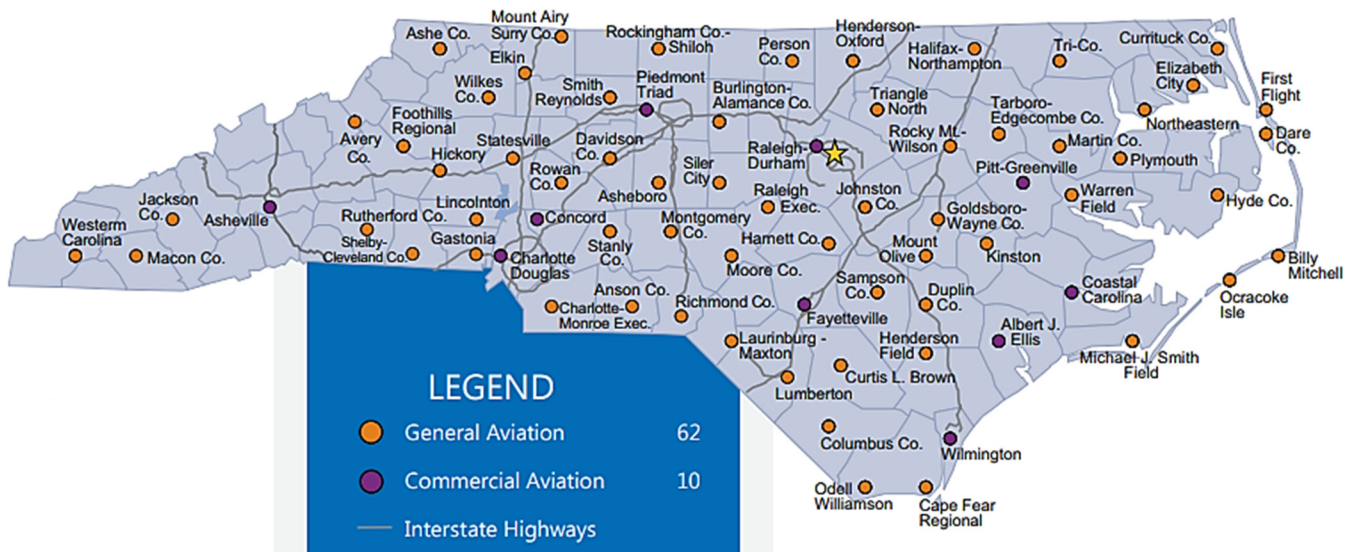


# 13. Aviation

## Introduction

Airports are a critical part of North Carolina’s transportation system, linking the state to the global economy and generating economic activity, commerce, and tourism. According to the 2016 *Economic Impacts of Airports in North Carolina* report from the North Carolina Department of Transportation’s Division of Aviation, the state’s 72 public-use airports (10 commercial air carrier airports and 62 general aviation airports) contribute to \$31 billion in annual economic impact, provide 123,400 airport-related jobs, and contribute to \$913 million in direct government revenue. In addition, airports and aerospace manufacturing support 8.5 percent of North Carolina’s total Gross State Product.

Figure 13-1. Commercial Service & General Aviation Airports in North Carolina.



Source: *Economic Impacts of Airports in North Carolina*, North Carolina Department of Transportation, Division of Aviation, 2016.

The wider economic benefits of airports are often less well-known. At first glance it may seem that the only beneficiaries of airports are its pilots, but in fact airports perform a broad range of services that are directly linked to the economic well-being of the state and the GHMPO region. Table 13-1 provides an overview of several of these services.

Table 13-1. Airports & the GHMPO Economy.

Airports & The GHMPO Economy	
<ul style="list-style-type: none"> <li>&gt; Time-sensitive, high-value cargo/freight</li> <li>&gt; Search and rescue</li> <li>&gt; Agriculture</li> <li>&gt; Tourism</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Firefighting and medical emergency operations</li> <li>&gt; Military</li> <li>&gt; Aerospace/drone industry</li> <li>&gt; Education/flight instruction</li> </ul>

Source: *Economic Impacts of Airports in North Carolina*, North Carolina Department of Transportation, Division of Aviation, 2016.

Airports are also directly linked to economic development opportunities. Airport access is often a key decision factor for businesses evaluating potential locations for a new facility or a corporate headquarters. Local businesses frequently want to operate their chartered or corporate aircraft using airports that are located within 45 minutes to an hour’s drive from their offices. The presence of an airport within a community provides that community with a competitive advantage in attracting or retaining businesses, while simultaneously providing businesses in the community with competitive advantages and other efficiencies.

In addition to the 5 dedicated military bases in North Carolina, the US military uses airports throughout the state to conduct flight operations. According to the *Economic Impacts of Airports in North Carolina* report, approximately 200,000 military operations (Air Force, Army, Coast Guard, Marines, Navy, and NC National Guard) occurred at public-access airports in North Carolina in 2014.

## Commercial Airline Service

Ten airports in North Carolina provide commercial airline service. The largest, Charlotte/Douglas International Airport (CLT) had over 21 million passenger enplanements in calendar year 2016. CLT serves as American Airlines’ second-busiest hub, and is classified by the US Department of Transportation as a “large hub primary”. Charlotte/Douglas International Airport is the GHMPO region’s closest commercial service hub airport.

Piedmont Triad International (GSO) and Asheville Regional (AVL) airports also offer commercial airline service. Both airports are classified as “small hub primary” airports. GSO had nearly 850,000 passenger enplanements in 2016; Asheville had nearly 417,000. Raleigh-Durham International airport (RDU), classified as a “medium hub primary”, had 5.4 million enplanements in 2016. Concord Regional Airport also provides limited commercial airline service. Compared to 2015, passenger enplanements at AVL grew by 6%, and enplanements at RDU grew by 9%. Enplanements at CLT and GSO remained flat over the same period.

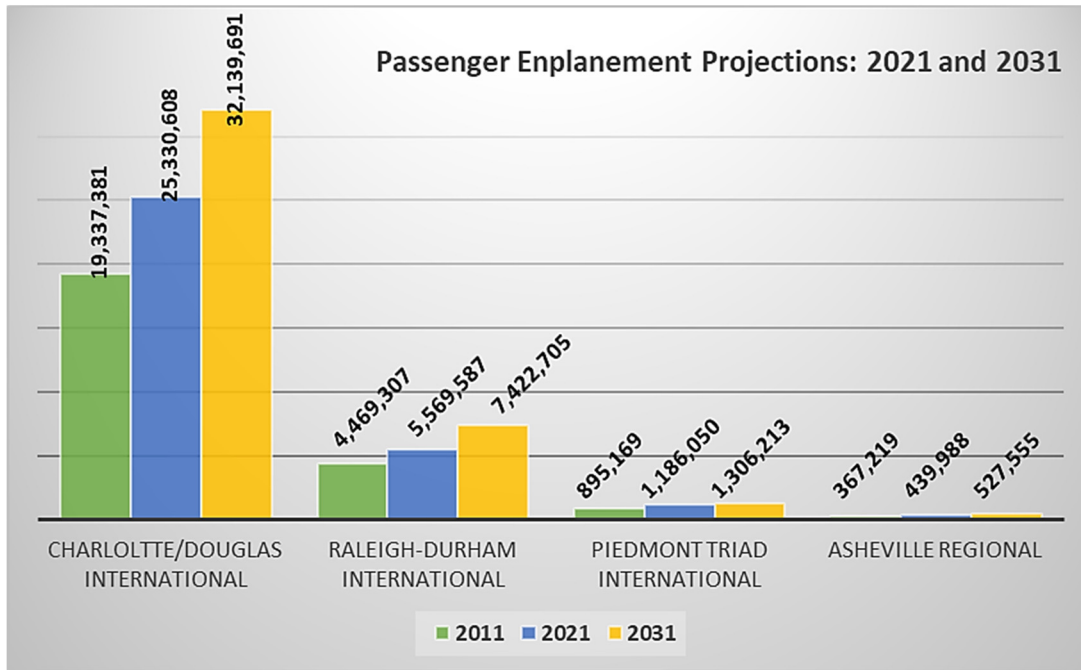
Table 13-2. Passenger Enplanements at Area Airports: 2015 vs. 2016.

Passenger Enplanements at Area Airports: 2015 vs. 2016					
National Rank	Airport Name	CY 16 Enplanements	CY 15 Enplanements	% Change	Airport Classification
10	Charlotte/Douglas International	21,511,880	21,913,166	-1.83%	Large Hub Primary
38	Raleigh-Durham International	5,401,714	4,954,735	9.02%	Medium Hub Primary
97	Piedmont Triad International	848,261	848,249	0.00%	Small Hub Primary
132	Asheville Regional	416,939	393,386	5.99%	Small Hub Primary

Source: USDOT, 2018.

Passenger enplanements are projected to increase substantially at CLT, RDU, GSO and AVL by 2031. CLT is projected to reach 32.1 million enplanements by 2031, GSO is projected to have over 1 million enplanements by 2021.

Chart 13-1. Passenger Enplanements at Commercial Service Airports: 2021 and 2031.



Source: North Carolina Division of Aviation, [Airport System Plan Update](#), 2015.

In addition to regular commercial airline service for passengers, airlines at CLT, GSO and RDU provide cargo service using dedicated cargo aircraft. Unlike passenger aircraft that carry “belly freight” in the baggage compartments under the aircraft floor, cargo aircraft are specifically designed (or modified) to carry large freight shipments. Cargo carriers (mostly FedEx) at GSO carried the most freight – nearly 500 million pounds in 2016.

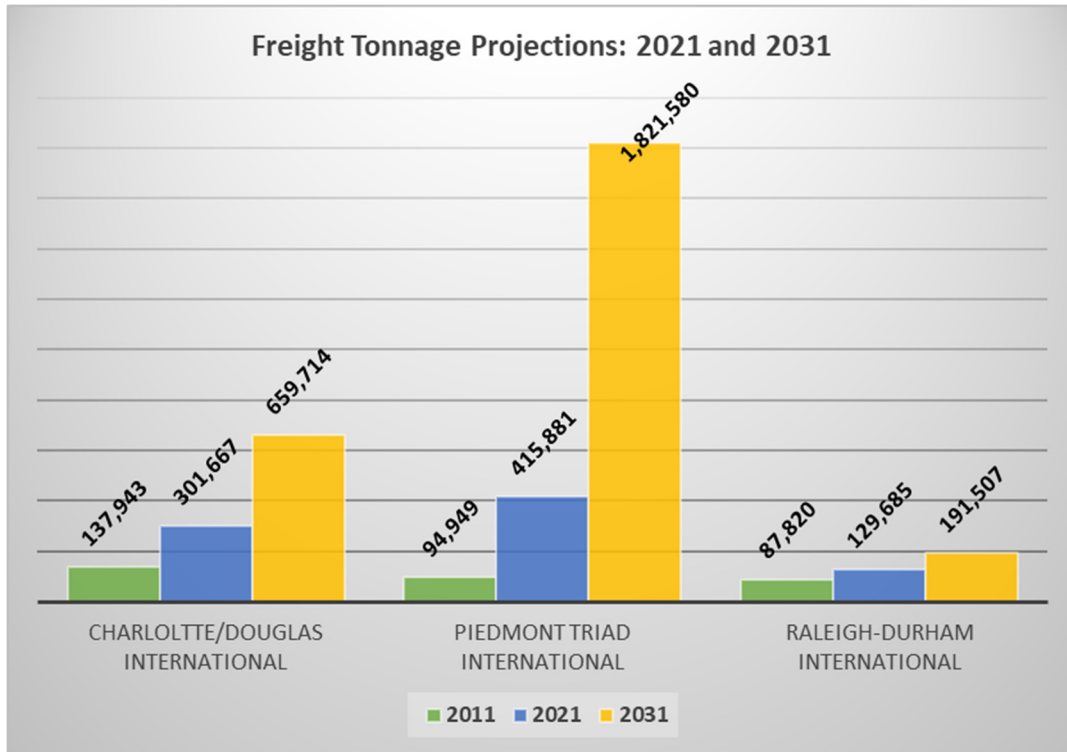
Table 13-3. Cargo Landed Weight at Area Airports: 2015 vs. 2016.

Cargo Landed Weight at Area Airports: 2015 vs. 2016				
National Rank	Airport Name	2016 Landed Weight (lbs.)	2015 Landed Weight (lbs.)	% Change
44	Piedmont Triad International	498,972,502	548,015,962	-8.95%
49	Charlotte/Douglas International	467,253,040	378,541,098	23.44%
52	Raleigh-Durham International	452,516,590	446,121,017	1.43%

Source: Federal Aviation Administration, 2018.

The 2015 North Carolina Airport Systems Update projects that by 2031 GSO will handle more than 1.8 million tons in freight – largely due to the presence of the FedEx facility at that airport. Cargo tonnage at CLT and RDU airports will also continue to increase by 2031.

Chart 13-2. Freight Tonnage Projections: 2021 and 2031.



Source: North Carolina Division of Aviation, Airport System Plan Update, 2015.

## GHMPO Aviation Facilities

Four airports in the GHMPO region have the capacity to process passengers and air freight: Foothills Regional Airport, Hickory Regional Airport, Little Mountain Airport and Wilson’s Airport. Hickory Regional Airport is the largest of the 4 airports, with a control tower and 2 runways. Hickory Regional Airport has not had commercial airline service since 2006, but the airport remains certificated by the Federal Aviation Administration (Part 139) for commercial aircraft operations. Table 13- 4 below summaries the operational capabilities of each airport.

Table 13-4. GHMPO Airport Facilities.

GHMPO Airport Facilities							
Airport	Location	Use	Governance	Runway Dimensions	Based Aircraft	Aircraft Operations	Control Tower
Foothills Regional Airport	Caldwell Co.	Public	Airport Authority	5,500 x 75 ft.	70	47/day**	No
Hickory Regional Airport	Hickory	Public	City	6,400 x 150 ft; 4,400 x 150 ft.	84	180/day*	Yes
Little Mountain Airport	Maiden	Private	Private	3,000 x 40 ft.	3	40/week	No
Wilson’s Airport	Catawba Co.	Private	Private	2,175 x 70 ft.	9	67/month***	No

\* 12 month period ending June 1, 2017.

\*\* 12 month period ending June 20, 2017.

\*\*\* 12 month period ending August 27, 2017.

Source: airnav.com, 2018.

Located adjacent to US 321 and less than four miles from the interchange of US 321 and Interstate 40, the Hickory Regional Airport is owned and operated by the City of Hickory.

While Hickory can accommodate aircraft such as Boeing 737s, military C-130s, large private jets and other aircraft of similar size, prior landing permission is required. At 6,400 feet in length, the airport's main runway is long enough to land these aircraft (depending on the weight of each aircraft, its cargo and time of year). However, regularly scheduled operations of these heavier aircraft would damage the runway and taxiway system.

Foothills Regional Airport's close proximity to both Lenoir and Morganton give it unique advantages for the provision of passenger and freight service. Foothills Regional Airport's 5,500 foot runway can accommodate some larger aircraft (private/corporate jets, etc.).

The airport is governed by the Foothills Regional Airport Authority, which is comprised of elected officials from the cities of Morganton and Lenoir, and the counties of Burke and Caldwell. The cities of Morganton and Lenoir and the counties of Burke and Caldwell help fund the airport.

Little Mountain Airport is a private facility located near Maiden. It serves at the headquarters for Mountain Air Cargo (a subsidiary of AirT), a regional freight carrier that provides service in the eastern US and the Caribbean. Mountain Air Cargo aircraft do not operate freight services at the airport. Wilson's Airport is also a private facility.

#### *Fixed Base Operations:*

Both Foothills Regional Airport and Hickory Regional airports provide Fixed Base Operator (FBO) services. FBOs provide jet fuel, AvGas, flight planning stations for pilots, pilot lounges and aircraft maintenance services.

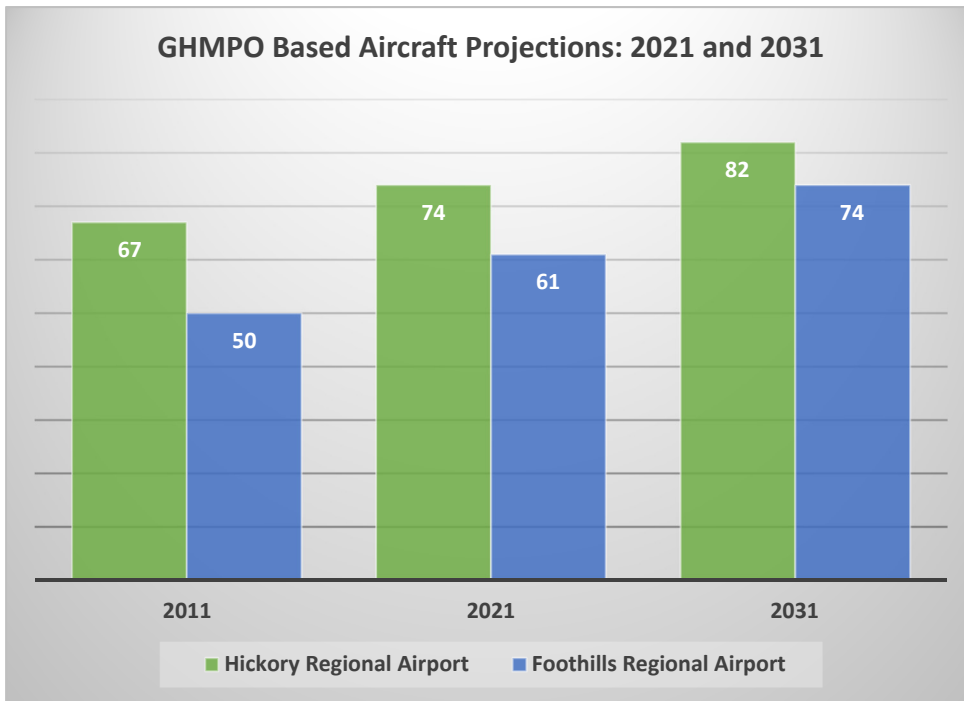
FBOs are important assets for both the airports (revenue generated from fuel sales and maintenance activity) and for pilots (FBOs provide opportunities for crew rest, flight planning activities, and are often the first impression visitors experience when arriving in the region). The City of Hickory began providing FBO services in 2011, prior to that date FBO services were managed by a private organization.



Private jet at Foothills Regional Airport.

## GHMPO Based Aircraft & Aircraft Operations

Chart 13-3. GHMPO Based Aircraft Projections: 2021 and 2031.

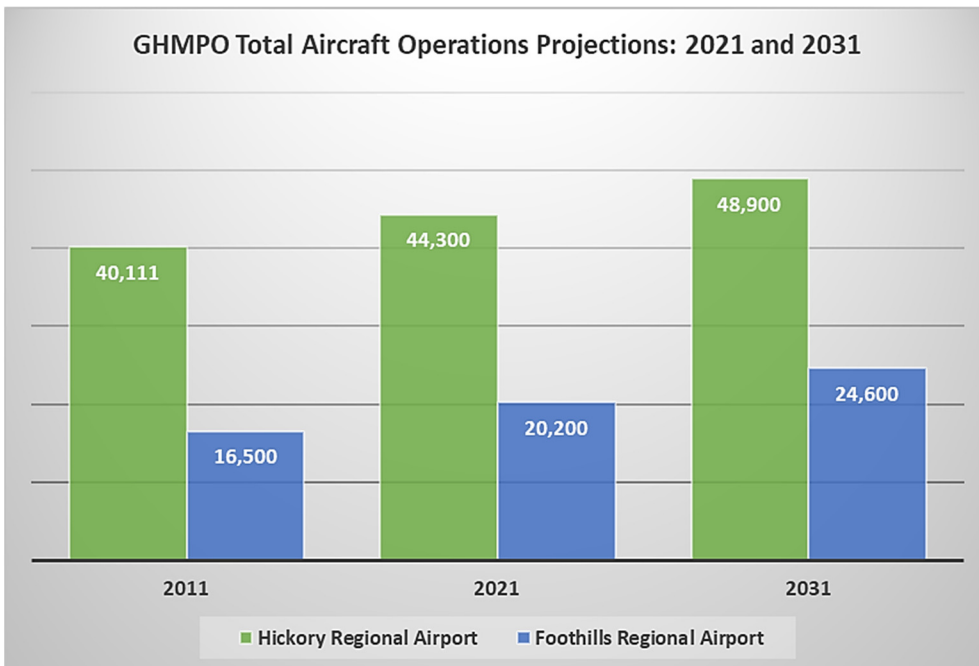


Based aircraft are general aviation aircraft that are stored at an airport either in hangars or on tie-down spaces. The number and types of based aircraft at an airport can serve as a measure of an airport's local corporate, business, and leisure flight activity.

The number of based aircraft at Foothills and Hickory Regional airports is projected to increase by 2031.

Chart 13-4. GHMPO Total Aircraft Operations Projections: 2021 and 2031.

An aircraft operation refers to either a takeoff or a landing. Airports track the number of operations on a monthly and annual basis in order to measure overall demand and monitor the types of aircraft using the facility.



Tracking operations can be challenging for airports that either lack a control tower or have a control tower that is not staffed full-time – the former applies to Foothills Regional Airport, the latter applies to Hickory Regional Airport.

According to the 2015 *North Carolina Airport System Plan Update*, "The projections provided...are considered planning estimates and are based on information gathered from all available sources.

Source: North Carolina Division of Aviation, [Airport System Plan Update](#), 2015.

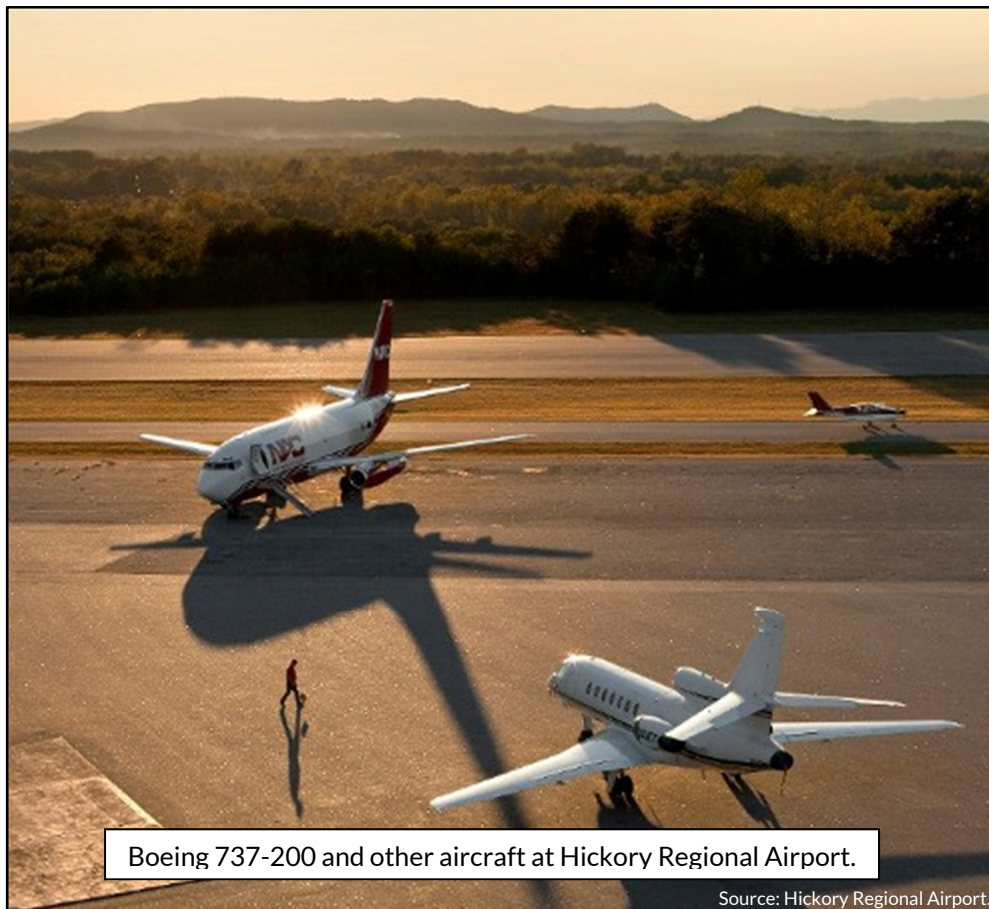
These projections were generated for a system planning level of detail, rather than that of a master plan.” Like the number of based aircraft, the number of annual aircraft operations at both Foothills Regional Airport and Hickory Regional Airport are projected to increase by 2031.

## Planning Implications

### *Based Aircraft and Aircraft Operations:*

The number of based aircraft at an airport fluctuates frequently due to changing economic conditions, seasonality, and operating costs. An increase in the number of based aircraft at an airport, while desirable, may result in hangar space and aircraft tie-down parking shortages. These shortages could prevent local businesses and pilots from using an airport, forcing them to rely on less convenient facilities. A careful balance must be struck when evaluating the need for additional hangars and aircraft parking spaces. Achieving a balance between hangar/parking space supply and demand is made more challenging because of the aviation sector’s susceptibility to fluctuations in the economy.

Since based aircraft are taxed locally, revenue streams can be significantly impacted by an increase or decrease in the number of based aircraft at an airport. Corporate aviation departments are often the first to be cut back at



the onset of a recession or economic downturn, which may lead to reductions in fleet sizes and hangar lease cancellations. Conversely, during periods of economic growth, the overall aviation sector also experiences growth - often leading to pressure to expand hangar space. Importantly, an increase in the number of based aircraft also leads to increased rents and tax revenue for an airport, and can imply increased local economic activity. An increase in aircraft operations leads to increased wear and tear on an airport’s runway, taxiway and ramp system. Wear and tear can result from an increase in the number of historically similar aircraft types using an airport or because of a change

in the mix of aircraft types (i.e. heavier and larger aircraft) using the airport.

However, an increase in wear and tear can also occur even if the number of aircraft operations decreases or remains the same – but the mix of aircraft types using the airport becomes larger and heavier.

An increase in airport operations can lead to increased fuel sales, the primary source of revenue for Hickory and Foothills Regional airports. Like the number of based aircraft, an increase in fuel sales can also imply an increase in local economic activity.

According to the North Carolina Division of Aviation 2015 Airport System Plan Update, airports in the region are currently not meeting the following infrastructure objectives:

Table 13-5. Airport Infrastructure Health: 2015 Airport System Plan Update.

Infrastructure Health: 2015 Airport System Plan Update GHMPO Airports Currently Not Meeting Infrastructure Objectives						
Airport	Pavement Condition	Pavement Strength	Runway Width Objectives	Taxiway Objectives	Aircraft Apron Objectives	Hangar Objectives
Foothills Regional Airport			X	X	X	X
Hickory Regional Airport	X	X				

Source: North Carolina Division of Aviation, Airport System Plan Update, 2015.

Based on the projected number of based and itinerant aircraft using Foothills Regional Airport and Hickory Regional Airport, demand will exceed supply by 2031 in the following infrastructure categories:

Table 13-6. GHMPO 2031 Airport Infrastructure Usage Projections.

GHMPO 2031 Airport Infrastructure Usage Projections Overcapacity		
Airport	Apron Space	Hangar Capacity
Foothills Regional Airport	X	X
Hickory Regional Airport	X	

Source: North Carolina Division of Aviation, Airport System Plan Update, 2015.



Source: Hickory Regional Airport.

Aircraft at Hickory Regional Airport.



### *Future Airport Projects:*

Foothills Regional Airport is planning several future projects, including a partial parallel taxiway extension to eliminate back-taxiing; a 500-foot extension of Runway 21; new t-hangars; land acquisition; terminal area expansion and a new terminal. The airport is also surrounded by several thousand acres of land that can be developed into an industrial park.

The 2018-2027 GHMPO MTIP includes project \*AV-5741 (Division), Hickory Regional Airport, 600-foot Extension of Runway 6/24 – Phase I and II. Construction is scheduled to begin in FY 2019. Total project cost is estimated to be \$3,844,000. Extending the runway will allow some larger aircraft to operate at the airport while also making it easier for heavier aircraft to take off during the hot summer months.

Other future projects include runway obstruction removal, the rehabilitation of the North Ramp, new hangar/t-hangar construction and updating Hickory airport's Master Plan/Airport Layout Plan.

Both airports – while accessible – are reachable using smaller 2 lane roads. Future development at each airport will likely require road improvements.

### *Airport Master Plan/Airport Layout Plan:*

The FAA's AIP Sponsor Guide describes an airport master plan as an airport's blueprint for long term development. Some of the goals of a master plan are to:

- Provide a graphic representation of existing airport features, future airport development and anticipated land use.
- Establish a realistic schedule for implementation of the proposed development
- Identify a realistic financial plan to support the development
- Validate the plan technically and procedurally through investigation of concepts and alternatives on technical, economic and environmental grounds.
- Prepare and present a plan to the public that adequately addresses all relevant issues and satisfies local, state and federal regulations.
- Establish a framework for a continuous planning process.

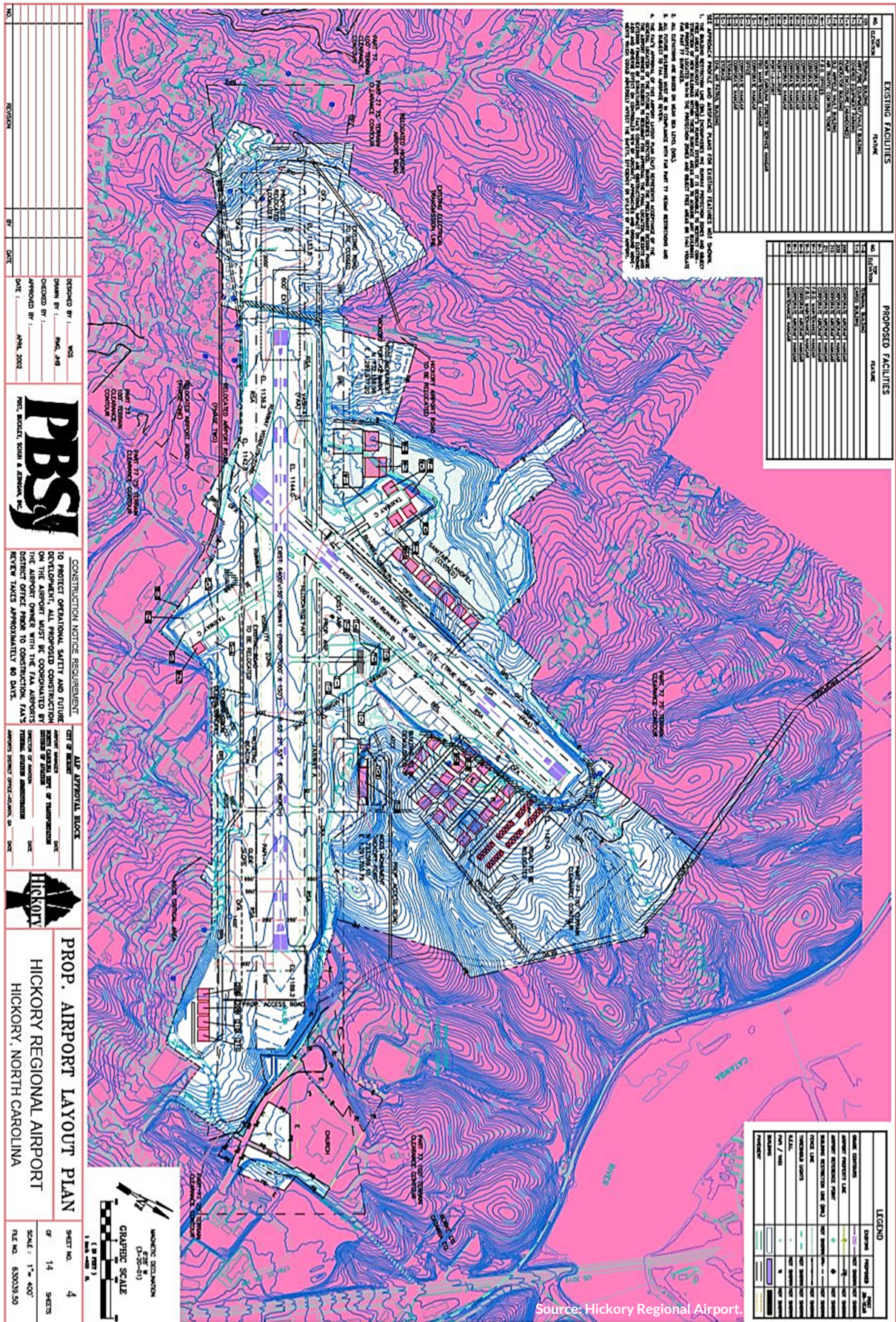
The Federal Aviation Administration (FAA) states that "The term 'Master Plan' is a term of art, and means different things to different organizations and individuals. However, of the related terms (Master Plan, Master Plan Update, ALP Update), all have this in common: ...the primary deliverable is an updated Airport Layout Plan (ALP).....focused on the future development needs of the airport." NCDOT summarizes the five primary functions of the ALP in the box below.

#### The Five Primary Functions of the ALP

1. Required for state and federal funding
2. Guideline for future development
3. Record of aeronautical requirements
4. Assist with financial planning for improvements and airspace protection
5. Provide a working tool for Sponsor

--NCDOT Division of Aviation.

Figure 13-2. Hickory Regional Airport – Airport Layout Plan (2002).



Source: Hickory Regional Airport.

## Airport Project Funding Sources:

As discussed in the 2016 North Carolina Program Guidance Handbook, State funding is used to fund three overarching categories of airport projects:

### 1.) Safety/Regulatory/Operations Projects (NCDOT Highway Fund).

- Land acquisition for approach requirements (Clearing, Runway Protection Zone/Safety Area)
- Pavement expansions to bring airport up to System Plan Objectives
- Airfield maintenance buildings
- Navigation and airfield lighting & signage
- Pavement overlay and rehabilitation
- Fencing

### 2.) Capital Improvement Projects – Airport (NCDOT Highway Trust Fund – STI; for projects that expand airport capacity and/or alleviate congestion).

- Land acquisition for runway development projects
- Major pavement expansions for runway development projects
- New buildings (terminal or hangars)
- Projects that exceed the System Plan objectives and goals
- New airports
- Fuel facilities

### 3.) Statewide Programs.

- Pavement marking, pavement sealing, crack sealing, shoulder grading, ditch cleaning, and tree removal
- Wildlife Hazard Management Program
- Weather reporting (AWOS)

Chart 13-5. State Airport Project Funding Summary.

	PROJECT FOCUS	AIRPORT TYPE	DEFINITION	FUNDING AVAILABLE
<b>STATEWIDE MOBILITY (4 airports)</b>	Address Significant Congestion	Commercial Service Airports included in NPIAS	International Service or 375,000 annual enplanements (CLT, RDU, GSO, ILM, AVL)	\$500,000 per airport per project per year
<b>REGIONAL IMPACTS (6 airports)</b>	Improve Connectivity within Regions	Commercial Service Airports included in NPIAS	Not included in "Statewide Mobility" (OAJ, EWN, JQF, PGV, FAY)	\$300,000 per airport per project per year
<b>DIVISION NEEDS (62 airports)</b>	Address Local Needs	General Aviation Airports included in NPIAS	Not included under "Statewide Mobility" or "Regional Impacts"	Statewide total not to exceed \$18,500,000 per year

Source: North Carolina Division of Aviation, [North Carolina Airports Program Guidance Handbook](#), 2016.

*Aviation Recommendations:*

The GHMPO recognizes the importance of collaboration in developing projects that will benefit the region’s airports – and the area’s wider transportation system. Both Foothills Regional Airport and Hickory Regional Airport are vital to the region’s transportation infrastructure and its future economic development.

1. Continue to work with Foothills Regional Airport and Hickory Regional Airport to identify and prioritize improvement projects.
2. Identify funding sources for improvement projects.
3. Work with each airport to improve roadway accessibility.



Aircraft at Foothills Regional Airport.