MIDDLEBURY STATE AIRPORT (6B0)

Airport Master Plan (DRAFT Working Paper #1)

June 2021

VERMONT AGENCY OF TRANSPORTATION

Prepared By:

CHA

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1 Inventory of Existing Conditions

Understanding the background of an airport and the region it serves is essential to making informed decisions pertaining to airport-related improvements. Therefore, to develop a well-rounded understanding of the Middlebury State Airport ('6B0' or 'the Airport'), an inventory of key airport elements was conducted and discussed in the subsequent sections.

1.1 Airport History

The Middlebury State Airport was privately developed by the Quesnel Family in the 1950s as an airfield for aircraft performing aerial pesticide application. The Airport was later acquired by the Town of Middlebury in 1966. During this period, the Town paved Runway 1-19, which at the time measured 2,500 feet in length by 50 feet in width. In 1970, the Airport was transferred to the State of Vermont Aeronautics Board and rededicated as the Middlebury State Airport. In 1976, the Vermont National Guard constructed a gravel parallel taxiway (Taxiway 'A'). Throughout the following decades, several infrastructure-related improvements were made including:[1]

- Land acquisition: 1976
- Apron construction: 1976
- Fuel farm installation: 1993
- Runway rehabilitation: 2000
- Terminal building and hangar construction: 2003
- Runway extension: 2017

1.2 Airport Role

6B0 is a public-use airport owned by the State of Vermont and maintained by the Vermont Agency of Transportation (VTrans). According to the Federal Aviation Administration's (FAA) *2021 – 2025 National Plan of Integrated Airport Systems (NPIAS) Report*, 6B0 is designated as a General Aviation (GA) airport and is currently classified with a role of "local". As stated in the NPIAS report, a local airport, *"provides communities with access to local and regional markets, is*

Source: Vermont Agency of Transportation

[1] Middlebury State Airport: Final Environmental Assessment & Finding of No Significant Impact for Runway 1-19 Extension

generally located near larger population centers, and has moderate levels of activity with some multi-engine propeller aircraft."

Additionally, 6BO is classified as a Category 2 airport within the *Vermont State Aviation System Plan* (VSASP). According to the VSASP, Category 2 airports, "*offer a higher level of facilities and services than Category 1 Airports. Typically have equipment that enhances safety of use during inclement weather, and complimentary facilities and services that may be able to accommodate smaller jet aircraft during favorable conditions*." For Category 2 airports, the VSASP recommends:

- A primary runway of at least 5,000 feet in length
- Self-serve fuel (both 100LL and Jet-A)
- Full-time airport manager and operations staff
- A full-serve Fixed Base Operator (FBO)
- Runway and taxiway edge lighting
- A GPS instrument approach procedure providing vertical guidance
- A terminal building
- Owned snow removal equipment
- Aircraft and avionics maintenance services
- A rotating beacon

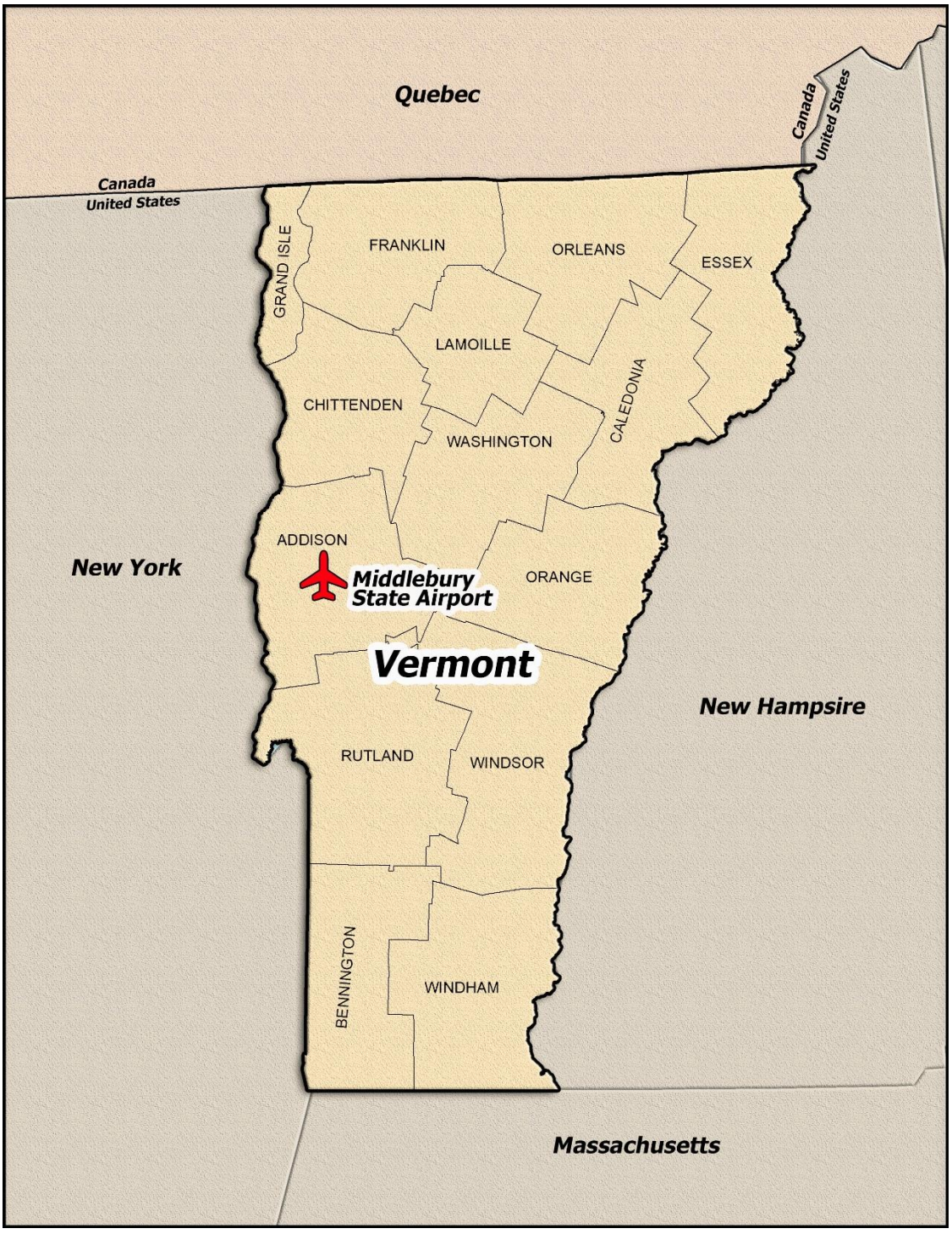
Subsequent sections of this Master Plan will review each recommendation in relation to existing services and facilities available at 6B0.

1.3 Airport Location

6B0 is located in the Town of Middlebury, VT; approximately six miles southwest of the Middlebury central business district. The Town of Middlebury serves as the Addison County seat and is located approximately 30 miles south of Burlington, 35 miles southwest of Montpellier, 100 miles north-northeast of Albany, NY, and 155 miles northwest of Boston, MA.

The Airport is accessible on the ground via Vermont State Route 116, 125, and Highway 7. **Figure 1-1** depicts the location of 6B0 respective to the State of Vermont and the Addison County region.

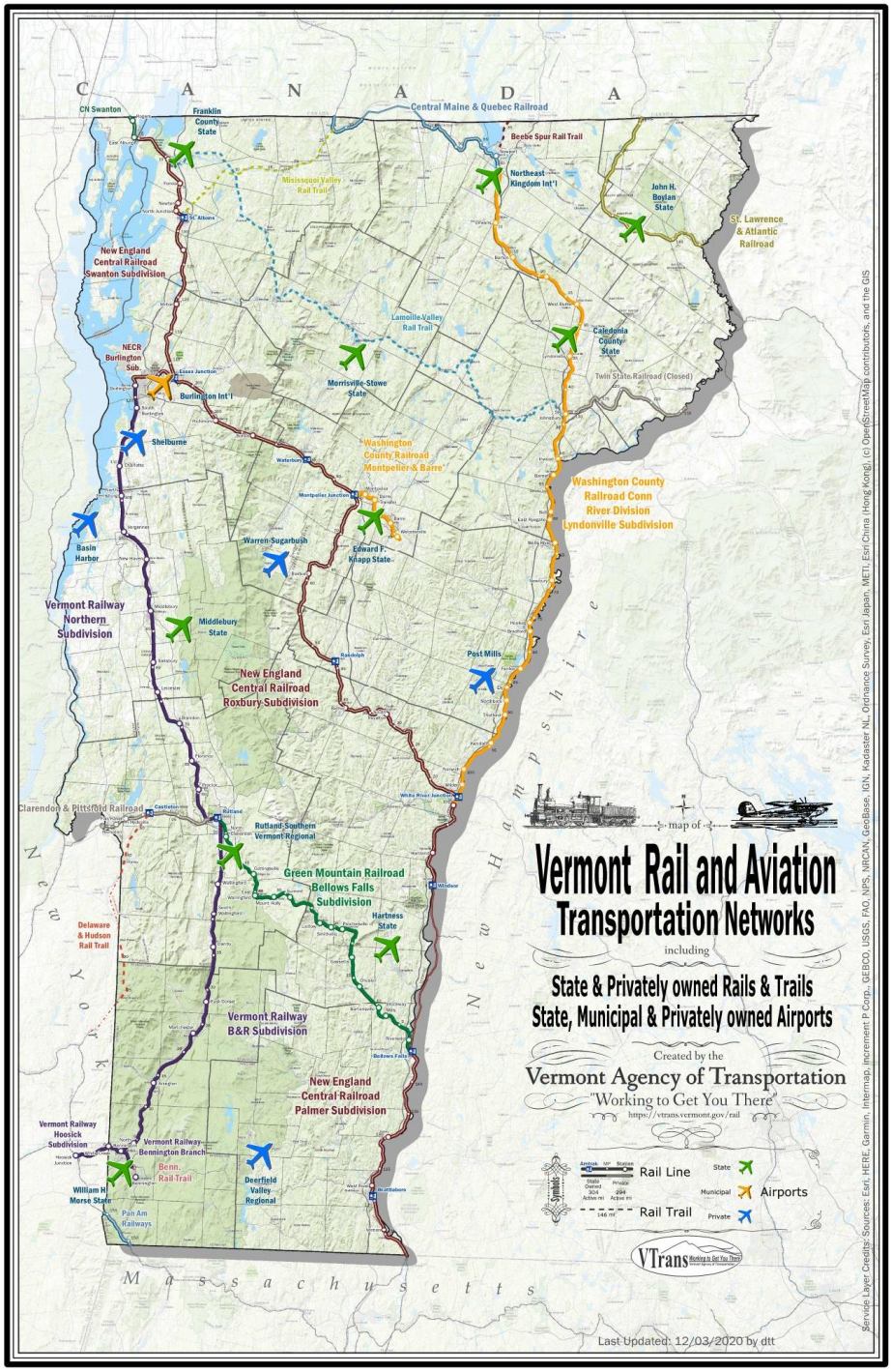
Figure 1-1 – Middlebury State Airport Location



Source: CHA, 2021.

In addition to owning and maintaining a network of airports within the State of Vermont, VTrans also ensures safe and efficient transportation of people and goods through the State's railway infrastructure. **Figure 1-2** depicts the agency's network of airports along with the State's railway system.

Figure 1-2 – Vermont Rail & Aviation Transportation Networks



Source: Vermont Agency of Transportation.

1.4 Airport Facilities

A primary role of master planning is developing a detailed listing of recommended facilities and improvements for implementation over the 20-year planning period. As such, the first step in this process is to compile an inventory of existing facilities and to review their current condition.

Airport facilities are often described as either airside or landside, depending upon the type of operation they support. Airside facilities are those related to the landing, takeoff, and taxiing of aircraft in the airport environment. Examples of airside facilities include: the runway and taxiway system; airfield lighting, marking and visual aids; and aircraft parking and apron areas. Landside facilities are those related to the transition from air to ground movement or vice versa. Examples of landside facilities include: the airport terminal building, aircraft refueling area, aircraft storage, and vehicle parking. depicts the existing airfield infrastructure.

1.4.1 Airside Facilities

1.4.1.1 Runways

6B0 operates under a single runway, north/south system. Runway 1-19 is 3,206 feet in length by 60 feet in width. The Runway 1 end has a 141-foot displacement due to obstructions south of the Airport. The runway is constructed of asphalt and is listed in good condition within the most recent FAA Airport Master Record (FAA Form 5010-1). The runway's load-bearing capacity is estimated at 12,500 pounds for single-wheel aircraft.

Runway 1-19 does not currently have a published Instrument Approach Procedure (IAP) and is, therefore, categorized as a visual approach runway. Subsequent sections of this Master Plan will examine the potential for a non-precision IAP on each runway end.

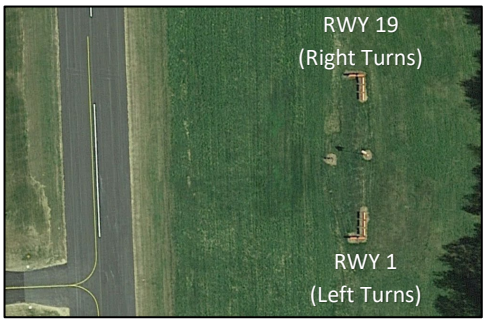
Table 1-1 presents the characteristics of Runway 1-19.

Table 1-1 – Runway 1-19

Runway Feature	Runway 1-19
Length	3,206'
Width	60'
Pavement Type	Asphalt – Good Condition
Pavement Strength	12,500 lbs. Single-Wheel
Gradient	0%
Edge Lighting	None
Approach Instrumentation	None
Approach Lighting	None
Approach Aids	None
Runway Markings	RWY 1 – Non-Precision RWY 19 – Basic/Visual

Source: FAA Airport Master Record, CHA 2021.

1.4.1.2 Visual Aids & Lighting



Due to the Green Mountain Range east of the Airport, Runway 19 has a right-hand (i.e., non-standard) traffic pattern. Traffic pattern turning indicators are located approximately 240 feet east of Runway 1-19 provide aircraft with a visual indication of the direction to turn when operating within the traffic pattern. A wind cone is located between the turn indicators.

The Airport is not currently equipped with runway or taxiway edge lighting or a directional rotating beacon. As such, Runway 1-19 is not currently operational at night.

1.4.1.3 Runway Markings & Instrument Approach Procedures

Runway markings denote runway direction, type of approach associated with the runway (e.g., visual, non-precision, precision), runway width, and provide aiming guidance to aircraft. Although the Airport does not currently have a published IAP, non-precision markings are located on the Runway 1 end along with the 141-foot displaced threshold and associated displacement markings. The Runway 19 end only contains the runway designation number, thus indicating a visual only approach. The Runway 1-19 markings were repainted as part of the 700-foot north runway extension completed in 2017 and are currently in good condition.

Visual Markings in red brackets; Non-Precision Markings in orange brackets

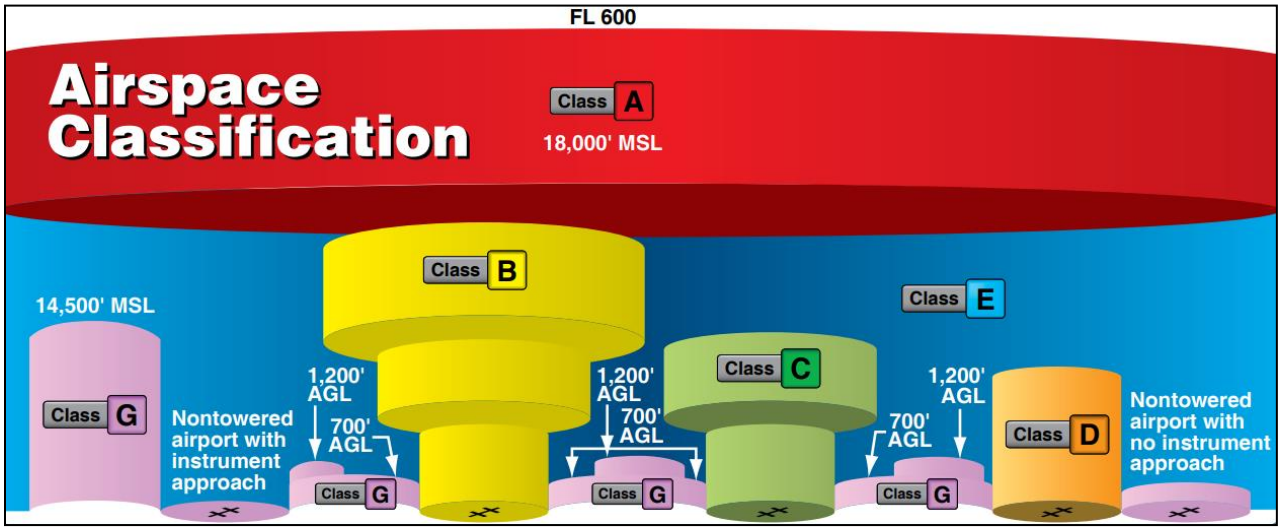
1.4.1.4 Airspace

There are two types of aircraft flight operations in the National Airspace System (NAS): Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). VFR operations rely on pilots maintaining visual separation from aircraft and objects and require minimum weather conditions for operation. Conversely, IFR operations rely on radar detection, instrument navigation, and separation by Air Traffic Control (ATC). IFR flights permit operations below VFR weather minimums (i.e., during IMC). As discussed above, Runway 1-19 does not have any published IAPs.

The NAS classifies airspace uses a lettering-system (e.g., Class A, B, C, D, E, and G) and includes controlled and uncontrolled areas of airspace. Class A airspace is a controlled airspace and is generally reserved for business and commercial aircraft as it begins at 18,000 feet above Mean Seal Level (MSL). Class A airspace requires operation under IFR flight plan and communication

with ATC. The Class B, C, and D airspaces are also considered controlled airspace and are generally centered around larger airports. Communication with ATC must be established prior to entering the Class B, C, or D airspaces. The Class E and G airspaces encompass the majority of the NAS's airspace below 18,000 feet MSL. Class E airspace can be either controlled or uncontrolled, depending on the type of operation (i.e., VFR or IFR). Class G airspace is always uncontrolled. **Figure 1-3** depicts the National Airspace System.

Figure 1-3 – National Airspace System

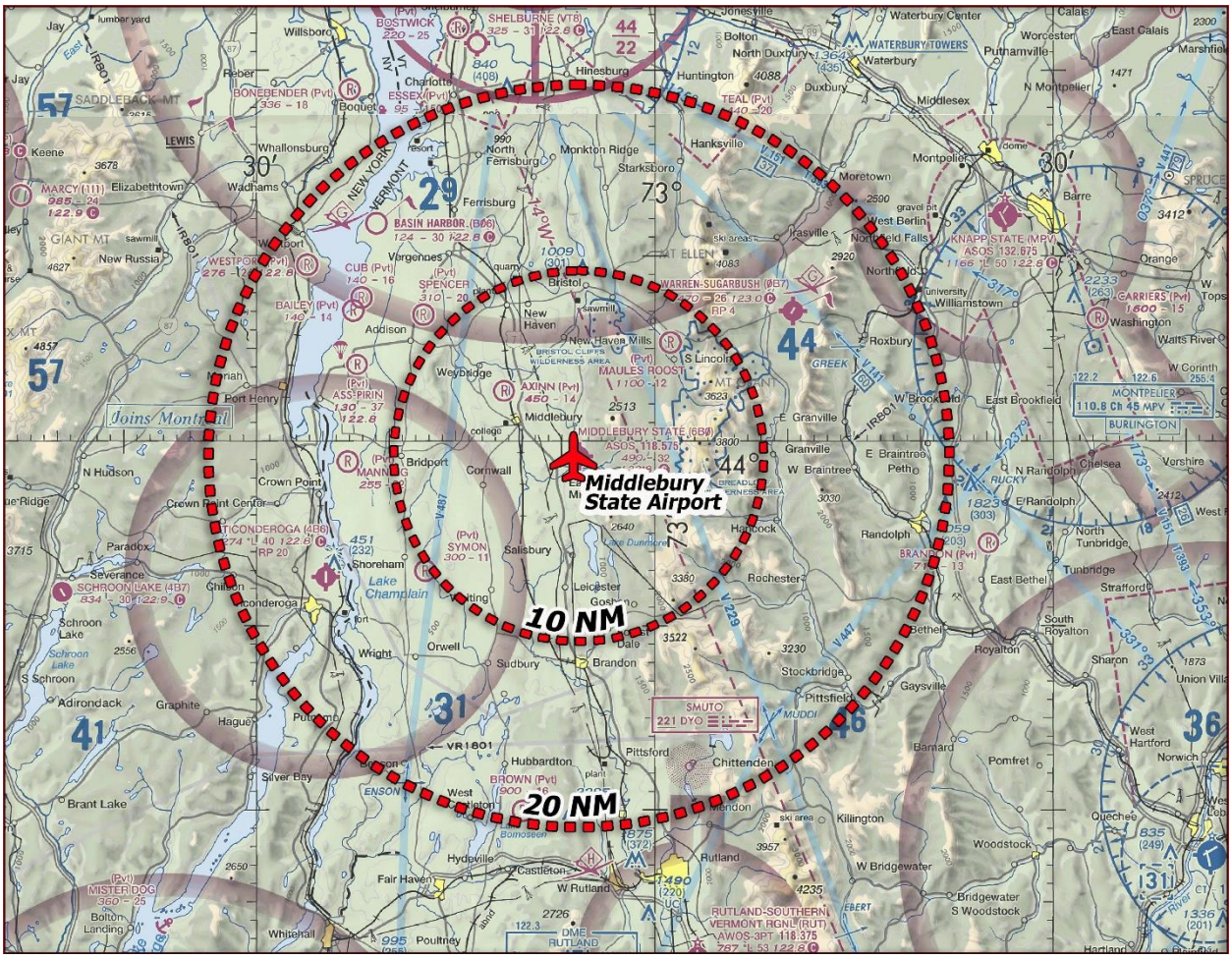


Source: Chapter 15, *FAA Pilot's Handbook of Aeronautical Knowledge, 2016.*

Most non-towered GA airports are located within Class G airspace. Generally, Class G airspace extends vertically from the ground to either 700 feet or 1,200 feet above ground level where it then becomes Class E airspace. Class G airspace extending to 700 feet is denoted on the FAA sectional chart by a shaded magenta circle around the the airport whereas the absence of the magenta circle denotes Class G airspace extending to 1,200 feet, with the exception of a few select locations within the United States where Class G extends to 14,500 feet mean sea level.

As shown on **Figure 1-4**, 6B0 is located within Glass G airspace extending from the ground to 1,200 feet above ground level. Class G airspace is considered uncontrolled and does not require two-way radio communication. However, aircraft must adhere to weather minimums specific to each class of airspace.

Figure 1-4 – Middlebury State Airport Airspace



Source: FAA Sectional Aeronautical Chart, CHA, 2021

1.4.1.5 Taxiways

An airport's system of taxiways provides aircraft with connectivity between the runways, aircraft parking aprons, storage hangars, and other facilities. As 6B0 operates under a single-runway system, Taxiway 'A' is the primary taxiway providing full-length connectivity to each runway end. In addition to Taxiway 'A', six taxiway connectors are located west of the runway and provide ingress/egress to Runway 1-19 and various apron areas. Taxiway 'A' is 25 feet in width, meeting FAA standards for Taxiway Design Group 1B. Taxiway 'A' was extended 700-feet north as part of the 2017 runway extension project. The taxiway markings are currently in good condition.

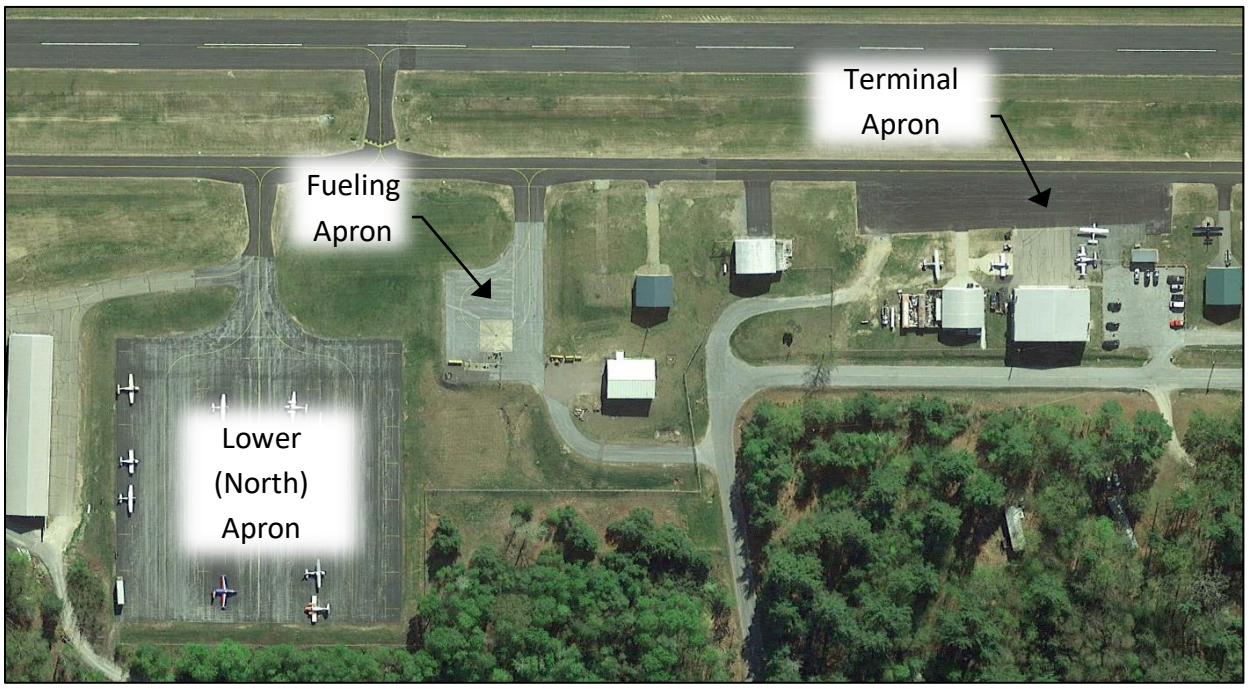
1.4.1.6 Aprons

Airport aprons, also referred to as ramps, provide space for short-term and long-term aircraft parking, as well as the loading/unloading of passengers and goods. There are a total of three public-use apron areas located throughout 6B0:

- **Lower (North) Apron:** The Lower Apron is located in the northern portion of the Airport and west of the Runway 19. The apron approximately 120,915 square feet and contains 42 aircraft tie-down positions accommodating single- and twin-engine piston aircraft.
- **Fueling Apron:** The Fueling Apron is located south of the Lower Apron and is approximately 16,470 square feet, excluding the taxiway connector. The self-serve fueling pump is located along the western edge of the apron area. A staging area for the equipment storage building is located on the southwestern corner of the apron. With limited spacing within the apron, aircraft must park on a different apron upon refueling.
- **Terminal Apron:** This apron is located in the central portion of the Airport, adjacent to Taxiway 'A' and directly east of the terminal building. With only approximately 9,000 square feet available, aircraft parking within this apron area is limited to ensure adequate taxiway safety area clearance (65.5 feet) from Taxiway 'A'.
- In addition to the listed apron area, there are several private apron areas associated with private hangars. These areas are unavailable for transient aircraft parking.

Figure 1-5 depicts each apron area,

Figure 1-5 – Apron Areas



1.4.1.7 Automated Surface Observing System

An Automated Weather Observing System (AWOS) provides pilots with current meteorological conditions, such as wind speed, direction, and cloud ceiling. An AWOS-III at 6B0 was installed in 2014 and is located east the Runway 19 end.[2] The AWOS is maintained by the National Weather Service (NWS) and the data is uploaded directly to the NWS database and available for public review.

1.4.2 Landside Facilities

1.4.2.1 Airport Buildings & Facilities

There are a total of 18 buildings or facilities located at 6B0 consisting of aircraft hangars, the passenger terminal building, and equipment storage buildings. **Table 1-2** lists the on-airport buildings and structures at 6B0 and **Figure 1-6** depicts their location.

Table 1-2 – Airport Buildings & Structures

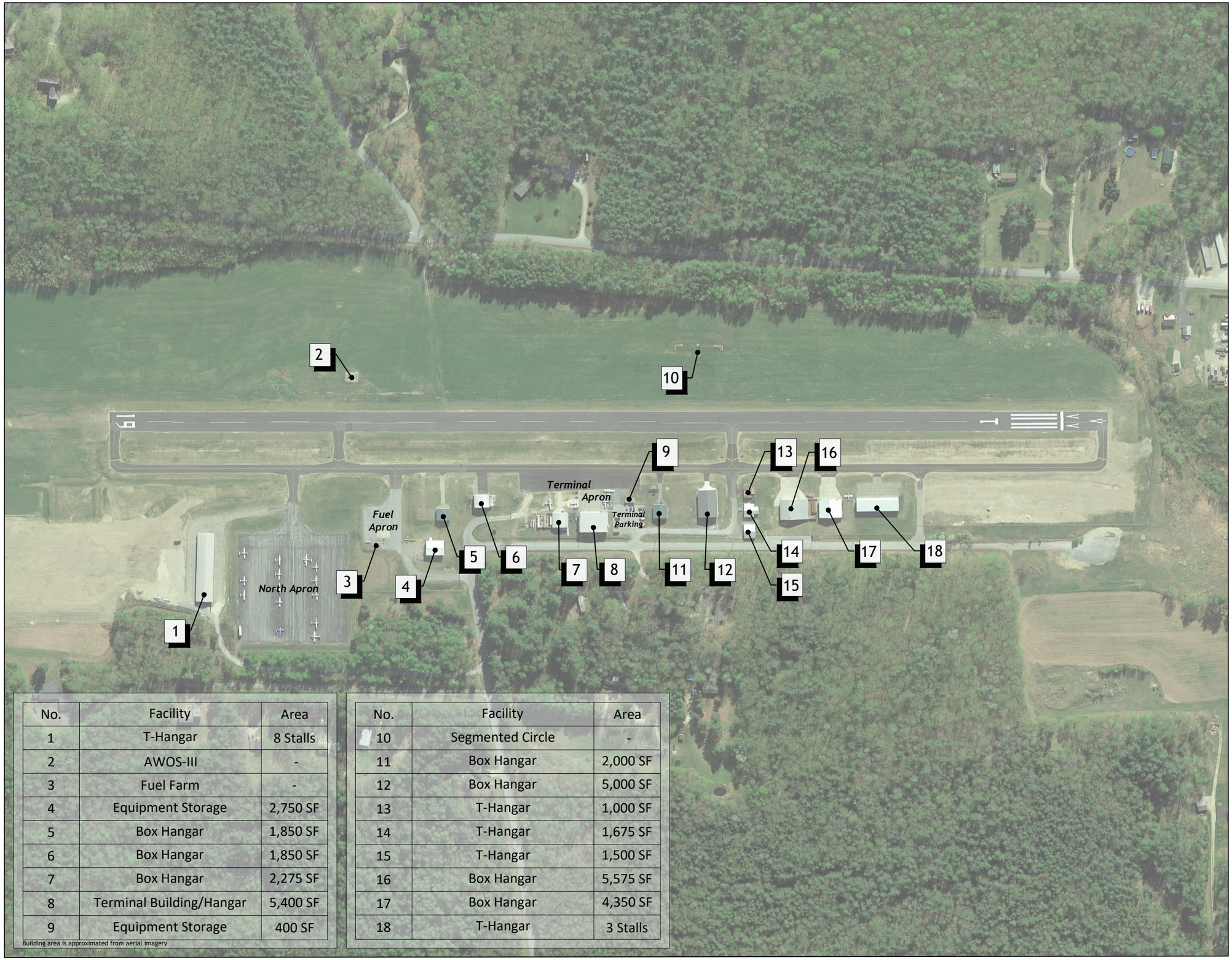
No.	Facility	Area (SF)
1	T-Hangar	8 Stalls
2	AWOS-III	-
3	Fuel Farm	-
4	Equipment Storage	2,750 SF
5	Box Hangar	1,850 SF
6	Box Hangar	1,850 SF
7	Box Hangar	2,275 SF
8	Terminal Building/Hangar	5,400 SF
9	Equipment Storage	400 SF
10	Segmented Circle	-
11	Box Hangar	2,000 SF
12	Box Hangar	5,000 SF
13	T-Hangar (Single Unit)	1,000 SF
14	T-Hangar (Single Unit)	1,675 SF
15	T-Hangar (Single Unit)	1,500 SF
16	Box Hangar	5,575 SF
17	Box Hangar	4,350 SF
18	T-Hangar	3 Stalls

Source: VTrans, CHA, 2021.
Note: Building area is approximated from aerial imagery

1.4.2.2 Airport Terminal Building

The Airport terminal building is a one-story structure located in the central portion of the Airport with vehicle access from Airport Road. The terminal building is owned and maintained by VTrans and is approximately 5,400 square feet with hangar space.

[2] An AWOS-III provides: barometric pressure, wind speed/direction, temperature, dew point, density altitude, visibility, precipitation values, cloud height, and sky condition



No.	Facility	Area
1	T-Hangar	8 Stalls
2	AWOS-III	-
3	Fuel Farm	-
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7	Box Hangar	2,275 SF
8	Terminal Building/Hangar	5,400 SF
9	Equipment Storage	400 SF

No.	Facility	Area
10	Segmented Circle	-
11	Box Hangar	2,000 SF
12	Box Hangar	5,000 SF
13	T-Hangar	1,000 SF
14	T-Hangar	1,675 SF
15	T-Hangar	1,500 SF
16	Box Hangar	5,575 SF
17	Box Hangar	4,350 SF
18	T-Hangar	3 Stalls

Building area is approximated from aerial imagery

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MIDDLEBURY STATE AIRPORT MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 150 300 600

LEGEND

- Airport Property Boundary
- On-Airport Building

Figure 1-6
Airport Buildings & Structures

1.4.2.3 Aircraft Refueling

A 10,000 gallon 100 Low-Lead underground fuel storage tank is located on the western portion of the Fuel Apron. The fuel pump allows for 24-hour self-serve refueling. Jet-A fuel is not currently available at the Airport

1.4.2.4 Vehicle Parking

There are two vehicle parking lots for tenants, visitors, and employees. The primary lot is located south of the terminal building and contains 32 parking spaces. The second lot is located near the southernmost hangars and contains 10 parking spaces. Several of the hangars throughout the Airport also contain space for vehicle parking.

1.4.2.5 Airport Security

Many GA airports have limited security procedures and rely heavily on the flying community to report suspicious or hazardous activity. The Facility Requirements portion of this master plan will further discuss general recommendations regarding existing security practices and procedures in accordance with the Transportation Security Administration's (TSA) Airport Characteristics Measurement Tool.

1.5 Existing Airport Activity Data

As 6B0 is a GA airport, the majority of its activity is generated by light, private, recreational, and training aircraft utilizing single- and multi-engine piston aircraft. According to the 2021 FAA Terminal Area Forecast (TAF), there were approximately 6,350 annual operations at 6BO in 2020, which amounts to an average of 17 landings per day. Of that total, operations consisted of approximately 67 percent local and 33 percent itinerant according to the 2021 TAF. Local operations are flights originate at 6B0 and generally stay within the airport vicinity, conducted mostly by based aircraft, and primarily include single- and multi-engine piston aircraft. Itinerant operations are flights arriving from outside of or departing the local area and are conducted by a mix of based and transient aircraft.

The number of based aircraft at an airport is used to determine the need for aircraft hangar space, apron area, and other related facilities. Based aircraft include those owned by individuals, businesses, or organizations that are stored at the Airport on a regular basis. According to FAA Airport Master Records, 6B0 has a total of 17 based aircraft. Of that total, there are 15 are single-engine piston aircraft and two are multi-engine aircraft. As 6B0 is a GA airport, the majority aviation activity is generated by light, private, recreational, and training aircraft utilizing single- and multi-engine piston aircraft. Chapter 2, *Forecasts of Aviation Activity*, will examine potential activity forecasts and future airport demand.

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2 Forecasts of Aviation Activity

Projecting the future demand of aviation activity at an airport is a vital step in the airport master planning process. The forecasts of aviation activity presented within this chapter will serve as the basis for effective decision-making, airport development guidance, and facility recommendations in subsequent chapters of the Middlebury State Airport (6B0) Master Plan Update. The projections help guide airport development over the 20-year planning horizon by identifying current and future facility needs and providing a general timeline of when those developments may be needed. Prior to use in the master planning effort, the recommended forecasts are submitted to the Federal Aviation Administration (FAA) for review and approval. Once approved, the forecasts are then used to perform the Facility Requirements and to prepare a Development Plan for this Master Plan Update.

Forecasts are prepared for short-term (1-5 years), intermediate-term (6-10 years), and long-term (11-20 years) intervals. Short-term forecasts are used to identify deficiencies that need immediate attention. Medium-term forecasts are used in planning foreseeable capital improvement needs. Long-term forecasts provide more generalized information and are used for space and land use planning to accommodate potential future demand.

General aviation (GA) airports are typically influenced by national and regional trends in population, household income, airport prominence, airport-based aircraft, and the region in which the airport is located. The population growth (or decline) can have an influence on the growth of aviation demand. Household income could be an indicator of GA aircraft purchase trends or overall increase in flying. Airports that have enhanced facilities and services to offer users will generally attract greater aviation activity. An airport's based aircraft count is also another factor that directly contributes to aviation activity. The addition of hangars, instrument approaches, and facilities that can accommodate a wider range of piston, twin-engine, and turbine aircraft, can increase airport activity and demand.

2.1 Forecast Categories

Aviation demand forecasts are prepared for a variety of aviation categories. These categories are determined based on the type and level of activity expected at an airport over the planning horizon and can vary in relevance depending on the size and category of an airport and the basic objectives of a specific master plan. The forecasts prepared for 6B0 include the following categories:

- **Based Aircraft:** Based aircraft are defined as aircraft that use a specific airport as a home base. These are the aircraft that typically rent tie-down or hangar space for extended periods of time and, depending on state and local regulations, are registered as based at that specific airport and pay local user taxes to that jurisdiction. It is important to note that the number of based aircraft at most GA airports is, perhaps, the most important indicator of growth as based aircraft most directly affect the daily aircraft activity.

- **Operations:** An operation can be defined as either a take-off or landing of an aircraft. Operations are typically segregated into three sectors based on the aircraft/operator's purpose and operating certifications. These sectors include:
  - **General aviation** encompasses all other operations not including air carrier, air taxi and commuter, and military. These operations are conducted under Federal Aviation Regulation (FAR) Part 91 (General Operating and Flight Rules).
  - **Air taxi** operations are considered itinerant GA operations (i.e., operations that did not originate at the airport). These operations refer to carriers that operate aircraft with 60 or fewer seats or cargo On-Demand Operations. Air taxi carriers are governed under FAR Part 135 (Operating Requirements: Commuter and on Demand Operations and Rules Governing Persons on Board Such Aircraft).
  - **Military** includes operations conducted by the nation's military forces.

Based aircraft and operations are classified into a fleet mix, which is a breakdown of aircraft by specific type. Aircraft fleet mix typically refers to the aircraft power plant, such as: single-engine piston; multi-engine piston; turboprop; jet; and rotorcraft/helicopter. In some analyses, it can also refer to an aircraft's Airport Reference Code (ARC) (e.g. B-II).

Additional operations forecasts conducted as part of this forecasting effort include local/itinerant operations, peak operating-hour, and annual instrument approaches. A forecast of the critical aircraft is also presented.

2.2 Impacts of COVID-19

In January of 2020, COVID-19 (commonly referred to as Coronavirus) began impacting the aerospace industry and air travel as a whole. According to FAA and industry sources, the impacts of COVID on the Aerospace system have been split, in terms of types of users. Although impacted by the virus outbreak, GA users were not as impacted as commercial operators. While travel restrictions were placed on the commercial industry and routes, route restrictions were not placed on civil aviation.

Business and travel restrictions have had an impact on itinerant GA travel; however, recreational flying during the pandemic has been largely stable. In addition, during 2020, GA pilots began assisting with COVID-19 relief efforts by aiding in delivery of personal protective equipment to medical facilities.

General Aviation Aircraft Shipment Reports, published by the General Aviation Manufactures Association (GAMA)[1&2], indicates aircraft shipments in the United States declined from 1,771 aircraft in 2019 to 1,552 aircraft in 2020; however, the number of single-engine piston aircraft remained relatively stable with approximately a 3.0 percent increase in shipments, showing the

[1] General Aviation Manufactures Association. "General Aviation Aircraft Shipment Report." 16 May 2020. https://gama.aero/wp-content/uploads/2019ShipmentReport03162020.pdf

[2] General Aviation Manufactures Association. "General Aviation Aircraft Shipment Report." 24 February 2021. https://gama.aero/wp-content/uploads/2020ShipmentReport-02242021.pdf

trend of stability amongst smaller aircraft users.

Due to the impacts of COVID-19 on the aviation industry, it was important to analyze and become familiar with historical activity trends at 6B0 prior to 2020 to determine the level of impact to the Airport's activity and to further determine recovery efforts. 6B0 does not have scheduled commercial service activity; therefore, the Airport was not as heavily impacted as commercial service airports. According to the Vermont Agency of Transportation (VTrans), airport operations remained relatively steady throughout the COVID period.

2.3 Applied Forecast Data

Aviation activity forecasting is not considered an exact science and, as such, it can be difficult to project future airport demand based on historic facility information alone. There are many uncontrollable variables that can affect the true outcome of activity levels throughout the forecast period. Therefore, several data resources were reviewed to ensure regional, national, and industry trends that can affect future activity at 6B0 were incorporated into the forecast methodologies. Guidance provided by the FAA in Advisory Circular (AC) 150-5070-6B, *Airport Master Plans*, was also used to identify suggested forecasting methodologies. The following provides a brief overview of each data resource used to develop the 6B0 forecasts:

- **The FAA Terminal Area Forecast (TAF)** is a detailed economic model, prepared by the FAA, which provides historical and projected growth of passenger enplanements, operations, and GA aircraft activity. The national level TAF is a cumulative total of all U.S. airport activity. These projections account for national economic conditions and trends within the aviation industry as a whole. From the national forecasts, airport specific projections are derived that reflect regional market and socioeconomic conditions and anticipated demand. In this relatively top-down approach, specific airport development and marketing actions do not influence FAA projections. The most recent TAF was published in May 2021.[3]

  Each airport's TAF is considered the benchmark by which Master Planning forecasts are measured. According to the FAA, forecasts that differ from the TAF by 10 percent within a five-year planning period or 15 percent within a 10-year planning period must document the variance prior to FAA approval.

- **Vermont Airport System Plan (VASP**) is a 20-year statewide planning document developed for the Vermont Agency of Transportation's 16 public-use airports. In addition to inventorying the attributes of each airport, the VASP developed draft forecasts of aviation activity including based aircraft and operations. Although an update to the VASP is currently in progress, draft forecasts developed for the plan were referenced and will serve as the basis in most forecasting scenarios.

[3] The 'FAA 2020 TAF' was published in May 2021 and consists of historical data (1990 to 2019) and forecasted aviation activity levels (2020 to 2045). The forecasts provided in the 2020 TAF account for COVID-19.

- **Vermont Department of Health & United States Census Bureau** are two sources for acquiring historic and current econometric data by county in Vermont. Vermont Department of Health provides population counts, while household income data can be acquired from the US Census Bureau.
- **FAA Aerospace Forecast, Fiscal Years (FY) 2020-2040** is an annually issued document providing an overview of aviation industry trends and expected growth for each aviation market segment (e.g., GA activity, air taxi operations, commercial, etc.). The FAA Aerospace Forecast also provides projected fleet mix operations by aircraft by type (e.g., single- and multi-engine piston, turboprop, turbine, etc.). National growth rates are provided over a 20-year forecast horizon. For the purposes of this Master Plan, the FAA Aerospace Forecast will be referenced when determining potential fleet mix projections.
- **FAA Airport Master Record, Form 5010-1** is a document providing information of facilities and activity at airports, including based aircraft and operations numbers. Note that in conjunction with this Study an inventory of based aircraft was conducted to update the number of aircraft based at 6B0. This number was submitted to the FAA for review and, therefore, the number of based aircraft listed on the 6B0 Master Record does not match existing numbers listed within subsequent sections of this report.

2.4 Airport Catchment Area & Socioeconomic Data

An airport's catchment area, or market, is defined as the area in which an airport captures the majority percentage of airport users based on the proximity of the residencies in respect to other airports in the region, drive-time, and demographics. The primary catchment area for 6B0 users is Addison County, Vermont.

Socioeconomic data includes factors based on population and household income within the catchment area. Historic and projected trends of these factors can be relevant in predicting changes in airport activity within the forecast period, such as based aircraft ownership and overall itinerant users. For Addison County, 10-year historic household income data was gathered from the US Census Bureau and 10-year historic population data was gathered from the Vermont Department of Health.

Figure 2-1– 6B0 Catchment Area (Addison County, VT)

Source: CHA, 2021.

2.5 Baseline Activity Data & 6B0 TAF

Prior to initiating each forecast, a baseline year must first be identified for both airport operations and aircraft based at the airport. Generally, the baseline year is the most recently recorded calendar or fiscal year of data and is the year from which subsequent forecasts are derived and carried forward throughout the 20-year planning horizon. At non-towered airports, such as 6B0, it is often challenging to identify baseline activity, particularly airport operations. Therefore, for the purposes of activity forecasting, data for the baseline year of 2020 is used from the 2020 TAF.

As shown on **Table 2-1**, the 2020 TAF lists airport operations and based aircraft at 6B0 remaining static throughout the forecast period.

Table 2-1 – Middlebury State Airport Terminal Area Forecast (2021)

Year	Itinerant Operations			Local Operations				Based Aircraft
	GA Ops.	Military Ops.	Total	Civil Ops.	Military Ops.	Total	Total Ops.	
Historic:								
2010	2,900	800	3,700	7,200	0	7,200	10,900	46
2011	2,900	800	3,700	7,200	0	7,200	10,900	31
2012	2,900	800	3,700	7,200	0	7,200	10,900	32
2013	2,900	800	3,700	7,200	0	7,200	10,900	32
2014	2,900	800	3,700	7,200	0	7,200	10,900	32
2015	2,900	800	3,700	7,200	0	7,200	10,900	36
2016	2,900	800	3,700	7,200	0	7,200	10,900	37
2017	2,900	800	3,700	7,200	0	7,200	10,900	36
2018	2,900	800	3,700	7,200	0	7,200	10,900	29
2019	2,116	800	2,916	4,234	0	4,234	7,150	17
2020	2,116	800	2,916	4,234	0	4,234	7,150	17
Projected:								
2021	2,116	800	2,916	4,234	0	4,234	7,150	17
2026	2,116	800	2,916	4,234	0	4,234	7,150	17
2031	2,116	800	2,916	4,234	0	4,234	7,150	17
2036	2,116	800	2,916	4,234	0	4,234	7,150	17
2041	2,116	800	2,916	4,234	0	4,234	7,150	17
2021-2041 AAGR	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**

Source: FAA 2020 TAF, CHA, 2021.

2.5.1 Baseline Activity Summary

Table 2-2 and **Table 2-3** provide a summary of the 2020 airport operations and based aircraft. The 2020 baseline airport operations count are those, as reported in the 2020 TAF, which are used as the baseline data for subsequent forecasting activity. Note that baseline airport operations do not include military activity.

Table 2-2 – 6B0 Baseline Year 2020 Airport Operations

Operation Type	Total Operations
Itinerant	2,116
Local	4,234
Total	**6,350**

Source: FAA 2020 TAF, CHA, 2021.

Table 2-3 – 6B0 Baseline Year 2020 Based Aircraft

Aircraft Category	Aircraft Count
Single-Engine Piston	29
Multi-Engine Piston	0
Turboprop	0
Jet	1
Other	0
Total	**30**

Source: www.basedaircraft.com(5010-1), CHA, 2022.

2.6 Aviation Activity Forecasts

The forecast of aviation activity presented in this section consists of a projection of airport operations and based aircraft through the 2041 planning horizon. As discussed previously, the 2020 operations as well as the existing based aircraft information reported in the 2020 TAF for 6B0 were used as the baseline for this forecasting effort. Note that each forecast was developed assuming unconstrained conditions.

This section consists of an explanation and execution of the following data and forecast methodologies for based aircraft and aircraft operations:

- TAF Based Forecasts
- Vermont Airport System Plan Forecasts
- Econometric Forecasts
- Operations per Based Aircraft Forecasts

Alternate forecast scenarios to be discussed and evaluated include:

- Instrument Approach Procedure Scenario
- Hangar Development Scenario

After the various forecast methodologies were evaluated and a preferred forecast selected, projected operations were further categorized by type of operations (i.e., local vs. itinerant), the aircraft fleet mix, and peak activity levels.

2.6.1 TAF Based Forecasts

As 6B0 is a non-towered airport, baseline year (2020) operations are taken directly from the TAF.

6B0 TAF Scenarios

Projected Growth Forecast

The Projected Growth Forecast utilizes the percentage parameters set by the FAA as discussed earlier (i.e., within 10 percent of the five-year forecast period and within 15 percent of the 10-year forecast period). The five-year (2026) and 10-year (2031) TAF operations are assumed at 10 percent and 15 percent (respectively) higher than projections shown in the 6B0 TAF; and the remaining years were interpolated via a fixed-number average. The 10- (2031) through 20-year

(2041) forecast period was then calculated using the Average Annual Growth Rate (AAGR) of the one- to 10-year (1.2 percent). As previously discussed, the FAA has validated 30 based aircraft (via www.basedaircraft.com) per a recent based aircraft survey. As such, the existing number of based aircraft does not currently reflect the current TAF or the Airport Master Record.

Historic Trend

The TAF historic trend analysis assumes that previous activity at 6B0 will predict future activity. This forecast calculated the AAGR of the previous 10-years of Airport's TAF data for both operations (-3.1 percent AAGR for itinerant operations and -5.2 percent AAGR for local operations) and based aircraft (-9.5 percent) and applied it to the respective baseline counts. Due to a historic decline in both based aircraft and total operations, the forecasted numbers resulted in an unlikely decline based on current demand and development plans according to VTrans.

Table 2-4 – 6B0 TAF Based Forecast Scenarios

Year	TAF		Projected Growth		Historic Trend	
	Based Aircraft	Total Operations	Based Aircraft	Total Operations	Based Aircraft	Total Operations
2021	30	6,350	17	6,456	27	6,065
2026	30	6,350	19	6,985	17	4,830
2031	30	6,350	20	7,303	10	3,857
2036	30	6,350	21	7,671	6	3,089
2041	30	6,350	22	8,260	4	2,480
% AAGR	**0.0%**	**0.0%**	**1.2%**	**1.2%**	**-9.5%**	**-4.4%**
% Growth	**0.0%**	**0.0%**	**27.9%**	**27.9%**	**-86.3%**	**-59.1%**

Source: FAA 2020 TAF, CHA, 2021.

Statewide TAF Scenarios

Projected Growth Forecast

In addition to forecasting activity for individual airports, the TAF issues a statewide forecast. In this scenario, the statewide projected average annual growth rate from 2021 through 2041 for itinerant and local operations, as well as based aircraft, were applied to the baseline conditions. Statewide, the TAF forecasts a 0.9 percent AAGR for itinerant operations, a 0.02 percent AAGR for local operations, and a 0.7 percent AAGR in based aircraft. It is important to note that the statewide forecasted total itinerant operations include air carrier, air taxi, general aviation, and military. The application of these rates to 6B0 is depicted in Table 2-5.

Table 2-5 – Sitewide TAF Based Projected Growth Forecast (All Users)

Year	Based Aircraft	Itinerant Operations	Local Operations	Total Operations
2021	30	2,135	4,235	6,370
2026	31	2,234	4,239	6,473
2031	32	2,338	4,243	6,581
2036	33	2,446	4,247	6,693
2041	34	2,559	4,251	6,810
% AAGR	**0.7%**	**0.9%**	**0.02%**	**0.3%**
% Growth	**13.8%**	**19.9%**	**0.4%**	**6.9%**

Source: FAA TAF, CHA, 2021.

Given that 6B0 is serves almost exclusively GA aircraft, an additional analysis was used with only itinerant GA and local civil projected average annual growth rates applied (0.1 percent and 0.02 percent, respectively), as shown in **Table 2-6**.

Table 2-6 – Statewide TAF Based Projected Growth Forecast (General Aviation)

Year	Itinerant Operations	Local Operations	Total Operations
2021	2,118	4,235	6,353
2026	2,128	4,239	6,367
2031	2,139	4,243	6,382
2036	2,149	4,247	6,397
2041	2,160	4,251	6,411
% AAGR	**0.1%**	**0.02%**	**0.05%**
% Growth	**2.0%**	**0.4%**	**0.9%**

Source: FAA TAF, CHA, 2021.

Historic Trend

In the Historic Trend analysis, the historic AAGRs (from 2010 through 2020), as detailed in the statewide TAF for itinerant operations (-2.9 percent), local operations (-3.6 percent), and based aircraft (0.1 percent), were applied to the respective baseline activity levels and projected at a static rate throughout the forecast horizon. See Table 2-7.

Table 2-7 – Statewide TAF Based Historic Trend Forecast (All Users)

Year	Based Aircraft	Itinerant Operations	Local Operations	Total Operations
2021	30	2,054	4,082	6,137
2026	30	1,772	3,401	5,174
2031	30	1,529	2,834	4,363
2036	30	1,319	2,361	3,681
2041	30	1,138	1,968	3,106
% AAGR	**0.1%**	**-2.9%**	**-3.6%**	**-3.3%**
% Growth	**1.3%**	**-44.6%**	**-51.8%**	**-49.4%**

Source: FAA TAF, CHA, 2021.

Similar to the previous statewide scenario, because 6B0 is predominately serves GA aircraft, the statewide historic AAGRs for only itinerant GA and local civil users were analyzed, as shown in Table 2-8.

Table 2-8 – Statewide TAF Based Historic Trend Forecast (General Aviation)

Year	Itinerant Operations	Local Operations	Total Operations
2021	2,082	4,086	6,168
2026	1,921	3,422	5,342
2031	1,772	2,865	4,637
2036	1,634	2,399	4,033
2041	1,508	2,009	3,517
% AAGR	**-1.6%**	**-3.5%**	**-2.8%**
% Growth	**-27.6%**	**-50.8%**	**-43.0%**

Source: FAA TAF, CHA, 2021.

2.6.2 Vermont Airport System Plan

As discussed earlier, the VASP is a 20-year planning document prepared by VTrans that details anticipated growth, challenges, and development for each airport under the agency's control, including 6B0, over a 20-year planning horizon. VTrans is currently updating the 2007 Airport System and Policy Plan, which is in draft form, with the latest draft being published in December 2020. While the VASP has a forecast component, the master plan implements the VASP methodology for the current baseline data provided by the 2020 TAF and 2021 Form 5010-1, as the VASP was based on the 2017 TAF.

Operations

The most recent VASP draft outlines a low-growth, average-growth, and high-growth scenario and applies projected average annual growth rates at 5-year, 10-year, and 20-year intervals. Note, **Table 2-9** outlines the average annual growth rates and total operations projected for 6B0.

Table 2-9 – Vermont Airport System Plan Growth for Middlebury (Operations)

Scenario	5-Year	10-Year	20-Year
FAA TAF (2018)	10,900	10,900	10,900
Average Growth (.42%)	11,131	11,367	11,853
High Growth (.84%)	11,366	11,851	12,885
Low Growth (.21%)	11,015	11,131	11,367

Source: Vermont Airport System Plan (2020 DRAFT), CHA, 2021.

These growth rates were subsequently applied to the existing baseline operations data at the Airport and carried throughout the forecast horizon. **Table 2-10** depicts the total operations forecasts for the three scenarios.

Table 2-10 – Vermont Airport System Plan Scenarios (Operations)

Year	Average Growth	High Growth	Low Growth
2021	6,377	6,403	6,363
2026	6,512	6,677	6,430
2031	6,650	6,962	6,498
2036	6,790	7,259	6,567
2041	6,934	7,569	6,636
% AAGR	**0.4%**	**0.8%**	**0.2%**
% Growth	**8.7%**	**18.2%**	**4.3%**

Source: Vermont Airport System Plan (2020 DRAFT), CHA, 2021.

Based on the above figures, it was determined that the High Growth yielded the most feasible growth rates of the three forecasting scenarios.

Based Aircraft

The VASP draft also provides a low-growth, average-growth, and high-growth scenario for based aircraft, with the AAGRs being depicted in Table 2-11.

Table 2-11 – Vermont Airport System Plan Growth for Middlebury (Based Aircraft)

Scenario	5-Year	10-Year	20-Year
FAA TAF (2018)	36	36	36
Average Growth (-1.61%)	34	31	27
High Growth (1.20%)	39	42	47
Low Growth (-2.39%)	33	29	23

Source: Vermont Airport System Plan (2020 DRAFT), CHA, 2021.

Each AAGR was applied to the baseline count of based aircraft at 6B0 and assumed throughout the 20-year forecast horizon, as shown in **Table 2-12**.

Table 2-12 – Vermont Airport System Plan Scenarios (Based Aircraft)

Year	Average Growth	High Growth	Low Growth
2021	30	30	29
2026	27	32	26
2031	25	34	23
2036	23	36	20
2041	21	39	18
% AAGR	**-1.6%**	**1.2%**	**-2.4%**
% Growth	**-27.7%**	**26.9%**	**-38.4%**

Source: Vermont Airport System Plan (2020 DRAFT), CHA, 2021.

2.6.3 Econometric Forecasts

The socioeconomic outlook of an airport's catchment area can factor into the type and level of activity the facility may experience. Generally speaking, population and household income indicate potential levels of discretionary spending and the propensity of aviation users to utilize a local GA airport. As such, these two socioeconomic factors (e.g., population and household income) within the 6B0 catchment area were examined to develop the following two econometric forecast scenarios.

Population Econometric Forecast

The population econometric forecasts adjust the 6B0 TAF projections to account for population growth within the Airport's catchment area (e.g., Addison County). It is important to note that according to the Vermont Department of Health's population statistics, the population of the State of Vermont increased 2.8 percent over the past 10 years. The population of Addison County, however, declined by 0.12 percent during the same time period with an AAGR of -0.01 percent. As such, the population economic forecast indicates a decline in both aircraft operations and based aircraft when applying Addison County's population growth rate to the baseline operations and based aircraft counts.

Household Income Econometric Forecast

Similar to the Population Econometric Forecast, a Household Income Econometric Forecast uses projected change in household income over the forecast period as a metric for growth. Unlike population for Addison County, which is projected to decrease, household income has increased 2.5 percent annually over the past 10 years (adjusted for inflation) and is expected to continue trending upward at this rate according to 2020 U.S. Census data. In the case of airports such as 6B0, income is often a more accurate metric than population as most of the Airport's operators are individual aircraft owners. As such, the 2.5 percent AAGR was applied to the baseline operation and based aircraft counts, resulting in growth exceeding the FAA forecast parameters.

Table 2-13 provides a summary of the econometric forecasts.

Table 2-13 – TAF Based Econometric Forecasts

Year	Population Econometric		Household Income Econometric	
	Based Aircraft	Operations	Based Aircraft	Operations
2021	30	6,349	31	6,507
2026	30	6,345	35	7,352
2031	30	6,341	39	8,306
2036	30	6,337	44	9,385
2041	30	6,332	50	10,603
% AAGR	**-0.01%**	**-0.01%**	**2.5%**	**2.5%**
% Growth	**-0.3%**	**-0.3%**	**62.9%**	**62.9%**

Source: Vermont Department of Health, US Census Bureau, CHA, 2021.

2.6.4 Operations per Based Aircraft Forecasts

Operations per based aircraft (OPBA) forecasts involve a relatively straightforward forecasting methodology which assumes a total number of annual operations conducted by each aircraft based at the Airport. This methodology is often used at non-towered airports, such as 6B0, where historical annual operations are not as easily obtainable.

According to FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems*, guidance suggests using 250 OPBA for a typical GA airport, 350 OPBA for a busier GA airport with more itinerant traffic, and 450 OPBA for busy reliever airports.

To develop an OPBA forecast at 6B0, a preferred based aircraft forecast must first be selected. Four of the nine based aircraft forecasts projected a decline in based aircraft. However, local demand and interest in future hangar development indicates a likelihood for increased based aircraft throughout the forecast period. The projected based aircraft from the VASP High Growth forecast scenario was selected, as it showed modest growth in line with VTrans knowledge of local demand and potential development at 6B0.

As shown in the recommended based aircraft forecast, 6B0 is projected to have 39 based aircraft by 2041. Based on recommendations from the National Plan of Integrated Airport Systems (NPIAS), 250 operations per based aircraft were assumed and applied to the 2041 based aircraft count, thus resulting a projection of 12,523 operations at the end of the forecast period or approximately 88.5 percent more GA operations. The operations from 2021 through 2040 are a result of a statistical interpolation using a compound annual growth rate (CAGR).

Table 2-14 – OPBA Forecast

Year	Based Aircraft*	Operations
2021	30	6,350
2026	32	6,644
2031	34	8,114
2036	36	9,584
2041	39	11,053
% AAGR	**1.2%**	**3.2%**
% Growth	**26.9%**	**88.5%**

Source: CHA, 2021.

*Based aircraft forecast derived using VASP High Growth Scenario (Section 2.6.2)

2.7 Act 250 Permitting

In addition to the quantitative forecasting methodologies depicted in the previous sections, regional and statewide factors were considered in choosing a preferred forecast. The responsibility of building hangars is often on the tenants, with VTrans leasing out the land. VTrans is currently undergoing an Act 250 permitting process in which pre-selected plots of land on airport property can be leased with all necessary permits already in place, resulting in a more streamlined and easier construction process for the prospective tenants. Thus, it is expected that the inclusion of pre-permitted lots would increase demand and based aircraft counts.

2.8 Summary of Forecast

The previously discussed operations and based aircrafts forecasts were derived using a variety of forecasting methodologies and incorporated various external data resources to further refine the projected activity data at 6B0. **Table 2-18** and **Table 2-19** present and summarize each operations and based aircraft forecast scenario, respectively.

2.9 Preferred Forecasts

Following an assessment of each of the based aircraft and operations scenarios, forecasts that were not plausible based on too high or too low of growth were eliminated. Furthermore, given the qualitative factors of future hangar development and activity patterns, those that showed negative growth were also eliminated. From there, a preferred Based Aircraft Forecast and Operations Forecast were selected.

Preferred Based Aircraft Forecast

The forecast from the TAF reflected static growth and thus was removed from consideration. Given the historic trend conditions and market uncertainty caused by the COVID-19 pandemic, several of the based aircraft forecast scenarios reflected negative growth throughout the forecast period, thus were also removed from consideration. The VASP High Growth scenario projected an AAGR of 1.2 percent and 26.9 percent growth over the planning period. As VTrans has direct insight to the local market and demands, the VASP High Growth scenario was selected as the preferred based aircraft forecast scenario, shown in **Table 2-15**.

Table 2-15 – Preferred Based Aircraft Forecast

Year	Based Aircraft
2020	30
2021	30
2026	32
2031	34
2036	36
2041	39
% AAGR	**1.2%**
% Growth	**26.9%**

Source: US Census Bureau, CHA, 2021.

Preferred Operations Forecast

Much like the based aircraft forecast, the TAF yields static growth and was removed from consideration. While certain scenarios yielded negative growth, the three VASP scenarios projected positive growth rates, as did the Household Income Econometric. Household Income

is considered a reliable metric of overall operations, though not as reliable as based aircraft. Given this, and that the VASP forecasts were uniquely calculated to 6B0, these were considered the most reliable. As a result, the VASP High Growth scenario was selected as the preferred operations forecast scenario (**Table 2-16**). This yielded an annual growth rate of 0.8 percent and 18.2 percent growth in the forecast period.

Table 2-16 – Preferred Operations Forecast

Year	Operations
2020	6,350
2021	6,403
2026	6,677
2031	6,962
2036	7,259
2041	7,569
% AAGR	**0.8%**
% Growth	**18.2%**

Source: Vermont Agency of Transportation, CHA, 2021.

Preferred Operations Forecast vs. FAA TAF

Table 2-17 details the recommended operations forecast for 6B0 in comparison to the FAA 2020 TAF forecast. The recommended forecast predicts operations to be approximately 5.1 percent higher than the TAF in five years and approximately 9.6 percent above the TAF in 10 years, both of which are within the acceptable ranges provided in AC 150/5070-6B*, Airport Master Plans*.

Table 2-17 – Preferred Operations Forecast vs. FAA TAF

Year	Operations		
	6B0 TAF	Preferred Forecast	Recommended Forecast vs. FAA TAF
2020	6,350	6,350	0.0%
2021	6,350	6,403	0.8%
2026	6,350	6,677	5.1%
2031	6,350	6,962	9.6%
2036	6,350	7,259	14.3%
2041	6,350	7,569	19.2%
% AAGR	**0.0%**	**0.8%**	-
% Growth	**0.0%**	**18.2%**	-

Source: FAA 2020 TAF, Vermont Agency of Transportation, CHA, 2021.

Table 2-18 – Operations Forecast Summary

Year	TAF	6B0 TAF Scenarios		Statewide TAF Scenarios				VASP Scenarios			Econometric Scenarios		OPBA
		Projected Growth	Historic Trend	Projected Growth (All Users)	Projected Growth (GA)	Historic Trend (All Users)	Historic Trend (GA)	Average Growth	High Growth	Low Growth	Population	Household Income	
2020	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350
2021	6,350	6,456	6,065	6,370	6,353	6,137	6,168	6,377	6,403	6,363	6,349	6,507	6,386
2026	6,350	6,985	4,830	6,473	6,367	5,174	5,342	6,512	6,677	6,430	6,345	7,352	6,563
2031	6,350	7,303	3,857	6,581	6,382	4,363	4,637	6,650	6,962	6,498	6,341	8,306	6,741
2036	6,350	7,767	3,089	6,693	6,397	3,681	4,033	6,790	7,259	6,567	6,337	9,385	6,919
2041	6,350	8,260	2,480	6,810	6,411	3,106	3,517	6,934	7,569	6,636	6,332	10,603	7,096
% AAGR	**0.0%**	**1.2%**	**-4.4%**	**0.3%**	**0.05%**	**-3.3%**	**-2.8%**	**0.4%**	**0.8%**	**0.2%**	**-0.01%**	**2.5%**	**0.5%**
% Growth	**0.0%**	**27.9%**	**-59.1%**	**6.9%**	**0.9%**	**-49.4%**	**-43.0%**	**8.7%**	**18.2%**	**4.3%**	**-0.3%**	**62.9%**	**11.1%**

Source: FAA 2020 TAF, Vermont Agency of Transportation, Vermont Department of Health, US Census Bureau, CHA, 2021.

Table 2-19 – Based Aircraft Forecast Summary

Year	TAF	6B0 TAF Scenarios		Statewide TAF Scenarios		Vermont Airport System Plan			Econometric Scenarios	
		Projected Growth	Historic Trend	Projected Growth (All Users)	Historic Trend (All Users)	Average Growth	High Growth	Low Growth	Population	Household Income
2020	17	30	30	30	30	30		30	30	30
2021	17	28	27	30	30	30	30	29	30	31
2026	17	19	17	31	30	27	32	26	30	35
2031	17	20	10	32	30	25	34	23	30	39
2036	17	16	6	33	30	23	36	20	30	44
2041	17	14	4	34	30	21	39	18	30	50
% AAGR	**0.0%**	**1.2%**	**-9.5%**	**0.7%**	**0.1%**	**-1.6%**	**1.2%**	**-2.4%**	**0.0%**	**2.5%**
% Growth	**0.0%**	**27.9%**	**-86.3%**	**13.8%**	**1.3%**	**-27.7%**	**26.9%**	**-38.4%**	**-0.3%**	**62.9%**

Source: FAA 2020 TAF, Vermont Agency of Transportation, Vermont Department of Health, US Census Bureau, CHA, 2021.

2.10 Alternative Aviation Activity Forecasts

2.10.1 Instrument Approach Procedure Scenario (Operations Activity)

Presently, 6B0 is not equipped with published Instrument Approach Procedures (IAPs); effectively limiting the use of Runway 1-19 when weather conditions are below the required minimums to operate under Visual Flight Rules (VFR). As discussed within Chapter 1, this Master Plan examines the potential for establishing IAPs at the Airport. Therefore, a qualitative forecast scenario was developed to identify a potential increase of aircraft operations should an IAP be established for one or both ends of Runway 1-19.

To develop an IAP forecast scenario, historic (2009 through 2019) weather conditions reported by the 6B0 Automated Weather Observing System (AWOS) were reviewed. According to the data, VFR weather conditions occur approximately 92.8 percent of the time and, conversely, weather conditions below VFR minimums (i.e., Instrument Flight Rules) occur approximately 7.2 percent of the time. Therefore, this forecast scenario assumes that if both ends of Runway 1-19 are equipped with IAPs, runway utilization would increase approximately 3.6 percent (i.e., half of the current percentage of IFR weather conditions) by the end of the forecast period.

As it is likely that only one IAP will be established at a time, it was assumed that each IAP will result in a 1.8 percent growth in operations in addition to the standard average annual growth of 0.8 percent from the previous year; thus, resulting in a total year-over-year growth of 2.6 operations each time an IAP is published. The years where a new IAP is not introduced were assumed to grow at the 0.8 percent AAGR that was determine in the preferred forecast.

The results of this scenario are shown in **Table 2-20**.

Table 2-20 – Instrument Approach Procedure (IAP) Scenario

Year	Total Operations
2021	6,403
2026	6,797*
2031	7,211*
2036	7,517
2041	7,835
% AAGR	**1.0%**
% Growth	**22.4%**

Source: CHA, 2021.
*Introduction of Runway IAP

Although the results of the IAP scenario exceed TAF growth parameters, this forecast presents a potential that is not reflected within the Airport's current TAF considerations.

2.10.2 Hangar Development Scenario (Based Aircraft Activity)

Much like the assumptions for the IAP forecasting scenario, a qualitative assumption was made for potential based aircraft growth. As with many VTrans airports, site locations for future hangar development as part of the State's Act 250 permitting process are being examined. As such, a hangar development scenario was generated to forecast growth of based aircraft resulting from potential future additional hangar space.

As part of the State's Act 250 permitting, three hangar sizes are being assumed: small hangars (60'x60'), medium hangars (60'x80'), and large hangar (120'x120x'). The most recent plans depict five small hangars, three medium hangars, and one large hangar at 6B0. Although future hangar development is demand driven and will vary based on private developer needs, should the full buildout occur within the planning period, it is assumed that two hangars would be built within the next 5 years, two additional hangars within six to 10 years, three hangars within 11 to 15 years, and three hangars within 16 to 20 years. This assumption was applied to the VASP High Growth forecast scenario. Its results are shown in **Table 2-21**.

Table 2-21 – Hangar Development Scenario

Year	Total Based Aircraft
2021	30
2026	34
2031	36
2036	40
2041	49
% AAGR	**2.4%**
% Growth	**59.9%**

Source: CHA, 2021.

2.11 Local/Itinerant Operations

The percentage of local and itinerant operations at GA airports can vary greatly by airport location, size, and type of activity. Rural airports that mostly experience activity by based aircraft generally have a greater percentage of local operations, while airports nearby larger metropolitan areas or tourist destinations may have a greater percentage of itinerant operations.

According to the 6B0 TAF, the local/itinerant operations split at the Airport was historically 60/40 percent, respectively. However, the 2020 6B0 TAF reports the current spread of local/itinerant operations to be at a 67/33 split.

As such, it is assumed that the current split of local/itinerant operations at 6B0 is closer to its historically report spread (e.g., 60 percent local and 40 itinerant) with a gradual increase of itinerant operations throughout the forecast period. **Table 2-22** lists the projected local/itinerant forecast for 6B0.

Table 2-22 – Local/Itinerant Operations

Year	Local Operations	Local Percent	Itinerant Operations	Itinerant Percent	Total Operations
2021	2,134	33.3%	4,270	66.7%	6,403
2026	2,141	32.1%	4,536	67.9%	6,677
2031	2,145	30.8%	4,817	69.2%	6,962
2036	2,146	29.6%	5,114	70.4%	7,259
2041	2,142	28.3%	5,427	71.7%	7,569

Source: CHA, 2021.

2.12 Aircraft Fleet Mix Forecast

The FAA Aerospace Forecast is an annually issued document providing an overview of aviation industry trends and growth rates over a 20-year forecast horizon, including the breakdown of aircraft fleet mix by type. **Table 2-23** lists the percent makeup of fleet mix each, broken down by type of aircraft, as projected within the *FAA Aerospace Forecast, FY 2020 - 2040*.

Table 2-23 – FAA Fleet Mix Projection

Year	Single-Engine	Multi-Engine	Turboprop	Jet	Rotorcraft	Other	Total
2021	60.0%	6.0%	4.7%	7.5%	5.0%	17%	100%
2026	57.3%	5.9%	4.9%	8.6%	5.4%	18%	100%
2031	54.4%	5.8%	5.2%	9.7%	5.9%	19%	100%
2036	51.7%	5.6%	5.6%	10.7%	6.4%	20%	100%
2041	49.6%	5.5%	6.0%	11.4%	6.8%	21%	100%

Source: FAA Aerospace Forecast, *FY 2020 – 2040*
Note: Represents national projections

According to the Aerospace Forecast, the number of single-engine piston aircraft will decrease by 2040 with an increase of larger aircraft including turboprop and jet aircraft. It is important to note that the majority of aircraft activity at 6B0 is represented by single-engine piston aircraft, which are expected to continue to encompass the majority of the Airport's operating aircraft fleet mix. As the FAA Aerospace Forecast presents national projections, the fleet mix growth rates would not reflect 6B0's local characteristics and GA demand. Therefore, a percentage breakdown using national based aircraft numbers as a baseline was utilized and adjusted for local considerations and demand. **Table 2-24** and **Table 2-25** lists the projected fleet mix for of airport operations and based aircraft at 6B0.

Table 2-24 – Operations Fleet Mix

Year	Single-Engine	Multi-Engine	Jet	Helicopters	Total Operations
2021	4,304	520	990	590	6,403
2026	4,488	542	1,032	615	6,677
2031	4,680	565	1,076	641	6,962
2036	4,879	589	1,122	669	7,259
2041	5,088	614	1,170	697	7,569
AAGR	**0.8%**	**0.8%**	**0.8%**	**0.8%**	**0.8%**
% Growth	**19.2%**	**19.2%**	**19.2%**	**19.2%**	**19.2%**

Source: CHA 2021.

Table 2-25 – Based Aircraft Fleet Mix

Year	Single-Engine	Multi-Engine	Turboprop	Jet	Helicopters	Based Aircraft
2020	29	0	0	1	0	30
2021	29	0	0	1	0	30
2026	30	1	0	1	0	32
2031	32	1	0	1	0	34
2036	32	1	1	2	0	36
2041	34	2	1	2	0	39

Source: CHA 2021.

2.13 Peak Activity

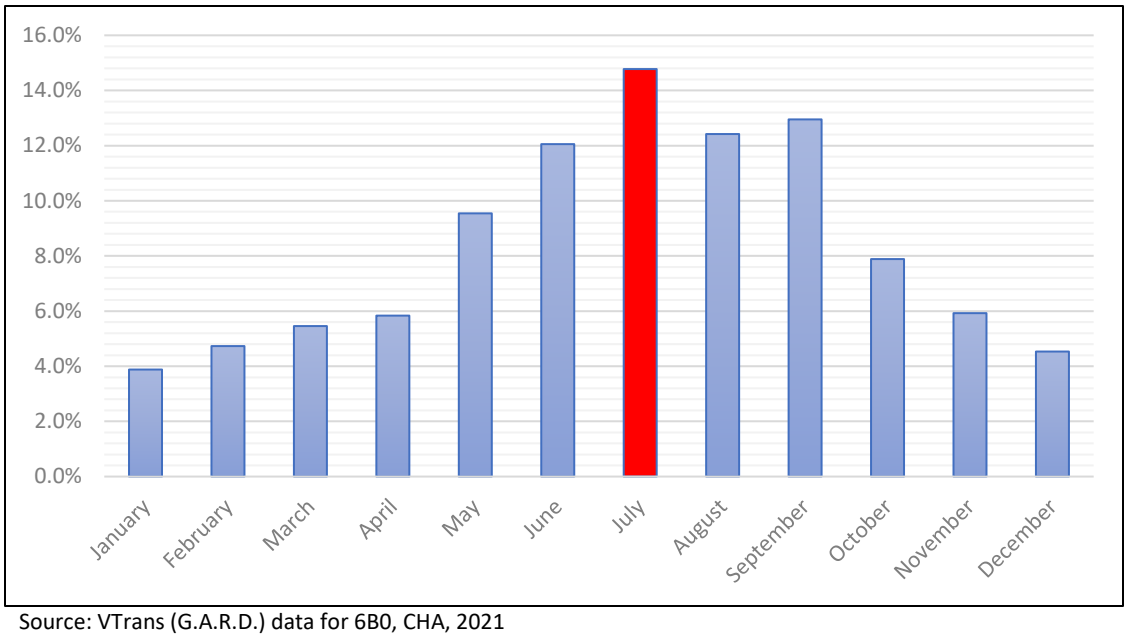
To ensure adequate apron and aircraft staging space is available at an airport, an understanding of the facility's most demanding (i.e., peak) period of activity is necessary. Peak Month and Peak Day forecasts guide future facility requirements needed to accommodate above average levels of utilization. The Peak Month is the calendar month of the year during which the highest level of aircraft operations typically occur. Likewise, the Peak Day is the highest level of operations occurring within the Peak Month. At non-towered airports, tracking periods of peak activity can be challenging unless local observations are maintained.

VTrans utilizes a system that provides approximate aircraft operations data by recording the number of aircraft radio announcements on each airport's common traffic advisory frequency (CTAF). Although the number of operations reported through this system is not exact, the data provides valuable operational trend and peak activity levels.

As shown on **Figure 2-2**, according to historic (2015 – 2020) data recordings provided by VTrans, 6B0 experiences its Peak Month activity in July; approximately 14.8 percent of the total annual data for the year.

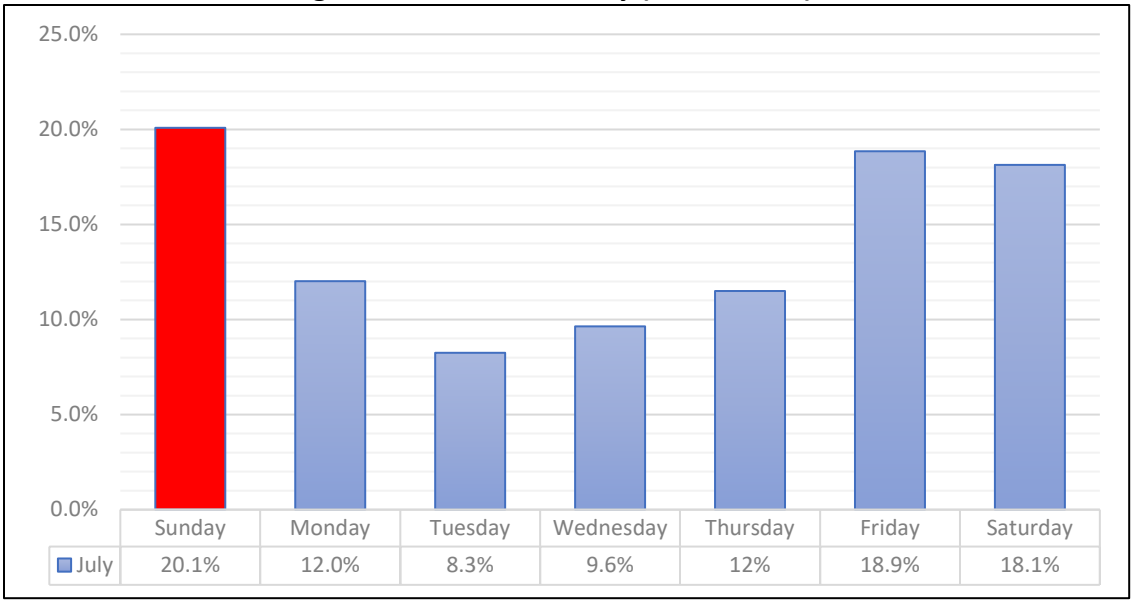
Furthermore, **Figure 2-3** shows that similar to many GA airports, 6B0 experiences its greatest volume of activity during the weekend (Friday through Sunday) with Sunday representing 20.1 percent of the week's average data recordings for the peak month of July.

Figure 2-2 – 6B0 Peak Month (2015 - 2020)



Source: VTrans (G.A.R.D.) data for 6B0, CHA, 2021

Figure 2-3 – 6B0 Peak Day (2015 - 2020)



Source: VTrans (G.A.R.D.) data for 6B0, CHA, 2021

Using the Peak Month and Peak Day percentages (14.8 and 20.1 percent, respectively), **Table 2-26** lists the projected number of Peak Month and Peak Day aircraft operations at 6B0 based on the preferred operations forecast. A Peak Day-Hour is also listed and represents the estimated heaviest volume of aircraft operations the airport may experience in the span of an hour, such as during an airport event or fly-in gathering.

Table 2-26 – 6B0 Peak Month, Day, Hour

Year	Peak Month	Peak Day	Peak Day-Hour
2020	938	47	7
2021	946	48	7
2026	987	50	7
2031	1,029	52	8
2036	1,073	54	8
2041	1,119	56	8

Source: CHA, 2021.

2.14 Critical Aircraft

The design, or critical, aircraft is defined as the largest or most demanding aircraft using or forecast to regularly use an airport (at least 500 annual itinerant operations). In the case of 6B0, the aircraft with the majority of operations are in ADG A-I and A-II, however there is still consistent activity from B-II aircraft. Given this, and that the fleet mix of aircraft at 6B0, which includes a significant amount of older, out-of-production aircraft, there is not a specific critical aircraft designated. Rather, the critical aircraft type is a family of light, multi-engine piston aircraft such as the Cessna 421 and light, turboprop aircraft such as the Piper Cheyanne. These both represent ADG B-I. The ARC and other airport design characteristics will be further detailed in the following chapter.