentives are one way to encourage new service to new cities.

Air Service Incentives

CAA has targeted non-stop service to Europe and the U.S. west coast as top air service objectives. These objectives would increase the airport's air service quality by turning one or two stop service to Europe into non-stop or one-stop service, and one-stop service to the west coast into nonstop service. This would reduce the world's overall cost to access the BDL market, which is consistent with growing the economy.

Another feature of BDL's current air service that might make it attractive for a foreign carrier are the potential to connect with jetBlue and Southwest airline services to major vacation destinations including Orlando and Las Vegas. Both of these U.S. carriers have made it easy for foreign carriers to interline with them. Baltimore (BWI) is one airport whose international service has benefited from easy connections with Southwest, for example.

An incentive would be an important buffer against losses, and might be enough to encourage an experiment, perhaps with seasonal service to begin. Seasonal service (6 months) would mean the buffer would be an even more meaningful share of costs. BDL currently has a healthy incentive program. In addition to the support already provided, the state may want to explore the potential to provide revenue guarantees to initiate international service in addition to potential leasing and other fee-reduction incentives.

New Technology Aircraft

By around 2018 there will be sufficient numbers of new technology narrow body aircraft from Boeing and Airbus to facilitate new services across the Atlantic reaching deeper into the continent from BDL. Service as far east as Germany may be feasible in the summer. Because European ultra-LCC's operate from multiple focus cities (that would feed transatlantic services), BDL may become an attractive opportunity because it would be difficult for legacy carriers operating from major hubs in Europe to match the service on either end. Again, the connectivity on both ends of the journey would be an important determinant of success.

Tweed-New Haven's Airline Service

As was noted previously, the opportunity for growth at HVN likely depends mostly on lengthening the runway. This is true for both high-end GA and for increased commercial service. Today, HVN has four flights per day to Philadelphia on aging 37-seat turboprop aircraft. According to the *FAA Forecast 2015* there are only 36 turboprop aircraft with between 31 and 40 seats in the U.S. fleet today. By 2020, FAA forecasts there will be only 30. The future of air service at HVN is largely dependent on a runway extension that would accommodate larger aircraft replacing the smaller ones currently in service, but that are being discontinued.

6.3.2 Air Cargo

The air cargo industry in general has been in decline since 2007. Several trends have converged within the last decade to reduce the demand for air cargo services including:

- The decline in demand for the transportation of high value documents due to the ascendance of electronic communications
- Increased pressure to keep freight costs low from high volume internet retailers that offer free shipping for their customers.
- Implementation of information technologies that optimize production, track inventory, follow cargo in transit and schedule just in time delivery.

The new information systems enable goods to move via less expensive longer-transit time freight options. Buying power makes it possible to maintain acceptable inventory carrying costs. Some high volume end-users pay nothing at all because they force manufacturers and distributors to hold inventory in transit and to bill for it after final sale.

The result is that shippers can opt for slower transit shipping so long as they are able to count on definite time deliveries. As shown in **Table 6-5**, this has resulted in an overall decline in air cargo in the immediate region since 2007. Relative to other airports, BDL has held its own but is still off by 16 percent in terms of tons of freight landed since 2007.

Table 6-5: Decline in Air Cargo Since 2007

Airport	Locid	Location	Nearest City	Airport Service Level Category	2007 Landed Weight (tons)	2012 Landed Weight (tons)	2013 Landed Weight (tons)	Longest Runway Length (ft)
Bradley International	BDL	Windsor Locks,	Hartford	P	459,287	364,288	386,929	9,510
TF Green State	PVD	Warwick, RI	Providence	P	86,974	52,472	53,208	7,166
Stewart International	SWF	Newburgh, NY	NY Metro Area	P	62,995	68,635	69,782	11,817
JFK International	JFK	New York, NY	NY-NJ Metro	P	2,556,998	1,747,323	1,686,385	14,511
Newark Liberty Internatio	EWR	Newark, NJ	NY-NJ Metro	P	1,873,401	1,427,004	1,266,613	11,000
Logan International	BOS	Boston, MA	Boston Metro	P	529,973	390,456	433,349	10,083
Hartford-Brainard	HFD	Hartford, CT	Hartford	R	N/A	N/A	N/A	4,417
Il Sikorsky Memorial	BDR	Bridgeport, CT	Bridgeport	GA	N/A	N/A	N/A	4,761
Waterbury-Oxford	OXC	Oxford, CT	Waterbury	GA	N/A	N/A	N/A	5,800
Tweed-New Haven	HVN	New Haven, CT	New Haven	P	N/A	N/A	N/A	5,600

Airport Service Level Categories, FAA Designations: P= Commercial Service-Primary, R= Reliever Airport, GA= General Aviation

Cargo Data Source: FAA Passenger Boarding (Enplanement) and All-Cargo Data for U.S. Airports, CY07 and CY13. No cargo data reported to FAA by Hartford-Brainard and Sikorsky airports but both are designated as cargo service points by Wiggins Airways, a Northeast regional freight carrier based in Manchester, NH.

Runway Length Source: FAA data reported on AirNav.com

The air cargo industry appears to be returning its focus to the niche shipment markets that require the high speed delivery of products and/or are high value goods that can absorb the cost of transporting the goods via air. Examples of the types of commodities which these characteristics include:

- Bio-material (e.g., laboratory samples, transplants, etc.)
- High value pharmaceutical and medical products
- Perishable and high value food products (e.g., sushi grade fish)
- High value and/or high in demand retail products (high end apparel, jewelry, electronics, toys with short product life cycles)
- Replacement parts (critical to production line or business operations)
- Emergency response shipments

BDL is poised to maintain share in this new environment. The BADZ zone around BDL has been instrumental in building manufacturing and other production likely to increase air freight in the future. Increases cargo volumes also have the added formulaic benefit of increasing the cargo portion of BDL's annual AIP entitlement to support airport capital improvements.

6.3.3 System Impacts of Potential General Aviation Airport Closures

As discussed in the Forecast Chapter, the prospects for GA are bimodal, with higher end, largely turbojet operations continuing to grow and more traditional largely single-engine piston operations in secular decline due to rapidly rising costs. This trend is expected to continue. Connecticut's airport system could be affected by this trend if the continued decline in piston activity threatens the viability of some of the state's airports. An important question concerns the ability to base any aircraft affected by closures of some airports.

Table 6-6 reports on the location of the state's GA fleet.

Table 6-6: Based Aircraft at Connecticut Airports

			Based Aircraft Airport IQ 5010							
CAA Owned Airports		Asset Class	Single Engine	Multi-Engine	Turbojet	Helicopter	Gliders	Military	Ultra Light	Total All Vehicles
Bradley Internatioal	BDL	Medium Hub	1	7	26	4		17		55
Groton-New London	GON	Regional	36	8	6	1		2		53
Hartford-Brainard	HFD	Regional	119	9	4	3	1			136
Waterbury -Oxford	OXC	National	128	8	31	1				168
Windham	IJD	Local	63	2	3					68
Danielson	LZD	Local	30	1			3			34
CAA Subtotal			377	35	70	9	4	19	0	514
Municipally Owned Airports										
Tweed-New Haven	HVN	Non Hub	31	8	4					43
Sikorsky	BDR	National	139	15	33	3				190
Danbury	DXR	Regional	244	37	10	2				293
Robertson Field	4B8	Local	50	5	2					57
Meriden-Markham	MMK	Local	63	2						65
Municipal Subtotal			527	67	49	5	0	0	0	648
Privately Owned, Public Use Airports										
Chester	SNC	Unclassified-Private	100	5						105
Simsbury	4B9	Unclassified-Private	13							13
Goodspeed	42B	Not NPIAS	29	1						30
Ellington	7B9	Not NPIAS	20			8			6	34
Skylark	7B6	Not NPIAS	60	1						61
Waterbury	N41	Not NPIAS	10				2		2	14
Toutant	C44	Not NPIAS	1			2			1	4
Candlewood Farms	11N	Not NPIAS	14							14
Salmon River	9B8	Not NPIAS	7			2				9
Private Subtotal			254	7	0	12	2	0	9	284
Private Not NPIAS Subtotal			141	2	0	12	2	0	9	166
State of Connecticut Totals			1158	109	119	26	6	19	9	1446

According to the FAA's Airport IQ 5010 database, there are 1,446 non-airline aircraft based in Connecticut, with 514 at CAA Owned Airports and another 648 at Municipally Owned Facilities. All of these airports are in the National Plan of Integrated Airport Systems (NPIAS) and are eligible for annual entitlement and apportionment grants under the FAA Airport Improvement Program (AIP). The remaining 284 aircraft are based at privately owned, public-use airports in Connecticut.

Developing Closure Scenarios

As noted in Chapter 4, there have been discussions about closing Danbury, Simsbury, and Ellington Airports, and Skylark Airpark. Danbury differs in that the evaluations recognized the important role of the airport, ultimately recommending continued operation and further growth. Privately-owned airports nationwide are vulnerable to closure primarily because of high operational costs, declining activity and aviation-generated revenues, and higher property valuations that encourage airport owners to sell the land for redevelopment to another use. In some instances, municipally-owned airports may be vulnerable to closure largely due to operational deficits and perceived lack of economic benefit. Any private or public-use facility that is in the NPIAS and has accepted federal AIP grants has to make a formal proposal for closure to FAA to settle outstanding grant assurance obligations

No effort has been made in this study to forecast the closure of any one airport. Instead, a set of closure scenarios have been developed which group airports together to test which remaining Connecticut facilities would face additional demand for basing and operations.

In the event of closure, the main issue for the state airport system is where based aircraft would likely move. All aircraft owners would be interested in relocating to an airport that is close to their trip originations. The only exception would be those jet operators whose main objective is to use a Connecticut facility as a base to fly transition flights to New York or Boston area airports to pick up corporate or VIP travelers. But even these jet owners would likely seek out a nearby airport that is convenient for crew domiciled nearby. All owners would also consider availability of services including fuel, repairs, hangar or tie-down availability.

As an initial screen for where aircraft might move, for each airport considered, the two closest alternates with at least some instrument approach facilities were identified. The based aircraft at each airport were assumed to prefer to move to these two close-by facilities. Closure scenarios were then developed by grouping airports and evaluating how based aircraft[9] from the group would be redistributed. Four scenarios were assessed:

(1) Airports where closure has been discussed (as reported in Chapter 4)
(2) All privately owned, public-use airports not in NPIAS
(3) All privately owned, public-use airports
(4) All airports in scenarios (1) through (3)

The resulting scenarios provide some guidance on the possible redistribution of GA aircraft without explicitly identifying any one airport as being more likely to close than another. The scenarios show which airports are likely to face additional demand for basing (and operations) in the event that some airports close or otherwise become less desirable in the future. To the extent that demand is concentrated at one or just a few airports, the stress on the airport system may be greatest. Owners would be less likely to be accommodated at their two most preferred alternatives and would face traveling further to access their aircraft, which raises their costs and may reduce the demand for airport services overall.

(1) Airports Where Closure Has Been Discussed

In Chapter 4, four airports were identified where closure has been discussed: Danbury (DXR), Simsbury (4B9), Ellington (7B9) and Skylark (7B6). Closure of Danbury was discussed by the FAA as outlined in Chapter 4 but it has been decided that closure will not occur and thus it will no longer be considered in this scenario analysis. The three airports, 4B9, 7B9, and 7B6, are privately owned, public-use airports with only Simsbury in the National Plan of Integrated Airport Systems (NPIAS). In total, 95 fixed wing aircraft would have to be redistributed if all three airports were to close. Based aircraft from these airports would be redistributed to BDR, OXC, MMK, or HVN. Sikorsky (BDR) and Waterbury-Oxford would together be preferred by more than half of this group of fixed wing aircraft. This level of demand would result in an increase in demand for basing facilities at these two airports. If facilities cannot accommodate these displaced aircraft, it is likely that many operators would have to move farther away from their current base, which would likely cause some owners of smaller aircraft to discontinue operations, consistent with the secular decline in this segment of general aviation.

[9] Only single engine piston, multiengine piston and turbojet aircraft were considered, because basing decisions for helicopters, gliders, military aircraft and ultra-light aircraft may not be governed by proximity.

Sikorsky (BDR) and Waterbury-Oxford (OXC) would together be preferred by more than half of this group of fixed wing aircraft. This level of demand would be difficult to accommodate because it would represent a sudden 50 percent (or more) increase in demand for basing facilities at these two airports. Thus, it is likely many operators would have to move farther away from their current base, which would likely cause some owners of smaller aircraft to discontinue operations, consistent with the secular decline in this segment of general aviation.

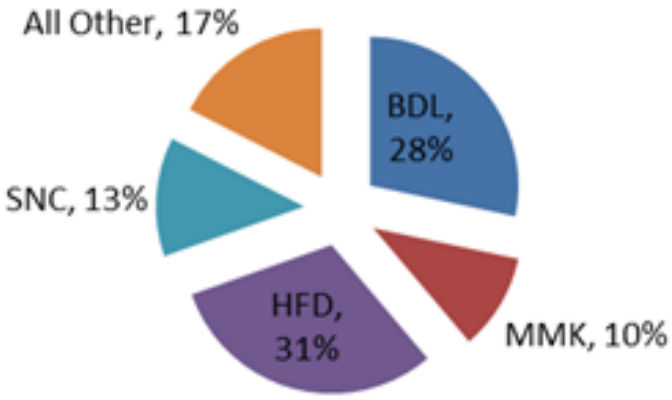
(2) All Privately Owned, Public-Use Airports in Connecticut Not in NPIAS

Another group of vulnerable airports would be the seven privately owned GA airports that are not part of the NPIAS. Included in this group are Goodspeed, Ellington, Skylark, Waterbury, Toutant, Candlelight Farms, and Salmon River. These private facilities:

- Receive no federal grants
- Have no federal obligations to remain open
- Are self-financing
- Typically have exposure to local property and other tax levies
- May have more economically attractive uses for their owners.

Together they house 143 (10 percent) of the state's 1,386 fixed wing based aircraft, with 141 of these aircraft being single engine piston. **Figure 6-9** shows how aircraft currently based at these seven airports might be redistributed to the two closest alternative airports.

Figure 6-9: Closest Airports for 143 Fixed Wing Aircraft Based at Private Airports Not in NPIAS*



*Based on two closest airports with instrument procedures identified in AirNav

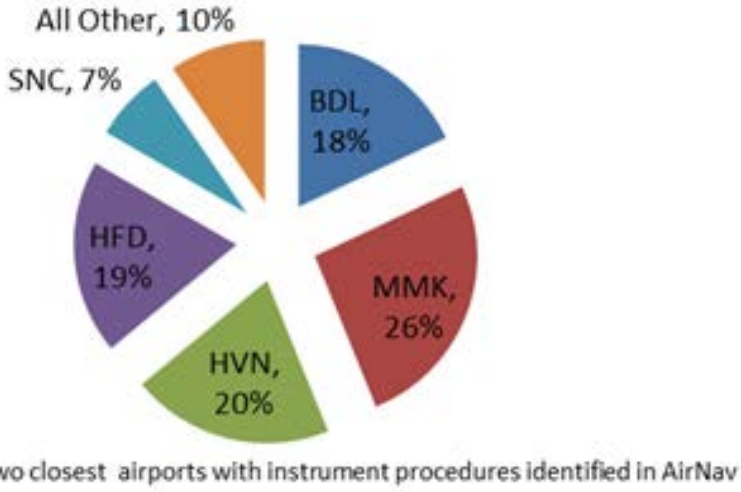
The two Hartford airports, BDL and HFD, would be preferred by over half of this group of fixed wing aircraft. BDL is an unlikely destination for these aircraft; it currently houses only one single engine aircraft and has plans to focus on higher value added activities. Thus, HFD could face outsize demand to house smaller aircraft should some of these private facilities close. Again, operators are likely to have to travel farther to be accommodated, with some choosing to exit resulting in a reduction in activity in the state.

(3) All Privately Owned, Public-use Airports in Connecticut

This scenario builds off of Scenario 2 by adding Chester (SNC) and Simsbury (4B9) airports to the group being analyzed. Together they house 118 of the state's GA fixed wing fleet (8 percent). Both are in NPIAS, but their role in the FAA's updated ASSET planning document is "Unclassified". [10]This means that these two airports have been found not to have a defined role in the NPIAS, which in turn may reduce the priority they are given for future AIP grants. Ultimately, the unclassified status may reduce the future viability of these facilities. However closing them would require FAA approval, if they have accepted AIP grants in the past.

Figure 6-10 shows the closest alternate airports aircraft currently based at all privately owned facilities in Connecticut.

Figure 6-10: Closest Airports for 261 Fixed Wing Aircraft Based at Private Airports*



The most likely or popular locations of displaced aircraft (without reference to local cost or capacity) would be: MMK, HVN, HFD and BDL. HFD currently houses 132 fixed wing aircraft. It would be preferred by owners of 50 aircraft, a number it would be unlikely to be able to accommodate immediately. The other airports listed would face even larger percentage increases in demand.

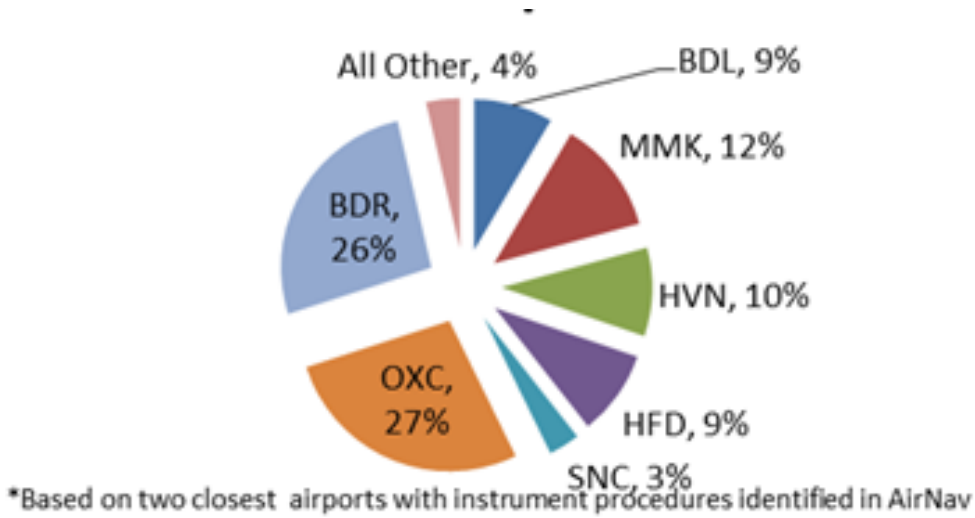
Chester (SNC) a privately owned airport in NPIAS would also be popular. It currently accounts for 105 aircraft and might be able to accommodate an increase of 18 or so aircraft implied in **Figure 6-10**.

(4) All Airports in Scenarios (1) Through (3)

Finally, Scenario 4 reports the redistribution of aircraft if all airports included in the prior three scenarios are grouped together. The results are shown in **Figure 6-11**.

[10] FAA: ***Asset 2: In Depth Review of 497 Unclassified Airports*** (March 2014)

Figure 6-11: Closest Airports for 552 Fixed Wing Aircraft Based at Danbury and All Private Airports*



Together these airports account for about 40 percent of the state's fixed wing fleet of GA aircraft. When taking all of the airports into consideration, Sikorsky (BDR) and Waterbury-Oxford (OXC) appear to be the most popular destinations for displaced aircraft. As outlined in Chapter 4, several of the airports identified to potentially accommodate displaced aircraft will require additional storage capacity to meet the demand associated with potential displaced aircraft in addition to the anticipated future demand.

6.4 Future Considerations that Could Influence Connecticut's Airport System

This section discusses emerging trends that may influence Connecticut's airport system in the future.

6.4.1 Air Service

Air service to and from the State of Connecticut is likely to continue to be dominated by BDL for the next 20 years. The airport has a well-defined economic catchment area that will continue to be attractive to air carriers in the future. Meanwhile, HVN will likely encounter significant challenges to retain air service because of near-term changeover to larger, more demanding aircraft by all airlines. To maintain air service, HVN will need to make significant enhancements to extend the runway, expand the terminal building, and then maintain a viable air service market under the new operating parameters. Maximizing the potential market position of all the state's airports to retain and increase the state's market capture of its passenger base will likely require a high level of coordination to enhance primary statewide service through BDL while identifying specific niche markets than can be better provided at HVN (or potentially GON or BDR).

At present, the U.S. commercial airline industry has completed its consolidation wherein four carriers account for almost 90 percent of the traffic. The very high rates of return being earned by these and other carriers should in the longer term attract additional capital and new air service that may successfully compete against very large surviving airlines.

The emerging competition may come from two sources. First, ultra-low-cost carriers already in existence may choose to expand their operations. Although Spirit and Frontier Airlines appear to be transitioning towards operating at larger hub airports, they will likely face competitive responses from their larger competitors. Over the course of the next 20 years, it may become more attractive to operate from medium-hub airports like BDL with well-defined economic catchment areas.

The second source for additional competition would be new entrant domestic operators. There currently are several carriers in early stage development. It appears that the combination of low interest rates, available aircraft, excess airport capacity, and very high airfares may make it feasible for new operators to find niches in the market. Again BDL, with its well-defined economic catchment area, may benefit from this trend. An important near term barrier to entry is the shortage of qualified pilots, but over time this problem should be resolved.

BDL may also find benefit from the emergence of new technology narrow body aircraft that should be available in large numbers beginning in about 2018. These new narrow body aircraft are capable of flying from BDL deeper into Europe, as far east as Germany in the summer. Ultra low-cost European operators (Ryanair and easyjet) have in the past considered beginning transatlantic operations. As was noted previously, BDL's well-defined catchment area, its potential to provide a connecting point to jetBlue and Southwest, and the difficulty major carriers would have in matching this service make this a potential for the future.

The state's proposed airline incentive program for European non-stops may also bring international service in the near future.

6.4.2 Changes in Government Policy

There are four changes in government policy that may influence the future of the Connecticut airport system:

- **Passenger Facility Charges (PFCs):** Currently Congress is considering a proposal to increase PFCs from Dulles at $4.50 up to $8.50. These proposals are being opposed by the airlines but supported by most airports. The rationale for the increase is to give airports an independent mechanism for raising funds to finance infrastructure. Having additional funds to plan and implement infrastructure improvements and to back bond issuance would likely make it easier for Connecticut to refurbish existing infrastructure and build new infrastructure consistent with increases in demand.

- **FAA Air Traffic Organization (ATO) Reform/Privatization:** Currently there are several parties in Washington who have expressed an interest in reforming the ATO in the FAA and making it a private, non-share, not-for-profit corporation modeled along the lines of Nav Canada. The idea is to convert air traffic control more of a production operation outside of the control of the government, but with a mandate to keep costs down and maintain levels of service. An important feature of the proposal would be to give a privatized ATO the ability to let bonds which would in turn allow it to finance NextGen and other capital projects. It is thought that the discipline from the private sector and the financial markets would substantially improve the productive efficiency in air traffic control

resulting in benefits to all users. The net impact may be to reduce the overall costs of producing air transportation, which would tend to increase the demand in the production of those services.

- **Sponsor Assurances:** There are also proposals being offered by larger airports to change their relationship to the AIP program. These large-hub airports typically do not receive a large portion of their needs from the AIP program, but the sponsor assurances that they sign to continue to participate in the AIP program restrict what they otherwise can do. These airports have offered to exit the program, in conjunction with an increase in the PFCs, to gain greater independence, especially in their dealings with airlines. The net effect of this may be to free up some AIP funds for medium-, small- and non-hub airports as well as for GA airports. Politically, however, if the larger airports are no longer in the program this may reduce Congressional support for the current levels of funding for AIP.

- **ASSET Program:** Under FAA's recent ASSET project, unclassified GA airports are not eligible for annual entitlement grants. Connecticut has two such private airports: Chester and Simsbury. While the FAA has committed to maintain essential facilities at such airports so long as they remain in NPIAS, the reduction in annual support may hurt their long-term viability. Chester in particular is an important airport in the state system because there are 105 aircraft based there.

6.4.3 Role of High-end General Aviation in Economic Development

Earlier sections of this chapter discussed how higher-end GA aircraft support corporate operations by extending the control of senior management. For this reason, many have observed that corporate headquarters and other such activities tend to be co-located near airports where such aircraft are based. The availability of airport capacity to support such operations clearly is an important factor for senior executives, but may not itself be the determining factor for location of aircraft. This was also noted earlier because corporations have shown a willingness to transition flights to more remote locations (including those in Connecticut) in instances where available basing capacity is not available (at airports near New York City). Connecticut's comparative advantages may therefore be to support corporations in the nearby area, especially in the southwestern part of the state adjacent to New York City, while also continuing to support capacity in more remote locations that make transition flying feasible.

6.4.4 Trends in More Traditional General Aviation Activity

As was noted previously, the long-term trends for piston GA operations are adverse. The fleet is aged and much of it is being retired as the costs to maintain and operate such aircraft continue to rise. Replacement aircraft are much more expensive to own—sometimes by a factor of 10. Connecticut, like the rest of the U.S., is likely to continue to see a decline in activity by these aircraft, which may lead to selected airport closures or reduction in the viability of those facilities in the longer term.

Chapter 7 – Recommendations

7.1 Introduction

The previous chapters established the baseline conditions of the Connecticut airport system, compiled and assessed recently completed aviation demand forecasts for the airports included in this system plan, examined broad aviation-industry trends for their implications on the State's airports, identified system challenges and needs, assessed funding programs and outlook, and examined alternative scenarios to enhance planning-response flexibility. This chapter summarizes key recommendations intended to enhance the effectiveness of air transportation and to maximize its contribution toward economic growth within the State.

7.2 Airline Passenger Service

Connecticut is a geographically small state that is subject to significant market-overlap with neighboring states, specifically major international airports (e.g., New York City and Boston) and regional airports (Providence, Rhode Island and Westchester County, New York). Bradley International Airport (BDL) is the primary scheduled passenger airport for the State of Connecticut; its central location within Connecticut contributes significantly to the in-state capture of Connecticut passengers.

7.2.1 Enhance Statewide Capture of Connecticut Passengers at BDL

In most cases, BDL would be the preferred airport for the majority of travel by passengers in Connecticut and western Massachusetts. Primary factors that influence passengers to BDL (and vice versa) are distance, direct routes available, total travel cost, passenger convenience, and airport experience. Since Providence and Westchester County have similar airline service offerings, cost/convenience factors are particularly important market-share assessments. Relative to the major international hub airports of New York City and Boston, direct travel options to additional cities, particularly international ones, is an important consideration.

Given the competitive environment, the following recommendations are intended to enhance BDL's ability to maximize the capture within the overlapping service markets:

- **Maintain low cost structures** – This applies to both the air carriers and passengers. Relatively small differences in total costs, particularly airline ticket costs, can significantly alter the capture rate. This objective can be accomplished by maintaining many of the management practices currently in place, such as new projects generally favor lower cost with more conservative utilization/size estimates; facility maintenance and upkeep schedules optimized for value, duration, and total life cycle costs; new aviation and non-aviation revenue streams developed to offset air carrier and passenger charges; and balance overall staffing/labor costs with an optimized level of service. The methods for accomplishing this objective are many and varied, and new areas of innovation should be regularly encouraged.

- **Maintain and enhance passenger convenience** – BDL is a growing regional airport with providing Connecticut travelers convenient and efficient access to air transportation without many of the challenges associated with travel through a major international-hub airport in terms of access, passenger processing, amenities availability, and walking distances. Incremental improvements may be possible in these areas over time. To improve statewide capture, BDL should assess intermodal connectivity where passenger leakage is highest in the southwestern and southeastern sections of Connecticut. In these areas, the convenience factor could be enhanced by providing regular public bus service. Such service could include use of Groton-New London and Igor Sikorsky airport parking and terminal facilities (potentially for check-in and baggage drop). It may be further beneficial for the Connecticut Airport Authority (CAA) to operate the routes directly to maintain more effective routing, pricing, and security controls. Aside from the additional market capture, such service could potentially provide one or more new sources of positive revenue.

- **Seek and obtain international passenger service** – Currently, BDL supports non-scheduled and seasonal international passenger operations. Establishing regularly scheduled service to one or more international markets would enhance BDL's capture with the major international hub airports as well as the regional markets. Similar market enhancements could also be realized by establishing new and more direct service to the major airline domestic hubs. Such service would significantly enhance travel options between Connecticut and other worldwide markets. To realize this objective, CAA may need to conduct individual service market assessments to support dialogue and subsequent negotiations with target carriers. Additionally, international passenger processing facilities within the terminal/gate complex should be pursued with the option for the designated gates to fulfill both domestic and international flights. Depending on overall activity demand, the acquisition of new scheduled international service could warrant the development of new gate and terminal building capacity.

- **Airport business development** – CAA is currently engaging in a variety of business development efforts and initiatives; these efforts should be continued and tracked. The passenger convenience factors and new services should be highlighted along with the rollout of new initiatives, service offerings, and price/cost differentiators, particularly in overlapping markets where higher capture rates are most sought.

7.2.2 Explore and Enhance Statewide Capture at Secondary Passenger Airports

Tweed-New Haven Airport (HVN) currently offers direct flights to Philadelphia International Airport (PHL), a major domestic and international hub airport for American Airlines (previously operated as US Airways). Likewise, airline commuter service was previously available at Igor I. Sikorsky Memorial Airport (BDR) through 1999 and at Groton-New London Airport (GON) until 2004. Both BDR and GON maintain Part 139 air carrier certifications, which would allow service to be reestablished upon request by an airline. Of the three secondary commercial service-capable airports, CAA operates GON.

The previous chapters identified concerns about HVN's ability to retain scheduled service; the primary reason for the concern is associated with the long-term and continuing trend toward airline consolidation at major, or larger, airports located in large cities that support large passenger volumes. Larger airports can accommodate origin/destination passengers through point-to-point service combined with connecting-transfer passengers that feed the airline's network. Regional airports provide network feeder value only. These same trends lead to the current service disruption at BDR and GON. Separate from this study, HVN is exploring options to extend its runway to retain service during an expected transition to larger jet aircraft. Longer-term improvements to the terminal building and roadway system should also be considered.

Recommendations to the secondary passenger service airports are related to HVN's independent efforts and also combined with statewide objectives, and include the following:

- **Extend Runway 2-20 at HVN** – The transition from turbo-prop to regional jet service will place additional demands on the runway length in the short term. The viability of continued service using regional jets at HVN will be directly affected by the new aircraft's ability to operate profitably. Weight restrictions due to runway length equate to reduced passenger loads and lost revenue.

- **Develop contingency plans at HVN** – Airline decisions regarding service are generally short term. Although continued service at HVN by scheduled carriers will best serve the airport, the risk of losing this service may continue to increase along with the national trend. HVN should develop at least two scenario-based outlook positions to guide future airport decisions: continued air service and disrupted/discontinued airline service. Additional measures to support higher range success and a reduced/seasonal service outlook may also be prudent. In the disrupted service scenario, HVN would concentrate resources on high-end general aviation.

- **Independent versus statewide coordination decisions (HVN)** – This plan advocates the best option for retaining service is to enhance statewide coordination. The advantages include combining resources to conduct market evaluations to target services that have the highest chance of success, coordinating and consolidating marketing efforts, undertaking community education and outreach initiatives, and informing legislative decisions impacting development.

- **Evaluate, identify, and pursue new secondary service markets (HVN, GON, and BDR)** – Coordination efforts are to consider that secondary airports collectively increase total statewide retention of Connecticut passengers by using statewide analysis combined with operator prerogative. It should be noted that the anticipated role of BDR and GON is high-end general aviation, but that outlook should not deter efforts to reacquire commercial passenger service.

- **Identify facility improvements to fit specific airline requirements (HVN, BDR, and GON)** – This plan indicates that facility improvements would be needed at all three secondary airports to support regular-scheduled passenger service. Assuming airline retention efforts at HVN and/or reintroduction of service at BDR or GON are supported, subsequent studies would be needed to assess runway, instrumentation, terminal building, and landside access.

7.3 General Aviation

This plan suggests a combination of physical airport improvements and strategic initiatives targeting "high-end" aircraft operators with a focus on increasing the number of based business jets and turbo-props. The rationale is for these types of operators to more commonly provide a higher level of direct and indirect economic benefits that in turn would support statewide growth. Examples of the types of activities a corporate operator could undertake are leasing larger and newer hangar facilities; undertaking "build-to-suit" hangars and business centers at airports; staffing corporate flight departments; establishing a corporate office, headquarter site, or industrial facility; host conferences and tradeshows related to the business; and employ local residents to expand business operations. Airport accessibility can be a differentiator in business decisions to locate or expand business operations at one location or another, or in a different state. Typically, transient "high end" operators contribute spending within the local communities. Finally, "high end" aircraft activity has consistently been growing with that trend expected to continue.

Strategies identified to encourage greater "high end" general aviation operators to base their airplanes in Connecticut include:

- Adequate airport facilities and services: instrument approach accessibility, runway length, pavement strength, apron and/or hangar space, fuel and maintenance services, and airport safety and response capabilities (e.g., control tower, airfield inspections, and emergency services).
- Close access to customer and employment centers
- Competitive hangar and fuel rates
- "Build-to-suit" and expansion options
- Available development lands at or near the airport
- Development incentives and tax break availability
- Implement improvements to support high-end GA activity at HFD, GON, OXC, BDR, and DXR
- Maintaining favorable taxing conditions
- Customs and inspection service availability to support international operations

7.4 Airport Role Changes

The Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS) categorizes airports into roles based on the availability of commercial air service as well as activity levels. Of Connecticut's 20 state system airports, 13 are included in the NPIAS. The current NPIAS roles of the CSASP airports are shown in **Table 7-1.**

It is not anticipated that the NPIAS roles for the system airports would change as current designations are sufficient. HVN, BDR, and GON are the only potential changes based on commercial service. If commercial service ceases at HVN, it would automatically be reclassified as general aviation airport at the next two-year publication cycle. Likewise, if commercial service begins at BDR and GON, they would be reclassified as commercial service as opposed to general aviation.

Table 7-1: NPIAS Classification of the Study Airports

Airport Name	NPIAS Role
CAA-Owned Airports	
Bradley International (BDL)	Primary Commercial Service, Medium Hub
Groton-New London (GON)	General Aviation
Hartford-Brainard (HFD)	Reliever, Regional
Waterbury-Oxford (OXC)	General Aviation
Windham (IJD)	General Aviation
Danielson (LZD)	General Aviation
Municipally-Owned Airports	
Tweed-New Haven (HVN)	Primary Commercial Service, Non-Hub
Igor I. Sikorsky Memorial (BDR)	General Aviation
Danbury Municipal (DXR)	General Aviation
Robertson Field (4B8)	Reliever, Local
Meriden-Markham Municipal (MMK)	General Aviation
Privately Owned Airports Open for Public Use	
Chester (SNC)	General Aviation
Simsbury (4B9)	General Aviation
Goodspeed Airport and Seaplane Base (42B)	Non-NPIAS
Ellington (7B9)	Non-NPIAS
Skylark Airpark (7B6)	Non-NPIAS
Waterbury-Plymouth (N41)	Non-NPIAS
Toutant (C44)	Non-NPIAS
Candlelight Farms (11N)	Non-NPIAS
Salmon River Airfield (9B8)	Non-NPIAS

Source: 2015-2019 National Plan of Integrated Airport Systems Report

Recommendations for airport role changes include:

- Generally limited to commercial service changes at HVN, BDR, or GON.
- HVN should develop a strong contingency plan assuming a role change to General Aviation where it would concentrate on the high-end spectrum of that market.
- BDR is a general aviation airport recommended to concentrate on high-end general aviation. The market conditions driving that segment are also relevant to airline passenger activity. A role change back to commercial service is conceivable particularly given NY-area airports ability to accommodate growth.
- GON is a general aviation airport with a high-end focus with some potential for commercial air service.

7.5 Part 139 (Scheduled Air Service) Certification

Four airports in Connecticut maintain Part 139 certifications: BDL, HVN, BDR, and GON. Airports certificated under Part 139 must maintain certain safety standards. BDL and HVN are required to have Part 139 certificates due to their NPIAS roles of primary commercial service airports. While general aviation airports BDR and GON are not required to be Part 139 certified, they continue to maintain their Part 139 certifications since the cessation of air carrier service at those locations. As long as BDR and GON continue to seek passenger service, they should maintain their Part 139 certification. Upon determination by the airport operators to discontinue efforts seeking the reestablishment of air service, they should no longer maintain their Part 139 certification status. Elimination of the certification would result in a degree of cost savings for the operation of those facilities.

Recommendations for Part 139 Certification include:

- Consider reduction or elimination of Part 139 certification if air service cannot be attained at BDR and GON.

7.6 Capacity Improvements

Providing sufficient operational capacity to accommodate the current and forecasted aviation activity levels is an integral part of state system planning. Many aspects of airport capacity were examined in Chapter 4, *Needs Assessment*.

Airside capacity involves the number of aircraft operations an airport can sustain without experiencing delays. Airside capacity is not a significant factor affecting any airports within the system; the statewide Demand/Capacity Ratio for the year 2035 is at 24.53%. While not technically considered a capacity consideration, existing runway lengths were also examined because of the influence on the statewide capability to accommodate “high end” aircraft operators. To retain scheduled commercial passenger service, HVN will need a runway extension in order to accommodate the introduction of regional jet aircraft that will replace current turbo-prop airplanes. Should commercial service begin at BDR or GON, they would require runway extensions as well.

Passenger terminal improvements were discussed for BDL, HVN, GON, and BDR. BDL has a schematic design for a 19-gate terminal, which will be constructed in phases based on demand. It is anticipated that the first phase will be initiated by about 2024. HVN will likely need some renovations to accommodate the increased number of seats per aircraft. Similar space reallocations, building modifications, and system improvements would be needed at both GON and BDR should their scheduled service resume.

While small airport hangar storage capacity was not studied in detail for this plan update, the need to provide additional small aircraft hangar storage capacity at these airports is expected to be minimal. Hangar facilities are anticipated at the larger airports. Based aircraft forecasts indicate that BDL, GON, OXC, BDR, and DXR are projected to increase by 25 based or more during the planning period. Growth in based aircraft is expected to be “high end” to support operations by larger aircraft that continue to grow as a percentage of the U.S. general aviation fleet.

Capacity of airport access and parking is also integral to the airport system. BDL has limited public transportation options although interest in downtown connectivity continues to be identified. A commuter rail study identified potential stops near BDL that could also provide additional access through a new rail spur connection or via a bus link. Roadway access is a significant issue at HVN; the airport is located two miles from the I-95 interchange requiring extensive use of residential roadways with limited signage. Public transportation to HVN is limited to a single public bus route to and from the city of New Haven, as well as an Amtrak station approximately five miles from the airport. The airport does not have well defined landside accessibility from its nearby interstates and the existing infrastructure is significantly constrained by surrounding land use and numerous environmental factors to improve access. Other system airports have minor issues with access and parking capacity; these should be further addressed in individual airport master planning efforts.

There is continued anticipated growth in "high-end" GA activities, which is dominated by turbine aircraft. Airports that are capable of accommodating such aircraft should consider preparing suitable hangar development sites in anticipation and support of accommodating these aircraft. Airports with the financial means may also explore constructing hangars that can immediately accommodate "high end" tenants.

Recommendations for various capacity improvements include:

- Runway extensions at HVN and HFD.
- Possible runway extensions at GON and BDR to accommodate the potential return of air service.
- Regularly update and monitor forecasts for potential terminal expansion at BDL.
- Terminal expansion to support retained commercial service at HVN.
- Terminal enhancements/expansions to accommodate the potential return of air service to GON and BDR.
- Increased hangar storage capacity at HFD, GON, OXC, LZD, IJD, BDR, and 4B8.
- Enhance public transportation options and market existing public transportation routes at BDL.
- Cargo consolidation at BDL and supporting development plans to support cargo growth.
- Explore potential cargo options at HVN.

7.7 Potential Implications of Airport Closures

A number of airports maintaining predominantly limited numbers of based aircraft and operations are often financially strained. The ability to improve their financial situation is largely influenced by their ability to attract "high end" operators, the ability to capture a higher percentage of total operators, and/or the ability to increase revenue through other means. Since the number of small aircraft is not expected to increase, additional airport closures may occur. This plan concludes that the airports at the highest risk of closure are privately owned, non-NPIAS facilities, having small numbers of based aircraft. Storage capacity and/or the space availability to construct new storage units at nearby facilities appears adequate.

7.8 Design Standards, Safety and Efficiency Improvements

Continued emphasis must be placed on developing and maintaining a safe and efficient airport system. This is accomplished primarily through adherence to the FAA's design standards and through regular maintenance and inspection programs, particularly airfield pavements. Airport design standards address airfield geometries and safety setbacks particularly. Statewide there are a variety of design standards compliance issues to be addressed. Undertaking these projects may not produce a direct financial or economic benefit to the airport outside beyond construction. However, the FAA will assign a higher priority for these projects and will typically require compliance as a part of future programmatic funding.

Of particular importance for the timing of this system plan update, the FAA is expected to emphasize taxiway geometry in the short term and over the next 10 years. The most recent updates to the Airport Design standards incorporated in FAA AC 150/5300-13 incorporate significant revisions to the taxiway design standards. The general emphasis is on 1) reducing confusing intersections by limiting directional choices and 2) preventing inadvertent entry onto a runway by eliminating direct access from a ramp area and also by compelling a turn onto a parallel taxiway followed by a right-angled entry onto a runway. A new taxiway design group has also been established to better account for varying gear widths and base lengths. The FAA is finishing a safety evaluation that will be used to prioritize the taxiway improvements needed on a nationwide basis. Regardless of priority, most airports should anticipate addressing these conditions throughout the duration of this system plan update cycle.

7.9 Policy Position Enhancements to Support Growth Recommendations

A number of government policy initiatives could support the growth, development, and operation of airports in Connecticut to better fulfill the system's transportation goals that support economic growth. Continued focus is recommended to inform policy decision makers and stakeholders of the benefits associated with aviation development as well as the benefit/cost and risk factors associated with regulatory policies at federal, state, and local government levels. Specific policy focus areas are captured in the following sections.

7.9.1 Passenger Facility Charge Increases

As indicated in Chapter 6, *Funding*, total airport project grant allocations associated with the Airport Improvement Program (AIP) have been stagnant for many years. Furthermore, the total amount of grants allocated fall well short of the infrastructure development needs of airports throughout the nation. Increasing the Passenger Facility Charges (PFCs) provides a more reliable means of providing needed funds while reducing the strain on the AIP. PFCs are airport funds regulated by the FAA. Statewide position should be generally supportive of an increase in PFCs, since AIP funding shortfalls entail either additional contribution at the state or local level, or deferred enhancements to BDL and HVN (the two airports eligible to collect and apply PFCs).

7.9.2 Promote Airport Economic Development Zone Establishment

The Bradley Airport Development Zone (BADZ) is a successful example for development zone incentives. Additional zones on or near other airports may provide further incentives to locate aircraft and business operations in Connecticut and may counter efforts by neighboring states to lure the activity away. The program would most benefit airports with significant "high end" activity or those airports capable of acquiring additional volumes of "high end" activity. Although CAA and local airport sponsors would ideally support such initiatives and coordinate development proposals, the financial management and oversight of the zones should be conducted by non-airport organizations.

7.9.3 Airport Land Use Compatibility Initiatives

The FAA has very limited ability to control and restrict the development of lands that surround an airport. Barring a more effective control process by State and local governments, the FAA's primary land use control mechanism is established through grant assurances with individual airport sponsors. Many states incorporated compatibility guidelines to better protect investment in statewide transportation infrastructure. While individual state programs vary considerably, Connecticut's system could benefit from enhanced statewide measures. In particular by establishing notification and review requirements related to proposed development near an airport (explicitly in the extended approach/ departure areas) and airport planning/development could lend additional support justification to both enhance and protect the whole system.

7.9.4 Advocacy and Aviation Technical Contribution

Local and statewide legislation limiting airport development could result in significant economic flow away from an airport or to a neighboring state. Such limitations and restrictions should be avoided through available means of establishing statewide prerogative of aviation infrastructure. Available tools vary significantly from providing expertise to enacting and enforcing law. At a minimum, a new mechanism to better inform and contribute to the decision-making process should be undertaken and should include the implications of current restrictions. Such mechanisms could include annual reports and briefings to legislature identifying and prioritizing system challenges, establishing statewide positions on airport issues being debated at the local level, streamlining airport-related environmental permitting processes, undertaking technical investigations and establishing aviation-related findings, and/or establishing a state regulatory review and decision –making processes for airport-related matters. Ultimately, the passage or modification of law is at the purview of the State.

Continued and enhanced efforts to coordinate statewide system initiatives may have significant alignment benefit in leveraging Connecticut's competitive advantages. Examples would include coordinated marketing for a major "high end" business operator, developing brochures and studies exemplifying the economic contribution of system airports, and developing and participating in expanded outreach efforts to avoid, lift, or eliminate development and activity restrictions; communicate proactive responses to sensitive issues; and potentially garner support for airport actions.

7.9.5 System Function and Governance

This section refers to the decision-making bodies and structure of the various airports comprising the Connecticut airport system. This plan did not assess governance structures for the purpose of recommending changes; however, at various points, the plan references potential advantages of coordination. The need for coordination within a system is fairly common although seldom successful given the competitive differences associated with an airport's operations. Given the amount of overlap and influences of neighboring states however, the advantages of system functionality are well placed with limited in-state competition. The ability to function more effectively as a system should be explored further through dialogue amongst the airports within the system.

Certain governance structures and political dynamics create challenges for the operation and development of an airport. This most commonly occurs when more than one governing entity is involved or the airport is placed low in the hierarchical structure of a decision-making body overseeing many unrelated functions of government. From a statewide perspective, an airport is a transportation asset that contributes to economic vitality. The governance structure should be supporting those contributions for which the state has a shared interest.

7.10 Conclusions

The purpose of the Connecticut Statewide Airport System Plan (CSASP) update was to examine the interrelationship of airports in Connecticut with respect to statewide user needs, economy, and population. That information was then used to assess the specific roles of the airports comprising Connecticut's airport system, facility requirements, and ultimately a set of recommendations that is both responsive and adaptive. The overall goal of the CSASP is to supply the CAA with a road map for the next 20 years and in doing so, identify opportunities and synergies for supporting and enhancing the economic vitality of the greater region. The recommendations provided in this chapter were determined based on all of the information from the previous chapters, as well as stakeholder involvement. These recommendations provide tools to enhance Connecticut's airport system and continue to operate in synergy with the goals for the airports in Connecticut.

While more specific recommendations have been made in the previous sections, **Table 7-2** outlines the overall plan recommendations for commercial service, Part 139, and general aviation.

Table 7-2: Overall Plan Recommendations

Category	Recommendations
Commercial Air Service	**Improve in-state passenger retention.** • Coordinate services to increase negotiating leverage and identify optimal service by airport: BDL, HVN, BDR, and GON. • Maintain low cost and high traveler convenience. • Enhance in-state intermodal connectivity. • Improve marketing and community understanding. • Continued work to meet FAA standards, ideal runway length, terminal building upgrades, and landside access.
Part 139 Airports	**Consider reduction or elimination of Part 139 certification if air service cannot be attained at BDR and GON.** • BDL and HVN – required to maintain Part 139 certification as commercial service airports. • BDR and GON – not required to maintain Part 139 certification, but continue to maintain while coordinated airline discussions are under consideration or are ongoing.
General Aviation	**Attract the high-end operator growth market that help to drive economic development and enhance the State's competitive position.** • Undertake long-term efforts to reduce airport development constraints: legislative, environmental, physical, and community. • Support development and expansion of economic incentive zones near airports and establish airport land use compatibility guidelines. • Pursue runway extensions to achieve more than 5,000 feet takeoff length. • Prepare hangar and service development areas at target high-end airports. • Undertake pavement and improvements to comply with FAA design standards. • Advocacy and aviation technical contribution.