FINAL REPORT

TENNESSEE LONG-RANGE TRANSPORTATION PLAN

AVIATION SYSTEM PLAN UPDATE

January 2005

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PLAN Go.

A Long-Range Multimodal Strategy

Prepared by
The PBS&J Consultant Team
in Association with HNTB

Tennessee Long-Range Transportation Plan

Aviation System Plan Update
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Executive Summary

The Tennessee Department of Transportation desires to incorporate the existing Tennessee Airport System Plan into its Long Range Transportation Plan. HNTB Corporation completed a thorough Tennessee Airport System Plan in 2001. Although the Airport System Plan is only three years old, significant changes in the nature of the aviation industry and a desire for a longer-range planning horizon indicated that the System Plan should be updated at this time.

Although the efforts from the 2001 Plan will be used to the extent feasible in this Update, no other mode has been affected as greatly as air transportation in this short three-year timeframe. The September 11, 2001 terrorist attacks and the prolonged economic slowdown have resulted in the loss of one major carrier (TWA) and the bankruptcy of two other carriers (United and US Airways). Today, although low cost airlines are leading a general trend toward lower airfares, demand is still languishing. Air cargo is also experiencing a dampening of demand.

Recognizing timing and resource limitations as well as the thoroughness of the 2001 plan, the update is streamlined in nature and will only consider the State's six commercial service airports and 14 regional airports. Vertical infrastructure, or heliports, have not been identified for the purpose of this report.

The tasks completed for this update included an inventory of facilities, aviation industry review, review and update of previous system plan forecasts, and development plans for each of the 20 airports included in this study.

Inventory of Facilities

Visits were made to each airport, where possible, to familiarize the team with existing and proposed future facilities and to explain the update process to local airport staff. Where in-person visits were not possible, phone interviews were conducted.

Aviation Industry Review

In this aviation industry review, significant national, regional, and local aviation-related events occurring since the completion of the previous plan were covered. These events included:

- September 11, 2001 Terrorist Attacks
- Recent Economic Downturn
- Continued Rapid Growth of Low-Cost Carriers
- New and Changing Airline Alliances and Codeshare Agreements
- Continued Growth of Regional Jets and Decline of Passenger Turboprops
- Increasing Popularity of Fractional Ownership
- Cargo Trends
- Teleconferencing and Videoconferencing
- New Technologies

- Security Initiatives
- Airline Labor Issues and Bankruptcies
- Airline Service Strategies

Review of Previous System Plan Forecasts

The aviation forecasts performed for the Tennessee Aviation System Plan were done in 2000, prior to the events of September 11, 2001. Immediately after these events, aviation activity throughout the nation declined dramatically, and the airports in Tennessee were no exception. It was determined after a thorough review of the previous system plan forecasts that all segments of aviation, including passenger, cargo, and general aviation traffic, have been affected. Thus, all forecasts performed prior to the events of September 11, 2001 need to be reviewed.

UPDATE AIRPORT SYSTEM FORECASTS

Forecast Assumptions and Appropriate Forecast Approaches

The updated airport system forecasts for the six commercial and 14 regional airports in Tennessee were prepared to include based aircraft, passenger enplanements, cargo tonnage, and aircraft operations for 2010, 2015, and 2030. Each forecast was developed independently using the most appropriate methodology.

Forecast Based Aircraft

Based general aviation aircraft were categorized into the following categories: single engine piston, multi engine piston, turboprop, turbojet, and helicopter. In 2003, there were no other types of general aviation aircraft based at the 20 airports included in this study. It is assumed that the 20 airports will continue to just have single engine piston, multi engine piston, turboprop, turbojet, and helicopter based aircraft for the duration of the forecast period.

The forecast for based aircraft is illustrated in **Figure ES-1**. As shown, jet aircraft are expected to grow at a rate higher than other types of aircraft.

Forecast Passenger Enplanements

The forecast for passenger enplanements at the six commercial airports used two primary sources in its development. The FAA Terminal Area Forecast (TAF), February 2004 Edition, was used to generate the average annual growth rates from 2004 through 2015. The growth rates from 2015 through 2030 were projected using the trends from the earlier periods. The second source of data that was used was the number of annual scheduled seat departures each airport had in the Official Airline Guide schedule. Trends in historical ratios of annual enplanements to annual scheduled seat departures from 1999 through 2003 were used to develop the ratio for annual enplanements to annual scheduled seat departures for 2004. The results of the passenger enplanement forecasts are shown in **Figures ES-2** and **ES-3**.

Figure ES-1
Forecast Based Aircraft

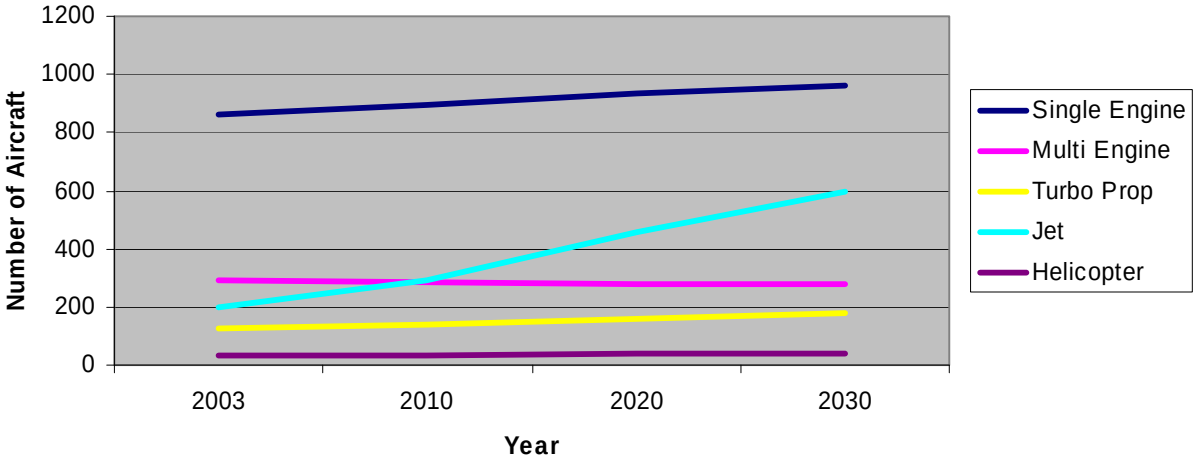


Figure ES-2
Enplanements for Memphis and Nashville

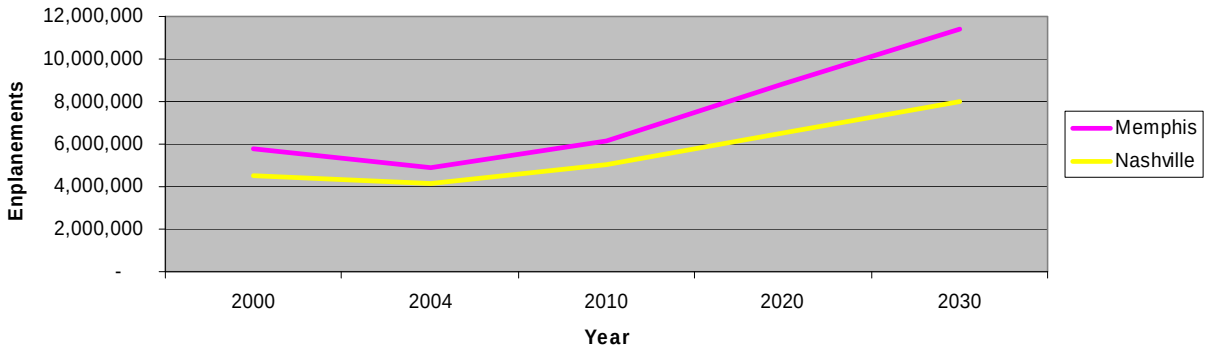
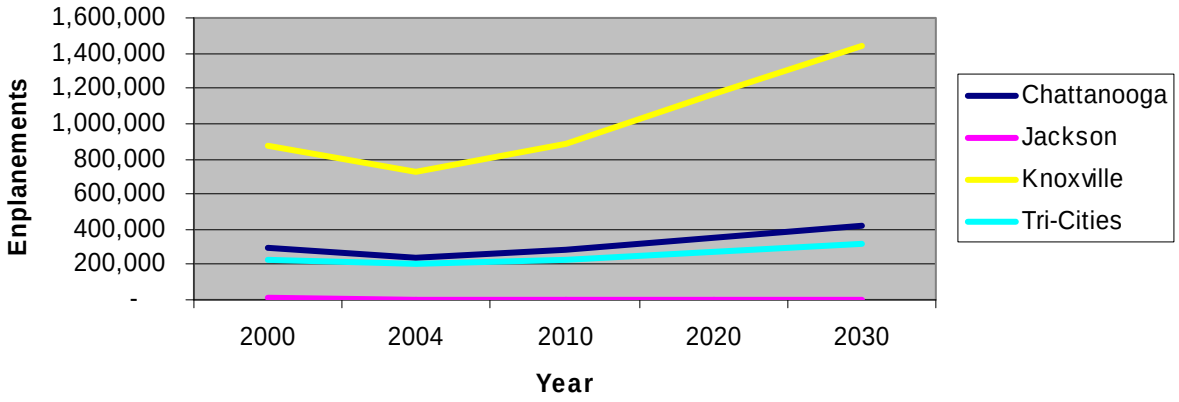


Figure ES-3
Enplanements for Chattanooga, Jackson, Knoxville, and Tri-Cities



Forecast Cargo Tonnage

Cargo tonnage forecasts for each of the 20 airports were developed using the national rates of growth for various categories of cargo traffic. As Memphis is a major cargo hub for the whole nation, with the bulk of its cargo volume deriving from all-cargo volumes generated by FedEx on both domestic and international flights, its cargo traffic is forecast to grow at the national rate forecast for total all-cargo traffic by the FAA in its *Aerospace Forecast FY 2004-2015* and *Long-Range Forecast FY 2015, 2020, 2025, and 2030*. Using these growth rates, it is forecast that cargo tonnage in Memphis will average 5.1 percent annual growth from 2003 through 2010, 4.7 percent annual growth from 2010 through 2015, and 4.4 percent annual growth from 2015 through 2030. In 2030, Memphis is forecast to enplane and deplane a total of 25 billion pounds of cargo. Historic and forecast cargo for Memphis is shown in **Figure ES-4**.

The other markets are projected to grow at the average annual rate corresponding to the overall national domestic cargo growth rate for both passenger and all-cargo carriers as forecast by the FAA. This growth rate is 3.6 percent annually from 2003 to 2010, 3.3 percent from 2010 to 2015, and 3.1 percent for 2015 to 2030. Historic and forecast cargo for Knoxville and Nashville is shown in **Figure ES-5**. Historic and forecast cargo for Chattanooga, Tri-Cities, and Jackson is shown in **Figure ES-6**.

Figure ES-4
Historic and Forecast Cargo for Memphis

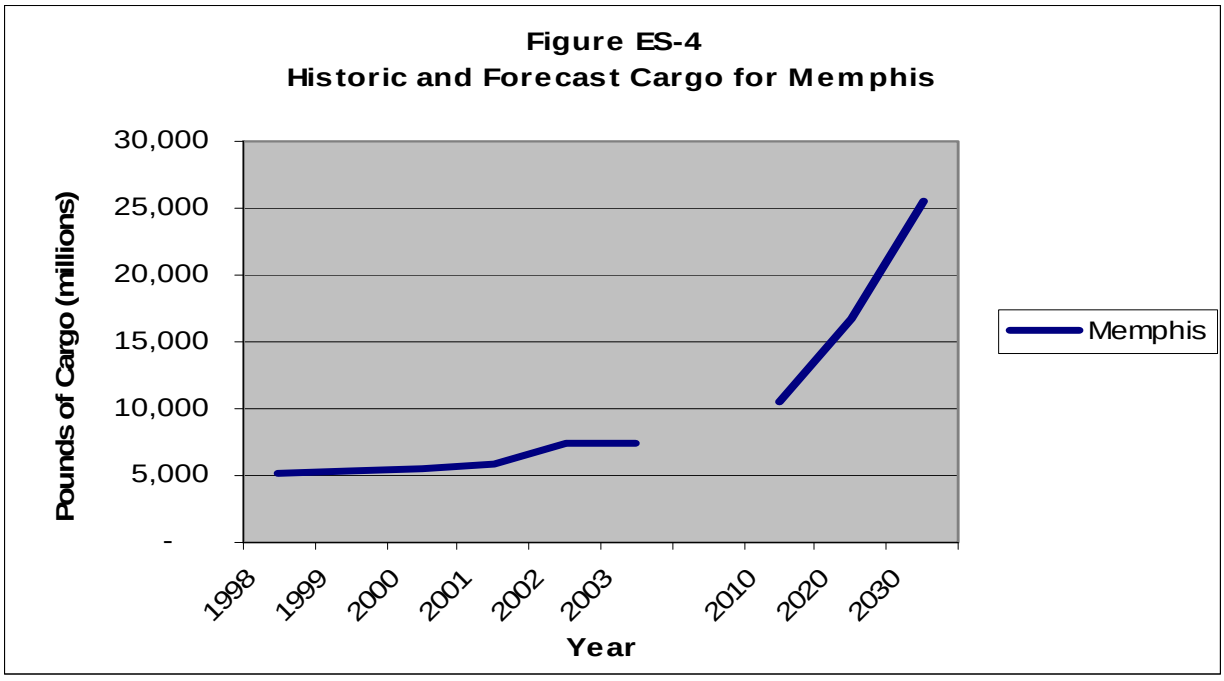


Figure ES-5
Historic and Forecast
Cargo for Knoxville and Nashville

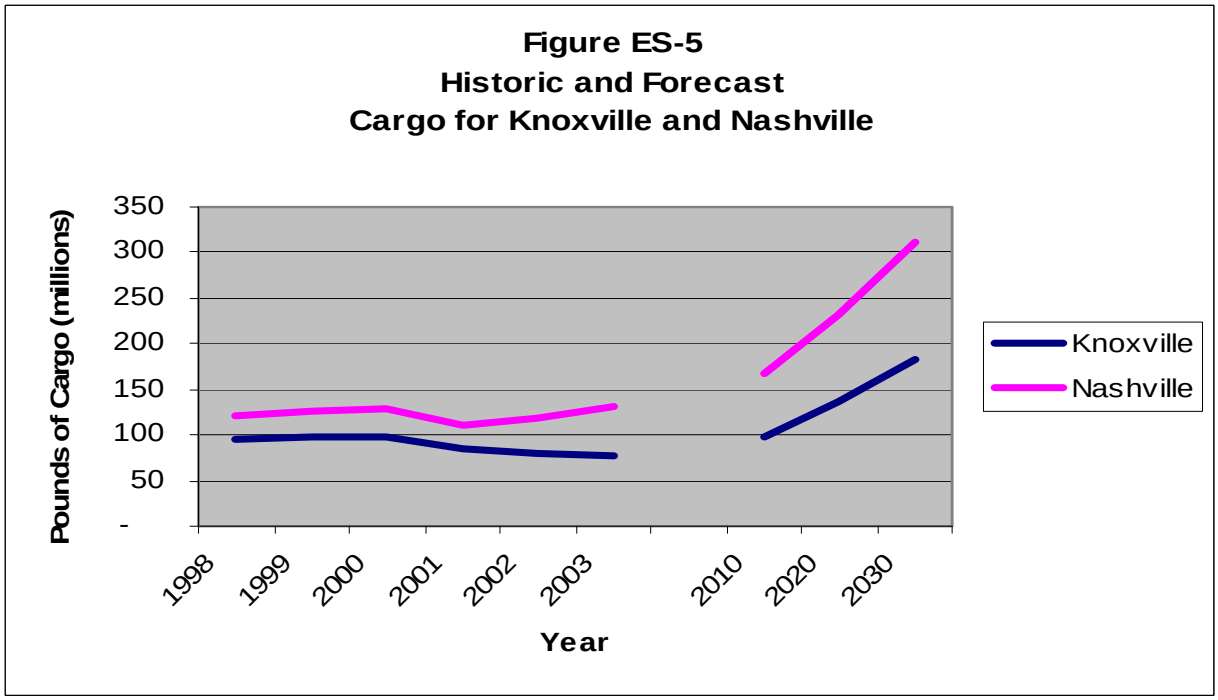
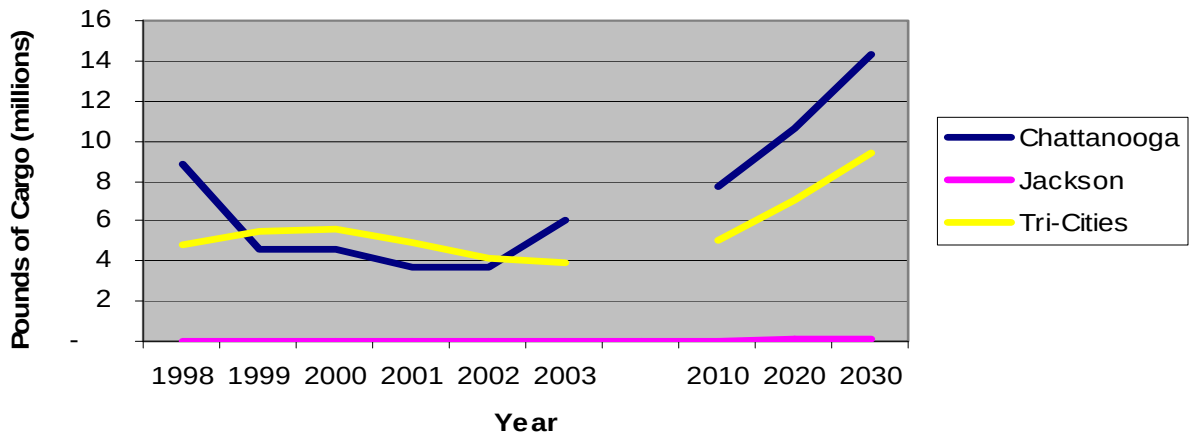


Figure ES-6
Historic and Forecast Cargo for
Chattanooga, Tri-Cities and Jackson



Forecast Aircraft Operations

Table ES-1 provides the historic operations for 2003, and forecasted operations for 2003, 2010, 2015, and 2030. These forecasts summarize the forecasts for general aviation, commercial service, and air taxi operations. Military operations, which are held constant with 2003 levels, similar to the FAA forecasts, are also included in the total operations data. The total number of aircraft operations among all 20 airports is forecast to grow from 1.4 million in 2003 to 1.6 million in 2010, 1.75 million in 2015, and 2.2 million in 2030.

Overall Aviation System Plan Assessment

The State has a well-balanced aviation system comprising six commercial airports (to accommodate passenger and cargo airline activity), 14 regional airports (designed to meet the needs of higher performance general aviation aircraft—typically jets), community business airports (designed to meet the business aviation needs of communities), and community service airports (designed to meet the general aviation needs of communities). Although detailed facility requirements were not developed for the update, the data gathered for this study suggests the State Aviation System will be able to meet future aviation demand (i.e., passenger enplanements, cargo, and aircraft operations) provided the existing infrastructure is preserved and maintained and the development projects identified by airport sponsors (described in Chapter 6) are implemented in a timely fashion.

Table ES-1. Annual Aircraft Operations 2003-2030*

Region/Airport	2003 Total	2010 Total	2015 Total	2030 Total
East Tennessee				
Knoxville	139,640	152,496	163,637	192,497
Chattanooga	97,549	108,109	117,901	142,537
Tri-Cities	90,323	98,641	106,014	124,281
Campbell County	3,110	3,233	3,321	3,483
Greeneville-GC	13,600	14,060	14,364	15,004
Gatlinburg-PF	45,060	47,535	49,563	54,005
Moore-Murrell	44,575	45,804	46,644	48,353
Subtotal	433,857	469,877	501,444	580,160
Middle Tennessee				
Nashville	228,977	266,446	294,773	378,364
Outlaw Field	25,735	26,291	26,656	27,464
John Tune	66,000	69,293	71,697	77,463
Smyrna	78,440	83,197	87,417	97,608
Sumner County	22,000	22,791	23,376	24,589
Upper Cumberland	22,586	23,418	24,003	25,175
Bomar Field	28,476	29,494	30,217	31,578
Subtotal	472,214	520,930	558,139	662,241
			-	
West Tennessee			-	
Memphis	402,362	504,251	592,664	859,466
Jackson	27,381	29,083	30,606	34,257
Carroll County	12,600	13,097	13,453	14,110
Dyersburg	18,848	19,529	20,013	20,981
Millington	20,796	21,285	21,623	22,357
Robert Sibley	11,340	11,761	12,060	12,714
Subtotal	493,327	599,006	690,418	963,884
Tennessee Commercial and Regional Airports Total	1,399,398	1,589,814	1,750,000	2,206,285

Sources: Airport Records; airnav.com; FAA Aerospace Forecasts FY 2004-2015; FAA Long-Range Aerospace Forecasts 2015, 2020, 2025, and 2030; FAA TAF (February 2004 Edition); FAA ATADS; and HNTB Analysis

*Operations are defined as a takeoff or a landing; one takeoff and one landing are two operations.

Chapter 1

Overview and Purpose of Update

The Tennessee Department of Transportation desires to incorporate the existing Tennessee Airport System Plan into its Long Range Transportation Plan. HNTB Corporation completed a thorough Tennessee Airport System Plan in 2001. Although the Airport System Plan is only three years old, significant changes in the nature of the aviation industry and a desire for a longer-range planning horizon indicated that the System Plan should be updated at this time.

Considerable effort was expended in the 2001 Plan. Goals and objectives were developed and approved. All 83 system airports were grouped into three classifications: Commercial Service (six airports), Regional (14 airports), and Community (63 airports). In addition, the relationship between airports and economic development was established. Next, activity forecasts were prepared for each airport and general facility needs were identified. The priority ranking system used to determine funding priorities was also revised and updated. Environmental factors were considered. Finally, a set of projects (including their cost and timing) was prepared as input to the Aeronautics Commission CIP.

Although the efforts from the 2001 Plan will be used to the extent feasible in this Update, no other mode has been affected as greatly as air transportation in this short three-year timeframe. The September 11, 2001 terrorist attacks and the prolonged economic slowdown have resulted in the loss of one major carrier (TWA) and the bankruptcy of two other carriers (United and US Airways). Today, although low cost airlines are leading a general trend toward lower airfares, demand is still languishing. Air cargo is also experiencing a dampening of demand.

Recognizing timing and resource limitations as well as the thoroughness of the 2001 plan, the update is streamlined in nature and will only consider the State's six commercial service airports and 14 regional airports. Vertical infrastructure, or heliports, have not been identified for the purpose of this report.

The tasks completed for this update include an inventory of facilities, aviation industry review, review and update of previous system plan forecasts, and development plans for each of the 20 airports included in this study.

Chapter 2
INVENTORY

Visits were made to each airport, where possible, to familiarize the team with existing and proposed future facilities and to explain the update process to local airport staff. Where in-person visits were not possible, phone interviews were conducted. Where available, the following information was collected for each airport:

- Latest available airport master plans
- Airport Layout Plans (ALP)
- Department of Aeronautics CIP
- Airport 5010 database
- FAA National Aerospace Forecasts
- FAA Long Range Forecasts of Aviation Activity
- FAA Terminal Area Forecasts
- Socioeconomic projections
- Recent historic activity statistics

Tennessee has six commercial service and 14 regional airports, as shown in **Figure 2-1**. **Tables 2-1** through **2-3** show the airports by region, airport role, and also show the date of the Airport Layout Plan (ALP) that was used for the update.

Table 2-1 East Tennessee Airports

Airport Name	Identifier	Airport Role*	Date of Most Recent ALP
Lovell Field	CHA	Air Carrier	2004
McGhee Tyson	TYS	Air Carrier	1995
Tri Cities	TRI	Air Carrier	2001
Campbell County	JAU	Regional	2001
Gatlinburg-Pigeon Forge	GKT	Regional	1995
Greeneville-Greene County	GCY	Regional	2004
Moore-Murrell	MOR	Regional	2001

Source: HNTB Analysis

* Per Tennessee Airport System Plan

Table 2-2 Middle Tennessee Airports

Airport Name	Identifier	Airport Role*	Date of Most Recent ALP
Nashville	BNA	Air Carrier	2004
Bomar Field	SYI	Regional	2003
John C. Tune	JWN	Regional	2004**
Outlaw Field	CKV	Regional	1996**
Smyrna	MQY	Regional	2001
Sumner County Regional	M33	Regional	2004**
Upper Cumberland Regional	SRB	Regional	1996**

Source: HNTB Analysis

* Per Tennessee Airport System Plan

** Airport Layout Plan Update in Progress

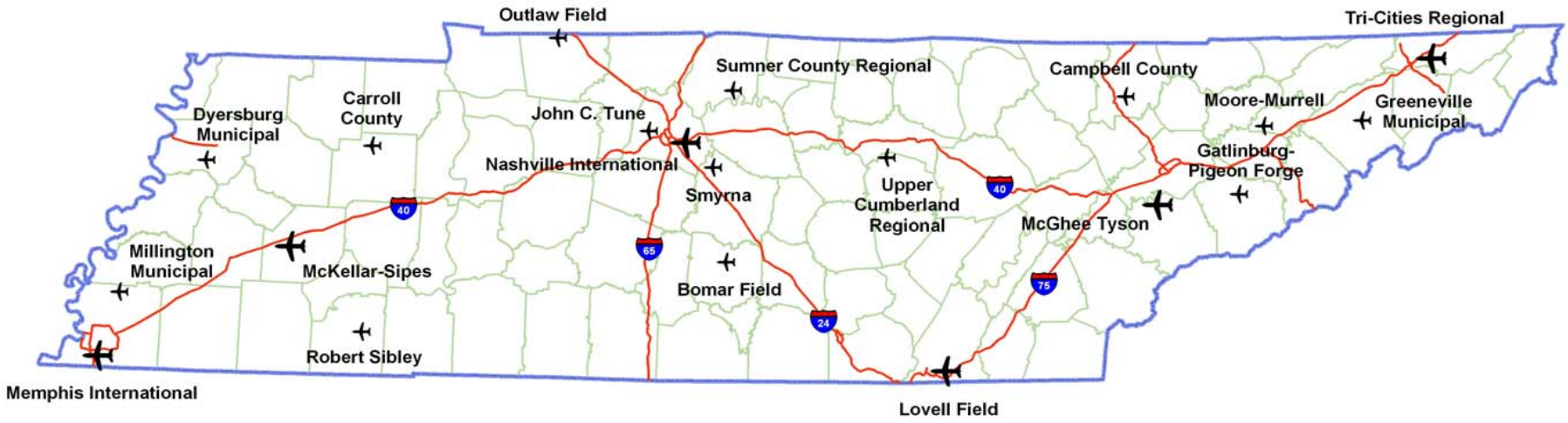
Table 2-3 West Tennessee Airports

Airport Name	Identifier	Airport Role*	Date of Most Recent ALP
McKellar-Sipes	MKL	Air Carrier	1998**
Memphis	MEM	Air Carrier	2004
Carroll County	HZD	Regional	1996
Dyersburg	DYR	Regional	2002
Millington	NQA	Regional	2001
Robert Sibley	SZY	Regional	1996

Source: HNTB Analysis

* Per Tennessee Airport System Plan

** Airport Layout Plan Update in Progress



Commercial Service Airports

Regional Airports

Source: HNTB analysis

Figure 2-1

Chapter 3

Aviation Industry Review

In this aviation industry review, significant national, regional, and local aviation-related events occurring since the completion of the previous plan will be covered. The impact of these events on air passenger and cargo traffic will be assessed.

U.S. passenger and cargo airlines suffered a major blow due to the events and aftereffects of September 11, 2001. Traffic and revenues dropped by a larger margin than in any other previous downturn. However, it should also be noted, that the airline industry was already feeling the impacts of the economic recession and reduction in business travel prior to September 11. Tennessee, having not experienced the terrorist acts directly, did not suffer as much from September 11 as New York City and other places where the terrorism did occur. It did, though, share in the overall decline of the industry. **Table 3-1** provides highlights of national trends in scheduled passenger and cargo air service from 1998 to 2003. **Figure 3-1** shows the annual enplanement trend by U.S. carriers.

As the table indicates, there were 666 million enplanements by U.S. carriers in 2000. Of this total, 593 million enplanements were on larger carriers that are members of the Air Transport Association of America, while 73 million enplanements were on other smaller regional carriers. In 2001, total enplanements in the U.S. dropped to 622 million, and in 2002, there was a further drop to 612 million enplanements. It is estimated that there were roughly a similar number of enplanements in 2003.

Cargo traffic on U.S. carriers has not experienced the major declines that passenger traffic has. In 2000, there were 23.9 billion combined freight and mail ton miles of cargo carried by U.S. carriers. In 2001, this cargo traffic dropped down to 22 billion ton miles, but by 2002, there were 24.5 billion ton miles of air cargo carried by U.S. carriers.

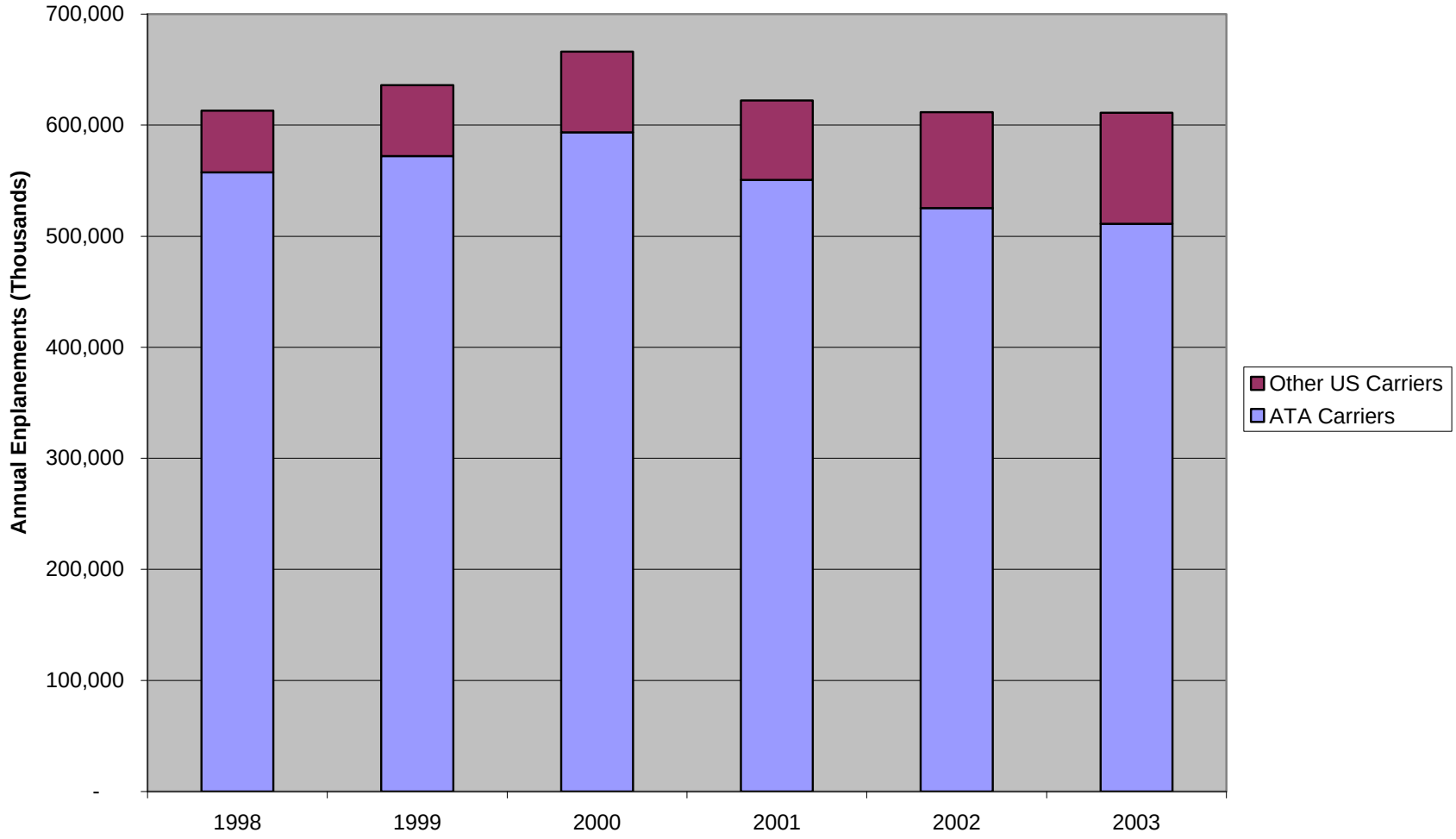
Table 3-1 National Trends in Scheduled Passenger and Cargo Air Service 1998-2003

	1998	1999	2000	2001	2002	2003	Avg Annual Percent Change 1998-2002	Avg Annual Percent Change 1998-2003
Enplanements (000)								
Air Transport Ass'n (ATA) Carriers	557,511	572,099	593,418	550,743	525,316	511,194	-1.5%	-1.7%
Other US Carriers (a)	55,374	63,860	72,732	71,386	86,341	100,000	11.7%	12.5%
Combined ATA & Other US Carriers	612,885	635,959	666,150	622,129	611,657	611,194	-0.1%	-0.1%
Revenue Passenger Miles (millions)								
Air Transport Ass'n (ATA) Carriers	595,899	622,292	657,686	616,560	600,958	595,050	0.2%	0.0%
Other US Carriers (a)	22,188	29,755	35,071	35,140	38,629	41,000	14.9%	13.1%
Combined ATA & Other US Carriers	618,087	652,047	692,757	651,700	639,587	636,050	0.9%	0.6%
Freight & Mail Ton Miles (millions) (including cargo carriers)								
Combined ATA & Other US Carriers	20,496	21,613	23,888	22,004	24,509	-	4.6%	
Aircraft Departures (000) (including cargo carriers)								
Air Transport Ass'n (ATA) Carriers	5,981	6,110	6,265	6,029	5,532	5,175	-1.9%	-2.9%
Other US Carriers (a)	2,311	2,517	2,770	2,759	3,497	4,100	10.9%	12.1%
Combined ATA & Other US Carriers	8,292	8,627	9,035	8,788	9,029	9,275	2.2%	2.3%
Real Passenger Yield (cents/mile) in 2002 cents								
Combined ATA & Other US Carriers	14.47	13.97	14.14	12.62	11.46	-	-5.7%	
Annual Revenue (including cargo carriers) ($M)								
Combined ATA & Other US Carriers	113,810	119,455	130,839	115,527	106,881	-	-1.6%	
Annual Operating Profit/Loss (including cargo carriers) ($M)								
Combined ATA & Other US Carriers	9,328	8,403	6,999	(10,326)	(8,569)	-	NA	
Annual Net Profit/Loss (including cargo carriers) ($M)								
Combined ATA & Other US Carriers	4,903	5,360	2,486	(8,275)	(11,295)	-	NA	

(a) Other Carriers enplanements for 2003 estimated

Sources: Air Transport Association website; and HNTB Analysis

Figure 3-1
Annual Enplanements by U.S. Carriers 1998-2003



The U.S. airline industry had annual operating and net profits of $7.0 billion and $2.5 billion in 2000. In 2001, these numbers plunged dramatically down to operating and net losses of $(10.3) billion and $(8.3) billion, and in 2002, the financial results were fairly similar, $(8.6) billion in operating losses and $(11.3) billion in net losses. The projected net loss for 2003 is about $(5) billion), an improvement of $6.3 billion over 2002, but still a major deficit.

These financial results include the impacts of the September 11, 2001 terrorist attacks and the corresponding increase in security costs and passenger inconvenience associated with increased security procedures, as well as the decrease in consumer confidence and satisfaction resulting from these measures. The recent economic downturn, as well as the continued rapid growth of low-cost carriers and their impact on airlines that began operating prior to airline deregulation and thus have higher operating costs, have all been contributing factors toward declining passenger revenues.

An additional factor is the increased popularity of fractional ownership[1] among the least price sensitive travelers, which has also contributed toward the declining revenues earned recently by the passenger airlines.

3.1 September 11, 2001 Terrorist Attacks

The terrorist attacks that occurred on September 11, 2001 created major havoc on the airline industry worldwide, and U.S. airlines were especially hard hit. The immediate grounding of the U.S. fleets and the slow return to a schedule that was relatively smaller than the one immediately preceding the attacks led to a dramatic decline in both passenger and cargo traffic. All U.S. carriers received financial assistance from the federal government to partially offset some of the major losses that stemmed from the terrorist attacks. First, $5 billion in grants to airlines was delivered to offset the short-term impacts of September 11. Next, the Air Transportation Stabilization Board (ATSB) was established to make available $10 billion in loan guarantees to help with the longer-term impact of these attacks.

The $5 billion in grants was divided into two segments: $4.5 billion for passenger carriers and $0.5 billion for cargo carriers. As each airline's share of the grant was based on its August 2001 share of the passenger or cargo market, the largest carriers received the bulk of the funds. These grants have been paid to all the eligible airlines, and the airlines' financial reports have incorporated the proceeds from these grants.

The $10 billion in loan guarantees had stringent terms for application and repayment, and most airlines did not accept this offer from the government. Sixteen airlines submitted applications for a loan guarantee to the government. America West, US Airways, and ATA did receive loan guarantees totaling $380 million, $900 million, and $148 million respectively. The $10 billion in loan guarantees that the government initially made available actually only totaled about $1.4 billion after all applications were submitted and approved.

The government grants and loan guarantees to the airlines were directly related to the September 11, 2001 terrorist attacks. These attacks impacted airlines' traffic and financial performances, but these results were also exacerbated by the recent economic downturn.

[1] Where more than one person or company shares the use and cost of owning an aircraft.

3.2 Recent Economic Downturn

According to the National Bureau of Economic Research, the U.S. economy entered a recession in March 2001. The economy declined for three consecutive quarters starting with the first quarter of 2001, which also happened to be the first quarter when aviation demand began to decline. The U.S. economy grew by 2.0 percent in the fourth quarter of 2001 and for the year, the U.S. Gross Domestic Product (GDP) grew by a modest 0.5 percent. In 2002, the U.S. economy then grew 4.7 percent in the first quarter, 1.9 percent in the second quarter, 3.4 percent in the third quarter, and 1.3 percent in the fourth quarter. The overall annual growth for 2002 was 2.2 percent, and in 2003, the U.S. economy grew 3.1 percent.

While the economy has been growing since the fourth quarter of 2001, it has not been accompanied by any similar growth in employment. National employment has gone from an average of 131.9 million jobs in 2001 to 130.4 million in 2002 and then to an estimated 130.1 million jobs in 2003. This jobless recovery has had a negative impact on air travel, both business and leisure.

While the decline in aviation activity in 2001 paralleled the economic recession of the first three quarters of this year, the continued decline of aviation activity from the fourth quarter of 2001 through 2002 and into 2003 cannot be solely attributed towards the economic conditions in the nation or the world. The decline in passenger enplanements in 2002 and 2003 over the peak year of 2000 stems primarily from impacts other than the national GDP performance, including the decline in numbers of people employed in the nation, the impact of the terrorist attacks in September 2001 and the increasing concerns for safety and the frustration with the inconvenience of new security procedures that air travelers have dealt with since then. Furthermore, with 2002 and 2003 airfares being very affordable relative to the levels of 2000, the recent decline in air travel was not due to higher airfare levels.

3.3 Continued Rapid Growth of Low-Cost Carriers

The low-cost carriers have grown at a faster rate than the legacy[2] carriers, as the lower fares that they offer attract many price sensitive travelers. In nearly all cases, the low-cost carriers fly solely in domestic markets. In 2000, there were a total of 432 million domestic Origin & Destination (O&D) passengers, of which 84 million, or 19.4 percent, flew on low-cost carriers. In the 12 months ending September 2003, there were a total of 395 million domestic O&D passengers, of which 97 million, or 24.5 percent, flew on low-cost carriers.

Included in the low-cost carrier category are airlines such as Southwest, AirTran, JetBlue, Frontier, ATA, and Spirit. While many of these low-cost carriers are profitable and growing, it must be noted that there are more failures than successes in this competitive segment of the market. Among the low-cost carriers that have disappeared are Vanguard, National, Western Pacific, Kiwi, Carnival, Tower, and Reno (acquired by American). Overall, though, the low-cost carriers have increased their share of domestic U.S. traffic, and if they had not existed, passenger volumes would not be as high as they are.

[2] Those airlines operating prior to airline deregulation.

The growth in passenger traffic that low-cost carriers have themselves flown is only one portion of the total traffic that the low-cost carriers have generated. With their low fares driving down the airfares that the legacy carriers need to offer in order to maintain passenger traffic on their airlines, much of the traffic on legacy airlines is also attributable to low-cost carriers.

3.4 New and Changing Airline Alliances and Codeshare Agreements

Airline alliances and codeshare agreements have led to greater passenger traffic volumes than if these arrangements were not in place. Alliances among major U.S. carriers and regional U.S. airlines and even Amtrak, as well as global alliances among major U.S. carriers and various foreign airlines have provided air travelers and airlines with a variety of benefits. Air travelers benefit from greater network access, seamless travel, transferable priority status for frequent travelers, increased lounge access, lower fares, and enhanced frequent-flier program benefits. Airlines benefit from market access to markets which might not otherwise be accessible, cost reductions due to economies of scale, coordinated schedules and prices, and competitive advantages over other carriers which do not offer similar products.

If these alliances were not in place, there would be far less competition in the overall air travel marketplace. As the market becomes more and more competitive, greater numbers of alliances and codeshare agreements have been created. These in turn make the market even more competitive, especially when governments have been willing to intervene in specific cases where consolidated market presences would reduce competition on individual routes. The growing numbers of alliances and codeshare agreements have led to higher traffic levels than would have otherwise existed if they had not been in place.

Tennessee is impacted primarily by the Northwest/KLM alliance and its presence in Memphis. Recent applications by KLM and Air France to merge have been approved by both the European Commission and the U.S. Department of Justice. If the deal is approved by the companies' shareholders, then the Northwest/Continental/Delta alliance will be enhanced with the KLM/Air France merger, since KLM and Northwest are already allies, and Delta and Air France are the two largest members of the Sky Team alliance. This new Sky Team alliance might have an impact on the Memphis hub, as the KLM Amsterdam flight might be supplemented or replaced with an Air France or Northwest flight to Paris.

3.5 Continued Growth of Regional Jets and Decline of Passenger Turboprops

In 1991, there were about 2,000 turboprop aircraft and 20 regional jets in the fleets of U.S. regional airlines. Additional limited numbers of smaller jets, such as the Fokker F-28, were also in the fleets of mainline U.S. carriers, such as US Airways. By 1997, there were 1,941 turboprops and 132 regional jets in the fleets of U.S. regional airlines, and by 2002, there were an estimated 1,489 turboprops and 1,032 regional jets in the U.S. fleets. Most of the decline in the turboprop fleet occurred in the smaller sized aircraft. In 1997, there were 484 turboprops with between 10 and 19 seats and 321 turboprops with between 20 to 30 seats. By 2002, there were only 244 turboprops with between 10 and 19 seats and 223 turboprops with between 20 and 30 seats.

Regional jets have been used by the airlines for a variety of reasons, including replacing turboprop equipment on some flights, but also replacing mainline jets on other flights, as well as adding new nonstop service on routes which were too thin for mainline service, but too long in range for turboprops. The continued growth of regional jets and the decline of turboprops in passenger service have both led to improved passenger traffic levels in certain markets and lower passenger volumes in other markets.

In smaller markets such as Jackson, the decline of turboprop fleets of U.S. commuter carriers has led to a decline in scheduled passenger air service. The increased safety requirements which were imposed on the small turboprop aircraft in the 1990s have made them more costly, and therefore, less competitive to operate. In larger markets, the introduction of regional jets into the market has led to greater frequencies of service in many instances, and in some cases, an increase in overall capacity measured in terms of seat departures has also occurred.

Atlanta is one example of a large market that has grown in the past few years. In 2000, there were 44.7 million scheduled seat departures by Delta and Delta Connection, of which 4.1 million scheduled seat departures were with Delta Connection. In 2004, the preliminary schedule for Atlanta has 45 million scheduled seat departures by Delta and Delta Connection, of which 6.8 million scheduled seat departures were with Delta Connection. In addition to this growth by Delta, AirTran has also increased its Atlanta hub service dramatically. While there has been growth in Atlanta overall from 2000 to 2004, none of the six commercial airports in Tennessee have grown in terms of scheduled seat departures during this period.

3.6 Increasing Popularity of Fractional Ownership

Fractional ownership of aircraft, where more than one person or company shares in the use and cost of owning an aircraft, is rapidly increasing in popularity. In 1986, there were three owners of fractionally held aircraft. By the end of 2002, there were 5,827 shares of fractional ownership in aircraft held by companies and individuals. The number of planes in fractional ownership has grown as the numbers of shares have grown, and in 2002, there were 776 fractionally owned airplanes in the US.

These fractionally owned aircraft have helped business aviation increase its overall share of the air travel market in the U.S. in recent years. In 2002, there were 9,200 business jets and 6,369 turboprops operated by business aviation. Of this total of 15,569 turbine business aircraft in the U.S. in 2002, 349 airplanes were based in Tennessee. Just three years earlier, there had been 13,148 planes in the national fleet. Tennessee's fleet had only grown by seven aircraft, as it had 342 planes in 1999. These national and statewide figures include fractionally owned aircraft but with only 776 fractionally owned aircraft in the nation, only a small percentage of both the national and state fleet is fractionally owned. Georgia, in contrast to the low growth in Tennessee, experienced a dramatic increase in its business aviation turbine fleet from 368 aircraft in 1999 to 467 planes in 2002.

3.7 Cargo Trends

The increasing utilization of trucks to ship less time sensitive air cargo shipments has come partially as a result of the more attractively priced time-deferred services being offered by air

express companies. Time-deferred services are less expensive than time-sensitive services, and these new services appeal to shippers who need to cut shipping costs but who still need to ensure that their shipment reaches its destination within a certain time span. More than 500 city pairs in the U.S. and Canada are served by trucks to ship air cargo. Trucking operations of integrators are now deregulated, and trucks are now frequently used in markets less than 400 miles from air cargo hubs such as Memphis. In 2001, truck freight in the U.S. and Canada grew 4.5 percent, while airfreight decreased 9.2 percent.

3.8 Teleconferencing and Videoconferencing

Teleconferencing and videoconferencing have expanded rapidly and become more widely accepted, so these techniques of accomplishing business meetings have made some inroads on the total demand for business travel. Time spent away from the office going to and from business meetings can be significantly less productive than time spent at the office. With greater productivity and lower total costs as the two most significant benefits to teleconferencing and videoconferencing, business travel has been negatively impacted throughout the nation. Costs for both teleconferencing and videoconferencing continue to decline as new technology is implemented, so these substitutes for traditional in-person meetings will continue to impact business travel.

3.9 New Technologies

New technologies in aviation also have impacted air traffic recently. With online internet bookings being far less expensive in distribution costs than those generated at traditional travel agencies and even airline reservations offices, airlines have focused on this new technology in an effort to drive down distribution costs. Similarly, new self-service check-in kiosks that can issue boarding passes without any customer service agents have helped airlines reduce costs in providing necessary services for its consumers. Electronic ticketing has also become very prevalent in the industry in just the past few years. The savings attributable to the lower distribution and passenger handling costs associated with each of these new technologies have been passed along to the consumer in terms of lower airfares.

3.10 Security Initiatives

New security initiatives have increased the processing times for check-in and security clearance and made air travel less convenient. According to the Air Transport Association of America, the airline industry spends about $3 billion a year on security, including fees paid to the Transportation Security Administration. These financial costs and the effects of the hassle factor raise the cost of air travel and in doing so, reduce demand for scheduled passenger air travel.

Especially in short haul markets, the increased security measures at airports are making alternative forms of transport, including both rail and road, more competitive in terms of both time and convenience. As much of this shorter haul traffic tends to be higher airfare business travel, airlines are suffering from the diversion of this traffic to other modes of transportation. Airport investment priorities have also been altered, and security initiatives now have a higher priority than they formerly did.

3.11 Airline Labor Issues and Bankruptcies

Airline labor issues have impacted air traffic as well. With legacy carriers[3] having to compete more frequently with low-cost carriers in greater numbers of markets as these newer airlines expand their networks, labor costs have been pressured downward. Salaries and wages have declined and productivity has increased at the legacy carriers. While these developments have had a negative impact on the workers at the legacy carriers, they have helped consumers as the labor cost savings have been passed along to them in the form of lower airfares. Airline bankruptcies and the potential threat of bankruptcies have played an important role in the renegotiation of labor contracts with airline employees. Midway, National, Sun Country, United, US Airways, and Vanguard have filed for Chapter 11 or Chapter 7 bankruptcy.

3.12 Airline Service Strategies

Recent shifts in airline service strategies have also played a role in both passenger and cargo traffic. As previously mentioned, road feeder trucks have increased their share of the overall air cargo traffic base. Passenger carriers have also made changes in service strategies, including the development of new hubs or major increases in operations at some airports offset by the reduction of service at other airports. Among the various service strategies that legacy passenger carriers have used in order to maintain market share from the low cost carriers are the operation of lower cost units within the corporate entity. US Airways had its MetroJet operation, United had its United Shuttle service, and Delta had its Delta Express operation. These three units are no longer in operation, but both Delta and United have restarted low cost units, Delta with Song and United with Ted. These two new units have not been in business long enough to determine whether or not they will be successful in the long term.

In looking at air service strategies on an individual airport basis, JetBlue built up its largest hub at New York-Kennedy when it saw the opportunity of using this underutilized airport located in the largest metropolitan area in the nation. Similarly, JetBlue led the increase in Long Beach service to the point where all the available commercial service slots at this airport are now utilized (25 regional carrier slots remain). American pulled down its St. Louis hub when overall traffic in the nation's midsection declined and American could serve the lower traffic volumes via its other hubs at Chicago-O'Hare and Dallas/Ft. Worth. Just recently, in January 2004, Northwest reduced the overall number of seats available at its Memphis hub in response to the declining traffic base using this hub as well. US Airways has downsized its Pittsburgh hub and Delta has reduced its Salt Lake City hub as well.

[3] Those airlines operating prior to airline deregulation.

Chapter 4

Review of Previous System Plan Forecasts

The aviation forecasts performed for the Tennessee Aviation System Plan were done in 2000, prior to the events of September 11, 2001. Immediately after these events, aviation activity throughout the nation declined dramatically, and the airports in Tennessee were no exception. Subsequent slow economic growth compounded by the impact of new security measures and consumer concerns about flying have continued to affect levels of aviation activity. All segments of aviation, including passenger, cargo, and general aviation traffic, have been affected, and all forecasts performed prior to the events of September 11, 2001 need to be reviewed. The forecasts performed for the Tennessee Aviation System Plan also need this review.

In a comparison of two enplanement forecasts for the six commercial airports in Tennessee in 2010, the forecast included in the Tennessee Aviation System Plan and the forecast provided by the March 2003 edition of the FAA's Terminal Area Forecast (TAF), there are major differences. As **Table 4-1** shows, there are percentage differences in the two 2010 enplanement forecasts ranging from just 5.0 percent in Tri-Cities to 57.2 percent in Jackson. The two largest airports, Nashville and Memphis, had differences of 15.1 percent and 8.2 percent between the two 2010 forecasts.

In comparing these two forecasts regarding total aircraft operations in 2010 for the six commercial and 14 regional airports, the percentage differences between the Tennessee Aviation System Plan and the TAF are also noteworthy. Among the commercial airports, the percentage differences range from 9.2 percent for Tri-Cities to 32.9 percent for Chattanooga. Among the regional airports, the percentage differences range from a minor 2.5 percent difference for Millington to a major 84.2 percent difference for Bomar Field-Shelbyville. Overall, the Tennessee Aviation System Plan forecasts 600,191 operations for the 14 regional airports in 2010, while the TAF forecasts 464,870 operations for these same airports. There is a 22.5 percent difference in these forecasts.

Regarding the large differences in operations forecasts for Lovell Field, Greeneville-Greene County, and Carroll County in 2010 between the March 2003 Terminal Area Forecast (TAF) and the original Tennessee System Plan (November 2001), the Tennessee System Plan forecasts 107,332 operations for Lovell Field in 2010, while the March 2003 TAF forecasts 142,619 operations. There was a spurt of activity in Lovell Field between the November 2001 and March 2003 TAF, so the FAA anticipated higher growth by 2010 for Lovell Field in its March 2003 TAF. But this spurt of activity was very short-lived, and the FAA has changed the growth it forecasts for Lovell Field. Now, in its latest TAF (February 2004), the FAA is forecasting 105,520 operations for Lovell Field in 2010—very close to the 107,332 operations forecast in the Tennessee System Plan. For the smaller airports, such as Greeneville-Greene County and Carroll County, the numbers of 2010 operations forecast in the Tennessee System Plan were based on historical data on aircraft operations that came directly from the airports themselves, while the TAF forecasts were based on historical data on operations that were in its database. Due to the differences in historical levels of operations, there were differences in forecast levels of operations for these two smaller airports.

Table 4-1 Comparison of Terminal Area Forecast (TAF March 2003 Edition) and Tennessee System Plan (November 2001) Forecasts for 2010

		Enplanement Forecast for 2010			Aircraft Operations Forecast for 2010		
Airport		March 2003 TAF	Tenn. Sys. Plan	Percent Diff	March 2003 TAF	Tenn. Sys. Plan	Percent Diff
Commercial Airports							
Nashville International	BNA	5,015,912	5,911,000	-15.1%	270,518	300,000	-9.8%
Lovell Field (Chattanooga)	CHA	342,725	459,000	-25.3%	142,619	107,332	32.9%
Memphis International	MEM	6,330,599	6,897,000	-8.2%	519,115	470,000	10.5%
McKellar-Sipes Regional (Jackson)	MKL	4,706	11,000	-57.2%	32,103	27,614	16.3%
Tri-Cities Regional	TRI	247,816	236,000	5.0%	104,466	95,675	9.2%
McGhee Tyson (Knoxville)	TYS	824,897	1,150,000	-28.3%	157,149	203,000	-22.6%
Subtotal		12,766,655	14,664,000	-12.9%	1,225,970	1,203,621	1.9%
Regional GA Airports							
Outlaw Field	CKV				41,240	43,182	-4.5%
Dyersburg Municipal	DYR				19,400	27,462	-29.4%
Greeneville-Greene County	GCY				43,500	24,970	74.2%
Gatlinburg-Pigeon Forge	GKT				48,780	70,758	-31.1%
Carroll County	HZD				6,290	4,155	51.4%
Campbell County	JAU				4,720	8,509	-44.5%
John C. Tune	JWN				66,000	93,435	-29.4%
Sumner County Regional	M33				33,750	32,475	3.9%
Moore-Murrell	MOR				46,000	55,709	-17.4%
Smyrna	MQY				89,253	133,387	-33.1%
Millington Municipal	NQA				37,593	38,555	-2.5%
Upper-Cumberland Regional	SRB				12,064	14,935	-19.2%
Bomar Field-Shelbyville	SYI				6,290	39,749	-84.2%
Robert Sibley	SZY				9,990	12,910	-22.6%
Subtotal					464,870	600,191	-22.5%
Total					1,690,840	1,803,812	-6.3%

Sources: Tennessee Airport System Plan (November 2001); Terminal Area Forecast (March 2003 Edition); and HNTB Analysis

A review of recent trends in enplanements and scheduled seat departures at the six commercial airports shows that while the Tennessee Aviation System Plan forecasted that enplanements would grow at an average annual rate of 3.3 percent from 1998 through 2010, the actual average annual rate of change in enplanements from 1998 through 2002 is a -0.3 percent decline. As shown in **Table 4-2**, total enplanements declined from 9.9 million in 1998 to 9.8 million in 2002. The 2010 forecast of 14.7 million enplanements in the Tennessee Aviation System Plan would require that average annual growth from 2002 to 2010 accelerate to 5.2 percent.

This future growth rate of 5.2 percent is not likely to occur, especially considering the continued decline in scheduled seat departures from 2002 to the preliminary schedule for 2004 as published in February 2004. With a major restructuring of Northwest Airlines' Memphis hub in January 2004, Memphis is scheduled to have 7.6 million seat departures in 2004, a major decline from the 8.6 million seat departures it had in 2003 and the 8.4 million seat departures it had in 2002.

As scheduled seat departures are a very good source for estimating enplanements, the recent trend in scheduled seat departures should be used in projecting future enplanement levels. In 1998, Tennessee had a total of 16.8 million scheduled seat departures, and with an approximate average load factor of 59.2 percent, there were 9.9 million enplanements. In 2004, there are 16.7 million scheduled seat departures for the commercial airports in Tennessee, a decline of 100,000 scheduled seat departures from 1998. It would not be a reasonable assumption to forecast that there would be many more enplanements than the 9.9 million enplanements that were recorded in 1998. The Tennessee Aviation System Plan's forecast of 14.7 million enplanements in 2010 would require an average annual growth rate of 6.8 percent from 2004 to 2010. Again, it is not likely that this rate of growth will occur.

Regarding the positive growth in scheduled seat departures for Nashville, Memphis, and Tri-Cities from 1998 to 2002, there are various reasons. Nashville is a strong Southwest Airlines market, and this leading low cost/low fare carrier did not retrench as much as the legacy carriers after September 11, 2001. In measuring seat departure growth from 1998 to 2004, Nashville still has more seat departures in 2004 than it did in 1998. Memphis has a major Northwest hub, and Northwest grew its hub flight schedule from three major daily banks to four major daily banks effective June 2000. This Northwest initiative accounted for most of the growth in seat departures in Memphis from 1998 to 2002, but with its latest scheduling initiative in early 2004, Northwest restructured its Memphis hub again. In January 2004, the Northwest hub went from four major daily banks to six mid-sized daily banks. This schedule change accounted for a reduction in total Northwest/Northwest Airlink seat departures in Memphis from 2002 to 2004. In checking the number of seat departures now scheduled from Memphis in 2004 (as opposed to the schedule effective in early 2004), the total number of seats now exceeds the levels in 1998. Tri-Cities had just 0.1 percent more scheduled seat departures in 2002 compared with 1998. One factor that contributed toward this increase was the introduction of Northwest Airlink service to Memphis in September 2000. However, Tri-Cities has also lost capacity from 2002 to 2004, and the number of seat departures from 1998 to 2004 has declined. One of the major reasons for this decline is the reduction in seats provided to and from Atlanta, the hub which has historically been the largest hub served from Tri-Cities. In summary, of the six commercial service airports

Table 4-2 Actual Scheduled Seat Departure Trends compared to Enplanement Forecast Trends for Commercial Airports 1998-2010

Commercial Airport	1998	1999	2000	2001	2002	2003	2004 Preliminary	2010 Forecast	Average Annual Growth Rates 1998-2004P	1998-2002	2002-2010	1998-2010
						Scheduled Seat Departures (1998-2004 based on calendar year)						
Nashville	6,777,923	7,395,383	7,942,195	7,778,391	7,248,560	7,064,976	7,098,082		0.8%	1.7%		
Chattanooga	490,048	526,740	527,598	553,139	471,232	435,920	450,519		-1.4%	-1.0%		
Memphis	7,693,546	8,134,268	9,067,302	9,327,327	8,426,356	8,606,638	7,555,440		-0.3%	2.3%		
Jackson	39,796	71,808	69,234	33,958	17,784	13,357	11,913		-18.2%	-18.2%		
Tri-Cities	434,247	489,794	491,386	467,454	436,289	374,946	405,799		-1.1%	0.1%		
Knoxville	1,339,214	1,360,126	1,476,842	1,363,473	1,181,566	1,175,032	1,152,180		-2.5%	-3.1%		
Total	16,774,774	17,978,119	19,574,557	19,523,742	17,781,787	17,670,869	16,673,933		-0.1%	1.5%		
						Enplanements (1998 and 2010 based on calendar year; 1999-2002 based on fiscal year)						
Nashville	3,900,000	4,124,000	4,471,000	4,358,000	3,910,000			5,911,000	0.1%	5.3%	3.5%	
Chattanooga	287,000	304,000	299,000	278,000	281,000			459,000	-0.5%	6.3%	4.0%	
Memphis	4,708,000	5,071,000	5,527,000	5,877,000	4,784,000			6,897,000	0.4%	4.7%	3.2%	
Jackson	6,000	7,000	6,000	8,000	5,000			11,000	-4.5%	10.4%	5.2%	
Tri-Cities	219,000	222,000	221,000	225,000	196,000			236,000	-2.7%	2.3%	0.6%	
Knoxville	818,000	862,000	877,000	757,000	631,000			1,150,000	-6.3%	7.8%	2.9%	
Total	9,938,000	10,590,000	11,401,000	11,503,000	9,807,000			14,664,000	-0.3%	5.2%	3.3%	
						Approximate Average Load Factor						
Nashville	57.5%	55.8%	56.3%	56.0%	53.9%							
Chattanooga	58.6%	57.7%	56.7%	50.3%	59.6%							
Memphis	61.2%	62.3%	61.0%	63.0%	56.8%							
Jackson	15.1%	9.7%	8.7%	23.6%	28.1%							
Tri-Cities	50.4%	45.3%	45.0%	48.1%	44.9%							
Knoxville	61.1%	63.4%	59.4%	55.5%	53.4%							
Total	59.2%	58.9%	58.2%	58.9%	55.2%							

Sources: Official Airline Guide via BACK Aviation for Seat Departures; Tennessee Airport System Plan for 1998 and 2010 Enplanements; TAF for other Enplanements; HNTB Analysis

in Tennessee, only two (Nashville and Memphis) have increased seat departures from 1998 to 2004, while the other four smaller commercial airports have fewer seat departures.

The impact of September 11, 2001, and the recent economic downturn have had negative impacts on the growth rate of all aspects of aviation activity, including enplanements, cargo tonnage, and aircraft operations. Based on the findings of this comparison between the Tennessee Aviation System Plan forecasts for 2010 and both recent FAA forecasts for 2010 and recent trends through 2004, it is highly recommended that the forecasts for the Tennessee Aviation System Plan be revised and updated. These revisions and updates are critical not only for generating new forecasts for 2010, but also for establishing a more accurate projection for aviation activity in 2030, the new horizon for this system plan update.

Chapter 5
UPDATE AIRPORT SYSTEM FORECASTS

5.1 Determine Forecast Assumptions and Appropriate Forecast Approaches

The updated airport system forecasts for the six commercial and 14 regional airports in Tennessee have been prepared to include based aircraft, passenger enplanements, cargo tonnage, and aircraft operations for 2010, 2015, and 2030. Each forecast was developed independently using the most appropriate methodology, and these methodologies will be discussed in the section covering each specific forecast.

The assumptions inherent in the following calculations are based on input from federal and local sources, previous studies, relevant literature, and professional experience. Forecasting, however, is not an exact science. Departures from forecast levels in the local and national economy and in the aviation industry would have a significant effect on the projections presented herein. These uncertainties increase toward the end of the forecast period when new technologies and changes in work and recreational practices may have an unpredictable impact on aviation activity. For these reasons, the forecasts should be periodically compared with actual activity levels. Plans and policies should then be adjusted accordingly.

5.2 Forecast Based Aircraft

Based general aviation aircraft were categorized into the following categories: single engine piston, multi engine piston, turboprop, turbojet, and helicopter. In 2003, there were no other types of general aviation aircraft, including sport and experimental aircraft, based at the 20 airports included in this study. It is assumed that the 20 airports will continue to just have single engine piston, multi engine piston, turboprop, turbojet, and helicopter based aircraft for the duration of the forecast period.

The forecast for based aircraft assumes that the based aircraft by aircraft types at the 20 airports will grow at rates slightly higher than the national growth rate for each aircraft type as forecast by the FAA in their recent *Aerospace Forecast FY 2004-2015* (March 2004 Edition) and *Long-Range Aerospace Forecast FY 2015, 2020, 2025,and 2030* (June 2003 Edition). The percentage shares of aircraft type across airports remain constant for each based aircraft category, not total based aircraft. This slightly higher growth rate for based aircraft growth is comparable to the slightly higher population growth rate for the state of Tennessee than the United States overall that is forecast by the Woods & Poole Economics (CEDDS 2003) forecast. This demographic forecast projects statewide population will average annual growth of 1.13 percent from 2000 through 2005, 1.32 percent from 2005 through 2010, 1.2 percent from 2010 through 2015, and 1.02 percent from 2015 through 2030. These average annual growth rates are slightly greater than the national average annual growth rates of 1.02 percent from 2000 through 2005, 0.97 percent from 2005 through 2010, 0.97 percent from 2010 through 2015, and 0.9 percent from 2015 through 2030. The population projections for the individual air service areas of each airport, as well as the state of Tennessee and the United States overall are shown in **Table 5-1**.

Table 5-1 Population Projections for Air Service Areas of Commercial and Regional Airports 2005, 2010, 2015, and 2030

Census	Population Projections (a)					Average Annual Percent Change				
2000	2003	2005	2010	2015	2030	2000-2005	2005-2010	2010-2015	2015-2030	2000-2030
USA Total										
282,224,350	290,954,348	296,923,860	311,573,090	326,997,480	374,260,669	1.02%	0.97%	0.97%	0.90%	0.95%
Tennessee Total										
5,689,283	5,884,058	6,017,599	6,425,969	6,821,312	7,948,223	1.13%	1.32%	1.20%	1.02%	1.12%
Nashville (BNA)/John Tune (JWN)/ Smyrna (MQY) Air Service Area										
includes Cannon, Cheatham, Davidson, Dickson, Hickman, Humphreys, Robertson, Williamson, & Wilson Counties										
1,153,912	1,211,379	1,251,272	1,358,772	1,465,966	1,783,938	1.63%	1.66%	1.53%	1.32%	1.46%
Chattanooga (CHA) Air Service Area										
includes Bledsoe, Bradley, Grundy, Hamilton, Marion, McMinn, Meigs, Polk, Rhea, & Sequatchie Counties										
566,257	580,030	589,397	621,459	654,350	742,175	0.80%	1.07%	1.04%	0.84%	0.91%
Clarksville (CKV) Air Service Area										
includes Houston, Montgomery, & Stewart Counties										
155,226	163,737	169,668	189,144	209,294	269,477	1.80%	2.20%	2.05%	1.70%	1.86%
Dyersburg (DYR) Air Service Area										
includes Dyer, Lake, Lauderdale, & Obion Counties										
104,784	106,650	107,913	111,728	114,669	121,771	0.59%	0.70%	0.52%	0.40%	0.50%
Greeneville-Greene County (GCY) Air Service Area										
includes Greene County										
62,909	64,332	65,299	68,949	72,169	80,813	0.75%	1.09%	0.92%	0.76%	0.84%
Gatlinburg-Pigeon Forge (GKT) Air Service Area										
includes Sevier County										
71,170	77,723	82,423	95,196	108,709	149,356	2.98%	2.92%	2.69%	2.14%	2.50%
Carroll County (HZD) Air Service Area										
includes Benton, Carroll, Henry, & Weakley Counties										
112,022	115,101	117,201	124,236	130,913	149,240	0.91%	1.17%	1.05%	0.88%	0.96%
Campbell County (JAU) Air Service Area										
includes Campbell & Scott Counties										
60,981	62,674	63,828	66,940	69,690	76,999	0.92%	0.96%	0.81%	0.67%	0.78%

Table 5-1 (cont'd) Population Projections for Air Service Areas of Commercial and Regional Airports 2005, 2010, 2015, and 2030

Census	Population Projections (a)					Average Annual Percent Change				
2000	2003	2005	2010	2015	2030	2000-2005	2005-2010	2010-2015	2015-2030	2000-2030
Sumner County (M33) Air Service Area										
includes Macon, Sumner & Trousdale Counties										
158,094	167,696	174,420	193,098	211,203	264,927	1.98%	2.06%	1.81%	1.52%	1.74%
Memphis (MEM)/Millington (NQA) Air Service Area										
includes Fayette, Shelby & Tipton Counties										
977,549	1,002,325	1,019,190	1,070,404	1,118,473	1,253,534	0.84%	0.99%	0.88%	0.76%	0.83%
Jackson (MKL) Air Service Area										
includes Chester, Crockett, Decatur, Gibson, Hardeman, Haywood, Henderson, & Madison Counties										
255,216	262,351	267,218	283,401	298,198	339,119	0.92%	1.18%	1.02%	0.86%	0.95%
Moore-Murrell (MOR) Air Service Area										
includes Claiborne, Cocke, Grainger, Hamblen,& Jefferson Counties										
186,508	193,178	197,757	212,123	225,830	264,990	1.18%	1.41%	1.26%	1.07%	1.18%
Upper Cumberland (SRB) Air Service Area										
includes Clay, Cumberland, DeKalb, Fentress, Jackson, Overton, Pickett, Putnam, Smith, Van Buren, Warren & White Counties										
271,786	282,526	289,921	311,437	332,641	394,167	1.30%	1.44%	1.33%	1.14%	1.25%
Bomar Field (SYI) Air Service Area										
includes Bedford, Coffee, Franklin, Giles, Lawrence, Lewis, Lincoln, Marshall, Maury, Moore, Perry & Wayne Counties										
363,428	374,344	381,803	406,623	429,675	492,348	0.99%	1.27%	1.11%	0.91%	1.02%
Robert Sibley (SZY) Air Service Area										
includes Hardin & McNairy Counties										
50,231	51,521	52,399	55,193	57,611	64,030	0.85%	1.04%	0.86%	0.71%	0.81%
Tri-Cities (TRI) Air Service Area										
includes Carter, Hancock, Hawkins, Johnson, Sullivan, Unicoi, & Washington Counties										
412,503	420,548	425,998	443,779	459,155	500,193	0.65%	0.82%	0.68%	0.57%	0.64%
Knoxville (TYS) Air Service Area										
includes Anderson, Blount, Knox, Loudon, Monroe, Morgan, Roane, & Union Counties										
726,707	747,618	761,892	813,486	862,763	999,123	0.95%	1.32%	1.18%	0.98%	1.07%

(a) 2003 figures are interpolated; 2030 projection numbers were obtained using FORECAST function-a linear regression task.
Note that forecasted numbers were used (2005-2025) to project 2030 values.

Source: www.state.tn.us/tacir/population.htm for Tennessee Population; Woods & Poole Economics (CEDDS 2003) for USA Population; and HNTB Analysis

In developing the based aircraft forecast by aircraft type, the first step was to show the change that had occurred from 1998 to 2003. For the 20 airports, the total based aircraft fleet increased from 1,445 aircraft in 1998 to 1,510 aircraft in 2003. This collective growth among the 20 airports represents an average annual increase of 0.9 percent. In comparison, the average annual national growth rate for all general aviation aircraft in the United States during this same period was 0.6 percent, as the total general aviation fleet increased from 204,711 aircraft in 1998 to 211,190 aircraft in 2003. In reviewing the general aviation fleet and excluding the categories of sport, experimental, and other aircraft, the national fleet remained fairly constant, only changing from 182,629 aircraft in 1998 to 182,860 aircraft in 2003. Based on this trend, it was assumed that the growth rate of based aircraft in the state of Tennessee would be faster than the overall national growth rate for the duration of the forecast period.

In forecasting the future number of aircraft for these 20 airports, the number of aircraft for each category was first summed for all 20 airports. Then, this total was calculated as a percentage of all aircraft of that category in the country. As an example, there were 202 turbojets based at these 20 airports in 2003, or 2.4 percent of the national total of 8,500 turbojets. The state of Tennessee's population in 2003 was estimated to be roughly 5.9 million people, or 2.0 percent of the national total of 296.9 million people. The ratio of turbojet percentage to population percentage is 1.18, calculated by dividing 2.4 percent by 2.0 percent. Assuming that this ratio of turbojet percentage to population percentage holds constant for the duration of the forecast, as Tennessee's population grows to 2.1 percent of the national total in 2030, its share of the turbojets will grow to 2.5 percent of the national total. Based on this assumption, there would be 599 turbojets based at these 20 airports in 2030, or 2.5 percent of the national total of 24,000 turbojets.

Each category of aircraft was similarly forecast, and when all aircraft types are summed, the total number of aircraft forecast for these 20 airports grows to 1,647 aircraft in 2010, 1,770 aircraft in 2015, and 2,064 aircraft in 2030.

In distributing these based aircraft among the 20 airports, it was assumed that the percentage shares of based aircraft each airport had in 2003 of the statewide total would remain the same for the duration of the forecast. In reviewing trends at the 20 airports from 1998 to 2003, there was no significant statistical correlation between demographic growth in a particular air service area and the change in numbers of based aircraft at the airport. Part of the explanation for this phenomenon might be that not all the airports in Tennessee are included in this analysis. There might be a greater correlation if all airports were included in the study. Due to the lack of correlation between the demographic growth rates within individual air service areas and the numbers of based aircraft at the respective airport, the distribution of aircraft by airport was held constant for the duration of the forecast. Using this assumption, each airport's growth rate in based aircraft was the same for each individual aircraft type. The forecast for based aircraft by aircraft type is shown in **Table 5-2**.

Table 5-2 Based General Aviation Aircraft at Commercial and Regional Airports in Tennessee 2003-2030
(forecasts adjusted for differences in demographic growth rates between U.S. and state of Tennessee)

		Based General Aviation Aircraft by Aircraft Type																					
		2003						2010						2015						2030			
Region/Airport	Code	SE	TE	TP	Jet	Helo	Total	SE	TE	TP	Jet	Helo	Total	SE	TE	TP	Jet	Helo	Total	SE	TE	TP	Jet	Helo	Total
East Tennessee																									
Knoxville	TYS	37	32	32	31	3	135	38	32	36	45	3	154	40	31	39	58	3	171	41	31	47	92	4	215
Chattanooga	CHA	31	31	14	32	1	109	32	31	16	46	1	126	33	30	17	60	1	142	35	30	21	95	1	181
Tri-Cities	TRI	52	18	9	16	-	95	54	18	10	23	-	105	56	17	11	30	-	114	58	17	13	47	-	136
Campbell County	JAU	9	-	-	-	-	9	9	-	-	-	-	9	10	-	-	-	-	10	10	-	-	-	-	10
Greeneville-GC	GCY	58	7	-	-	-	65	60	7	-	-	-	67	62	7	-	-	-	69	65	7	-	-	-	72
Gatlinburg-PF	GKT	70	6	-	4	-	80	73	6	-	6	-	84	75	6	-	8	-	88	78	6	-	12	-	96
Moore-Murrell	MOR	49	14	-	-	-	63	51	14	-	-	-	65	52	14	-	-	-	66	55	13	-	-	-	68
Subtotal		306	108	55	83	4	556	318	106	62	119	4	610	327	105	67	156	4	660	343	104	81	246	5	778
Middle Tennessee																									
Nashville	BNA	64	40	35	38	2	179	67	39	39	55	2	202	68	39	43	72	2	224	72	38	51	113	2	277
Outlaw Field	CKV	10	5	-	-	-	15	10	5	-	-	-	15	11	5	-	-	-	16	11	5	-	-	-	16
John Tune	JWN	102	15	4	4	6	131	106	15	5	6	6	138	109	15	5	8	7	143	114	14	6	12	7	154
Smyrna	MQY	105	67	-	21	16	209	109	66	-	30	17	223	112	65	-	40	18	235	118	64	-	62	19	264
Sumner County	M33	68	13	-	1	-	82	71	13	-	1	-	85	73	13	-	2	-	87	76	12	-	3	-	92
Upper Cumberland	SRB	58	8	2	-	2	70	60	8	2	-	2	73	62	8	2	-	2	74	65	8	3	-	2	78
Bomar Field	SYI	28	2	-	-	-	30	29	2	-	-	-	31	30	2	-	-	-	32	31	2	-	-	-	33
Subtotal		435	150	41	64	26	716	452	148	46	92	28	766	465	146	50	120	29	810	488	144	60	190	32	913
West Tennessee																									
Memphis	MEM	22	12	22	51	-	107	23	12	25	73	-	133	24	12	27	96	-	158	25	12	32	151	-	220
Jackson	MKL	17	8	2	4	2	33	18	8	2	6	2	36	18	8	2	8	2	38	19	8	3	12	2	44
Carroll County	HZD	21	-	-	-	-	21	22	-	-	-	-	22	22	-	-	-	-	22	24	-	-	-	-	24
Dyersburg	DYR	25	3	1	-	-	29	26	3	1	-	-	30	27	3	1	-	-	31	28	3	1	-	-	32
Millington	NQA	18	7	1	-	-	26	19	7	1	-	-	27	19	7	1	-	-	27	20	7	1	-	-	28
Robert Sibley	SZY	16	4	2	-	-	22	17	4	2	-	-	23	17	4	2	-	-	23	18	4	3	-	-	25
Subtotal		119	34	28	55	2	238	124	34	32	79	2	270	127	33	34	104	2	300	133	33	41	163	2	373
Total 20 TN Airports		860	292	124	202	32	1,510	894	288	140	291	34	1,647	919	284	151	380	36	1,770	964	280	182	599	39	2,064
Total USA (000s)		143	18	7	9	7	183	146	17	8	12	7	190	148	16	8	16	7	196	153	16	10	24	8	210
٩ Subtotal as Percent of U.S.		0.6%	1.7%	1.8%	2.4%	0.5%		0.6%	1.7%	1.8%	2.4%	0.5%		0.6%	1.7%	1.9%	2.5%	0.5%		0.6%	1.8%	1.9%	2.5%	0.5%	
Population as Percent of U.S.		2.0%	2.0%	2.0%	2.0%	2.0%		2.1%	2.1%	2.1%	2.1%	2.1%		2.1%	2.1%	2.1%	2.1%	2.1%		2.1%	2.1%	2.1%	2.1%	2.1%	
Ratio of TN Based Aircraft as Percent of U.S. and TN Population as Percent of U.S.:		0.30	0.83	0.89	1.18	0.24		0.30	0.83	0.89	1.18	0.24		0.30	0.83	0.89	1.18	0.24		0.30	0.83	0.89	1.18	0.24	

(a) Excludes other aircraft types including experimental and sport aircraft (none reported for these 20 airports in 2003, none forecasted for future)

Sources: Airport Records; airnav.com; FAA Aerospace Forecasts FY 2004-2015; FAA Long-Range Aerospace Forecasts 2015, 2020, 2025, and 2030; and HNTB Analysis

5.3 Forecast Passenger Enplanements

The forecast for passenger enplanements at the six commercial airports uses two primary sources in its development. The FAA Terminal Area Forecast (TAF), February 2004 Edition, was used to generate the average annual growth rates from 2004 through 2015. The growth rates from 2015 through 2030 were projected using the trends from the earlier periods. The second source of data that was used was the number of annual scheduled seat departures each airport had in the Official Airline Guide schedule. Trends in historical ratios of annual enplanements to annual scheduled seat departures from 1999 through 2003 were used to develop the ratio for annual enplanements to annual scheduled seat departures for 2004.

With a major airline hub operated by Northwest and its commuter affiliate Northwest Airlink, the Memphis forecast is particularly dependent on the future development of this hub. It could grow in the future, as is the case with many hubs, but it could also decline, as it will for 2004. In some cases, legacy carriers such as American Airlines and US Airways have abandoned hubs entirely. It is assumed for this forecast that Memphis will retain a hub by Northwest or another airline if Northwest ceases to operate at any time during the period of this forecast.

The major reduction in scheduled seat departures for Memphis from 8.6 million in 2003 to 7.7 million in 2004 is used to forecast that the annual enplanement total for this airport will decline from 5.4 million in 2003 to 4.9 million in 2004. According to the TAF, enplanements in Memphis will then grow at an average annual rate of 3.9 percent from 2004 through 2010 and at average rate of 3.8 percent from 2010 through 2015. HNTB estimates that the average annual growth will continue to decline and that from 2015 through 2030, Memphis will average a 2.9 percent growth rate in enplanements. Using these growth rates, it is forecast that Memphis will generate 11.4 million enplanements in 2030. The growth rate from 2020 to 2030 is based on a linear extrapolation of the TAF forecast, and the reduced annual compounded growth rate is a byproduct of this process.

Among the other airports, there is not as much uncertainty about the future, since none has a hub operation with a legacy carrier. The TAF does forecast that Jackson will lose commercial scheduled passenger service by 2010, as the forecast has no enplanements for the future. With the declining numbers of turboprops in the fleets of the commuter affiliates of the legacy carriers, this is a likely scenario. In this forecast, it is also predicted that Jackson will have no enplanements in the future.

Among the other markets, Chattanooga and Tri-Cities are forecast to generate 0.4 and 0.3 million enplanements in 2030 respectively. Knoxville is forecast to have 1.4 million enplanements, and Nashville is forecast to generate 8 million enplanements in 2030. The enplanement forecasts for each airport are provided in **Table 5-3**.

Table 5-3 Total Enplanements for Commercial Airports 1999-2030

Year	Chattanooga CHA	Jackson (a) MKL	Knoxville TYS	Memphis MEM	Nashville BNA	Tri-Cities TRI	Tennessee Total
Calendar Year				Total Enplanements			
1999	303,577	6,832	886,510	5,073,523	4,278,374	221,520	10,770,336
2000	299,867	6,409	871,801	5,801,068	4,516,970	225,132	11,721,247
2001	260,801	8,189	721,935	5,601,272	4,235,613	209,955	11,037,765
2002	260,978	6,890	718,879	5,306,473	4,020,460	206,167	10,519,847
2003	237,221	6,000	716,603	5,403,825	3,985,604	196,713	10,545,966
2004 E (b)	240,255	5,361	723,424	4,913,380	4,154,287	200,549	10,237,256
2010	281,994	-	889,350	6,184,192	5,041,846	226,846	12,624,229
2015	316,776	-	1,027,622	7,439,851	5,781,479	248,761	14,814,489
2030	421,125	-	1,442,441	11,421,861	8,000,381	314,505	21,600,313
Calendar Year				*Average Annual Growth Rates for HNTB Forecast*			
1999-2004	-4.6%	-4.7%	-4.0%	-0.6%	-0.6%	-2.0%	-1.0%
2004-2010	2.7%	NA	3.5%	3.9%	3.3%	2.1%	3.6%
2010-2015	2.4%	NA	2.9%	3.8%	2.8%	1.9%	3.3%
2015-2030	1.9%	NA	2.3%	2.9%	2.2%	1.6%	2.5%
Fiscal Year				FAA Terminal Area Forecast (TAF) Feb. 2004 Edition			
1999	304,418	6,832	861,966	5,070,574	4,124,225	221,935	10,589,950
2004	227,123	-	700,424	5,183,070	4,165,628	195,967	10,472,212
2010	266,580	-	861,075	6,523,635	5,055,611	221,664	12,928,565
2015	299,461	-	994,951	7,848,215	5,797,263	243,078	15,182,968
2020	332,343	-	1,128,828	9,286,214	6,538,917	264,492	17,550,794
2030 (b)	398,106	-	1,396,581	12,048,793	8,022,223	307,320	22,173,023
Fiscal Year				*Average Annual Growth Rates from Feb. 2004 TAF*			
1999-2004	-5.7%	-100.0%	-4.1%	0.4%	0.2%	-2.5%	-0.2%
2004-2010	2.7%	NA	3.5%	3.9%	3.3%	2.1%	3.6%
2010-2015	2.4%	NA	2.9%	3.8%	2.8%	1.9%	3.3%
2015-2030 (c)	1.9%	NA	2.3%	2.9%	2.2%	1.6%	2.6%
Calendar Year				Scheduled Seat Departures			
1999 (d)	526,740	71,808	1,360,126	8,134,268	7,395,383	489,794	17,978,119
2000 (d)	527,598	69,234	1,476,842	9,067,302	7,942,195	491,386	19,574,557
2001 (d)	553,139	33,958	1,363,473	9,327,327	7,778,391	467,454	19,523,742
2002	471,232	17,784	1,181,566	8,426,356	7,248,560	436,289	17,781,787
2003	435,920	13,357	1,175,032	8,606,638	7,064,976	374,946	17,670,869
2004 E (b)	436,828	11,913	1,185,941	7,677,157	7,288,222	401,097	17,001,158
Calendar Year				Enplanements/Scheduled Seat Departures			
1999 (d)	57.6%	9.5%	65.2%	62.4%	57.9%	45.2%	59.9%
2000 (d)	56.8%	9.3%	59.0%	64.0%	56.9%	45.8%	59.9%
2001 (d)	47.1%	24.1%	52.9%	60.1%	54.5%	44.9%	56.5%
2002	55.4%	38.7%	60.8%	63.0%	55.5%	47.3%	59.2%
2003	54.4%	44.9%	61.0%	62.8%	56.4%	52.5%	59.7%
2004 E (b)	55.0%	45.0%	61.0%	64.0%	57.0%	50.0%	60.2%

(a) Jackson enplanements from FAA TAF (fiscal year) through 2002; 2003 enplanements are estimated

(b) 2004 E enplanements based on scheduled seat departures as of April 2004 schedule multiplied by estimated enplanements/scheduled seat ratio

(c) TAF only goes through 2020; HNTB estimate for growth rate between 2020 and 2030

(d) Jackson had many routings between Memphis and other spoke cities in 1999-2001, many scheduled seat departures not to Memphis, but rather to Paducah, Muscle Shoals and other markets. Seat departures on these flights from Jackson did not have any enplanements from Jackson.

Sources: Airport Records; FAA Terminal Area Forecast (TAF) Feb. 2004 Edition; Official Airline Guide via BACK Aviation; HNTB Analysis

5.4 Forecast Cargo Tonnage

Cargo tonnage forecasts for each of the 20 airports were developed using the national rates of growth for various categories of cargo traffic. As Memphis is a major cargo hub for the whole nation, with the bulk of its cargo volume deriving from all-cargo volumes generated by FedEx on both domestic and international flights, its cargo traffic is forecast to grow at the national rate forecast for total all-cargo traffic by the FAA in its *Aerospace Forecast FY 2004-2015* and *Long-Range Forecast FY 2015, 2020, 2025, and 2030*. Using these growth rates, it is forecast that cargo tonnage in Memphis will average 5.1 percent annual growth from 2003 through 2010, 4.7 percent annual growth from 2010 through 2015, and 4.4 percent annual growth from 2015 through 2030. In 2030, Memphis is forecast to enplane and deplane a total of 25 billion pounds of cargo.

The other markets are projected to grow at the average annual rate corresponding to the overall national domestic cargo growth rate for both passenger and all-cargo carriers as forecast by the FAA. This growth rate is 3.6 percent annually from 2003 to 2010, 3.3 percent from 2010 to 2015, and 3.1 percent for 2015 to 2030. The cargo tonnage forecasts for all 20 airports are provided in **Table 5-4**.

5.5 Forecast Aircraft Operations

In order to forecast aircraft operations by commercial service, air taxi, general aviation, and military aircraft, and to distinguish between itinerant and local operations, the three primary sources of data used were the FAA's TAF (February 2004 Edition), the FAA's Air Traffic Activity Data System (ATADS), and local airport records.

Aircraft operations broken out by category of aviation for 1998 and 2003 are provided in **Table 5-5**. There were 1.35 million total operations among the 20 airports in 1998, and this total grew to 1.4 million total operations in 2003.

In forecasting general aviation operations, the number of general aviation operations per based aircraft for each airport in 2003 was multiplied by the number of based aircraft that were previously forecast for each year in Table 8. **Table 5-6** provides the number of general aviation operations per based aircraft in both 1998 and 2003.

With a growing fleet of aircraft, it is assumed that general aviation operations will grow in the future. This forecast reverses the decline in general aviation operations that occurred between 1998 and 2003. **Table 5-7** provides the general aviation operations for each airport in 2010, 2015, and 2030. The percentage distribution of general aviation operations between local and itinerant was held constant to the levels generated in 2003. Based on these assumptions, total general aviation operations are forecast to grow from 671,093 in 2003 to 730,502 in 2010, 784,039 in 2015, and 911,888 in 2030.

Table 5-4 Total Cargo Volume for Commercial and Regional Airports 1998-2030
(forecasts not adjusted for differences in demographic growth rates between US and state of Tennessee)

Year	Chattanooga CHA	Jackson MKL (a)	Knoxville TYS	Memphis MEM	Nashville BNA	Tri-Cities TRI	Commercial Airports Total
Calendar Year				Enplaned and Deplaned Cargo (pounds)			
1998	8,834,053	42,000	95,142,850	5,194,234,696	120,856,000	4,806,028	5,423,915,627
1999	4,579,743	Unavailable	98,423,688	5,300,000,000	125,032,000	5,529,549	5,533,564,980
2000	4,549,129	Unavailable	97,746,816	5,488,416,681	129,342,000	5,576,694	5,725,631,320
2001	3,732,447	Unavailable	85,565,125	5,802,746,719	111,370,000	4,892,065	6,008,306,356
2002	3,644,272	Unavailable	79,667,146	7,476,712,170	118,480,000	4,157,939	7,682,661,527
2003	5,994,352	42,000	76,826,235	7,476,085,635	130,392,000	3,956,812	7,693,297,034
2010	7,678,220	53,798	98,407,418	10,589,934,637	167,020,290	5,068,316	10,868,162,680
2015	9,031,547	63,280	115,752,251	13,323,756,527	196,458,508	5,961,634	13,651,023,748
2030	14,276,968	100,033	182,979,864	25,538,958,396	310,559,413	9,424,084	26,056,298,758
Calendar Year				*Average Annual Growth Rates for HNTB Forecast*			
1998-2003	-7.5%	0.0%	-4.2%	7.6%	1.5%	-3.8%	7.2%
2003-2010	3.6%	3.6%	3.6%	5.1%	3.6%	3.6%	5.1%
2010-2015	3.3%	3.3%	3.3%	4.7%	3.3%	3.3%	4.7%
2015-2030	3.1%	3.1%	3.1%	4.4%	3.1%	3.1%	4.4%

Year	Outlaw Field CKV	Dyersburg DYR	Greenville-GC GCY	Gatlinburg-PF GKT	Carroll Cnty HZD	Campbell Cnty JAU	John C. Tune JWN
Calendar Year				Enplaned and Deplaned Cargo (pounds)			
1998	24,000	228,000	234,000	88,000	48,000	-	-
1999	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
2000	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
2001	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
2002	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
2003 estimate	24,000	228,000	234,000	88,000	48,000	-	-
2010	30,742	292,047	299,733	112,720	61,484	-	-
2015	36,160	343,522	352,562	132,587	72,320	-	-
2030	57,162	543,036	557,326	209,593	114,323	-	-
Calendar Year				*Average Annual Growth Rates for HNTB Forecast*			
1998-2003	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2003-2010	3.6%	3.6%	3.6%	3.6%	3.6%	0.0%	0.0%
2010-2015	3.3%	3.3%	3.3%	3.3%	3.3%	0.0%	0.0%
2015-2030	3.1%	3.1%	3.1%	3.1%	3.1%	0.0%	0.0%

Year	Sumner Cnty M33	Moore-Murrell MOR	Smyrna MQY	Millington NQA	Upper-Cumberld SRB	Bomar Field SYI	Robert Sibley SZY	Regional Airports Total
Calendar Year				Enplaned and Deplaned Cargo (pounds)				
1998	48,000	670,000	80,000,000	-	600,000	164,000	847,000	82,951,000
1999	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
2000	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
2001	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
2002	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable
2003 estimate	48,000	670,000	85,000,000	-	600,000	164,000	847,000	87,951,000
2010	61,484	858,209	108,877,268	-	768,545	210,069	1,084,930	112,657,230
2015	72,320	1,009,473	128,067,467	-	904,006	247,095	1,276,155	132,513,669
2030	114,323	1,595,764	202,447,620	-	1,429,042	390,605	2,017,331	209,476,125
Calendar Year				*Average Annual Growth Rates for HNTB Forecast*				
1998-2003	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%	1.2%
2003-2010	3.6%	3.6%	3.6%	0.0%	3.6%	3.6%	3.6%	3.6%
2010-2015	3.3%	3.3%	3.3%	0.0%	3.3%	3.3%	3.3%	3.3%
2015-2030	3.1%	3.1%	3.1%	0.0%	3.1%	3.1%	3.1%	3.1%

Note: Memphis growth rate asssumed to be same as national total (domestic and international combined) all-cargo growth rate as forecast by FAA; All other airports with cargo traffic assumed to grow at national overall domestic cargo growth rate (all-cargo and passenger carriers)
(a) Jackson Cargo data for 1999-2002 unavailable; 2003 total is estimated

Sources: Airport Records; FAA Aerospace Forecasts FY 2004-2015; FAA Long-Range Aerospace Forecasts FY 2015, 2020, 2025, & 2030; HNTB Analysis

Table 5-5 Annual Aircraft Operations at Commercial and Regional Airports in Tennessee 1998 & 2003

		Aircraft Operations by Category of Aviation												
		1998							2003					
Region/Airport	Code	Air Carrier	Air Taxi	GA Itiner	Mil Itiner	GA Local	Mil Local	Total	Air Carrier	Air Taxi	GA Itiner	Mil Itiner	GA Local	
East Tennessee														
Knoxville	TYS	27,484	24,838	50,202	11,541	28,408	6,081	148,554	9,735	49,573	46,561	10,957	18,925	
Chattanooga	CHA	10,530	12,807	45,829	3,196	18,107	4,652	95,121	4,845	19,456	41,378	7,257	18,107	
Tri-Cities	TRI	6,517	14,462	37,407	468	27,778	34	86,666	5,083	18,705	36,505	720	29,296	
Campbell County	JAU	-	-	641	20	2,449	-	3,110	-	-	641	20	2,449	
Greeneville-GC	GCY	-	3,588	5,022	36	4,954	-	13,600	-	3,588	5,022	36	4,954	
Gatlinburg-PF	GKT	-	2,864	27,583	554	14,059	-	45,060	-	2,864	27,583	554	14,059	
Moore-Murrell	MOR	-	1,684	21,083	185	21,623	-	44,575	-	1,684	21,083	185	21,623	
Subtotal		44,531	60,243	187,767	16,000	117,378	10,767	436,686	19,663	95,870	178,773	19,729	109,413	
Middle Tennessee														
Nashville	BNA	114,712	36,675	70,429	4,344	1,754	45	227,959	119,158	50,089	52,999	3,137	3,587	
Outlaw Field	CKV	-	1,455	11,931	29	12,320	-	25,735	-	1,455	11,931	29	12,320	
John Tune	JWN	-	25,000	15,000	25	25,975	-	66,000	-	25,000	15,000	25	25,975	
Smyrna	MQY	122	1,689	26,290	4,222	32,140	3,952	68,415	82	2,543	36,781	3,872	33,865	
Sumner County	M33	-	912	4,758	33	16,297	-	22,000	-	912	4,758	33	16,297	
Upper Cumberland	SRB	-	-	5,634	75	6,811	-	12,520	-	-	12,580	100	9,906	
Bomar Field	SYI	-	-	21,000	300	7,176	-	28,476	-	-	21,000	300	7,176	
Subtotal		114,834	65,731	155,042	9,028	102,473	3,997	451,105	119,240	79,999	155,049	7,496	109,126	
West Tennessee														
Memphis	MEM	188,504	108,290	62,492	5,391	26	-	364,703	229,146	132,377	38,886	1,942	6	
Jackson	MKL	8	4,732	13,469	1,122	9,792	1,570	30,693	8	2,704	12,130	1,517	8,562	
Carroll County	HZD	-	-	2,500	100	10,000	-	12,600	-	-	2,500	100	10,000	
Dyersburg	DYR	-	-	12,000	500	6,348	-	18,848	-	-	12,000	500	6,348	
Millington	NQA	4	10	8,478	1,924	8,682	1,698	20,796	4	10	8,478	1,924	8,682	
Robert Sibley	SZY	-	-	5,620	200	5,520	-	11,340	-	-	5,620	200	5,520	
Subtotal		188,516	113,032	104,559	9,237	40,368	3,268	458,980	229,158	135,091	79,614	6,183	39,118	
Tennessee Commercial and Regional Airports Total		347,881	239,006	447,368	34,265	260,219	18,032	1,346,771	368,061	310,960	413,436	33,408	257,657	

Sources: Airport Records; airnav.com; FAA TAF (February 2004 Edition); FAA ATADS; and HNTB Analysis

Table 5-6 General Aviation Aircraft Operations per Based Aircraft at Commercial and Regional Airports in Tennessee 1998 & 2003

		General Aviation Operations						Based GA Aircaft		GA Operations per Based Aircraft	
		1998			2003						
Region/Airport	Code	GA Itiner	GA Local	Total	GA Itiner	GA Local	Total	1998	2003	1998	2003
East Tennessee											
Knoxville	TYS	50,202	28,408	78,610	46,561	18,925	65,486	134	135	587	485
Chattanooga	CHA	45,829	18,107	63,936	41,378	18,107	59,485	102	109	627	546
Tri-Cities	TRI	37,407	27,778	65,185	36,505	29,296	65,801	75	95	869	693
Campbell County	JAU	641	2,449	3,090	641	2,449	3,090	9	9	343	343
Greeneville-GC	GCY	5,022	4,954	9,976	5,022	4,954	9,976	50	65	200	153
Gatlinburg-PF	GKT	27,583	14,059	41,642	27,583	14,059	41,642	61	80	683	521
Moore-Murrell	MOR	21,083	21,623	42,706	21,083	21,623	42,706	71	63	601	678
Subtotal		187,767	117,378	305,145	178,773	109,413	288,186	502	556	608	518
Middle Tennessee											
Nashville	BNA	70,429	1,754	72,183	52,999	3,587	56,586	157	179	460	316
Outlaw Field	CKV	11,931	12,320	24,251	11,931	12,320	24,251	62	15	391	1,617
John Tune	JWN	15,000	25,975	40,975	15,000	25,975	40,975	131	131	313	313
Smyrna	MQY	26,290	32,140	58,430	36,781	33,865	70,646	183	209	319	338
Sumner County	M33	4,758	16,297	21,055	4,758	16,297	21,055	77	82	273	257
Upper Cumberland	SRB	5,634	6,811	12,445	12,580	9,906	22,486	53	70	235	321
Bomar Field	SYI	21,000	7,176	28,176	21,000	7,176	28,176	28	30	1,006	939
Subtotal		155,042	102,473	257,515	155,049	109,126	264,175	691	716	373	369
West Tennessee											
Memphis	MEM	62,492	26	62,518	38,886	6	38,892	111	107	563	363
Jackson	MKL	13,469	9,792	23,261	12,130	8,562	20,692	40	33	582	627
Carroll County	HZD	2,500	10,000	12,500	2,500	10,000	12,500	17	21	735	595
Dyersburg	DYR	12,000	6,348	18,348	12,000	6,348	18,348	32	29	573	633
Millington	NQA	8,478	8,682	17,160	8,478	8,682	17,160	26	26	660	660
Robert Sibley	SZY	5,620	5,520	11,140	5,620	5,520	11,140	26	22	428	506
Subtotal		104,559	40,368	144,927	79,614	39,118	118,732	252	238	575	499
Tennessee Commercial and Regional Airports Total		447,368	260,219	707,587	413,436	257,657	671,093	1,445	1,510	490	444

Sources: Airport Records; airnav.com; FAA TAF (February 2004 Edition); FAA ATADS; and HNTB Analysis

Table 5-7 General Aviation Aircraft Operations at Commercial and Regional Airports in Tennessee 2010-2030

		General Aviation Operations									Based GA Aircraft					GA Operations per Based Aircraft	
		2010			2015			2030									
Region/Airport	Code	GA Itiner	GA Local	Total	GA Itiner	GA Local	Total	GA Itiner	GA Local	Total	1998	2003	2010	2015	2030	1998	2003
East Tennessee																	
Knoxville	TYS	53,073	21,572	74,644	59,115	24,028	83,143	74,079	30,110	104,189	134	135	154	171	215	557	485
Chattanooga	CHA	47,704	20,875	68,579	53,787	23,537	77,324	68,779	30,098	98,877	102	109	126	142	181	672	546
Tri-Cities	TRI	40,334	32,369	72,702	43,862	35,200	79,062	52,349	42,011	94,360	75	95	105	114	136	969	693
Campbell County	JAU	666	2,546	3,213	685	2,616	3,301	718	2,745	3,463	9	9	9	10	10	357	343
Greeneville-GC	GCY	5,192	5,122	10,314	5,312	5,241	10,553	5,542	5,467	11,009	50	65	67	69	72	206	153
Gatlinburg-PF	GKT	29,117	14,841	43,958	30,388	15,489	45,876	33,127	16,885	50,011	61	80	84	88	96	721	521
Moore-Murrell	MOR	21,667	22,222	43,888	22,070	22,635	44,705	22,877	23,463	46,341	71	63	65	66	68	618	678
Subtotal		197,753	119,546	317,299	215,219	128,746	343,965	257,472	150,779	408,250	502	556	610	660	778	632	518
Middle Tennessee																	
Nashville	BNA	59,872	4,052	63,924	66,245	4,484	70,729	81,920	5,544	87,464	157	179	202	224	277	407	316
Outlaw Field	CKV	12,189	12,587	24,776	12,362	12,765	25,127	12,733	13,149	25,882	62	15	15	16	16	400	1,617
John Tune	JWN	15,749	27,271	43,020	16,335	28,287	44,622	17,606	30,488	48,094	131	131	138	143	154	328	313
Smyrna	MQY	39,172	36,066	75,238	41,304	38,030	79,334	46,414	42,734	89,148	183	209	223	235	264	411	338
Sumner County	M33	4,929	16,884	21,813	5,057	17,322	22,379	5,319	18,217	23,536	77	82	85	87	92	283	257
Upper Cumberland	SRB	13,045	10,272	23,318	13,373	10,530	23,903	14,028	11,047	25,075	53	70	73	74	78	440	321
Bomar Field	SYI	21,759	7,435	29,194	22,298	7,619	29,917	23,312	7,966	31,278	28	30	31	32	33	1,043	939
Subtotal		166,715	114,568	281,283	176,974	119,036	296,010	201,332	129,145	330,478	691	716	766	810	913	407	369
West Tennessee																	
Memphis	MEM	48,283	7	48,290	57,427	9	57,436	79,854	12	79,866	111	107	133	158	220	435	363
Jackson	MKL	13,128	9,266	22,394	14,020	9,896	23,917	16,161	11,407	27,568	40	33	36	38	44	560	627
Carroll County	HZD	2,599	10,397	12,997	2,671	10,682	13,353	2,802	11,208	14,010	17	21	22	22	24	765	595
Dyersburg	DYR	12,446	6,584	19,029	12,762	6,751	19,513	13,395	7,086	20,481	32	29	30	31	32	595	633
Millington	NQA	8,719	8,929	17,649	8,886	9,100	17,987	9,249	9,472	18,721	26	26	27	27	28	679	660
Robert Sibley	SZY	5,832	5,729	11,561	5,983	5,877	11,860	6,313	6,201	12,514	26	22	23	23	25	445	506
Subtotal		91,008	40,913	131,920	101,749	42,315	144,064	127,774	45,386	173,160	252	238	270	300	373	523	499
Tennessee Commercial and Regional Airports Total		455,475	275,027	730,502	493,942	290,097	784,039	586,578	325,310	911,888	1,445	1,510	1,647	1,770	2,064	506	444

Sources: Airport Records; airnav.com; FAA Aerospace Forecasts FY 2004-2015; FAA Long-Term Aerospace Forecasts 2015, 2020, 2025, and 2030; and HNTB Analysis

Table 5-8 provides the commercial service and air taxi forecasts. In the cases of the airports where ATADS data was available, this data was used to provide annual numbers of operations for each category of aviation in 2003. In the cases of the airports where ATADS data was unavailable, data from the airports was used to provide annual numbers of operations for 2003. For most airports that fell into this category, the report back from the airport was that there was no change in the number of operations. The forecast growth rates from the TAF were then applied to the commercial service airports for each of the commercial service and air taxi categories. In the case of the regional airports, the forecast for air taxi growth was comparable to the growth rates for general aviation activity at each airport.

Based on these assumptions regarding growth rates, the total number of commercial service operations among all 20 airports is forecast to grow to 630,324 operations in 2030, while the total number of air taxi operations among all 20 airports is forecast to grow to 614,324 operations.

Table 5-9 provides the forecasts for each category of aviation in 2010 and 2015, and **Table 5-10** provides the forecasts for 2030. These forecasts summarize the forecasts for general aviation, commercial service, and air taxi operations that were developed in previous tables. Military operations, which are held constant with 2003 levels, similar to the FAA forecasts, are also included in the total operations data. The total number of aircraft operations among all 20 airports is forecast to grow from 1.4 million in 2003 to 1.6 million in 2010, 1.75 million in 2015, and 2.2 million in 2030.

Table 5-8 Annual Air Carrier and Air Taxi/Commuter Aircraft Operations at Commercial and Regional Airports in Tennessee 1998-2030

		Aircraft Operations by Category of Aviation									
		1998		2003		2010		2015		2030	
Region/Airport	Code	Air Carrier	Air Taxi	Air Carrier	Air Taxi	Air Carrier	Air Taxi	Air Carrier	Air Taxi	Air Carrier	Air Taxi
East Tennessee											
Knoxville (a)	TYS	27,484	24,838	9,735	49,573	9,735	53,271	9,735	55,912	9,735	63,727
Chattanooga (b)	CHA	10,530	12,807	4,845	19,456	4,845	20,922	4,845	21,970	4,845	25,052
Tri-Cities (c)	TRI	6,517	14,462	5,083	18,705	5,083	20,122	5,083	21,134	5,083	24,103
Campbell County	JAU	-	-	-	-	-	-	-	-	-	-
Greeneville-GC	GCY	-	3,588	-	3,588	-	3,710	-	3,775	-	3,959
Gatlinburg-PF	GKT	-	2,864	-	2,864	-	3,023	-	3,133	-	3,440
Moore-Murrell	MOR	-	1,684	-	1,684	-	1,731	-	1,753	-	1,827
Subtotal		44,531	60,243	19,663	95,870	19,663	102,778	19,663	107,678	19,663	122,109
Middle Tennessee											
Nashville (d)	BNA	114,712	36,675	119,158	50,089	138,107	61,271	151,642	69,258	193,594	94,163
Outlaw Field	CKV	-	1,455	-	1,455	-	1,486	-	1,500	-	1,553
John Tune	JWN	-	25,000	-	25,000	-	26,248	-	27,051	-	29,344
Smyrna	MQY	122	1,689	82	2,543	82	2,708	82	2,832	82	3,209
Sumner County	M33	-	912	-	912	-	945	-	964	-	1,019
Upper Cumberland	SRB	-	-	-	-	-	-	-	-	-	-
Bomar Field	SYI	-	-	-	-	-	-	-	-	-	-
Subtotal		114,834	65,731	119,240	79,999	138,189	92,658	151,724	101,604	193,676	129,287
West Tennessee											
Memphis (e)	MEM	188,504	108,290	229,146	132,377	247,865	206,149	285,115	248,167	416,973	360,679
Jackson	MKL	8	4,732	8	2,704	8	2,704	8	2,704	8	2,704
Carroll County	HZD	-	-	-	-	-	-	-	-	-	-
Dyersburg	DYR	-	-	-	-	-	-	-	-	-	-
Millington	NQA	4	10	4	10	4	10	4	10	4	10
Robert Sibley	SZY	-	-	-	-	-	-	-	-	-	-
Subtotal		188,516	113,032	229,158	135,091	247,877	208,863	285,127	250,881	416,985	363,393
Tennessee Commercial and Regional Airports Total		347,881	239,006	368,061	310,960	405,729	404,298	456,514	460,163	630,324	614,789

(a) Knoxville Air Carrier Operations held constant (similar to TAF), Air Taxi/Commuter growth based on growth rate in Feb. 2004 TAF (1.03% annual growth 2003-2010, 0.97% annual growth 2010-2015, est. 0.88% annual growth 2015-2030)
(b) Chattanooga Air Carrier Operations held constant (similar to TAF), Air Taxi/Commuter growth based on growth rate in Feb. 2004 TAF (1.04% annual growth 2003-2010, 0.98% annual growth 2010-2015, est. 0.88% annual growth 2015-2030)
(c) Tri-Cities Air Carrier Operations held constant (similar to TAF), Air Taxi/Commuter growth based on growth rate in Feb. 2004 TAF (1.05% annual growth 2003-2010, 0.99% annual growth 2010-2015, est. 0.88% annual growth 2015-2030)
(d) Nashville Air Carrier Operations based on growth rate in Feb. 2004 TAF (2.13% annual growth 2003-2010, 1.89% annual growth 2010-2015, est. 1.6% annual growth 2015-2030)
Air Taxi/Commuter Operations based on growth rate in Feb. 2004 TAF (2.92% annual growth 2003-2010, 2.48% annual growth 2010-2015, est. 2.1% annual growth 2015-2030)
(e) Memphis Air Carrier Operations based on growth rate in Feb. 2004 TAF (1.13% annual growth 2003-2010, 2.84% annual growth 2010-2015, est. 2.6% annual growth 2020-2030)
Air Taxi/Commuter Operations based on growth rate in Feb. 2004 TAF (6.53% annual growth 2003-2010, 3.87% annual growth 2010-2015, est. 2.5% annual growth 2015-2030)
Sources: Airport Records; airnav.com; FAA TAF (February 2004 Edition); FAA ATADS; and HNTB Analysis

Table 5-9 Annual Aircraft Operations at Commercial and Regional Airports in Tennessee 2010-2015

		Aircraft Operations by Category of Aviation													
		2010							2015						
Region/Airport	Code	Air Carrier	Air Taxi	GA Itiner	Mil Itiner	GA Local	Mil Local	Total	Air Carrier	Air Taxi	GA Itiner	Mil Itiner	GA Local	Mil Local	Total
East Tennessee															
Knoxville	TYS	9,735	53,271	53,073	10,957	21,572	3,889	152,496	9,735	55,912	59,115	10,957	24,028	3,889	163,637
Chattanooga	CHA	4,845	20,922	47,704	7,257	20,875	6,506	108,109	4,845	21,970	53,787	7,257	23,537	6,506	117,901
Tri-Cities	TRI	5,083	20,122	40,334	720	32,369	14	98,641	5,083	21,134	43,862	720	35,200	14	106,014
Campbell County	JAU	-	-	666	20	2,546	-	3,233	-	-	685	20	2,616	-	3,321
Greeneville-GC	GCY	-	3,710	5,192	36	5,122	-	14,060	-	3,775	5,312	36	5,241	-	14,364
Gatlinburg-PF	GKT	-	3,023	29,117	554	14,841	-	47,535	-	3,133	30,388	554	15,489	-	49,563
Moore-Murrell	MOR	-	1,731	21,667	185	22,222	-	45,804	-	1,753	22,070	185	22,635	-	46,644
Subtotal		19,663	102,778	197,753	19,729	119,546	10,409	469,877	19,663	107,678	215,219	19,729	128,746	10,409	501,444
Middle Tennessee															
Nashville	BNA	138,107	61,271	59,872	3,137	4,052	7	266,446	151,642	69,258	66,245	3,137	4,484	7	294,773
Outlaw Field	CKV	-	1,486	12,189	29	12,587	-	26,291	-	1,500	12,362	29	12,765	-	26,656
John Tune	JWN	-	26,248	15,749	25	27,271	-	69,293	-	27,051	16,335	25	28,287	-	71,697
Smyrna	MQY	82	2,708	39,172	3,872	36,066	1,297	83,197	82	2,832	41,304	3,872	38,030	1,297	87,417
Sumner County	M33	-	945	4,929	33	16,884	-	22,791	-	964	5,057	33	17,322	-	23,376
Upper Cumberland	SRB	-	-	13,045	100	10,272	-	23,418	-	-	13,373	100	10,530	-	24,003
Bomar Field	SYI	-	-	21,759	300	7,435	-	29,494	-	-	22,298	300	7,619	-	30,217
Subtotal		138,189	92,658	166,715	7,496	114,568	1,304	520,930	151,724	101,604	176,974	7,496	119,036	1,304	558,139
West Tennessee															
Memphis	MEM	247,865	206,149	48,283	1,942	7	5	504,251	285,115	248,167	57,427	1,942	9	5	592,664
Jackson	MKL	8	2,704	13,128	1,517	9,266	2,460	29,083	8	2,704	14,020	1,517	9,896	2,460	30,606
Carroll County	HZD	-	-	2,599	100	10,397	-	13,097	-	-	2,671	100	10,682	-	13,453
Dyersburg	DYR	-	-	12,446	500	6,584	-	19,529	-	-	12,762	500	6,751	-	20,013
Millington	NQA	4	10	8,719	1,924	8,929	1,698	21,285	4	10	8,886	1,924	9,100	1,698	21,623
Robert Sibley	SZY	-	-	5,832	200	5,729	-	11,761	-	-	5,983	200	5,877	-	12,060
Subtotal		247,877	208,863	91,008	6,183	40,913	4,163	599,006	285,127	250,881	101,749	6,183	42,315	4,163	690,418
Tennessee Commercial and Regional Airports Total		405,729	404,298	455,475	33,408	275,027	15,876	1,589,814	456,514	460,163	493,942	33,408	290,097	15,876	1,750,000

Sources: Airport Records; airnav.com; FAA Aerospace Forecasts FY 2004-2015; FAA Long-Range Aerospace Forecasts 2015, 2020, 2025, and 2030; FAA TAF (February 2004 Edition); FAA ATADS; and HNTB Analysis

Table 5-10 Annual Aircraft Operations at Commercial and Regional Airports in Tennessee 2030

		Aircraft Operations by Category of Aviation						
		2030						
Region/Airport	Code	Air Carrier	Air Taxi	GA Itiner	Mil Itiner	GA Local	Mil Local	Total
East Tennessee								
Knoxville	TYS	9,735	63,727	74,079	10,957	30,110	3,889	192,497
Chattanooga	CHA	4,845	25,052	68,779	7,257	30,098	6,506	142,537
Tri-Cities	TRI	5,083	24,103	52,349	720	42,011	14	124,281
Campbell County	JAU	-	-	718	20	2,745	-	3,483
Greeneville-GC	GCY	-	3,959	5,542	36	5,467	-	15,004
Gatlinburg-PF	GKT	-	3,440	33,127	554	16,885	-	54,005
Moore-Murrell	MOR	-	1,827	22,877	185	23,463	-	48,353
Subtotal		19,663	122,109	257,472	19,729	150,779	10,409	580,160
Middle Tennessee								
Nashville	BNA	193,594	94,163	81,920	3,137	5,544	7	378,364
Outlaw Field	CKV	-	1,553	12,733	29	13,149	-	27,464
John Tune	JWN	-	29,344	17,606	25	30,488	-	77,463
Smyrna	MQY	82	3,209	46,414	3,872	42,734	1,297	97,608
Sumner County	M33	-	1,019	5,319	33	18,217	-	24,589
Upper Cumberland	SRB	-	-	14,028	100	11,047	-	25,175
Bomar Field	SYI	-	-	23,312	300	7,966	-	31,578
Subtotal		193,676	129,287	201,332	7,496	129,145	1,304	662,241
West Tennessee								
Memphis	MEM	416,973	360,679	79,854	1,942	12	5	859,466
Jackson	MKL	8	2,704	16,161	1,517	11,407	2,460	34,257
Carroll County	HZD	-	-	2,802	100	11,208	-	14,110
Dyersburg	DYR	-	-	13,395	500	7,086	-	20,981
Millington	NQA	4	10	9,249	1,924	9,472	1,698	22,357
Robert Sibley	SZY	-	-	6,313	200	6,201	-	12,714
Subtotal		416,985	363,393	127,774	6,183	45,386	4,163	963,884
Tennessee Commercial and Regional Airports Total		630,324	614,789	586,578	33,408	325,310	15,876	2,206,285

Sources: Airport Records; airnav.com; FAA Long-Range Aerospace Forecasts 2015, 2020, 2025, and 2030; and HNTB Analysis

Chapter 6

DEVELOPMENT PLANS

This section summarizes capital improvement development plans for each of the 20 Commercial Service and Regional airports considered in this update. While airport-specific development plans are typically based on a detailed determination of facility requirements and an evaluation of development alternatives, time and resource limitations required that the plans be based on a review of existing master plans, airport layout plans and discussions with airport and TDOT Aeronautics representatives.

A write up, table of projects and figure is presented for each airport. The write-ups highlight major new capital projects, as well as known airport access issues that should be considered in future planning. The tables detail all known proposed improvements (including rehabilitation of existing facilities) that are scheduled to occur by 2030. Data presented in the tables is a summary of official airport capital improvement plans and the result of discussions with airport managers and sponsors. The figures graphically illustrate the phasing of major projects in 10-year time increments through the year 2030. The current airport layout plan was used as a base (where available), with a current aerial photo superimposed. Major projects shown include planned airfield, terminal, parking, air cargo, general aviation, military, and access capital improvements.

Commercial Service Airports

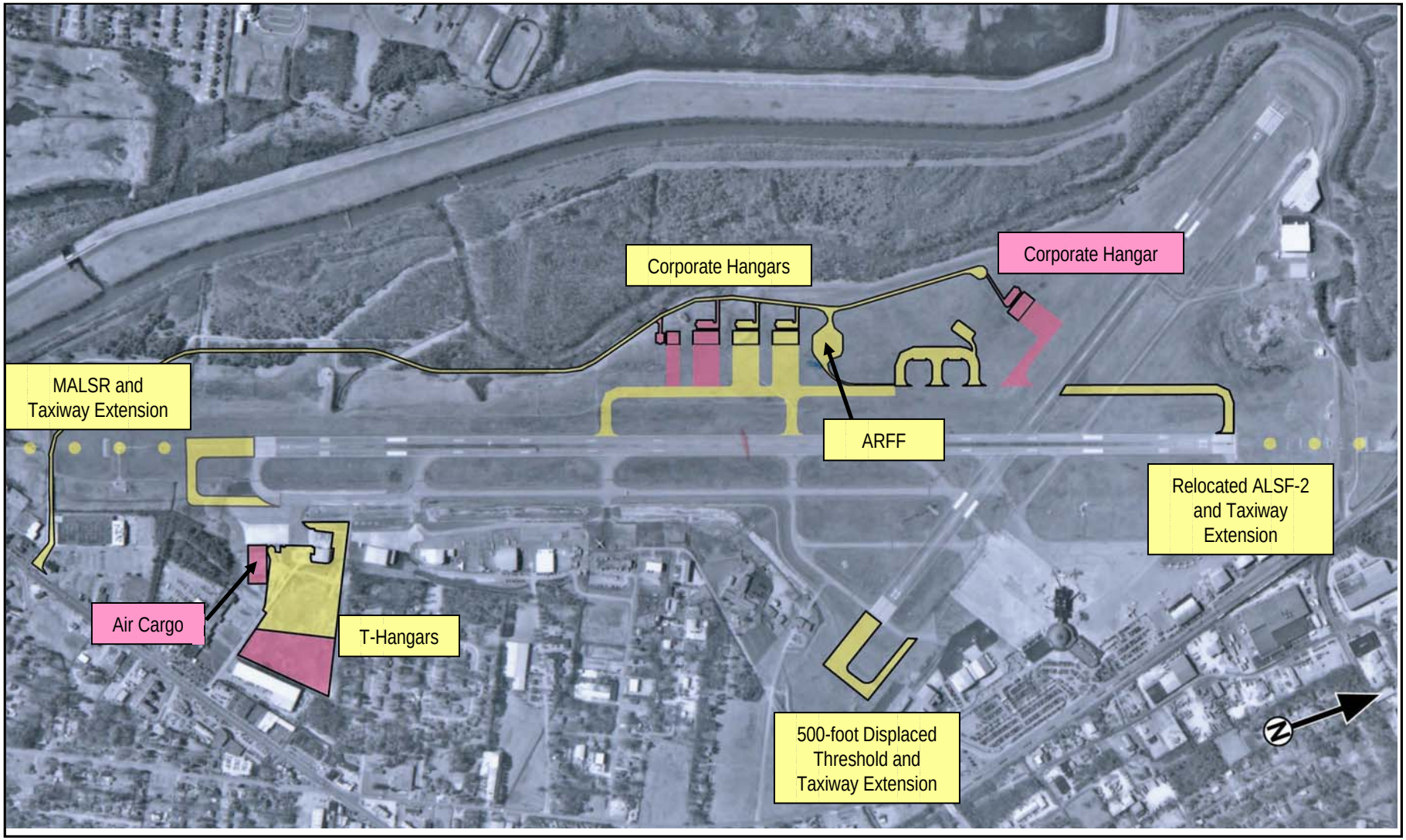
6.1 Lovell Field (Chattanooga)

Major capital improvements for Lovell Field through 2010 include several taxiway extensions, updated lighting systems, additional development of corporate and T-hangars, and a new Aircraft Rescue and Fire Fighting (ARFF) facility. Major improvements through 2020 include additional corporate and T-hangars, associated ramp space, and an air cargo area. There are no planned improvements for the 2020-2030 timeframe. Proposed capital improvements through 2020 are detailed in **Table 6-1** and **Figure 6-1**.

Table 6-1 Lovell Field (Chattanooga)
Capital Improvements Through 2030

Phasing	Project
2010	Taxiway H phase 2
2010	New electrical vault Runway15/33, Taxiway D
2010	Taxiway A north end overlay
2010	Reconstruction Runway 15/33
2010	Runway 15/33 and Taxiway D extension
2010	Relocate ALSF-2 and relocate Runway 20 glideslope
2010	Relocate Taxiway A from Taxiway G to Taxiway C
2010	Acquire property for safety area of RW 2 and Twy A extension
2010	Runway 2 and Taxiway A extension
2010	MALSR relocation
2010	Taxiway C and B re-work
2010	Taxiway A from Taxiway C to Runway 15/33
2020	Southwest ramps to within 50 feet of building
2020	North ramps

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Lovell Field (Chattanooga)

Figure 6-1

6.2 McGhee Tyson Airport (Knoxville)

Major capital improvements for McGhee Tyson Airport through 2010 include multiple runway exits. Major improvements through 2020 include a Runway extension to Runway 5L, various taxiway connectors and runway exits, and a terminal and ramp expansion project. In addition, improved access to the Tennessee Air National Guard (TANG) facility is expected to be completed by TANG. Major improvements in the 2030 timeframe include a new parallel runway and taxiway system, a new terminal building, various taxiway connectors, and a runway extension to runway 5R. Proposed capital improvements through 2030 are detailed in **Table 6-2** and **Figure 6-2**.

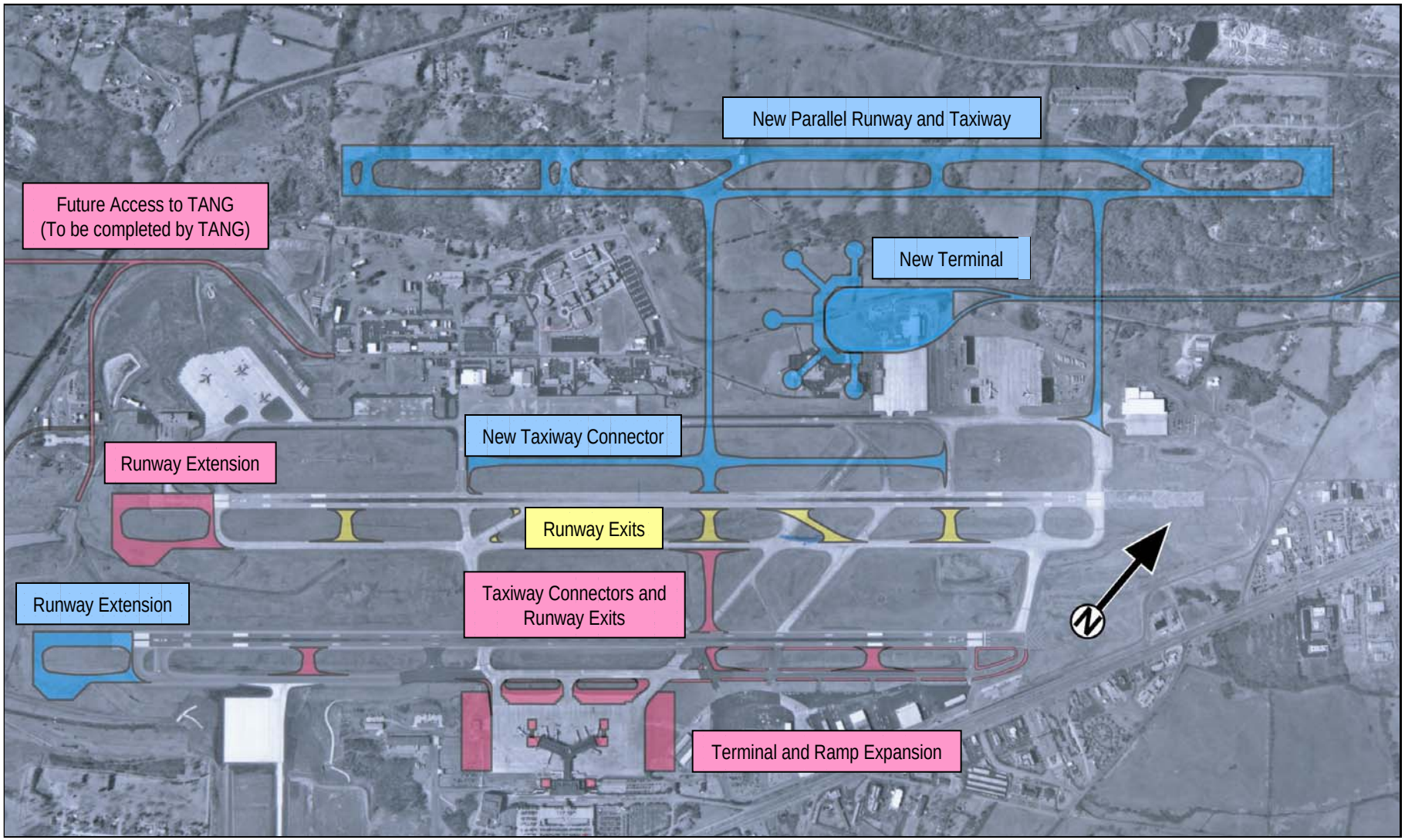
Known access issues as reported by airport representatives include the following:

- Public transportation from Blount County to Knoxville – need improved access from the Gatlinburg/Pigeon Forge area to the airport.
- Alcoa Parkway - improvements to the limited access highway.
- Alcoa Highway - existing alignment and median improvements.
- Pellissippi Parkway connection to the midfield terminal – sufficient room may not exist as this road is physically constrained.
- Relocation of Airbase Road - the airport anticipates a need for additional land acquisition. If acquired, Airbase Road (a State highway) would eventually need to be relocated.
- Improvements to Louisville Road for TANG new main entrance – the current road has poor sight distance and vertical alignment.
- Construction of TANG new main entrance including bridge over the railroad.
- Development at Topside Road interchange at I-140 compatible with midfield connector.

Table 6-2 McGhee-Tyson (Knoxville)
Capital Improvements Through 2030

Phasing	Project
2010	Taxiway D
2010	ARFF building replacement
2010	Taxiway B (South reconstruction)
2010	From Taxiway B1 to Taxiway B2
2010	Demolition, grading, drainage, paving, lighting
2010	Parking garage phase 4
2010	Land reimbursement
2010	Equipment replacement
2010	Taxiway B4 connector
2010	From Runway 5R/23L to Taxiway B
2010	Grading, drainage, paving, lighting
2010	1970 air cargo building-paving landside
2010	Taxiway G8 extension to Airbase Rd.
2010	Land acquisition of two parcels for noise abatement
2010	Warrior Transport & Self
2010	Lower TVA towers
2010	EIS - Third runway
2010	Runway 5R/23L overlay
2010	Air cargo expansion
2010	Entrance road improvements (Alcoa Parkway)
2010	Replace snow removal equipment storage building
2010	Runway 5L/23R rehabilitation
2010	Widen Taxiway B3
2010	From Runway 5L to Taxiway B
2010	Grading, drainage, paving, lighting
2010	Perimeter road
2010	Aviation-related development
2010	Runway 5L/23R shoulders
2010	Complete west development area
2010	Land acquisition for third runway
2020	Runway 5R/23L Twy A overlay
2020	New Runway 5R-Twy A extension
2020	Parking garage phase 5
2020	Misc. projects/maintenance
2020	Equipment purchases
2020	Aviation-related site development
2020	Land acquisition for third runway
2030	Runway 5L and Twy B extension
2030	Runway 5L exit (B-2)
2030	ARFF building relocation
2030	Twy G bypass
2030	New runway/taxiway system

Source: HNTB Analysis



Source: HNTB analysis

Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

McGhee-Tyson (Knoxville)

Figure 6-2

6.3 McKellar-Sipes Regional (Jackson)

Major capital improvements for McKellar-Sipes Regional Airport through 2010 include development of a perimeter road, and a runway and taxiway extension. There are no planned improvements for the 2020 or 2030 timeframe; however airport representatives reported a possible need for a new terminal building at some point in the future. Space for the facility has not been planned at this time. Proposed capital improvements through 2010 are detailed in **Table 6-3** and **Figure 6-3**.

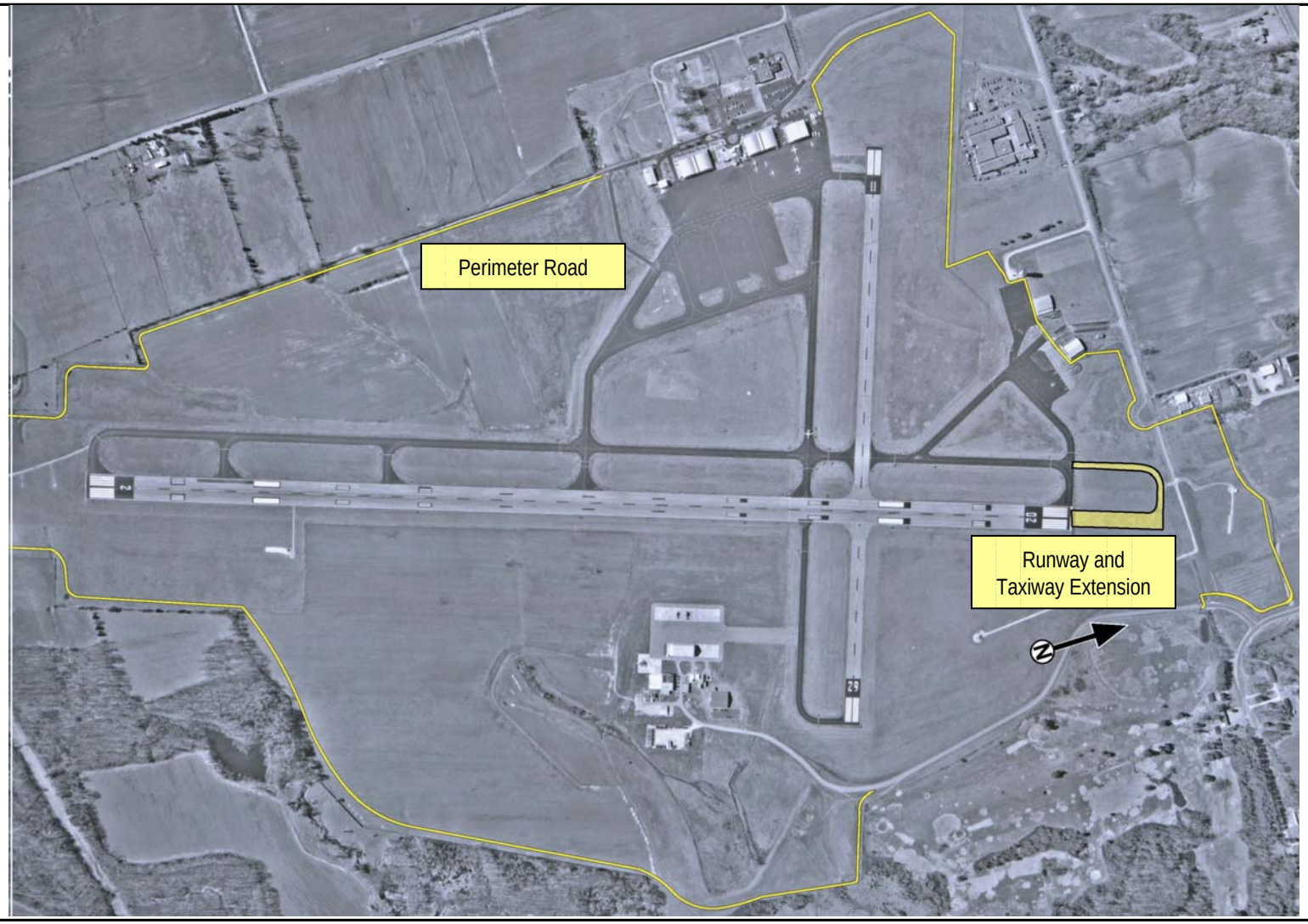
Known access issues as reported by airport representatives include the following:

- Widening of State Route 223 beginning approximately one half mile south of the James Lawrence Rd./State Route 223 intersection and ending at the 4-lane divided section north of State Route 1 (US70)/State Route 223 intersection.

Table 6-3 McKellar-Sipes Regional (Jackson)
Capital Improvements Through 2030

Phasing	Project
2010	Reseal & restripe landside pavement
2010	Install security cameras
2010	Rehab portions of taxiways "C" & "A"
2010	Rehab drainage R/W 2 RPZ
2010	Update Master Plan & ALP
2010	Acquisition land for approaches (RWY RPZ)
2010	Overlay R/W 11/29
2010	Perimeter access road
2010	Construct taxiway (near control tower)
2010	Extend Runway & Taxiway "A" (Rwy 20) 500'

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

McKellar-Sipes Regional (Jackson)

Figure 6-3

6.4 Memphis International Airport (Memphis)

Major capital improvements for Memphis International Airport through 2010 include a possible relocation of the Tennessee Air National Guard (TANG) to allow FedEx expansion, the first phase of a new transportation center and employee parking area, terminal expansion, a new Aircraft Rescue and Fire Fighting (ARFF) facility, taxiway expansion, a new service road bridge, airport related development, and a new air cargo area on the east side of the airport. Major improvements through 2020 include several connecting taxiways, a new glycol collection system and several departure staging pads, and belly cargo facilities. Major improvements through 2030 include plans for a new terminal building. Proposed capital improvements through 2030 are detailed in **Table 6-4** and **Figure 6-4**.

Known access issues as reported by airport representatives and the Memphis Area MPO include the following[4]:

Widening and reconstruction of Winchester Road and the Winchester Road-Plough Boulevard interchange – this interchange currently forces vehicles into the airport when many would prefer to go eastbound on Winchester. A redesign of this interchange would substantially reduce airport traffic congestion.

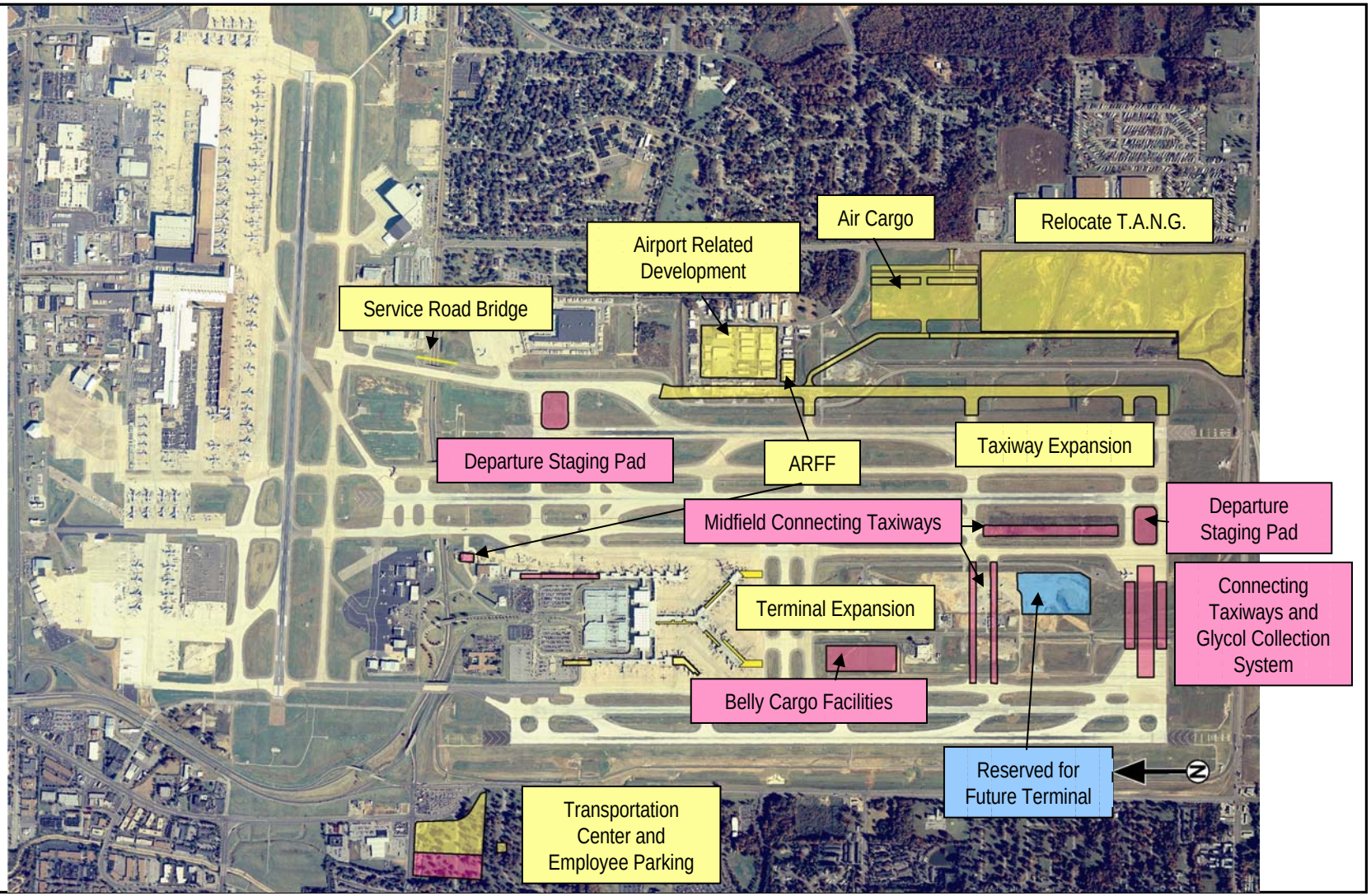
- Construction of the Downtown-Airport light-rail line. MATA has an option to extend their rail line to the airport to use the existing subterranean system. If constructed, the new line would connect to an existing trolley system.
- Construction of I-69.
- Reconstruction of the Airways Boulevard at the I-240 South interchange.
- Widening Holmes Road and the addition of a Holmes Road interchange at I-55 to provide an alternate access route to the airport.

[4] Source: Memphis Area MPO Long Range Transportation Plan 2026 and Conformity Determination for Long Range Transportation Plan 2026 and Transportation Improvement Plan 2004-2006. February 13, 2004.

Table 6-4 Memphis International (Memphis)
Capital Improvements Through 2030

Phasing	Project
2010	Extend Taxiway November south to Runway 36L
2010	Re-mark, sign & light Taxiway Mike for runway use
2010	Reconstruct Runway 18R/36L
2010	Reconstruction of Taxiway Zulu
2010	Construction of high speed exit from Runway 27
2010	Reconstruction of Taxiway Tango
2010	Construct Taxiway Yankee east of Runway 18L/36R
2010	Construct service road bridge
2010	Reconstruct Taxiway Mike
2010	East walkway connector
2010	Land acquisition for noise mitigation
2010	Parking garage expansion
2010	Construct signalized roadway system
2010	Construct employee parking lot (phase 1)
2010	Plough Boulevard slip ramp
2010	Repair of upper level drive
2010	Parking garage repairs
2010	Expand Concourse A to the North
2010	Expand Concourse B to the South
2010	Widen existing Concourse B (hybrid expansion)
2010	Expand ticketing in Terminal C
2010	Expand/reconstruct baggage claim and make-up
2010	Concourse B FIS expansion
2010	Concourse B Skywalk
2010	Install elevators on Concourse A
2010	Install elevators on Concourse C
2010	Vertical access improvements in Concourse B
2010	East walkway connector
2010	Install elevators in Terminal B
2010	ADA restrooms in Terminal A and C
2010	Regional jet facility on Concourse A
2010	New world club on west connector
2010	Concourse A, B, and C concession
2010	Construct belly cargo facilities
2010	Construct sitework for all-cargo facility
2010	Acquisition of industrial park
2010	Construct maintenance warehouse
2010	Construct new taxiway to all-cargo facility (phase 1)
2020	Construct crossfield taxiway system
2020	Construct common de-ice pads
2020	Construct aircraft departure staging area at Rwy 36C, 18L, and 9
2020	Non-signalized roadway and parking improvements
2020	Employee parking lot (phase 2)
2020	Expand Concourse C to the north
2020	Construct new ARFF facility
2020	Construct new taxiway to all-cargo facility (phase 2)
2030	Construct new terminal building

Source: HNTB Analysis



Source: HNTB analysis

Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Memphis International (Memphis)

Figure 6-4

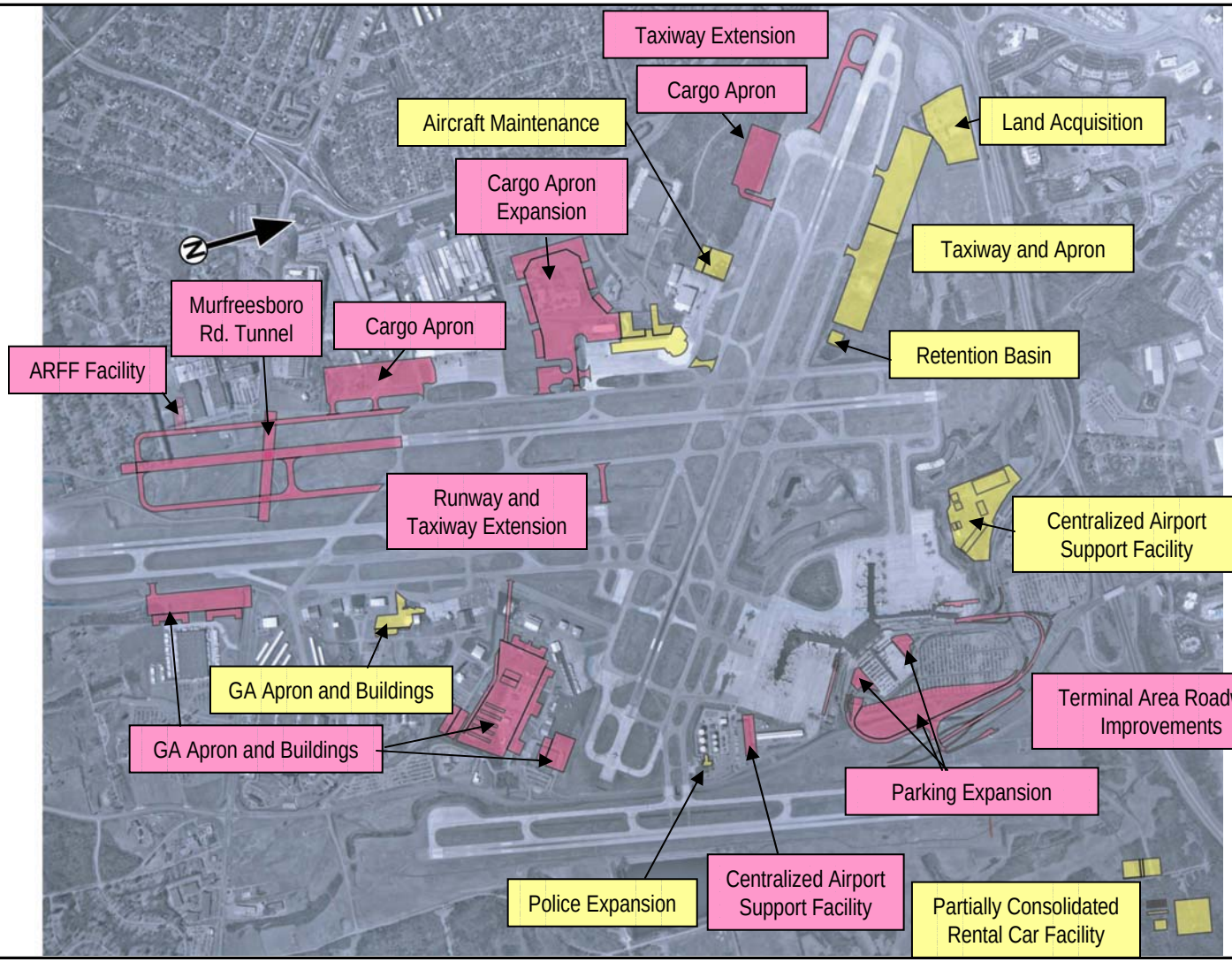
6.5 Nashville International Airport (Nashville)

Major capital improvements for Nashville International Airport through 2010 include land acquisition, an aircraft maintenance facility, expanded taxiway and apron areas, a centralized airport support facility, an expansion of the police building, a partially consolidated rental car facility, and general aviation buildings and apron expansion. Major improvements through 2020 include terminal area roadway improvements, an expansion of parking facilities, a new centralized airport support facility, additional general aviation apron and buildings, a new Aircraft Rescue and Fire Fighting (ARFF) facility, a runway and taxiway extension for Runway 2L, a taxiway extension at the approach end of Runway 13, and the development of several cargo apron areas. There are no known improvements proposed for the 2030 timeframe at this time. Proposed capital improvements through 2020 are detailed in **Table 6-5** and **Figure 6-5**.

Table 6-5 Nashville International (Nashville)
Capital Improvements Through 2030

Phasing	Project
2010	ARFF facility
2010	Murfreesboro Road tunnel
2010	Cargo apron
2010	Aircraft maintenance
2010	Runway 2C and taxiway extension
2010	Centralized airport support facility
2010	Terminal area roadway improvements
2010	Partially consolidated rental car facility
2010	GA apron and buildings
2020	Taxiway and apron
2020	Retention basin
2020	Parking expansion
2020	Centralized airport support facility
2020	Police expansion
2020	GA apron and buildings

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Nashville International (Nashville)

Figure 6-5

6.6 Tri-Cities Regional Airport (Bristol)

Major capital improvements for Tri-Cities Regional Airport through 2010 include parking and ramp expansions, a multi-modal center, expansion of the cargo area and new cargo buildings, widening of the airport perimeter road, and widening of the state route west of the airport. Major improvements through 2020 include further expansion of the cargo area, and additional corporate hangar development. Major improvements through 2030 include multiple runway extensions and parallel taxiways, as well as a new runway, parallel taxiway, and taxiway extension. Proposed capital improvements through 2030 are detailed in **Table 6-6** and **Figure 6-6**.

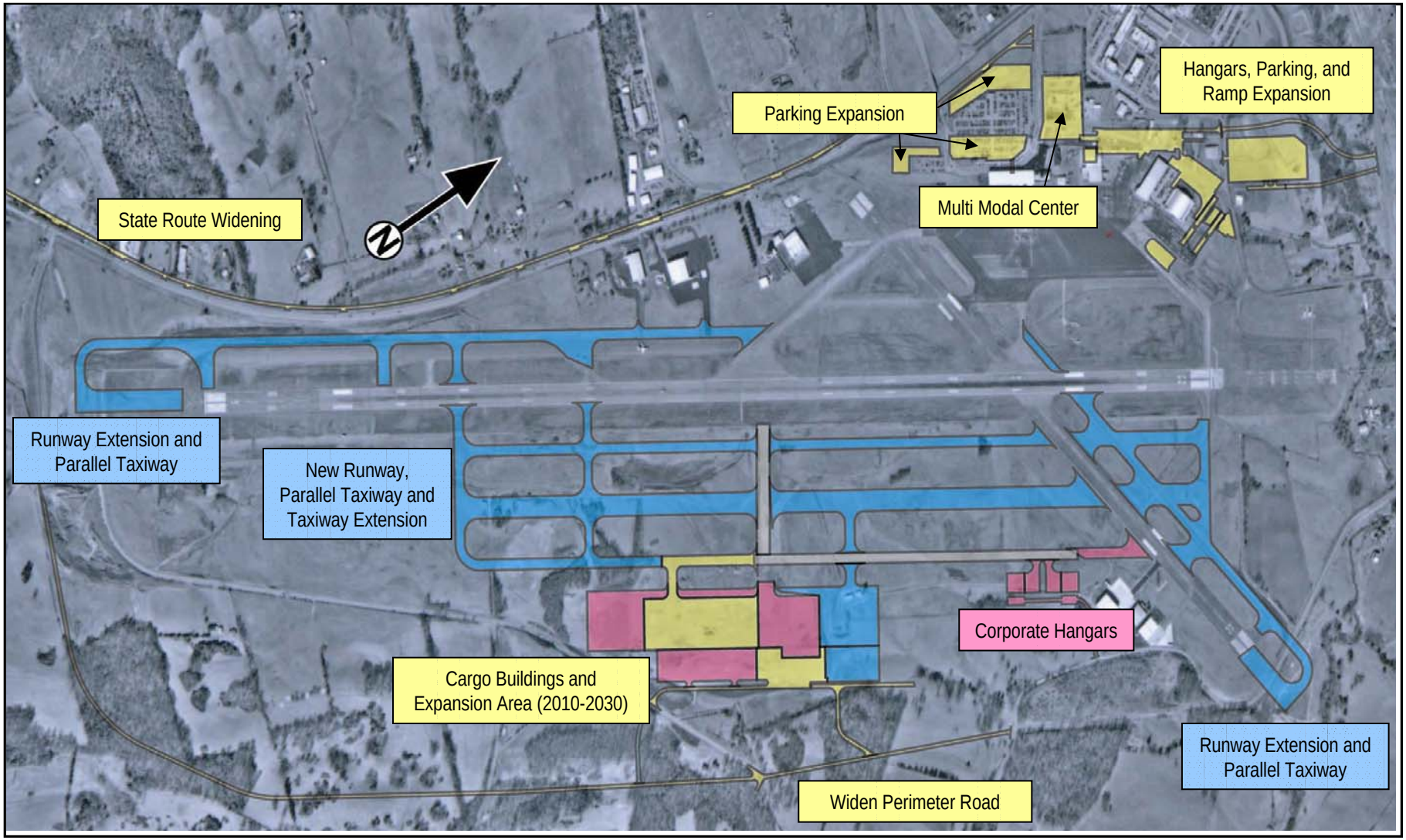
Known access issues as reported by airport representatives include the following:

- Hamilton Road connection to allow traffic to go to the northeast side of the airport.
- Improve Muddy Creek connector to provide improved access to general aviation and to reduce terminal congestion.
- Continuation of U.S. Highway 19E from Bluff City to Route 75.
- Widening of Route 75 near the airport.

Table 6-6 Tri-Cities Regional (Bristol)
Capital Improvements Through 2030

Phasing	Project
2010	Runway 5 pavement rehabilitation
2010	ARFF training equipment
2010	South parallel taxiway extension
2010	Runway 23 property acquisition
2010	Runway 9/27 distance markers & guidance
2010	GA public parking rehabilitation
2010	PSA bullet proof vest
2010	Terminal food court
2010	Air cargo center security equipment
2010	Air cargo fuel tank
2010	Runway 5/23 rubber removal
2010	Airport roadway signage improvements
2010	Administrative vehicle
2010	Public parking exit plaza improvements
2010	Parking lot service vehicle
2010	Web cams
2010	Airfield security vehicle
2010	Wysong hanger & ramp repairs
2010	Runway 23 pavement rehabilitation
2010	Airport master plan
2010	Relocate GA area frontage road
2010	Terminal lobby seating replacement
2010	Airport access road - south development area
2010	Taxiway C lead-in centerline lighting
2010	Airfield perimeter road - Rwy 23 end
2010	Terminal loop road pavement rehabilitation
2010	ARFF vehicle replacement
2010	Land acquisition - Runway 5 approach
2010	Airfield tractor/mower
2010	Terminal Ramp pavement rehabilitation
2010	Taxiway pavement rehabilitation
2010	GA ramp expansion
2010	Airfield perimeter road - southside
2010	Air cargo center apron
2010	Terminal expansion
2020	Air cargo expansion
2030	Runway 9/27 and Taxiway C extension 500'
2030	Runway 5/23 extension 2000 feet
2030	Relocate Taxiway A 87 feet north
2030	New parallel runway and taxiway system

Source: HNTB Analysis



Source: HNTB analysis

Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Tri-Cities Regional Airport (Bristol)

Figure 6-6

General Aviation Airports

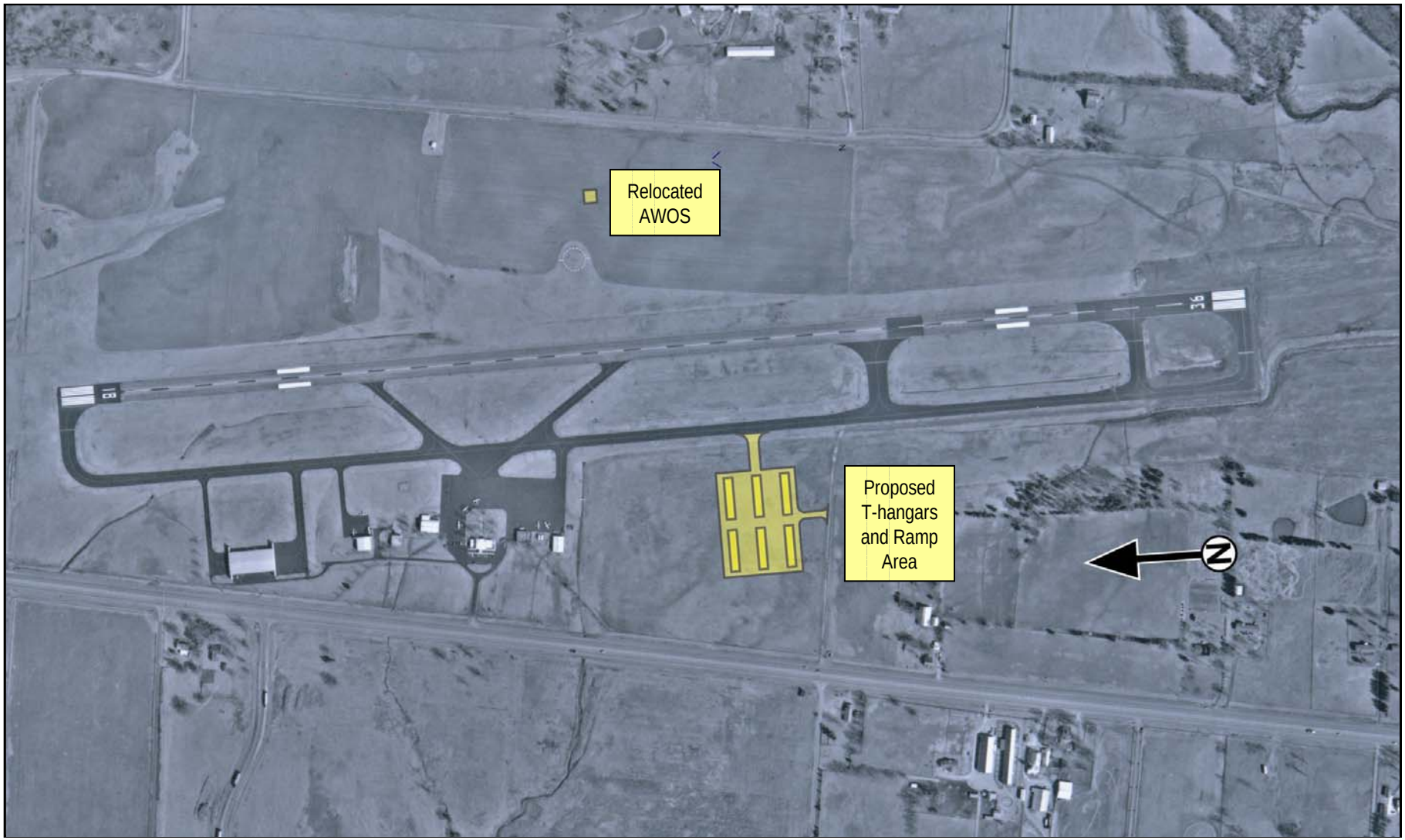
6.7 Bomar Field – Shelbyville Municipal Airport (Shelbyville)

Major capital improvements for Bomar Field through 2010 include relocation of the Automated Weather Observing System (AWOS) and the development of T-hangars and ramp area on the west side of the airport. There are no major improvements planned at this time past 2010. Proposed capital improvements through 2010 are detailed in **Table 6-7** and **Figure 6-7**.

Table 6-7 Bomar Field-Shelbyville Municipal (Shelbyville)
Capital Improvements Through 2030

Phasing	Project
2010	Construct 30 T-hangars - 2 sets
2010	Security gate - T-hangar
2010	Site prep for 100X100 hangar
2010	Corporate hangar
2010	Apron expansion/site prep
2010	Security gate south side terminal
2010	Security lighting upgrade/street & ramp
2010	Hangar roof repairs
2010	AWOS relocation/upgrade
2010	Runway/Taxiway Overlay (Rwy 18/36)
2010	Auto parking upgrade

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Bomar Field-Shelbyville Municipal (Shelbyville)

Figure 6-7

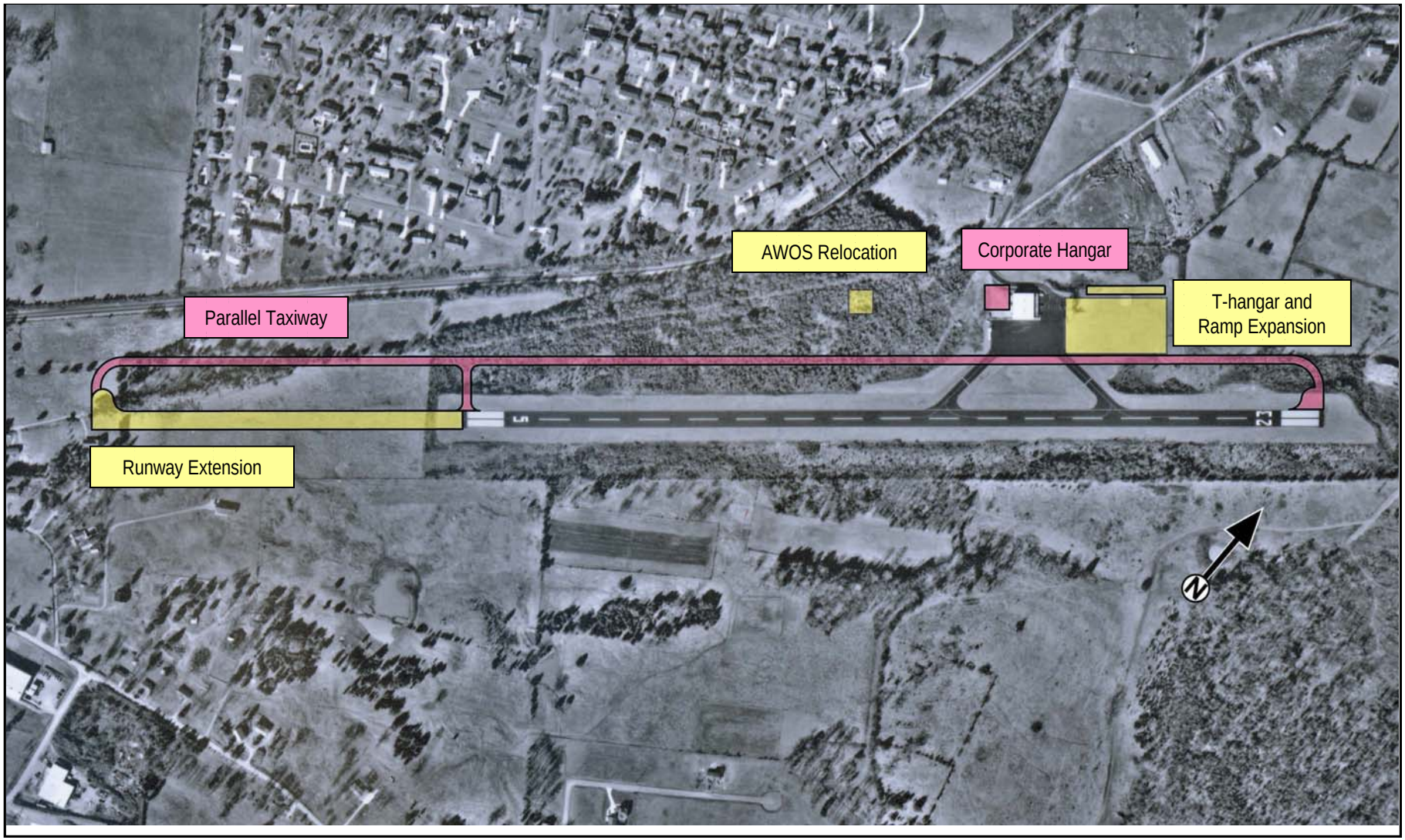
6.8 Campbell County Airport (Jacksboro)

Major capital improvements for Campbell County Airport through 2010 include relocation of the Automated Weather Observing System (AWOS), T-hangar and ramp expansion, and a runway extension that will take available runway length to 4000 feet. Major improvements through 2020 include corporate hangar development and a full parallel taxiway. There are no proposed capital improvements for the 2020-2030 timeframe. Proposed capital improvements through 2020 are detailed in **Table 6-8** and **Figure 6-8**.

Table 6-8 Campbell County (Jacksboro)
Capital Improvements Through 2030

Phasing	Project
2010	Environmental study for runway extension
2010	Seal coat runway and taxiway
2010	Acquire land for approaches
2010	Apron extension - terminal eastward
2010	T-hangers
2010	Runway 5 end extension - 500 feet
2010	Security fencing
2010	AWOS relocation/upgrade
2010	Repave runway and taxiway and ramp
2020	Install parallel taxiway to Runway 5 end

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Campbell County (Jacksboro)

Figure 6-8

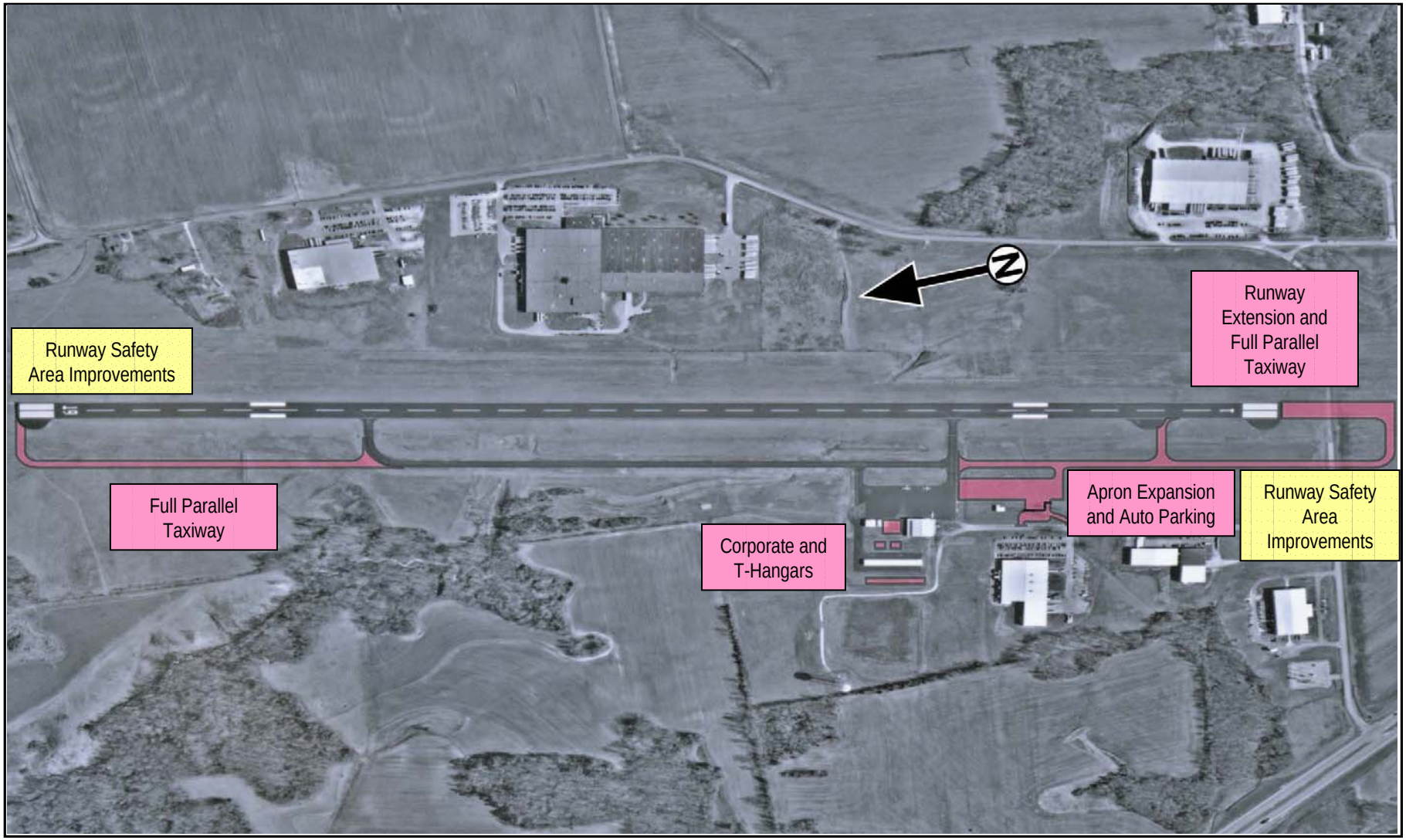
6.9 Carroll County Airport (Huntingdon)

Major capital improvements for Carroll County Airport through 2010 include Runway Safety Area improvements. Major improvements through 2020 include apron expansion and auto parking, corporate and T-hangar development, a runway extension on Runway 1, and completion of the full parallel taxiway. There are no proposed improvements for the 2020-2030 timeframe at this time. Proposed capital improvements through 2020 are detailed in **Table 6-9** and **Figure 6-9**.

Table 6-9 Carroll County (Huntingdon)
Capital Improvements Through 2030

Phasing	Project
2010	Crack sealing and seal coating (rwy, twy, ramp)
2010	Surveillance system
2010	Runway 19 approach
2010	T-hangar site
2010	Acquisition land for RPZ & Runway 1 end
2010	Fuel apron
2010	Safety area runway 1/19 parallel
2010	Land acquisitions (excluding approaches)
2010	Runway Safety Area (Runway 19)
2010	Terminal area development
2010	Runway overlay 1/19
2020	Runway 1 extension
2020	Parallel taxiway
2020	Auto parking
2020	Corporate and T-hangars

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Carroll County (Huntingdon)

Figure 6-9

6.10 Dyersburg Municipal Airport (Dyersburg)

Major capital improvements for Dyersburg Municipal Airport through 2010 include land acquisition for T-hangar development. Major improvements through 2020 include corporate and T-hangar development as well as an apron expansion for the corporate hangar area. Major improvements through 2030 consist of completion of the full parallel taxiway for Runway 4/22. Proposed capital improvements through 2030 are detailed in **Table 6-10** and **Figure 6-10**.

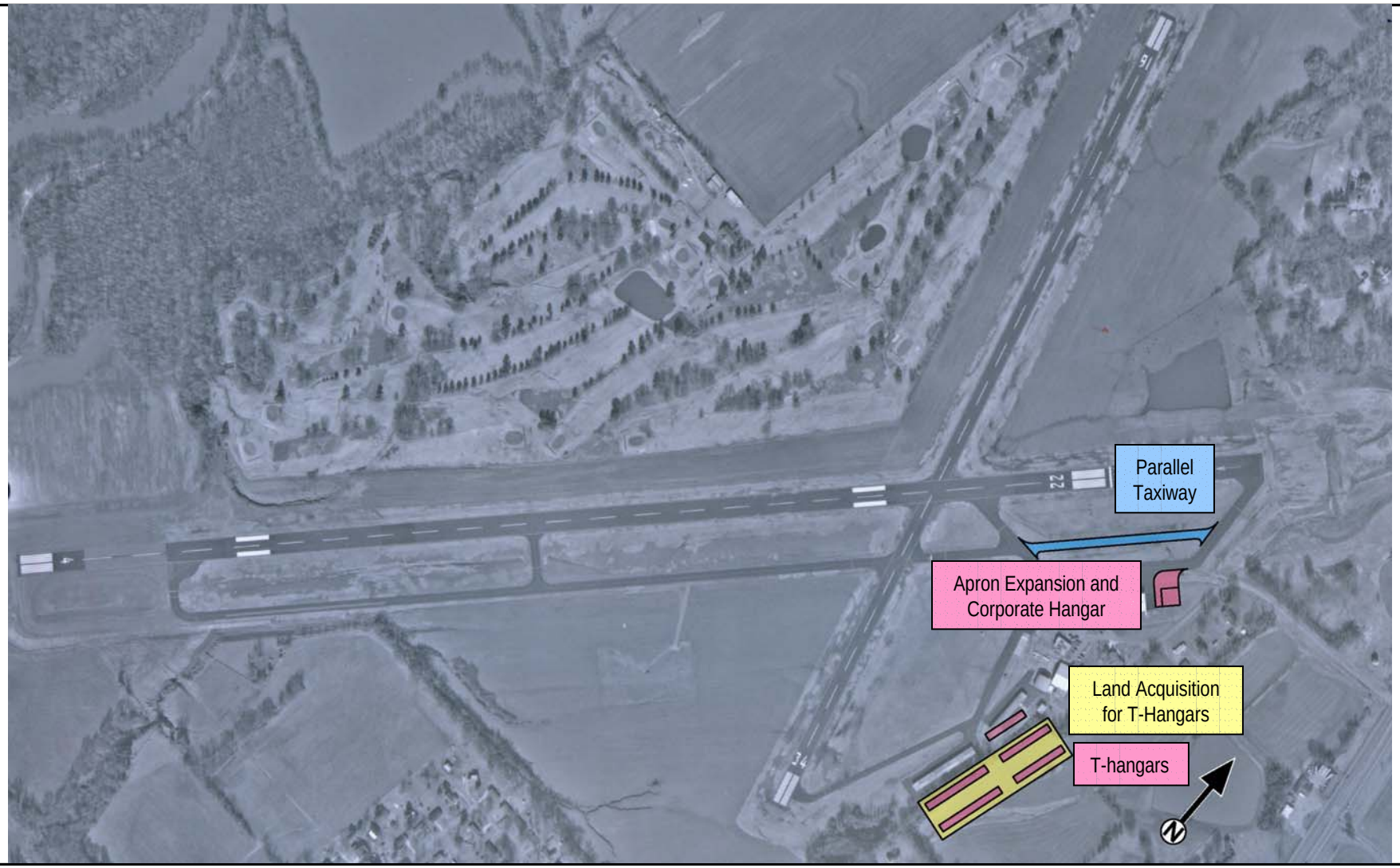
Known access issues as reported by airport representatives include the following:

- Potential widening and improvement of the current 2-lane county access road.

Table 6-10 Dyersburg Municipal (Dyersburg)
Capital Improvements Through 2030

Phasing	Project
2010	Crack seal on taxiway
2010	Apron expansion (terminal tie downs)
2010	Refurnish gray hangar floor/heat/bi-fold doors
2010	Build 10 T-hangars
2010	Micro surface Runway 16/34
2010	Runway safety area, Runway 16/34
2010	Evaluate microsurface and resurface Runway 4/22
2010	Rehabilitation, crosswind Runway 16/34
2010	Pavement overlay, Runway 4/22
2020	Pavement overlay, Runway 16/34
2030	Runway lights upgrade, Runway 4/22
2030	Parallel taxiway segment

Source: HNTB Analysis



Source: HNTB analysis

Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Dyersburg Municipal (Dyersburg)

Figure 6-10

6.11 Gatlinburg-Pigeon Forge Airport (Sevierville)

Major capital improvements for Gatlinburg-Pigeon Forge Airport through 2010 include a new terminal building and ramp area, land acquisition and grading for future development, and land acquisition for a future runway relocation. Major improvements through 2020 include relocation of Runway 10/28 to allow for a 300 foot separation between runway and taxiway. At this time there are no planned improvements for the 2020-2030 timeframe. Proposed capital improvements through 2020 are detailed in **Table 6-11** and **Figure 6-11**.

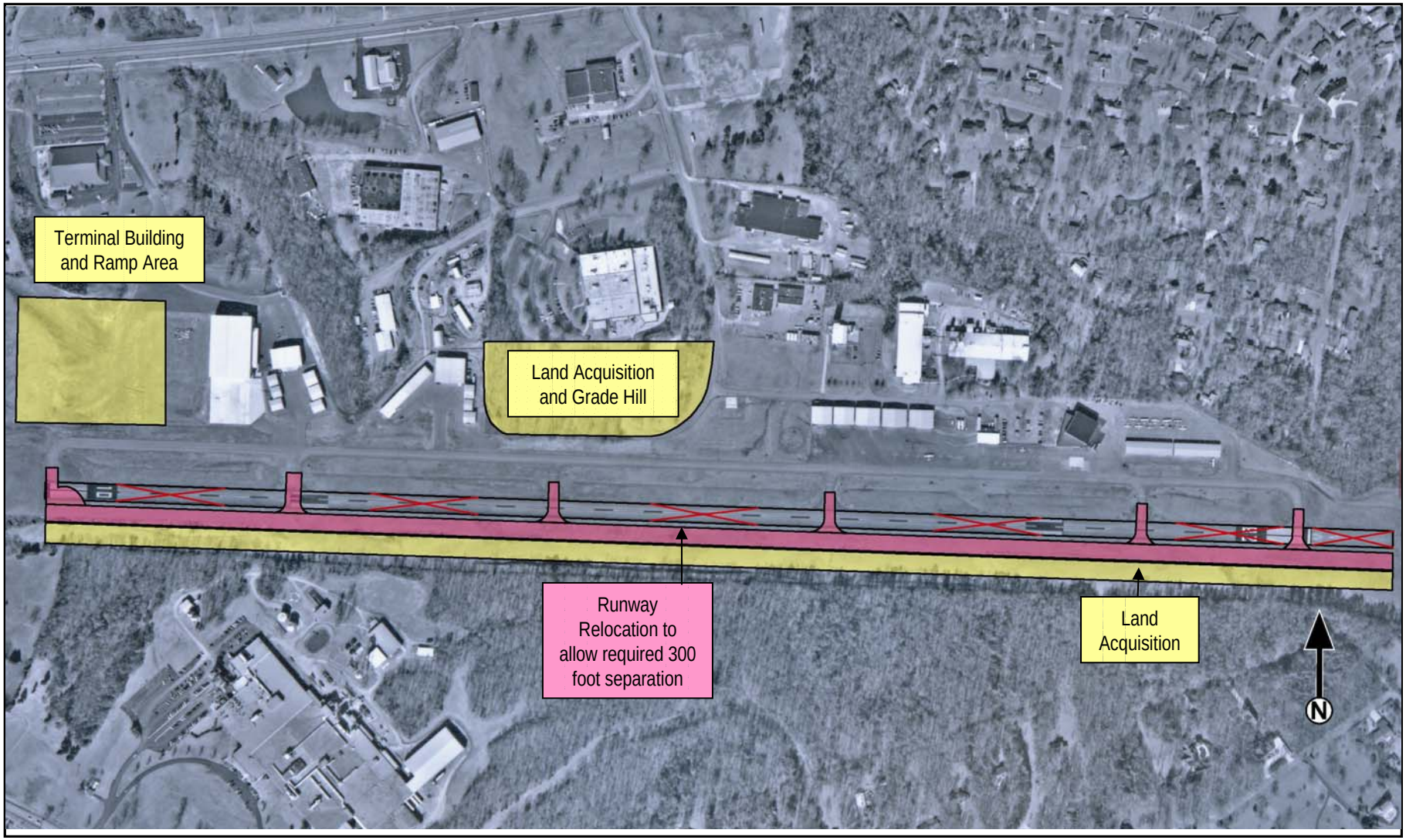
Known access issues as reported by airport representatives include the following:

- Construction of a new 5-lane road from Pigeon Forge to Sevierville.
- New road from I-40 to Pigeon Forge.

Table 6-11 Gatlinburg-Pigeon Forge (Sevierville)
Capital Improvements Through 2030

Phasing	Project
2010	Hangars
2010	Land acquisition, 7 acres near AWOS
2010	TVA power line relocation
2010	Removal of hill - north side
2010	Land acquisition south side
2010	Ramp expansion
2010	New terminal and apron
2010	Runway overlay
2010	AWOS upgrade
2020	Runway relocation

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Gatlinburg-Pigeon Forge (Sevierville)

Figure 6-11

6.12 Greeneville-Greene County Municipal Airport (Greeneville)

Major capital improvements for Greeneville-Greene County Municipal Airport through 2010 include a runway and taxiway extension for Runway 23 with a corresponding displaced threshold for Runway 5, development of box hangars and associated ramp expansion, and relocation of Old Wilson Road. Major improvements through 2020 include construction of a new section of Airport Road. There are no improvements planned for the 2020-2030 timeframe at this time. Proposed capital improvements through 2020 are detailed in **Table 6-12** and **Figure 6-12**.

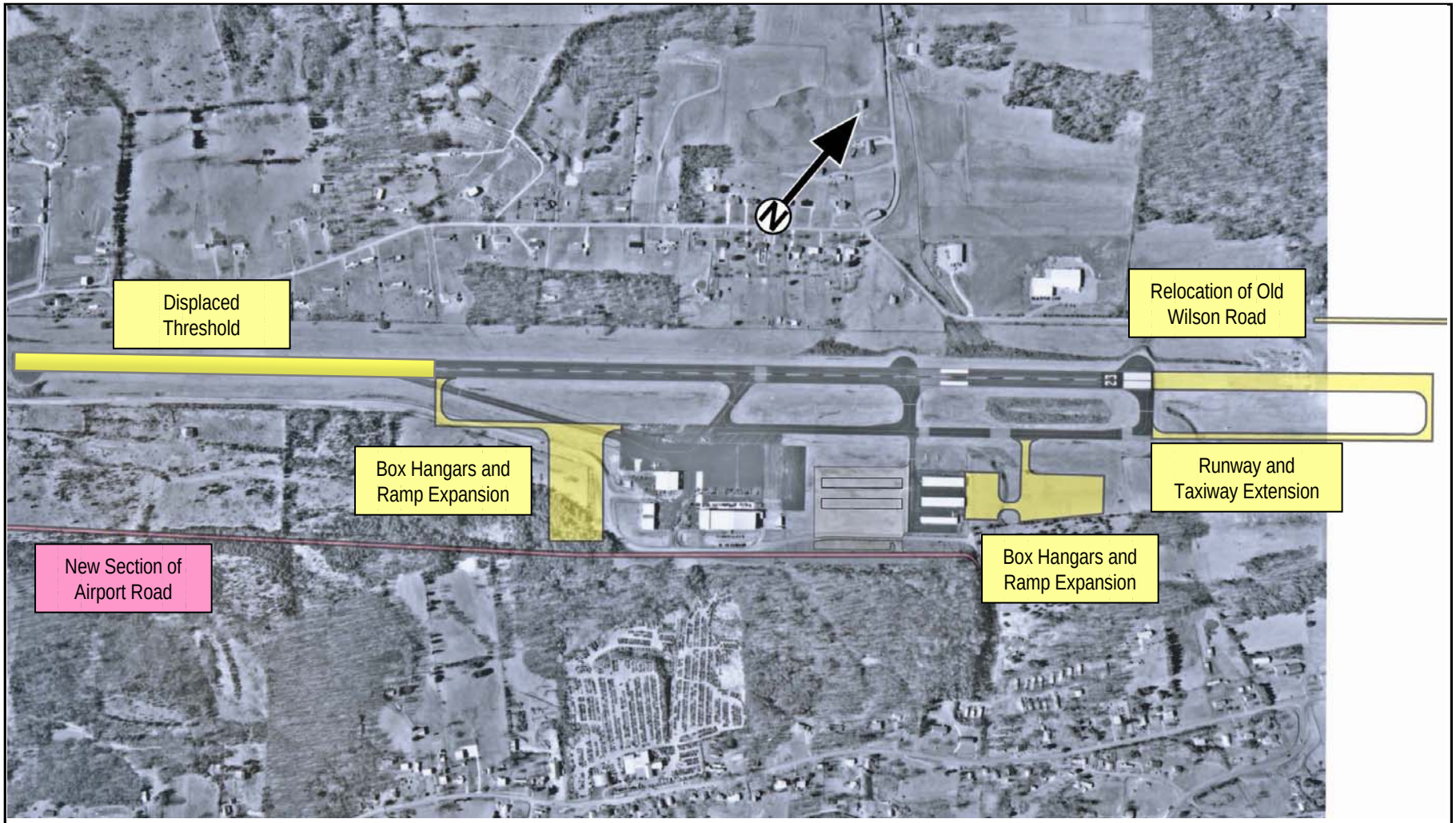
Known access issues as reported by airport representatives include the following:

- Straighten White House Road to eliminate the dogleg to State Route 93.
- Create a bypass to U.S. Route 11E with an airport exit.

Table 6-12 Greeneville-Greene County Municipal (Greeneville)
Capital Improvements Through 2030

Phasing	Project
2010	Runway justification
2010	Environmental study, Runway 23 end
2010	Acquisition land for approaches
2010	Improve RSA, Runway 23 end
2010	Relocated runway (correct L.O.S.), Runway 23 end
2010	Corporate hangar construction
2010	AWOS relocation/ upgrade
2010	Terminal renovations
2010	Fueling apron pad, 50' X 50'
2010	RSA improvements- Runway 23 end- parallel to runway
2020	Construct new section of Airport Road

Source: HNTB Analysis



Source: HNTB analysis

Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Greeneville-Greene County Municipal (Greeneville)

Figure 6-12

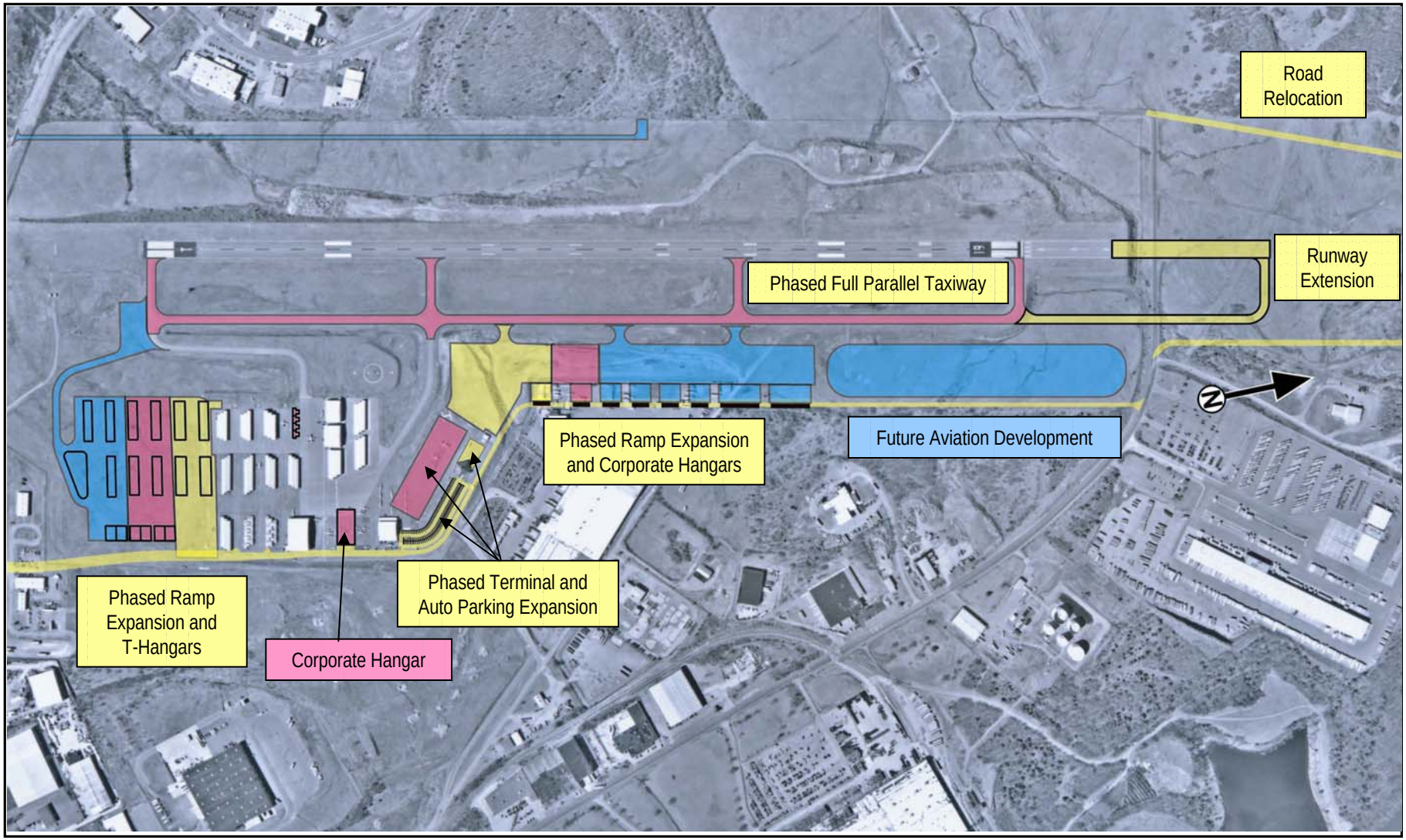
6.13 John C. Tune Airport (Nashville)

Major capital improvements for John C. Tune Airport through 2010 include a runway and taxiway extension for Runway 19, phased ramp expansion and corporate/T-hangar development, road relocation and phased terminal and auto parking expansion. Major improvements through 2020 include further development of the phased terminal and auto parking expansion and ramp expansion and corporate/T-hangar development begun in the previous period, as well as completion of the full parallel taxiway. Major improvements through 2030 include road relocation, completion of the phased ramp expansion and corporate/T-hangar development, as well as future aviation development proposed for the east side of the airport. Proposed capital improvements through 2030 are detailed in **Table 6-13** and **Figure 6-13**.

Table 6-13 John C. Tune (Nashville)
Capital Improvements Through 2030

Phasing	Project
2010	Apron pavement repairs
2010	OFA/ drainage improvements (west side)
2010	Relocate localizer
2010	Design apron - south
2010	Security cameras, phase 3
2010	Rehabilitate Runway 1/19
2010	Construct hangars - phase 1
2010	Fuel farm tanks
2010	RSA improvements
2010	Apron expansion - south
2010	New access road
2010	Retaining wall
2010	Pavement management study
2010	Runway 1/19 extension
2010	Parallel Taxiway A extension
2020	Construct hangars - phase 2
2020	Parallel Taxiway extension
2020	Terminal and auto parking expansion
2020	Corporate hangar
2030	Environmental assessment - west parallel taxiway
2030	Ramp expansion and hangars - phase 3
2030	Aviation development area

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

John C. Tune (Nashville)

Figure 6-13

6.14 Millington Municipal Airport (Millington)

Major capital improvements for Millington Municipal Airport through 2010 include a large aircraft maintenance hangar, and development of corporate and T-hangars. Major improvements through 2020 include additional corporate and T-hangars. Major improvements through 2030 include development of a full parallel taxiway. In addition to these projects, phased development of perimeter roads is planned throughout the 2010-2030 timeframe. Proposed capital improvements through 2030 are detailed in **Table 6-14** and **Figure 6-14**.

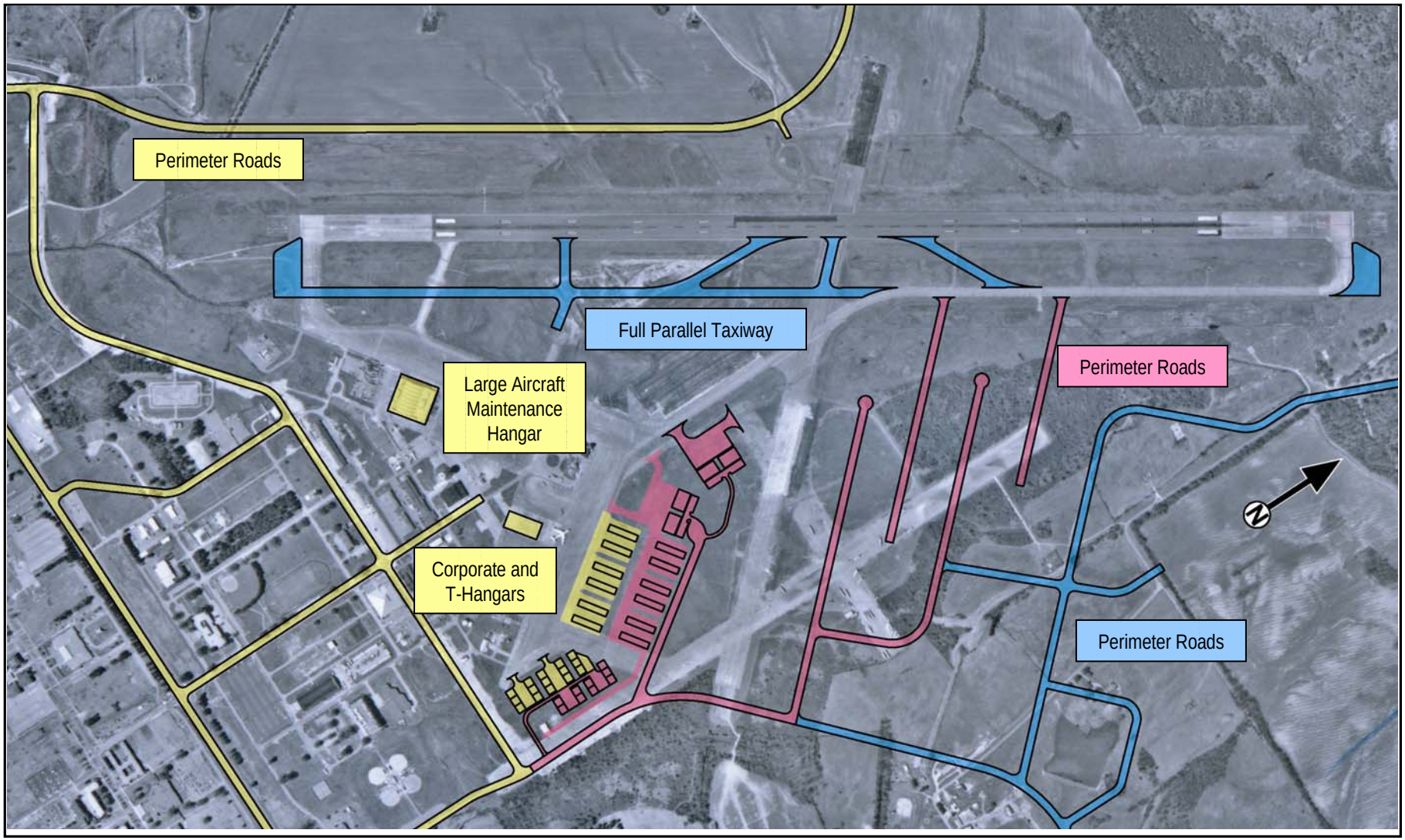
Known access issues as reported by airport representatives include the following:

- The Navy closed the local base to civilians. Consequently Singleton Parkway is no longer available for access to the highway. Need access from both sides of the airport to I-385. Need access to I-385 from Navy Road (Route 205) on the east and west side.

Table 6-14 Millington Municipal (Millington)
Capital Improvements Through 2030

Phasing	Project
2010	Apron construction - remove bldg. floor and replace
2010	Hangar renovation - lean-to, hangar 126
2010	Security survey - fuel tanks
2010	Taxiway striping
2010	Access road to new hangars
2010	T-hangar (phase 1) - four, 10 units each
2010	Corporate hangars (phase 1), 2 - 60' X80'
2010	Taxiway E overlay
2010	Radio equipment (ATC)
2010	ATCT renovation (tear down wings)
2010	Rehabilitate existing ARFF
2010	CFR building
2010	Drainage improvements near runway
2010	Master plan update
2010	GA security improvements
2010	Security gates
2010	Maintenance hangar
2010	Runway rubber removal
2010	Corporate hangars (phase 2)
2010	Avigation easements
2010	T-hangars (phase 2)
2010	Rehabilitate runway/taxiway
2010	Auto parking lot
2010	Corporate hangars (phase 3)
2010	Replace main electrical power distributor system
2010	Obstruction removal in approaches
2010	Replace access road to terminal/tower
2010	T-hangars (phase 3)
2010	Construct run-up area (Rwy 4 end)
2010	Construct maintenance/storage hangar
2010	GPS/LAAS
2010	Apron construction - FBO ramp, phase 2
2010	Runway overrun replacement
2010	Parallel taxiway extension (Rwy 4 end to existing)
2010	Runway rehabilitation/ tiedown
2010	Construct taxiway connectors - Rwy 4/22
2020	Pavement rehabilitation
2020	Corporate hangars (phase 4)
2020	Restripe runway/taxiway and rubber removal
2020	Perimeter road development
2030	Runway overlay
2030	Parallel taxiway
2030	Perimeter road development

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Millington Municipal (Millington)

Figure 6-14

6.15 Moore Murrell (Morristown)

Major capital improvements for Moore Murrell Airport through 2010 include corporate and T-hangar development. Major improvements through 2020 include corporate and T-hangar construction, auto parking, and relocation of the full parallel taxiway to allow 300 foot separation from the runway. At this time there are no proposed improvements for the 2020-2030 timeframe. Proposed capital improvements through 2020 are detailed in **Table 6-15** and **Figure 6-15**.

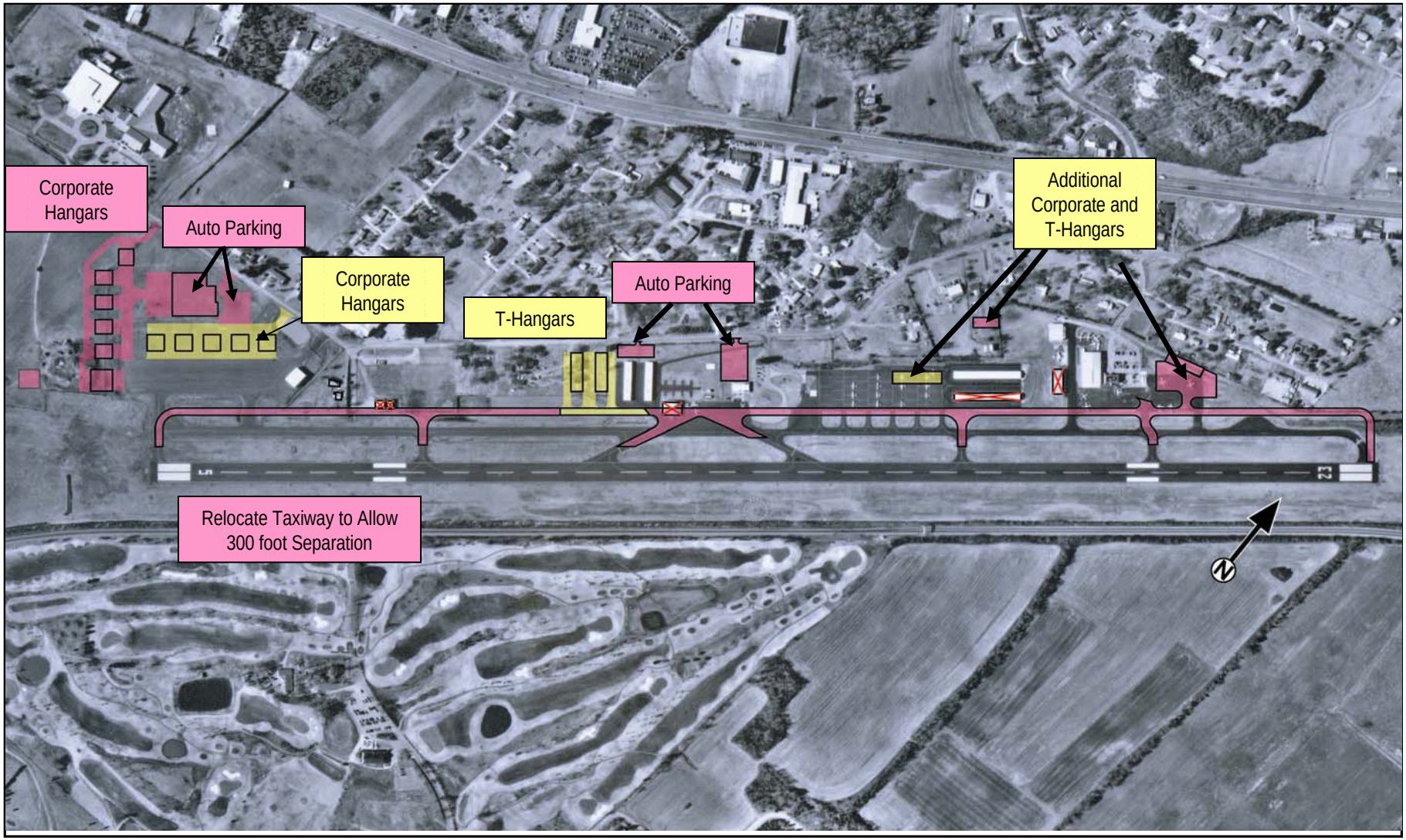
Known access issues as reported by airport representatives include the following:

- A 5-lane highway from I-81 exit 4 to just east of the airport is under construction at this time and should take 7-10 years to complete.

Table 6-15 Moore Murrell (Morristown)
Capital Improvements Through 2030

Phasing	Project
2010	Install three security gates
2010	Install security cameras
2010	Construct T-hangar
2010	Security lighting
2010	Tree clearing
2010	Land acquisition (residential area near hangars)
2010	Construct corporate hangar
2010	Rehabilitate (crack seal) runway
2010	Construct Taxiway - end of Rwy 5 to hangars
2010	NDB (new)
2010	Relocate parallel taxiway
2010	Demolish T-hangars
2020	Corporate and T-hangar construction
2020	Additional auto parking
2020	Relocation of taxiway

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Moore Murrell (Morristown)

Figure 6-15

6.16 Outlaw Field (Clarksville)

Major capital improvements for Outlaw Field through 2010 include a taxiway extension and development of corporate and T-hangars. Major improvements through 2020 include relocation of the parallel taxiway 17/35 to meet separation standards. This project is not shown on the associated graphic at this time as it is not yet known exactly where the relocation will occur. Proposed capital improvements through 2020 are detailed in **Table 6-16** and **Figure 6-16**.

Table 6-16 Outlaw Field (Clarksville)
Capital Improvements Through 2030

Phasing	Project
2010	T-hangars
2010	Corporate hangars
2010	Ramp expansion (front of terminal)
2010	Maintenance hangar
2020	Strengthen Runway 17/35
2020	Relocate parallel Taxiway 17/35

Source: HNTB Analysis

Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Outlaw Field (Clarksville)

Figure 6-16

6.17 Robert Sibley Airport (Selmer)

Major capital improvements for Robert Sibley Airport through 2010 include the first phase of a full parallel taxiway, a phased ramp expansion, development of corporate hangars and roadway relocation. Major improvements through 2020 include the completion of the phased ramp expansion and full parallel taxiway. At this time there are no proposed projects for the 2020-2030 timeframe. Proposed capital improvements through 2020 are detailed in **Table 6-17** and **Figure 6-17**.

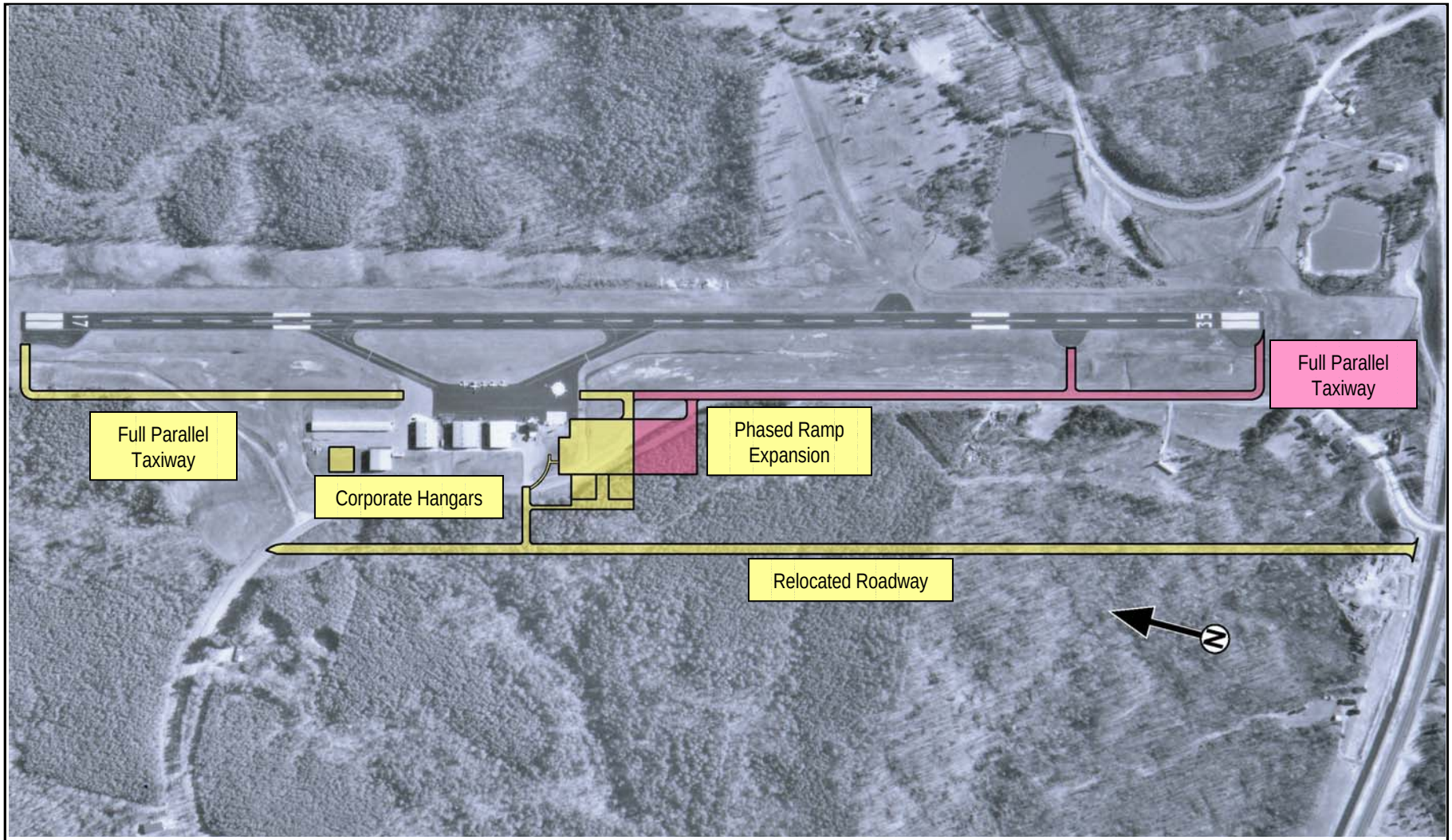
Known access issues as reported by airport representatives include the following:

- Relocate Airport-Purdy Road to make room for the planned apron expansion. (Phase I). Close the limited north/south portion of Airport-Purdy Road and continue the roadway to the I-64 interchange (Phase II).

Table 6-17 Robert Sibley (Selmer)
Capital Improvements Through 2030

Phasing	Project
2010	Land acquisition
2010	Fencing and gates (2) (10,000')
2010	Expand RSA parallel Rwy 17/35
2010	Construct parallel taxiway (Rwy 17 end)
2010	Runway 17 GPS approach
2010	Expand aircraft parking apron
2010	Widen runway
2010	Runway lighting and segmented circle
2010	Fule farm upgrade
2010	Reroute Airport - Purdy Road
2020	Full parallel taxiway
2020	Ramp expansion

Source: HNTB Analysis



Source: HNTB analysis

Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Robert Sibley (Selmer)

Figure 6-17

6.18 Smyrna (Smyrna)

Major capital improvements for Smyrna Airport through 2010 include development of a perimeter road and business development area, ramp expansion, corporate and T-hangars, a runway and taxiway extension for Runway 32, multiple other taxiway extensions, a new air traffic control tower, and maintenance hangars. Major improvements through 2020 include additional corporate and T-hangars and tenant offices. At this time there are no projects proposed for the 2020-2030 timeframe. Proposed capital improvements through 2020 are detailed in **Table 6-18** and **Figure 6-18**.

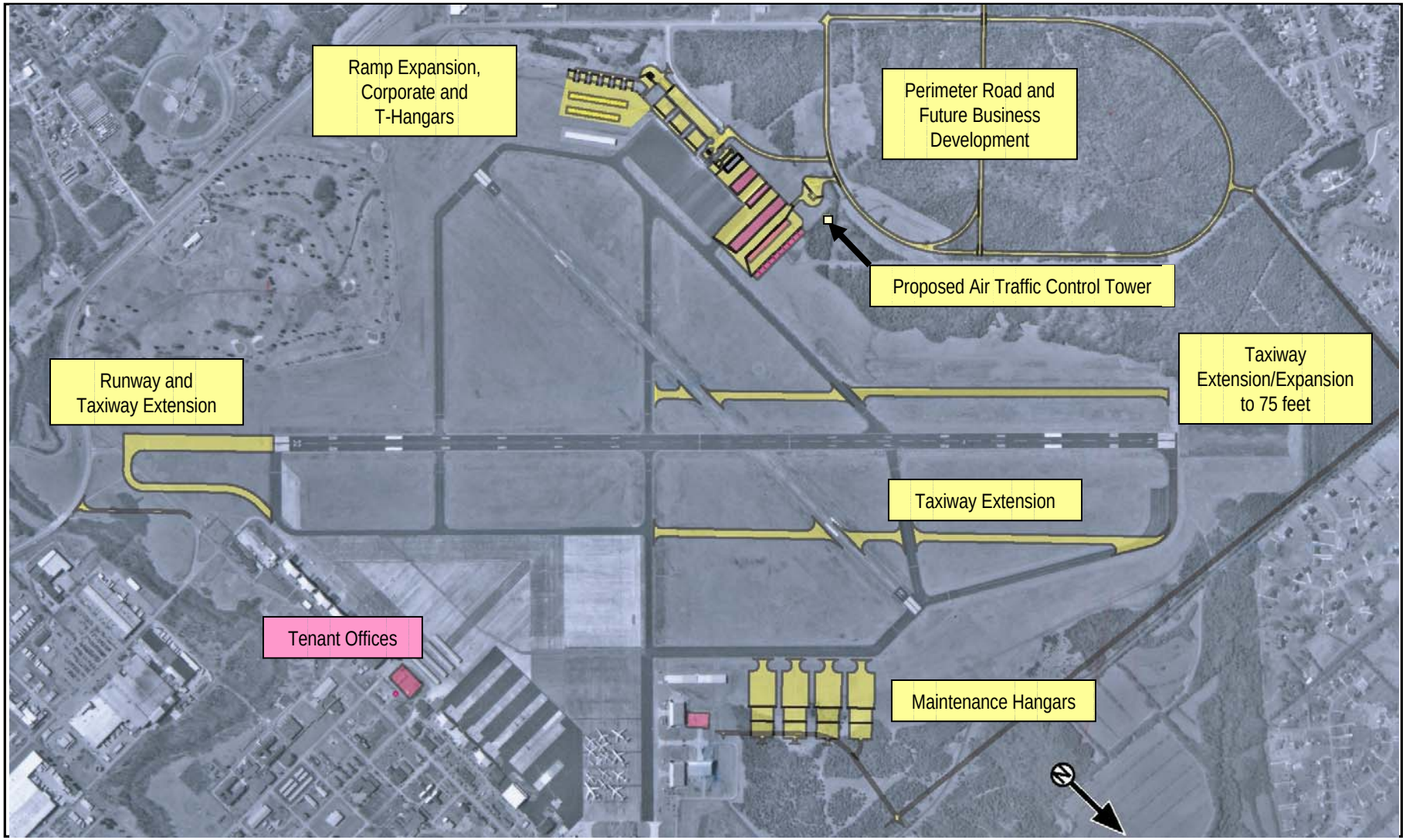
Known access issues as reported by airport representatives include the following:

- Need to improve roadway access between Williamson County and Smyrna.

Table 6-18 Smyrna (Smyrna)
Capital Improvements Through 2030

Phasing	Project
2010	Snow plow/striping machine
2010	Pavement striping
2010	Utility construction, west side
2010	Extend Rwy 14/32, blast fence, road relocation
2010	Taxiway edge light replacement
2010	Construct Taxiway F
2010	Rehabilitate Rwy 14/32
2010	ARFF vehicle
2010	Construct airport perimeter road
2010	Rehabilitate apron (east side at F&A Taxiway)
2010	Construct taxiway (west side)
2010	Hangar upgrade
2010	Maintenance shop renovation/expansion
2010	Relocate electrical vault, etc.
2010	Apron expansion (west side)
2010	Rehabilitate Taxiway A
2010	Install PAPI (Rwy 14/32)
2010	ATCT relocation and outfitting
2010	Terminal parking lot
2010	Security fencing
2010	Maintenance hangar
2020	Corporate and T-hangar development
2020	Tenant offices

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Smyrna (Smyrna)

Figure 6-18

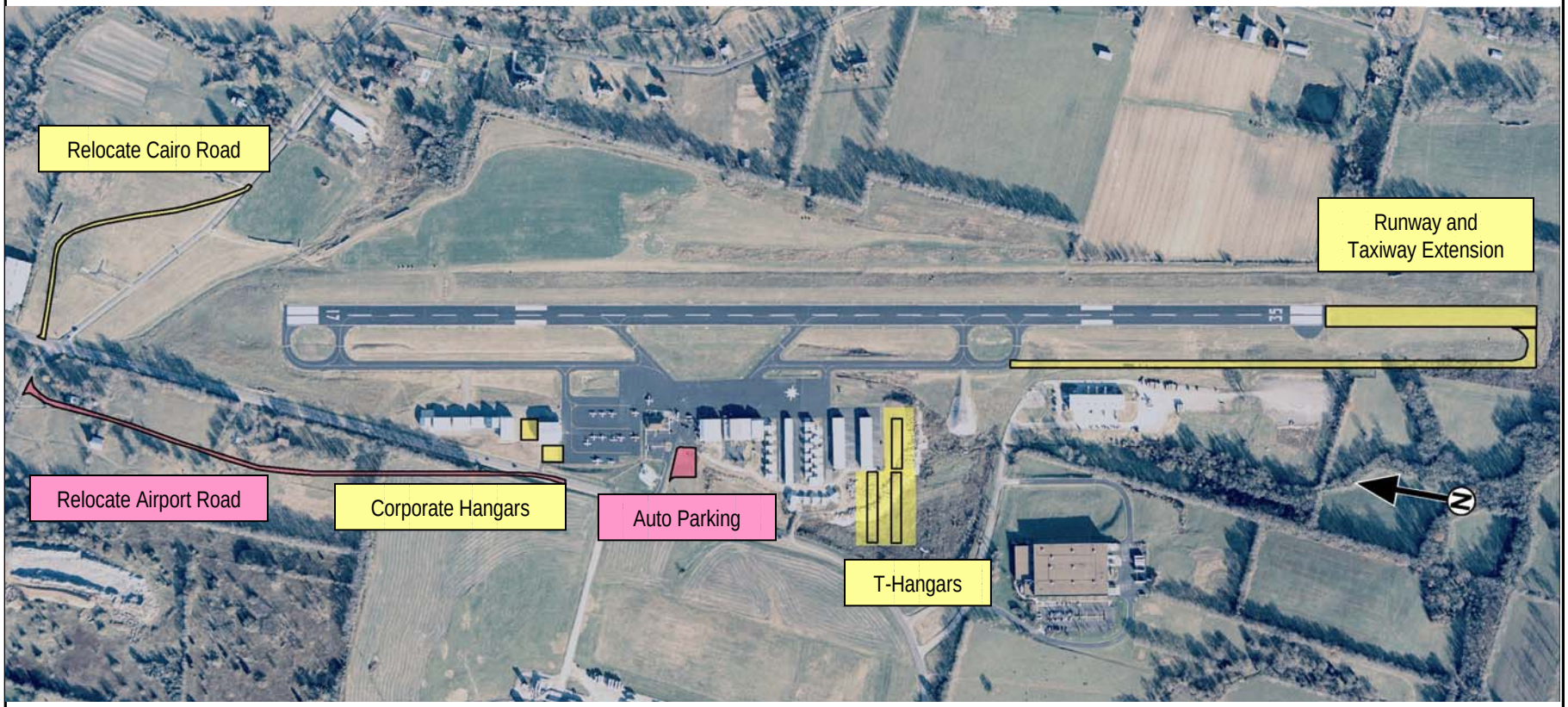
6.19 Sumner County Regional Airport (Gallatin)

Major capital improvements for Sumner County Regional Airport through 2010 include relocation of Cairo Road, additional corporate and T-hangars, and a runway and taxiway extension for Runway 35. Major improvements through 2020 include relocation of Airport Road and additional auto parking. At this time there are no proposed projects for the 2020-2030 timeframe. Proposed capital improvements through 2020 are detailed in **Table 6-19** and **Figure 6-19**.

Table 6-19 Sumner County Regional (Gallatin)
Capital Improvements Through 2030

Phasing	Project
2010	Runway 17 visual approach (partial)
2010	Hazard lights
2010	Power line
2010	Property acquisition and road relocation
2010	Runway safety area
2010	Runway 17 overrun
2010	New hangars
2010	Runway extension 1,000' (Rwy 35 end)
2010	Utility connection line to City Sewer
2010	Land acquisitions - Albrights Lane
2010	Land acquisition to OFA, near Rwy 35 end
2010	Relocate taxiway
2010	Underground fuel tank
2010	Parallel taxiway (Rwy 17 end)
2010	Environmental and justification study
2010	Security fencing and gates - east side
2010	AWOS relocation/ upgrade
2010	Taxiway extension (Rwy 35 end)
2020	Airport road relocation
2020	Auto parking

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Sumner County Regional (Gallatin)

Figure 6-19

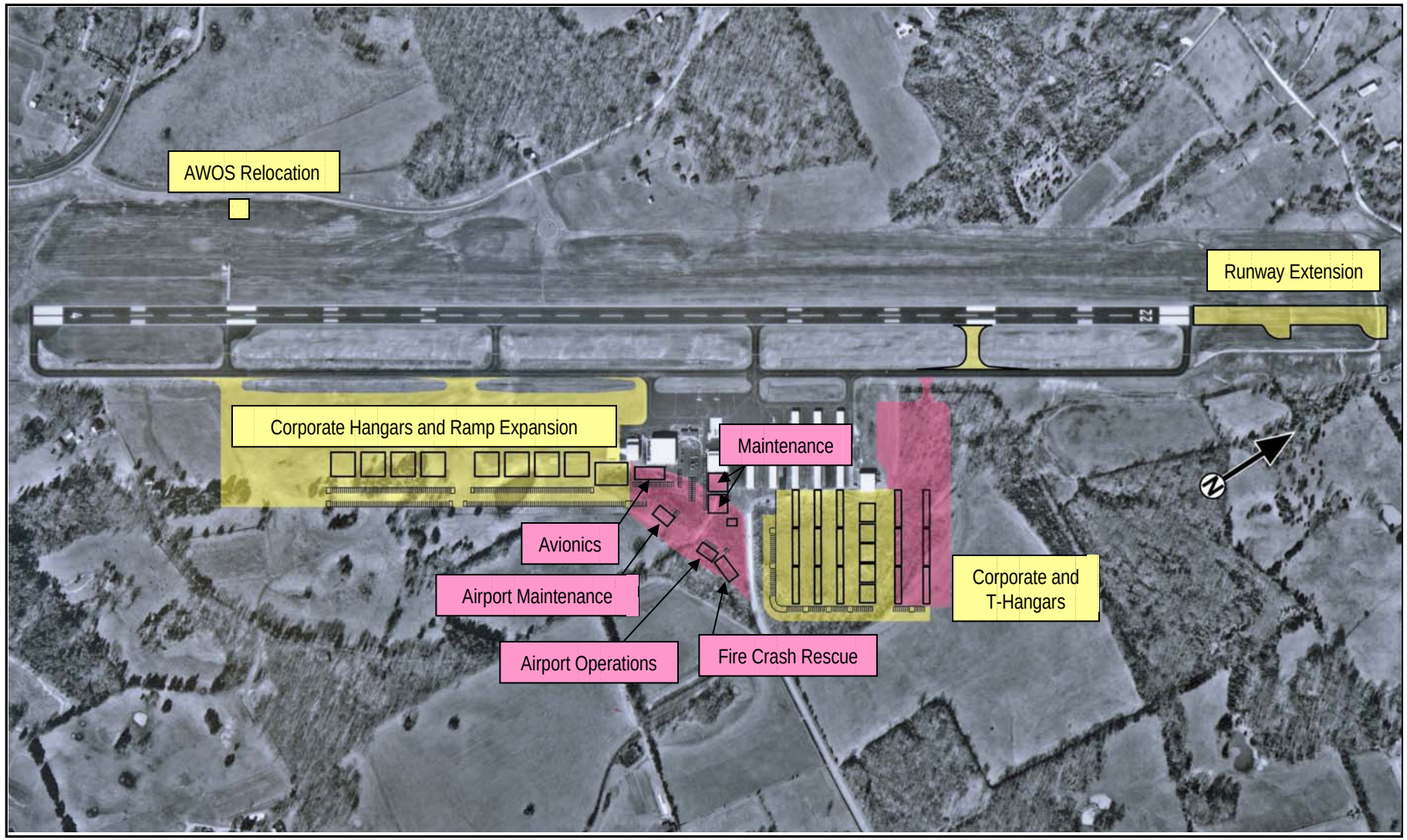
6.20 Upper Cumberland Regional Airport (Sparta)

Major capital improvements for Upper Cumberland Regional Airport through 2010 include a runway extension for Runway 22, an additional runway exit, corporate and T-hangars and associated ramp expansion, and relocation of the Automated Weather Observing System (AWOS). Major improvements through 2020 include a new fire crash rescue facility, additional corporate and T-hangar development, and other aviation related development including facilities for avionics, maintenance, and operations. At this time there are no projects proposed for the 2020-2030 timeframe. Proposed capital improvements through 2020 are detailed in **Table 6-20** and **Figure 6-20**.

Table 6-20 Upper Cumberland Regional (Sparta)
Capital Improvements Through 2030

Phasing	Project
2010	Additional auto parking - new corporate hangar area
2010	Strengthen airfield pavements
2010	Stub taxiway and fillets
2010	Expand aircraft parking apron
2010	Wetlands - landside exp. and security
2010	T-Hangars
2010	Land acquisition for runway extension
2010	Runway extension
2010	Fuel farm construction
2020	Approach lighting
2020	Fire crash rescue facility
2020	Airport maintenance facility
2020	Maintenance hangar

Source: HNTB Analysis



Proposed Development Through 2010
Proposed Development Through 2020
Proposed Development Through 2030
Remove

Source: HNTB analysis

Upper Cumberland Regional (Sparta)

Figure 6-20