3. Inventory

3.1. INTRODUCTION

This chapter presents an inventory of existing facilities at the 16 public-use airport facilities currently identified as part of the Vermont State Aviation System. According to the Federal Aviation Administration's (FAA) Airport Master Records (form 5010), as of January 2017, there are 86 airports and other landing facilities in the state of Vermont. These include all public-use and privately-owned/private-use landing fields, heliports, and seaplane bases. The Vermont State Aviation System Plan focuses on the 16 public-use airports.

Additionally, the VTSASP notes 12 Vermont airports included in the National Plan of Integrated Airport Systems (NPIAS) for the 2017-2021 period. The FAA updates the NPIAS every two years to identify existing and proposed airports that are significant to national air transportation and thus eligible to receive federal grants under the Airport Improvement Program (AIP).

This chapter presents a summary of the inventory process and the data collected for the VTSASP. This data serves as the foundation for analyses performed and presented in subsequent chapters of the VTSASP. As will be presented, the data informs objective analyses performed to examine the current state of the Vermont aviation system, and identify areas of deficiency where improvements may be warranted. The VTSASP concludes with a recommended plan for infrastructure projects, priorities, and policy strategies that can ensure that Vermont system airports meet current and projected levels of aviation demand.

3.2. SUMMARY OF EXISTING SYSTEM

Figure 3-1 displays Vermont State Aviation System Plan (VTSASP) airports, and indicates type of airport and ownership. Airport types are general aviation (GA) and commercial service (CS), and ownership is identified as municipally owned, privately owned, and State-owned.

Figure 3-2 displays the system airports by NPIAS status.

Figure 3-1: Existing System

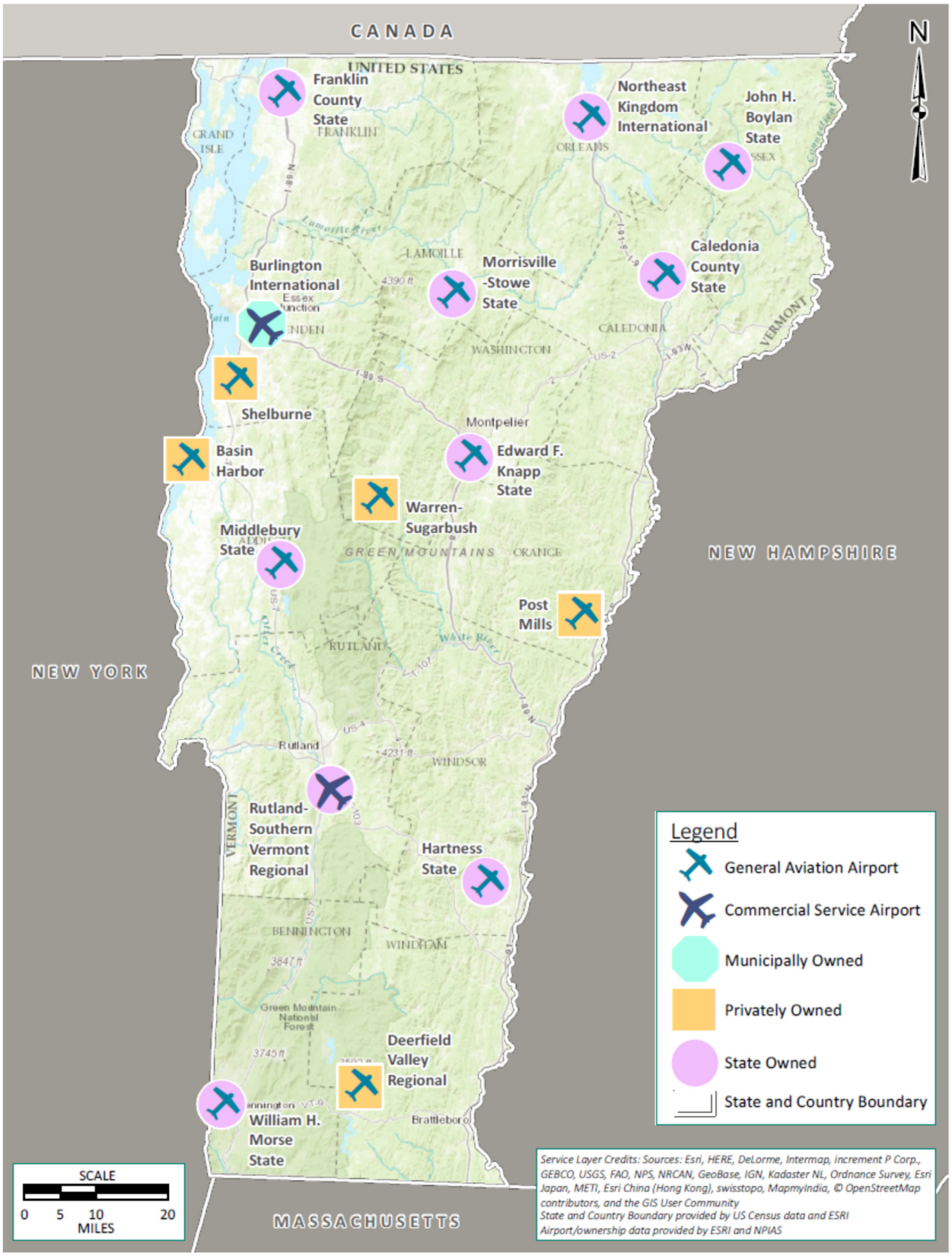
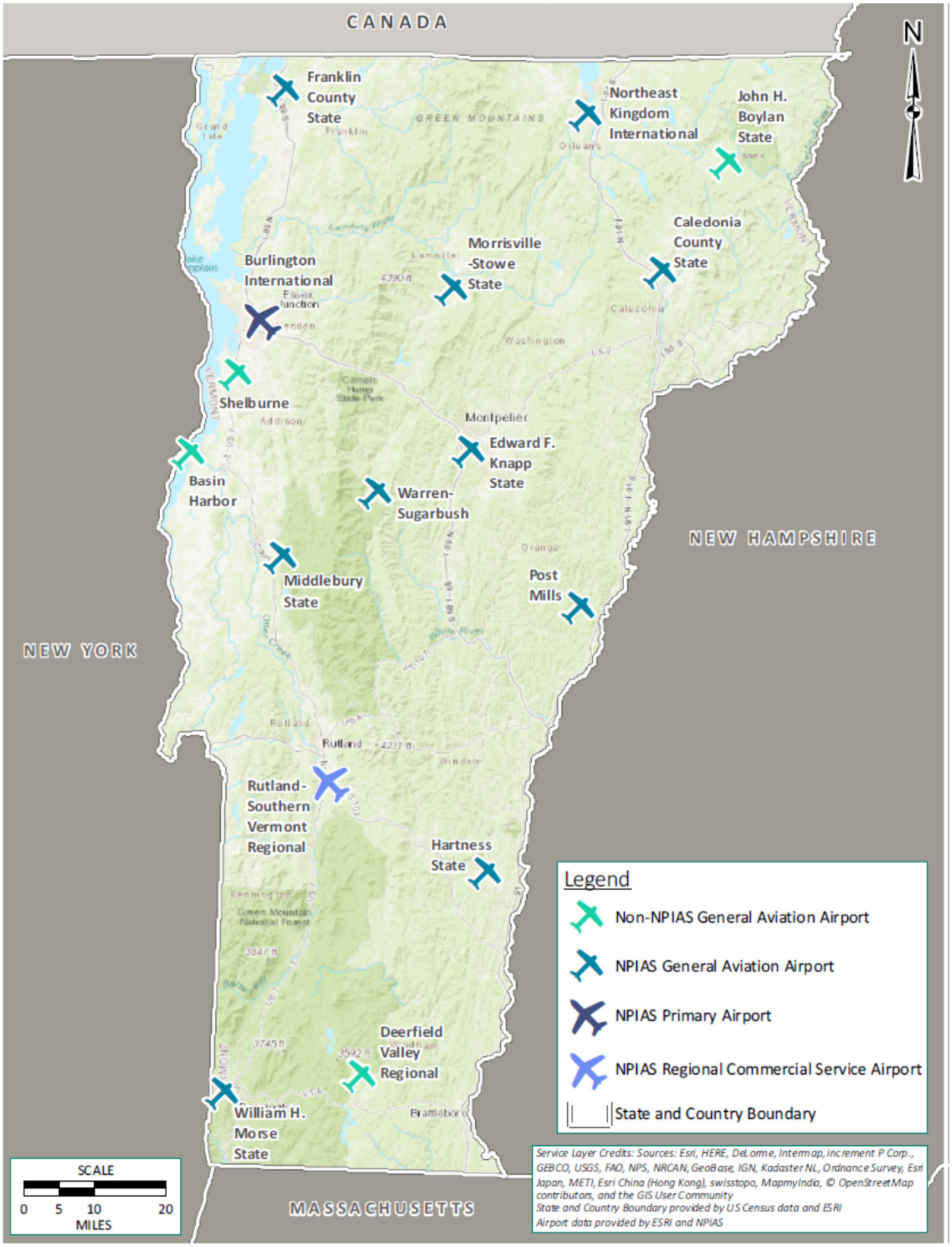


Figure 3-2 NPIAS Airports



3.2.1. Snapshot of Existing System Airports

This section provides a brief summary of each airport in the state's aviation system. The descriptions present the character of the airports and the areas the airport serve, as well as any unique activities associated with the facilities. Accompanying each Airport description is a table listing the Airport's critical attributes.

State-Owned Airports

Caledonia County State (CDA)

Source: Vermont Agency of Transportation

Caledonia County Airport is located 3 miles north-northwest of the village of Lyndonville in the Northeast Kingdom. The Airport has a 3,302 feet by 60 feet paved runway designated as Runway 2-20. It has a single RNAV (GPS) (Area Navigation using Global Positioning System) approach to Runway 2. Per the Airport's 5010 record, there are 18 single-engine based aircraft. CDA is included in the NPIAS and as such, is eligible for federal funding through the AIP.

According to the Airport's 2010 business plan, the Vermont Pilots Association (VPA) provides fuel services at the Airport, and at the time was looking to expand their role in the management and supervision of the Airport. Tenants at the Airport include the Civil Air Patrol (CAP) as well as private aircraft owners, some of which utilize their aircraft for business purposes.

The Airport ALP (Airport Layout Plan) was last updated in March 2003 and in 2000, the Airport was part of a state funded project to provide some of the details that might be included in a full airport master plan project.

Caledonia County State (CDA)	
Location	Lyndonville
VTrans Airport Category	Local Service
Primary Runway Length/Width (feet)	3,302/60
Taxiway Type	Non-standard midfield entrance and exit taxiway with a partial parallel taxiway
ATCT (air traffic control tower)	No
IAP (instrument approach procedure)	RNAV (GPS) Runway 2
Terminal/Admin. Building	Yes
Fuel	100LL (self-serve)
Weather Reporting	ASOS
Paved Aircraft Parking	Yes
Hangars	T-hangars, box hangars
ALS (approach lighting system)	None
Visual Approach Aids	REIL Runway 2 (runway end identifier lights)
Lighting	MIRL, MITL (medium intensity runway lighting) (medium intensity taxiway lighting)
Fencing	Perimeter
Services	Fuel, transient storage

Edward F. Knapp State (MPV)


Source: Vermont Agency of Transportation

Edward F. Knapp State Airport is located about 35 miles from Burlington International and midway between the Cities of Barre and Montpelier. The Airport once supported commercial service with regional carriers. The Airport is included in the NPIAS.

The Airport has two runways, 5-23 and 17-35, however in the winter months, Runway 5-23 remains closed and is not maintained for use. The Airport has a 4,680-square foot terminal building with offices and space for a restaurant. Vermont Flying Service is the Airport's FBO.

Per the most recent 5010 record data, the Airport has 50 single-engine based aircraft, two multi-engine aircraft and one helicopter.

The ALP was last updated in March 2005 and the most recent revision to the airport master plan was in 2000.

Edward F. Knapp State (MPV)	
Location	Berlin
VTrans Airport Category	National Service
Primary Runway Length/Width (feet)	5,002/100
Crosswind Runway Length/Width (feet)	3,000/75
Taxiway Type	Non-standard full parallel taxiway
ATCT (air traffic control tower)	No
IAP (instrument approach procedure)	ILS Runway 17 (instrument landing system), RNAV Runway 17, RNAV Runway 35, VOR Runway 35 (very high frequency omnidirectional range)
Terminal/Admin. Building	Yes
Fuel	100LL, Jet-A (full service)
Weather Reporting	ASOS
Paved Aircraft Parking	Yes
Hangars	T-hangars, box hangars
ALS (approach lighting system)	MALSR Runway 17 (medium intensity approach light system)
Visual Approach Aids	REIL Runway 17/35, PAPI Runway 17 (precision approach path indicator)
Lighting	MIRL, MITL
Fencing	Perimeter (partial)
Services	Fuel, transient storage, major powerplant and airframe repairs, aircraft rental and instruction

Franklin County State (FSO)


Source: Vermont Agency of Transportation

Franklin County State Airport is adjacent to the northern portion of Lake Champlain, just under 5½ miles from the Canadian border. It is included in the NPIAS. The Airport's single runway, Runway 1-19 is 3,000 feet long by 60 feet wide and listed in good condition as of the last inspection. Approaches include RNAV (GPS) approaches in both directions with minimums as low as 512 feet and 1 statute mile visibility (Runway 1). There is also a VOR/DME approach to Runway 19.

Based aircraft include 85 single-engine aircraft, 2 multi-engine, and one jet. The current FBO is Border Air and they provide both 100LL and Jet A via self-serve fuel tank systems.

Four days of each year, a large portion of the eastern section of the Airport is leased to Franklin County Field Days, Inc. for shows and events. Notable performances have included the Grateful Dead and Phish, among others.

In November 2006, the ALP was updated to reflect recent changes while the Airport participated in a limited, state funded project to provide basic airport information in an airport master plan style.

Franklin County State (FSO)	
Location	Highgate
VTrans Airport Category	Local Service
Primary Runway Length/Width (feet)	3,000/60
Taxiway Type	Stub taxiway, taxilane
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	RNAV (GPS) Runways 1/19 VOR/DME Runway 19
Terminal/Admin. Building	Yes
Fuel	100LL, Jet-A (SS)
Weather Reporting	AWOS-3
Paved Aircraft Parking	Yes
Hangars	Box hangars
ALS (approach lighting system)	None
Visual Approach Aids	REIL Runway 1/19, PAPI Runway 1
Lighting	MIRL, MITL
Fencing	Perimeter (partial)
Services	Fuel, FBO, courtesy vehicle, rental and instruction, transient storage, radiant/hangar deicing, avionic, airframe, and powerplant repairs

Hartness State (VSF)

Source: Vermont Agency of Transportation

Hartness State Airport is a NPIAS airport located in the southeast portion of Vermont, approximately 5½ miles from the New Hampshire border, and just three miles northwest of the central business district of Springfield, Vermont.

The Airport has two runways. Runway 5-23 is 5,501 feet long by 100 feet wide and constructed of asphalt in good condition. Runway 5 is served by an RNAV (GPS) approach with minimums down to 1,560 feet and 1¼ statute mile visibility in addition to a LOC/DME (localizer approach with distance measuring equipment) approach with similar minimums. Runway 11-29 is 3,000 feet by 75 feet of asphalt listed in excellent condition.

The Airport's terminal building is approximately 2,000 square feet and is located adjacent to the main ramp. Both Jet A and 100LL are sold at the airport with 100LL available 24/7 through a self-serve system and Jet A through Vermont Agency of Transportation employees during normal business hours. Based aircraft include 19 single-engine aircraft and eight gliders.

Both the ALP and airport master plan were updated in 2014.

Hartness State (VSF)	
Location	North Springfield
VTrans Airport Category	Regional Service
Primary Runway Length/Width (feet)	5,501/100
Crosswind Runway Length/Width (feet)	3,000/75
Taxiway Type	Single entrance/exit taxiway for each runway
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	RNAV (GPS) Runway 5, LOC/DME Runway 5 (localizer only approach)
Terminal/Admin. Building	Yes
Fuel	100LL, Jet-A (self-serve)
Weather Reporting	ASOS
Paved Aircraft Parking	Yes
Hangars	T-hangars, box hangars
ALS (approach lighting system)	None
Visual Approach Aids	VASI, REIL Runway 5
Lighting	MIRL, MITL
Fencing	Perimeter
Services	Fuel, aircraft rides, rental and instruction, transient storage, charter, banner towing, major airframe and powerplant repairs

John H. Boylan State (5B1)

At 15½ miles from the Canadian border and approximately 10 miles from the New Hampshire Border, John H. Boylan is Vermont's northeastern most public-use airport. Its turf runway is 2,650 feet long by 120 feet wide and listed in good condition. The most recent inspection information indicates there are three single-engine aircraft and two ultralights based at the Airport.

Source: Vermont Agency of Transportation

John H. Boylan State Airport is not included in the NPIAS. The ALP was updated, and an abbreviated airport master plan were completed in 2003.

John H. Boylan State (5B1)	
Location	Brighton
VTrans Airport Category	Specialty Service
Primary Runway Length/Width (feet)	2,650/120
Taxiway Type	None
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	None
Terminal/Admin. Building	No
Fuel	None
Weather Reporting	None
Paved Aircraft Parking	Yes
Hangars	Box hangars
ALS (approach lighting system)	None
Visual Approach Aids	None
Lighting	None
Fencing	None
Services	Transient storage

Middlebury State (6B0)

Source: Vermont Agency of Transportation

Located just south of Lake Champlain, Middlebury State Airport has a single paved runway designated as Runway 1-19 which is listed in good condition. It is 2,500 feet long by 50 feet wide with no lighting or navigational aids. 6B0 is included in the NPIAS.

There is a small office/terminal building which is owned by the State of Vermont for arriving and departing passengers. 100LL aviation fuel is available through a self-serve fuel farm located between the SRE building and the tie-down apron.

There are 32 single-engine, 1 multi-engine and 2 jets based at the airport on tie-downs and inside hangars of various sizes.

In 2000, the Airport was included in the aforementioned state funded project to provide airport details, and the ALP was last updated in July of 2005.

Middlebury State (6B0)	
Location	Middlebury
VTrans Airport Category	Local Service
Primary Runway Length/Width (feet)	2,500/50
Taxiway Type	Non-standard parallel taxiway
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	None
Terminal/Admin. Building	Yes
Fuel	100LL (self-serve)
Weather Reporting	ASOS
Paved Aircraft Parking	Yes
Hangars	T-hangars, box hangars
ALS (approach lighting system)	None
Visual Approach Aids	None
Lighting	None
Fencing	Perimeter
Services	Fuel, transient tie-downs, parachute jumping, major airframe and powerplant repairs

Morrisville-Stowe State (MVL)

Source: Vermont Agency of Transportation

Located in the north-central portion of Vermont, Morrisville-Stowe State Airport is six miles north of Vermont's capital, the town of Stowe and approximately 30 miles east of the central business district of Burlington. It is included in the NPIAS and eligible for federal funding. Its single runway is 3,700 feet long by 75 feet wide and is paved with a rating of excellent condition. Both runway ends are equipped with a REIL (runway end identifier lights) and Runway 19 has a PAPI (precision approach path indicator). Additionally, the runway has medium intensity edge lights and there are two RNAV (GPS) approaches to Runway 19 with minimums down to 1,270 feet and 1⅝ statute miles visibility. There are two stub taxiways providing access to the tie-downs, hangars and terminal building.

Stowe Aviation is the Airport FBO and also manages the Airport on behalf of the Vermont Department of Transportation. They provide maintenance, charter and flight training as well as fuel sales. Scheduled charter service is provided by Tradewinds Aviation to White Plains, New York on certain days of the week. In 2014, the construction of a new $27 million runway and terminal building was completed, funded through a public/private partnership.

Per the Airport survey data, there are 25 single aircraft and three multi-engine aircraft as well as six gliders/ultralights based at the Airport. In 2005, the ALP was updated and an update to the airport master plan was completed.

Morrisville-Stowe State (MVL)	
Location	Morrisville
VTrans Airport Category	Regional Service
Primary Runway Length/Width (feet)	3,700/75
Taxiway Type	Dual stub taxiway
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	Two RNAV (GPS) approaches to Runway 19, RNAV (GPS) circling approach to Runway 1
Terminal/Admin. Building	Yes
Fuel	100LL, Jet-A (self-serve)
Weather Reporting	ASOS
Paved Aircraft Parking	Yes
Hangars	T-hangars, box hangars
ALS (approach lighting system)	None
Visual Approach Aids	PAPI Runway 19
Lighting	MIRL, MITL, REILs
Fencing	Perimeter (partial)
Services	Fuel, transient storage, FBO, based flight instruction, deicing, airframe, power plant, and avionics repair, glider towing,

Northeast Kingdom International (EFK) *(Formerly Newport Airport)*

At just under nine miles from the Canadian border, and approximately three miles south of the town of Newport, lies Northeast Kingdom International Airport. It has two intersecting runways. Runway 18-36 is the primary runway, which measures 5,000 feet long by 100 feet wide. Runway 18-36 has a 4-box PAPI (precision approach path indicator) on both ends and a non-precision approach to Runway 36 with minimums down to 1,340 feet and one statute mile visibility. It has medium intensity edge lights. The Airport recently completed a 1,000-foot extension to the runway.

The crosswind runway, Runway 5-23 is 3,996 feet long by 100 feet wide with limited taxiway access. There is a single connecting taxiway toward the northeast end of the runway.

Source: Vermont Agency of Transportation

Lakeview Aviation is the Airport FBO and Airport manager, and also provides maintenance, aircraft rentals and instruction, aircraft storage and fuel sales. They lease the 1,250-square foot terminal building which also serves the flying public. There are 19 single-engine and one multi-engine aircraft according to the most recent 2010 data.

Northeast Kingdom International Airport is included in the NPIAS and underwent a master plan update as well as an update to the ALP in 2013.

Northeast Kingdom International (EFK)	
Location	Coventry
VTrans Airport Category	Local Service
Primary Runway Length/Width (feet)	5,000/100
Crosswind Runway Length/Width	3,996/100
Taxiway Type	Partial parallel taxiway
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	RNAV (GPS) Runway 16
Terminal/Admin. Building	Yes
Fuel	100LL (self-serve), Jet-A (full-serve)
Weather Reporting	AWOS-3
Paved Aircraft Parking	Yes
Hangars	T-hangars, box hangars
ALS (approach lighting system)	None
Visual Approach Aids	PAPI Runway 19
Lighting	MIRL, MITL
Fencing	Perimeter (partial)
Services	Fuel, transient storage, avionics service and repair, glider towing, banner towing major airframe and powerplant repairs

Rutland-Southern Vermont Regional (RUT)

Source: Vermont Agency of Transportation

Rutland-Southern Vermont Regional Airport is located approximately 15½ miles from Vermont's western border and approximately five miles south of Rutland, Vermont's second largest city. The Airport has two intersecting runways. Runway 1-19 is the primary runway and is 5,303 feet long by 100 feet wide. It has REILs on the approach end of Runway 1 and a MALSR (medium intensity approach lighting system with runway alignment indicator lights) for Runway 19. It has grooved asphalt listed in good condition as well as medium intensity edge lights. Runway 19 is equipped with an instrument landing system (ILS) with several approaches and minimums as low as 493 feet and 1¼ statute miles visibility. Rutland Airport is included in the NPIAS.

Runway 13-31 is the crosswind runway at 3,170 feet long by 75 feet wide. It has medium intensity edge lights as well as a 2-box PAPI for Runway 13.

On-Airport companies include the FBO, Columbia Air Services, which offers a full range of FBO services, the Hangar Café, a restaurant, and Cape Air offers scheduled daily service to Boston Logan International. There are also multiple aircraft repair options at the Airport. According to the Airport's 5010 record, there are 29 single-engine aircraft and one ultralight aircraft based at the Airport. Both the ALP and the airport master plan were updated in 2009.

Rutland-Southern Vermont Regional (RUT)	
Location	North Clarendon
VTrans Airport Category	National Service
Primary Runway Length/Width (feet)	5,303/100
Crosswind Runway Length/Width	3,170/75
Taxiway Type	Partial parallel, non-standard taxiway for Runway 18-36, partial parallel for Runway 13-31
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	ILS or LOC Runway 19, RNAV (GPS) Runway 1 and 19, VOR/DME Runway 1
Terminal/Admin. Building	Yes
Fuel	100LL (self-serve, full-serve), Jet-A (self-serve, full-serve)
Weather Reporting	AWOS-3
Paved Aircraft Parking	Yes
Hangars	Box hangars, T-hangars
ALS (approach lighting system)	MALSR Runway 19
Visual Approach Aids	PAPI Runways 1-19 and 13, REIL Runway 13
Lighting	MIRL Runway 18-36
Fencing	Perimeter
Services	Fuel, transient storage, aircraft sales instruction and rental, major airframe and powerplant repairs

William H. Morse State (DDH)

Source: Vermont Agency of Transportation

William H. Morse State is the south westernmost public-use airport in Vermont. It is located approximately 1½ miles from the state border with New York to the west, 10 miles from Massachusetts to the south and 3 miles from the central business district of Bennington to the east. The single Runway 13-31 is 3,704 feet long by 75 feet wide. It is paved asphalt listed in fair condition. Both runway ends have a 4-box PAPI and REILs. Two midfield stub taxiways provide access to and from the runway from the ramps and hangars. Additional features at the Airport include a 14,000 square-feet terminal hangar and attached hangar. There are underground storage tanks for both 100LL and Jet A. The most recent Airport survey data indicates 30 single-engine, two multi-engine, two helicopter and six ultralight aircraft are based at the Airport. The Airport is included in the NPIAS.

The Airport was formerly managed by the FBO AirNow, which operated a charter freight business, however AirNow ceased operations in 2011[1]. Hildt Aviation provides maintenance services for aircraft.

The airport master plan and ALP were updated in 2014.

[1] Goswami, Neal P., (2011. February 24). AirNow takes last flight; closes today. *Bennington Banner.* Retrieved from http://www.benningtonbanner.com/stories/airnow-takes-last-flight-closes-today,236873

William H. Morse State (DDH)	
Location	North Clarendon
VTrans Airport Category	Regional Service
Primary Runway Length/Width (feet)	3,704/75
Taxiway Type	Partial parallel
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	RNAV (GPS) Runway 13, VOR Runway 31
Terminal/Admin. Building	Yes
Fuel	100LL (self-serve), Jet-A (self-serve)
Weather Reporting	ASOS
Paved Aircraft Parking	Yes
Hangars	Box hangars, T-hangars
ALS (approach lighting system)	No
Visual Approach Aids	PAPI, REIL Runways 13-31
Lighting	HIRL/MITL
Fencing	Perimeter
Services	Fuel, transient storage, FBO, courtesy vehicle, based flight instruction, airframe, power plant, and avionics repair, radiant/ hangar deicing, skydiving

Privately-Owned, Public-Use Airports

Basin Harbor (B06)

Basin Harbor Airport is Vermont's westernmost public-use airport and is owned by Beach Properties, Inc. It is located on the southern shore of Lake Champlain and has a 3,000 feet long by 90 feet wide turf runway listed in good condition. There are no services listed or based aircraft reported for the Airport, which is open seasonally and closes during winter months. There are no published instrument procedures at the Airport. Basin Harbor Airport is not included in the NPIAS.

Source: Vermont Agency of Transportation

Basin Harbor (B06)	
Location	Vergennes
VTrans Airport Category	Specialty Service
Primary Runway Length/Width (feet)	3,000/90
Taxiway Type	N/A
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	None
Terminal/Admin. Building	No
Fuel	None
Weather Reporting	None
Paved Aircraft Parking	None
Hangars	None
ALS (approach lighting system)	None
Visual Approach Aids	None
Lighting	None
Fencing	None
Services	None

Deerfield Valley Regional (4V8)

Owned by Deerfield Valley Regional Airport, LLC, and located in the southern tier of Vermont, Deerfield Valley (formerly Mount Snow) is directly adjacent to Mount Snow and local golf courses. Runway 1-19 is 2,650 feet long by 75 feet wide and listed in excellent condition. There is a single RNAV (GPS) approach to Runway 1 with minimums down to 3,140 feet and 1¼ statute miles visibility. Deerfield Valley Regional Airport is not included in the NPIAS.

Source: Vermont Agency of Transportation

Deerfield Valley Regional (4V8)	
Location	West Dover
VTrans Airport Category	Specialty Service
Primary Runway Length/Width (feet)	2,560/75
Taxiway Type	Dual midfield stub taxiways
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	RNAV (GPS) Runway 1
Terminal/Admin. Building	Yes
Fuel	N/A
Weather Reporting	None
Paved Aircraft Parking	Yes
Hangars	Box hangars
ALS (approach lighting system)	None
Visual Approach Aids	None
Lighting	MIRL
Fencing	None
Services	Transient aircraft storage

Post Mills (2B9)

Post Mills Airport is privately owned and is located on the east border of Vermont, adjacent to Lake Fairlee. The turf runway is 2,900 feet long by 80 feet wide. According to the Vermont Agency of Transportation website, services available include sailplane and hot air balloon rides as well as hangar space and tie-downs. The Airport hosts an annual hot air balloon festival with a pancake breakfast. It is included in the NPIAS.

Source: Vermont Agency of Transportation

Post Mills (2B9)	
Location	Post Mills
VTrans Airport Category	Specialty Service
Primary Runway Length/Width (feet)	2,560/75
Taxiway Type	N/A
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	None
Terminal/Admin. Building	No
Fuel	N/A
Weather Reporting	None
Paved Aircraft Parking	No
Hangars	Box hangars, T-hangars
ALS (approach lighting system)	None
Visual Approach Aids	None
Lighting	None
Fencing	None
Services	Transient aircraft storage, minor airframe and powerplant repairs, balloon repairs, sales and scenic flights, aircraft charter, aircraft sales and instruction, glider and banner towing

Shelburne (VT8)

Source: Vermont Agency of Transportation

Shelburne Airport is also located very near the shores of Lake Champlain. The Airport owner apparently passed away in 2015 and it appears the Airport is for sale.

Shelburne's runway is 3,077 feet long by 60 feet wide and is turf listed in excellent condition. Services offered at the Airport have included aircraft maintenance and flight instruction. Shelburne is not included in the NPIAS.

Shelburne (VT8)	
Location	Shelburne
VTrans Airport Category	Specialty Service
Primary Runway Length/Width (feet)	3,077/60
Taxiway Type	N/A
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	None
Terminal/Admin. Building	No
Fuel	MoGas (full-serve)
Weather Reporting	None
Paved Aircraft Parking	No
Hangars	Box hangars, T-hangars
ALS (approach lighting system)	None
Visual Approach Aids	None
Lighting	None
Fencing	None
Services	Transient aircraft storage, major airframe and powerplant repairs, aircraft rental and instruction

Warren-Sugarbush (0B7)


Source: Vermont Agency of Transportation

Sugarbush Airport is centrally located in Vermont, approximately 3½ miles from Sugarbush Ski Resort. Runway 4-22 is 2,575 feet long by 30 feet wide, paved and listed in excellent condition. There are two stub taxiways, one accessing a hangar, and the other to a grass tie-down area.

There are several hangars on the Airport and it is also home to Sugarbush Soaring, which offers glider rides and flying lessons. This Airport is not included in the NPIAS.

Warren-Sugarbush (0B7)	
Location	Warren
VTrans Airport Category	Specialty Service
Primary Runway Length/Width (feet)	2,575/30
Taxiway Type	N/A
ATCT (air traffic control tower)	No
IAP (instrument approach procedures)	None
Terminal/Admin. Building	No
Fuel	100LL (self-serve)
Weather Reporting	None
Paved Aircraft Parking	No
Hangars	Box hangars (private)
ALS (approach lighting system)	None
Visual Approach Aids	None
Lighting	None
Fencing	None
Services	Transient aircraft storage, aircraft rental and instruction, glider and banner towing

Burlington International (BTV)

Source: Vermont Agency of Transportation

As the largest public-use airport in the Vermont aviation system, Burlington International Airport offers a full complement of infrastructure, facilities, equipment, and services to accommodate scheduled commercial passenger service and the most demanding and sophisticated general aviation aircraft types and operators. Domestic carriers American Airlines, Delta Airlines, JetBlue and United Airlines provide flights to major hubs in Atlanta, New York City, Washington D.C., Chicago, Detroit, Philadelphia, and Charlotte, and Canada-based Porter Airlines, which serves 17 Canadian destinations and eight U.S. destinations via its hub in Toronto.

BTV also serves as home to 158th Fighter Wing of the Vermont Air National Guard (ANG) and the Army Aviation Support Facility of the Vermont Army National Guard (ARNG).

BTV's CIP (capital improvement program) shows over $95 million in total project costs planned through 2023, and include property acquisitions, pavement rehabilitation and relocations, noise mitigation, and development of a new cargo area, among other projects.

Burlington International (BTV)	
Location	Burlington
VTrans Airport Category	National Service
Primary Runway Length/Width (feet)	8,319/150
Crosswind Runway Length/Width	4,112/75
Taxiway Type	Partial parallel, Runway 15-33, full parallel for Runway 1-19
ATCT (air traffic control tower)	Yes
IAP (instrument approach procedures)	ILS or LOC Runway 15 and 33, RNAV (GPS) Runways 1, 15 and 33, VOR/DME Runway 1, HI-TACAN Runways 15 and 33
Terminal/Admin. Building	Yes
Fuel	100LL (full-serve), Jet-A (full-serve)
Weather Reporting	ASOS
Paved Aircraft Parking	Yes
Hangars	Box hangars, T-hangars
ALS (approach lighting system)	MALSR Runway 15, MALSF Runway 33
Visual Approach Aids	PAPI Runways 1-19 and 15-33
Lighting	MIRL, MITL
Fencing	Perimeter
Services	Fuel, transient storage, aircraft sales, charter instruction and rental, major airframe and powerplant repairs, avionics sales and service, oxygen, cargo and freight handling

3.2.2. Review of Previous System Plan

The previous Vermont Airport System Plan was completed in 2007 by Wilbur Smith Associates, Inc. Per the Executive Summary, most the funding for the plan was from the FAA with the intent of providing the Vermont Agency of Transportation and the airport sponsors with future development guidance for the 17 system airports. The primary objectives of the update were threefold:

- Identify and analyze aviation assets and needs of the State to assure that aviation performs the role needed for Vermont's economy and Citizens
- Provide continued guidance for development of a system of airports to meet the State's existing and future air transportation needs, identifying 5, 10 and 20-year projects and giving guidance to meet associated needs.
- Build consensus among public policy makers, airport sponsors and users so that the plan's recommendations can be more readily accomplished[2].

System airports were grouped into categories based on their service and activity levels, and other factors such as the type of approaches, runway length and economic impact, among others.

The Plan also details the goals of the Vermont Agency of Transportation in carrying out their mission. Per the Plan, their goals are:

- Provide a system of airports accessible for people and goods from both the ground and the air throughout the State.
- Provide intermodal ground access opportunities and/or services such as rental car, taxi, bus or bike.
- Preserve and enhance Vermont's existing airport system's infrastructure investment through maintenance and rehabilitation to meet future growth and demand as well as providing new infrastructure to meet future needs in support of the national air transportation system when needed.
- Plan for future airport development and protect public investment in airports through promotion of compatible land use in the vicinity of airports.
- Provide a safe and secure system of airports that meets state and federal guidelines, including routine inspections of airports through the 5010 Program.
- Seek adequate and stable funding, including FAA assistance, and assure appropriate staffing to support the Agency's mission.
- Make timely, sound infrastructure investments derived from airport master plans and based on priorities that are determined through coordination with Vermont's aviation stakeholders, including use of the Vermont Airport Capital Facilities Program.
- Maintain commercial air service at Rutland State Airport and support its development elsewhere in the state, as well as encourage additional commercial and cargo services where appropriate.

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[2] Vermont Agency of Transportation. *Vermont Airport System and Policy Plan.* February 2007. Web. 28, September 2017

- Maintain an up-to-date integrated database of air and landside facilities including capital plans and improvements, leaseholds, contacts, relevant zoning as well as the system's performance measures.
- Strive to generate appropriate revenues from the operation of State-owned airports in support of their continued operation and expansion utilizing a business-oriented approach[3].

The Plan goes on to detail recommended aviation policies, many of which are still relevant today. They were:

1. Advocate for the promotion of aviation and airports, including education of youth and flight training to promote sustainability in Vermont's aviation industry.
2. Maintain all 10 State-owned airports in order to keep them open and safe.
3. Maintain adequate access to public-use commercial and general aviation airports for all areas of Vermont.
4. Promote generating appropriate revenues from the operation of State-owned airports utilizing a business-oriented approach.
5. Promote development of facilities at State-owned airports in response to demand including tie-down areas and hangars, including associated surface access and utilities either with State or private funding.
6. Implement an updated computerized Airport Management System such as Airport IQ consistent with the Strategic Enterprise Initiative that is based on achieving the performance targets set for the aviation system, with a high priority given to the matching of available federal funds.
7. Support federal passenger Essential Air Service subsidies at Rutland State Airport and continued growth of passenger service at Burlington International Airport and encourage new passenger service development such as charter and other services through marketing and promotion.
8. Promote compatible land use near airports.
9. Utilize an asset management approach to ensure appropriate maintenance and investment in existing airport assets.
10. Seek adequate and stable funding and resources from all available sources to support the State's goals, missions and policies.
11. Promote airports as economic generators and catalysts.
12. Promote establishment of a statewide airports council to provide a forum for Vermont's airport operators, both public and private, to discuss current issues, activities, and processes to assist in enhancing Vermont's airport system.
13. Evaluate and seek changes to plans and facilities to respond to new technology and aircraft fleets to accommodate future air transportation needs.
14. Encourage private use airports to consider transition to public use, if appropriate.

The 2007 plan began with an inventory of existing airports and their attributes, including activity levels, physical characteristics, location within the state and economic impact, among others.

[3] IBID

System airports were grouped into four general roles depending on the existing attributes. The roles included National Service Airports, Regional Service Airports, Local Service Airports and Specialty Airports.

A detailed forecast was then laid out for the planning period. It included population projections by county and employment projections. The forecast was broken down into general aviation forecasts for the bulk of the system airports and commercial service forecasts for Burlington International and Rutland State.

Next, the Plan delved into facility and service objectives where minimum standards were established for the four airport roles in the areas of function, activity, facilities/services and runway length. The standards for each role were further broken down into specific considerations including Airport Reference Code, approach types, ground communications, etc. Finally, benchmarks were established for each of the individual considerations for the airports in the system to work toward throughout the planning period.

The next chapter considered the future of the aviation system in Vermont. This chapter attempted to address future system performance in the context of airport accessibility, airport development and safety and security. Again, several benchmarks were established as to how the individual airports and the system as a whole might evolve in order to meet the state's air transportation needs.

The Plan concluded with the role, vision and mission of the Vermont Agency of Transportation as to how the individual airports, and the system could improve to meet future demand.

3.3. INVENTORY PROCESS

The primary foundational element of any airport planning study is an inventory effort, which ensures that the most current and accurate information is considered during the conduct of the study. As such, an extensive and comprehensive data collection process was initiated to collect current relevant data for the VTSASP. Two types of data were collected from the airports: 1.) airport specific data such as airside and landside facilities, and 2.) economic data specific to the airports, tenants and airport users.

The process involved the following steps:

- A Comprehensive Airport Inventory and Data Survey to collect qualitative and quantitative data pertaining to infrastructure facilities at each airport, aeronautical services available, and activity characteristics.
- Collection of information from Vermont Agency of Transportation (VTRANS) such as Airport Master Plans, Airport Layout Plans, and Capital Improvement Programs.

The Airport Inventory and Data Survey provided the foundation of relevant data for system airports. Survey completion was performed by VTRANS staff for state-owned airports, and privately-owned airports were contacted directly to participate in the Survey. A copy of the airport Inventory and Data Survey is provided in Appendix A.

3.4. AIRPORT INVENTORY DATA

This section presents data collected for Vermont system airports via the inventory process previously described. Data for system airports is organized and presented in the following sections:

- General Airport Information
- Airside Facilities
- Landside Facilities and Services
- Airport Activity Data

3.4.1.General Airport Information

As previously stated, the Vermont Aviation System is comprised of 16 public-use airports. Eleven airports are classified as General Aviation airports in the NPIAS. Burlington International is classified as a Primary Commercial Service Airport, and Rutland-Southern Vermont Regional is classified as a Regional airport. Three Vermont Aviation System airports are not included in the current NPIAS. General airport information from the survey is presented in Table 3-1:.Basin Harbor, Deerfield Valley Regional, Shelburne and John H. Boylan State Airports are not included in the current NPIAS, and as such are not eligible for AIP funding.

Table 3-1: VTSASP Airport General Information

Airport Name	Airport ID	Associated City	Ownership	NPIAS Status
Basin Harbor	B06	Vergennes	Private	N/A
Burlington International	BTV	Burlington	Public	Primary
Caledonia County State	CDA	Lyndonville	Public	General Aviation
Deerfield Valley Regional	4V8	West Dover	Private	N/A
Edward F. Knapp State	MPV	Barre/Montpelier	Public	General Aviation
Franklin County State	FSO	Highgate	Public	General Aviation
Hartness State	VSF	Springfield	Public	General Aviation
John H. Boylan State	5B1	Island Pond	Public	N/A
Middlebury State	6B0	Middlebury	Public	General Aviation
Morrisville-Stowe State	MVL	Morrisville	Public	General Aviation
Northeast Kingdom International	EFK	Newport	Public	General Aviation
Post Mills	2B9	Post Mills	Private	General Aviation
Rutland - Southern Vermont Regional	RUT	Rutland	Public	Reliever
Shelburne	VT8	Shelburne	Private	N/A
Warren-Sugarbush	0B7	Warren	Private	General Aviation
William H. Morse State	DDH	Bennington	Public	General Aviation

Source(s): Airport Master Record, 2017. FAA, NPIAS, 2017-2021.

3.4.2.Airside Facilities

This section presents and summarizes airside facility information collected for system airports. Airside facilities include runways, taxiways, associated visual and navigational aids, and the communication and weather reporting infrastructure utilized to support aircraft operations. This information for Vermont's Aviation System is described in the following sections, and presented in **Table 3-2:** and **Table 3-3:**:

- Runway Information
- Runway Lighting
- Taxiway Coverage
- Approach Type
- Visual and Navigational Aids (NAVAIDS), Weather Reporting, and Communications

Runway Information

Runways are the most critical facilities on an airport because runway length, surface type, and width determines the types of aircraft that can safely operate at an airport. Other airport infrastructure facilities and services available are generally configured to support the most demanding types of aircraft that can operate there. In this way, the full complement of runway and associated facilities at an airport affect the type of aeronautical activity that can occur, driving decisions by aircraft owners and operators that exercise choices regarding which airports they will use.

As shown in Table 3-2:, five (5) of the system airports have a primary runway length greater than 5,000 feet. The longest runway in the system is at Burlington International, which boasts a primary runway length of more than 8,300 feet. For planning purposes, a runway length of 5,000 feet or greater is typically benchmarked as the minimum to accommodate sophisticated turbo-prop and jet aircraft most often in service by business/corporate operators.

The shortest paved runways at system airports are between 2,500 and 3,700 feet and are as follows:

- Caledonia County State (3,300 feet)
- Deerfield Valley Regional (2,650 feet)
- Franklin County State (3,000 feet)
- Middlebury State (2,500 feet)
- Morrisville-Stowe State (3,700 feet)
- Warren-Sugarbush (2,575 feet)
- William H. Morse State (3,704 feet).

Runways at Basin Harbor, John H. Boylan State, Post Mills, and Shelburne Airports are unpaved.

In terms of primary runway widths, four state-owned system airports offer primary runways of 100 feet, and Burlington International has a width of 150 feet. The remaining system airports have runway widths that range from 30 feet to 90 feet.

Five (5) system airports offer paved secondary, or crosswind runways (not shown in Table 3-2). These airports are: Burlington International (4,112 feet), Edward F. Knapp (3,000 feet), Hartness State (3,000 feet), Northeast Kingdom International (3,996 feet), and Rutland-Southern Vermont Regional (3,170 feet). Post Mills offers a turf crosswind runway of 2,300 feet in length.

Runway Lighting

Runway lighting provides the use of the airport at night or use during poor weather conditions. The types of runway lighting include High Intensity Runway Lighting (HIRL), Medium Intensity Runway Lighting (MIRL) Low Intensity Runway Lighting (LIRL), and Runway End Indicator Lighting (REIL). As shown in Table 3-2:, eight (8) state-owned airports employ MIRL and REIL. Burlington International offers HIRL, and Deerfield Valley offers MIRL. The remaining six (6) system airports do not have runway lighting.

Taxiway Type and Lighting

Table 3-2: also presents the type of taxiways in place for each system airport's primary runway. A full-length taxiway is a taxiway that spans the entire length of the primary runway. A partial-length taxiway spans only part of the length of its associated primary runway. Runways without a taxiway system may have a turnaround at one or both ends of the runway for aircraft to reverse direction and perform other operations off the runway. Additionally, stub taxiways are also shown for system airports without parallel taxiways. A stub taxiway is defined as one that connects a runway to a parallel taxiway or a runway or taxiway to an adjacent apron area. An airport's taxiway "coverage" contributes to the runway's capacity for accommodating higher volumes of aircraft operations, such that taxiway pavement is available to perform off-runway operations prior to take-off and after landing. In this way, parallel taxiways offer greater coverage than turnarounds and stubs.

As shown, three (3) system airports offer a full parallel taxiway, with Burlington International offering dual full parallel taxiways to serve the primary runway. Four (4) airports have a partial parallel taxiway, five (5) airports have turnarounds at runway ends, and four (4) airports have taxiway stubs connecting aprons with runways. The airports with unpaved, turf runways do not have designated taxiways. Airports with turnarounds only or stubs connecting to aprons require aircraft to back-taxi to either depart or taxi to the apron upon landing.

Burlington International is the only system airport with taxiway lighting (Medium Intensity Taxiway Lighting, MITL)

Approach Type

During periods of low visibility, pilots rely on NAVAIDS and instruments to operate aircraft to a point when a runway element is visually acquired. An instrument approach procedure is the means by which pilots perform such operations; however, not all airports offer an instrument approach. Therefore, operations at airports without an instrument approach have visual approaches. An approach is referred to as precision (used during the most restrictive visibility conditions), non-precision, or circling approach (used under the least restrictive conditions). Precision approaches have both lateral and vertical guidance equipment, while non-precision offer lateral guidance only.

As presented in **Table 3-2:**, three (3) of Vermont's system airports have precision instrument approach procedures and six (6) system airports have non-precision instrument approaches. The remaining seven (7) airports have visual approaches with no approach procedures. The primary approach systems in place for primary runways at system airports are Instrument Landing Systems (ILS) and non-precision approaches such as Area Navigation Global Positioning Systems (RNAV/GPS). For system planning purposes, the most important consideration for evaluating approach systems is the existence or lack of these systems - not the specific type of equipment installed.

Table 3-2: Primary Runway, Taxiway Facilities & Approach Facilities

Airport Name	Primary Runway		Runway Lighting	Taxiway Type / Lighting (Type/N)	Best Approach
	Length	Width			
Basin Harbor	3,000	90	N/A	N / N	Visual
Burlington International	8,319	150	HIGH / ALS	Full Parallel (Dual) / MITL	Precision
Caledonia County State	3,300	60	MED / REIL	Partial, Stubs / N	Non-Precision
Deerfield Valley Regional	2,650	75	MED	Stubs / N	Visual
Edward F. Knapp State	5,002	100	MED / REIL	Full Parallel /	Precision
Franklin County State	3,000	60	MED / REIL	Stub, Taxilane / Med PCL	Non-Precision
Hartness State	5,501	100	MED / REIL	Stubs, Turnaround / N	Non-Precision
John H Boylan State	2,650	120	N/A	N / N	Visual
Middlebury State	2,500	50	N/A	Full Parallel / N	Visual
Morrisville- Stowe State	3,700	75	MED / REIL	Stubs / N	Non-Precision
Northeast Kingdom International	5,000	100	MED / REIL	Partial, Turnaround / N	Non-Precision
Post Mills	2,900	80	N/A	N / N	Visual
Rutland - Southern Vermont Regional	5,003	100	MED / REIL	Partial / MITL	Precision
Shelburne	3,077	60	N/A	N / N	Visual
Warren-Sugarbush	2,575	30	N/A	Turnaround / N	Visual
William H. Morse State	3,704	75	HIGH / REIL	Partial Parallel / MITL	Non-Precision

Source: Airport Master Record, 2017. Airport Surveys, 2017.

Visual and Navigational Aids (NAVAIDS), Weather Reporting, and Communications

In addition to runway lighting and approach procedures at system airports, system planning considers other visual aids and NAVAIDS as well as weather reporting and air traffic communications facilities that aid in safe operations for aircraft operators. Table 3-3: lists the availability of Air Traffic Control Towers (ATCT), communications systems, approach lighting and vertical guidance systems, weather reporting equipment, and visual aids such as rotating beacons, wind indicators, and segmented circles.

Communications Systems: The only system airport with an ATCT in the Vermont system is Burlington International. Therefore, most general aviation operations in Vermont occur in uncontrolled airspace and utilize Common Traffic Advisory Frequency (CTAF) and Universal Communications (UNICOM) station communications. A CTAF/UNICOM station is provided at all system airports, and operating procedures require pilots to communicate position and intentions with one another whether operating in the airport traffic pattern or moving on the airport runway and taxiway system.

Approach Lighting and Vertical Guidance Systems: Approach Lighting Systems (ALS) are a configuration of sequenced signal lights that guide pilots on approach to the runway threshold. An ALS is typically installed to serve runways with an instrument approach procedure. Approach lights also provide additional visual guidance for nighttime approaches under Visual Flight Rules (VFR) or poor weather conditions during Instrument Flight Rules (IFR). As shown in **Table 3-3:**, ALS is available at Burlington International, Edward F. Knapp State, and Rutland-Southern Vermont Regional.

Table 3-3: also shows that Visual Glide Slope Indicators (VGSI) are available at eight (8) system airports. VGSI equipment installations at system airports vary between several Visual Approach Slope Indicators (VASI) and Precision Approach Path Indicators (PAPI) variants.

Weather Reporting: Automated weather reporting systems are a great benefit to pilots. The most common types of weather reporting systems are Automated Weather Observing Systems (AWOS) and Automated Surface Observation Systems (ASOS). ASOS installations report wind, visibility, cloud height, temperature, dew point, pressure, and precipitation. There are several variations of AWOS in use at Vermont system airports, such as AWOS III and AWOS III-PT. However, for system planning purposes, the most important consideration for weather reporting systems is the presence of weather reporting equipment or lack of weather reporting.

As shown in **Table 3-3:**, ten (10) system airports offer weather reporting systems. System airports without automated weather reporting systems are Basin Harbor, Deerfield Valley Regional, John H. Boylan State, Post Mills, Shelburne, and Warren-Sugarbush. It should be noted that the system airports without weather reporting are either attended irregularly, unattended, or are seasonal facilities closed during the months of October through April.

Other Visual Aids: The following visual aids are in place at system airports:

- Rotating Beacon: A rotating beacon helps pilots locate the airport at night and during periods of low visibility. Eight (8) system airports have a rotating beacon.
- Wind Indicator: A wind indicator provides wind direction information to pilots, and are often lighted for night operations. All system airports have wind indicators, eight of which are lighted.
- Segmented Circle: A segmented circle shows pilots information on the traffic pattern visually, without use of ATC communication. Ten (10) system airports have a segmented circle.

Table 3-3: Visual & NAVAIDS, Weather Reporting Capability, and Communication Equipment

Airport Name	ATCT/ CTAF	Approach Lighting/ Vertical Guidance	Weather Reporting	Rotating Beacon	Wind Indicator (Lighted Y-L)	Segmented Circle
Basin Harbor	N / Y	N / N	N	N	Y	N
Burlington International	Y / Y	Y / Y	ASOS	Y	Y-L	N
Caledonia County State	N / Y	N / N	AWOS-3	Y	Y-L	Y
Deerfield Valley Regional	N / Y	N / N	N	N	Y-L	N
Edward F. Knapp State	N / Y	Y / Y	ASOS	Y	Y	Y
Franklin County State	N / Y	N / Y	AWOS-3	Y	Y-L	Y
Hartness State	N / Y	N / Y	ASOS	Y	Y-L	N
John H Boylan State	N / Y	N / N	N	N	Y	Y
Middlebury State	N / Y	N / N	ASOS-4	N	Y	Y
Morrisville- Stowe State	N / Y	N / Y	ASOS	Y	Y-L	Y
Northeast Kingdom International	N / Y	N / Y	AWOS-3	Y	Y-L	Y
Post Mills	N / Y	N / N	N	N	Y	N
Rutland - Southern Vermont Regional	N / Y	Y / Y	AWOS-3PT	Y	Y-L	Y
Shelburne	N / Y	N / N	N	N	Y	N
Warren-Sugarbush	N / Y	N / N	N	N	Y	Y
William H. Morse State	N / Y	N / Y	ASOS	Y	Y-L	Y

Source: Airport Master Record, 2017. Airport Surveys, 2017.

3.4.3. Landside Facilities and Services

This section presents and summarizes landside facility information collected for system airports. Landside facilities include: terminal buildings, other airport buildings, fuel farms, hangars, T-hangars, aprons, automobile parking facilities and services such as flight training, aircraft rental, snow removal, and courtesy cars.

Landside facility information for the Vermont Aviation System airports is described in the following sections, and presented in **Table 3-4:**, **Table 3-5:**, **Table 3-6:**, and **Table 3-7:**:

- Fueling Services
- Aircraft Storage
- Operator and Passenger Services

Fueling Services

Aviation fuel type and fueling services available at Vermont Aviation System airports is tantamount to the critical importance of primary runway length. In this regard, the availability of aviation fuel at Vermont Aviation System airports is an indicator of the system's ability to accommodate demand by type of aircraft in Vermont. Additionally, the availability of fuel - especially during periods when an airport is unattended or at facilities that do not have full-time line service staff - provides insight into the system's ability to service users operating after hours or for aircraft in flight that may need to refuel. Finally, ownership of fueling facilities at system airports is an indicator of whether the airport sponsor benefits from the fuel sales profit margin. For airports with fuel facilities owned by an FBO, sponsors typically receive a fraction of the fuel profit margin in the form of a fuel flowage fee. **Table 3-4:** presents fueling services available at system airports.

Table 3-4: VTSASP – Fueling Services Available

Airport Name	AvGas	Jet A	Fuel Farm Own/Ops	Fuel Service Availability	Self-Fueling
Basin Harbor	N	N	N/A	N/A	N/A
Burlington International	Y	Y	FBO/FBO	24-Hours	Y
Caledonia County State	Y	N	Sponsor	24-Hours	Y
Deerfield Valley Regional	N	N	N/A	N/A	N/A
Edward F. Knapp State	Y	Y	N/A	PT	N
Franklin County State	Y	Y	Sponsor/FBO	24-Hours	Y
Hartness State	Y	Y	N/A	N/A	Y
John H Boylan State	N	N	N/A	N/A	N/A
Middlebury State	Y	N	Sponsor/Sponsor	24-Hours	Y
Morrisville- Stowe State	Y	Y	Sponsor/FBO	24-Hours	Y
Northeast Kingdom International	Y	Y	FBO/FBO	24-Hours	Y
Post Mills	N	N	N/A	N/A	N/A
Rutland - Southern Vermont Regional	Y	Y	Sponsor/FBO	24-Hours	Y
Shelburne	N[1/]	N	Sponsor	On-Call	N
Warren-Sugarbush	Y	N	Sponsor	PT	Y
William H. Morse State	Y	Y	Sponsor/FBO	24-Hours	Y

Source: Airport Surveys, 2017.
1/ Shelburne Airport provides MoGas fuel for use in piston aircraft.

As shown, eleven (11) system airports offer AvGas (100LL) fuel and eight (8) system airports offer Jet A fuel. Motor vehicle fuel (MoGas) for aviation use is offered at Shelburne Airport. Additionally, eleven (11) system airports offer some level of after-hours/24-hour fueling service,

whether it be self-serve or on-call assistance made through prior arrangement. Six (6) system airports do not offer self-fueling services.

Aircraft Storage

Aircraft storage at airports consists primarily of hangars and tie-down/apron parking. Hangar types vary from airport to airport, but typically include T-hangars and conventional or "box" hangars. T-hangars are individual units constructed as multi-bay covered structures, most suitable for storing single-engine piston aircraft and small twin-engine aircraft. Conventional hangars are free-standing, covered buildings for storing larger twin-engine and jet aircraft. Some conventional hangars are utilized to store multiple aircraft as a "community" hangar.

Hangars can be constructed and/or owned by the airport sponsor, private individual, or business/corporate operator and typically depends upon the demand for covered and secure storage at each facility.

A third option for storing aircraft at an airport is on an apron utilizing tie-down spaces. Aircraft tie-down spaces are individual, outdoor locations where aircraft are tied-down and stored. Larger airports will maintain paved tie-down spaces, while smaller general aviation facilities often have grass tie-down areas.

Table 3-5: lists the types of aircraft storage facilities available at each system airport. Also included is information pertaining to hangar ownership (sponsor/private), and waiting lists for hangars at system airports.

Table 3-5: VTSASP – Aircraft Storage Available

Airport Name	T-Hangars		Conventional Hangars		Wait List	Tie-Downs
	Total	Sponsor/ Private	Total	Sponsor/ Private		
Basin Harbor	-	-	-	-	-	-
Burlington International	12	0 / 12	4	1 / 3	Y (10)	18
Caledonia County State	8	0 / 8	6	2 / 4	N	21
Deerfield Valley Regional	-	-	-	-	-	-
Edward F. Knapp State	0	N/A	31	3 / 28	N	39
Franklin County State	4	0 / 4	38	2 / 36	Y (8)	41
Hartness State	-	-	-	-	-	-
John H Boylan State	0	N/A	3	0 / 3	N	10
Middlebury State	12	1 / 11	11	2 / 9	Y (6)	73
Morrisville- Stowe State	19	0/19	1	1 / 0	Y (22)	25
Northeast Kingdom International	0	N/A	16	2 / 14	N	56
Post Mills	-	-	-	-	-	-
Rutland - Southern Vermont Regional	-	-	-	-	-	-
Shelburne	-	-	-	-	-	-
Warren-Sugarbush	0	N/A	5	0 / 5	N	4
William H. Morse State	20	0 / 20	2	1 / 1	N	40
Total	**42**		**154**		**45**	**324**

Source: Airport Surveys, 2017.

As shown in **Table 3-5:**, there are a total of 42 T-hangars at Vermont system airports, along with 154 conventional or box hangars. As reported by Airport survey participants, there are currently 45 aircraft operators on waiting lists for hangar storage facilities at four system airports.

Ownership of hangar facilities at system airports is predominantly private, with 98 percent of T-hangars and 91 percent of conventional hangars owned by private interests, respectively.

Completed surveys indicated that system airports have 324 tie-down spaces, of which 201 (approximately 62 percent) are utilized for based aircraft.

Operator and Passenger Services

Airports offer a range of services to operators and passengers, whether they be managed by the airport sponsor, FBOs, or other on-airport service providers. **Table 3-6:** and **Table 3-7:** present a snapshot of services offered at each system airport, which are described below:

- **Terminal Building:** Terminal facilities can be provided by either the airport sponsor or an FBO. For the purposes of the VTSASP, an airport building is considered a terminal if it is

accessible to the public and has basic amenities such as restrooms. Twelve (12) system airports have terminal buildings.

- **Fixed Base Operator:** FBO's provide essential services for operators and their passengers, and oftentimes serve as the "face" of an airport to these users. As indicated in **Table 3-6:**, 11 system airports offer FBOs.

- **Courtesy Car:** A courtesy car is one that is maintained on-airport by the sponsor, FBO, or other service provider, which is offered to aircraft crews and operators free of charge. Three (3) system airports offer a courtesy car for these purposes.

- **Flight Instruction:** Flight instruction refers to either a flight school that is established and located at an airport, or individual flight instructors that offer instruction services. Seven (7) system airports reported flight instruction availability at their airport. For the purpose of the VTSASP, Aviation Career Education (ACE) Camps sponsored by VTRANS and soaring instruction offered at Morrisville-Stowe, Warren-Sugarbush, and Hartness State Airports is not considered flight instruction.

- **Airframe and Power Plant Repairs:** Airframe repair services at airports can include both minor and major repairs by technicians certified to repair various types of aircraft structural components. Powerplant repair services at airports refers to technicians certified to perform minor and major repairs on a variety of aircraft engines. As shown, nine (9) system airports offer some level of airframe and powerplant repairs.

- **Avionics Sales/Repair:** Avionics sales or repair services indicates whether radio, navigation instrument, and other electronic gear repairs are available for purchase and installation, or if repair services are offered at the airport. **Table 3-6:** shows that five (4) system airports offer avionics services.

- **Aircraft Sales:** Aircraft sales refers to businesses located on-airport that sell aircraft, but does not include aircraft sold by private individuals. As shown in **Table 3-7:** Franklin County State is the only system airport with a business engaged in aircraft sales.

- **Deicing:** Deicing services commonly refers to chemical deicing capability, but also includes radiant (a heated hangar) that is available to deice aircraft. As shown in **Table 3-7:**, seven (7) system airports offer deicing services.

- **Snow Removal:** The survey inquired about the existence of snow removal equipment on each system airport. Nine (9) system airports provide snow removal.

- **Lavatory:** Lavatory service is the sanitary disposal of aircraft lavatory holding tanks. Burlington International is the only system airport that provides lavatory service.

- **Ground Transportation:** Ground transportation at airports includes the availability of public bus service, taxi service, intermodal connectivity with local transit lines, as well as rental cars, private limousine, or executive coach providers. **Table 3-7:** shows nine (9) system airports reported the availability of ground transportation for operators and passengers. Burlington International and Morrisville-Stowe are accessible via Green Mountain Transit bus service routes.

Table 3-6: Operator and Passenger Services

Airport Name	Terminal Building	FBO	Courtesy Car	Flight Instruction	Airframe/ PP Repair	Avionics
Basin Harbor	N	N	N	N	N	N
Burlington International	Y	Y	Y	Y	Y	Y
Caledonia County State	Y	N	N	N	N	N
Deerfield Valley Regional	N	N	N	N	N	N
Edward F. Knapp State	Y	Y	N	Y	Y	N
Franklin County State	Y	Y	Y	Y	Y	Y
Hartness State	Y	Y	-	Y	Y	N
John H Boylan State	N	N	N	N	N	N
Middlebury State	Y	Y	N	N	Y	N
Morrisville- Stowe State	Y	Y	N	N	Y	Y
Northeast Kingdom International	Y	Y	Y	Y	Y	N
Post Mills	N	N	N	N	N	N
Rutland - Southern Vermont Regional	Y	Y	N	Y	Y	Y
Shelburne	Y	Y	-	Y	Y	N
Warren-Sugarbush	Y	Y	N	Y	N	N
William H. Morse State	Y	Y	Y	Y	Y	Y

Table 3-7: Operator and Passenger Services (cont.)

Airport Name	Aircraft Sales	Deicing	Snow Removal	Lavatory	Ground Transport
Basin Harbor	N	N	N	N	N
Burlington International	N	Y	Y	Y	-
Caledonia County State	N	N	Y	N	N
Deerfield Valley Regional	N	N	N	N	N
Edward F. Knapp State	N	Y	Y	N	Y
Franklin County State	Y	Y	Y	N	Y
Hartness State	N	-	-	-	-
John H Boylan State	N	N	N	N	-
Middlebury State	N	N	Y	N	Y
Morrisville- Stowe State	N	Y	Y	N	Y
Northeast Kingdom International	N	Y	Y	N	Y
Post Mills	N	N	N	N	N
Rutland - Southern Vermont Regional	-	Y	Y	-	Y
Shelburne	N	N	N	N	N
Warren-Sugarbush	N	N	N	N	Y
William H. Morse State	N	Y	Y	N	Y

Source: Airport Surveys, 2017.

3.4.4. Airport Activity Data

This section presents and summarizes airport activity information collected for system airports. Activity at an airport is measured in terms of based aircraft and operations. Both aircraft type and operations are factors utilized in *Chapter 5., Aviation Forecasts*.

Table 3-8: displays the most recent count available for each system airport's total number of based aircraft by type. As indicated, system airports are a base of operations for 427 fixed wing aircraft, most of which (400) are single-engine piston aircraft. There are 13 based multi-engine aircraft, 15 based jet aircraft, and 11 based helicopters.

Table 3-8: VTSASP – Based Aircraft by Type

Airport Name	Single Engine	Multi-Engine	Jet	Helo	Other	Military	Total[1/]
Basin Harbor	-	-	-	-	-	-	0
Burlington International	62	3	14	1	-	28	79
Caledonia County State	18	-	-	-	-	-	18
Deerfield Valley Regional	5	2	-	7	-	-	7
Edward F. Knapp State	50	2	-	1	-	-	52
Franklin County State	85	2	1	-	5	-	88
Hartness State	19	-	-	-	8	-	19
John H Boylan State	3	-	-	-	2	-	3
Middlebury State	32	1	1	1	1	-	34
Morrisville - Stowe State	25	3	-	-	6	-	28
Northeast Kingdom International	19	1	-	-	-	-	20
Post Mills	-	-	-	-	9	-	0
Rutland - Southern Vermont Regional	29	-	-	-	1	-	29
Shelburne	53	-	-	-	4	-	53
Warren-Sugarbush	-	-	-	-	50	-	0
William H. Morse State	30	2	-	2	6	-	34
Total – VTSASP Airports	**399**	**13**	**15**	**11**	**94**	**28**	**427**
Additional – Non-VTSASP Airports[2/]	**-**	**-**	**-**	**-**	**-**	**-**	**68**

Source: Airport Surveys, 2017. Airport Master Record, 2017.
[1/] Total Fixed Wing Aircraft
[2/] Additional fixed-wing and helicopter aircraft are based at approximately 50 private-use airports, landing fields, and seaplane bases throughout the State.

Among VTSASP Airports, including all helicopters, other aircraft such as gliders, ultra-light, and/or experimental aircraft, and military aircraft operated by the Vermont Air National Guard and the Army National Guard, there are 560 aircraft operating from Vermont system airports. Additionally, non-VTSASP airports account for 68 based aircraft, bringing the total number to nearly 630 based aircraft statewide.

Operations at general aviation airports are difficult to account for accurately. This is because there are no means of tabulating operations at most general aviation airports. Even at facilities with an operating ATCT, operations counts are only recorded during operating hours, after which operations are estimated.

Table 3-9: provides information regarding the most recent activity level estimated at each airport, and the type of operations (one landing and one takeoff equals two operations). These operation estimates are from two sources, Airport Surveys and the FAA Airport Master Record (5010 Form) data. FAA 5010 data was utilized where no estimate was provided by airport management.

Table 3-9: VTSASP – Annual Operations

Airport Name	Air Carrier	Air Taxi	GA Local	GA Itinerant	Military	Total
Basin Harbor	-	-	-	2,120	62	2,182
Burlington International	12,972	12,131	19,720	19,736	6,241	70,800
Caledonia County State	-	-	5,800	1,280	300	7,380
Deerfield Valley Regional	-	-	1,800	1,300	-	3,100
Edward F. Knapp State	-	625	14,500	8,000	1,000	24,125
Franklin County State	-	-	12,000		600	12,600
Hartness State	-	222	3,752	2,487	150	6,611
John H Boylan State	-	-	127	264	12	403
Middlebury State	-	-	7,200	2,900	800	10,900
Morrisville - Stowe State	-	127	5,023	954	254	2,040
Northeast Kingdom International	-	-	7,234	1,980	238	9,452
Post Mills	-	10	2,920	1,400	-	4,330
Rutland - Southern Vermont Regional	-	1,104	6,187	5,061	30	12,382
Shelburne	-	-	3,820	416	-	4,236
Warren-Sugarbush	-	-	16,520	1,100	-	17,620
William H. Morse State	-	200	1,200	570	100	2,070
Total	**12,972**	**14,219**	**106,008**	**60,440**	**10,712**	**204,351**

Source: Airport Surveys, 2017. Airport Master Record, 2017

General Aviation Activity Overview

The diversity in the general aviation activity in the State of Vermont is as varied as the general aviation industry itself. Airports across the state support all types of recreational, leisure, and business aviation on a year-round basis with airports near ski areas showing some seasonal variability. At the time of the previous system plan in 2007, the general aviation industry was considered relatively stable. While weakened by the effects of September 11, 2001, the effects were not as far reaching as they were for the airlines and commercial aviation.

General aviation activity however was greatly impacted by the sharp increase in the price of oil in 2008 that nearly tripled the cost of aviation fuel (Both 100LL and Jet A). This fuel spike occurred just prior to the economic recession in 2008-2009. All segments of general aviation activity were affected by the fuel costs and weak economy with reductions in both recreational and corporate activity occurring on the national level. A detailed discussion of the trends affecting the growth of general aviation can be found in *Chapter 5., Aviation Forecasts.*

Commercial Service Activity Overview

The airline industry is evolving rapidly to maintain sustained profitability as the economy continues to improve. There have been a number of airline mergers reducing overall system capacity and affecting individual market competition. These mergers have created more efficient airlines with increased load factors and profits, primarily resulting from reduced competition and unbundled products driving new ancillary revenues for things such as checked baggage and seat assignments.

The decreases in fuel price across the country have also facilitated record profits for most US airlines in 2015. As of August 2017, this trend has plateaued and airlines may be susceptible to the pressure of rising fuel costs once again. Recovery of the economy has led to steady increases in leisure and business travel while the airlines have continued slow growth in seating capacity. The bulk of the traffic growth has been occurring at large-hub airports where competition is at its greatest.

Some specific commercial service activity influencers include:

Pilot Supply – In recent years the industry has begun to see impacts associated with a reduced number of pilots entering the aviation industry. Reduced pay, with the onset of regional jet flying in the 2000's, and regulatory changes requiring 1500 hours for first officers have added to an already increasingly expensive training process. These are compounding factors that will likely increase the severity of this issue in the coming years. Some industry groups also predict a similar shortage in qualified aircraft mechanics as well. Limited pilot supply is a contributing factor to the recent aircraft upgauging trend.

NextGen – For the past 10 years, the FAA has been incrementally implementing new technology with the broader goal of modernizing the nation's air traffic control system. Some of the key objectives involve improving the safety and efficiency of airspace in and around high-volume airport regions such as Atlanta, New York and Washington. These improvements may not have a noticeable impact on Vermont airport's operational efficiency; however, it may reduce delays to hub airports and provide the opportunity for additional schedule frequencies resulting in an improved passenger experience.

Fuel Prices – Over the past 10 years the aviation industry has demonstrated its sensitivity to fuel prices and their impact on operational cost and ultimately aviation demand. On average, fuel represents approximately one-third of the cost of commercial aviation activity. Thus, during spikes in fuel prices like in 2008, the impacts to both supply and demand are tremendous. Advancements in fuel technology will help reduce industry sensitivity to fuel although it will likely continue to be a key influencer for activity for some time.

Aircraft Technology – Over the past 20 years there have been significant advances and innovations to aviation and aircraft technology. With global positioning system (GPS) technology, unmanned aerial systems (UAS) and single pilot operations for complex aircraft systems, the next 20 years will likely yield numerous additional advances in technology that could impact various airline business models. Monitoring and maintaining an awareness of technology enhancements and potential applications for Vermont airports will help ensure the system is always well-positioned to respond to a changing industry.

- Burlington International

Burlington International Airport is the only airport in the state served by a variety of network airlines, providing access for Vermont residents to the global air transportation network. Service provided under the major airlines brands of American, Delta, JetBlue and United, though most flights are operated by regional affiliate airlines. Porter Airlines seasonally flied between Burlington and Toronto, representing the only scheduled international service at the airport.

Airlines and their destinations offered from Burlington (as of October 2017) include:

- American/American Eagle - Charlotte, Philadelphia, Washington Reagan
- Delta/Delta Connection - Atlanta, Detroit, New York (LaGuardia and JFK)
- JetBlue - New York, JFK
- Porter - Toronto Billy Bishop
- United/United Express – Chicago O'Hare, Newark, Washington Dulles

Burlington had approximately 593,311 enplanements in 2016.

In addition to passenger service, Burlington International also has air cargo serviced by both FedEx Express and Wiggins Airways (for UPS).

- Rutland-Southern Vermont Regional

Cape Air provides scheduled service from Rutland to Boston Logan International Airport with three (3) daily departures. Service is provided on twin-piston engine 9-seat Cessna 402 aircraft. Cape Air has interline agreements with most major US carriers allowing for seamless ticketing and baggage connections to other flights allowing for one-stop service from Rutland to dozens of domestic and international destinations. Rutland had approximately 5,120 enplanements in 2016.

- Morrisville-Stowe State – (Non-Network).

Tradewinds aviation provides scheduled charter service to/from White Plains/Westchester County Airport with service typically aligned with weekend trips during peak seasons at varying frequencies. Service operated via the FBO at Westchester County Airport and not the passenger terminal. While this represents a type of commercial service, it does not provide the community with access to the global commercial air transportation network and therefore MVL is not considered a commercial service airport like Burlington or Rutland. Furthermore, the FAA threshold for commercial service airports is 2,500 annual enplanements. Morrisville-Stowe had approximately 265 enplanements in 2016 which represented a 390% increase over 2015.

3.5. SUMMARY

The data in this inventory represents the basis for the VTSASP. The next chapter, *Chapter 4., Current System Performance* will utilize the facility and service objectives presented in *Chapter 2., System Parameters*, to evaluate the current performance of the Vermont Aviation System against minimum facility and service objectives to identify quantitative deficiencies and qualitative gaps in service that will be addressed with recommendations at the conclusion of the VTSASP.