HUNTINGTON
TRI-STATE AIRPORT

Master Plan Study

FINAL REPORT

March, 2014

CHA
design/construction solutions
4080 Lafayette Center Dr., Suite 210A
Chantilly, Virginia 20151
(703) 230-0300
chacompanies.com

TRI-STATE AIRPORT AUTHORITY*

PRESIDENT

Kevin Gunderson – *City of Ashland*

1ST VICE PRESIDENT

Bill Dingus, Ph.D. – *Lawrence County EDO*

2ND VICE PRESIDENT

A. Michael Perry – *Cabell County Commission*

SECRETARY

Bob Pasley – *Wayne County Commission*

TREASURER

Nancy Cartmill – *Cabell County Commission*

MEMBERS

Dennis Adkins – *City of Ceredo*
Kenneth Adkins – *Wayne County Commission*
Cathy Burns – *Huntington Regional Chamber of Commerce*
Bill Hannah – *Ashland Alliance*
Danny Pelfry – *Town of Kenova*
Larry Poynter – *Village of Barboursville*
Nickie Smith – *Northeast Industrial Authority*
Carl Tolliver – *Boyd County Fiscal Court*
Gary Walton – *Huntington Area Development Council*
Mayor Steve Williams – *City of Huntington*
Bill Pratt – *Lawrence County Commission*

Assistant Secretary and Airport Director

Jerry Brienza

Airport Authority Attorney

Tom Gilpin

TECHNICAL ADVISORY COMMITTEE*

Bob Maynard	Matt DiGuilian
Brad Phelps	Paul Butcher
Eric Thomas	Paul Davis
Frank Betz	Philip Jones
James Seadler	Robert Jones
Bill Hannah	Saleem Salameh
Patrick Donovan	Scott Bias
Kevin Price	Steve Fetty
Dario Jimenez Lopez	Susan Chernenko
Lynn Anderson	

CHA Consulting, Inc.*

REGIONAL DIRECTOR OF AVIATION

Bill Barley, P.E.

DIRECTOR OF PLANNING

Paul Puckli

PROJECT MANAGER

Kevin Clarke

AIRPORT PLANNERS

Jackson Sargent, AICP
Mark Heckroth
Aaron Lofurno

In professional association with:

- **MAC Consulting, LLC**

**As of September 2013*

NOTICE

The preparation of this document was financed in part through a planning grant from the Federal Aviation Administration (FAA) as provided under Section 505 of the Airport and Airway Improvement Act as Amended. The contents of this document do not necessarily reflect the official views of the FAA. Acceptance of the report by the FAA does not in any way constitute a commitment on the part of the United States to participate in any development depicted herein, nor does it indicate that the proposed development is environmentally acceptable in accordance with applicable public laws.

PREFACE

This document is the result of the Tri-State Airport (HTS) Master Plan Study. The study was kicked off in August 2010 and involved collaboration between the Airport staff, Airport sponsor (Tri-State Airport Authority), the Federal Aviation Administration Beckley Airport District Office (FAA Beckley ADO), West Virginia Department of Transportation (WVDOT), CHA, and the Technical Advisory Committee (TAC). The TAC was established for the purpose of reviewing technical analyses at key points during the study process, providing technical input to the study team, distributing data, and serving as a conduit between interested parties and the study team. The TAC was comprised of Airport staff and Airline representatives, Authority members, local public officials, FAA Beckley ADO and WVDOT officials, business and personal users of the Airport, and other local stakeholders.

The recommendations of this document were developed in collaboration with the stakeholders listed above, and are reflected on the Airport Layout Plan (ALP) Set. Because many of the components of this study are officially approved by the FAA Beckley ADO (such as the Forecasts of Aviation Demand), the early chapters in this document were largely left unchanged in final production. Thus, there are some references to the "base year" which is listed as 2010 (Forecasts of Aviation Demand). In addition, some of the conditions at the Airport have changed – such as the discontinuation of Delta Airline service. Although references to these conditions are still present within the document, the recommendations have been adjusted to reflect current market conditions.

Contents

Figures

Tables

1 INTRODUCTION

The Tri-State Airport Authority has retained the services of CHA (formerly RW Armstrong) to perform a Master Plan Update Study for the Huntington Tri-State Airport (HTS). This introductory chapter provides a description of the study objectives and a brief overview and history of the Airport. The outcome of this Master Plan Update will provide planning and development guidance necessary to address landside and airside facilities and land development considerations for the next 20 years and beyond. The final Master Plan document will serve as a strategic plan and marketing tool for the continued management and improvement of the Airport.

Consistent with the guidance provided in Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, the contents of this Airport Master Plan Update include:

- **Chapter 1: Introduction**
- **Chapter 2: Inventory of Existing Facilities**
- **Chapter 3: Forecasts of Aviation Demand**
- **Chapter 4: Facility Requirements**
- **Chapter 5: Development Concepts**
- **Chapter 6: Implementation Plan**
- **Chapter 7: Financial Plan**
- **Chapter 8: Airport Plans**

A Technical Advisory Committee (TAC), consisting of individuals with a vested interest in HTS and its operations, was established to support this master planning effort. Members of the TAC reviewed working papers and participated in group discussions at various milestones throughout the course of the study to ensure that all relevant issues were adequately addressed.

1.1 STUDY OBJECTIVES

The purpose of this Master Plan Update is to provide guidance for future airport improvements in order to satisfy regional aviation demand in a logical and financially-feasible manner. Consistent with this purpose, the following objectives were developed:

- Provide a framework that allows the Airport to meet the long-term air transportation needs of the region in a safe, secure, and efficient manner and in compliance with all FAA and West Virginia Aeronautics Commission (WVAC) requirements.
- Identify the airfield, terminal, and aviation support facilities that are necessary to accommodate future aviation demand and fulfill the needs of all Airport users and stakeholders.

- Provide a financial plan that establishes a schedule of development priorities to adequately meet the needs of the future demand for aviation facilities and services at the Airport.
- Develop a flexible and functional, long-range plan for terminal area expansion and the enhancement of passenger amenities.
- Provide strategies for improving Airport accessibility and the level of service of ground transportation, curbside, and parking activities.
- Promote the Airport as a major contributor to regional economic activity.
- Identify strategies to best utilize the collective resources offered by the Airport and the community.
- Support the development of compatible land uses in the Airport vicinity in a manner that is sensitive to the surrounding environment.
- Actively solicit the input of the TAC and the public throughout the planning process.

In addition to addressing these objectives, this study will also fulfill the broad master plan goals set forth by the FAA in AC 150/5070-6B. These goals are:

- Document the issues that the proposed development will address.
- Justify the proposed development through the technical, economic, and environmental investigation[1] of concepts and alternatives.
- Provide an effective graphic presentation of the development of the airport and anticipated land uses in the vicinity of the airport.
- Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.
- Propose an achievable financial plan to support the implementation schedule.
- Provide sufficient project definition and detail for subsequent environmental evaluations that may be required before the project is approved.
- Present a plan that adequately addresses the issues and satisfies local, state, and federal regulations.
- Document policies and future aeronautical demand to support municipal or local deliberations on spending, debt, land use controls, and other policies necessary to preserve the integrity of the airport and its surroundings.
- Set the stage and establish the framework for a continuing the planning process. Such a process should monitor key conditions and permit changes in plan recommendations as required.

[1] *A detailed environmental overview is not being prepared as part of this study; however, future environmental evaluation of the proposed improvements, in accordance with National Environmental Policy Act (NEPA), would be required prior to implementation.*

1.2 AIRPORT BACKGROUND

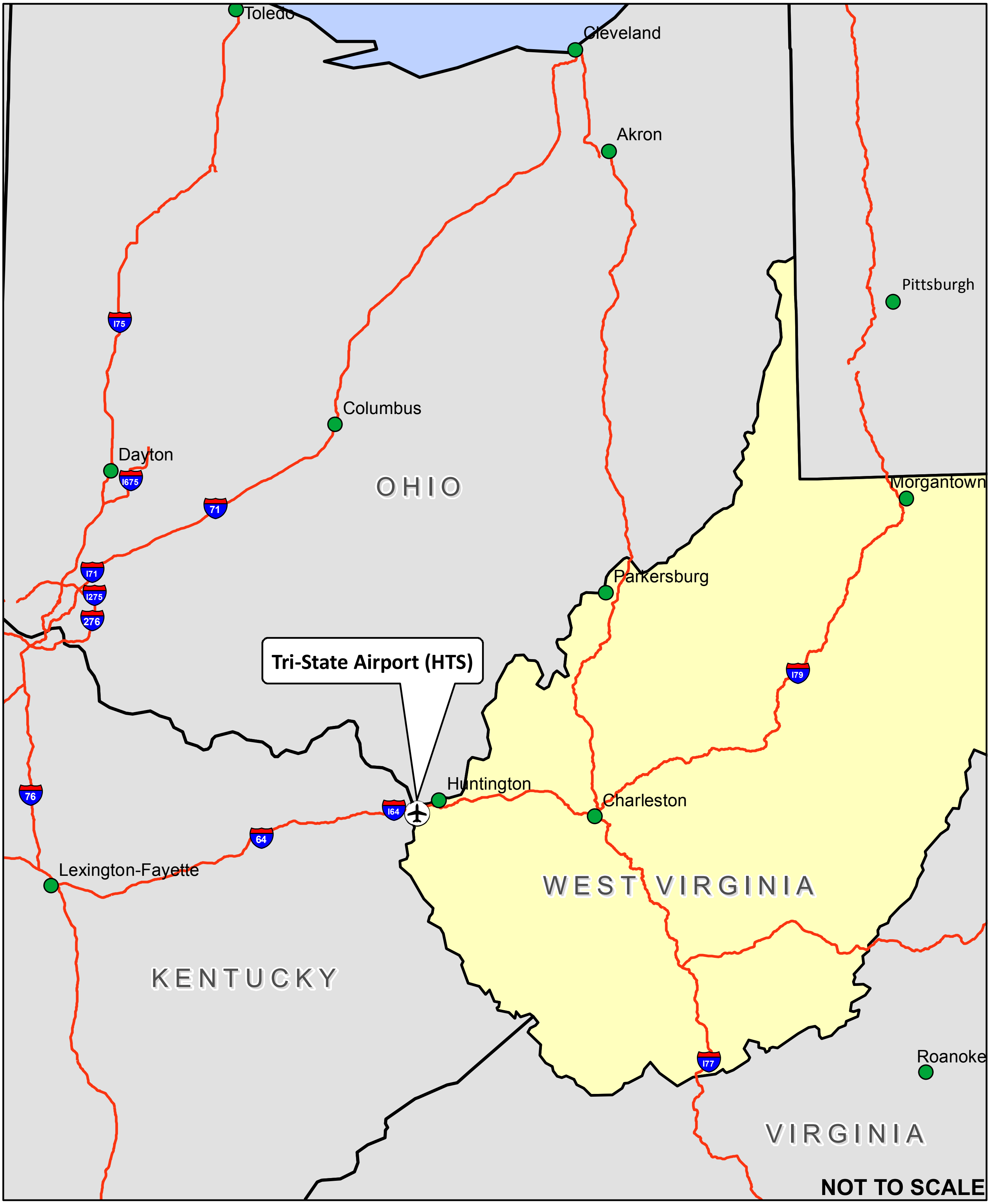
Understanding the background of an airport and the region that is serves is important in making informed decisions pertaining to airport-related improvements. This section discusses HTS in the context of its location and history.

1.2.1 Location

The City of Huntington is the second largest city in West Virginia behind Charleston in terms of population. It is located in the southwestern part of the state on the banks of the Ohio River which divides West Virginia and Ohio, and is approximately 10 miles northeast of the Kentucky border. Huntington's city limits fall within two counties, Wayne and Cabell, with a majority of the city located in Cabell County where it serves as the county seat. The Airport is located in Wayne County, nine miles west of the City of Huntington, and covers approximately 1,154 acres[2] of land with an elevation of 828 feet above mean sea level (MSL). The Airport is accessible from Interstate 64 to the east and west via West Virginia Route 75/US Route 52 (which also provides north and south access) and continuing to Airport Road. The general vicinity of Huntington (the Tri-State Region), the Metropolitan Statistical Area (discussed further in **Chapter 3**), and the Airport are shown on **Figure 1-1** and **Figure 1-2**.

---

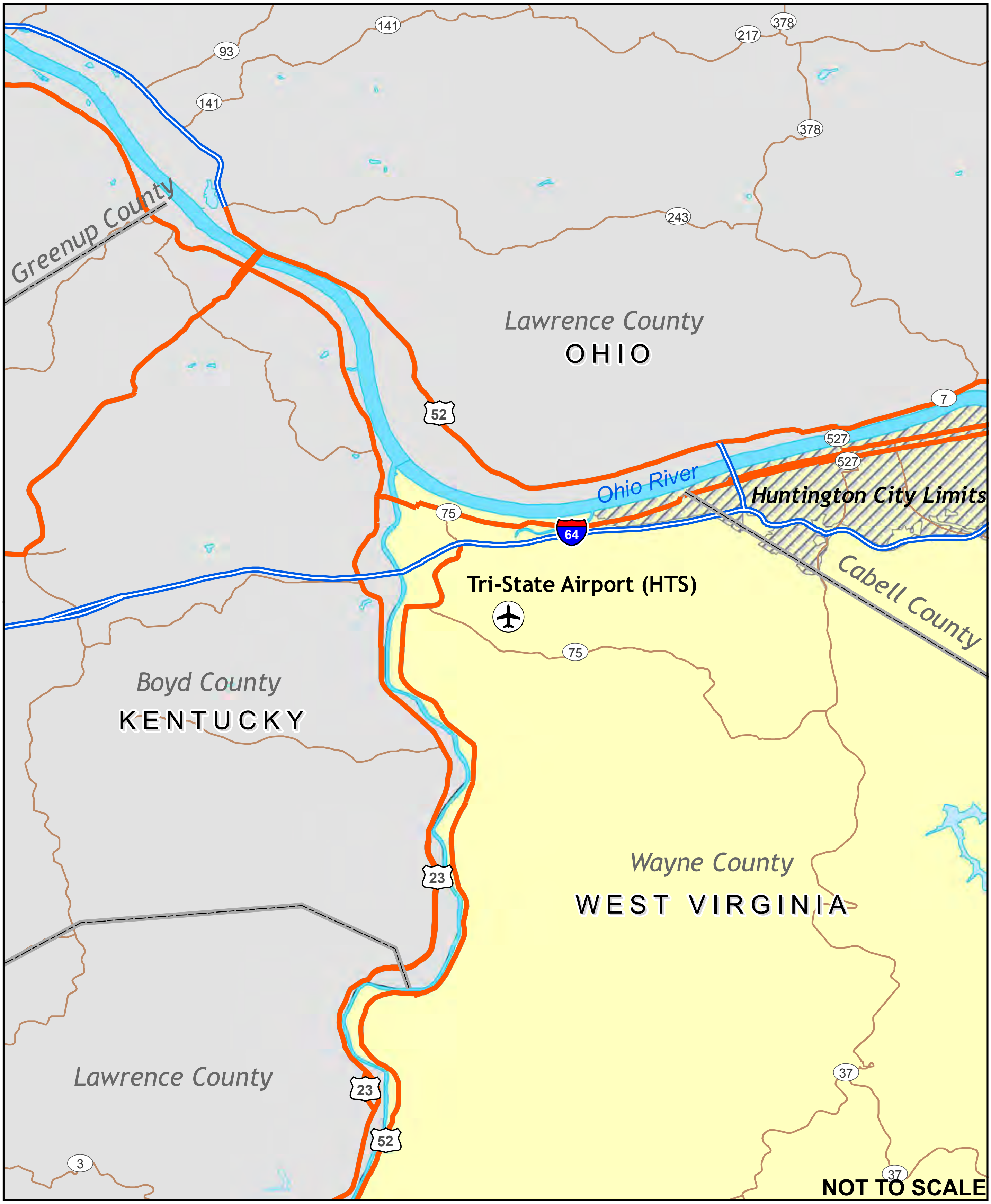
[2] *As determined from the August 2003 Airport Property Map (prepared by others) and does not include approximately 17 acres of easements.*



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 1-1
Location Map



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 1-2
Vicinity Map

1.2.2 History

Source: Huntington Tri-State Airport Website, http://www.tristateairport.com
Photo date unknown

Aviation in Huntington dates back to early 1920s when the Huntington Chamber of Commerce formed an Aviation Committee tasked with finding land suitable for an airfield. The land they originally selected was referred to as Kyle Field, but by 1927 the Chamber set out to find an alternate location. In 1929, the Embry-Riddle Company expressed a desire to build an airport in the Tri-State Region. The site they selected was located in Chesapeake, Ohio, and is still in operation today as Lawrence County Airpark. Nearly 20 years later, after World War II, the City of Huntington still sought an airport. It was in June 1948 that Cabell County, Wayne County, City of Huntington, Town of Ceredo, City of Kenova, and the Huntington Industrial Corporation joined together to form the Tri-State Airport Authority. The following March they were deemed a legal entity by the West Virginia Legislature with the first task of appointing a committee to buy land suitable for a new airport.

Three years later, in 1952, HTS was officially opened to serve as the main airport of the Tri-State Region. Upon dedication, the Airport provided a 4,600' x 150' paved runway to the community, which is the present day Runway 12-30. Four years later, the runway was extended to 5,297', and in 1961, the current terminal building was dedicated. In 1973, the main runway was once again extended to 6,517' using soil from a hill on the southeast side of the airfield to fill in the ditches. Additionally, runway 12-30 added a Visual Approach Slope Indicator (VASI) and Runway End Identification Lights (REILs). The hill used for the runway extension was later graded to allow the construction of a 3,007' x 60' paved crosswind runway (3-21). The terminal building was expanded in 1979 along with the construction of the general aviation (GA) access road. In 1984, a Southside GA apron and taxiway were constructed. During the 1990s the Airport saw several improvements: a partial parallel taxiway for Runway 12-30 was constructed (1990), passenger terminal lobby improvements (1995), and the construction of the Snow Removal Equipment (SRE) Building (1995). In 2009, crosswind Runway 3-21 was closed and converted into Taxiway Bravo (B) for future Southside development. The most recent project at the Airport was a 500-foot extension of Runway 12-30 to 7,016 feet which occurred in 2010. Previous Airport Master Plans were conducted in 1973, 1981, 1988, and 2003.

1.2.3 Airport Role

The National Plan of Integrated Airports Systems (NPIAS) is a program maintained by the FAA to assist the agency in programming federal funds to support required aviation development at airports included in the NPIAS. According to the 2011-2015 NPIAS Report, the United States has approximately 5,179 public airports, of which 64 percent are included in the NPIAS (3,332 airports). Airports included in the NPIAS are considered significant to national air transportation and therefore, are eligible to receive grants under the FAA Airport Improvement Program (AIP). The NPIAS further categorizes the included airports based on types of service provided and quantity of passengers enplaned. Of the airports included in the NPIAS, 503 airports are considered commercial service airports meaning they offer regularly scheduled passenger service and enplane more than 2,500 passengers per year. Commercial service airports are further broken down into primary (more than 10,000 annual enplaned passengers) and non-primary (more than 2,500 but less than 10,000 annual enplaned passengers). Primary commercial service airports fall into one of four categories based on the percentage of all U.S. enplanements that they provide: Large hub airports account for at least 1 percent, medium hubs between .25 and 1 percent, small hubs between .05 and .25 percent, and non-hubs which are less than .05 percent.

Huntington Tri-State Airport is classified as a non-hub, primary commercial service airport in the 2011-2015 NPIAS. As stated above, this type of airport provides less than 0.05 percent of all commercial passenger enplanements in the U.S. but has more than 10,000 annual enplanements. There are 244 non-hub primary airports in the nation that together account for three percent of all enplanements. As one of 34 public-use airports with NPIAS roles in West Virginia, HTS is a valuable resource within the state's aviation system.

1.3 AIRPORT ORGANIZATION

The Airport is owned and operated by the Tri-State Airport Authority. The present day Authority includes 16 members representing the business community and Airport interests. Each Board member is appointed to a three-year term by the representative governing body. The Authority is comprised of members from the following organizations: City of Huntington, WV; City of Ashland, KY; Town of Kenova, WV; Town of Ceredo, WV; Village of Barboursville, WV; Cabell County Commission; Wayne County Commission; Lawrence County Commission; Lawrence County EDO/Chamber; Boyd County Fiscal Court; Huntington Regional Chamber of Commerce; Huntington Area Development Council; Ashland Alliance; and the Northeast Industrial Authority. Each of the previous entities are represented by one member with the exception of the City of Huntington, Cabell County, and Wayne County which each have two members.

The Airport is managed by a full-time Airport Director, an Assistant Operations Manager/Aircraft Rescue and Firefighting (ARFF) Chief, Police Chief, Financial Director, Maintenance Director, Marketing Director, Airline Station Manager, Human Resources Coordinator, and a support staff of approximately 44 people (27 full-time and 17 part-time).

This Master Plan Update was completed taking into consideration the Airport's mission statement and associated vision. HTS's mission statement is as follows:

> *"The mission of the Tri-State Airport is to plan, operate, maintain, develop and promote a premier air transportation facility in the best interest of the citizens of the Tri-State Region. We shall strive to provide and improve commercial air service and other aeronautical related services essential to the economic development and vitality of the community; and to be the preferred airport for both business and leisure travelers."*

Along these lines, the Airport Authority desires to establish an "aviation ecosystem," that will encourage the development of a leading-class aviation facility with the utmost focus on safety and optimal customer service, while maintaining an operationally sustainable environment that will remain viable well into the future of the region. The Authority's goal is to position the Airport as a preferred destination for all users of the aviation system, including, but not limited to commercial passengers, recreational pilots, cargo and air taxi operators, flight trainees, and corporate users. By providing leading-edge accommodations for these various aviation users, the Airport will be able to attract new services and tenants, thus maintaining economic stability and growth not only for the Airport, but for the region as well.

1.4 COMMERCIAL AIR CARRIER

Until mid-2012, there were three airlines providing regularly scheduled service at HTS – Allegiant, Delta, and US Airways. Due to fluctuating market conditions, Delta ceased service in June 2012. The following provides a brief description of these operators. A map depicting the travel destinations by airline is provided in **Figure 1-3**.

1.4.1 Allegiant Air

Allegiant Air has been operating at HTS since 2006 and utilizes approximately 1,100 square feet (SF) of space in the terminal building. As of 2010, they operate with approximately four full-time and 10 part-time employees, all of which are employees of the Authority. According to Allegiant personnel, the operation at HTS is one of the most cost effective markets for the airline and they are able to maintain a 90-92% load factor. As of 2010, their regularly scheduled destinations were Ft. Lauderdale/Hollywood International Airport (FLL) (now discontinued), Orlando Sanford International Airport (SFB), and St. Petersburg-Clearwater International Airport (PIE). They also offer seasonal service to Myrtle Beach International Airport (MYR). All of Allegiant's service at HTS is handled by the 166-seat MD-80 aircraft, or the 175-seat A320. They run approximately 70 flights per week during the summer months while dropping down to approximately 30 flights per week during the winter months. Ground service equipment is owned by the Airport and services are handled by the airline with the exception of fueling which is done by the FBO. Aircraft maintenance is contracted to Attitude Aviation.

1.4.2 Delta Air Lines

Atlantic Southeast Airlines, Inc. (ASA) managed Delta operations at the Airport and offered service at HTS from 2000 to 2012. They utilized approximately 1,100 SF of space in the terminal building. They maintained six full-time and six part-time employees. Their regularly scheduled destination was two flights a day to Detroit Metropolitan Wayne County Airport (DTW) by way of a 50-seat CRJ-200. Ground service equipment was owned and operated by ASA. Aircraft fueling was handled by the FBO and an off-site contractor was used for aircraft maintenance.

1.4.3 US Airways

Air Wisconsin Airlines Corporation manages US Airways operations at the Airport and has offered service at HTS in some capacity for over 50 years. They utilize approximately 1,500 SF of space in the terminal building. They maintain an average of six full-time and six part-time employees. Their regularly scheduled destination is four flights a day to Charlotte/Douglas International Airport (CLT) by way of the 37-seat Dash 8-100 and the 50-seat Dash 8-300. Ground service equipment is owned and operated by Piedmont. Aircraft fueling is handled by the FBO and aircraft maintenance is handled by Attitude Aviation.

1.5 AIR CARGO

FedEx has been operating at HTS since the early 1980s. Due to increased regional cargo demand, FedEx upgraded their service at HTS to the Boeing 757 in 2012. The approximate 14,500 square foot converted hangar that FedEx operates its sorting & trucking facility out of is located on the western most portion of the terminal area apron. Being located in this position allows the aircraft to park on the apron in front of the sorting facility and provides a quick and efficient transition of freight to the overland trucks. There are five loading docks for the trucks as part of this facility, three elevated and two at ground level. The location of the FedEx facility allows the trucks immediate access to Airport Road.

The FedEx operation at HTS has 37 full-time employees on a year-round basis as well as 60 part-time employees. In addition to their own freight, they are also contracted to handle United States Postal Service (USPS) mail. Aircraft maintenance is handled by FedEx staff and Attitude Aviation.

Figure 1-3
Commercial Airline Destinations

1.6 PUBLIC AIRPORTS IN THE VICINITY

The Huntington Tri-State Airport is classified as one of four primary commercial service airports in the State of West Virginia according to the FAA 2011-2015 NPIAS report along with Yeager Airport (Charleston), North Central West Virginia Airport (Clarksburg), and Morgantown Municipal Airport (Morgantown).[3] These and the other NPIAS commercial service airports in the region are presented in **Table 1-1**. Public-use general aviation airports in the vicinity of HTS are presented in **Table 1-2**. These airports are also presented in **Figure 1-4**.

[3] *Federal Aviation Administration, National Plan of Integrated Airport Systems (NPIAS), 2011-2015.*

Table 1-1 – Regional Commercial Service Airports

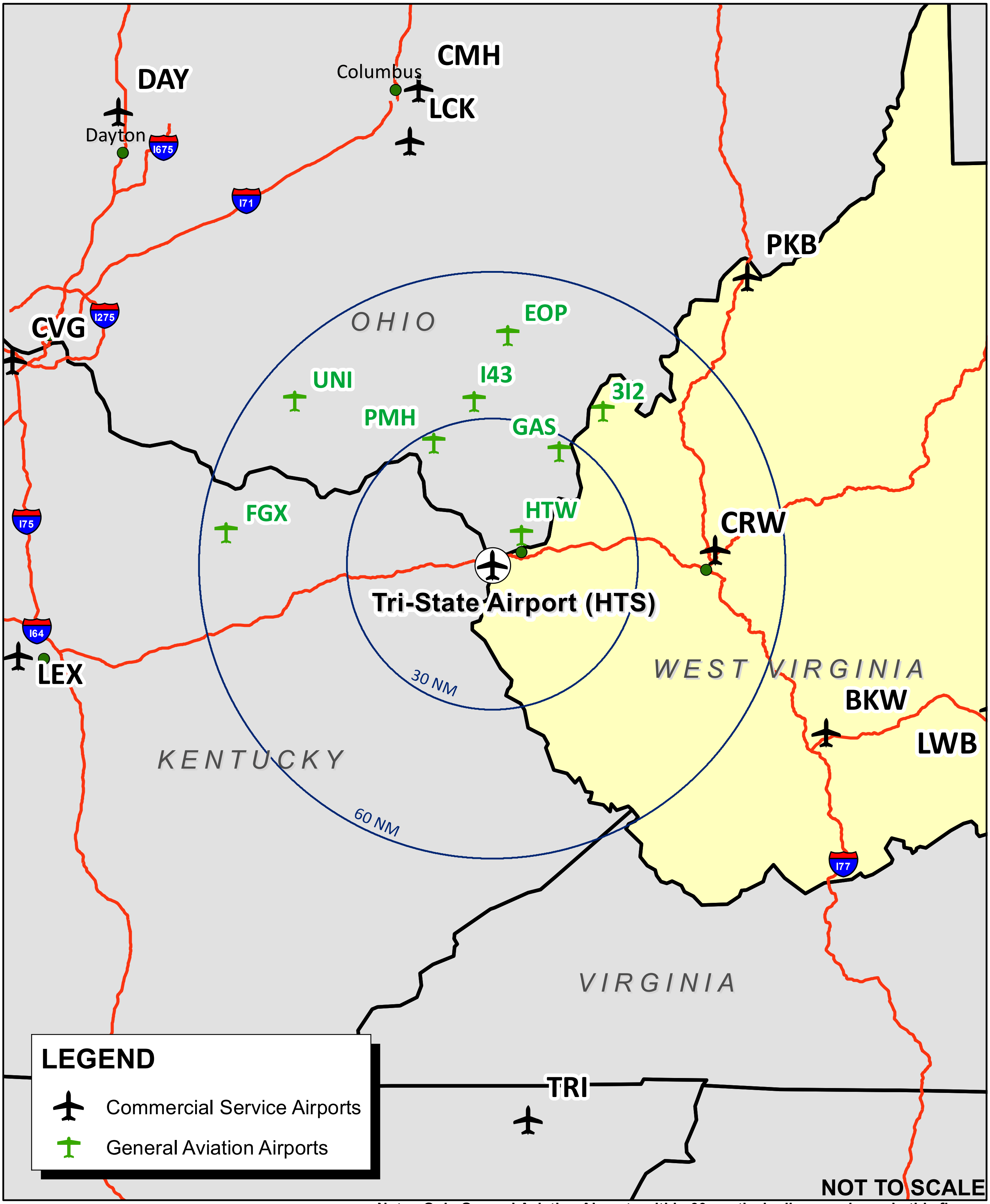
ID	Name	NPIAS Role	Runways	NAVAIDS	Based Aircraft (2012)	Enplaned Passengers (2012)	Operations (2012)	Distance
HTS	Huntington Tri-State	Primary Non-hub	7,017 x 150	MALSR, PAPI-4, RVR, ILS	44	105,548	15,162	-
CRW	Yeager	Primary Non-hub	6,802 x 150	VASI-4, ALSF1, RVR, PAPI-4, ILS, DME	103	272,901	47,776	45 NM East
BKW	Raleigh County Memorial	General Aviation	6,750 x 150 5,001 x 100	VASI-4, MALSR, ILS	51	2,534	21,581	76 NM Southeast
LEX	Blue Grass	Primary Small Hub	7,004 x 150 4,000 x 75	PAPI-4, MALSR, ILS, RVR	105	535,541	66,935	99 NM West
CMH	Port Columbus Int’l	Primary Medium Hub	10,113 x 150 8,000 x 150	PAPI-4, MALSR, RVR, ILS, DME	76	3,095,575	129,450	99 NM North
LWB	Greenbrier Valley	Primary Non-hub	7,003 x 150	MALSR, VASI-4, ILS	26	10,849	24,383	106 NM Southeast
CVG	Cincinnati/ Northern Kentucky Int’l	Primary Medium Hub	12,000 x 150 11,000 x 150 10,000 x 150 8,000 x 150	MALSR, PAPI-4, RVR, VASI-4, ILS, DME, SSALR, ALSF2	8	2,937,850	143,578	107 NM Northwest
TRI	Tri-Cities Regional	Primary Non-hub	8,000 x 150 4,442 x 150	PAPI-4, VASI-4, ALSF2, RVR, ILS	62	206,834	49,380	114 NM South

ALSF1 & ALSF2 – High Intensity Approach Lighting System with Sequenced Flashing Lights Configuration ½
PAPI – Precision Approach Path Indicator
VASI – Visual Approach Slope Indicator
MALSR – Medium-intensity Approach Lighting System with Runway Alignment Indicator Lights
ILS – Instrument Landing System
SSALR – Simplified Short Approach Lighting System
RVR – Runway Visual Range
DME – Distance Measuring Equipment
Source: Federal Aviation Administration, Form 5010-1, Airport Master Records, 2013; Air Traffic Activity System (ATADS), 2013; Air Carrier Activity Information System (ACAIS), 2013

Table 1-2 – Local General Aviation Airports

ID	Name	NPIAS Role	Runways	NAVAIDS	Based Aircraft (2009)	Fuel	Operations (2009)	Distance
HTS	Huntington Tri-State	Primary Non-hub	7,017 x 150	MALSR, PAPI-4, RVR, ILS	44	Jet A 100LL	15,162	-
HTW	Lawrence County	General Aviation	3,001 x 70	None	37	100LL	41,910	4 NM Northeast
PMH	Greater Portsmouth Regional	General Aviation	5,001 x 100	PAPI-4	30	Jet A1+ 100LL	45,830	32 NM Northwest
GAS	Gallia-Meigs Regional	General Aviation	3,999 x 75	PAPI-2	13	Jet A1+ 100LL	19,800	34 NM Northeast
I43	James A Rhodes	General Aviation	5,201 x 75	SAVASI-2	22	Jet A1+ 100LL	6,053	37 NM North
3I2	Mason County	General Aviation	4,000 x 75	PAPI-2	9	100LL	1,810	39 NM Northeast
EOP	Pike County	General Aviation	4,899 x 75	PAPI-4	5	Jet A 100LL	2,012	51 NM Northwest
UNI	Ohio University	General Aviation	5,600 x 100	PAPI-4, RVR, ILS	41	Jet A 100LL	51,600	53 NM North
FGX	Fleming-Mason	General Aviation	5,001 x 75	PAPI-4	31	Jet A1+ 100LL	17,070	57 NM West

ALSF1 & ALSF2 – High Intensity Approach Lighting System with Sequenced Flashing Lights Configuration 1/2
PAPI – Precision Approach Path Indicator
VASI – Visual Approach Slope Indicator
SAVASI – Simplified Abbreviated Visual Approach Slope Indicator
MALSR – Medium-intensity Approach Lighting System with Runway Alignment Indicator Lights
ILS – Instrument Landing System
SSALR – Simplified Short Approach Lighting System
RVR – Runway Visual Range
DME – Distance Measuring Equipment
Source: Federal Aviation Administration, Form5010-1, Airport Master Records, 2013; Air Traffic Activity System (ATADS), 2013; Air Carrier Activity Information System (ACAIS), 2013



Note: Only General Aviation Airports within 60 nautical miles are shown in this figure.

Figure 1-4
Regional Airports

2 INVENTORY OF EXISTING FACILITIES

The initial step in the master planning process was the development of an inventory of the existing physical conditions and operational characteristics of the Airport and its surroundings. Unless otherwise indicated, the inventory data described in this chapter was collected in mid-2010 and formed the basis for identifying needed airport facility improvements over the planning horizon. The inventory effort included the following elements:

- Airfield Facilities
- Navigational Aids and Instrument Approach Procedures
- Passenger Terminal Building
- Ground Access and Vehicle Parking
- General Aviation Facilities
- Support Facilities
- Airport Security
- Meteorological Conditions
- Public Utility Infrastructure
- Off Airport Land Use Considerations
- Environmental Considerations
- Airport Improvement Program (AIP) Grant History

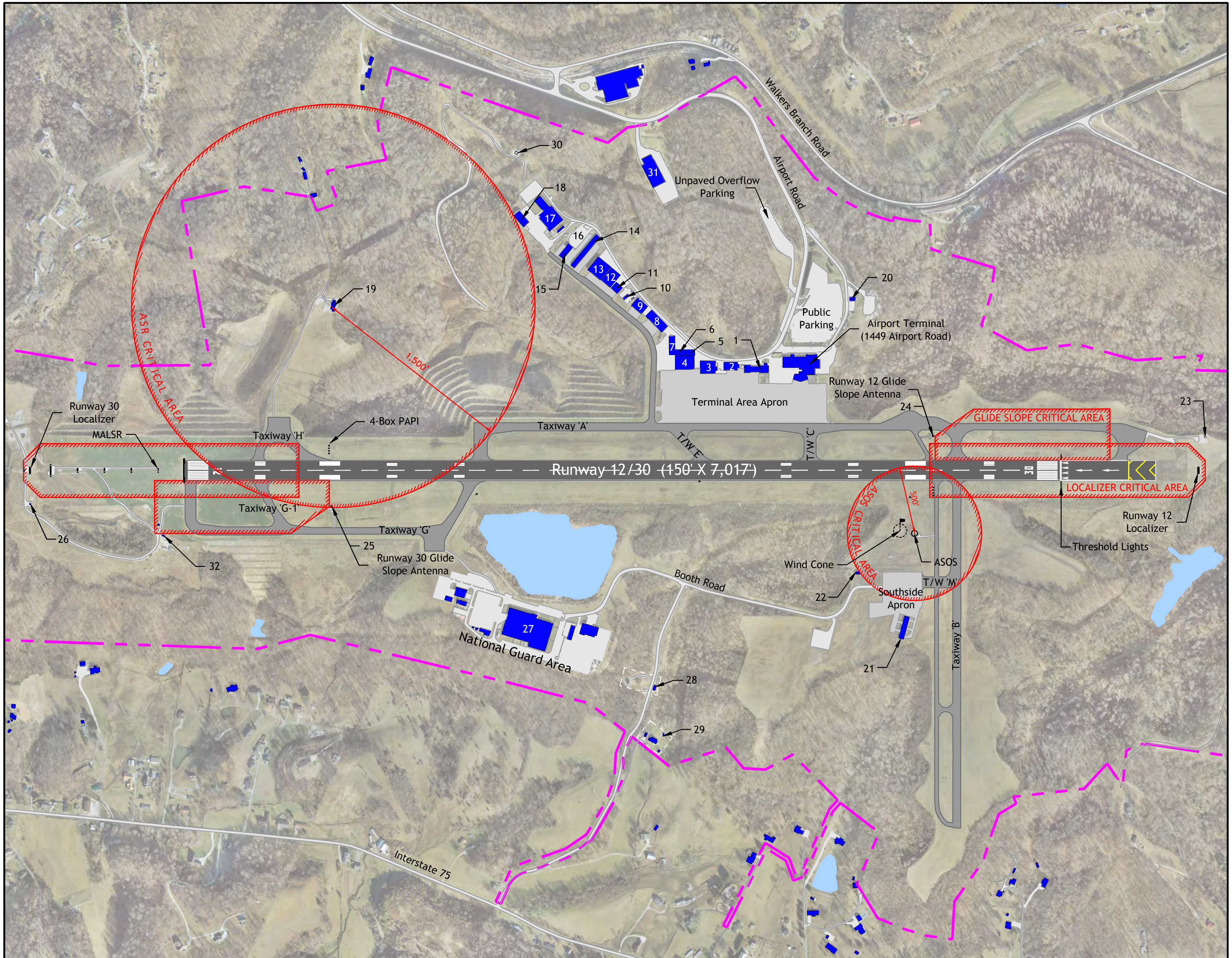
An aerial view of the airport is presented in **Figure 2-1**. A more detailed view of the terminal area is provided in **Figure 2-2**.

2.1 AIRFIELD FACILITIES

Airfield facilities are the elements of airport infrastructure that are most closely associated with the arrival and departure of aircraft. These elements are described in the following subsections and include:

- Runway 12-30
- Taxiway System
- Terminal Area Apron

Page Intentionally Left Blank



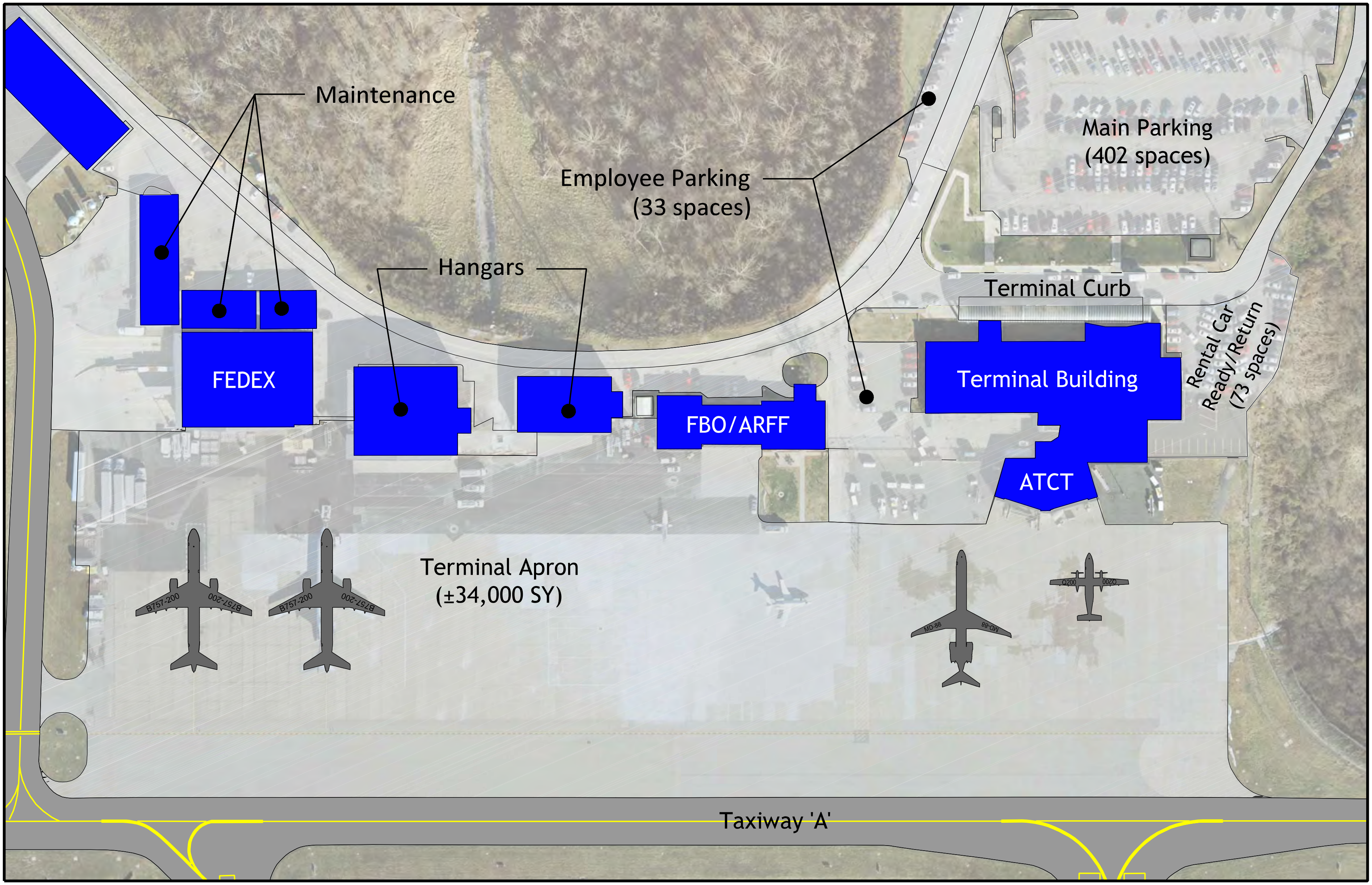
HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

LEGEND

	Property Line
1	FBO / ARFF Building
2	Heated Box Hangar
3	Heated Box Hangar
4	FEDEX Hangar
5	Maintenance Storage
6	Maintenance/Shop
7	Maintenance/Storage
8	Box Hangar
9	Box Hangar
10	FAA Antenna Array
11	Heated Community Box Hangar
12	Heated Box Hangar
13	Community Box Hangar
14	T-Hangars
15	T-Hangars
16	Fuel Farm
17	Old National Guard Building
18	Snow Removal Equipment Building
19	FAA Radar Site
20	Rental Car Wash Building
21	Southside T-Hangar
22	Southside Electrical Vault
23	East End Localizer Shelter
24	Taxiway 'B' Glide Slope Shelter
25	Taxiway 'G' Glide Slope Shelter
26	West End Localizer Shelter
27	West Virginia National Guard
28	Booth Road Water Storage/Pump
29	Residential Structure w/out Building
30	Airport Road Cell Phone Tower
31	FEDEX Ground Building
32	FAA Equipment Shelter

Figure 2-1
Existing Facilities



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 2-2
Terminal Area

2.1.1 Runway 12-30

The Airport operates one runway, 12-30. A shorter, crosswind runway, 3-21, was closed to all flight activity in the winter of 2009 and has since been converted into Taxiway B.

Runway 12-30 is the second longest runway in the state of West Virginia at 7,017 feet. This length was achieved in 2010 with a 500-foot runway extension. The runway is oriented in an east-west direction and has a 501-foot displaced threshold on the Runway 30 end. The runway is constructed of asphalt, is grooved, and is considered to be in excellent condition (after the pavement rehabilitation in 2012). **Table 2-1** presents the characteristics of Runway 12-30 as well as the declared distances for aircraft operations.

Table 2-1 – Existing Runway 12-30 Characteristics

		Runway 12-30	
Length (feet)		7,017	
Width (feet)		150	
Pavement Type		Grooved Asphalt	
Effective Runway Gradient		0.01%	
Pavement Load Bearing Capacity (pounds)	Single	Single – 110,000	
	Dual	Dual – 190,000	
	Dual Tandem	Dual Tandem – 275,000	
	Double Dual	Double Dual Tandem – 630,000	
		12 End	**30 End**
Runway End Elevation (feet above MSL)		827.9	828.1
Declared Distances (feet)	TORA	7,017	7,017
	TODA	7,017	7,017
	ASDA	6,516	7,017
	LDA	6,516	6,516

TORA – Takeoff Runway Available
TODA – Takeoff Distance Available
ASDA – Accelerate-Stop Distance Available
LDA – Landing Distance Available
Source: Kimley-Horn and Associates, data obtained from AGIS submittal in June, 2013

2.1.2 Taxiway System

Runway 12-30 is served by two partial parallel taxiways. Taxiway Alpha (A) is on the north side of the runway spanning from the Runway 30 threshold to the intersection of Runway 12-30 and Taxiway Golf (G), including the entire terminal area apron. Taxiway G is on the south side of the runway spanning from the intersection of Runway 12-30 and Taxiway A to the Runway 12 threshold.

Taxiway Foxtrot (F) runs from the west side of the terminal apron and serves the GA hangars, fuel farm, and SRE Building. This taxiway is considered to be in a non-movement area which means that its usage is not under guidance by the Air Traffic Control Tower (ATCT).

Taxiway B is the old crosswind Runway 3-21 and serves the future Southside development area of the airfield. The old Taxiway B, which runs parallel to the present day taxiway, now serves as a vehicle access road.

Taxiways Charlie (C), Echo (E), and Hotel (H) provide entrance and exit from Runway 12-30. Taxiway Mike (M) provides access to the Southside apron via Taxiway B.

All taxiways at HTS meet or exceed ADG III standards of a minimum 50-foot width with the exception of Taxiway F which is 35 feet wide.

2.1.3 Terminal Area Apron

Apron areas provide space for aircraft parking and circulation. The terminal area apron occupies approximately 235,000 SF of pavement and is located immediately south of the terminal building. It is constructed of both bituminous concrete and asphalt.

This apron is divided into three operational areas: commercial airline activity on the east side of the apron near the passenger terminal, General Aviation (GA) activity in the center of the apron near the Fixed-Based Operator (FBO), and the FedEx cargo operation on the west side of the apron. The commercial airline area of the apron provides parking positions for three aircraft; the furthest west position parks parallel (nose pointing east) to the passenger terminal building while the middle and furthest east positions park with their nose pointing at the passenger terminal building. FedEx has parking positions for two aircraft on their portion of the terminal apron. There are 11 tie-downs in the center section of the terminal apron near the FBO building.

2.2 NAVIGATIONAL AIDS AND INSTRUMENT APPROACH CAPABILITY

Navigational aids (NAVAIDs) assist pilots in safely and efficiently locating airports, landing aircraft, and taxiing and taking off from airports during all meteorological conditions. NAVAIDs are any visual or electronic device, airborne or on the surface, that provide point-to-point guidance information or position data to aircraft in flight. The following describes the existing NAVAIDs (to include airfield lighting) and instrument approach capability at HTS.

2.2.1 En-route NAVAIDs

En-route NAVAIDs assist pilots during navigation between airports. These facilities are usually ground-based and electronically emit signals that are received by aircraft on specific radio frequencies. They are almost always used in some manner by pilots operating on Instrument Flight Rule (IFR) flight plans but can also be used during Visual Flight Rule (VFR) flights for position information. Although not a ground-based NAVAID, satellite navigation (GPS) is now a widely-used form of en-route navigation.

Typical ground based en-route NAVAIDs include Very High Frequency Omni-directional Range Facilities (VOR) and Non-directional Beacons (NDB). VOR is a system that transmits a 24-hour, all-weather, static-free radio signal which pilots use to identify the direction to or from the

Airport. NDB is a system that transmits, as the name suggests, non-directionally based signals following the curves of the earth's surface which pilots use to determine bearing to and from the beacon. While there are no ground based en-route NAVAIDs located at HTS there are some located at airports nearby in West Virginia, Kentucky, and Ohio. These include: Newcombe VOR, York VOR, Henderson VOR, Charleston VOR, Portsmouth NDB[4], and Gallipolis NDB.

It should also be noted that the FAA air traffic control tower (ATCT) and the FAA Elkins Flight Service Station[5] (FSS) provide en-route assistance to aircraft operating to, from, and in the vicinity of HTS.

2.2.2 Instrument Approach Capability NAVAIDs and Procedures

Until recently, instrument approach procedures relied on ground-based electronic NAVAIDS and were classified as either "precision" or "non-precision". Non-precision approaches provided only lateral guidance, whereas precision instrument approaches provided both lateral and vertical guidance. The NAVAIDS supporting traditional precision approaches are collectively called an Instrument Landing System (ILS) and include a Localizer (providing lateral guidance), a Glideslope (providing vertical guidance) and typically an approach lighting system (providing close-in visual guidance). New advances in Global Positioning System (GPS) based technology have allowed "vertically-guided instrument approach procedures" and ILS-like approach capability without the need for traditional ground-based ILS NAVAID equipment.

Both runway ends are equipped with Category I (CAT I) ILS systems. The ILS to Runway 12 includes a Medium-intensity Approach Lighting System with Runway alignment indicator lights (MALSR). A CAT-I ILS with MALSR is capable of supporting approach minimums as low as 200-foot ceiling and ½-statute mile visibility. The ILS to Runway 30 does not have an approach lighting system and can support minimums as low as 200-foot ceiling and ¾-statute mile visibility. The ILS systems are owned and maintained by the FAA.

As of 2013, HTS had four published instrument approach procedures providing both ILS and vertically guided GPS approach capability to both runway ends. The procedures and associated visibility and ceiling minimums are presented in **Table 2-2**.

[4] *Checking with FAA to verify if Portsmouth NDB is still operational*

[5] *"Elkins Radio" still provides flight assistance however the facility is no longer located in Elkins, WV. Their services have been consolidated to a Washington, DC central facility.*

2.2.3 Visual Approach NAVAIDs


Photo: CHA, September 2010

All NPIAS airports in the United States that have a published instrument approach and are approved for night operations must have a rotating beacon. The rotating beacon, located on top of the control tower at HTS, functions as the universal indicator for locating an airport at night. For a civilian airport, it has a clear lens and a green lens, 180 degrees apart, and is generally visible 10 miles from the airport. Both runway ends have a 4-light Precision Approach Path Indicator (PAPI-4), which consists of four individual lights that are located near the touchdown point of a runway. The lights have lenses that act as a prism and transmit either white or red light. These lights provide vertical guidance to the pilot to indicate to them if they are either too high or too low on an approach to the runway.

2.2.4 Airfield Lighting

Runway 30 is equipped with Runway End Identification Lights (REILs). The REILs consist of two unidirectional strobe lights, located laterally on either side of the runway threshold, that flash to help the pilot establish the runway end during nighttime operations or periods of low visibility. Runway 12-30 is also equipped with high intensity runway lights (HIRL). A Pilot-Controlled Lighting (PCL) system should be implemented in Fall 2013, which would give pilots the ability to control the approach lights, edge lights, and taxiway lights via radio. The visual NAVAIDs and airfield lighting at HTS are summarized in **Table 2-2**.

Table 2-2 – NAVAIDS, Lighting and Instrument Approach Minimums

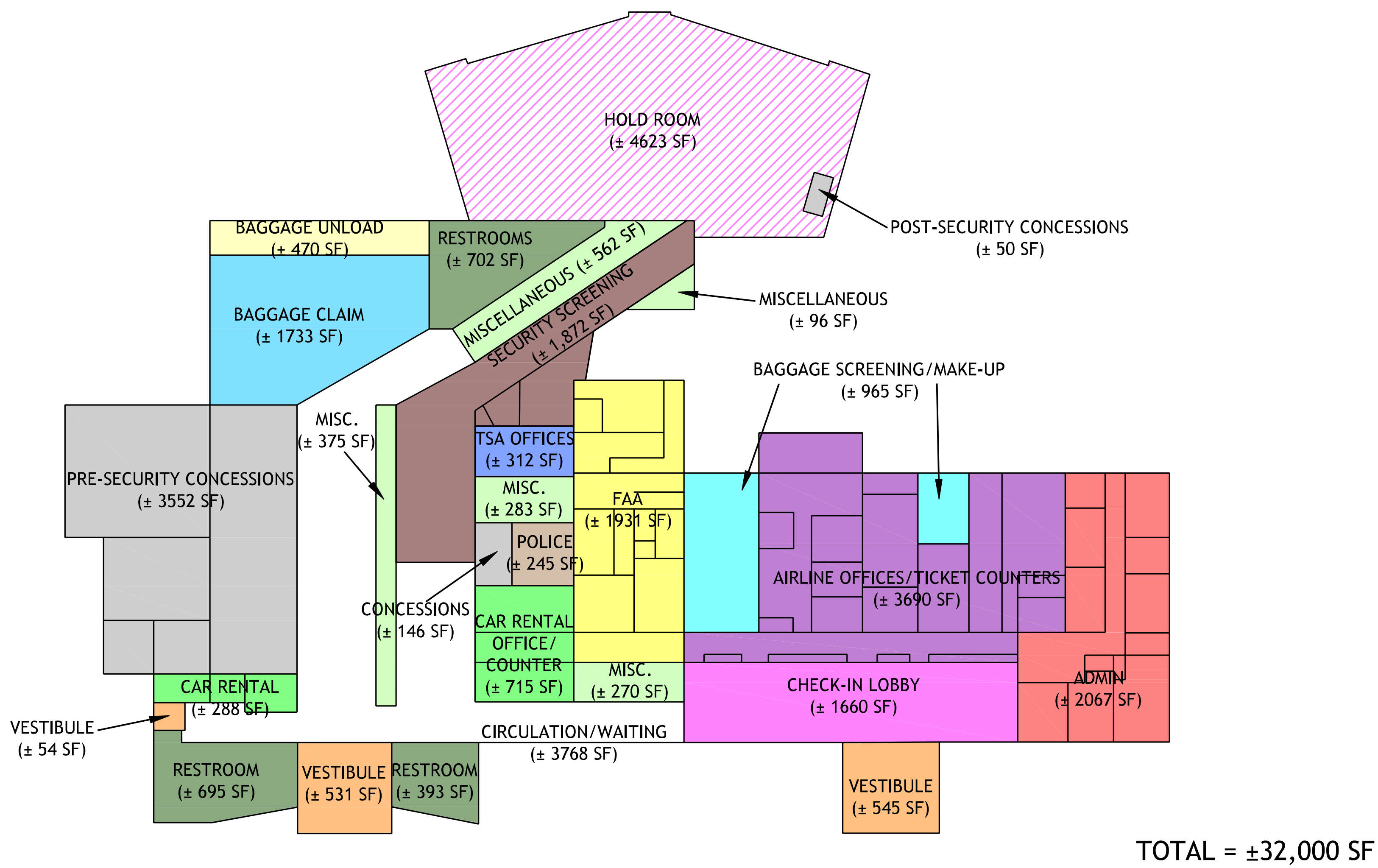
Runway Feature	Runway	
	12	30
Runway Lighting	HIRL	HIRL, REIL
Runway Markings	Precision	Precision
Approach Lighting	MALSR	n/a
Visual NAVAIDs	PAPI-4	PAPI-4
Instrument Approach Minimums (July 2013)		
ILS	200' / ¾ mile	200' / ¾ mile
RNAV (GPS)	200' / ¾ mile	200' / ¾ mile

HIRL – High Intensity Runway Edge Lighting System
REIL – Runway End Identifier Light System
PAPI-4 – Precision Approach Path Indicator
RNAV (GPS) – Area Navigation
ILS – Instrument Landing System
MALSR – Medium-intensity Approach Lighting System with Runway Alignment Indicator Lights
Source: FAA, Form 5010-1, *Airport Master Record*, Huntington Tri-State Airport, 2010

2.3 PASSENGER TERMINAL BUILDING

The passenger terminal building is located on the north side of the airfield and can be directly accessed from Airport Road. The main portions of the building were constructed in 1961 and later expanded in 1979 for a total size of approximately 32,600 square feet. Except for the ATCT, the terminal is a single-level building. The terminal building has three aircraft parking gates, all of which provide ground boarding of aircraft (i.e., no loading bridges) and share the same ±4,623 square foot hold room.

All areas of the terminal are prior to security screening except for the hold room which contains a small concession area and public restrooms. **Figure 2-3** depicts the layout of the passenger terminal building, and the following subsections describe the various functional areas of the terminal.



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 2-3
Passenger Terminal Layout

2.3.1 Airline Ticketing Area

The airline ticketing area is located in the west side of the terminal building adjacent to the administrative offices and running parallel to the terminal curb. Approximately 80 linear feet of counter space, capable of accommodating approximately 10 check-in positions, is provided. Three distinct airline operations offices are located behind the counter space.

2.3.2 Security Screening

The Transportation Security Administration (TSA) passenger security checkpoint is located prior to the hold room and adjacent to the baggage claim area. The security checkpoint consists of a single screening lane. In addition to the checkpoint, TSA has ±312 SF of office space directly adjacent to the screening area.

In 2010, HTS was provided a new Explosive Detection System (EDS) made by Reveal Imaging Technologies, Inc. This machine automatically screens checked bags for explosives and can inspect 226 bags per hour.[6] The EDS is used for checked baggage for both airlines.

2.3.3 Concessions

Presecurity concessions include a small vending area, a gift shop, two full-service restaurants consisting of a kitchen, office space, storage space, dining room, and a bar. The pre-security concession area totals to ±3,700 SF. Post-security concessions include a small coffee bar that provides snacks and beverages to ticketed passengers. This area is approximately 50 SF.

2.3.4 Baggage Claim

The Airport operates and maintains one baggage carousel located adjacent to the security screening area. The carousel is an elongated oval shape with approximately 40 feet of frontage. Bags are loaded onto the carousel directly via a narrow room between the baggage claim lobby and the terminal apron. The baggage claim area, including the unloading area, occupies approximately 2,203 SF of space. All airlines share the carousel.

2.3.5 Authority Administration

Administrative offices occupied by the HTS staff are located in the furthest west point of the passenger terminal with access directly adjacent to the airline ticketing counters. The approximate 2,070 square foot space includes offices, a conference room, and miscellaneous storage.

2.3.6 Rental Car Facilities

Counter and administrative office space for rental car companies is located on the east side of the terminal building, parallel to the terminal curb, totaling about 1,005 SF. The rental car companies that operate a ticket counter at HTS include Enterprise and Avis/Budget on the west side of the main north-south corridor and Hertz on the east side. All of the car rental

[6] *Source: Reveal Imaging, Inc., CT-80DR Datasheet, 2010*

companies at HTS share the same ready/return lot, east of the terminal building, which contains 73 parking spaces. The spaces are allotted by yearly volume of sales and in 2011 were: 28 Avis, 24 Hertz, and 21 Enterprise. In addition to sharing the same parking lot, the rental car companies also share a car wash building, located northeast of the terminal loop road.

2.3.7 Terminal Curb

The terminal curb is at ground-level and consists of approximately 205 linear feet spanning the length of the terminal building. A covered awning that protects against inclement weather is provided. There are 14 drop-off/pickup parking positions located on both sides of the one-lane terminal road.

Photo Taken By: CHA, September 2010

2.4 GROUND ACCESS AND VEHICLE PARKING

Access to the Airport is provided by Interstate 64 to the east and west and by West Virginia Route 75/US Route 52 to the north and south. Airport Road provides direct access to the terminal, parking, and GA facilities via WV Route 75/US Route 52. Access to the Southside apron is provided by Booth Road via WV Route 75/US Route 52.

A lighted vehicle parking lot is located near the terminal building and contains 402 total parking spaces. In 2012 the maximum daily parking fee for the main lot was $8 collected upon exit via the single-lane toll booth.[7] There is a shortage of paved parking at the Airport which leads to cars parking in an unpaved overflow lot to the northwest of the paved lot. The overflow lot contains ±100 parking spaces and is $8 per day which is paid in advance. Automated toll stations were implemented in 2011. The deficiency in paved parking was addressed in an October 2009 Huntington Intermodal Transportation Planning Study conducted by an outside consultant and will be addressed further in Chapter 4: *Facility Requirements.*

[7] *Source: Huntington Tri-State Airport Website http://www.tristateairport.com, 2010*

The rental car ready/return lot is located adjacent to the terminal on the east side of the building and contains 73 parking spaces. There are two paved employee parking lots. The first, containing 23 parking spaces, is located adjacent to the airport access road, west of the main parking lot and south of the remote lot. The second is a small, 10 space parking lot for administrative and other management personnel that is located adjacent to the west end of the terminal building. The total parking spaces are summarized in **Table 2-3**. The parking area layout is depicted in **Figure 2-4**.

Table 2-3 – Parking Spaces

Type	Number of Spaces
Main Parking Lot	402
Unpaved Remote Lot	±100
Rental Car Ready/Return	73
Employee	33
Total	**608**

Source: Huntington Intermodal Transportation Planning Study, 2009; CHA Observation, 2010

HTS HUNTINGTON TRI-STATE AIRPORT
MASTER PLAN UPDATE

Figure 2-4
Parking Area

2.5 GENERAL AVIATION FACILITIES

General Aviation (GA) comprises all civil aviation activities except for commercial airline service. GA includes a wide variety of activities such as personal/recreational flying, flight training, sightseeing, aerial patrol, aerial spraying, filming and photography, utility/construction support, electronic news gathering, law enforcement, aerial ambulance, and corporate flying. GA aircraft range from single- and multi-engine piston aircraft to corporate jets, helicopters, gliders, balloons, and experimental (homebuilt) aircraft. GA facilities at an airport include the FBO, aircraft storage space, and apron space to provide for the needs of these various types of aircraft that base and/or use the airport. GA facilities are located on the north side of the airfield and west of the terminal building. Refer back to **Figure 2-2** for the GA facilities location and layout.

2.5.1 Fixed Base Operator (FBO)

Huntington Jet Center is the only FBO in operation at the Airport and is supported by an Assitant Operations Manager, three customer service representatives, and 11 line employees that also serve as the ARFF staff. Refer to **Section 2.6.3** for more information on the ARFF operation at HTS as well as employment numbers.

This full service FBO provides aircraft fueling operations, ground power unit (GPU), de-icing, in-flight catering, concierge services for both crew and passengers, and leaseable aircraft storage space. The FBO operates an approximately 3,800 SF building located west of the passenger terminal. The FBO shares the 235,000 square foot ramp with the passenger terminal and cargo operators. FBO amenities include a passenger terminal, pilot lounge, wireless internet access, flight planning facilities, courtesy cars, vending machines, conference room, kitchen, and a dining area. The FBO operates several Jet A and Avgas (100LL) fuel trucks. The capacity for each truck ranges from 1,200 gallons to 3,000 gallons**.** The fuel trucks are filled from the fuel storage area located northwest of the FBO and accessible via Taxiway F. As noted previously, the FBO also provides fuel service to the airlines and cargo operators.

2.5.2 Aircraft Storage

Hangar facilities protect aircraft from exposure to daily weather conditions. HTS offers a variety of hangars ranging from 3,600 to 15,100 SF in three areas of the airfield. The terminal area apron contains two traditional box hangars of 6,350 and 10,750 SF as well as the FedEx 14,500 square foot hangar. The area along Taxiway F consists of five traditional box hangar units and two T-hangar units. The box hangars range from 3,600 to 15,100 SF. The two T-hangar units are 4,700 and 10,500 SF which can accommodate three and nine aircraft respectively. The Southside Apron contains one T-hangar unit which is 6,000 SF and can accommodate five aircraft. All hangar facilities at HTS are owned by the Airport with the exception of Hangar 11, which is privately-owned. Interviews with the Authority have indicated the ownership of this building will revert to the Airport in 2015. **Table 2-4** presents the aircraft hangar facilities at the Airport.

Table 2-4 – Aircraft Hangar Facilities

Hangar/Tenant	Location	Type	Hangar Area (sf)
Hangar 2	Terminal Area Apron	Box Hangar	±6,350
Hangar 3	Terminal Area Apron	Box Hangar	±10,750
Hangar 4 / FedEx	Terminal Area Apron	Conventional	±14,500
Hangar 8	Taxiway F	Box Hangar	±10,500
Hangar 9	Taxiway F	Box Hangar	±7,050
Hangar 11	Taxiway F	Box Hangar	±3,600
Hangar 12	Taxiway F	Box Hangar	±10,000
Hangar 13	Taxiway F	Box Hangar	±15,100
Building 14	Taxiway F	T-Hangar	±10,500
Building 15	Taxiway F	T-Hangar	±4,700
Building 21	Southside Apron	T-Hangar	±6,000

Source: Tri-State Airport Authority, 2010

2.6 SUPPORT FACILITIES

Support facilities provide vital functions related to the overall operation of the Airport, and typically include: airport maintenance, fuel storage, aircraft rescue and firefighting (ARFF), and snow and ice control.

2.6.1 Airport Maintenance Facilities

The maintenance facility for the Airport is located along the GA access road, west of the FBO and passenger terminal buildings. This facility is used for the repair and maintenance of Airport and tenant equipment and accommodates approximately seven employees.

2.6.2 Fuel Storage

Aviation fuel storage facilities at HTS are provided by the Authority and operated by the FBO. It consists of above ground fuel tanks with aircraft fueling supplied via three fuel trucks. The main fuel farm is located on the northwest side of the airfield, accessible via Taxiway F. Additional automobile and generator fuel storage tanks are owned by the rental car companies and the FAA. The Airport maintains an approved Spill Prevention, Control, and Countermeasure (SPCC) Plan that was completed in October of 2009. This plan serves as an inventory of all oil storage facilities at the Airport as well as providing a method to lessen the impact if an oil spill were to occur. **Table 2-5** describes the fuel storage capacity at the Airport.

Table 2-5 – Fuel Storage

Owner/Operator	Storage Type	Capacity (Gallons)	Fuel Type
Authority/FBO	Above Ground	2 – 20,000	Jet A
Authority/FBO	Above Ground	2 – 10,000	100LL
Authority/FBO	Above Ground	5,000	Auto
Authority/FBO	Truck	3,000	Jet A
Authority/FBO	Truck	2,200	Jet A
Hertz, Avis, Enterprise (1 ea.)	Above Ground	3 – 2,000	Auto
Authority/FBO	Above Ground	2,000	Diesel
Authority/FBO	Truck	1,200	100LL
FAA	Above Ground	500	Diesel

Source: HTS SPCC Plan, CHA Observations, 2010

2.6.3 Aircraft Rescue and Fire Fighting (ARFF)

Commercial service airports with Airport Operating Certificates under 14 CFR Part 139, *Certification of Airports*, are required to provide aircraft rescue and firefighting services in the event of an emergency. The ARFF building at HTS is approximately 5,500 SF in size. It is connected to the FBO facility and contains four bays or garages for vehicle and equipment storage. The location of the ARFF facility allows direct access to the airfield and provides a response time within the three minute or less threshold required by the FAA. The ARFF team at HTS includes four full-time employees and eight part-time employees, all of which share dual responsibilities with the FBO.

The level of service, or ARFF Index, is determined by the longest aircraft with at least five daily departures. In 2012 the Airport operated with an ARFF Index of A corresponding to Delta Airline's CRJ-200 which has an overall length of 87 feet 10 inches[8]. **Table 2-6** identifies ARFF Index equipment requirements as mandated by the FAA. The ARFF equipment in use consists of three response trucks. The primary truck is a 2009 Oshkosh Striker 1500 Pumper with a 1,500-gallon water capacity; 195-gallon foam capacity; and 500 pounds of dry chemical system capacity. The backup truck is a 1988 Oshkosh T-1500 Pumper with a 1,500-gallon water capacity; 195-gallon foam capacity; and 520 pounds of dry chemical system capacity. The third ARFF vehicle is a 2005 Crash Rescue Truck with a 100-gallon water capacity and 500 pounds of dry chemical system capacity.

[8] *Source: Bombardier Aerospace, CRJ-200 Specifications*

Table 2-6 – ARFF Index Requirements

Index	Aircraft length	Vehicles	Extinguishing Agents
A	<90 ft	1	Either 500 pounds of sodium-based dry chemical, Halon 1211, or clean agent; or 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application
B	90 ft to <126 ft	1	500 pounds of sodium-based dry chemical, Halon 1211, or clean agent and 1,500 gallons of water and the commensurate quantity of AFFF for foam production
		2	One vehicle carrying the extinguishing agents as specified for Index A; and one vehicle carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons
C	126 ft to <159 ft	2	One vehicle carrying the extinguishing agents as specified for Index B; and one vehicle carrying water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 3,000 gallons
		3	One vehicle carrying the extinguishing agents as specified for Index A; and two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 3,000 gallons
D	159 ft to <200 ft	3	One vehicle carrying the extinguishing agents as specified for Index A; and two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 4,000 gallons
E	>200 ft	3	One vehicle carrying the extinguishing agents as specified for Index A; and two vehicles carrying an amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 6,000 gallons

Source: 14 CFR Part 139, Aircraft Rescue and Firefighting

2.6.4 Snow Removal Equipment Building

The snow removal equipment (SRE) building at the Airport is located on the northwest side of the airfield, accessible via Taxiway F. The building is approximately 6,300 SF in size and was constructed in 1995. The SRE building houses most of the equipment used by the Airport for snow removal during inclement weather conditions. Due to the size of the building, however, several pieces of equipment must be stored outside. The SRE equipment used by the Airport is shown in **Table 2-7**.

Table 2-7 – SRE Equipment

Year	Vehicle
1967	International Plow Truck
1978	International Plow Truck (2)
1978	Dodge Sand Truck
1981	Mercedes HNIMOG Snow Blower
1988	Fiat Allis Endloader
1989	Oshkosh Plow Truck
1989	Oshkosh Snow Blower
1996	Sweepster Broom
2006	Oshkosh MB Broom
2013	Snow Plow Truck
2013	Aircraft De-icer
Unknown	International Sand/Plow Truck

Source: SPCC Plan, 2010

2.7 AIRPORT SECURITY

HTS employs a West Virginia certified police force in charge of law enforcement and security responsibilities at the Airport including personnel badging and access control. In 2010, the force included seven personnel (three full-time and two part-time officers, one administrative assistant, and one police chief). The police maintain approximately 400 SF of office space located in the non-secure portion of the passenger terminal near the security screening checkpoint and vending areas.

The airfield is enclosed completely by an eight foot tall perimeter fence, completed in 2001, to deter wildlife and other unwanted access from trespassing on to the airfield[9].

2.8 METEOROLOGICAL CONDITIONS

Meteorological conditions affect operations at an airport in many ways. Winds, precipitation, and temperature conditions influence decisions pertaining to NAVAIDS, runway orientation, and required runway length at an airport. HTS is equipped with an Automated Surface Observing System (ASOS) which is a weather data sensing, processing, and dissemination system. The ASOS is located approximately 500 feet south of Runway 12-30 and just west of Taxiway B. It was designed to support weather forecast activities and aviation operations. A federally funded program sponsored by the National Weather Service (NWS), FAA, and Department of Defense (DOD); the ASOS is constantly observing and updating local weather conditions and relaying this information to aircraft in the vicinity.

[9] *2003 Airport Master Plan, LPA Group, 2010*

2.8.1 Local Climate

The following climate data was gathered from the HTS ASOS. The average annual temperature is 55.0 degrees Fahrenheit; the average low is 45.1 degrees Fahrenheit; and the average high is 64.9 degrees Fahrenheit. The mean temperature of the hottest month (July) has an average temperature of 75.3 degrees Fahrenheit. Average monthly precipitation ranges from 2.73 inches to 4.46 inches, with an annual average of 42.31 inches. Average monthly snowfall ranges from 0.1 inches to 8.9 inches (October to April), with an annual average of 26.2 inches.

2.8.2 Wind Coverage

In addition to climate data, the ASOS at HTS collects wind speed and direction data, which can influence decisions on runway orientation and length at an airfield. Ideally, a runway is oriented with the prevailing wind as aircraft performance is enhanced by flying the aircraft into the wind. It is the recommendation of the FAA that the primary runway at an airport have at least 95 percent wind coverage, which means that 95 percent of the time, the wind at an airport is within certain limits of crosswind conditions. In cases where the primary runway does not meet the 95 percent threshold, a crosswind runway may be necessary to satisfy this recommendation. Wind coverage is calculated using the highest crosswind component that is acceptable for the type of aircraft expected to use the runway system. Larger aircraft have a higher tolerance for crosswind than smaller aircraft, due to their size, weight and operational speed. **Table 2-8** provides the standard crosswind component by aircraft size.

Table 2-8 – Standard Crosswind Components

Aircraft Category	Maximum Crosswind Component
A-I and B-I aircraft	10.5 knots
A-II and B-II aircraft	13.0 knots
A-III and B-III and C-I through D-I aircraft	16.0 knots
A-IV and D-IV aircraft or higher	20.0 knots

Source: FAA AC/5300-13 *Airport Design*

In addition to the crosswind component, another factor in the wind coverage is the ceiling and visibility. The FAA considers four weather classifications: all weather, visual flight rule (VFR) conditions, instrument flight rule (IFR) conditions, and poor visibility conditions. According to the data collected by the HTS ASOS, VFR conditions occur approximately 90 percent of the time and IFR conditions occur approximately 8 percent of the time. During poor visibility conditions (approximately 2 percent of the time) when the conditions are below the instrument approach minimums, the airfield is not operational for takeoff or landing.

Table 2-9 outlines the weather classification criteria and the number of recorded observations at HTS between 2000 and 2009. Note the total observations of VFR, IFR, and poor visibility does not equal the All Weather conditions; this is due to missing data during the observation process.

Table 2-9 – Weather Classification Criteria

Weather Class	Criteria	Recorded Observations at HTS (2000-2009)
All Weather	All ceiling and visibility weather conditions	78,357 (100%)
VFR Conditions	Ceiling ≥ 1,000’ and visibility ≥ 3 miles	70,439 (89.9%)
IFR Conditions	Ceiling ≥ 200’ and < 1,000’ *and* Visibility ≥ ½ mile and < 3 miles	6,119 (7.8%)
Poor Visibility Conditions	Ceiling < 200’ and/or visibility < ½ mile	1,727 (2.2%)

Source: NOAA, National Climate Center - Station 72425 (2000-2009)

Weather observations are presented in a format that is specifically designed by the FAA to be useful for evaluating weather conditions at an airport. Wind direction is grouped according to a 16-point compass rose (N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, and NNW). Wind speed is tabulated into groups of 0-3, 4-12, 13-15, 16-18, 19-24, 25-31, and 32 knots per hour or greater. This data is typically displayed on a windrose for each weather classification. The all-weather windrose is presented in **Figure 2-5**, VFR windrose in **Figure 2-6**, and IFR windrose in **Figure 2-7**.

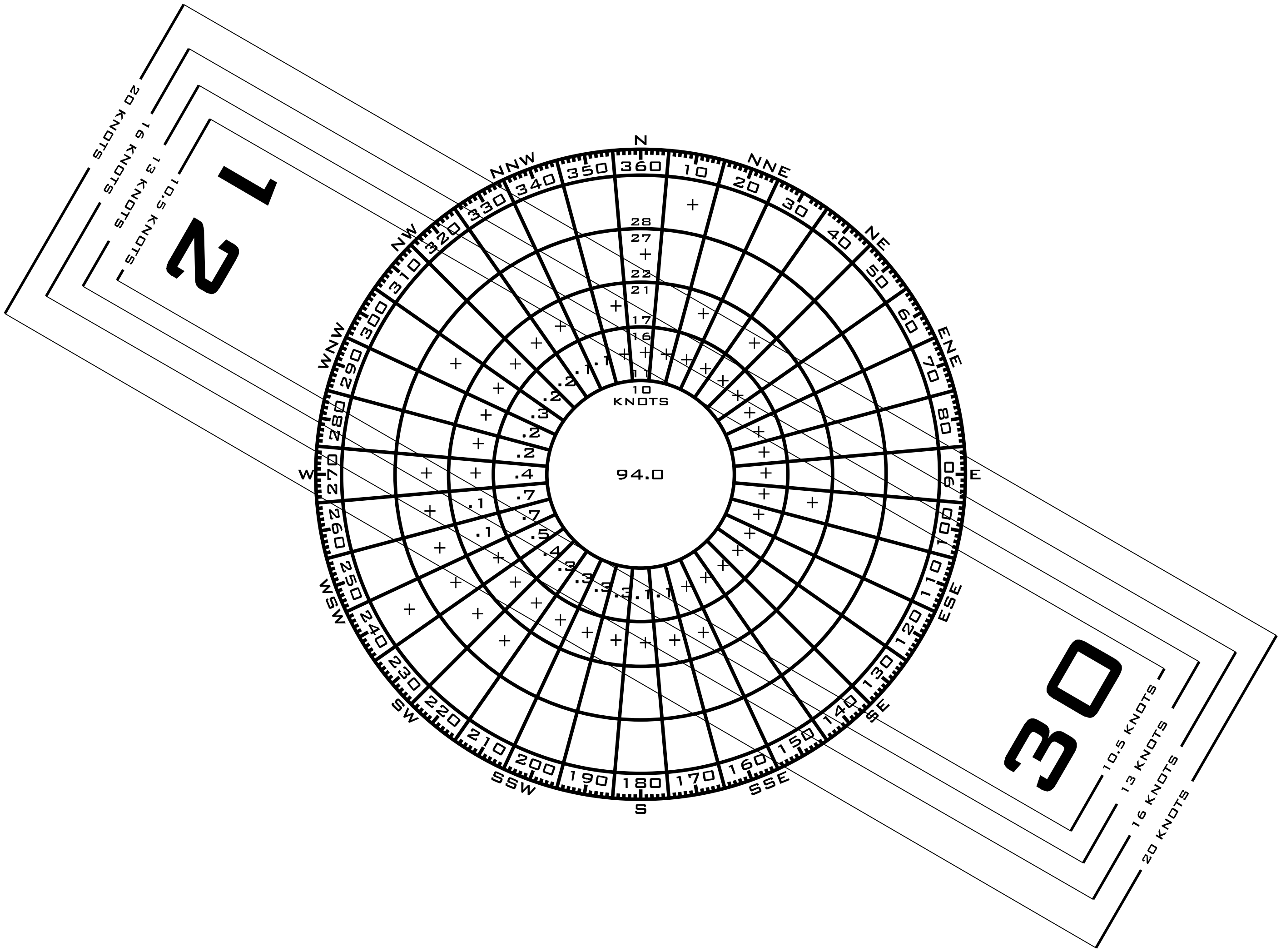
The combination of the crosswind and the weather classification allow for the calculation of the wind coverage, which for HTS is presented in **Table 2-10**.

Table 2-10 – HTS Wind Coverage

Condition	10.5 Knots	13 Knots	16 Knots	20 Knots
All Weather				
RW 12	58.85%	59.34%	59.86%	59.92%
RW 30	61.53%	62.61%	63.34%	63.45%
Combined	**97.01%**	**98.57%**	**99.80%**	**99.97%**
VFR				
RW 12	57.76%	58.29%	58.85%	58.91%
RW 30	60.51%	61.68%	62.47%	62.60%
Combined	**96.76%**	**98.45%**	**99.79%**	**99.97%**
IFR				
RW 12	64.41%	64.58%	64.74%	64.76%
RW 30	68.78%	69.12%	69.29%	69.32%
Combined	**99.08%**	**99.60%**	**99.92%**	**99.98%**

Source: NOAA, National Climate Center - Station 72425 (2000-2009)

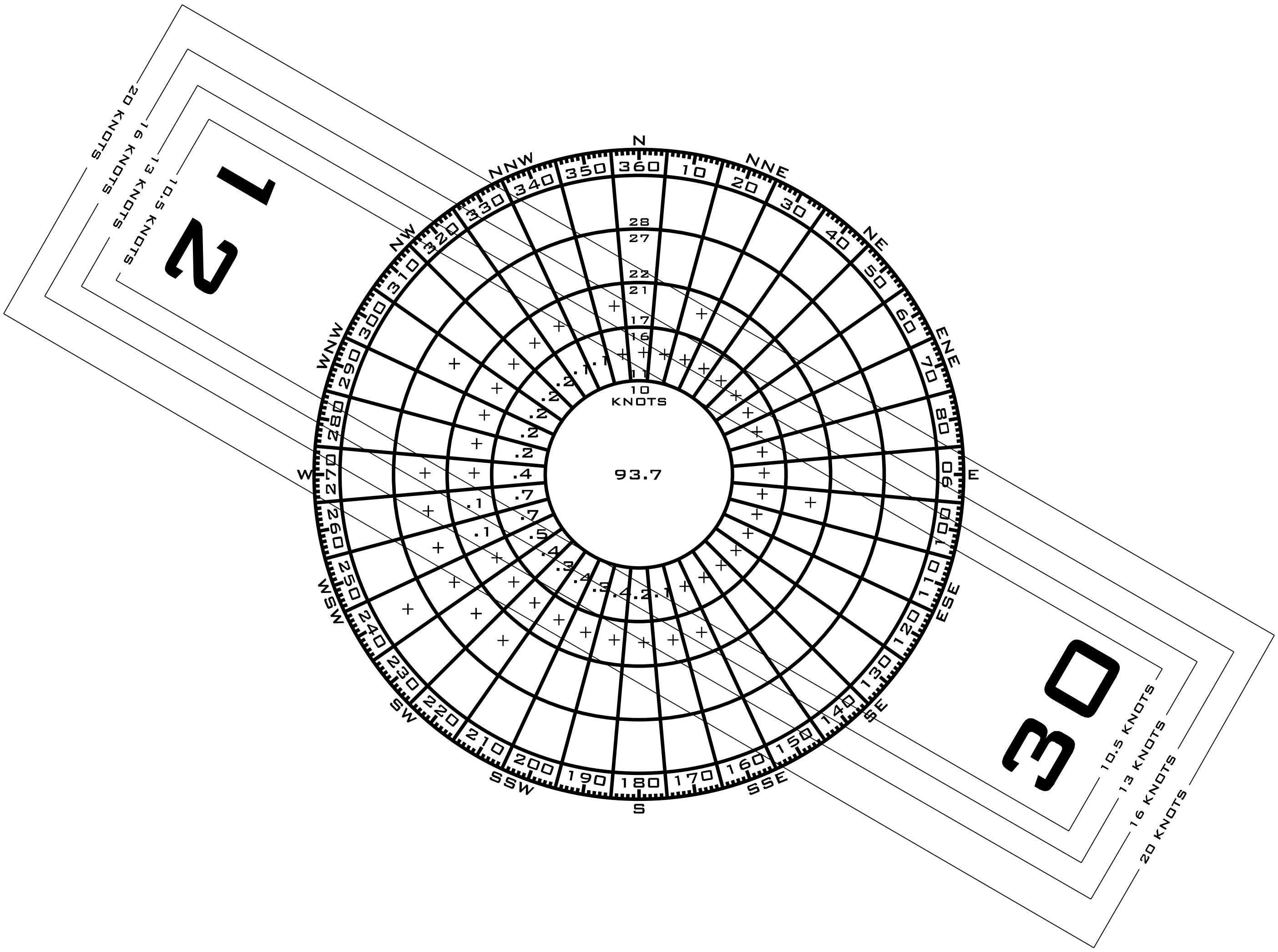
Based on the current runway configuration, the combined wind coverage exceeds the minimum desired crosswind coverage of 95 percent for all aircraft categories in all three weather conditions.



ALL WEATHER WIND ROSE

SOURCE: **NOAA National Climatic Center**
Asheville, NC
Huntington Tri-State Airport
Huntington, WV

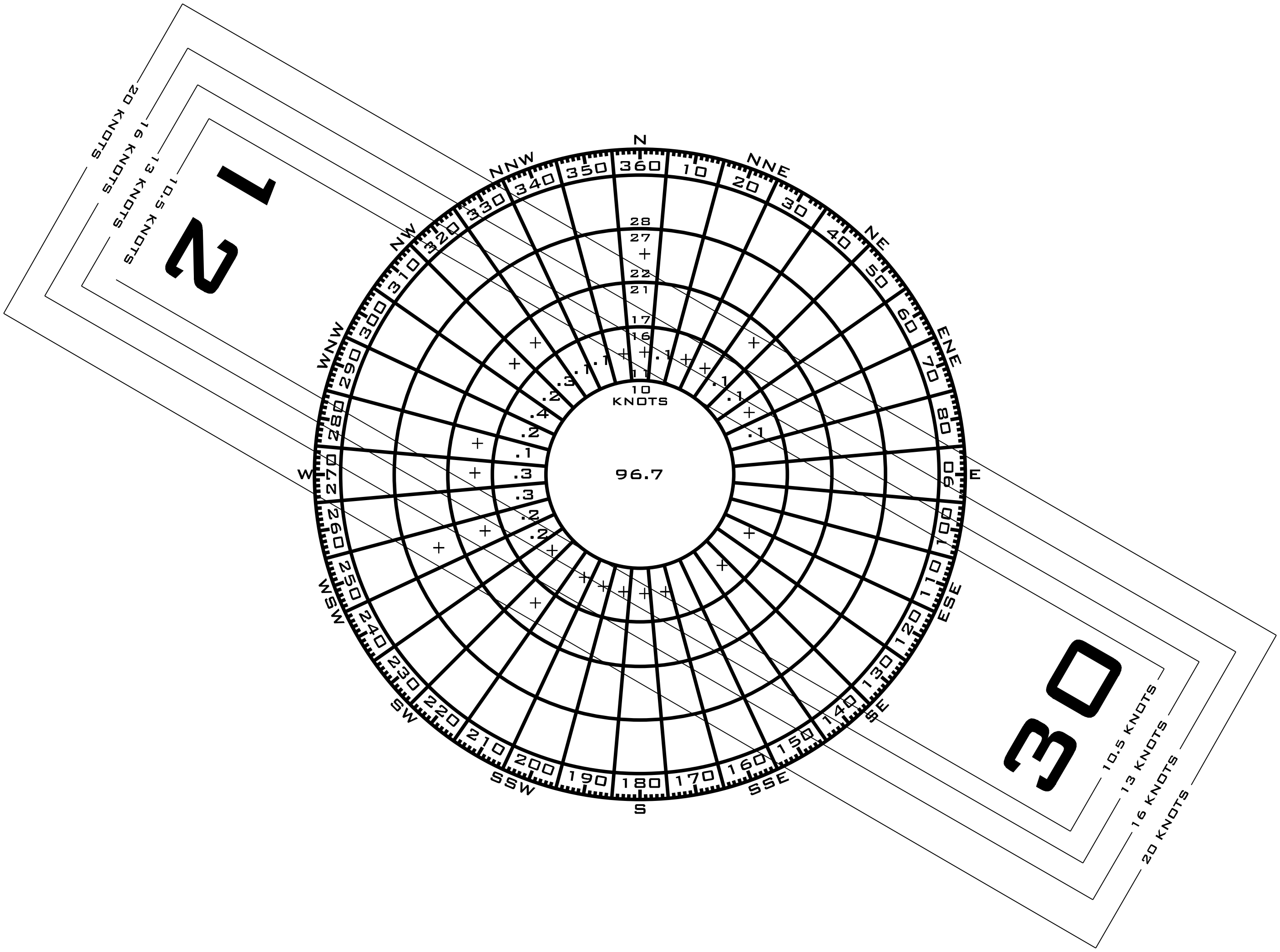
OBSERVATIONS: **78,356 Observations**
2000-2009



VFR WIND ROSE

SOURCE: NOAA National Climatic Center
Asheville, NC
Huntington Tri-State Airport
Huntington, WV

OBSERVATIONS: 70,438 Observations
2000-2009



IFR WIND ROSE

SOURCE: NOAA National Climatic Center
Asheville, NC
Huntington Tri-State Airport
Huntington, WV

OBSERVATIONS: 6,119 Observations
2000-2009

2.9 PUBLIC UTILITY INFRASTRUCTURE

HTS is served by all necessary utilities including underground water, sewer, electricity, and gas. Storm water management systems protect the airport facilities from flooding and standing water that may damage or erode vulnerable areas. The City of Kenova, WV provides water service to HTS while the Town of Ceredo provides sanitary sewer service. Electrical power is provided to all facilities and NAVAIDS by American Electric Power (AEP). Natural gas is provided to the Airport by Columbia Gas.

All utilities serving the terminal, with the exception of water pressure for fire suppression, have been determined to have sufficient capacity for the existing facilities and their associated demand. As of early 2011, the Authority is in discussion with the local water service provider to remedy this issue.

In 2010, the Authority and CHA prepared a Preliminary Southside Development Plan which included an existing utility inventory for the proposed construction of two corporate aircraft hangars located on the Southside Apron. The planning effort found that, while service lines would have to be extended to the site, all adjacent utilities would adequately serve the corporate hangars; however, further investigation would be needed to determine precise capacity requirements and proposed utility locations. In 2012, the Authority began designing the extension of utility service to the South Apron area with initial construction anticipated in 2013.

2.10 OFF AIRPORT LAND USE CONSIDERATIONS

Like many counties in West Virginia, Wayne County has not established specific zoning regulations and use restrictions with the exception of floodplains. According to the Wayne County Assessor's Office, HTS is surrounded by unincorporated area with the exception of the Town of Ceredo near the intersection of Airport Road and WV Route 75/US Route 52.

2.11 ENVIRONMENTAL CONSIDERATIONS

Potential effects to the natural and human environment, as related to airport development and operation, must be considered when planning and designing airport facilities. The National Environmental Policy Act of 1969 (NEPA), FAA Order 5050.4B *NEP) Implementing Instructions for Airport Projects*, the Environmental Protection Agency (EPA), and the West Virginia Division of Natural Resources (DNR) provide evaluation processes and guidance on minimization and mitigation of impacts. Detailed environmental evaluation may be required in the future to pursue the recommendations that flow from this Master Plan Update Study. While that level of detail is not included in this Study, the following is offered as a brief overview of readily available environmental conditions information relevant to HTS.

2.11.1 Noise and Compatible Land Use

The 2003 Airport Master Plan found no significant impacts to surrounding land uses caused from noise generated at the Airport. Although an updated evaluation of noise is not included in this Master Plan Study, any future changes in aircraft fleet mix and operational levels may warrant the need for a detailed noise study as part of a separate project.

2.11.2 Air Quality

The EPA monitors certain air pollutants per the standards established under the Clean Air Act Amendments and identifies areas throughout the nation that are in compliance ("attainment"), out of compliance ("non-attainment") or areas of possible concern ("maintenance"). The six criteria air pollutants are *ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter*, and *lead*. According to the EPA "Green Book: Non-Attainment Areas for Criteria Pollutants" (as of September 16, 2010), Wayne County is categorized as an area of "non-attainment" due to high particulate matter 2.5 (PM 2.5) levels computed to 1997 standards. This pollutant refers to tiny particles that are 2.5 microns or less in width. It should be noted that Wayne County was categorized as an area of "attainment" using the revised 2006 standards for PM 2.5 levels. Wayne County is also considered in an area of "maintenance" for 8-hour ozone levels using the 1997 standard. Ozone maintenance areas are currently referred to as "former subpart 1" areas until a reclassification is completed.

2.11.3 Other Environmental Considerations

According to the West Virginia Division of Culture and History, there are no archeological sites or other cultural resources known to be on or near the Airport property. The U.S. Fish and Wildlife National Wetlands Inventory has confirmed that there are no wetlands located on the Airport property. Based on the FEMA FIRM Map 5402000092B, no part of the Airport property is located in a floodplain.

2.12 AIRPORT IMPROVEMENT PROGRAM (AIP) GRANT HISTORY

As with most publicly-owned public use airports, the majority of the Airport's capital improvement funding comes from federal and state grants and airport generated funds. As stated in previously, HTS is considered a non-hub primary commercial service airport. Primary airports typically receive an annual AIP grant entitlement based on the number of enplaned passengers at their facility; generally it is at least $1 million per year, with the purpose being to maintain airport safety and operational efficiency. Grant funds, coupled with operating revenues from sources such as land leases, user fees, and automobile parking, generally allow the Airport to meet its development needs. **Table 2-11** displays the historical annual AIP grants supplied to HTS from 1982 through 2010 which totals in excess of $51 million.

Table 2-11 – AIP Grant History

Year	Grant Number(s)	Description	Grant Total
1982	001	Improve Airport Drainage	$447,656
1983	002	Rehabilitate RW Lighting, Acquire Snow Removal Equipment	$198,190
1984	003	Construct Apron and Taxiway, Install Lighting, Improve Drainage	$542,217
1985	004	Rehabilitate Runway, Apron, & Taxiway	$221,385
1986	005	Rehabilitate Runway & Taxiway, Groove Runway	$1,442,860
1987	006	Install Apron Lighting, Acquire ARFF Vehicle, Install Perimeter Fencing, Improve Airport Drainage	$402,869
1988	007-008	Conduct Airport Master Plan Study, Install Apron Lighting, Acquire Snow Removal Equipment, Improve Airport Drainage	$342,315
1989	009	Extend Taxiway	$90,633
1990	010	Extend Taxiway	$2,982,600
1991	011	Install Apron Lighting & Signage, Acquire Security Equipment	$715,238
1992	012	Acquire ARFF Safety Equipment, Install Apron & Runway Lighting, Install Guidance Signs & RW Vertical/Visual Guidance System, Rehabilitate Taxiway Lighting	$933,822
1993	013	Construct Deicing Facility, Install RW Vertical/Visual Guidance System & RW Lighting, Improve Service Road	$1,213,823
1994	014	Improve Access Road, Install RW Sensors, Acquire Handicap Passenger Lift Device	$186,396
1995	015-016	Acquire Handicap Passenger Lift Device, Improve Terminal Building, Install Apron Lighting	$962,559
1996	017-018	Acquire Snow Removal Equipment, Rehabilitate Runway	$3,721,636
1997	019	Construct Deicing Containment Facility, Acquire Security & Snow Removal Equipment, Improve Snow Removal Equipment Building, Acquire Handicap Passenger Lift Device	$232,482
1998	020	Improve Airport Drainage & SRE Building	$596,406
1999	021	Construct Deicing Containment Facility, Conduct Miscellaneous Study, Rehabilitate Apron, Improve Drainage	$865,789
2000	022	Rehabilitate Taxiway, Acquire Security Equipment	$2,944,446
2001	023-025	Conduct Airport Master Plan Study, Rehabilitate Runway, Improve Terminal Building & Airport Drainage	$1,290,925
2002	026-028	Rehabilitate Runway & Taxiway, Acquire Security Equipment	$198,344
2003	029-030	Rehab Runway & Taxiway, Rehab ARFF Building, Acquire FME	$5,501,452
2004	031-032	Improve Drainage, Acquire ARFF Vehicle, Rehab ARFF Building, Construct Taxiway	$7,586,459
2005	033	Rehabilitate Access Road, Improve Runway Safety Area & Terminal Building, Install Perimeter Fencing, Acquire SRE	$894,589
2006	034	Improve Runway Safety Area & Terminal Building	$1,908,964
2007	035	Improve Runway Safety Area	$4,484,577
2008	036-037	Improve Runway Safety Area & Terminal Building	$5,261,575
2009	038-041	Acquire ARFF Vehicle, Rehabilitate Apron, Construct Taxiway, Improve Terminal Building	$2,378,152
2010	042-045	Construct Taxiway, Rehabilitate Apron & Runway, Wildlife Hazard Assessments, Update Airport Master Plan Study	$3,217,482
2011	046-047	Rehabilitate Runway and Taxiway, Improve ARFF Building, Acquire ARFF Equipment	$8,864,078
2012	048-049	Rehabilitate Terminal, Conduct Environmental Study, Install Perimeter Fencing, Acquire Snow Removal and Aircraft Deicing Equipment	$1,379,368
		Total:	**$62,009,287**

Source: Faa.gov. AIP Grant History. 2010

Note: Some descriptions are generalized by category and may not accurately reflect work completed.

3 FORECASTS OF AVIATION DEMAND

Projecting future aviation activity at an airport is one of the most important and vital steps in the master planning process. This chapter uses various FAA-approved methodologies to predict levels of aviation demand at HTS which will serve as the basis for identifying future facility requirements during the planning period (2010-2030). It will also serve as the foundation for major decisions that will be made by the Authority and will provide guidance as to if, and when, future improvements are needed.

In this chapter the assumptions, methodologies, and data utilized to create the forecasts are presented. Also discussed are the local socioeconomic conditions that can affect aviation demand at HTS. The specific activity elements to be forecast include:

- Air Carrier Passenger and Aircraft Activity
- Air Cargo Activity
- General Aviation and Military Aviation Activity
- Fleet Mix and Load Factors
- Peak Activity
- Surface Transportation Activity

3.1 BASELINE FORECAST DATA

To derive the annual operations, enplanements, and based aircraft forecasts required for this Master Plan effort, it is first necessary to identify the forecast baseline on which future activity levels will be developed. For this forecasting effort, 2010 is the baseline year, or starting point, for the 20-year forecast. Aircraft operations by activity type (passenger carrier, air cargo, general aviation, and military), passenger enplanements, fleet mix and based aircraft counts must all be established and confirmed from multiple sources in order to ensure a solid foundation on which the forecasts will be built. The 2010 FAA Terminal Area Forecast (TAF) is used as the starting point for this data gathering effort, as well as the baseline forecast of future aviation activity at HTS, against which all subsequent forecasts presented in this chapter will be compared.

The TAF is prepared by the FAA and includes historical and forecast data for passenger enplanements, airport operations, TRACON operations, and based aircraft. The 2010 TAF contains historical aviation activity data and the FAA's forecasts for more than 500 airports receiving FAA contract tower and radar service. This database also includes projections for more than 2,800 other airports in the National Plan of Integrated Airport Systems (NPIAS). The forecasts, covering the years 2010-2030, project activity of the four major users of the air traffic system; air carriers, air taxi and commuters, general aviation, and military.

These estimates are derived by the FAA from national estimates of aviation activity which are then assigned to individual airports based upon multiple market and forecast factors. The FAA looks at local and national economic conditions, as well as trends within the aviation industry to develop their forecasts. These forecasts are not directly associated with the ability of an airport to support the trends, but instead are developed using the historical relationships between passenger levels and other trends that influence the aviation industry.

In addition to the TAF, the following FAA and HTS data sources are used to establish the 2010 baseline data:

- 2010 FAA Air Traffic Activity Data System (ATADS)
- 2010 FAA Enhanced Traffic Management System Counts (ETMSC)
- HTS Air Traffic Control (ATC) Tower Data
- HTS Carrier Schedules
- FAA Form 5010 Data (Airport Master Record)

Through an evaluation of the above listed data, it was determined that the following data sources were to be used to establish the 2010 base data for each of the following forecast components:

- Passenger Carrier Operations: 2010 ETMSC verified with HTS carrier schedules
- Passenger Carrier Fleet Mix: HTS carrier schedules
- Cargo Carrier Operations: 2010 ETMSC verified with HTS carrier schedules
- Cargo Carrier Fleet Mix: HTS carrier schedules, FedEx
- GA Based Aircraft: FAA Form 5010, 2010 HTS Tenant List
- GA Operations: 2010 TAF verified with ATADS
- Military Operations: 2010 TAF verified with ATADS

Note that within the TAF, the “Air Taxi & Commuter” category includes scheduled air carrier regional jet (RJ) and turbo prop operations, as well as unscheduled GA charter operations. In order to accurately gauge commercial operations versus general aviation operations utilizing TAF data, it becomes necessary to split GA air taxi operations from the commercial air carrier operations which are presented together in the single “Air Taxi & Commuter” category. This is accomplished by calculating the scheduled commercial air carrier RJ and turbo prop operations based on HTS carrier schedules, supplemented with FAA ETMSC operations data. Through this exercise, commercial air carrier commuter operations are quantified and removed from the TAF “Air Taxi & Commuter” category, with the remaining air taxi operations (i.e., non-scheduled charter operations) moved to the GA operations total. Through this exercise, a total of 4,770 commercial air carrier operations are established as the 2010 forecast baseline.

Table 3-1 details the established 2010 baseline operations data that will serve as the foundation for subsequent operations forecasts for each activity type. Note that based aircraft and fleet mix data will be presented and addressed in greater detail in their respective forecast sections.

Table 3-1 – 2010 Forecast Baseline Operations

Activity Type	Operations	Percent of Total
Passenger Carrier	4,770	27.9%
Cargo Carrier	606	3.5%
General Aviation	10,952	64.1%
Military	767	4.5%
Total	**17,095**	**100.0%**

Source: 2010 ETMSC, ATADS, HTS Carrier Schedules

In comparison to both TAF reported operations and ATADS operations, the 2010 baseline operations total, verified from multiple data sources and presented in greater granularity (i.e., by specific activity type), is within one percent of each. The totals are as follows:

- Forecast Baseline Operations: 17,095
- TAF Reported Operations: 17,241
- ATADS Reported Operations: 17,041

As with the baseline operations data, the forecast factors (i.e., annual growth rates applied to baseline activity), are culled from multiple sources and adjusted as necessary based on specific Airport, market, and industry conditions. The following are the primary sources of the growth factors used in this forecast:

- HTS Terminal Area Forecast
- National Terminal Area Forecast
- FAA Aerospace Forecast for Years 2010-2030
- Woods & Poole socioeconomic data

Note that Woods & Poole Economics, Inc. provided the socioeconomic data used to verify and modify, as necessary, the FAA (TAF and Aerospace Forecast) factors based on local market conditions in the Huntington Metropolitan Statistical Area (MSA). As illustrated in **Figure 3-1**, the Huntington MSA consists of the following five counting in the Tri-State region:

- Boyd County, Kentucky
- Cabell County, West Virginia
- Greenup County, Kentucky
- Lawrence County, Ohio
- Wayne County, West Virginia

Figure 3-1 – HTS MSA

Source: CHA, 2013

Woods & Poole is an independent firm that specializes in long-term economic and demographic projections on a county-wide basis. The Woods & Poole database includes every county in the United States and contains projections through 2040 utilizing more than 900 variables. Each year, Woods & Poole updates the projections. The socioeconomic factors that impact aviation activity are addressed in the following section of this chapter.

3.2 SOCIOECONOMIC TRENDS AFFECTING AVIATION DEMAND

There are multiple variables and factors that can affect the aviation activity of a particular airport. Commercial service airports are typically influenced by national and regional trends in population, per capita income, employment, tourism, airport prominence, and air service options. The population growth, or decline, could have an influence on the growth of aviation demand. Per capita income is usually a strong indicator of a community's discretionary income and ability to afford flying. The employment rate directly relates to the per capita income; the more people that are employed, the more discretionary income they will have to spend on activities, such as flying. Additionally, employment and per capita income are indicators of the overall strength of an area's economy. Airports that offer better facilities and more services will generally attract greater aviation activity. Commercial air fares also play a considerable role in a passenger's decision to utilize an airport. Potential passengers may decide to utilize another airport if fares are lower. The airport's prominence (location and catchment area) can certainly influence the aviation demand of an airport. The proximity of an airport to competing airports can also be a contributing factor on the demand experienced at that airport. Finally, the route structure of the airlines serving an airport greatly influences the demand at a commercial service facility. Passengers are attracted to airports with multiple scheduled flights to numerous destinations. An airport with a limited amount of choices tends to have higher fares and potentially could therefore lose passengers to airports with more service options.

The ultimate determinants of the number of aircraft and passengers utilizing a commercial service airport are the area's economic situation and the cost and availability of the service. Consequently, a clear understanding of local demographic and economic forces and trends is important for developing an accurate aviation activity forecast.

3.2.1 Population

The historic population, spanning from 2000-2010, for the United States, West Virginia, and the Huntington MSA, are shown in **Table 3-2**. The projected population, spanning from 2011-2030, are shown in **Table 3-3**. From 2000-2010 the population for the United States and West Virginia grew approximately 9.9 percent and 0.9 percent respectively while the Huntington MSA saw a decrease of 0.9 percent. These trends show that the State of West Virginia growth outpaced that of the MSA, but lagged the growth rate of the United States. For the years 2011-2030, the population for the United States, West Virginia, and the Huntington MSA are projected to grow approximately 19.4 percent, 5.6 percent, and 2.2 percent, respectively. This continues the trend shown historically of Huntington MSA growth being outpaced by both the State of West Virginia and the United States. **Figure 3-2** illustrates the historic and projected growth rates of the respective population groups.

Table 3-2 – Historical Population Trend

Year	Huntington MSA (000)	Annual Growth	West Virginia (000)	Percent Change	United States (000)	Annual Growth
2000	288.4	-	1,807	-	282,172	-
2001	287.1	-0.44%	1,799	-0.46%	285,082	1.03%
2002	286.0	-0.36%	1,799	0.05%	287,804	0.95%
2003	286.2	0.05%	1,802	0.16%	290,326	0.88%
2004	285.3	-0.31%	1,803	0.06%	293,046	0.94%
2005	284.5	-0.26%	1,804	0.03%	295,753	0.92%
2006	284.8	0.09%	1,807	0.18%	298,593	0.96%
2007	284.7	-0.02%	1,811	0.22%	301,580	1.00%
2008	284.9	0.06%	1,815	0.20%	304,375	0.93%
2009	285.6	0.25%	1,820	0.27%	307,007	0.86%
2010	285.8	0.05%	1,824	0.23%	310,009	0.98%
Historic 2000-2010		**-0.90%**		**0.94%**		**9.87%**
AAGR[1] 2000-2010		**-0.09%**		**0.09%**		**0.95%**

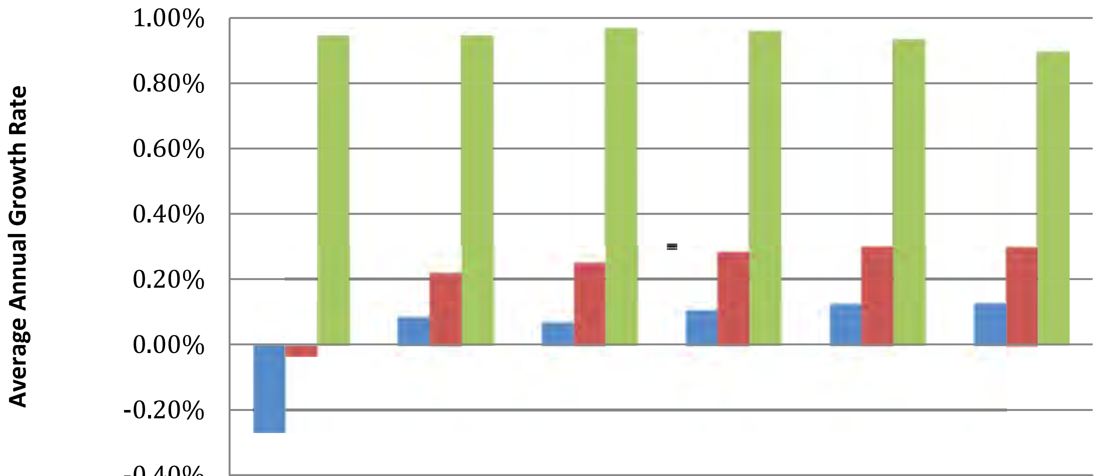
Source: Woods & Poole Economics, Inc., 2010
Note 1: *AAGR – Average Annual Growth Rate*

Table 3-3 – Population Growth Forecast

Year	Huntington MSA (000)	Annual Growth	West Virginia (000)	Annual Growth	United States (000)	Annual Growth
2011	285.9	0.05%	1,828	0.23%	313,010	0.97%
2012	286.1	0.06%	1,833	0.24%	316,047	0.97%
2013	286.3	0.07%	1,837	0.25%	319,116	0.97%
2014	286.5	0.08%	1,842	0.26%	322,220	0.97%
2015	286.8	0.09%	1,847	0.27%	325,343	0.97%
2016	287.1	0.10%	1,852	0.28%	328,488	0.97%
2017	287.4	0.11%	1,858	0.28%	331,658	0.97%
2018	287.7	0.11%	1,863	0.29%	334,841	0.96%
2019	288.0	0.11%	1,868	0.29%	338,042	0.96%
2020	288.3	0.12%	1,874	0.29%	341,252	0.95%
2021	288.7	0.12%	1,879	0.30%	344,480	0.95%
2022	289.0	0.13%	1,885	0.30%	347,727	0.94%
2023	289.4	0.13%	1,891	0.30%	350,976	0.93%
2024	289.8	0.13%	1,896	0.30%	354,242	0.93%
2025	290.2	0.13%	1,902	0.30%	357,504	0.92%
2026	290.5	0.13%	1,908	0.30%	360,765	0.91%
2027	290.9	0.13%	1,914	0.30%	364,032	0.91%
2028	291.3	0.13%	1,919	0.30%	367,298	0.90%
2029	291.7	0.13%	1,925	0.30%	370,566	0.89%
2030	292.0	0.13%	1,931	0.30%	373,828	0.88%
Projected 2011-2030		**2.15%**		**5.62%**		**19.43%**
AAGR[1] 2011-2030		**0.11%**		**0.29%**		**0.94%**

Source: Woods & Poole Economics, Inc., 2010
Note 1: *AAGR – Average Annual Growth Rate*

Figure 3-2 – Historic and Projected Population Growth Rates



	2000 - 2005	2005 - 2010	2010 - 2015	2015 - 2020	2020 - 2025	2025 - 2030
Huntington MSA	-0.27%	0.09%	0.07%	0.11%	0.13%	0.13%
West Virginia	-0.03%	0.22%	0.25%	0.29%	0.30%	0.30%
United States	0.94%	0.95%	0.97%	0.96%	0.93%	0.90%

Source: Woods& Poole Economics, Inc., 2010

3.2.2 Per Capita Personal Income

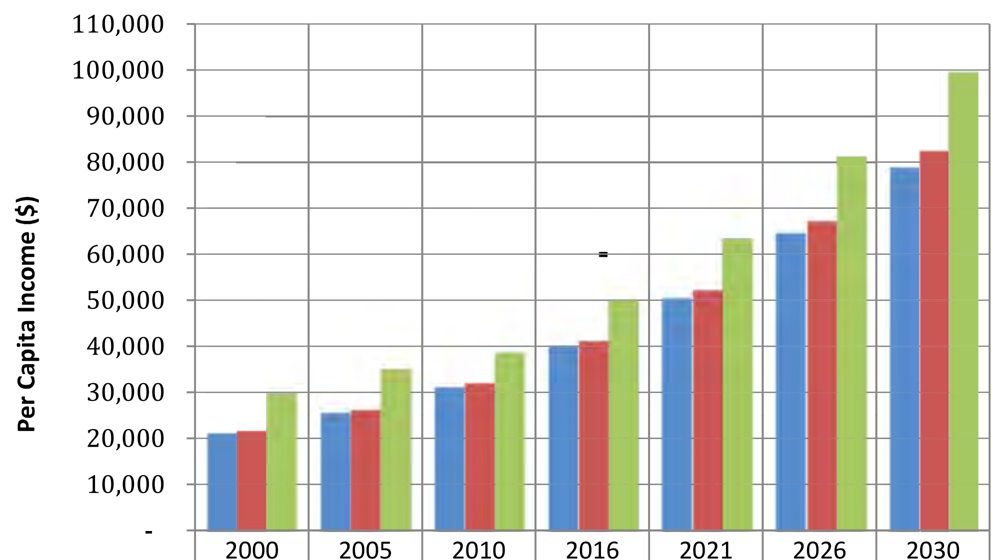
The 2010 per capita income for the MSA was $31,450, which was $7,613 below the U.S. total and $970 below the West Virginia total. The average annual growth rate in per capita income from 2000-2010 for the United States, West Virginia, and the Huntington MSA was approximately 2.6 percent, 3.9 percent, and 3.8 percent, respectively. These trends show that the income growth of the Huntington MSA and West Virginia have outpaced the nation at a relatively similar level. For the years 2010-2030, the per capita income for the United States, West Virginia, and the Huntington MSA are projected to grow annually by an average rate of approximately 4.8 percent, 4.8 percent, and 4.7 percent respectively. These trends show that the projected income growth for the Huntington MSA is comparable to the national and state levels. The historic and projected per capita income for the United States, West Virginia, and the Huntington MSA are shown in **Table 3-4**. **Figure 3-3** illustrates the historic and projected per capita income for each region.

Table 3-4 – Per Capita Income Trend

Year	Huntington MSA ($)	Average Annual Growth	West Virginia ($)	Average Annual Growth	United States ($)	Average Annual Growth
2000	21,713	-	22,174	-	30,318	-
2005	25,902	3.59%	26,686	3.77%	35,424	3.16%
2010	31,450	3.96%	32,420	3.97%	39,063	1.97%
AAGR[1] 2000-2010		**3.77%**		**3.87%**		**2.57%**
2011	32,706	3.99%	33,436	3.13%	40,668	4.11%
2016	40,495	5.19%	41,694	5.16%	50,520	5.28%
2021	50,858	4.66%	52,703	4.80%	63,695	4.74%
2026	64,777	4.96%	67,522	5.08%	81,455	5.04%
2030	79,019	4.05%	82,720	4.14%	99,697	4.12%
AAGR[1] 2010-2030		**4.71%**		**4.79%**		**4.80%**

Source: Woods & Poole Economics, Inc., 2010
Note 1: AAGR - Average Annual Growth Rate

Figure 3-3 – Historic and Projected Per Capita Income



	2000	2005	2010	2016	2021	2026	2030
Huntington MSA	21,713	25,902	31,450	40,495	50,858	64,777	79,019
West Virginia	22,174	26,686	32,420	41,694	52,703	67,522	82,720
United States	30,318	35,424	39,063	50,520	63,695	81,455	99,697

Source: Woods & Poole Economics, Inc., 2010

Due to the Huntington MSA's lower projected per capita income and population growth rates through the forecast period, it is unlikely that upward adjustments to FAA provided growth factors based upon local socioeconomic will be warranted. The relationship between socioeconomic conditions and forecast factors will be examined in greater detail in subsequent sections of this forecast chapter.

3.3 FORECAST OF COMMERCIAL PASSENGER AND AIRCRAFT ACTIVITY

As of 2011, scheduled air service at HTS was provided by three air carriers; US Air, Delta, and Allegiant. These three airlines offered approximately six to seven flights daily, depending upon seasonal schedules. To determine the types and sizes of facilities necessary to properly accommodate present and future airline activity, three elements of commercial service must be forecast; annual enplaned passengers, annual aircraft operations, and peak hour demand. Of these, the number of annual enplaned passengers is the most basic indicator of demand for commercial service activity. The term "enplanement" refers to a passenger boarding an airline flight. Terminal facilities are generally designed to accommodate enplanements on the average day during the peak month, rather than the absolute peak level of activity. Annual aircraft operations are the airborne movements of an aircraft in controlled or non-controlled airport terminal area airspace; it is the forecasted commercial air carrier air operations that will dictate the requirements for airside infrastructure.

There are a wide variety of forecasting techniques that have been developed to address aviation activity and overall demand. For the purposes of this forecasting exercise, the HTS Terminal Area Forecast (TAF) will be used as the baseline, with the FAA provided enplanement and operations growth rates for HTS applied to the 2010 operations. Note that it is not necessary to modify the TAF growth rates for the economic and demographic conditions outlined in the previous section; the FAA has already adjusted the HTS TAF forecast factors to account for local market conditions. The natural growth rates in the TAF are, however, adjusted to account for anticipated growth in the market triggered by potential increases in service level and market activity (these are detailed in subsequent sections of this forecast chapter). An additional FAA approved forecast methodology, a market share forecast, will also be performed, thus providing the following three methodologies for forecasting HTS commercial air carrier activity:

- Market Share Forecast
- Econometric Forecast
- TAF-Based Moderate Demand Forecast
- TAF-Based Optimal Demand Forecast

3.3.1 Baseline Terminal Area Forecast

In projecting commercial air carrier activity at the Airport, the TAF-based forecasts incorporate the figures and growth rates provided by the FAA for enplanements and operations with minor modifications to the Air Tax and Commuter category. The Air Taxi and Commuter component is one of the two primary types of commercial service aircraft operations included in the TAF; these types are defined as such:

- **Air Carrier Operations** include scheduled service on aircraft with 20 or more seats operated by carriers certified under FAR Part 119 (Certification: Air Carriers and Commercial Operators), whose operations are governed under FAR Part 121 (Operating Requirement: Domestic, Flag, and Supplemental Operations). The Air Carrier category also includes "Commuter" operators who provide scheduled passenger service (five or more round trips per week on at least one route according to published flight schedules) while utilizing aircraft of 60 or fewer seats.
- **Air Taxi and Commuter** refers to carriers that operate aircraft with 60 or fewer seats or a cargo payload capacity of less than 18,000 lbs. and carry passengers on an on-demand basis only (charter service) and/or carry cargo or mail on either a scheduled or charter basis. Air taxi carriers are governed under FAR Part 135.

Within the TAF, "Air Taxi and Commuter" operations include both air carrier RJ and GA charter operations. In order to accurately reflect commercial air carrier operations from the TAF, it was necessary to split the commercial air carrier operations from the GA charter operations. This was accomplished by calculating the commercial air carrier RJ operations based on the 2010 flight schedules of air carriers serving HTS. Through this exercise, commercial air carrier operations can be quantified, with the remainder of the air taxi operations (i.e., non-carrier operations), moved to the GA operations totals. The revised air carrier operations total is then grown annually at a rate equal to that of the unaltered TAF to provide the forecast commercial air carrier operations at HTS. The enplanement figures for the TAF forecast are shown unaltered, or as the actual numbers provided by the FAA.

Table 3-5 depicts the TAF historic and projected annual passenger enplanements and operations (2005-2009 and 2010-2030, respectively). Passenger enplanements were 112,552 in 2010 with an anticipated increase to 132,652 enplanements by the year 2030. This represents a growth of approximately 18 percent in enplanements during the forecast period. Note the strong growth in enplanements between 2006 and 2010 corresponds with the introduction of Allegiant service.

Commercial service aircraft operations numbered 4,770 with a projected increase to 5,742operations by the year 2030. This represents a growth of over 20 percent in operations during the forecast period.

Table 3-5 – HTS Terminal Area Forecast (Adjusted for Air Taxi Operations)

Year	Annual Enplanements	Annual Growth	Annual Operations[1]	Annual Growth
2005	49,384		10,768	
2006	37,164	-24.7%	9,274	-13.9%
2007	57,879	55.7%	9,600	3.5%
2008	76,640	32.4%	9,448	-1.6%
2009	99,758	30.2%	8,207	-13.1%
2005-2009 Growth		**102.0%**		**-23.8%**
2010	112,522	12.8%	4,770	n/a
2011	113,350	0.7%	4,814	0.9%
2012	114,195	0.7%	4,857	0.9%
2013	115,056	0.8%	4,903	0.9%
2014	115,937	0.8%	4,948	0.9%
2015	116,833	0.8%	4,993	0.9%
2016	117,746	0.8%	5,040	0.9%
2017	118,679	0.8%	5,086	0.9%
2018	119,632	0.8%	5,133	0.9%
2019	120,603	0.8%	5,180	0.9%
2020	121,592	0.8%	5,228	0.9%
2021	122,601	0.8%	5,277	0.9%
2022	123,632	0.8%	5,327	0.9%
2023	124,683	0.9%	5,377	0.9%
2024	125,754	0.9%	5,428	1.0%
2025	126,848	0.9%	5,479	0.9%
2026	127,963	0.9%	5,530	0.9%
2027	129,101	0.9%	5,582	0.9%
2028	130,261	0.9%	5,634	0.9%
2029	131,445	0.9%	5,688	1.0%
2030	132,652	0.9%	5,742	0.9%
2010-2030 Growth		**17.9%**		**20.4%**

Sources: 2010 FAA Terminal Area Forecast, 2010 ETMSC Operations Data, HTS, and CHA, 2010.
Note 1: 2005-2009 Annual Operations counts include GA Air Taxi operations.

3.3.2 Market Share Forecast

The market share forecast methodology assumes that HTS will maintain its 2010 commercial enplanement and operations market share relative to current and forecasted national activity throughout the forecast period. The FAA produces a cumulative national TAF, inclusive of all US airports, whose growth rates and assumptions differ from the airport specific HTS forecast. The market share forecast will essentially apply nationally forecasted growth rates to the HTS market, ensuring that HTS retains its 2010 ratio of national commercial operations through the forecast period. Note that the 2010 Airport reported enplanement count (minus air taxi enplanements) is used as the baseline instead of the TAF reported estimate. The Airport reported number will be used as the baseline for all subsequent forecast scenarios. **Table 3-6** details the HTS market share forecast, showing an overall 75 percent increase in enplanements and a 45 percent increase in commercial passenger operations.

Table 3-6 – Market Share Forecast

Year	Annual Enplanements	Annual Growth	Annual Operations	Annual Growth
2010	115,476		4,770	
2011	119,251	3.3%	4,874	2.2%
2012	123,122	3.2%	4,972	2.0%
2013	126,913	3.1%	5,071	2.0%
2014	131,014	3.2%	5,175	2.1%
2015	135,036	3.1%	5,278	2.0%
2016	138,698	2.7%	5,372	1.8%
2017	142,467	2.7%	5,468	1.8%
2018	146,347	2.7%	5,566	1.8%
2019	150,341	2.7%	5,666	1.8%
2020	154,451	2.7%	5,768	1.8%
2021	158,629	2.7%	5,872	1.8%
2022	162,933	2.7%	5,979	1.8%
2023	167,368	2.7%	6,088	1.8%
2024	171,924	2.7%	6,199	1.8%
2025	176,594	2.7%	6,314	1.8%
2026	181,406	2.7%	6,431	1.9%
2027	186,367	2.7%	6,551	1.9%
2028	191,479	2.7%	6,674	1.9%
2029	196,750	2.8%	6,800	1.9%
2030	202,183	2.8%	6,929	1.9%
2010-2030 Growth		**75.1%**		**45.3%**

Sources: 2010 FAA Terminal Area Forecast, 2010 ETMSC Operations Data, HTS carrier schedules and CHA, 2010.

3.3.3 Econometric Based Forecast

The commercial air carrier econometric forecast adjusts FAA growth factors provided in the national TAF for all national air carrier activity for the years 2010-2030 to arrive at adjusted forecasted factors based on local MSA demographic conditions. The Huntington MSA population projections in relation to the national average are applied to national growth rates. Using this forecast methodology; Huntington MSA population growth trends (below the national average) are applied to the national FAA enplanement and air carrier operations forecast factors and adjusted to account for Huntington's projected population growth. The adjusted forecast rates are then applied to HTS 2010 baseline enplanement and operations counts.

Table 3-7 provides the annual national population growth rate and annual national TAF growth rate for enplanements and carrier operations. These numbers are projected nationally and do not account for local or regional variations in population growth rates.

Table 3-7 – National TAF Commercial Air Carrier Growth Rates

Period	National Population	Enplanements	Carrier Operations
2010-2015	1.0%	3.2%	2.6%
2016-2020	1.0%	2.7%	2.2%
2021-2025	0.9%	2.7%	2.2%
2026-2030	0.9%	2.7%	2.3%

Sources: 2010 FAA Terminal Area Forecast, 2010 Woods & Poole, and CHA.

Table 3-8 details the Huntington-specific population and corresponding enplanement and carrier operations growth rates for the forecast period. As illustrated in the table, Huntington's population is expected to grow at a rate that is less than the national average. Since aviation growth rates are often tied to population growth within a region, logic would dictate that lower population growth will lead to a lower growth rate in commercial air carrier activity. The Huntington population growth factors are directly compared to the national population growth, and the ratio by which they fall below the national average is applied to the FAA aircraft forecast factors. It is through this methodology that Huntington-specific growth rates for enplanements and air carrier operations are derived and applied to the based aircraft forecast.

Table 3-8 – HTS Adjusted Commercial Air Carrier Growth Rates

Period	Huntington MSA Population	Enplanements	Carrier Operations
2010-2015	0.0%	0.2%	0.2%
2016-2020	0.1%	0.3%	0.3%
2021-2025	0.1%	0.4%	0.3%
2026-2030	0.1%	0.4%	0.3%

Sources: 2010 FAA Terminal Area Forecast, 2010 Woods & Poole, and CHA.

As illustrated in **Table 3-9**, the econometric method shows modest enplanement and air carrier operations growth during the planning period, showing only 6.7 percent enplanement growth and 5.5 percent operations growth during the forecast period.

Table 3-9 – Econometric Forecast

Year	Annual Enplanements	Annual Growth	Annual Operations	Annual Growth
2010	115,476		4,770	
2011	115,662	0.2%	4,776	0.1%
2012	115,903	0.2%	4,784	0.2%
2013	116,166	0.2%	4,793	0.2%
2014	116,489	0.3%	4,804	0.2%
2015	116,820	0.3%	4,815	0.2%
2016	117,138	0.3%	4,826	0.2%
2017	117,485	0.3%	4,837	0.2%
2018	117,846	0.3%	4,849	0.3%
2019	118,229	0.3%	4,862	0.3%
2020	118,623	0.3%	4,876	0.3%
2021	119,036	0.3%	4,889	0.3%
2022	119,469	0.4%	4,904	0.3%
2023	119,910	0.4%	4,919	0.3%
2024	120,368	0.4%	4,934	0.3%
2025	120,829	0.4%	4,950	0.3%
2026	121,293	0.4%	4,965	0.3%
2027	121,768	0.4%	4,982	0.3%
2028	122,248	0.4%	4,998	0.3%
2029	122,737	0.4%	5,014	0.3%
2030	123,226	0.4%	5,031	0.3%
2010-2030 Growth		**6.7%**		**5.5%**

Sources: 2010 FAA Terminal Area Forecast, 2010 Woods & Poole, and CHA.

3.3.4 TAF-Based Moderate Demand Forecast

The TAF-based moderate demand forecast introduces potential market activity, based on airport specific market potential that may impact commercial service air carrier enplanements and operations at the Airport. The rapid growth of Allegiant operations in preceding years is anticipated to continue in the near term future. The moderate demand forecast is intended to quantify the effects of increased operations growth by Allegiant (or another airline offering similar service) through the introduction of a likely service increase scenario. The following assumptions form the basis of the moderate demand forecast:

- The year 2012 will see the introduction of new service destinations by Allegiant (or a similar carrier with similar service). Service will be twice weekly with B757 aircraft to a western-U.S. destination, offering 214 seats per departure with an assumed load factor of 85 percent.
- Average annual enplanement growth will reflect the HTS TAF growth rates other than the year new service is introduced. This assumes that annual passenger demand,

absent any increase in service levels (i.e., introduction of new air carrier service) will increase at the same rate as that of the TAF.

- Operations will increase at the annual rate specified by the TAF in all years other than when new service is introduced to the market.

Note that the introduction of Allegiant service is meant to act as a proxy for any potential realistic addition of new service to the Airport. These assumptions are not a prediction of the exact carriers or service levels that may occur during the forecast period.

Table 3-10 provides the moderate demand forecast. Passenger enplanements were 112,522 in 2010 with an anticipated increase to 154,627 enplanements by the year 2030. This represents a growth in enplanements of over 37 percent during the forecast period. Commercial service aircraft operations numbered 4,770 in 2010, with a projected increase to 5,988 operations by the year 2030, representing a growth of 25.5 percent in operations during the forecast period. Note that by the end of the forecast period (2030), this forecast scenario will be nearly 17 percent above the unadjusted TAF in annual enplanements and 4 percent above the TAF in commercial service aircraft operations.

Table 3-10 – TAF-Based Moderate Demand Forecast

Year	Annual Enplanements	Annual Growth	Annual Operations	Annual Growth
2010	115,476		4,770	
2011	116,326	0.7%	4,814	0.9%
2012[1]	136,111	17.0%	5,067	5.3%
2013	137,137	0.8%	5,115	0.9%
2014	138,187	0.8%	5,162	0.9%
2015	139,255	0.8%	5,210	0.9%
2016	140,343	0.8%	5,259	0.9%
2017	141,455	0.8%	5,308	0.9%
2018	142,591	0.8%	5,357	0.9%
2019	143,748	0.8%	5,407	0.9%
2020	144,927	0.8%	5,458	0.9%
2021	146,130	0.8%	5,508	0.9%
2022	147,359	0.8%	5,560	0.9%
2023	148,611	0.9%	5,611	0.9%
2024	149,888	0.9%	5,664	0.9%
2025	151,192	0.9%	5,717	0.9%
2026	152,521	0.9%	5,770	0.9%
2027	153,877	0.9%	5,824	0.9%
2028	155,260	0.9%	5,878	0.9%
2029	156,671	0.9%	5,933	0.9%
2030	158,110	0.9%	5,988	0.9%
2010-2030 Growth		**36.9%**		**25.5%**

Sources: 2010 FAA Terminal Area Forecast, 2010 ETMSC Operations Data, HTS carrier schedules and CHA, 2010.
Note 1: Addition of 2 weekly B757 flights

3.3.5 TAF-Based Optimal Demand Forecast

The TAF-based optimal demand scenario again introduces potential market activity, based on airport specific market potential that may impact commercial service air carrier enplanements and operations at the Airport. In addition to the new service listed in the moderate demand scenario, the optimal demand forecast also includes the assumption that HTS will be successful in attracting a fourth carrier to the Airport that will serve a northeast hub. HTS is actively pursuing this goal and has a $500,000 marketing budget in place to secure said service. The following assumptions form the basis of the optimal demand forecast:

- Year 2012 will see the introduction of new service destinations by Allegiant (or a similar carrier with similar service). Service will be twice weekly by B757 aircraft to a western-U.S. destination, offering 214 seats per departure with an assumed load factor of 85 percent.

- Year 2015 will see a new carrier arrive at the Airport serving a northeast hub. Assumption will be 2 daily RJ flights through the forecast period.
- Average annual enplanement growth will reflect the HTS TAF growth rates other than the year new service is introduced. This assumes that annual passenger demand, absent any increase in service levels (i.e., introduction of new air carrier service) will increase at the same rate as that of the TAF.
- Operations will increase at the annual rate specified by the TAF in all years other than when new service is introduced to the market.

Table 3-11 details the optimal demand forecast. Passenger enplanements were 112,522 in 2010 with an anticipated increase to 185,624 enplanements by the year 2030. This represents a 65 percent increase in enplanements during the forecast period. Commercial service aircraft operations numbered 4,770 in 2010 with a projected increase to 7,661 operations by the year 2030. This represents a growth of 61 percent in operations during the forecast period. Note that by the end of the forecast period (2030), the optimal demand forecast projects enplanements will be 40 percent above the HTS TAF projections, and 33 percent above the adjusted HTS TAF commercial air carrier operations.

Table 3-11 – TAF Based Optimal Demand Forecast

Year	Annual Enplanements	Annual Growth	Annual Operations	Annual Growth
2010	115,476		4,770	
2011	116,326	0.7%	4,814	0.9%
2012[1]	136,111	17.0%	5,067	5.3%
2013	137,137	0.8%	5,115	0.9%
2014	138,187	0.8%	5,162	0.9%
2015[2]	166,555	20.5%	6,666	29.1%
2016	167,856	0.8%	6,728	0.9%
2017	169,186	0.8%	6,791	0.9%
2018	170,545	0.8%	6,854	0.9%
2019	171,929	0.8%	6,918	0.9%
2020	173,339	0.8%	6,983	0.9%
2021	174,778	0.8%	7,048	0.9%
2022	176,247	0.8%	7,113	0.9%
2023	177,746	0.9%	7,180	0.9%
2024	179,272	0.9%	7,246	0.9%
2025	180,832	0.9%	7,314	0.9%
2026	182,421	0.9%	7,382	0.9%
2027	184,044	0.9%	7,451	0.9%
2028	185,697	0.9%	7,520	0.9%
2029	187,385	0.9%	7,590	0.9%
2030	189,106	0.9%	7,661	0.9%
2010-2030 Growth		**63.8%**		**60.6%**

Sources: 2010 FAA Terminal Area Forecast, 2010 ETMSC Operations Data, HTS carrier schedules and CHA, 2010.
Note 1: Addition of 2 weekly B757 flights
Note 2: Addition of 2 daily RJ flights

For planning purposes, it is recommended that the optimal demand forecast be used as the preferred forecast. This forecast uses modest baseline growth, while accounting for the likely introduction of new service to the Airport during the forecast period. The assumptions used to gauge likely service additions are based upon recent trends at the Airport and currently funded marketing efforts, thus are deemed the most reasonable of assumptions on which to base future activity projections. HTS has long considered an expansion of commercial air service to un-served regions, an important step toward fulfilling the Airport's mission. Recently, the Authority has initiated discussions regarding the possibility of adding service between HTS and a Northeast/East Coast hub location. Based upon the FAA's *Terminal Area Forecast Summary: Fiscal Years 2009-2030*, Washington-Dulles International Airport (IAD) and John F. Kennedy International Airport (JFK) represent the highest forecasted enplanement and operations growth rates through the planning period, respectively. This expected heavy growth reinforces the importance of establishing an air transportation connection between HTS and the Northeast not only for commercial air service but also to facilitate the access of businesses originating in the Northeast into the Huntington area. Since the forecasted growth of these two locations is high, the chances of establishing air service to the Northeast from HTS are also enhanced and it is important for the airport to prepare to accommodate this possibility ahead of time.

3.4 FORECAST OF AIR CARGO OPERATIONS

Scheduled air cargo activity at HTS consists of integrated express carrier FedEx operating five B727 flights per week, in addition to sporadic diversions by UPS ATR-42 turboprop aircraft normally serving Charleston's Yeager Airport (CRW). There is limited commercial passenger carrier air cargo volume due to the fleet mix operating at HTS; RJ and turboprop aircraft simply do not have the capacity to carry substantial air cargo volume, and Allegiant does not accept cargo shipments.

Air cargo operations in this analysis consist solely of the integrated express carriers. Commercial air carrier operations are already accounted for in the commercial activity forecasts and the ad-hoc charter operations are accounted for in the GA itinerant (charter) forecasts. Based on the assumptions of constant market share and a stable route structure, it is assumed that any additional cargo capacity demand will likely be accommodated by upsizing the aircraft in lieu of adding additional flights. Note that FedEx will be upsizing its aircraft from a B727 to a B757 in 2012.

Due to operational difficulties and constraints at their current airport, as evidenced by the large number of diversions to HTS, coupled with a marketing effort by HTS, the potential exists that UPS may explore relocation of their operations serving the Charleston-Huntington market to HTS. For forecasting purposes, it is assumed that this service switch will occur in 2015 and consist of five weekly ATR-42 turboprop flights per week (520 operations annually). **Table 3-12** presents the estimated number of operations by HTS's integrated express carrier(s) based on five weekly flights each. Note that at such time that UPS begins HTS service, the diversions (approximately 80 operations per year) will no longer be accounted for in the forecast; these are absorbed into the UPS operations total.

Table 3-12 – Annual Air Cargo Operations Forecast

Year	Annual Operations	Annual Growth
2010	606	
2011	606	0.0%
2012[1]	606	0.0%
2013	606	0.0%
2014	606	0.0%
2015[2]	1,040	71.6%
2016	1,040	0.0%
2017	1,040	0.0%
2018	1,040	0.0%
2019	1,040	0.0%
2020	1,040	0.0%
2021	1,040	0.0%
2022	1,040	0.0%
2023	1,040	0.0%
2024	1,040	0.0%
2025	1,040	0.0%
2026	1,040	0.0%
2027	1,040	0.0%
2028	1,040	0.0%
2029	1,040	0.0%
2030	1,040	0.0%
2010-2030 Growth		**71.6%**

Source: FedEx, 2010 ETMSC Data, CHA
Note 1: FedEx moves from B727 to B757 aircraft.
Note 2: UPS moves Yeager service to HTS

3.5 FORECAST OF GENERAL AVIATION AND MILITARY ACTIVITY

There are a variety of aviation activities that comprise the broad definition of general aviation. General aviation includes all segments of the aviation industry except commercial air carriers/regional/commuter service, scheduled cargo, and military operations.

General aviation represents the largest percentage of civil aircraft in the United States and accounts for the majority of operations handled by towered and non-towered airports, as well as for the majority of certificated pilots in the United States. Its activities include the training of new pilots, sightseeing, aerial photography, law enforcement, and medical flights, as well as business, corporate, and personal travel via noncommercial or air taxi charter operations. General aviation encompasses a broad range of aircraft types, from small, one passenger piston aircraft to large corporate jets, as well as helicopters, gliders, and amateur-built aircraft.

General aviation operations are typically divided into the subcategories of local and itinerant operations. Local operations are those arrivals or departures performed by aircraft that remain in the airport traffic pattern, or are within sight of the airport. This covers an area within a 20-nautical mile radius of the airfield. Local operations are most often associated with training activity and flight instruction and include touch and go operations. Itinerant operations are arrivals or departures other than local operations, performed by either based or transient aircraft that do not remain in the airport traffic pattern or within a 20-nautical mile radius.

The forecast of general aviation and military activity presented in this section consists of based aircraft and operations projections, both local and itinerant, through the 2030 planning horizon. As with the commercial service aviation forecasts, the TAF is used as the baseline forecast for comparison purposes, with an econometric forecast based on Huntington MSA socioeconomic data presented in this chapter, as well as a market share forecast presented as alternative scenarios.

3.5.1 General Aviation and Military TAF

The adjusted GA and Military TAF is presented in **Table 3-13.** The adjusted forecast accounts for the removal of 2010 air taxi operations totals from the Air Taxi and Commuter operations (conducted in the commercial operations forecast section) and moves those operations into the GA Itinerant Operations total. Through the forecast period, the TAF indicates that based aircraft growth will be robust at 2.2 percent annually, while itinerant operations will grow at 2.1 percent annually and local operations will remain flat. Due to the inability to predict future military activity, the TAF and this master plan forecast assume that such operations will remain flat through the forecast period.

The based aircraft growth of 2.2 percent average annual growth (AAGR) shown in the HTS TAF is well above that of both the national TAF and the FAA Aerospace Forecast AAGR of 0.9 percent. This unexplained and well above average increase pushes the TAF based aircraft totals higher than would normally be expected throughout the forecast period. Additional forecast scenarios presented in the following sections will adjust based aircraft growth to levels in line with local market conditions (econometric) and national growth rates.

Table 3-13 – 2010 Adjusted General Aviation TAF

Year	Based Aircraft	Itinerant Operations			Local Operations			Total Ops
		GA	Military	Total	GA	Military	Total	
2005	34	12,255	445	**12,700**	14,340	84	**14,424**	**27,124**
2006	41	11,737	433	**12,170**	10,805	154	**10,959**	**23,129**
2007	44	12,206	471	**12,677**	9,178	390	**9,568**	**22,245**
2008	44	10,705	565	**11,270**	9,616	513	**10,129**	**21,399**
2009	45	7,721	430	**8,151**	3,906	427	**4,333**	**12,484**
AAGR 2005-2010	**5.8%**	**-8.1%**	**-2.6%**	**-7.8%**	**-27.4%**	**35.0%**	**-25.6%**	**-15.5%**
2010	45	8,050	391	**8,441**	2,902	376	**3,278**	**11,719**
2011	47	8,222	391	**8,613**	2,405	376	**2,781**	**11,394**
2012	47	8,398	391	**8,789**	2,430	376	**2,806**	**11,595**
2013	50	8,578	391	**8,969**	2,455	376	**2,831**	**11,800**
2014	51	8,762	391	**9,153**	2,480	376	**2,856**	**12,009**
2015	51	8,949	391	**9,340**	2,505	376	**2,881**	**12,221**
2016	53	9,141	391	**9,532**	2,530	376	**2,906**	**12,438**
2017	54	9,337	391	**9,728**	2,555	376	**2,931**	**12,659**
2018	56	9,537	391	**9,928**	2,580	376	**2,956**	**12,884**
2019	58	9,741	391	**10,132**	2,605	376	**2,981**	**13,113**
2020	60	9,949	391	**10,340**	2,631	376	**3,007**	**13,347**
2021	61	10,162	391	**10,553**	2,657	376	**3,033**	**13,586**
2022	63	10,380	391	**10,771**	2,683	376	**3,059**	**13,830**
2023	64	10,602	391	**10,993**	2,709	376	**3,085**	**14,078**
2024	65	10,829	391	**11,220**	2,737	376	**3,113**	**14,333**
2025	66	11,061	391	**11,452**	2,765	376	**3,141**	**14,593**
2026	67	11,298	391	**11,689**	2,793	376	**3,169**	**14,858**
2027	68	11,540	391	**11,931**	2,821	376	**3,197**	**15,128**
2028	69	11,787	391	**12,178**	2,850	376	**3,226**	**15,404**
2029	70	12,039	391	**12,430**	2,879	376	**3,255**	**15,685**
2030	70	12,297	391	**12,688**	2,908	376	**3,284**	**15,972**
AAGR 2010-2030	**2.2%**	**2.1%**	**0.0%**	**2.1%**	**0.0%**	**0.0%**	**0.0%**	**1.6%**

Source: 2010 HTS TAF, CHA

Table 3-14 shows the 2010 based aircraft fleet mix for HTS. This fleet mix will serve as the baseline for subsequent GA based aircraft forecasts.

Table 3-14 – 2010 Based Aircraft Fleet Mix

Aircraft Category	Aircraft Count	Percent of Total
Single Engine	30	66.7%
Multi-Engine	6	13.3%
Turbo-Prop	3	6.7%
Jet	5	11.1%
Rotorcraft	1	2.2%
Total	**45**	**100.0%**

Source: Huntington Tri-State Airport; FAA 5010

3.5.2 General Aviation and Military Econometric Forecast

The GA econometric forecast adjusts FAA growth factors provided in the FAA Aerospace Forecast for Years 2010-2030 to arrive at adjusted forecasted factors for the based aircraft forecast. The Huntington MSA population projections in relation to the national average are applied to national growth rates. Using this forecast methodology, Huntington MSA population growth trends are applied to the national FAA based aircraft forecasts and adjusted to account for Huntington's projected population growth. The adjusted forecast rates are then applied to HTS 2010 baseline based aircraft. The FAA Aerospace Forecast predicts the following average annual growth rate (AAGR) for each aircraft type through the forecast period:

- Single Engine: 0.7 percent AAGR
- Multi-Engine: -0.8 percent AAGR
- Turboprop: 1.4 percent AAGR
- Jet: 4.3 percent AAGR
- Rotor: 2.8 percent AAGR

Since each aircraft type is forecast independently based on specific growth rates unique to the aircraft type, a more accurate fleet mix can be predicted than when using the TAF as a sole source forecast. Once the based aircraft fleet mix is forecast, the FAA-provided guidance on operations per based aircraft (OPBA) is applied to calculate the projected aircraft operations through the forecast period.

Table 3-15 provides the annual national population growth rate and annual growth rate for aircraft by type. These numbers are projected nationally and do not account for local or regional variations in population growth rates. Note that for the purposes of this forecast, the single-engine piston and experimental categories have been combined with a derived weighted average growth rate based upon their respective forecast numbers within the national GA fleet.

Table 3-15 – National GA Fleet Growth Rates

Period	National Population	Single Engine	Multi-Engine	Turbo-Prop	Jet	Rotorcraft
2010-2015	0.97%	0.58%	-0.78%	1.49%	4.20%	3.54%
2016-2020	0.96%	0.50%	-0.87%	1.42%	4.38%	2.82%
2021-2025	0.93%	0.77%	-0.82%	1.37%	4.25%	2.47%
2026-2030	0.90%	0.91%	-0.77%	1.32%	4.14%	2.23%

Source: FAA Aerospace Forecast FY 2010-2030, Woods & Poole Economics, CHA
Note: *Single Engine* includes Experimental and Sport aircraft category.

Table 3-16 details the Huntington-specific population and corresponding aircraft growth rates for the forecast period. As illustrated in the table, Huntington's population is expected to grow at a rate that is less than the national average. Since aviation growth rates are often tied to population growth within a region, logic would dictate that lower population growth will lead to a lower growth rate in based aircraft. As with the air carrier econometric forecast, the Huntington population growth factors are directly compared to the national population growth, and the ratio by which they fall below the national average is applied to the FAA aircraft forecast factors. It is through this methodology that Huntington-specific growth rates for based aircraft are derived and applied to the based aircraft forecast.

Table 3-16 – HTS Adjusted GA Fleet Growth Rates

Period	Huntington MSA Population	Single Engine	Multi-Engine	Turbo-Prop	Jet	Rotorcraft
2010-2015	0.05%	0.03%	-0.78%	0.07%	0.21%	0.17%
2016-2020	0.07%	0.04%	-0.87%	0.11%	0.32%	0.21%
2021-2025	0.11%	0.09%	-0.82%	0.16%	0.49%	0.29%
2026-2030	0.13%	0.13%	-0.77%	0.19%	0.59%	0.32%

Source: FAA Aerospace Forecast FY 2010-2030, Woods & Poole Economics, CHA
Note: *Single Engine* includes Experimental and Sport aircraft category.

As illustrated in **Table 3-17,** the econometric method shows that based aircraft will remain nearly flat during the planning period, adding only a single aircraft over the forecast period. This total number of based aircraft predicted for HTS in 2030 in this forecast is 34 percent below the 70 aircraft forecast in the TAF.

Table 3-17 – Based Aircraft - Econometric Forecast

Year	Single Engine	Multi-Engine	Turbo-Prop	Jet	Rotorcraft	Total
2010	30	6	3	5	1	**45**
2015	30	6	3	5	1	**45**
2020	30	6	3	5	1	**45**
2025	30	5	3	5	1	**44**
2030	31	5	3	6	1	**46**

Source: Huntington Tri-State Airport, FAA Aerospace Forecast FY 2010-2030, Woods & Poole Economics, CHA
Note: *Single Engine* includes Experimental and Sport aircraft category.

The aircraft operations forecast was developed under the guidelines set forth in the FAA Order 5090.3C *Field Formulation of the National Plan of Integrated Airport System.* This FAA guidance states that aircraft activity levels can be developed by estimating annual OPBA. A general guideline is 250 operations per based aircraft for typical general aviation airport traffic, 350 operations per based aircraft for busier general aviation airports with more itinerant traffic, and 450 operations per based aircraft for busy reliever airports.

To calculate the Airport's forecast operations, 250 operations per based aircraft are used (175 itinerant and 75 local), a total in line with historic HTS operations per based aircraft, and applied to the based aircraft forecast provided in **Table 3-17**. The results of the exercise are presented in **Table 3-18,** which predicts that general aviation and military operations under this forecast scenario will grow from 12,017 to 12,267 during the forecast period.

Table 3-18 – General Aviation and Military Operations Econometric Forecast

Year	Based Aircraft	Local Operations			Itinerant Operations			Total Ops
		GA	Military	Total	GA	Military	Total	
2010	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2011	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2012	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2013	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2014	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2015	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2016	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2017	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2018	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2019	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2020	45	3,375	376	**3,751**	7,875	391	**8,266**	**12,017**
2021	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2022	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2023	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2024	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2025	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2026	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2027	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2028	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2029	44	3,300	376	**3,676**	7,700	391	**8,091**	**11,767**
2030	46	3,450	376	**3,826**	8,050	391	**8,441**	**12,267**

Source: 2010 HTS TAF, CHA

Table 3-19 presents the operations by aircraft type projections based on the fleet mix forecast presented in **Table 3-17**.

Table 3-19 – General Aviation and Military Operations Econometric Forecast

	2010	2015	2020	2025	2030
Single Engine *Ex. Piston Cessna 172, Piper Arrow*	7,500	7,500	7,500	7,500	7,750
Multi-Engine *Ex. Piper Seminole, Beech Baron*	1,500	1,500	1,500	1,250	1,250
Turbo-Prop *Ex. King Air C90, King Air B200*	750	750	750	750	750
Jet *Ex. Lear 35, Citation II, Falcon 10*	1,250	1,250	1,250	1,250	1,500
Rotor *Ex. Bell 210, 427*	250	250	250	250	250
Military	767	767	767	767	767
Total	**12,017**	**12,017**	**12,017**	**11,767**	**12,267**

Source: Huntington Tri-State Airport, FAA Aerospace Forecast FY 2010-2030, Woods & Poole Economics, CHA
Note: *Single Engine* includes Experimental and Sport aircraft category.

3.5.3 General Aviation and Military Market Share Forecast

The market share forecast methodology assumes that HTS GA based aircraft will grow at the national rate, maintaining its relative share of the national GA fleet through the forecast period. Each aircraft type will grow at the projected rate detailed in Table 3-12 (GA Fleet Growth Rates), equating to an overall 1.1 percent AAGR. **Table 3-20** presents the market share based aircraft forecast, which shows HTS based aircraft growing from 45 to 56 aircraft; a growth of nearly 25 percent over the forecast period.

Table 3-20 – Based Aircraft – Market Share Forecast

Year	Single Engine	Multi-Engine	Turbo-Prop	Jet	Rotorcraft	Total
2010	30	6	3	5	1	**45**
2015	31	6	3	6	1	**47**
2020	32	6	3	8	1	**50**
2025	33	5	4	9	2	**53**
2030	34	5	4	11	2	**56**

Source: Huntington Tri-State Airport, FAA Aerospace Forecast FY 2010-2030, CHA
Note: *Single Engine* includes Experimental and Sport aircraft category.

Rather than opt for the OPBA methodology to forecast the GA and military operations, an exercise that yields a total of 14,767 annual operations at the end of the forecast period, the HTS TAF forecast was chosen for the market share operations forecast. The TAF predicts a total 15,972 operations in 2030, a total that is 8.2 percent above that of the OPBA forecast. The higher forecast was chosen to account for the increasing share of jet aircraft in the HTS fleet mix; GA jet aircraft typically have higher utilization rates than piston aircraft, which would serve to increase the Airport's OPBA through the forecast period. **Table 3-21** presents the HTS TAF operations forecast with the market share based aircraft forecast.

Table 3-21 – General Aviation and Military Operations Market Share Forecast

Year	Based Aircraft	Local Operations			Itinerant Operations			Total Ops
		GA	Military	Total	GA	Military	Total	
2010	45	2,902	376	**8,441**	8,050	391	**3,278**	**11,719**
2011	45	2,405	376	**8,613**	8,222	391	**2,781**	**11,394**
2012	45	2,430	376	**8,789**	8,398	391	**2,806**	**11,595**
2013	47	2,455	376	**8,969**	8,578	391	**2,831**	**11,800**
2014	47	2,480	376	**9,153**	8,762	391	**2,856**	**12,009**
2015	47	2,505	376	**9,340**	8,949	391	**2,881**	**12,221**
2016	47	2,530	376	**9,532**	9,141	391	**2,906**	**12,438**
2017	48	2,555	376	**9,728**	9,337	391	**2,931**	**12,659**
2018	48	2,580	376	**9,928**	9,537	391	**2,956**	**12,884**
2019	48	2,605	376	**10,132**	9,741	391	**2,981**	**13,113**
2020	50	2,631	376	**10,340**	9,949	391	**3,007**	**13,347**
2021	50	2,657	376	**10,553**	10,162	391	**3,033**	**13,586**
2022	50	2,683	376	**10,771**	10,380	391	**3,059**	**13,830**
2023	51	2,709	376	**10,993**	10,602	391	**3,085**	**14,078**
2024	53	2,737	376	**11,220**	10,829	391	**3,113**	**14,333**
2025	53	2,765	376	**11,452**	11,061	391	**3,141**	**14,593**
2026	54	2,793	376	**11,689**	11,298	391	**3,169**	**14,858**
2027	54	2,821	376	**11,931**	11,540	391	**3,197**	**15,128**
2028	56	2,850	376	**12,178**	11,787	391	**3,226**	**15,404**
2029	56	2,879	376	**12,430**	12,039	391	**3,255**	**15,685**
2030	56	2,908	376	**12,688**	12,297	391	**3,284**	**15,972**

Source: 2010 FAA Terminal Area Forecast, Huntington Tri-State Airport, FAA Aerospace Forecast FY 2010-2030, CHA

Table 3-22 presents the operations by aircraft type projections based on the fleet mix forecast presented in **Table 3-17**.

Table 3-22 – General Aviation and Military Operations Market Share Forecast

Aircraft	2010	2015	2020	2025	2030
Single Engine *Ex. Piston Cessna 172, Piper Arrow*	7,301	7,555	8,051	8,609	9,231
Multi-Engine Piston *Ex. Piper Seminole, Beech Baron*	1,460	1,462	1,510	1,304	1,358
Multi-Engine Turbo-Prop *Ex. King Air C90, King Air B200*	730	731	755	1,043	1,086
Jet *Ex. Lear 35, Citation II, Falcon 10*	1,217	1,462	2,013	2,348	2,987
Rotor *Ex. Bell 210, 427*	243	244	252	522	543
Military	767	767	767	767	767
Total	**11,719**	**12,221**	**13,347**	**14,593**	**15,972**

Source: Huntington Tri-State Airport, FAA Aerospace Forecast FY 2010-2030, Woods & Poole Economics, CHA

For planning purposes, it is recommended that the market share forecast (based aircraft), utilizing TAF operations forecasts for GA and military operations, be used as the preferred forecast. This forecast methodology uses an FAA provided national growth rate for based aircraft, which tempers the aggressive based aircraft growth seen in the HTS TAF, while still accounting for growth consistent with national trends. The HTS TAF operations growth rate allows for anticipated growth in GA operations at a level slightly above the OPBA methodology, as is fitting for a primary airport serving an MSA. Superior infrastructure, instrument approaches, and services at HTS should result in a trend that transient (itinerant) aircraft utilize HTS at a higher rate than competing GA airports in the region.

3.6 COMMERCIAL AIRCRAFT FLEET MIX

The commercial aircraft fleet mix projections are a function of the carriers that operate, (or are expected to operate) at the Airport during the forecast period, each carriers' anticipated future fleet mix (i.e., aircraft acquisitions and retirements), and enplanement forecasts that will influence a carrier's aircraft type and level of operations at a given airport. This data is then coupled with the forecasted commercial air carrier operations to determine the number of annual departures by aircraft type.

The HTS 2010 commercial air carrier fleet mix consisted of the Canadair CRJ-200 RJ (RJ), the Bombardier Q400 Dash 8 Turboprop (DH-8), and variants of the Boeing MD-80 series. DH-8 operations conducted by USAir accounted for over 50 percent of HTS commercial air carrier operations during 2010, followed by Delta Airlines CRJ-200 operations at 27 percent and Allegiant MD-80 operations at 22 percent. It is anticipated that the fleet mix will change during the forecast period, with the addition of new aircraft types and the gradual shift to larger aircraft. The following assumptions are used when forecasting the projected fleet mix:

- USAir will continue to use DH-8 turbo-prop aircraft through the forecast period.
- As the CRJ-200 fleet ages, these 50-seat RJs will be replaced by larger aircraft such as the 70-seat CRJ-700. This shift is anticipated to start in 2015 at a rate of 10 percent of the CRJ-200 fleet per year, and continue until 2024 when the CRJ-200 fleet is fully retired.
- B757 service will be introduced in 2012 with the anticipated start of Allegiant service to western U.S. markets.

Using 2010 as the baseline year, the commercial air carrier fleet mix forecast for HTS takes into account the forecasted operations growth in the market, as detailed in the optimal demand forecast, the anticipated introduction of new service (by aircraft type and frequency), and the expected transition to larger RJ aircraft. **Table 3-23** and **Table 3-24** detail the forecasted commercial air carrier fleet mix in terms of annual operations and percent of operations respectively.

Table 3-23 – Commercial Air Carrier Fleet Mix: Annual Operations

Aircraft Type	2010	2015	2020	2025	2030
CRJ-200	1,290	2,526	1,214	0	0
CRJ-700	0	282	1,726	3,079	3,226
DH-8	2,430	2,544	2,665	2,791	2,924
MD-80	1,050	1,100	1,154	1,208	1,265
B757	0	214	224	236	246
Total	**4,770**	**6,666**	**6,983**	**7,314**	**7,661**

Source: HTS Carrier Schedule, CHA, 2010.

Table 3-24 – Commercial Air Carrier Fleet Mix: Percent of Annual Operations

Aircraft Type	2010	2015	2020	2025	2030
CRJ-200	27.0%	37.9%	17.4%	0.0%	0.0%
CRJ-700	0.0%	4.2%	24.7%	42.1%	42.1%
DH-8	50.9%	38.2%	38.2%	38.2%	38.2%
MD-80	22.0%	16.5%	16.5%	16.5%	16.5%
B757	0.0%	3.2%	3.2%	3.2%	3.2%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

3.6.1 Commercial Air Carrier Capacity and Load Factors

Load factors were calculated for the Airport based on annual enplanements and total available seats (i.e., capacity) derived from the 2010 and forecasted fleet mix. Capacity is calculated by multiplying the total number of annual departures of a given aircraft type by the number of available seats on said aircraft. **Table 3-25** presents the 2010 and projected annual combined capacity of HTS's forecasted commercial air carrier activity. Note that capacity is anticipated to grow at a rate higher than commercial air carrier operations due to the increasing size and associated available seats of HTS's fleet mix through the forecast period.

Table 3-25 – Annual Commercial Air Carrier Capacity

Aircraft Type	Seats	2010	2015	2020	2025	2030
CRJ-200	50	32,250	63,150	30,350	0	0
CRJ-700	70	0	9,870	60,410	107,765	112,910
DH-8	37	44,955	47,064	49,303	51,634	54,094
MD-80	166	87,150	91,300	95,782	100,264	104,995
B757	214	0	22,898	23,968	25,252	26,322
Total		**164,355**	**234,282**	**259,813**	**284,915**	**298,321**

Sources: Huntington International Airport Schedule, 2010, CHA, 2010.

The projected level of air carrier capacity (available seats) based on operations and fleet mix forecasts are combined with passenger enplanement projections to determine both future average Seats per Departure and Average Boarding Load Factor. **Table 3-26** depicts the average seats available per departure based upon the projected fleet mix. These figures are a function of forecasted fleet mix, annual departures, and enplanements. Note again, the forecasted decrease in Average Boarding Load Factor is due to the increasing size and capacity of the Airport's commercial air carrier fleet (average seats per departure will increase over 15 percent during the forecast period) versus an over aggressive forecasted increase in operations.

Table 3-26 – Annual Commercial Air Carrier Load Factor

	2010	2015	2020	2025	2030
Average Seats per Departure	65	70	74	78	78
Annual Enplanements	115,476	166,555	173,339	180,832	189,106
Annual Available Seats	155,955	234,282	259,813	284,915	298,321
Average Boarding Load Factor	**74%**	**71%**	**67%**	**63%**	**63%**

Sources: HTS Commercial Air Carrier Schedule, 2010, CHA, 2010.

3.7 PEAK ACTIVITY

Peak activity levels are used in the planning and design of airport facilities to determine the requirements that are necessary to accommodate the projected demand during busier periods. Airport peaking characteristics are evaluated according to the peak month, the average day of the peak month (PMAD), and the peak hour. Commercial service airports experience peaks in passenger airline operations, passenger enplanements, and passenger deplanements. Therefore, each of these peaking characteristics must be evaluated separately.

3.7.1 Peak Enplanements

The peak passenger enplanement numbers were found using historic monthly passenger statistics provided by the Authority to determine associated enplanement levels. Based on these statistics, the peak month for passenger enplanements was found to be July with approximately 12.1 percent of annual enplanements occurring during the month. PMAD was found by taking peak month enplanements and dividing by a factor of 30.4, which is the average number of days in each month. The peak hour enplanements were determined by using a Boeing 757 and 30-seat RJ at 80 percent load factor to come up with 25 percent of enplanements occurring during the peak hour. **Table 3-27** displays the projected passenger enplanements throughout the forecast period.

Table 3-27 – Peak Passenger Enplanements

Year	Annual Enplanements	Peak Month	Peak Month Average Day (PMAD)	Peak Hour
2010	115,476	13,972	460	115
2015	166,555	20,153	666	166
2020	173,339	20,974	690	172
2025	180,832	21,881	720	180
2030	189,106	22,882	753	188

Source: ATADS, ETADS, Tri-State Airport Authority, CHA

3.7.2 Peak Month Operations

The peak month is the calendar month when the highest level of aircraft activity occurs. The month will differ between each type of operation. A review of the Air Traffic Activity System (ATADS), Enhanced Transportation Automated Data System (ETADS), and historical data provided by the Authority was performed in order to identify the peak month(s). Air carrier operations peak in July at 9.4 percent (which is why enplanement peaks in the same month). Interviews with FedEx staff have indicated that the peak month for cargo activity at the Airport is December with approximately 9.4 percent of all volume being handled; GA peaks in August with 12.7 percent; and military peaks in February at 14.1 percent. The overall peak month of the Airport is determined to be August, with approximately 9.8 percent of total annual operations. **Table 3-28** displays the peak month operations by category throughout the forecast period. Note that the due to operations peaking in different months for each category, the total will not be a direct sum.

Table 3-28 – Projected Peak Month Operations

Year	Air Carrier	Cargo	General Aviation	Military	Total
2010	449	58	1,394	109	**1,683**
2015	628	106	1,506	109	**2,008**
2020	658	106	1,628	109	**2,133**
2025	689	106	1,760	109	**2,268**
2030	721	106	1,903	109	**2,412**

Source: ATADS, ETADS, Tri-State Airport Authority, CHA
Note: Operation categories do not add up to total operations due to peak month occurring in different months throughout the year

3.7.3 Average Day Operations

The peak month average day passenger enplanements reflect the number of enplaned passengers on a typical day during the peak month. **Table 3-29** displays the projected daily operations during peak month for each category throughout the forecast period. As previously stated, the PMAD numbers were determined based on a 30.4 days per month factor, which is the average amount of days in each month. Average daily operations during the peak month are projected to grow approximately 41.8 percent throughout the forecast period from 55 to 78.

Table 3-29 – Projected Peak Month Average Day Operations

Year	Air Carrier	Cargo	General Aviation	Military	Total
2010	15	2	45	4	**56**
2015	21	4	49	4	**67**
2020	22	4	53	4	**71**
2025	23	4	57	4	**75**
2030	24	4	62	4	**80**

Source: ATADS, ETADS, Tri-State Airport Authority, CHA
Note: Operation categories do not add up to total operations due to peak month occurring in different months throughout the year

3.7.4 Peak Hour Operations

The peak hour refers to the highest number of hourly operations or enplanements during the PMAD. This is used in identifying potential future capacity issues on Airport facilities. Air carrier and cargo peak hour were determined using historic airline/air cargo schedules. Hourly GA and military operations data is not available. In order to estimate peak GA and military operations, the time-of-day operations ratio of activity at similar airports was applied to HTS GA and military operations totals to determine peak hour operations for these categories. **Table 3-30** displays projected peak hour operations by category throughout the forecast period.

Table 3-30 – Projected Peak Hour Operations

Year	Air Carrier	Cargo	General Aviation	Military	Total
2010	2	1	5	1	**6**
2015	3	1	5	1	**7**
2020	3	1	6	1	**8**
2025	3	1	6	1	**8**
2030	3	1	7	1	**9**

Source: ATADS, ETADS, Tri-State Airport Authority, CHA
Note: Operation categories do not add up to total operations due to peak month occurring in different months throughout the year

3.8 FORECAST OF SURFACE TRANSPORTATION ACTIVITY

The forecast growth in passenger traffic impacts all operational activities, not only on the Airport's airside, but also landside activities such as automobile traffic and parking. The following demand of landside surface transportation activities analysis was completed using the preferred enplanement forecasts. These operational values and demand were derived from guidance found in FAA Advisory Circular 150/5360-9, *Planning and Design of Airport Terminal Building Facilities at Nonhub Locations.*

3.8.1 Traffic Levels

Traffic levels along the main terminal roadway and entrance/exit points are generally forecast to accommodate peak demand levels or other development, such as building expansions and commercial vehicle demands.

Traffic counts for the Airport were conducted at the entrance of Airport Road and include all Airport traffic (i.e., commercial passenger, GA, and cargo). These counts, while valuable in determining overall Airport traffic, do not specify the category of Airport traffic; more specifically, the level of terminal traffic driven by passenger pick-up and drop-off and rental car activity (also a function of passenger activity). Absent these specific counts, a methodology that relies on benchmarked ratios of enplanements to terminal vehicular traffic is used.

In place of direct terminal traffic counts, the estimated annual vehicle count for HTS was obtained by taking existing traffic and enplanement data from three commercial service airports around the United States to find a correlation between vehicle traffic and passenger activity. Vehicular traffic data was acquired from the following three Airport Master Plans where extensive vehicle counts were conducted:

- El Paso International Airport (El Paso, TX) Master Plan conducted by Ricondo & Associates in 2005
- T.F. Green State Airport (Providence, RI) Master Plan conducted by Landrum & Brown in 2001
- San Diego International Airport (San Diego, CA) Master Plan conducted by HNTB in 1999

Vehicle traffic at each airport was based on Average Daily Vehicles (ADV) while passenger traffic was based on Average Day Peak Month (ADPM). The traffic counts and passenger enplanements for all three airports were added and averaged to determine the overall average enplanements per vehicle. The results of this exercise yielded a ratio of 1.124 vehicles per enplaned passenger. The ratio was then applied to the HTS preferred enplanement forecast (i.e. TAF-based optimal demand scenario) to determine the estimated annual vehicle count. The results are shown in **Table 3-31**.

Table 3-31 – Estimated Annual Vehicle Traffic at HTS Terminal

Year	Forecast Enplanements	Estimated Annual Vehicles
2010	115,476	129,795
2015	166,555	187,208
2020	173,339	194,834
2025	180,832	203,255
2030	189,106	212,555

Source: El Paso International Airport, T.F. Green Airport, San Diego International Airport Master Plans, CHA, 2010

3.9 PREFERRED FORECAST SUMMARY

The following tables present a summary of the preferred aviation activity forecasts for the Huntington Tri-State Airport Master Plan Update. These are the recommended forecasts on which future planning for the Airport will be based. **Table 3-32** details the forecasted itinerant and local aircraft operations by activity category (passenger carrier, air cargo, GA, and military). **Table 3-33** summarizes the total operations (combined itinerant and local) by activity type.

Table 3-32 – Aircraft Operations – Preferred Forecast

Year	Itinerant				Local		Total
	Carrier	Air Cargo	GA	Military	GA	Military	
2010	4,770	606	8,050	391	2,902	376	**17,095**
2011	4,814	606	8,222	391	2,405	376	**16,815**
2012	5,067	606	8,398	391	2,430	376	**17,269**
2013	5,115	606	8,578	391	2,455	376	**17,521**
2014	5,162	606	8,762	391	2,480	376	**17,777**
2015	6,666	1,040	8,949	391	2,505	376	**19,928**
2016	6,728	1,040	9,141	391	2,530	376	**20,206**
2017	6,791	1,040	9,337	391	2,555	376	**20,490**
2018	6,854	1,040	9,537	391	2,580	376	**20,778**
2019	6,918	1,040	9,741	391	2,605	376	**21,071**
2020	6,983	1,040	9,949	391	2,631	376	**21,370**
2021	7,048	1,040	10,162	391	2,657	376	**21,674**
2022	7,113	1,040	10,380	391	2,683	376	**21,983**
2023	7,180	1,040	10,602	391	2,709	376	**22,298**
2024	7,246	1,040	10,829	391	2,737	376	**22,620**
2025	7,314	1,040	11,061	391	2,765	376	**22,947**
2026	7,382	1,040	11,298	391	2,793	376	**23,280**
2027	7,451	1,040	11,540	391	2,821	376	**23,618**
2028	7,520	1,040	11,787	391	2,850	376	**23,964**
2029	7,590	1,040	12,039	391	2,879	376	**24,315**
2030	7,661	1,040	12,297	391	2,908	376	**24,673**
2010-2030 Growth	**60.6%**	**71.6%**	**52.8%**	**0.0%**	**0.2%**	**0.0%**	**44.3%**
AAGR[1]	**2.4%**	**2.7%**	**2.1%**	**0.0%**	**0.0%**	**0.0%**	**1.9%**

Sources: 2009 FAA Terminal Area Forecast, CHA, 2010.
Note 1: AAGR – Average Annual Growth Rate

Table 3-33 – Aircraft Operations Forecast by Activity Type

Operation Type	2010	2015	2020	2025	2030	AAGR[1]
Passenger Carrier	4,770	6,666	6,983	7,314	7,661	2.4%
Cargo Carrier	606	1,040	1,040	1,040	1,040	2.7%
General Aviation	10,952	11,454	12,580	13,826	15,205	1.7%
Military	767	767	767	767	767	0.0%
Total	**17,095**	**19,928**	**21,370**	**22,947**	**24,673**	**1.9%**

Sources: 2009 FAA Terminal Area Forecast, CHA, 2010.
Note 1: AAGR – Average Annual Growth Rate

Table 3-34 compares the combined preferred operations forecast (all activity types) to the combined forecasted operations in the FAA's TAF. At the end of the forecast period, the preferred HTS forecast for total operations is projected to be nearly 12 percent above the level predicted by the TAF. The anticipated increases in commercial service levels in 2012 and 2015, as well the increase in air cargo service levels projected in 2015, are the primary drivers of preferred forecast growth levels above that of the TAF.

Table 3-34 – Aircraft Operations Forecast – Preferred Forecast versus TAF

Year	Preferred Forecast Operations	Annual Growth	TAF Operations	Annual Growth	Preferred versus TAF
2010	17,095		17,241		
2011	16,815	-1.6%	16,353	-5.2%	2.8%
2012[1]	17,269	2.7%	16,602	1.5%	4.0%
2013	17,521	1.5%	16,858	1.5%	3.9%
2014	17,777	1.5%	17,118	1.5%	3.8%
2015[2]	19,928	12.1%	17,384	1.6%	14.6%
2016	20,206	1.4%	17,655	1.6%	14.5%
2017	20,490	1.4%	17,931	1.6%	14.3%
2018	20,778	1.4%	18,212	1.6%	14.1%
2019	21,071	1.4%	18,499	1.6%	13.9%
2020	21,370	1.4%	18,794	1.6%	13.7%
2021	21,674	1.4%	19,095	1.6%	13.5%
2022	21,983	1.4%	19,402	1.6%	13.3%
2023	22,298	1.4%	19,715	1.6%	13.1%
2024	22,620	1.4%	20,037	1.6%	12.9%
2025	22,947	1.4%	20,365	1.6%	12.7%
2026	23,280	1.5%	20,699	1.6%	12.5%
2027	23,618	1.5%	21,040	1.6%	12.3%
2028	23,964	1.5%	21,389	1.7%	12.0%
2029	24,315	1.5%	21,747	1.7%	11.8%
2030	24,673	1.5%	22,111	1.7%	11.6%
2010-2030 Growth		**44.3%**		**28.2%**	
AAGR[3]		**1.9%**		**1.3%**	

Sources: 2010 FAA Terminal Area Forecast, 2010 ETMSC Operations Data, HTS carrier schedules and CHA, 2010.
Note 1: Addition of 2 weekly B757 flights
Note 2: Addition of 2 daily RJ flights, 4 weekly ATR flights
Note 3: AAGR – Average Annual Growth Rate

Table 3-35 details the preferred air carrier enplanements forecast, and the corresponding comparison to the TAF enplanements forecast. At the end of the forecast period, the preferred forecast predicts a level of enplanements that is nearly 40 percent above the TAF. This increase is attributed to the anticipated addition of commercial service operations coupled with a changing fleet mix that will see a gradual shift to larger capacity aircraft through the forecast period.

Table 3-35 – Air Carrier Enplanements - Preferred Forecast versus TAF

Year	Preferred Forecast Enplanements	Annual Growth	TAF Enplanements	Annual Growth	Preferred versus TAF
2010	115,476		112,522		
2011	116,326	0.7%	113,350	0.7%	2.6%
2012[1]	136,111	17.0%	114,195	0.7%	2.6%
2013	137,137	0.8%	115,056	0.8%	19.2%
2014	138,187	0.8%	115,937	0.8%	19.2%
2015[2]	166,555	20.5%	116,833	0.8%	19.2%
2016	167,856	0.8%	117,746	0.8%	42.6%
2017	169,186	0.8%	118,679	0.8%	42.6%
2018	170,545	0.8%	119,632	0.8%	42.6%
2019	171,929	0.8%	120,603	0.8%	42.6%
2020	173,339	0.8%	121,592	0.8%	42.6%
2021	174,778	0.8%	122,601	0.8%	42.6%
2022	176,247	0.8%	123,632	0.8%	42.6%
2023	177,746	0.9%	124,683	0.9%	42.6%
2024	179,272	0.9%	125,754	0.9%	42.6%
2025	180,832	0.9%	126,848	0.9%	42.6%
2026	182,421	0.9%	127,963	0.9%	42.6%
2027	184,044	0.9%	129,101	0.9%	42.6%
2028	185,697	0.9%	130,261	0.9%	42.6%
2029	187,385	0.9%	131,445	0.9%	42.6%
2030	189,106	0.9%	132,652	0.9%	42.6%
2010-2030 Growth		**63.8%**		**17.9%**	
AAGR[3]		**2.5%**		**0.8%**	

Sources: 2010 FAA Terminal Area Forecast, 2010 ETMSC Operations Data, HTS schedules and CHA, 2010.
Note 1: Addition of 2 weekly B757 flights
Note 2: Addition of 2 daily RJ flights
Note 3: AAGR – Average Annual Growth Rate

Table 3-36 details the based aircraft projections for the Airport by aircraft type. This forecast predicts a based aircraft total at the end of the forecast period that is 20 percent below that predicted in the TAF (56 based aircraft in the preferred forecast versus 70 based aircraft in the TAF). The TAF growth in based aircraft is predicted to be well above the State and national average; the econometric based forecast and market share forecast do not support the TAF predicted growth. The FAA Aerospace Forecast growth rates for general aviation aircraft were used for the based aircraft preferred forecast.

Table 3-36 – Based Aircraft – Preferred Forecast

Year	Single Engine[1]	Multi-Engine	Turboprop	Jet	Rotorcraft	Total
2010	30	6	3	5	1	**45**
2015	31	6	3	6	1	**47**
2020	32	6	3	8	1	**50**
2025	33	5	4	9	2	**53**
2030	34	5	4	11	2	**56**
2010-2030 Growth	**13.3%**	**-16.6%**	**33.3%**	**120%**	**100%**	**24.4%**
AAGR[2]	**0.6%**	**-0.9%**	**1.4%**	**4.0%**	**3.5%**	**1.1%**

Source: Huntington Tri-State Airport, FAA Aerospace Forecast FY 2010-2030, CHA
Note 1: Single Engine includes Experimental and Sport aircraft category.
Note 2: AAGR – Average Annual Growth Rate

3.10 FAA APPROVED AVIATION FORECAST

While this analysis recommends that the TAF-Based Optimal Demand forecast scenario (**Table 3-11**) be considered the preferred commercial activity forecast used for facility planning in this Master Plan Update Study, the FAA asserted that the Adjusted TAF forecast scenario presented in **Table 3-5** would adequately address the future commercial activity growth anticipated at HTS over the planning horizon. That forecast was subsequently approved by the FAA in August 2011 to be used as the basis for terminal facility planning in this Study (refer to correspondence in **Appendix E**). As recommended herein, the Market Share forecast scenario (refer to **Section 3.3.2**) will remain the preferred forecast for general aviation and military aircraft activity.

4 FACILITY REQUIREMENTS

In order to ensure that the Airport is capable of supporting the existing and anticipated activity levels as described in **Chapter 3**, care must be taken to ensure that the recommendations of this Master Plan will adequately accommodate the needs of users (i.e. passengers, aircraft operators, tenants). The purpose of this chapter is to identify the Airport's facility development needs over the 20-year planning horizon. The demand, capacity, design standards, and the overall airport facility requirements at HTS were evaluated using guidance contained in several FAA publications, including AC 150/5060-5, *Airport Capacity and Delay*, AC 150-5300-13, *Airport Design*, AC 150/5325-4B, *Runway Length Requirements for Airport* Design, AC 150/5360-13 *Planning and Design Guidelines for Airport Terminal Facilities*, AC 150/5360-9 *Planning and Design of Airport Terminal Building Facilities at Nonhub Locations*, *Airport Cooperative Research Program Airport Passenger Terminal Planning and Design Manual*, Federal Aviation Regulation (FAR) Part 77, *Objects Affecting Navigable Airspace*, and Order 5090.3C *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*. The findings of this evaluation will form the basis of the development concepts discussed in **Chapter 5**.

The facilities assessed in this chapter include:

- Airport Reference Code and Critical Aircraft
- Instrument Approach Capability and Navigational Aids
- Runway 12-30
- Taxiway System
- Terminal Area Apron
- Passenger Terminal Building
- Terminal Curbfront & Automobile Access
- Automobile Parking
- Air Cargo Facilities
- General Aviation Facilities
- Air Traffic Control Tower
- Support Facilities
- Airspace Protection

4.1 AIRPORT REFERENCE CODE AND CRITICAL AIRCRAFT

The FAA classifies airports according to the size and approach speed of aircraft that they are designed to accommodate. This system of classification, known as the Airport Reference Code (ARC), is used to relate airport design criteria to the operational and physical characteristics of the operating aircraft. This relationship between ARC and design standards is described in FAA AC 150/5300-13, *Airport Design*.

The ARC classification consists of a letter designating the aircraft Approach Category (determined by approach speed) and a roman numeral designating the Airplane Design Group (ADG) (determined by wingspan or tail height). Generally speaking, the ARC affects runway and taxiway dimensions, separation standards, and other safety restrictions. The ARC criteria are described in **Table 4-1** and **Figure 4-1** displays typical aircraft within each ARC (including those that frequent HTS).

Table 4-1 – Airport Reference Code

Approach Category			
Category	**Airspeed (knots)**		**Example Aircraft**
A	<91		Cessna 152, Beech Bonanza A36
B	91 ≤ 121		Saab 340, Gulfstream I
C	121 ≤ 141		Boeing MD-80, CRJ, Boeing 757-200
D	141 ≤ 166		Boeing 747, KC-135, Boeing 757-300
E	166+		F-16, A-10
Airplane Design Group			
Design Group	**Tail Height (ft)**	**Wingspan (ft)**	**Example Aircraft**
I	<20	<49	Cessna 172, Cirrus SR-22
II	20-<30	49 ≤ 79	Cessna Citation II, Falcon 900, CRJ
III	30-<45	79 ≤ 118	Boeing 727, Boeing MD-80, Dash 8
IV	45-<60	118 ≤ 171	Boeing 757, MD 11
V	60-<66	171 ≤ 214	Airbus A340, Boeing 777
VI	66-<80	214 ≤ 262	Airbus A380, C-5 Galaxy

Source: FAA AC 150/5300-13 *Airport Design*

A-I, B-I

- Beech Baron 55
- Beech Bonanza
- Beechjet 400
- **Cessna 152** / 172
- Cirrus SR-22
- Eclipse 500
- Hawker Premier I
- Piper Aztec
- Piper PA-46
- Piper Seneca

A-II, B-II

- King Air 200 / 300
- Beech 1900
- Cessna 208 Caravan
- Cessna 441
- Dassault Falcon 50
- Citation Mustang
- **Citation II**, III, V

C-I, D-I

- Israeli Westwind
- Hawker Siddeley 125
- Learjet 35, 45, 55
- **Piaggio Avanti**
- North American Sabreliner

C-II, D-II

- Bombardier CL-600
- Canadair Regional Jet
- Citation Sovereign
- Citation X
- Embraer Legacy 500
- **Hawker** 800 / **900 XP**
- Gulfstream II, III, IV
- Jetprop Commander 1000

A-III, B-III

- **DHC Dash 8**
- DC-3
- Convair 580
- Fairchild F-27
- ATR 42
- ATP

C-III, D-III

- Airbus A319, A320
- ATR 72
- Boeing Business Jet
- Boeing 727-200
- **Boeing 737-300**
- MD-80, DC-9
- Gulfstream V
- Global Express

C-IV, D-IV

- Airbus A300
- Boeing 707
- **Boeing 757**
- Boeing 767
- DC-8
- DC-10
- Lockheed C-130

C-V, D-V

- Airbus 340
- Boeing 777
- **Boeing 747**
- Boeing 777
- MD-11

*Note: Bold Text = Depicted Aircraft

Figure 4-1
Common Aircraft by ARC

AC 150/5325-4B *Runway Length Requirements for Airport Design* states that the "substantial use" threshold for determining an airport's critical aircraft is a minimum of 500 annual itinerant operations. The previous 2003 ALP identified HTS as an ARC C-III facility with the Boeing 727-200 as the critical aircraft. As described in **Chapter 3**, FedEx has been retiring their 727 fleet and replacing them with the converted Boeing 757-200s, which is classified as a C-IV aircraft. FedEx began operating the 757 at HTS in September 2011 and with five flights per week (one arrival and one departure); the 500 operations threshold will be surpassed in 2012. Additionally, the Authority continues to pursue an expanded route structure that could include service to western destinations, such as Las Vegas. Routes of this length are commonly flown by 757 type aircraft. Based on these two factors, this Master Plan Update recommends that that the Airport be developed to ARC C-IV standards and that the B-757 be considered the critical aircraft. The following describes the runway and taxiway design standards that are associated with ARC C-III and C-IV, along with the necessary improvements to achieve these standards.

4.2 INSTRUMENT APPROACH CAPABILITY

Providing the highest level of accessibility to an airport, particularly during inclement weather conditions, is a common goal of most airport and aircraft operators. Achieving the best instrument capability, or lowest approach minimums (i.e. visibility and ceiling height) is a function of the NAVAIDs and lighting systems provided, airspace protection, and compliance with the appropriate FAA airfield design standards.

4.2.1 En-Route NAVAIDs

While there are no ground-based en-route NAVAIDs located at HTS, and there has been no expressed need or desire for any, there are some located at airports nearby in West Virginia, Kentucky, and Ohio. These include: Newcombe VOR, York VOR, Henderson VOR, and Charleston VOR. The FAA has indicated that vegetative obstructions near the York and Charleston VORs are negatively affecting the reliability of certain approach fixes on the instrument procedures to HTS. As of early 2013, the FAA is working with the airports and regional legislators to mitigate these obstructions.

4.2.2 Instrument Approach NAVAIDs

As described in **Chapter 2**, the Airport provides CAT I instrument approach procedures for both ends of Runway 12-30. Enabled by the HIRLs and the Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR), the ILS to Runway 12 is capable of providing visibility minimums of ½ mile and 200-foot ceiling height, which is the best that can be achieved with a CAT I system. The ILS to Runway 30 has no approach lighting system and can provide visibility minimums as low as ¾ mile.

The ILS and approach light systems are owned and maintained by the FAA. The runway lighting is owned and maintained by the Airport. Aside from routine maintenance, these systems are in satisfactory working condition and will continue to support the existing and anticipated operational requirements over the planning horizon. The MALSR and Runway 12 Localizer may be nearing the end of their usable life and any replacement or upgrade of these will be at the discretion of the FAA.

4.2.3 Instrument Approach Minimums

By mid-2012, HTS had visibility minimums of 1 mile to Runway 30 and 5,000 feet to Runway 12. Following obstruction removal by the Authority, the FAA began the process of revising the precision instrument approach minimums. By July 2013 the minimums were ¾ mile for both runway ends. Ongoing coordination with the FAA is expected to eventually achieve ½ minimums to Runway 12, the best achievable with a CAT-I ILS. The minimums as of mid-2012, mid-2013 and what they are anticipated to become in the future are presented in Error! Reference source not found..

Table 4-2 – Approach Minima by Runway End

	As of May 2012		As of July 2013		Anticipated in Future	
	RW 12	RW 30	RW 12	RW 30	RW 12	RW 30
Approach Type	Precision	Precision	Precision	Precision	Precision	Precision
Visibility	5,000 ft.	1 mi.	¾ mi.	¾ mi.	½ mi.	¾ mi.
Ceiling (ft. AGL)	328	250	200	200	200	200

Source: FAA Digital Terminal Procedures, 23 May 2012, 27 June 2013

Category II and III ILS systems can achieve even lower minimums; however, they require additional NAVAID and lighting systems,[10] specific FAA and operator authorizations, and specialized on-board equipment and pilot training. For these reasons, Category II and III ILS systems are typically only developed for the larger commercial service hub airports and it is unlikely that HTS would warrant the investment, or be considered eligible, for an upgraded system.

If an approach lighting system were added to Runway 30, the visibility minimums could potentially be reduced. An Omni-Directional Approach Lighting System (ODALS) is a basic system consisting of seven flashing approach lights installed along the runway centerline extending approximately ¼ mile into the approach area which could reduce the visibility minimums from ¾ mile to 5/8 mile (with 200-foot celling) by giving the approaching aircraft extended *lead-in* lighting. The feasibility of installing ODALS in the mountainous terrain east of Runway 30 would need to be further evaluated.

[10] *FAA, Aeronautical Information Manual, February 2010, Sec. 1-1-9 i "ILS Minimums."*

4.3 RUNWAY 12-30

Runway 12-30 is 7,017 feet long by 150 feet wide with a 506 foot displaced landing threshold on the Runway 30 end. The single runway supports a variety of commercial, cargo, business, recreational, and military aircraft operations. The following evaluates the ability of Runway 12-30 to meet FAA design standards and the airfield facility requirements placed on HTS by the existing and anticipated operational demands.

4.3.1 Runway Design Standards

A goal of this master planning effort is to meet all FAA design and safety standards related to the recommended airfield ARC. The FAA design and safety standards in relation to runways (as defined in AC 150/5300-13 *Airport Design*) are described below.

Runway Width – The physical width of the runway pavement.

Runway Safety Area (RSA) – Graded surface centered on the runway centerline. The RSA shall be free of objects (except for objects that need to be located in the RSA to serve their function such as NAVAIDs and approach aids) and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting (ARFF) equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

Runway Object Free Area (ROFA) – The ROFA is also centered on the runway centerline and requires the clearing of all above ground objects protruding above the RSA edge elevation (unless objects need to be located in the OFA for air navigation or aircraft ground maneuvering purposes).

Runway Object Free Zone (OFZ) – The OFZ is a defined volume of airspace centered above the runway centerline that extends 200 feet beyond each end of the runway surface that precludes taxiing or parked airplanes and object penetrations, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function.

Runway Protection Zone (RPZ) – The RPZ is a trapezoidal surface located 200 feet beyond the runway end and centered on the extended runway centerline. The RPZ is primarily a land use control that is meant to enhance the protection of people and property near the airport through airport control. Such control includes clearing of RPZ areas of incompatible objects and activities. With special application of declared distances, separate approach and departure RPZs are required (as with the Runway 30 end at HTS).

Runway Separation Standards – Separation standards between the runway and other airport facilities are established to ensure operational safety of the airport and are as follows:

- Runway centerline to parallel taxiway centerline
- Runway centerline to holdline
- Runway centerline to edge of aircraft parking area

Building Restriction Line (BRL) – Though not a specific FAA design standard, the BRL is a reference line which provides generalized guidance on building location and height restrictions. The BRL is typically established with consideration to Object Free Areas and Runway Protection Zones as well airspace protection by identifying areas of allowable building heights such as 25 or 35 feet above ground level. It should be noted that site-specific terrain considerations (i.e. grade/elevation changes) may allow buildings taller than indicated by the generalized BRL to be developed within the limits of the BRL. These height restrictions are based on FAR Part 77 standards that will be described in more detail in **Section 4.13** and will need to be evaluated for each specific site development plan.

The dimensions for each of these standards can vary according to the ARC and approach capability of the airfield. **Table 4-3** identifies the geometric requirements of the above standards as they apply to Runway 12-30 with an ARC of C-III and C-IV and with precision instrument approach visibility minimums of ¾ mile and up to ½ mile for Runway 12. These standards, and areas of concern, are also depicted in **Figure 4-2**.

Table 4-3 – FAA Runway Design Standards

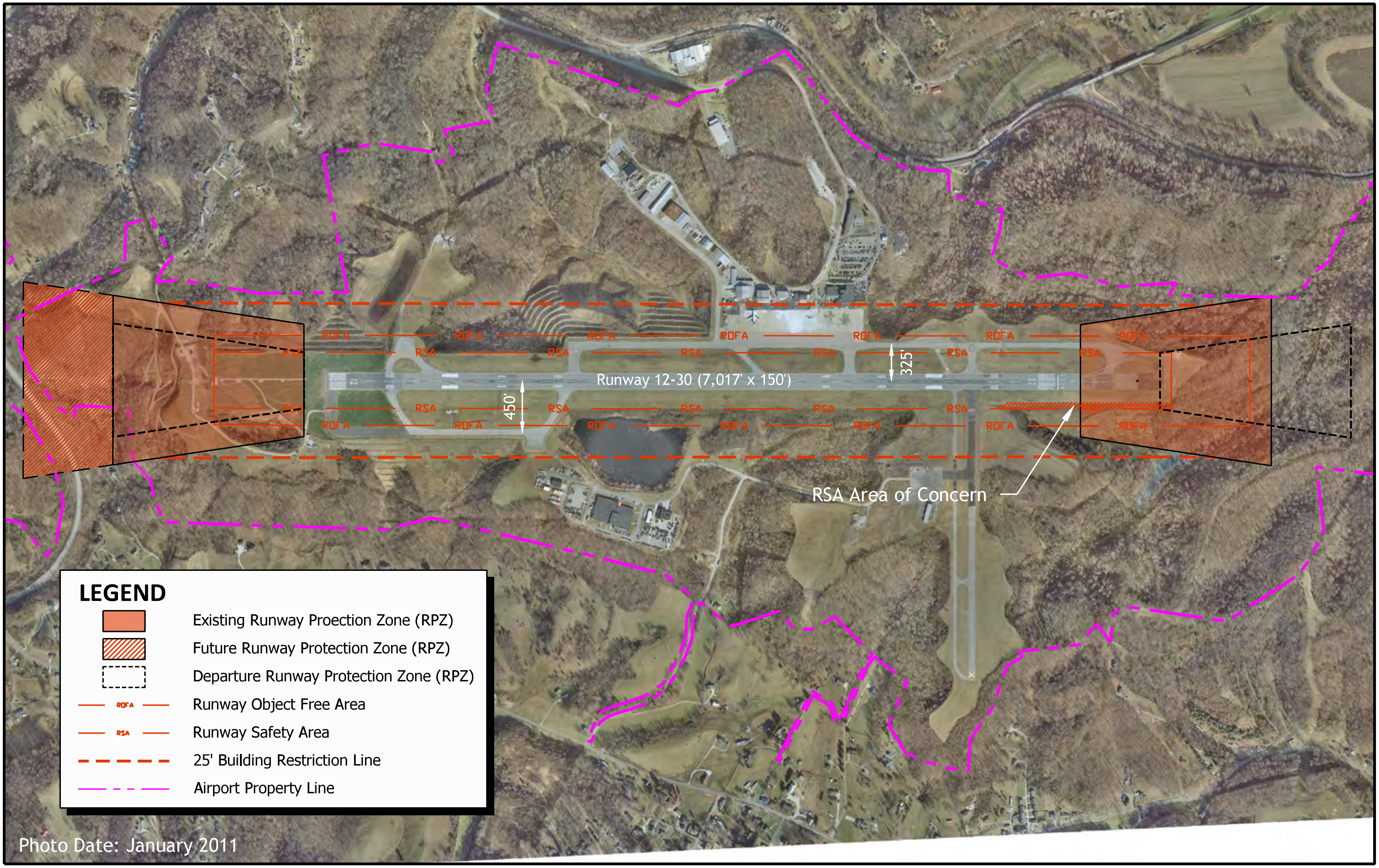
Design Standard	Existing Conditions (w/ ¾ mi visibility)		Runway 12-30: C-III Standards (w/ ¾ mi visibility)		Runway 12-30: C-IV Standards (w/ ¾ mi visibility)		Runway 12-30: C-IV Standards (w/ ½ mi visibility on Runway 12)	
Runway Width (ft)	150		150[1]		150[1]		150	
Runway Safety Area (RSA) Width (ft)	450[2]		500		500		500	
RSA Length Beyond RW End (ft)	1,000		1,000		1,000		1,000	
Runway Object Free Area (ROFA) Width (ft)	800		800		800		800	
ROFA Length Beyond RW End (ft)	1,000		1,000		1,000		1,000	
Runway Obstacle Free Zone (OFZ) Width (ft)	400		400		400		400	
Separation Between:								
Runway Centerline to Parallel Taxiway Centerline (ft)	325[3] / feet		400		400		400	
Runway Centerline to Edge of Aircraft Parking (ft)	418[4]		500		500		500	
Runway Centerline to Holdline (ft)	250		250		250		258[5]	
Runway Protection Zone (RPZ):	**12**	**30**	**12**	**30**	**12**	**30**	**12**	**30**
Length (ft)	1,700	1,700	1,700	1,700	1,700	1,700	2,500	1,700
Width 200 feet from RW End (ft)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Width at Far End of RPZ (Ft)	1,510	1,510	1,510	1,510	1,510	1,510	1,750	1,510

Sources: FAA AC 150/5300-13 *Airport Design*
CHA, 2013

Meets the standard

Does not meet the standard

Notes:
[1] For C-III aircraft with certificated takeoff weights greater than 150,000 pounds (such as the 757-200) the standard is 150 feet, as opposed to 100 feet for smaller C-III aircraft
[2] Field and aerial survey data has indicated that due to terrain grades, the RSA east of Taxiway B may be less than the 500 foot standard.
[3] The existing 325 feet of separation distance for the northern parallel taxiway received an FAA-approved modification of standards in 2004.
[4] Currently, apron parking limit line is 418' from runway centerline. Operationally, parked aircraft are positioned at least 500' from runway centerline
[5] The distance begins at 250' and increases 1' for each 100' above sea level for runways with visibility minimums less than ¾ mile.



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 4-2
Runway Design Standards
ARC C-III / C-IV

4.3.2 Runway Safety Area

In 2006, the FAA issued a Finding of No Significant Impact (FONSI) for a Runway Safety Area (RSA) improvement project that was needed to provide the required 1,000-foot by 500-foot RSA to the east of Runway 30. That project including shifting the runway 500 feet to the west and through the application of declared distances resulted in 7,017 feet of usable runway length for departures. That project was constructed in 2008/2009, however due to the steep terrain grades along the southern edge of Runway 30, south of Taxiway B, the RSA width remains deficient of the 500-foot standard. As of early 2013, the Authority has been evaluating and coordinating the engineering feasibility and funding support to remedying this discrepancy with the FAA Beckley Airports District Office and the Safety and Standards Branch.

4.3.3 Runway to Taxiway Separation

As evidenced by **Table 4-3** and **Figure 4-2**, the existing centerline-to-centerline separation between Runway 12-30 and the Parallel Taxiway A is 325 feet – less than the standard 400 foot separation standard for Group III and Group IV operations. The FAA approved a modification of standard regarding this discrepancy in 2004 to allow operations with the current centerline-to-centerline separation. In 2010, consistent with this modification of standard and in consideration of the terrain constraints, level of operations, potential impact to the constrained terminal apron and high construction cost, it was deemed infeasible, at that time, to relocate Taxiway A to the full 400 foot separation. It is recommended, however, that the Authority continue planning and preserving space for a full length parallel Taxiway A and develop specific sections to the 400 foot standard as they become warranted or feasible (i.e. future taxiway rehabilitation projects). Development concepts for meeting ARC C-IV design standards will be addressed in **Chapter 5** *Development Concepts*.

4.3.4 Runway Protection Zones

As previously stated, it is believed that the visibility minimums will eventually be reduced to ½ mile for Runway 12 by late-2013/early-2014. This will result is an increase of the RPZ size from ±49 acres (1,000' x 1,700' x 1,510') to ±79 acres (1,000' x 2,500' x 1,750'). As depicted in **Figure 4-2**, this will also extend the RPZ further off of airport property, over Old U.S. 52, and would require the Authority to gain positive control over three additional parcels. None of these parcels have residences, and it is recommended that they be acquired fee simple as compared to gaining control through easement acquisition.

4.3.5 Runway Capacity

Airfield capacity is primarily a function of the number and configuration of the runways and taxiways at an airport. The common method for determining runway capacity is calculating the airport's Annual Service Volume (ASV). An airport's ASV is the estimate of the total number of aircraft operations an airfield can accommodate based on runway layout, aircraft fleet mix, weather trends, and operational characteristics of the airport.

Using guidance provided in FAA AC 150/5060-5 *Airport Capacity and Delay*, the ASV for the runway at HTS was calculated at approximately 210,000 annual operations. The total annual operations by 2030 are projected to be between 23,000 and 25,000 (depending on the growth scenario), representing 11 to 12 percent of the estimated airfield capacity for a single runway configuration. Based on this evaluation, overall airfield capacity is not anticipated to be a concern over the planning horizon. That is not to say, however, that during specific times of peak demand, or high activity events, there will not be temporary congestion experienced on the airfield. Regardless, no additional runway capacity-enhancing improvements are recommended, at this time, to accommodate these infrequent occurrences.

4.3.6 Runway Orientation

As stated in **Chapter 2**, it is an FAA recommendation that the primary runway at an airport provide at least 95 percent wind coverage, meaning that 95 percent of the time on an annual basis, the crosswind at an airport is within acceptable limits for the types of aircraft operating on the runways. The current runway configuration at HTS provides wind coverage greater than the FAA desired 95 percent for all aircraft types under both VFR and IFR weather conditions, and is expected to be adequate throughout the planning period.

Due to changes in the earth's magnetic declination over time, the compass heading of a runway and its associated marking (i.e., runway end numbers) can change. As indicated, the current heading of Runway 12 is 118 degrees and Runway 30 is 298 degrees. Data obtained from the National Geophysical Data Center (NOAA) suggests that the magnetic declination in the Huntington region is changing by less than 0.05 degrees per year. Therefore, it is not anticipated that the runway heading will change over the planning horizon.

4.3.7 Runway Length

Runway length requirements are a function of an airport's design aircraft, the longest distance flown by departing aircraft, weather patterns, and runway gradient. Inadequate runway length may place operational restrictions on aircraft that would otherwise use the facility and may also restrict aircraft loading capacities (i.e. fuel, passengers, and cargo) during certain weather conditions. Such aircraft restrictions may negatively impact an airport's revenue stream and/or profitability (or the aircraft operator's profitability). As mentioned previously, Runway 12-30 at HTS is 7,017 feet long with a 501 foot displaced landing threshold on the Runway 30 end. With the application of declared distances, this allows for 7,017 feet of takeoff length in either direction and 6,516 feet in landing length in either direction.

To determine the required runway length at HTS, the guidance provided in AC 150/5325-4B, *Runway Length Requirements for Airport Design* was used. With the Boeing 757-200 as the critical aircraft, which is over 60,000 pounds at maximum takeoff weight (MTOW), the AC recommends using the manufacturer's operating data to determine the needed runway length. Other important factors taken into consideration were the maximum distance these aircraft regularly travel, the airport elevation, and the average high temperature of the hottest month.

For comparative purposes, and to ensure that the runway at HTS properly accommodates the anticipated traffic, additional aircraft known to operate at HTS were also evaluated. These include the McDonnell Douglas MD-80 and the Boeing 737-800/BBJ (common charter aircraft). The Airbus A300 was also evaluated as this would likely be the aircraft that FedEx would utilize in the event that the 757 no longer served their needs at HTS. Both landing and takeoff length requirements have been evaluated for both wet and dry conditions. **Table 4-4** identifies the calculated lengths at MTOW and maximum landing weight (MLW) using HTS conditions of 0.01 percent runway gradient, 59 degrees Fahrenheit, and approximately 825 feet elevation.

Table 4-4 – Critical Aircraft Runway Length Requirements

Aircraft	Engines	MTOW (lbs)	Max. Range at MTOW (nm)	TO Length Required (ft) at MTOW	Wet Landing Length Required (ft)
757-200 / 757-200PF	RB211-535E4	255,500	3,150	7,700	5,700
MD-82	JT8D-217A	149,500	1,200	7,900	5,800
737-800 / BBJ2	CFM56-7B24	174,900	2,000	8,000	5,900
Airbus A300 F4	GE CF6-80C2F	375,887	2,700	8,200	4,000

Source: CHA, 2013
Notes: Runway lengths are calculated at Standard Day Temperature (59°F) at an elevation similar to HTS (825')

This analysis indicates that the existing runway length at HTS is not sufficient for these aircraft to operate at MTOW. However, consistent with FAA guidance for critical aircraft over 60,000 pounds MTOW, the longest anticipated haul lengths for these aircraft were factored into the calculation to reflect actual operating requirements. The longest haul lengths performed by the airline and cargo operators at HTS include service to Memphis International Airport (MEM) (±400 nm) by FedEx and for service to Fort Lauderdale/Hollywood International Airport (FLL) (±750 nm) by Allegiant. Since the Marshall University Football team frequently utilizes a charter at HTS, the haul length to the furthest school in the team's athletic conference (University of Texas-El Paso) (±1,400 nm) was used to determine the requirements of the 737-800/BBJ. Additionally, this analysis includes the runway length requirements for the potential west coast service to Las Vegas (McCarran International Airport – LAS) (±1,600 nm) by a 757-200 aircraft. These factored runway length requirements are presented in **Table 4-5**.

Table 4-5 – Factored Runway Length Requirements

Operator	Aircraft	Engines	Haul Length (nm)	Estimated TO Weight (lbs)	TO Length Required (ft)	Wet Landing Length Required (ft)
Allegiant	MD-82	JT8D-217A	±750 (Ft. Lauderdale, FL)	143,000	6,800	5,800
FedEx	757-200PF	RB211-535E4	±400 (Memphis, TN)	208,000	4,950	5,700
Potential FedEx Upgrade	Airbus A300	GE CF6-80C2F	±400 (Memphis, TN)	318,600	5,800	4,000
Charter Services	737-800	CFM56-7B24	±1,400 (El Paso, TX)	163,500	6,900	5,900
Potential New Service	757-200	RB211-535E4	±1,600 (Las Vegas, NV)	226,000	5,800	5,700

Source: CHA, 2013
Notes: Landing length calculated at MLW

Based on this analysis, the existing takeoff distance available (TODA) and landing distance available (LDA) at HTS is anticipated to be adequate to accommodate the forecast operations and fleet mix throughout the planning period. However, to allow the Airport to accommodate potential future operational needs and potential changes to the aircraft fleet mix, it is recommended that the Authority preserve the ability to extend the runway to 8,000 feet if it becomes warranted in the future.

4.3.8 Runway Pavement Strength

The runway should be designed to withstand repeated use by the fleet mix of aircraft anticipated to use the Airport, and more specifically, those of significant weight including the critical aircraft. The design strength of the pavement at an airport is determined by the strength of the subgrade, the weight of the aircraft utilizing the airfield, the configuration of the landing gear, and the number of operations from these aircraft.

As previously stated, Runway 12-30 is constructed of asphalt and is grooved, with small amounts of reflective cracking. The runway has a load bearing capacity of 110,000 pounds for aircraft with single-wheel landing gear configurations, 190,000 pounds for aircraft with dual-wheel landing gear configurations, and 275,000 pounds for aircraft with dual-tandem landing gear configurations. The current critical aircraft is the Boeing 757-200 which has a dual tandem wheel gear configuration. The estimated takeoff weight for the 757-200 is 208,000 pounds, which falls below the load bearing capacity of the runway.

4.3.9 Runway Marking

As identified in AC 150/5340-1K, *Standards for Airport Marking*, the runway markings at HTS are consistent with the standards for precision instrument runways and include threshold markings, runway end numerals, touchdown zone markings, aiming point markings, side stripes, and runway centerline markings. The markings were reapplied in conjunction with the 2012 runway rehabilitation project and the Runway 30 threshold markings were adjusted in early 2013 in order to correct a discrepancy between the runway end coordinates and the threshold marking/lighting. Routine maintenance of the pavement and markings should be adequate throughout the planning horizon.

4.3.10 Runway Lighting

Runway lighting at HTS includes High Intensity Runway Edge Lighting (HIRL), Runway End Identification Lights (REILs), and 4-light precision approach path indicators (PAPIs) to both runway ends. The HIRLS and REILS were replaced with the 2012 runway rehabilitation project. The lighting systems appear to be in good condition, are consistent with precision approach runway requirements, and aside from routine maintenance, should be adequate throughout the planning horizon.

4.4 TAXIWAY SYSTEM

The taxiway system provides a link between the runway and other operational areas of an airport. An efficient taxiway system enhances operational safety and provides for the orderly flow of aircraft thereby reducing the potential for congestion and/or pilot confusion. The following describes the FAA design and safety standards, as well as the capacity and efficiency of the taxiway system at HTS (shown in **Figure 4-3**).

Figure 4-3 – Taxiway System

Source: CHA, 2013

4.4.1 Taxiway Design Standards

Similar to runways, taxiways are subject to FAA design requirements such as pavement width, edge safety margins, shoulder width, safety areas, and object free areas. The FAA standards in relation to taxiways (as defined in AC 150/5300-13 *Airport Design*) are described below.

Taxiway Width – The physical width of the taxiway pavement.

Taxiway Edge Safety Margin – The minimum acceptable distance between the outside of the airplane wheels and the pavement edge.

Taxiway Shoulder Width – Taxiway shoulders provide stabilized or paved shoulders to reduce the possibility of blast erosion and engine ingestion problems associated with jet engines which overhang the edge of the taxiway pavement.

Taxiway Safety Area (TSA) – The TSA is located on the taxiway centerline and shall be cleared and graded, properly drained, and capable, under dry conditions, of supporting snow removal equipment, ARFF equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

Taxiway Object Free Area (TOFA) – The TOFA is centered on the taxiway centerline and prohibits service vehicle roads, parked airplanes, and above ground objects, except for objects that need to be located in the TOFA for air navigation or aircraft ground maneuvering purposes.

Taxiway Separation Standards – Separation standards between the taxiways and other airport facilities are established to ensure operational safety of the airport and are as follows:

- Taxiway centerline to parallel taxiway/taxilane centerline
- Taxiway centerline to fixed or movable object

The dimensions for each of these standards vary according to the design group of the aircraft they are intended to accommodate. **Table 4-6** identifies the Group-II, III and IV geometric requirements as they apply to the taxiways at HTS.

During any future taxiway rehabilitation or signage upgrade projects, consideration should be given to renaming the taxiways in a sequential manner. The designations include A, B, C, E, F, G, G1, H and M. FAA AC 150/5340-18E *Standards for Airport Sign Systems* describes the intent of establishing a logical and orderly system of taxiways. This would have to be coordinated with the FAA to ensure that all published airport diagrams are updated accordingly. Due to the airfield activity levels, this may not be considered a critical improvement and it may only be financially justifiable when and if the associated signage and marking needs to be replaced.

Table 4-6 – FAA Taxiway Design Standards

Design Standard	Taxiways			
	Existing Conditions	Group-II Standards	Group-III Standards	Group-IV Standards
Taxiway Width	A – 47' / 60' B – 60' C – 90' E – 50' F – 35' (Group-II) G – 50' / 60' G1 – 50' H – 65' M – 80'	35 feet	60 feet[1]	75 feet
Taxiway Edge Safety Margin	Varies by Aircraft[2]	7.5 feet	10-15 feet[3]	15 feet
Taxiway Shoulder Width	N/A[4]	10 feet	20 feet	25 feet
Taxiway Safety Area (TSA) Width	118 feet (F – 79 feet)	79 feet	118 feet	171 feet
Taxiway Object Free Area (TOFA) Width	186 feet (F – 131 feet)	131 feet	186 feet	259 feet
Separation Between:				
Taxiway Centerline to Parallel Taxiway	N/A	105 feet	152 feet	215 feet
Taxiway Centerline to Fixed or Moveable Object	±150 feet[5]	65.5 feet	93 feet	129.5 feet

Sources: FAA AC 150/5300-13 *Airport Design*
CHA, 2013
Notes:

Meets the standard
Does not meet the standard

[1] FAA guidance in AC 150/5300-13 *Airport Design* states that a taxiway width of 50 feet is required for C-III airfields unless the design aircraft has a wheelbase equal to or greater than 60 feet, in which case the standard taxiway width is 60 feet. The 757-200 has a wheel base of 60 feet.
[2] Preliminary analysis indicates that most aircraft operating at HTS, existing or future, meet this requirement.
[3] The Group-III standard taxiway safety edge margin is 10 feet, however the margin is 15 feet for aircraft with wheelbases equal to or greater than 60 feet (e.g. 757-200).
[4] Taxiway shoulders are not necessary at HTS because aircraft engines do not overhang pavement edges.
[5] This distance includes separation from parked aircraft and service roads.

As shown in **Table 4-6**, the taxiway system is deficient in meeting Group-IV standards (excluding Taxiway F, which is designed to Group-II standards). The taxiways should be widened to 75 feet to meet Group-IV standards. Taxiway A should be relocated to the 400 foot standard runway separation distance, if feasible. As of mid-2013, the Authority is in the process of designing a taxiway rehabilitation project with construction programmed for 2014/2015. This design should strive to achieve Group-IV taxiway standards wherever possible, however this may be challenging due to terrain constraints. Therefore, it may be feasible to modify the requirements of the taxiways based on the 757 as the critical aircraft. AC 150/5300-13 *Airport Design* indicates that with the application of a 15 foot taxiway safety edge margin to the 30 foot gear width of the 757, a 60 foot wide taxiway could be acceptable. Similarly, the FAA standard TSA and TOFA requirements could be adjusted where deemed appropriate based on the 757 wing span (where the TSA width equals wingspan and TOFA width equals 1.4 times the wingspan plus 20 feet). Given the specs of the 757-200, in constrained areas the TSA could be widened to approximately 125 feet, and the TOFA to 195 feet. Because it is possible that the 757-200 will not utilize all the taxiways on the airfield, concepts for meeting the requirements of the 757-200 and the specific needs of the Airport will be presented in **Chapter 5** *Development Concepts*.

4.4.2 Operational Capacity and Efficiency

The location, geometry, runway access points, and bypass capability of the taxiways can help to reduce runway occupancy, taxiing, and engine idle times. While there are no apparent runway/taxiway capacity issues at HTS, some improvements would increase overall efficiency of the system and maximize utility of the runway. According to FAA Order 5090.3C *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, a full parallel taxiway is recommended for an airport with at least 20,000 annual operations. Parallel Taxiway A ends approximately 2,200 feet short of the Runway 12 threshold although it connects to Taxiway G, after crossing the runway, which provides access to the Runway 12 end. While operations at HTS are expected to surpass the 20,000 annual operations threshold between 2016 and 2022 (depending on the forecast growth scenario), it is presumed that the existing parallel taxiway system will function adequately over the forecast horizon. The extensive amount of earthwork and corresponding cost of extending Taxiway A to the Runway 12 threshold support deferring that project until such time as it may become warranted due to operational demand and activity levels. However, the Authority should continue planning, and preserve adequate space for a full parallel taxiway should that project become ripe for development.

In addition to the full parallel taxiway, holding pads or bypass areas should be provided near runway ends used primarily for departures. Considering the relatively even distribution of operations between Runway 30 (±55%) and Runway 12 (±45%), adequate hold areas should be provided near both runway ends. Although the eastern end of Taxiway A has a small holding pad, it is not sufficient for the larger air carrier aircraft (such as the MD-80 or B-757). Therefore, it is recommended that bypass capabilities be provided in the form of a larger hold apron or bypass taxiway. Ideally this should be factored into the taxiway rehabilitation design underway in 2013.

Bypass capability is provided near the Runway 12 end by Taxiway G1 and by a hold pad near the east end of Taxiway G. The hold pad can accommodate one or two Group-II aircraft. Therefore, when combined with Taxiway G1, these two features can accommodate multiple aircraft on hold without impeding access to the Runway 12 threshold. Taxiway H provides additional bypass or holding capability, however aircraft must cross the runway to access it. With this not being an ideal situation, it is recommended that an enlarged hold apron be considered on Taxiway G and that Taxiway H eventually be abandoned. Taxiway H could eventually be incorporated into Taxiway A if/when it is extended to the Runway 12 threshold.

4.4.3 Taxiway Lighting

The taxiways are lighted by Medium Intensity Taxiway Lighting (MITL). The lighting systems appear to be in good condition, are consistent with the operational requirements of the airfield, and aside from routine maintenance, should be adequate throughout the planning horizon.

4.5 TERMINAL AREA APRON

The terminal area apron is approximately ±34,000 SY in size and supports airline, cargo, and general aviation (GA) users. The relative size of these three use areas are displayed in **Figure 4-4**. Activities on the apron include passenger loading, cargo loading, aircraft fueling, aircraft de-icing, and remain-overnight (RON) parking. The specific needs of each use area are described in the subsequent sections.

Although the existing apron has typically been able to accommodate peak, or even unexpected activity at the Airport, congestion has been known to be problematic from time to time, particularly because the GA portion of the apron (a non-secure area) is situated between the cargo and airline portions (secure areas). Title 49, Chapter XII “Transportation Security Administration” of the Code of Federal Regulations (49 CFR Parts 1542 and 1544) require that the airline and cargo portions be designated as Security Identification Display Areas (SIDAs). Therefore, if additional commercial aircraft are forced to park on the GA portion of the apron for capacity, mechanical concerns, or weather delays, then all or part of the GA apron will not be accessible to the flying public.

Figure 4-4 – Terminal Area Apron

Source: CHA, 2013

4.5.1 Airline Use

The commercial airline use area of the apron is approximately 10,000 square yards in size. The aircraft operate in a power-in/power-out configuration, without the use of a tug for push back. At present, there are three available ground-boarding gates at the passenger terminal. This configuration often leaves passengers exposed to the elements while boarding in cold or inclement weather. Consistent with the Airport Authority's goal of providing optimal customer service, future passenger boarding bridges are recommended and will be incorporated into apron and terminal planning concepts.

In terms of apron size, it is common for three commercial aircraft to be on the apron at the same time. While this area of the apron is large enough to accommodate these aircraft and the current airline schedule, if any additional aircraft are present or if an aircraft experiences mechanical problems, congestion is likely to occur. In addition to the air carriers, charter aircraft often use this apron area to load passengers, such as the Boeing 737 utilized by the Marshall University football team. Based on existing use and the forecasts presented in **Chapter 3**, it is recommended that the terminal area apron be able to accommodate four to five aircraft in the future. This would provide accommodations for three to four airlines and large charter activity, and a contingency parking position for delayed or unexpected aircraft. To accommodate both the existing and anticipated aircraft mix, one gate should be able to accommodate aircraft like the Boeing 757 while the others should accommodate the MD-80, CRJ-200, and Boeing 737. Because of the size of these aircraft, second floor passenger loading will be required, if passenger boarding bridges are utilized. Preliminary analysis suggests that 8,000 to 10,000 additional square yards of space is necessary to meet these requirements.

4.5.2 Cargo Use

The cargo use area of the terminal area apron is approximately 12,000 square yards in size and is located on the westernmost portion of the terminal area apron. The layout consists of two marked parking spaces designed for the Boeing 757-200. Anecdotal evidence provided by FedEx indicates that they occasionally operate an ATR-42 and/or -72 turboprop aircraft at HTS. An additional 2,000 square yards of apron space would be needed to accommodate two Boeing 757s and an ATR simultaneously.

In addition to FedEx's operations, market conditions indicate the possibility of additional cargo carriers eventually operating at HTS. In the past, FedEx has utilized subcontracted carriers (i.e. Mountain Air Cargo) at HTS and there is potential that this type of service provider may return in the near future. Market conditions also indicate that due to congestion and the lack of expansion space at other area airports, the cargo companies may consider relocating their operations to HTS. Such a move could add five ATR-72 turboprop flights a week, further congesting the apron area.

4.5.3 General Aviation (GA) Use

The general aviation portion of the apron is approximately 12,500 square yards in size and is located between the cargo use and airline use portions. As explained in the previous sections, demand within the airline and cargo portions of the apron places significant constraints on the GA use area. These constraints lead to the intermingling of large and small, piston and jet, commercial and recreational aircraft types and can even result in the GA apron being closed to the public use per SIDA requirements. These constraints are enough reason to evaluate the potential of relocating the GA facilities and services to another place on the Airport – potentially to the new southside development area that has become available due to the closing of Runway 3/21 in 2010. Concepts for mitigating this constraint and safety concern, as well as for meeting the GA facility needs identified in the following paragraphs, will be presented in **Chapter 5** *Development Concepts*.

Typically, the requirements for GA aircraft parking are presented in terms of based and transient aircraft. Due to the relatively harsh winters in the Appalachian region, it is assumed that all aircraft based at HTS will require hangar facilities and therefore all aircraft requiring apron space will be transient. Based on historical activity data, it is further assumed that 30 percent of GA traffic at HTS is transient. The calculation of required GA apron space is based on the preferred GA forecast described in **Chapter 3**.

Table 4-7 presents the average peak day transient aircraft requiring parking at HTS.

Table 4-7 – Average Peak Day Transient Aircraft (Requiring Parking)

Aircraft	2010	2015	2020	2025	2030
Single Engine	6	6	7	7	8
Multi-Engine	1	1	1	1	1
Turbo-Prop	1	1	1	1	1
Jet	1	1	2	2	2
Helicopter	1	1	1	1	1
Military	1	1	1	1	1
Total	**11**	**11**	**13**	**13**	**14**

Source: CHA, 2013

Large charter or military aircraft will often "overnight" at the Airport, such as visiting football team charters (Typically Boeing 737) or Army National Guard (Boeing C-17). According to Airport management, there have been times where three C-17s have remained at the Airport overnight. In instances such as this, these aircraft are parked wherever space is available, whether that is on the GA apron, a holding pad, or taxiway. Although this is a rare occurrence, and it is unlikely that two or more large aircraft would require parking on the same day, anecdotal information such as this highlight the need for additional GA apron space, and more specifically, remain-overnight (RON) parking. The space planning factors described in the subsequent paragraphs have been adjusted in the military category appropriately to account for RON parking for large military or charter aircraft.

To accommodate the transient demand presented in **Table 4-7**, single-engine and multi-engine piston aircraft will require tie-down positions and turbo-prop and jet aircraft will require power-in/power-out parking configurations. Consistent with the nationally projected growth in the use of business aircraft and on-demand charter services, as well as the Authority's intent of creating a comprehensive "aviation ecosystem," it is a distinct possibility that additional charter service operators (potentially large charter) will become located at the Airport in the near future. To provide adequate apron space for additional charter operations and loading/unloading of passengers, two additional power-in/power-out parking positions should also be provided on the GA apron; one for turbo prop and one for jet aircraft.

Based on FAA guidance, industry experience, and common aircraft sizes, the following per-aircraft planning factors were used in determining the required apron space at HTS. Depictions of these planning factors, which include adequate maneuvering space, are provided in **Appendix C**.

- 880 square yard for single-engine piston aircraft (tie-down)
- 880 square yards for multi-engine piston aircraft (tie-down)
- 2,440 square yards for turbo-prop aircraft (power-in/power-out)
- 2,940 square yards for jet aircraft (power-in/power-out)
- 1,000 square yards for helicopters (power-in/power-out)
- 5,600 square yards for military aircraft (based on power-in/push-out configuration for Boeing C-17)

With these factors in mind, **Table 4-8** outlines the minimum amount of GA apron space required throughout the forecast horizon.

Table 4-8 – Apron Requirements

	2010	2015	2020	2025	2030
Group-I Tie-downs	7	7	8	8	9
Group-II Parking Positions	3	3	4	4	4
Large Aircraft (Charter / Military)	1	1	1	1	1
Total SY*	**±23,520 SY**	**±23,520 SY**	**±27,340 SY**	**±27,340 SY**	**±28,220 SY**

Source: CHA, 2013

Note: Total Square Yardage includes additional space (one turbo-prop and one jet space) to account for potential charter operations.

4.6 PASSENGER TERMINAL BUILDING

As described in **Chapter 2**, the existing passenger terminal building at HTS has approximately 32,600 SF of usable space and accommodates a variety of tenants, employees and users. The building not only serves as the gateway between landside and airside facilities for commercial passengers into and out of the Tri-State region, it also provides office and operational space for the airlines, Airport Authority, FAA, Transportation Security Administration (TSA), airport police, rental car companies and restaurant/retail concessionaires. For this analysis, each of the following functional areas of the terminal building was assessed on their ability to meet the existing and forecasted operational demands:

- Check-In Lobby
- Circulation/Waiting Area (Pre-Security)
- Passenger Hold Room/Circulation (Post-Security)
- Security Screening
- Baggage Screening and Make-up
- Baggage Claim and Baggage Unloading
- Airline Offices/Ticket Counters
- Rental Car Offices/Counter
- Transportation Security Administration (TSA) Offices
- Federal Aviation Administration (FAA) Offices
- Airport Police Offices
- Administration
- Concessions (Pre- and Post-Security)
- Business Center
- Restrooms and Miscellaneous Use

Source: Huntington Tri-State Airport Website, http://www.tristateairport.com Photo date unknown

Airport staff and regular airport users have indicated that the terminal is undersized and outdated. It is highly congested during peak times, which results in long lines at the ticket counter, security screening area, and baggage claim. The configuration of the terminal, particularly the narrowness of the ticketing lobby and security screening area, constricts circulation and impedes the efficient flow of passengers from the building entrance to the hold room. In addition, the passenger hold room is drastically undersized, with a lack of available seating and little room for circulation. Furthermore, the terminal building is over 50 years old (constructed in 1961) and many of the facilities and systems (i.e. roof, HVAC, electrical distribution) are either at, or beyond, the end of their usable life.

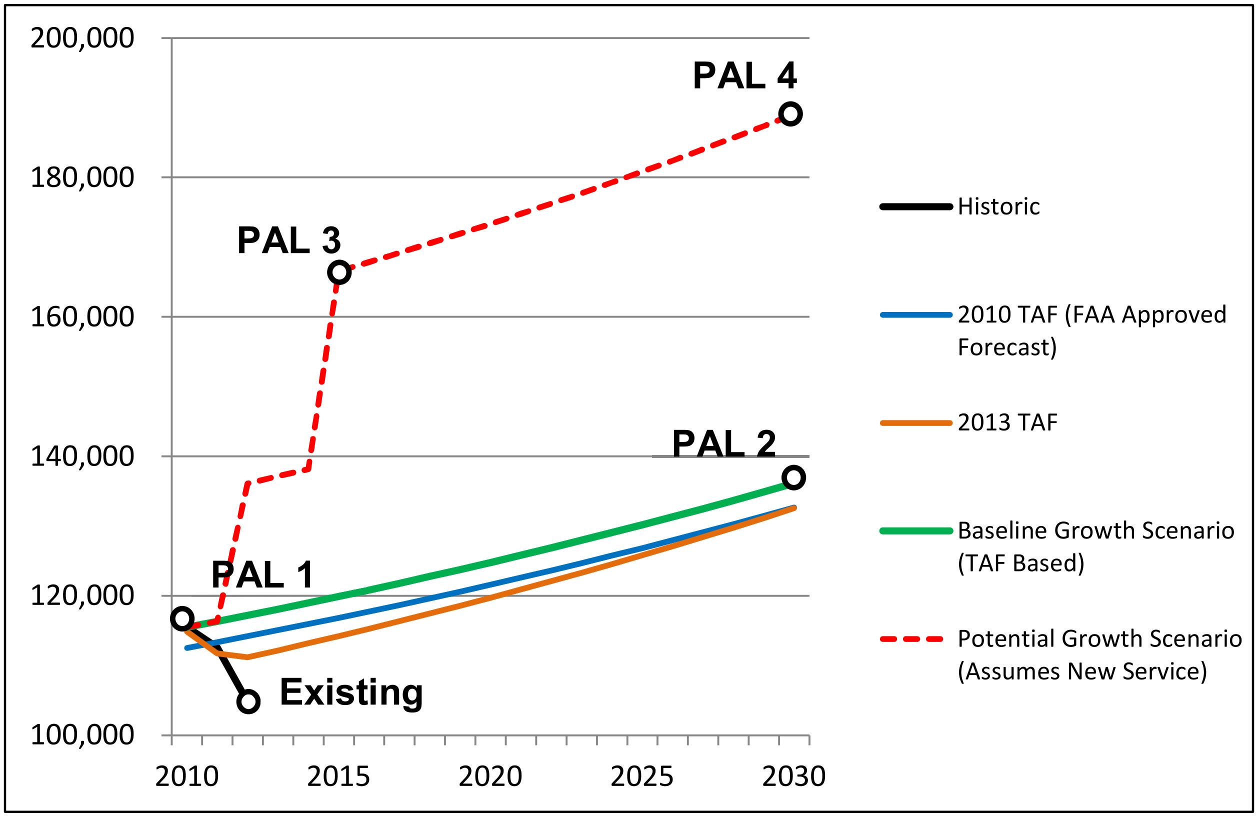
4.6.1 Planning Activity Levels

The FAA approved TAF enplanement forecast was adjusted to account for the actual 2010 reported enplanements and is considered the "baseline growth scenario" for evaluating terminal facility needs at the Airport over the 20-year planning horizon. To provide flexibility in accommodating increased activity growth and development opportunities that may arise over the planning horizon in response to changing market conditions and the Authority's marketing and service development initiatives, the preferred enplanement forecast described in **Chapter 3** is considered the "potential growth scenario" for this evaluation.

Since passenger volume is highly susceptible to fluctuations in economic conditions and industry trends, identifying recommended terminal building and automobile parking improvements based solely on specific years can be problematic. The timing of actual demand can vary, therefore, as an alternative to calendar year projections, Planning Activity Levels (PALs), rather than calendar years, were established to identify significant demand thresholds for facility enhancement projects. Disassociating the predetermined timeline from the recommended facility improvements provides the Authority with the flexibility to advance or slow the rate of development in response to actualized demand. If the baseline growth scenario proves conservative (i.e. new service is realized as a result of airport marketing and route development initiatives), recommended facility improvements should be advanced in schedule. In contrast, if demand occurs at a rate that is slower than anticipated, the improvements should be deferred accordingly. As actual activity levels approach a PAL and trigger the need for a facility improvement, sufficient lead time for planning, design and construction must be also given to ensure that the facilities are available for the impending demand. The PALs used for this analysis correspond with the following forecast enplanement levels (identified in **Figure 4-5**):

- Existing – Year 2012 recorded enplanements (105,000)
- PAL 1 – Year 2010 recorded enplanements (115,500)
- PAL 2 – Year 2030 enplanements of Baseline Growth Scenario (136,000)
- PAL 3 – Year 2015 enplanements of Potential Growth Scenario (166,500)
- PAL 4 – Year 2030 enplanements of Potential Growth Scenario (189,000)

Figure 4-5 – Terminal Planning Activity Levels



Source: CHA, 2013

With the PALs defining the range of annual enplanements to be considered in the terminal planning effort, additional factors such as the corresponding passenger peaking characteristics and assumptions on the number of aircraft gates to accommodate those activity levels is also needed. Additionally, a 30-minute surge factor has been applied to the peak hour enplanements to account for those periods when flight departures may be delayed due to maintenance, weather, and crew scheduling or late aircraft arrivals. These events can add to the total number of persons that need to be accommodated in the terminal building at any given time without sacrificing a high level of customer service or efficiency; particularly in the post security, gate and holdroom areas. **Table 4-9** identifies the other factors used.

Table 4-9 – Terminal Planning Factors

Factor	PAL 1	PAL 2	PAL 3	PAL 4
Annual Enplanements	115,500	136,000	166,500	189,000
Peak Hour Enplanements	115	135	166	188
Peak Hour Enplanements + 30-Minute Surge Factor	173	203	243	282
# of Airlines	2	2 to 3	3	4
# of Gates	2 NB, 1 RJ	2 NB, 1 RJ	2 NB, 2 RJ	3 NB, 1 RJ

Source: CHA, 2013
Notes: NB=Narrow Body, RJ=Regional Jet

4.6.2 Spatial Requirements

The spatial requirements for each functional area of the terminal were evaluated using various methodologies including guidance from FAA Advisory Circulars (AC) 150/5360-9 *Planning and Design Guidelines for Airport Terminal Facilities* and 150/5360-13 *Planning and Design Guidelines for Airport Terminal Facilities at Non-Hub Locations.* For the public, passenger-use areas of the terminal (including the check-in lobby, circulation areas, passenger hold room, and baggage claim), metrics and planning models provided by the Airport Cooperative Research Program (ACRP) and the International Air Transport Association (IATA) were utilized. The spatial requirements for areas utilized by airport staff (Authority, Airline, TSA, FAA, Airport Police, and Rental Car companies) were determined based on information provided by staff and airport management. Lastly, the spatial requirements for other usable areas of the terminal (security screening, baggage screening and unload, concessions, restrooms, and the business center) were determined using standard best practices and industry experience, with the goal of providing a high level customer service and efficiency for the travelling public.

The ACRP and IATA guidance categorizes level of service (LOS) based on passenger experience correlated to the per-passenger square footage of space provided. Generally speaking, the more space provided – the better the passenger flow. The LOS categories, A through F, are described as follows:

A. Excellent LOS: Free flow, no delays, excellent level of comfort
B. High LOS: Stable flow, very few delays, high level of comfort
C. Good LOS: Stable flow, brief delays, good level of comfort
D. Adequate LOS: Unstable flow, acceptable delays for short period, adequate level of comfort
E. Inadequate LOS: Unstable flow, unacceptable delays, inadequate level of comfort
F. Unacceptable LOS: Cross flow, system breakdown, unacceptable delays and level of comfort

In balancing the Authority's customer service goals with the potential cost of terminal development, in consideration of the Airport's peaking characteristics and rather constrained site topography, providing a minimum LOS of C was chosen as the goal for this terminal space planning exercise. LOS C will provide a stable flow for passengers through the terminal, brief delays at check-in and security, and a good level of comfort through all areas of the terminal. **Table 4-10** details the LOS square footage requirements of the major usage areas within the terminal.

Table 4-10 – Terminal Area Square Footage per Passenger

Functional Area	A	B	C	D	E
Check-In Lobby	19.4	17.2	15.1	12.9	10.8
Circulation Area	29.0	24.8	20.5	16.1	10.8
Passenger Hold Room	15.0	12.9	10.8	8.6	6.5
Baggage Claim	21.5	19.4	17.2	15.1	12.9

Source: ACRP Airport Passenger Terminal Planning and Design Manual, IATA, 2010

4.6.3 Terminal Building Space Program

The purpose of this analysis is to identify the terminal space needed to accommodate the existing and anticipated levels of passenger demand based on the PALs. These space requirements will establish the basic footprint and usage area requirements of the terminal building thus allowing the Authority to plan for and preserve adequate space for needed airside and landside development. This analysis should be considered a planning level exercise and should be refined during future facility design efforts. This range of facility requirements identifies the minimum level of infrastructure needed now and the amount of space that should be preserved for future expansion as activity levels warrant that development.

Check-In Lobby: The check-in lobby includes the active passenger check-in area, passenger queue area and circulation between the building entrance and queue. The lobby is approximately 1,660 SF in size and provides an airline counter length of 80 feet, capable of accommodating approximately 10 check-in positions. While the counter length is considered to be sufficient for the needs at HTS through PAL 4, the check-in lobby area is undersized and constricts passenger flow due to the very narrow 20 feet of depth between the terminal entrance and the ticketing counter. It is recommended in the ACRP Terminal Planning Model that the minimum depth from terminal entrance to ticketing counter be 48 feet (8 feet for active check-in area, 20 feet for queue area, and 20 feet for circulation) which results in a needed check-in lobby area of 3,840 SF.

Circulation/Waiting Area (Pre-Security): The pre-security circulation and waiting area accounts for approximately 3,768 SF of the existing terminal building, and should provide sufficient space for early arrival of departing passengers, arriving passengers leaving the airport, as well as the non-travelling public (meeters and greeters). The configuration of the existing space provides for nominal seating and creates a bottleneck between baggage claim and the terminal exit (including the rental car area) due to the intermingling of arriving and departing passengers and the meeters/greeters. Using peak hour enplanements and a meeter/greeter factor of 1.5 and the LOS C factor of 20.5 SF per person, the pre-security space requirement ranges between 5,175 and 8,460 SF.

Passenger Hold Room/Circulation (Post-Security): The existing passenger hold room at HTS is approximately 4,623 SF and is undersized, with no room for circulation. In fact, capacity in the existing hold room is approximately 99 seats, which is far less than needed to accommodate the 3 gates, which can be occupied simultaneously by aircraft with a passenger capacity of approximately 250 (MD82 – 150 to 166 seats, CRJ200 – 50 seats, Dash8 – 37 to 50 seats). Based on the planning metrics provided in the ACRP Terminal Planning Model, a hold room for a narrow-body aircraft gate will require 2,050 SF, and the hold room for a regional jet gate will require 840 SF. Additionally, a 15 feet wide area of circulation spanning the length of the concourse frontage (±100 feet per gate) should also be provided. Assuming a PAL 1 demand of two narrow body gates and one regional jet gate, the space requirement would be 7,940 square feet. The space requirement would be expected to increase to 11,490 square feet by PAL 4 with three narrow body gates and one regional jet gate.

Security Screening: In 2012 the single lane security screening area was expanded into the public use lobby and circulation area to accommodate TSA equipment and operational demands and encompasses approximately 1,872 SF of space. This expansion reduced the amount of public space available and the configuration creates a bottleneck between arriving and departing passengers and becomes heavily congested during peak hours. Based on the customer service goals of the Authority, and TSA equipment requirements, a standard two-lane checkpoint[11] and a minimum of 2,000 SF is needed in this use area. This would provide ample space for: two bin carts and two divest tables, two x-ray machines with extension rollers, one walk through metal detector, one ADA gate, one explosives trace detection (ETD) unit and cabinet, one or two bag search tables, one glass holding station or holding/wanding station, and a private screening area.

Baggage Screening and Make-up: The baggage screening area is approximately 965 SF in size and spans two separate rooms interspersed with the airline offices. As of 2013, one room is utilized by US Airways and one is utilized by Allegiant. In the past, these two areas had also accommodated a third airline. The existing configuration is considered to be inefficient because the machine utilized by US Airways is not directly behind the counter, and requires the staff to transport the baggage to the screening area. To improve operational efficiency, it is believed that one common-use, mini checked baggage inspection system (CBIS) capable of accommodating 180-360 checked bags per hour will be sufficient to accommodate through PAL 4 activity levels. TSA planning guidelines[12] indicate a system of this type would require a minimum of 1,600 SF of space.

---

[11] As provided by TSA May 2011, 75’x30’ standard two-lane system equipment area

[12] Planning Guidelines and Design Standards for Checked Baggage Inspection Systems, TSA, September 15, 2011

Baggage Claim: The 1,733 SF baggage claim area is located near the egress point of the passenger hold room, and contains a single 40 foot linear baggage claim belt. As with many areas of the existing terminal building, this area is undersized and becomes highly congested during peak times. Using the assumption that 75 percent of all passengers check their bags, the ACRP Terminal Planning Model was used to calculate the linear footage of the baggage claim unit as well as the square footage requirements. In order to achieve LOS C, approximately 230 linear feet of baggage claim frontage over one or two carousels would be appropriate to accommodate passenger levels through PAL 2. This would increase to approximately 320 linear feet and two carousels by PAL 4.

Baggage Unload: The existing baggage unload area is adjacent to the baggage claim area and is approximately 470 SF in size. This area is used by airline staff for transposing baggage from the aircraft to the baggage claim belt. FAA guidance indicates that this function requires approximately 22 feet of width spanning the length of the baggage claim room. Considering the existing baggage room is approximately 60 feet wide, the existing loading area demand is 1,320 SF. For planning purposes, this space requirement would be expected to increase commensurate with the linear footage of the baggage claim belt or approximately 15 percent for each PAL. This equates to 1,500 sf in PAL 1 expanding up to 2,300 SF by PAL 4.

Airline Offices/Ticket Counters: There is approximately 3,690 SF of space in the existing terminal, with three airline offices, and 80 linear feet of counter space capable of accommodating approximately 10 check in positions. Even with the potential for additional service at HTS, it is not estimated that more than 10 check-in positions will be needed over the planning horizon, especially with the expanding implementation of self-service ticketing kiosks and emerging remote check-in technologies. Based on information provided by the airlines, existing utilization of the office space, and industry experience, it is assumed that approximately 1,500 SF of office/ticketing space per airline is adequate. With 2 airlines operating at HTS (as of mid-2013), the existing space should be sufficient through PAL 1 and most of PAL 2, however as new service and/or airlines become operational at HTS additional airline space would likely be needed to accommodate PAL 3 and PAL 4 activity demands.

Rental Car Offices/Counter: The rental car offices, counters, and customer queue area occupies approximately 1,005 SF of space in the existing terminal. No changes are expected to the number of companies or the overall operational needs of the existing companies at HTS. However, in order to provide flexibility and accommodate any additional unforeseen needs, it is recommended that approximately 2,000 SF of space be preserved for the long term operational requirements of the rental car and ground transportation tenants.

Transportation Security Administration (TSA) Offices: The TSA offices are adjacent to the security screening area and encompass approximately 312 SF of space. TSA has indicated that to accommodate existing and future staffing levels, additional office space is needed. It is assumed that a minimum of 800 SF (including two 10 by 12 offices) would be sufficient throughout the planning horizon.

Federal Aviation Administration (FAA) Offices: The FAA offices occupy approximately 1,931 SF of the existing terminal building (one floor footprint). The FAA has not expressed any additional needs at HTS and therefore, this amount of space will be considered adequate throughout the forecast horizon.

Airport Police Offices: The airport police offices occupy approximately 245 SF of space in the existing terminal building. Police staff and airport management have expressed the need for two additional offices (10 feet by 10 feet) and additional storage space. Therefore, the requirement for airport police office space at HTS is approximately 600 SF throughout the forecast horizon.

Administration: The Airport Authority occupies approximately 2,070 SF of usable space in the existing terminal building. Based on conversations with airport staff, additional office, meeting, and storage space is needed. Therefore, the requirement for Authority Administration Space is estimated at 3,000 SF throughout the forecast horizon.

Concessions (Pre- and Post-Security): Concessions areas in the existing terminal include two restaurants, a bar, gift shop and small vending area pre-security (±3,700 SF total), and a small snack bar post-security (±50 SF). Using a common industry planning factor of 20 SF per peak enplaned passenger, the total concession space demand would range from 3,450 SF to 5,640 SF through PAL 4. With non-hub airports like HTS, a distribution of 75 percent of concessions being pre-security is common and would support industry trends of providing additional concessions post-security. For larger hub airports, this distribution would be closer to 50/50. With the 2013 remodel of the pre-security facilities, it is assumed that these facilities will remain in place through the planning horizon and more than meet the total concessions demand through PAL 1. An additional 100 SF of post-security space is still, however, warranted to enhance customer service and passenger convenience. As activity levels increase, and by developing only additional post-security concession space, the post-security distribution will increase from its current 1.3 percent to approximately 34 percent by PAL 4.

Business Center: There are no business center facilities provided in the existing terminal building at HTS. Both business travellers and local businesses have expressed the desire for basic accommodations within the terminal, such as a small meeting room, and access to fax, copier, and computer stations. Consistent with the Authority's goals of providing quality customer service and supporting the regional business economy, providing a minimum 600 SF business center should be considered. Consideration should also be given to providing some level of business type amenities both pre- and post-security.

Restrooms: Restroom facilities in the existing terminal building include approximately 1,088 SF pre-security and 702 SF post-security. Using ACRP guidance[13] pre-security space demands were calculated at 2.5 SF per peak hour passenger (enplanements + deplanements) and post-security

---

[13] ACRP Report 25, Airport Passenger Terminal Planning and Design, Vol.1, 2010

requirements were calculated 20 fixtures (10 male and 10 female) at 65 SF per fixture, ore one standards airport restroom “module”. This analysis indicates that additional restroom facilities will likely be needed over the planning horizon, particularly in the concourse area.

Miscellaneous: Miscellaneous space at HTS includes dedicated use access areas, pre-security seating, columns, storage, public displays and entry vestibules. Combined, these areas account for approximately 2,716 SF in the existing terminal building. It is assumed that the vestibule space is sufficient but to meet operational and customer service needs, approximately 2,500 SF of miscellaneous storage space would be sufficient for existing and long-term needs of the Airport.

4.6.4 Space Program Summary

Based on this analysis, the existing terminal building is undersized by a minimum of 15,000 SF to satisfy PAL 1 passenger levels and Authority needs. The space requirement ranges from a minimum of 47,700 SF by PAL 1 and up to 63,100 SF bay PAL 4. The calculated space requirements are summarized in **Table 4-11**. These requirements should be considered reasonable for general passenger terminal planning efforts and will allow the Authority to preserve adequate space for the development of terminal facilities throughout the planning horizon.

While these calculations identify the minimum amount of space required within each terminal use area, additional facilities, not directly related to passenger levels, would also be beneficial to the Airport, local communities and associated stakeholders. More specifically, there has been local interest to provide expanded intermodal connectivity and accommodations for business travellers (i.e. business center, office space for local businesses, etc.). While not accounted for in the following facility descriptions, these uses could be provided in the terminal building and could increase the overall building size by 10,000 to 20,000 SF.

Table 4-11 – Terminal Space Requirements

Facility Use Area	Existing Space (SF)	PAL 1 (SF)	PAL 2 (SF)	PAL 3 (SF)	PAL 4 (SF)
Check-In Lobby	1,660	3,840	3,840	3,840	3,840
Circulation (Pre-Security)	3,768	5,175	6,090	7,470	8,460
Passenger Holding / Circulation	4,623	7,940	7,940	10,280	11,490
Security Screening	1,872	2,850	2,850	2,850	2,850
Baggage Screening/Makeup	965	1,600	1,600	1,600	1,600
Baggage Claim	1,733	3,225	4,619	5,212	5,638
Baggage Unload	470	1,518	1,746	2,008	2,309
Airline Offices / Ticket Counter	3,690	3,000	3,000	4,500	6,000
Rental Car Offices / Counter	1,005	2,000	2,000	2,000	2,000
TSA Offices	312	800	800	800	800
FAA Offices	1,931	1,931	1,931	1,931	1,931
Airport Police Offices	245	600	600	600	600
Authority Administration	2,070	3,000	3,000	3,000	3,000
Concessions (Pre-Security)	3,700	3,700	3,700	3,700	3,700
Concessions (Post-Security)	50	100	360	1,280	1,940
Business Center	0	600	600	600	600
Restrooms (Pre-Security)	1,088	863	1,015	1,245	1,410
Restrooms (Post-Security)	702	1,300	1,300	1,300	1,300
Vestibules	1,130	1,130	1,130	1,130	1,130
Miscellaneous / Storage	1,586	2,500	2,500	2,500	2,500
Subtotal	**±32,600**	**±47,672**	**±50,621**	**±57,846**	**±63,098**

Source: CHA, 2013

Meets the requirement

Does not meet the requirement

4.7 TERMINAL CURBFRONT AND AUTOMOBILE ACCESS

The terminal curb is the initial point of entrance to the passenger terminal. The FAA recommends that terminal curbs be a minimum of eight feet wide, span the length of the terminal building and be covered with an 11 foot minimum height to allow for vehicle and passenger circulation. The roadways serving the terminal curb are recommended to have a minimum of three lanes: one for loading and unloading passengers and baggage; one for vehicles entering and exiting the loading and unloading lane; and one for through traffic.

The existing terminal curbfront at HTS consists of three lanes and spans the 205 linear feet of terminal frontage. A single lane, the passenger load and unload lane closest to the terminal is covered to protect patrons from inclement weather. The center lane is used for through traffic, and the third lane furthest from the terminal is sectioned off for authorized parking only. It should be noted that rental car return traffic also uses the terminal access road (inclusive of both passengers and rental car staff returning vehicles to the lot). The access road is known to be highly congested during peak times, and the addition of a fourth lane is recommended to increase throughput, improve customer service and enhance circulation for taxis and parking shuttles.

In May 2011, the KYOVA Interstate Planning Commission and West Virginia Department of Transportation collected automobile traffic counts along the airport roadway network. The results are provided in Table 4-12 – Airport Traffic Counts**Table 4-12**. The peak periods along the Terminal Road and Parking coincide with Allegiant arrivals and departures and thus do not occur on a daily basis. These peak periods will also fluctuate depending upon Allegiant Airlines schedules.

Table 4-12 – Airport Traffic Counts

Location	Average Daily Total	Peak Hour	Start of Peak Hour	Peak 15 Minutes
Airport Entrance	1,285	159	3:45pm	54
Terminal Road [1]	**840**	**155**	**4:15pm**	**53**
GA/Air Cargo	340	37	6:15am	10
Rental Car [2]	62	11	3:30pm	3
Total Vehicles Parking [3]	105	26	3:45pm	12

Source: KYOVA Interstate Planning Commission, May 2011
[1] Includes vehicles entering Rental Car lot
[2] Vehicles into Rental Car lot only.
[3] Total vehicles at Airport entrance minus Terminal Road and GA/Air Cargo total.

For purposes of this analysis, the 2011 peak hour traffic count along the Terminal Road, minus the vehicles entering the Rental Car lot, was correlated to the PAL-1 peak hour enplanements (representing the 2010 reported activity levels) which resulted in a curbfront demand ratio of 1.25 automobiles per peak hour enplanement. Using the ACRP Terminal Planning Model – Terminal Curb Requirement module, and the assumptions listed below, the calculated curbfront requirements for each PAL are presented in **Table 4-13**.

- Ratio of 1.25 vehicles per peak hour enplaned passenger
- 35 percent of peak hour vehicles arrive during peak 15-minutes
- Average 2.5 minute per vehicle dwell time at terminal curb
- 22 foot average vehicle length
- Additional six parking shuttle cycles, with 40 foot vehicle length and 4 minute dwell time added to vehicle demand
- Single lane used for pick-up and drop-off

Based on this analysis, while there appears to be adequate linear footage of curbfront, during peak periods the single pick-up/drop-off lane results in unacceptable congestion levels (LOS F). The lengthening of the terminal curbfront, or the addition of a second pick-up/drop-off lane, would be needed to mitigate this congestion. The supporting traffic count data and curbfront calculations are provided in **Appendix C**. Enhancements to the terminal area circulation and curbfront should also consider the regional interest of developing intermodal facilities by providing adequate public transportation (taxi, shuttle, bus) lanes and dropoff and loading stations.

Table 4-13 – Terminal Curbfront Requirements

Curbfront Activity	PAL 1	PAL 2	PAL 3	PAL 4
Peak Hour Enplaned Passengers	115	135	166	188
Peak Hour Terminal Vehicles[1]	144	169	208	235
Peak 15 Minutes	50	59	73	82
Minimum Curbfront Requirements (Linear Feet)	**207**	**239**	**289**	**324**
Required Curbfront to Achieve LOS C (3 lanes)*	**319**	**368**	**445**	**498**
Level of Service w/Existing 205' Curbfront	F	F	F	F

Source: CHA, 2013

* Represents linear foot requirement for single drop-off/pick-up lane

Meets the requirement

Does not meet the requirement

4.8 AUTOMOBILE PARKING

The amount of parking needed at an airport is directly related to the enplaned passenger activity levels and includes public, employee and rental car parking facilities. As of 2013, HTS has 402 public parking spaces in the paved main lot near the terminal building. The rental car ready/return lot is located adjacent to the east side of terminal building and contains 73 parking spaces. The paved employee parking lots contain 33 parking spaces and are located adjacent to the airport access road and adjacent to the west end of the terminal building. An unpaved overflow/remote lot is inconveniently located on the opposite side of the access road and can accommodate approximately 100 cars. FAA AC 150/5360-9 states that public parking facilities should be in proximity to the passenger terminal, which is consistent with the customer service goals of the Authority. Therefore, this overflow lot is not included in the baseline public parking accommodations.

Guidance provided in the FAA's AC 150/5360-9 was used to gauge future parking requirements at HTS for each of the PALs. Based on this guidance, and the following assumptions and metrics, **Table 4-14** identifies the number and type of parking spaces anticipated to be necessary throughout the planning horizon.

- Total public parking space requirements: 350 spaces per 100,000 enplanements
  - Public long-term: 80% of public spaces
  - Public short-term: 20% of public spaces
- Employee space requirements: 35 spaces per 100,000 enplanements
- Rental car space requirements: 60 spaces per 100,000 enplanements

Table 4-14 – Parking Requirements

Parking	Existing (2012)	PAL 1	PAL 2	PAL 3	PAL 4
Annual Enplanements	105,000	115,500	136,000	166,500	189,000
Total Public Parking	402	404	476	583	662
Public Parking - Long-Term		*323*	*381*	*466*	*529*
Public Parking - Short-Term		*81*	*95*	*117*	*132*
Employee Parking	33	40	48	58	66
Rental Car Parking	73	69	82	100	113
TOTAL PARKING SPACES	**508**	**513**	**606**	**741**	**841**

Source: CHA, 2013
FAA AC 150/5360-9 Planning and Design of Airport Terminal Facilities

Meets the requirement
Does not meet the requirement

These calculations indicate that the existing 402-space public parking lot is essentially at capacity. Public parking requirements are anticipated to reach 476 by PAL 2 and 662 by PAL4. To meet the near and long-term public parking demands, and provide convenient, passenger friendly amenities, it is recommended that the public parking be reconfigured and the remote lot paved or a parking garage be developed near the terminal building. To account for potential growth in enplanements and other airport activity, the ability to provide upwards of 700 public parking spaces should be planned for. Further validating these planning parameters is the 2009 *Huntington Intermodal Transportation Study* prepared by the KYOVA Metropolitan Planning Organization, which arrived at similar parking demand levels as follows:

- 441 spaces needed in 2009
- 484 spaces needed by 2012
- 537 spaces needed by 2017
- 596 spaces needed by 2022
- 663 spaces needed by 2027

This analysis further indicates that additional employee parking is needed now and additional rental car ready/return parking will be needed through PAL 2. Supporting this is a 2010 *Rental Car Facility Questionnaire* administered by the Authority in which a minimum of 120 ready/return spaces were desired by the existing rental companies operating at the Airport.

4.9 AIR CARGO FACILITIES

For the period from June 2009 to June 2010, HTS recorded a total of 979,382 pounds of cargo processed through the Airport.[14] In addition to the cargo apron requirements described in **Section 4.5.2**, the structural facilities supporting cargo operations consist of a large sorting and trucking facility used by FedEx located on the west end of the terminal apron. FedEx leases the

[14] *Source: Tri-State Airport Authority Passenger Activity Report, June 2010*

facility and has invested substantial resources in the building to accommodate sorting equipment and truck bays. Based on information provided by the Authority and FedEx staff, this facility is adequate in size and capability to handle FedEx operations at HTS over the near term planning horizon. FedEx may, however, require additional office space and truck parking in the near term. In the event that additional service is brought to HTS, the capabilities of the existing apron and buildings will need to be re-evaluated. It should be noted that the possibility exists for FedEx to lease the adjacent hangar building No. 3 pending the Authority's ability to relocate any tenant aircraft stored therein.

4.10 GENERAL AVIATION FACILITIES

The general aviation sector continues to represent a large percentage of total operations in the aviation industry, and with demand for business and corporate aviation on the rise it is important for airports to have the required facilities in place to serve tenants such as fixed based operators, recreational pilots, corporate users, flight training facilities, charter services, etc. The necessary facilities to accommodate these users can include aircraft storage, operation/office space, aircraft maintenance/repair areas, and equipment storage.

In the development of the GA facilities for the long-term planning horizon of the Airport, it is important to consider existing and future tenants, desired services, and changes to the GA industry. In addition to the existing tenants and services, the Authority is actively pursuing additional flight schools, charter services, air taxi services, and maintenance/repair/overhaul (MRO) facilities to locate at the Airport. These desired services, coupled with the Airport's goal of creating a sustainable "aviation ecosystem" and a focus on providing optimal customer service, should foster the development of additional aviation and transportation businesses, as well as best in class general aviation facilities.

4.10.1 FBO/ARFF Building

The FBO building is located directly west of the passenger terminal building, and is connected to the Aircraft Rescue and Firefighting (ARFF) facility. Based on visual inspection and discussion with Authority staff, it is evident that the building is nearing the end of its usable life and will not be able to accommodate FBO/ARFF administration and operations, flight planning, and other pilot/passenger amenities (e.g. passenger lounge area and meeting rooms) for an extended time period. The staff has noted significant issues with roof leaks and problems with the air conditioning and electrical systems.

In order to accommodate FBO/ARFF activities, as well as the growing corporate and personal pilot needs, development of a best in class, larger facility would be consistent with the goals of the Authority and market demands. A new GA terminal should provide sufficient space for FBO administration, pilot lounge, flight planning facilities, conference rooms, leasable office space, concessions, and a passenger lobby. In order to accommodate the base needs/desires of the FBO and users, a 10,000 to 13,000 SF building is recommended, at minimum. Additional amenities, such as overnight pilot rooms/lounges (including beds and showers) and a business center could drive the terminal space requirement to 18,000 – 20,000 SF. Consistent with the goals of the Authority, additional flight school and air taxi service providers would also be likely tenants for an improved GA terminal building.

4.10.2 Aircraft Storage

All based aircraft at HTS are stored in T-hangars or group hangars. In 2010 there were 45 aircraft based at the airfield. In 2011, new tenants brought six single-engine and two rotorcraft to HTS. Based on analysis of the 2011 tenant list and discussions with Airport management and FBO staff, hangar space is essentially full. **Table 4-15** presents the 2010 and 2011 based aircraft counts, and the projected increase of based aircraft established by the forecasts presented in **Chapter 3**.

Table 4-15 – Based Aircraft Forecast By Type

	Single Engine	Multi-Engine	Turbo-Prop	Jet	Rotor	Total
2010 (reported)	30	6	3	5	1	**45**
2011 (reported)	36	6	3	5	3	**53**
2015	37	6	3	6	3	**55**
2020	38	6	3	8	3	**58**
2025	39	5	4	9	4	**61**
2030	40	5	4	11	4	**64**
Growth 2010-2030	**10**	**-1**	**1**	**6**	**3**	**19**

Source: CHA, 2013

It is projected that 19 new aircraft will be added to the base fleet over the planning horizon. FBO staff has indicated that that although no T-hangars are available, the Airport should be able to accommodate 1-2 additional single-engine or twin aircraft in the group hangars although space would be very tight. In accordance with the Authority's goal of promoting optimal customer service and attracting new tenants, it is recommended that development of additional hangar space be pursued to better accommodate the based and transient aircraft, forecasted growth, and tenant waiting list. This can be accomplished by providing a combination of new box or T-hangars, corporate, and group hangars as needed. With adequate evidence of demand, it is reasonable that one 10-unit T-hangar bank and one group hangar could be warranted in the near- to mid-term timeframe (i.e. 2-10 years).

4.10.3 Air Taxi Facilities

Market trends within the GA industry indicate growth in air taxi operations, especially with the continued emergence of Very Light Jets (VLJs). The VLJ has been promoted as an "entry-level business jet" which provides jet aircraft access at a fraction of the cost of other commonly purchased business jets. VLJs quickly gained the attention of Part 135 On-Demand air taxi operators who began offering per-seat prices on flights between select cities instead of whole-aircraft charters, making business jet travel affordable to a much larger market segment.

Though the air taxi and VLJ industry experienced decline during the economic downturn in the late 2000s, most long-term forecasts including the *FAA Aerospace Forecast for Fiscal Years 2011-2031* point to a steady and extended growth period for the VLJ and air taxi industries. The Huntington Metropolitan Statistical Area (MSA), through its relatively large population, expanding intermodal transportation network, and proximity by air to major east coast and Midwest cities, provides a favorable location for development of air taxi services. In March of 2011 the Mercer County Airport in Bluefield, West Virginia began discussions of reviving air taxi service to cities such as Charleston, Morgantown, Martinsburg and others across the state.[15] This is a valid indication that a market for on-demand air taxi services within the Tri-State area may be developing.

With signs of positive growth to the VLJ and air taxi sectors, it is important for HTS to plan and preserve adequate space for air taxi service providers. Most air taxi operations will operate between two and ten aircraft with four to six aircraft operating at any one time. Typical on-airport amenities for air taxi operators include designated hangar space, 24-hour fuel access, and an FBO or other form of General Aviation terminal through which passengers can easily and efficiently access the aircraft. It is anticipated that the air taxi office and passenger terminal needs can be accommodated in the development of the GA terminal facilities. The needed apron and aircraft storage space would be in addition to those facility requirements previously described.

4.10.4 Maintenance, Repair and Overhaul (MRO) Facilities

In creating an "aviation ecosystem" at HTS, the Authority is pursuing the development of an aircraft Maintenance, Repair and Overhaul (MRO) facility on the south side of the airfield. Negotiations have been underway with potential MRO tenants for facilities that could accommodate up to Boeing 757 aircraft. An MRO facility of this capacity also has the potential to attract additional aviation related business and suppliers which could lead to HTS becoming a maintenance hub for multiple operators or air carriers. These businesses would further enhance the local economy, provide job opportunities and could be linked to the local schools and universities for job training and internships.

4.10.5 Summary of General Aviation (GA) Facility Requirements

The GA facilities at HTS play a major role in meeting the personal and business aviation needs of the Tri-State region. The GA facilities are also a major component of the Authority's program to create a sustainable aviation community while providing optimal customer service and enhancing operational efficiency. With limited space and security constraints on the terminal apron, some of, if not all, these facilities may need to be relocated to the southside of the airfield. **Table 4-16** summarizes the GA facility requirements over the forecast horizon.

[15] *Source: Bluefield Daily Telegraph: Air Taxi: Idea Back on the Table for Mercer.*

Table 4-16 – Summary of GA Facility Requirements

Facility	Recommendation
GA and Operations Terminal	A 10,000 to 20,000 SF facility, depending on the desired amenities, is recommended to accommodate the needs of the tenants, and the goals of the Authority. It should provide sufficient space for FBO administration, pilot lounge, flight planning facilities, conference rooms, leasable office space, concessions, and a passenger lobby.
Aircraft Storage	It is recommended that development of additional hangar facilities be pursued with adequate evidence of demand. One 10-unit T-hangar and one group hangar may be warranted in the near- to mid-term horizon.
Air Taxi Facilities	In order to meet the goals of the Authority and accommodate potential market demands, adequate space for air taxi offices and passenger terminal facilities should be considered in the development of the GA terminal.
MRO Facilities	The Authority is pursuing development of an MRO facility on the south side of the airfield to support the economic health of both the airport and region.

Source: CHA, 2013

4.11 AIR TRAFFIC CONTROL TOWER (ATCT)

FAA Air Traffic Control (ATC) personnel at HTS are responsible for ensuring a safe and orderly flow of aircraft in and around movement areas on the airfield as well as in the airspace surrounding the Airport. The Air Traffic Control Tower (ATCT) is located within the existing terminal building and includes four levels: three office levels below and the tower cab on the top floor. The existing ATCT provides adequate space for controllers; however the current location facilitates problems with the line of sight across the airfield. FAA Order 6480.4A *Air Traffic Control Tower Siting Process* requires that ATCTs allow for unobstructed views of all aircraft movement areas at an airport. At HTS, the view of the end of Runway 12 is often obstructed by the tails of FedEx aircraft when they are parked on the terminal apron. While FAA personnel indicate there are no requirements, at present, to modify or improve the ATCT at the Airport, it is recommended that solutions be evaluated to ultimately mitigate any visibility concerns. Development or expansion of the passenger terminal may also impact the ATCT. While a detailed siting study will be required to identify the optimal location for a new or relocated tower, a preliminary evaluation of potential ATCT locations is provided in **Chapter 5** *Development Concepts*.

4.12 SUPPORT FACILITIES

Various support facilities are needed at an airport to maintain safe, efficient aircraft operations and effectively serve the travelling public. At HTS, support facilities include fueling, Aircraft Rescue and Fire Fighting (ARFF), de-icing, rental cars, airport maintenance, and internal access.

4.12.1 Fueling Facilities

Aircraft and airport vehicle fueling at HTS is provided by the Huntington Jet Center (FBO). As stated in **Chapter 2**, the fuel farm is located at the northwest end of Taxiway F and consists of multiple storage tanks designed for Jet-A, 100LL AvGas, diesel fuel, and automotive gasoline. In addition to these tanks, two gasoline tanks are located behind the car wash facility and are utilized by the rental car companies. Lastly, three fuel trucks carrying Jet-A and AvGas fuel are owned by the Authority and stored on the Terminal Apron.

In the year spanning July 2010 through June 2011, the Airport recorded a total fuel flowage of 1,380,588 gallons. This amount represents an increase of over eight percent compared to the previous annual timeframe, and flowage amounts are expected to continue to increase commensurate with additional tenants and growing activity levels. The airport receives five to eight fuel tanker deliveries per week of varying fuel types. **Table 4-17** illustrates fuel flowage by fuel type and operation type (between July 2010 and June 2011). Commercial air carriers at HTS receive their fuel through pre-purchased agreements with the Authority and all air carrier fuel is co-mingled in the Airport's storage tanks. In addition, the FBO also provides contract fuel for Department of Defense aircraft through transient into-plane fueling.

Table 4-17 –Fuel Flowage (July 2010 – June 2011)

Fuel Type	Flowage (Gal)
Jet A	1,310,046
AvGas	51,197
Automobile Gasoline	9,981
Automobile Diesel	9,364
Total	**1,380,588**

Source: Tri-State Airport Authority Gallon Fuel Usage Report, June 2011

Although all of the fuel equipment at HTS remains compliant with federal, state, and local requirements, the Authority has expressed a desire to upgrade or replace some of the existing fuel equipment to keep pace with demand. The Authority's desired improvements include acquisitions of larger storage tanks and replacement of the fuel trucks which are up to 25 years old. With the development of GA facilities and an FBO on the south side of the airfield, a second fuel farm may be warranted to efficiently service those tenants and the flying public. A second fuel system in this area would reduce the need for fuel trucks to cross the runway as often. In accordance with the goal of creating an "aviation ecosystem," the ability to provide retail automobile fuel is also desired. This additional fuel service would not only provide a steady revenue stream for the Authority, it could also be used by the rental car companies and local police / emergency services.

4.12.2 Aircraft De-icing

According to data provided by the National Climatic Data Center, the Huntington, West Virginia area experiences an average of 95 days per year with minimum temperatures below freezing and an average annual snowfall of 26.2 inches. De-icing services at HTS are provided for commercial and GA aircraft by the Huntington Jet Center (with the exception of who administers their own de-icing). All de-icing operations are conducted on the terminal apron. The FBO utilizes a “street sweeper” truck to reclaim the residual glycol de-icing fluid after operations have finished. Although an in-pavement deicing fluid drainage / collection system is preferred, use of a vacuum truck in this manner is a feasible and economically viable method of glycol collection at this time. Future apron improvements should however consider the feasibility of installing an in-pavement system.

It should be noted that the Environmental Protection Agency (EPA) has an Effluent Limitation Guideline (ELG) in draft form, as of September 2011, that would regulate the amount of Aircraft Deicing Fluid (ADF) that needs to be collected and treated, based on usage. If adopted, this guideline would require airports that use less than 460,000 gallons of ADF annually to collect and treat 20 percent of the fluids. It is estimated that HTS uses approximately 15,000 gallons of ADF a year, based on information provided by the FBO staff. Under this guidance, if HTS were to surpass the 460,000 gallon threshold for annual ADF use, which is unlikely over the course of the planning horizon, then the Airport will be required to collect and treat 60 percent of used ADF.

4.12.3 Hazmat Storage Facilities

Fuel and de-icing fluid storage tanks at HTS are spread out over the airfield as shown in **Figure 4-6**. According to the Authority’s 2009 Spill Prevention, Control and Countermeasures (SPCC) Plan, the storage and operations of these facilities are compliant with all federal, state, and local regulations. The multiple locations, however, result in system redundancy and may lead to containment difficulties in the event of a spill or leak. In order to provide efficient fueling and de-icing operations and mitigate potential spills, it is recommended that a consolidated, joint-use, hazardous materials (hazmat) area be developed to house all fuel, de-icing, and other hazardous materials.

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 4-6
Existing Hazmat
Storage Facilities

4.12.4 Aircraft Rescue and Firefighting (ARFF)

Ensuring an adequate and efficient Aircraft Rescue and Firefighting (ARFF) capability is a top priority for any airport. In order to provide the highest level of safety and the shortest response times, the FAA mandates that the first ARFF vehicle responding to an emergency on the airfield be able to reach the midpoint of the farthest runway within three minutes of the alarm being activated. Additionally, the National Fire Protection Association requires that ARFF buildings be located in a position where crash response vehicles can reach the farthest runway end within two minutes and any point on the airfield within three minutes.

As stated in **Chapter 2***,* an airport's ARFF Index is based upon the overall length of the longest scheduled air carrier aircraft which conducts at least five daily operations at the airport. Prior to Delta Airlines stopping service to HTS in 2012, the longest aircraft to meet this criterion was the CRJ-200 which has an overall length of 87 feet 10 inches[16]. Based upon the ARFF equipment identified at HTS in 2010, and with commensurate staffing adjustments, the Airport is within the capabilities of ARFF Index C (for aircraft such as the 757-200) should it become necessary as airline schedules and fleet mix evolve. As of mid-2013, Allegiant Airlines operates up to four departures, typically by MD-80 aircraft that have an overall length of 147 feet 8 inches[17] which is also an Index C aircraft. Although the five daily departure operational level may not be reached in the near future, the Authority will strive to maintain ARFF Index B at a minimum and have a transitional plan ready for an ARFF Index upgrade should it become necessary.

4.12.5 Internal Access

With the ongoing development of facilities on the south side of the airfield, providing efficient automobile access between the north and south sides of the Airport will become a concern. Airport and FBO personnel will need access to both sides of the field to provide service (i.e. fuel) and maintain the airport facilities. Likewise, tenants, transient pilots and passengers will want to take advantage of the amenities on both sides of the field. Currently, there are only two ways to transition between the north and south facilities; either by crossing the airfield and runway under ATC control, or by driving approximately five miles around the west side of the Airport, along Route 75 to Booth Road. For security reasons, crossing the airfield should be reserved for authorized airport staff. They can utilize the previous parallel taxiway to the now closed Runway 3-21, which is being maintained as a service road. Although much less direct, other airport users will have to use the existing roadway network unless a public use, internal access road can be developed. Two logical means of achieving this are a tunnel underneath the runway with entrances outside the Airport Operations Area (AOA) or an internal access road around the eastern end of the runway, outside of the runway OFA. Due to the costs and airfield

[16] *Source: Bombardier Aerospace, CRJ-200 Specifications*

[17] *Source: Boeing, MD-80 Technical Specifications, http://www.boeing.com*

disruption associated with a tunnel, and the cost to overcome the mountainous terrain surrounding the airfield, neither of these options is considered feasible at this time.

4.12.6 Rental Car Facilities

The rental car services at HTS are fundamental to providing optimal customer service to the travelling public and an important source of revenue for the Airport. Rental car facilities include office and counter space, ready/return parking, overflow fleet parking, fueling, and car wash facilities. As discussed in previous sections, office/counter, parking and fueling facilities will be incorporated into the development concepts of the Passenger Terminal, Automobile Parking, and Fueling Facilities.

The car wash facility is located adjacent to the terminal loop road and is in plain view of existing airport patrons. While relatively convenient to the ready/return lot, this location may not be the best use of space and does not promote an attractive “gateway to the region” image. Relocation of this facility would serve two purposes: freeing up developable land near the Passenger Terminal and automobile parking, and creating an aesthetically pleasing landside terminal area.

4.12.7 Airport Maintenance

The airport maintenance facilities at HTS consist of the maintenance building (located adjacent to the west side of the FedEx hangar) and the snow removal equipment building (located at the far northwest corner of Taxiway F). Both are undersized and equipment is often stored outdoors as a result, exposing this equipment to the elements and reducing their usable lifespan. Due to the space constraints a portion of the maintenance work is performed outside, which can be difficult during poor weather conditions. It is recommended that these facilities be expanded to meet operational demand or that an adequate new facility is constructed.

4.13 AIRSPACE PROTECTION

As directed by Federal Aviation Regulation (FAR) Part 77 *Obstructions to Navigable Airspace*, imaginary surfaces govern the height of objects on and within the vicinity of airports. The purpose of these surfaces is to ensure safe air navigation of aircraft by identifying airspace obstructions and then determining the best way to mitigate any potential hazards. These surfaces will vary in size and slope depending on the available approach procedures to each runway end. Any penetration of these imaginary surfaces by an object or structure is considered an obstruction to air navigation. Once objects have been identified as obstructions, the FAA must evaluate them to determine if they present a hazard to air navigation. If determined to be a hazard, the obstacle must be removed or altered to mitigate the penetration. The Part 77 surfaces for runways with precision instrument approach procedures, as they apply to HTS, are described as follows:

> **Primary Surface** – This surface is longitudinally centered on the runway and the elevation of any point on the surface is the same as the elevation of the nearest point

on the runway centerline. For Runway 12-30, this surface is 1,000 feet wide and extends 200 feet beyond the ends of pavement usable for takeoff and landing.

Approach Surface – This surface is longitudinally centered on the extended runway centerline and extends outward and upward from the end of the Primary Surface. An Approach Surface is applied to each end of each runway based upon the type of approach available or planned for that runway end. The inner width of the Approach Surface is the width of the Primary Surface. The Approach Surface extends at a specific slope to a uniform width and distance based on the approach capabilities of the runway. For Runway 12-30, this surface is 50,000 feet in length, at a slope of 50 to 1 for the first 10,000 feet and a slope of 40 to 1 for the additional 40,000 feet.

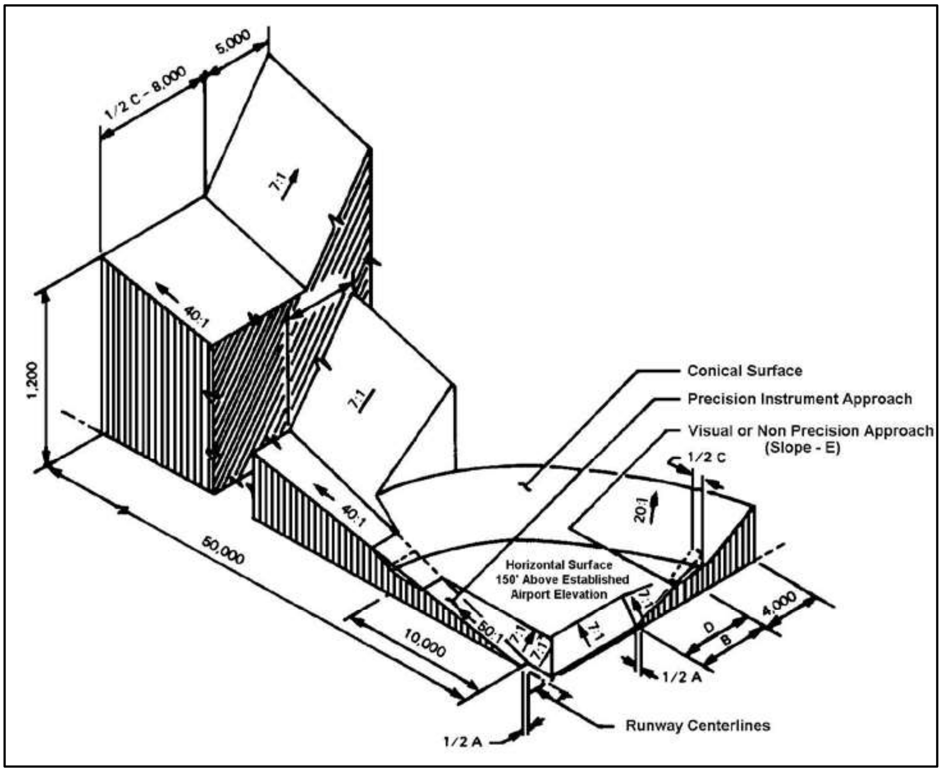
Transitional Surface – This surface extends outward and upward from the edges of the Primary Surface and from the edges of the Approach Surfaces at a slope of 7 to 1 beyond the height of the Horizontal Surface.

Horizontal Surface – This surface is a horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the Primary Surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. At HTS, the Horizontal Surface extends 10,000 feet from the ends of Runway 12-30, at an elevation of 978 feet MSL.

Conical Surface – This surface extends outward and upward from the periphery of the Horizontal Surface. The Conical Surface extends at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

Figure 4-7 graphically displays the typical Part 77 surfaces. **Figure 4-8** presents the extents of the Part 77 surfaces at HTS.

Figure 4-7 – Typical FAR Part 77 Surfaces



Source: NOAA website, National Geodetic Survey, http://www.ngs.noaa.gov/AERO/oisspec.html, 2013

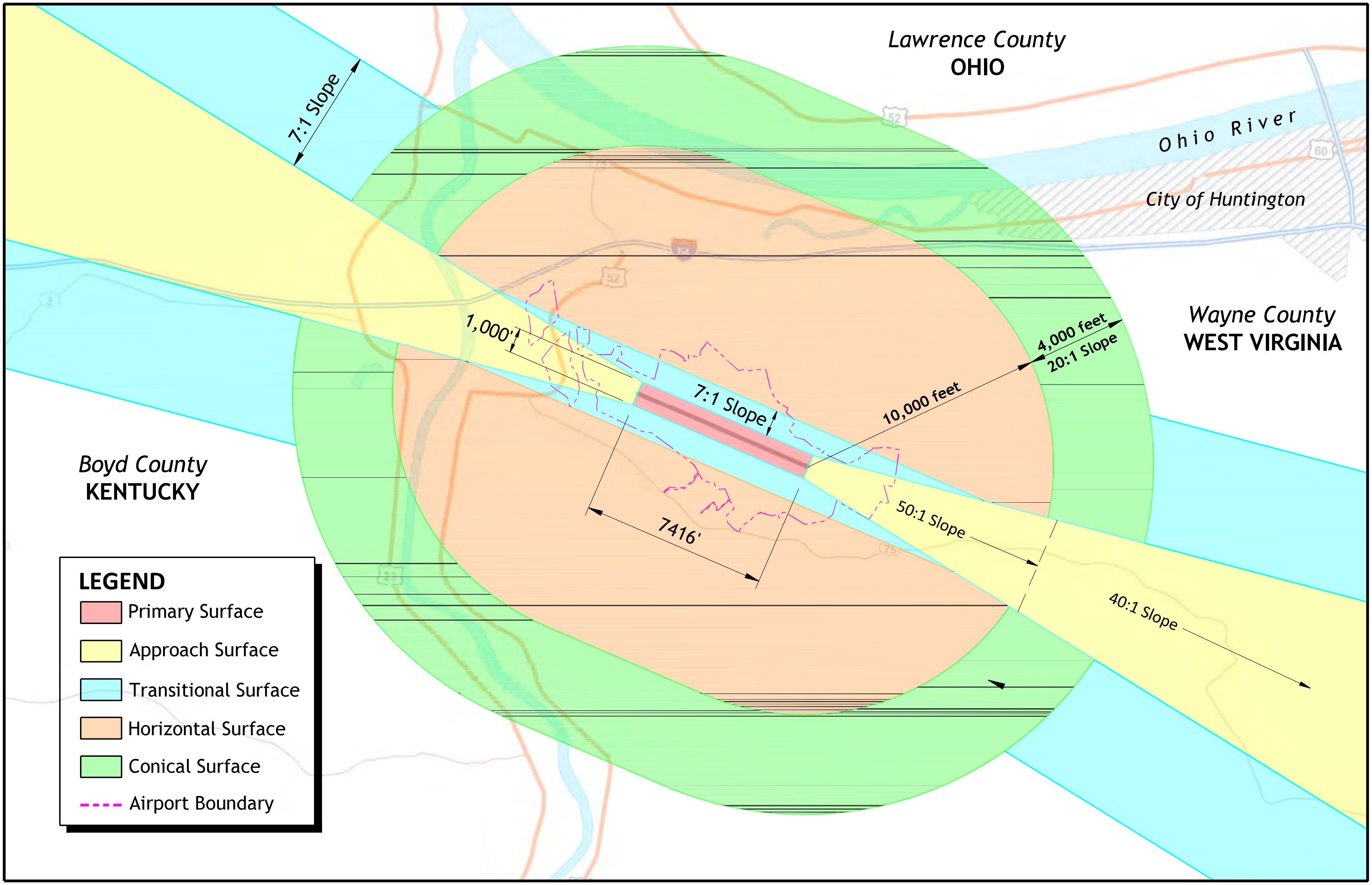


Figure 4-8
Part 77 Surfaces at HTS

4.13.1 Part 77 Considerations

A preliminary airspace analysis was performed to identify areas containing potential obstructions to the Part 77 surfaces at HTS. These areas of concern were evaluated by using terrain data and tree and obstacle heights obtained from the 2011 aerial survey of the Airport and nearby environs. This analysis identifies areas that should be monitored and addressed in the overall maintenance and operation of the Airport. It should be reiterated that this is a preliminary analysis to support the Authority's ongoing obstruction mitigation program and further detailed evaluation and coordination with the FAA, may be needed should these areas come to adversely affect the approach minimums. The areas of concern, as determined from this analysis, are presented in **Figure 4-9**.

4.13.2 Threshold and Runway End Siting Considerations

In addition to Part 77, the surfaces associated with the "Runway End Siting Requirements" as contained in Appendix 2 of AC 150/5300-13 were evaluated for potential obstructions. FAA threshold siting criteria are applied to maintain safe operations when circumstances, either temporary or permanent, preclude the application. Such circumstances often include objects that penetrate the Part 77 surfaces that are unable to be removed. With precision, ILS approach procedures at HTS, the threshold siting standards include a 34 to 1 Obstacle Clearance Surface (OCS) for "runways expected to accommodate instrument approaches having visibility minimums < ¾ mile or precision approaches." These areas of concern are also presented in **Figure 4-9**.

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 4-9
Potential Obstructions to Airspace

4.14 SUMMARY OF FACILITY REQUIREMENTS

This chapter evaluated the ability of the facilities at Huntington Tri-State Airport to accommodate the projected aviation demand presented in **Chapter 3**. This analysis was accomplished by applying reasonable assumptions and planning standards to the approved activity forecasts in order to quantify the facilities required to meet the demand over the 20 year planning horizon. The facility requirements as determined by this evaluation are described below:

- The passenger terminal building should be expanded or replaced to alleviate existing space constraints, terminal age concerns, and to accommodate projected passenger activity levels. Focusing on PAL 2 as a reasonable terminal planning target for the near- and mid-term future, approximately 50,600 SF of terminal space is needed to meet enplanement and operational demands. Adequate space should be preserved for expandability options to meet additional demand if potential growth scenarios (new or expanded service) are realized. The PAL 4 terminal building space requirement would be approximately 63,100 SF.
- With development of the expanded terminal building, the existing terminal hold room should be removed to alleviate apron constraints, and passenger boarding bridges should be provided to improve passenger safety, convenience, and comfort.
- The automobile parking facilities should be expanded to provide convenient, passenger-friendly, preferably covered facilities to accommodate approximately 600 to 800 parking spaces, depending on the growth scenario.
- The Runway Safety Area deficiency south of Taxiway B near the Runway 30 end should be resolved. An interim acknowledgement of "non-standard conditions" or "modification of standard" from the FAA may be necessary until sufficient funding can be programmed.
- Plan and preserve space for a potential 1,000-foot extension to Runway 12-30 should it become warranted in the future.
- Plan and preserve space for a full-length parallel taxiway A and develop sections to the 400 foot C-IV standard as they become warranted or feasible.
- Develop taxiways to Group-IV standards where feasible. At a minimum develop a taxiway corridor to accommodate Group-IV aircraft, or more specifically, the Boeing 757 with modified taxiway width, safety areas, and object free areas.
- Bypass taxiways should be provided on both runway ends to allow bypass capabilities.
- Relocate the General Aviation facilitates to the southside of the airfield to separate secure commercial and cargo operations from non-secure GA operations. A GA terminal should be provided with sufficient space for FBO administration, pilot lounge, flight planning facilities, conference rooms, leasable office space, concessions, and a passenger lobby. Depending on the desired amenities, this building would be approximately 10,000 to 20,000 SF in size.
- Construct a GA apron on the southside of the airfield in concert with the development of GA terminal. Approximately 28,000 SY of space would be needed as well as up to 10 Group-I tie-downs, four power-in/power-out Group-II parking positions, and enough

space for one large charter or military aircraft. The configuration of the apron should also provide adequate space in front of the GA terminal for loading and unloading of passengers for air taxi or charter services. This apron could also be used for remain overnight (RON) parking and aircraft de-icing.

- Pursue development of additional aircraft storage with evidence of demand. One, ten-unit T-hangar and one group hangar may be warranted in the near- to mid-term planning horizon.
- Obtain positive control of land within the Runway 12 RPZ through fee simple land acquisition.
- The FAA indicates that while there are no present requirements to modify or improve the Air Traffic Control Tower (ATCT), continued line of sight concerns and terminal development may warrant the relocation of the ATCT in the future. If the desire or opportunity to relocate the ATCT should arise, a detailed siting study will be required.
- The Authority’s desired improvements to fueling and aircraft de-icing facilities include larger storage tanks, newer fuel trucks, and the development of a consolidated hazardous material (hazmat) storage facility.
- The Aircraft Rescue and Firefighting (ARFF) facilities meet all ARFF Index B requirements; however, if the 757-200 begins five or more daily operations, the Airport may be required to upgrade to ARFF Index C.
- Airport maintenance and storage buildings should be expanded or reconstructed to provide adequate space for maintenance work and covered equipment storage.
- Improve access signage to south and north sides of the airfield.

5 DEVELOPMENT CONCEPTS

To satisfy the facility requirements presented in **Chapter 4**, various development concepts were prepared and evaluated for each of the airport functional areas needing improvement. Through this evaluation, preferred facility concepts were identified resulting in an overall development program for the Airport. The development program described at the end of this chapter is largely driven by the on-airport land use plan presented in **Section 5.1** which focuses on grouping like land uses in an effort to reduce operational constraints and allow for flexible site configurations.

In order to evaluate and compare the various development concepts, the weighted evaluation criteria presented in **Table 5-1** were used to determine the preferred improvements. Weighting factors were assigned that reflect the Authority's customer-centric management philosophy realizing that a development program focused on the end users (both business and personal travelers) will likely garner the most positive effect on the economic health of the region. To maximize return on investment, and to emphasize concepts that would be more financially viable, implementation cost was also weighted heavily in the evaluation criteria.

Through this Master Plan Update, it has become evident that the functional areas needing the most improvement, and thereby driving the overall development of the Airport over the next several years, are the passenger terminal and automobile parking facilities. While the nine criteria were considered in the evaluation of all recommended facility improvements, only the direct application of these criteria to the terminal and parking concepts are documented herein. The study team considered numerous development concepts for the other functional area facilities and the ones deemed most practical, most aligned with the Authority's mission, and most consistent with the preferred terminal and parking concepts are also reflected in this chapter.

Although not one of the specific evaluation criteria considered in this Master Plan Update, potential environmental impacts related to the recommended airport improvements will need to be evaluated in detail during any future environmental approval efforts as required by the National Environmental Policy Act (NEPA) and FAA Orders 1050.1 *Environmental Impacts: Policies and Procedures* and 5050.4 *NEPA Implementing Instructions for Airport Projects*. Based on cursory evaluation, any potential impacts to the natural environment would be relatively similar for any of the development concepts. Aside from temporary impacts during construction of the proposed improvements, there appears to be little potential for long-term environmental impacts that could not be avoided or mitigated within the framework of the federal and state regulations.

Table 5-1 – Evaluation Criteria

Evaluation Criteria	Weighting Factor	Parameters
Meets Existing and Forecasted User Demand	5	By providing the necessary accommodations to satisfy forecasted enplaned passengers, air carrier, cargo, corporate, air taxi, charter, general aviation, and flight training activity, as well as automobile traffic and parking.
Improves User Convenience and Safety	5	By providing the facilities that support the safe and efficient movement of aircraft and passengers, allow easy access, comply with ADA guidelines, and protect passengers in inclement weather conditions.
Implementation Costs	5	Preliminary development costs including design, environmental approval, and construction.
Supports Regional Economic Development Initiatives	4	By providing efficient/accommodating facilities and airline service routes that will be attractive to new businesses, create a destination for business travellers, and promote regional multi-modal connectivity that will benefit the Tri-State region.
Expandability / Flexibility for Future and Unforeseen Needs	4	By providing a scalable, or phased, development program that can be adjusted to meet market demands well into the future. Additionally, concepts are ranked on the ability to meet "potential" demand (as a result of additional service coming to HTS, thus resulting in an increase in passenger activity), and the flexibility to adapt to changing market conditions.
Promotes Additional Revenue Generation for Continued Airport Operation and Maintenance	3	By providing facilities that optimize rate structures and attract new tenants and users, resulting in new or additional airport revenues.
Supports Airport Mission / Vision	2	By developing a premier air transportation facility, improving aeronautical related services, and promoting economic development and vitality of the community.
Integrates with Other Master Plan Recommendations	1	By developing facilities that blend with the other recommendations of this Master Plan and minimize impact to nearby existing facilities (buildings, apron, auto parking).

Source: CHA, 2013

5.1 ON-AIRPORT LAND USE PLAN

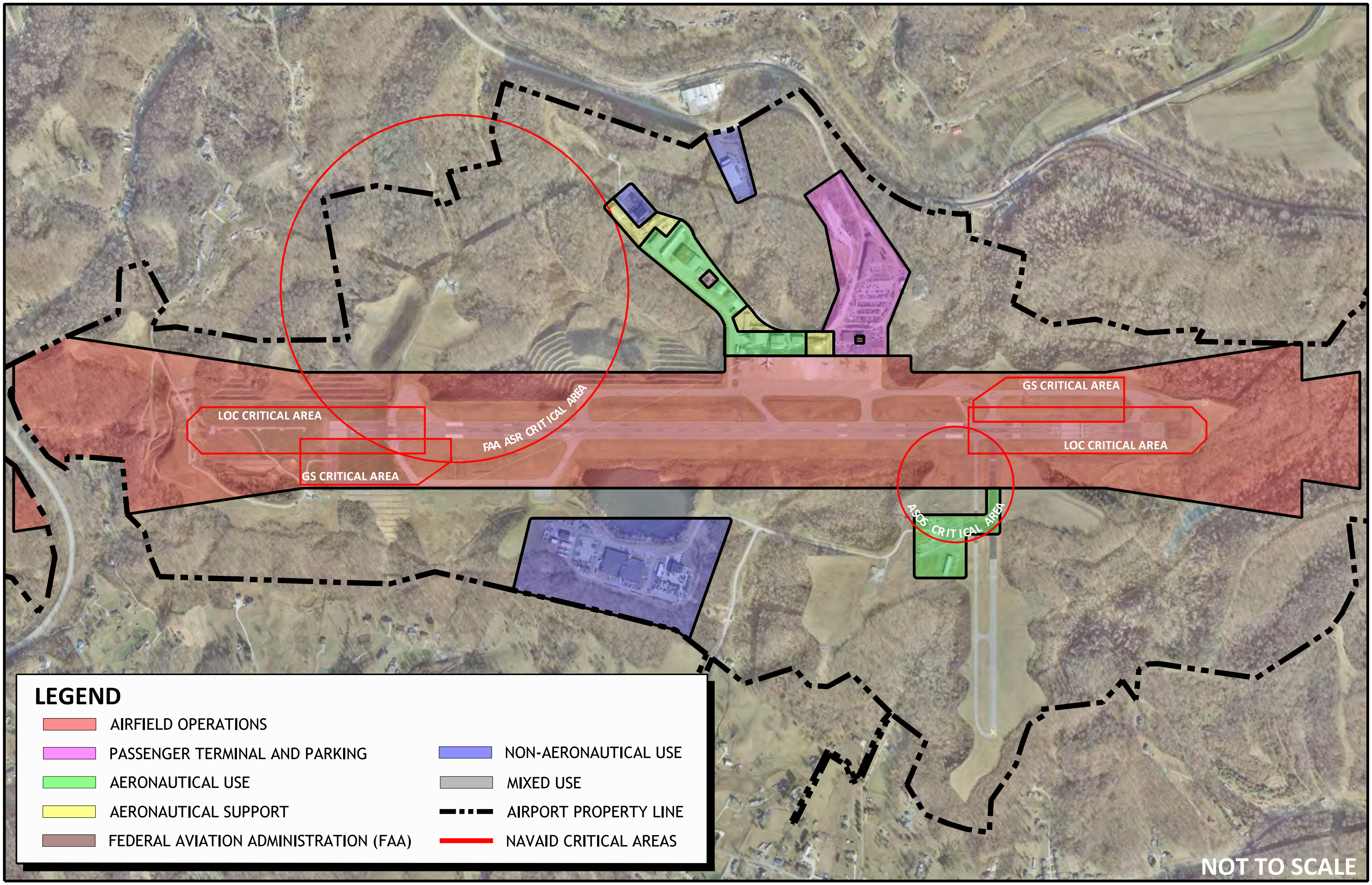
As previously mentioned, the recommended development concepts are highly dependent on efficient use of airport land. Airport property consists of approximately 1,105 acres, much of which is considered unusable for development due to steep grades, limited access, existing infrastructure, and water features (i.e. stormwater retention and streams). Because of these limitations, facility development on the Airport has always been a significant challenge. In order to effectively plan for the future of the Airport, and to avoid long-term constraints, the recommended land use plan should be consulted when evaluating any development opportunities.

The various activities taking place on airport property were generalized into seven land use categories. These categories are summarized in **Table 5-2**, and are graphically depicted in **Figure 5-1**. While not a specific land use category, NAVAID critical areas are also identified as they influence what type of infrastructure, facilities, and uses can occur within them.

Table 5-2 – Land Use Categories

Use	Includes
Airfield Operations	Runway 12-30; Taxiways A, C, E, F, G, G1, and H; Terminal Area Apron; Runway Safety Area (RSA); Runway Object Free Area (ROFA); Runway Protection Zones (RPZ)
Passenger Terminal & Access	Passenger Terminal Building; Public Parking; Employee Parking; Rental Car Parking; Terminal Loop Road
Aeronautical Use	General Aviation and Air Cargo Facilities: General Aviation Terminal; Taxiways B, F, and M; South Side Apron; Hangar Aircraft Storage and Office Space, FedEx Hangar; Loading Dock; Truck Parking
Aeronautical Support	Airport Rescue & Fire Fighting (ARFF) Building; Various Maintenance and Storage Buildings; Snow Removal Equipment (SRE) building; Fuel Farm
Federal Aviation Administration (FAA)	Air Traffic Control Tower (on terminal); Relay Antennae Array; Radar Site
Non-Aeronautical Use	Non-airside access facilities such as the West Virginia National Guard Facility; FedEx Ground Facility; Commercial Building (Korman); Water Pumping Station; Cell Tower Site
Mixed Use	Area west of Taxiway B and southernmost portion of the airfield (previously southern end of Runway 3-21) is preserved for aeronautical or non-aeronautical mixed use
NAVAID Critical Areas	Localizer, Glide Slope, ASR, AWOS Critical Areas *(Special facility design and land use considerations apply in this area to protect the integrity of the signal/reception of all NAVAIDS.)*

Source: CHA, 2013



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 5-1
Existing On-Airport Land Uses

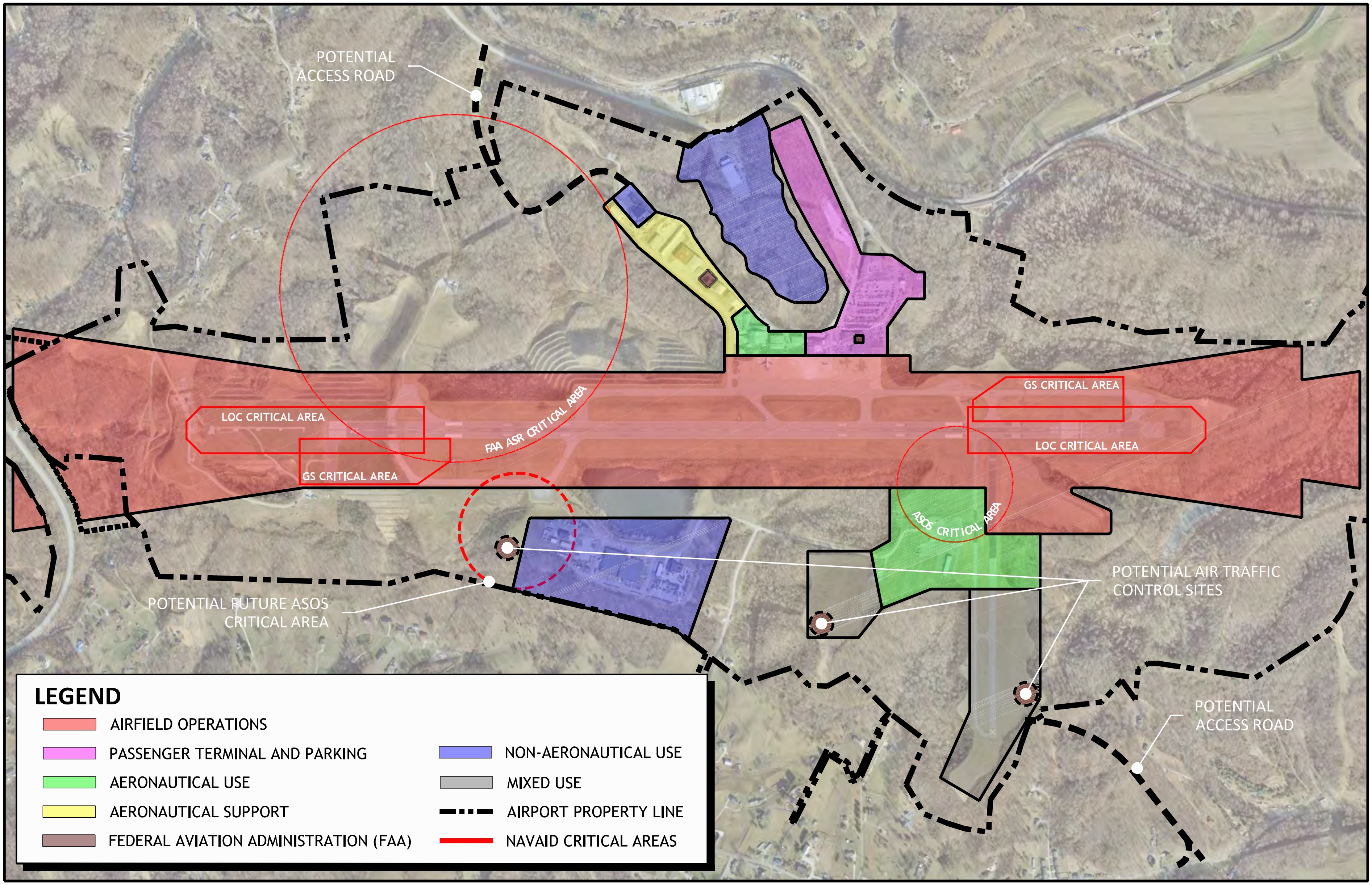
As shown in **Figure 5-1**, activity on the north side of the airfield involves a mix of passenger, air cargo, general aviation (GA), aviation support, FAA, and non-aviation activities. Because of the space constraints, coupled with the mix of secure and non-secure functions, efficient use of facilities on the north side is of particular concern to the Airport. Prior to the closing of Runway 3-21 (now designated as Taxiway B), the Airport was essentially "built-out," with insufficient land readily-available for development. With the runway closing, the opportunity arose to move facilities to the south side of the airfield, thus relieving much of the north side constraints.

Due to the existing passenger terminal and public parking constraints, the south side area was initially considered for future terminal development. In May 2010, a *Preliminary South Side Development Planning Effort* (included in **Appendix A**) was conducted that analyzed the feasibility of placing a passenger terminal building on the south side. Through this analysis, it was concluded that a south side terminal would not be economically feasible, due to the extensive infrastructure improvements that would be needed. It was recommended that the south side be preserved for GA and/or cargo use. Based on the South Side Study, the recommendations in **Chapter 4**, and conversations with airport staff, a long-term land use plan was developed that includes:

- Moving all GA facilities to the south side as it becomes warranted;
- Limiting terminal apron activity to air carrier operations (passenger and cargo);
- Converting the GA facilities on the north side to airport / aviation support facilities (as GA facilities are developed on the south side);
- Maintaining FAA and Non-Aviation facilities in their current location, while providing expansion room; and
- Providing flexibility for the potential long-term relocation of the Air Traffic Control Tower (ATCT) (discussed in **Section 5.9**).

The ability to expand the non-aviation use area near the FedEx ground facility merits further consideration. While there are apparent terrain constraints with this site being 60-80 feet below the level of the Airport, the development of a multi-level office or hotel building with an elevated walkway to the terminal could be investigated should the need or opportunity arise.

The recommended on-airport land use plan is presented in **Figure 5-2**. While the Authority should strive to develop the Airport in accordance with this plan, it is meant to simply guide development. Actual development of the Airport is dependent on the projected demand being realized and/or funding availability, and should be flexible to accommodate unanticipated airport activity. For example, land use of the south side is targeted for general aviation activity however, in the event that cargo demands increase beyond what is able to be accommodated on the north side, development of a new cargo facility could be accommodated on the south. Alternative scenarios for the development of the south side area are discussed in **Section 5.7**.



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 5-2

Future On-Airport Land Use Plan

Table 5-3 summarizes the approximate acreages associated with each land use category (for both existing and future conditions). While there may seem to be an abundance of uncategorized airport property, much of these areas are essentially undevelopable. Control of these areas does however benefit the Airport in terms of airspace protection and providing a buffer from incompatible uses.

Table 5-3 – Airport Acreage by Land Use Category

Land Use	Existing Acreage	Future Acreage
Airfield Operations	289.3	305.9
Passenger Terminal & Access	17.9	21.6
Aeronautical Use	17.8	27.6
Aeronautical Support	4.3	9.8
Federal Aviation Administration (FAA)	0.4	1.1
Non-Aeronautical Use	36.7	55.8
Mixed Use	0	31.3
Uncategorized Airport Property	*738.6*	*661.9*
TOTAL AIRPORT PROPERTY	**1,105**	**1,115**[1]

Source: CHA, 2013
[1] Includes three parcel acquisitions for RPZ control.

5.2 PASSENGER TERMINAL BUILDING

As described in **Chapter 4**, the existing terminal building is undersized to meet current activity levels. Focusing on PAL 2 as a reasonable terminal planning target for the near- and mid-term future, an additional ±18,000 SF of terminal space is needed. This space deficiency could increase to ±30,500 SF (PAL 4) should the Airport experience activity such as the addition of a new carrier or west coast service from an existing carrier. In order to meet existing and projected demand, the terminal building needs to be expanded or replaced entirely. The various terminal development concepts prepared for this Master Plan Update were conceptualized from the following recommendations:

- The existing terminal building should be expanded or replaced to meet the PAL 2 space requirement of approximately 50,600 SF.
- The terminal building should be expandable to approximately 63,100 SF to accommodate higher growth, PAL 4 activity scenarios should they become actualized.
- The existing hold room should be removed to alleviate apron constraints and Part 77 concerns.
- The terminal improvements should provide for the construction of up to four aircraft gates (one for each airline and one for contingency). The gates should accommodate passenger boarding bridges (PBBs) – three second-level and one ground level. A fifth gate could become necessary if high growth scenarios are realized.
- For development concepts that require substantial terminal building construction, a portion of the existing public parking lot would need to be converted into a staging area. For this reason, combined with the existing public parking constraints, additional surface parking would be made available prior to building construction.

A multitude of passenger terminal development scenarios were considered, including both expansion and replacement concepts. The four most feasible concepts were carried forward and evaluated in this section, using the evaluation criteria presented in **Table 5-1**. Order-of-magnitude costs for these concepts were estimated from comparable projects (at HTS and similar airports) and industry experience. The assumptions presented in **Table 5-4** represent the factors used to estimate development cost. The order-of-magnitude costs for the terminal building are factored for design and bidding services, construction, construction administration, and construction contingency. These estimations are considered to be moderate in nature. Depending on the level of “fit and finish” the actual costs could be higher. Because some concepts will require automobile parking and access road improvements, the costs of these types of improvements are factored into the evaluation. These estimated costs are factored for design and building services, construction, construction administration, construction contingencies, utilities, guardrails, fencing and lighting. A high, medium, or low cost was chosen for parking/access improvements depending on the level of cut/fill and slope stabilization (retaining walls). Due to the terrain constraints and existing infrastructure, full, long-term buildout of these concepts could require the relocation of the FBO and/or ARFF buildings. Since the relocation of these facilities to the south side is a separate recommendation of this Master Plan Update, the associated costs are not factored in the terminal area cost estimates.

Table 5-4 – Order-of-Magnitude Cost Estimates (Terminal Building Concepts)

Project Component	Cost Assumption
Terminal Building Demolition	$15 (per SF)
Terminal Building Rehabilitation/Reconfiguration	$160 (per SF)
Terminal Building Expansion	$300 (per SF)
New Terminal Building Construction	$350 (per SF)
Passenger Boarding Bridges	$575,000 (per unit)
Apron Expansion/Rehabilitation	$150 (per SY)
Parking/Access Improvements (Low Cost)[1]	$81 (per SY)
Parking/Access Improvements (Medium Cost)[2]	$156 (per SY)
Parking/Access Improvements (High Cost)[3]	$238 (per SY)

Source: CHA, 2013
[1] Involves no cut/fill or retaining walls
[2] Involves a moderate amount of cut/fill and retaining walls
[3] Involves substantial cut/fill and retaining walls

5.2.1 Terminal Concept 1: Maintain Existing Building

In this concept the existing passenger terminal building is maintained with no major alterations or additions. Portions of the existing terminal building would however be rehabilitated and reconfigured to establish a more orderly flow of passengers, maintain the life of the building, and allow room for new passenger and baggage screening technologies.

While this concept has no impact to surrounding facilities (FBO and ARFF buildings), it does not create any additional benefits to the Airport, nor does it support the existing and projected aviation demand. The terminal would continue to be undersized and cause congestion at the ticketing counters, security screening, baggage claim, and in the passenger hold room. This concept would leave the Airport unable to accommodate future changes in fleet mix and does not support the customer service goals of the Authority. Since the existing passenger hold room would not be demolished, the terminal apron would continue to be constrained.

Costs associated with this concept include the rehabilitation and modest internal reconfiguration of the terminal building with an estimated cost of $5,216,000 (32,600 SF x $160/SF).

5.2.2 Terminal Concept 2: Rehabilitate and Expand Existing Building

This concept focuses on rehabilitation and reconfiguration of the existing terminal building and expansion of the congested areas including ticketing, baggage/passenger screening, and baggage claim to accommodate enplanement levels through PAL 2. The existing hold room would be demolished to alleviate Part 77 concerns and provide more usable commercial apron space. The terminal would be expanded north to the curb sidewalk and west and east to the extents determined reasonable during the design process. To accommodate the ±18,000 SF of additional needed space (50,600 SF total), the building would likely need to expand into the rental car ready-return lot or vertically. With the desire to keep rental cars near the terminal, a partial vertical expansion to accommodate office and support space may become a reasonable design strategy. Long term expandability of the building further to the west would allow the terminal to meet PAL 4 requirements (up to 63,100 SF).

Aside from Concept 1, this is the least expensive concept and has the least amount of impact to the surrounding facilities (ARFF building, access road, public parking). Concerns with this concept include the difficulty in phasing and maintaining passenger operations during construction. The age of the existing terminal building would continue to be a concern as it will be costly to maintain. Expansion of the terminal would result in the loss of approximately 4-5 parking spaces in the rental car lot and 23 spaces in the employee parking lot. While this concept should be considered sufficient to accommodate the basic passenger demands, it does not fully support the customer service goals of the Authority. The terminal would not accommodate passenger boarding bridges capable of serving the 2010 and future aircraft mix.

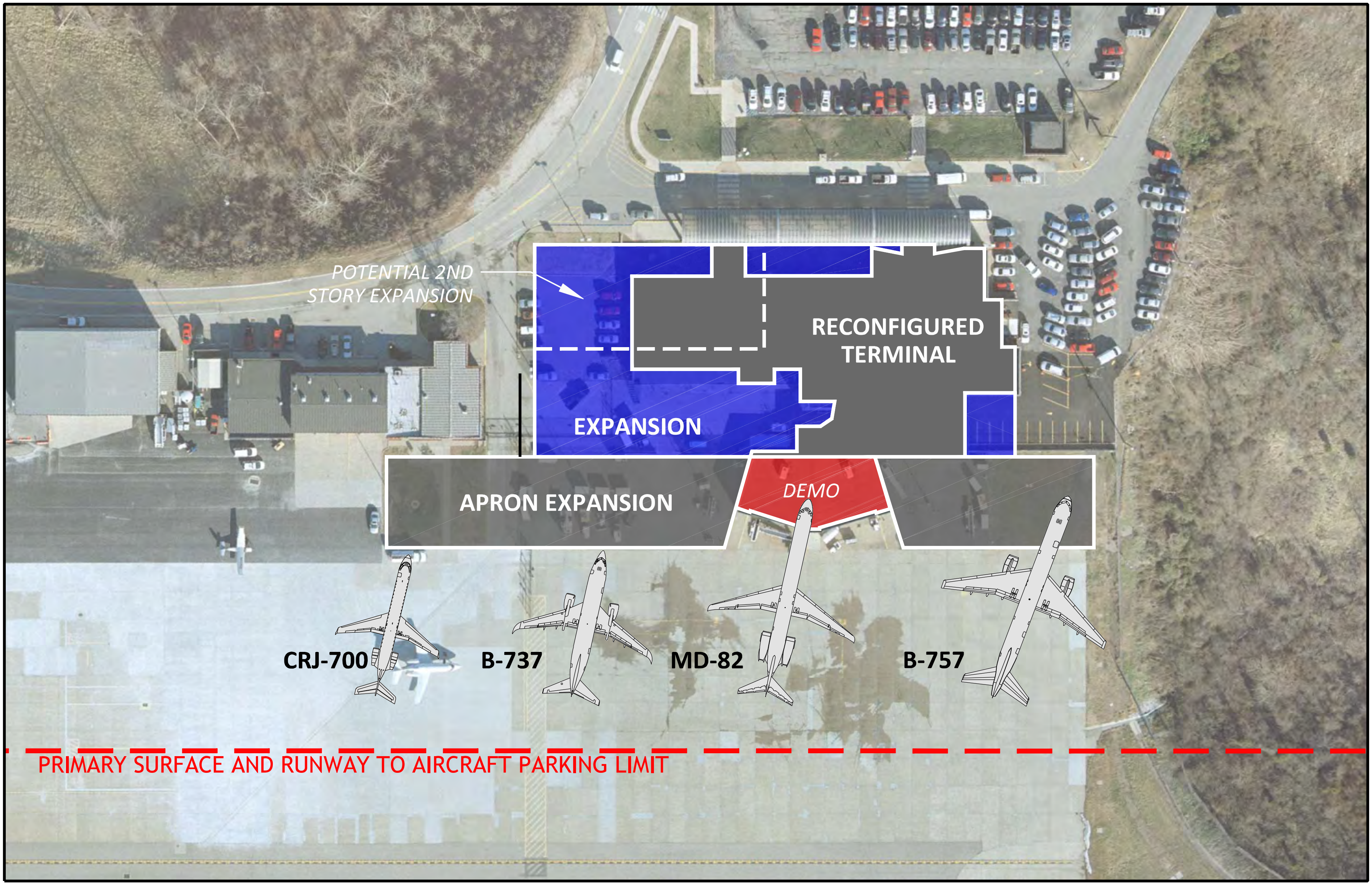
Costs associated with this concept include paving a remote parking lot, rehabilitating/reconfiguring existing portions of the terminal building, and expansion of the terminal to a total of ±50,600 SF. The total estimated cost for this concept is $15,318,500. In order to expand to 63,100 SF, it would cost an additional $3,750,000.

Terminal Concept 2 is shown in **Figure 5-3**. And the estimated costs are presented in **Table 5-5**.

Table 5-5 – Terminal Concept 2 Cost Estimate

Project Component	Units	Cost ($)
Terminal Building Demolition	4,500 SF @ $15/SF	67,500
Terminal Building Rehabilitation/Reconfiguration	28,100 SF @ $160/SF	4,496,000
Terminal Building Expansion	22,500 SF @ $300/SF	6,750,000
Apron Expansion/Rehabilitation	2,900 SY @ $150/SY	435,000
Parking/Access Improvements (High Cost)	15,000 SY (±270 spaces) @ $238/SY	3,570,000
TOTAL COST		**15,318,500**

Source: CHA, 2013



GRAPHIC SCALE (FEET)
0 50 100

Figure 5-3
Terminal Concept 2:
Rehabilitate / Expand Existing Building

5.2.3 Terminal Concept 3: New Building in Existing Location

In Terminal Concept 3, the existing terminal would be demolished to construct a new building, with a second-story concourse utilizing passenger boarding bridges. The building would be approximately ±50,600 SF to support PAL 2 enplanements, including three second-level boarding bridges.[18] Space would be preserved to expand the building to ±63,100 SF (PAL 4), as demand warrants. Subsequent expansion to the west could provide an additional boarding bridge and/or a ground board gate as needed. The existing passenger hold room would be removed and the airside terminal face would be shifted north to provide more usable apron space and relieve the congestion and existing Part 77 concerns.

The benefit of this concept over the previous concepts is that it supports the customer service goals of the Authority by providing passenger boarding bridges and flexibility to meet existing, future, and potential ultimate needs. By constructing vertically, the footprint of the terminal would be reduced, leaving room for further expansion or establishing other revenue-generating facilities near the terminal building. The largest disadvantages of this concept would include the associated costs and phasing difficulties. In order to maintain the Airport's current level of service during construction, a temporary terminal building would likely be needed. Construction of the new terminal would result in the loss of approximately 10-15 parking spaces in the rental car lot, 23 spaces in the employee parking lot, and approximately 8,000 SF of apron space used for GSE storage and airport operations. This concept also includes curbside road improvements, which would ultimately be expanded north, requiring the removal of approximately 25 parking spaces.

Costs associated with this concept include paving a remote parking lot, demolishing the existing terminal, constructing the new terminal, installing passenger boarding bridges, expanding and rehabilitating the existing apron, and curbside road improvements. The total estimated cost for this concept is $24,241,000. In order to expand to 63,100 SF and provide a fourth PBB, it would cost an additional $4,325,000.

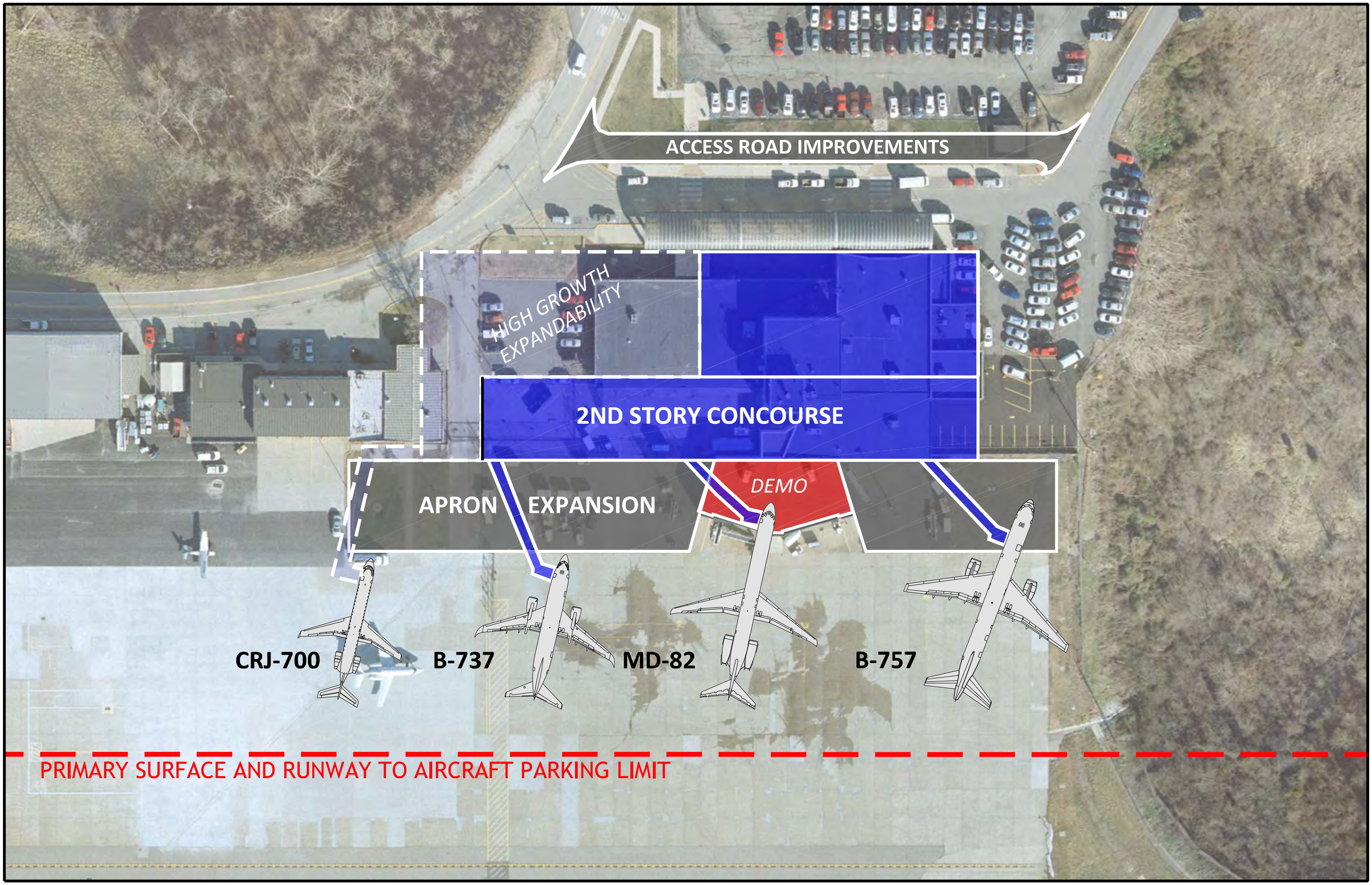
Terminal Concept 3 is depicted in **Figure 5-4** and associated costs are presented in **Table 5-6**.

Table 5-6 – Terminal Concept 3 Cost Estimate

Project Component	Units	Cost ($)
Terminal Building Demolition	32,600 SF @ $15/SF	489,000
New Terminal Building Construction	50,600 SF @ $350/SF	17,710,000
Passenger Boarding Bridges	3 units @ $575,000/ea	1,725,000
Apron Expansion/Rehabilitation	2,900 SY @ $150/SY	435,000
Parking/Access Improvements (Medium Cost)	2,000 SY @ $156/SY	312,000
Parking/Access Improvements (High Cost)	15,000 SY (±270 spaces) @ $238/SY	3,570,000
TOTAL COST		**24,241,000**

Source: CHA, 2013

[18] Note: Second level passenger boarding bridges are needed to accommodate aircraft taller than a B-717.



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

N

GRAPHIC SCALE (FEET)
0 50 100

Figure 5-4
Terminal Concept 3:
New Building in Existing Location

5.2.4 Terminal Concept 4: Separate Airside and Landside Buildings

This concept involves the development of separate airside and landside terminal facilities. These facilities would be connected by an approximate 50-foot by 200-foot corridor that could be utilized as the passenger screening area. The main benefit of this concept is that it provides the most flexibility in phasing and construction. The first phase of development would likely involve the construction of a ±42,750 SF landside terminal in the existing public parking lot. This structure would ultimately serve as the pre-security portion of the terminal and include ticketing counters, administrative offices, airline offices, concessions, baggage screening, passenger security screening (in the walkway) and baggage claim. Once this structure is completed and operational, the existing terminal would be demolished in phases, to make way for a new, post-security airside structure (±12,100 SF) that would include the passenger hold room, concessions, business center, TSA offices, and administration/flexible use space. As with Concept 3, the existing hold room would be removed and a second-story concourse would ultimately be constructed to accommodate passenger boarding bridges.

Not only is this concept flexible for phasing purposes, it has the ability to accommodate other revenue-generating opportunities in the landside portion of the building. Based on discussions with the Authority and local stakeholders, there is interest in establishing a multimodal transportation center at the Airport which would serve as a hub for various modes of transit, such as bus and shuttle service. The building itself could also offer leasable office space for aviation and transportation businesses, educational institutions, local government and planning agencies or other stakeholders. The area occupied by the existing terminal building could be reconfigured to accommodate airline functions and the storage of ground support equipment with apron access provided by a ground-level corridor through the airside terminal building.

Disadvantages of this concept include the overall cost of construction and the reconfiguration of the curbside road. Much of the existing curbside road, rental car lot, and employee lot would be converted to secure use areas for the airlines (i.e. baggage handling). This concept also results in the loss of a large portion of the terminal parking lot (over 130 spaces). Additional surface parking or a parking garage would have to be established to provide adequate passenger parking. Parking concepts will be discussed in **Section 5.3**, however, the concurrent development of a landside terminal and multi-level parking garage in one structure would provide the best use of limited airport property and could prove to be the most cost effective option in the long run.

Costs associated with this concept include paving a remote parking lot, demolishing the existing hold room, rehabilitating/reconfiguring/expanding portions of the existing terminal building (near-term), construction of new terminal facilities (landside and airside), passenger boarding bridges, expanding and rehabilitating the existing apron, and relocating the access road. The total estimated cost for this concept is $27,168,700. In order to expand to 63,100 SF and provide a fourth PBB, it would cost an additional $3,480,000. To provide a fair cost comparison between the terminal concepts, the cost of a parking structure is not included in this estimate.

Terminal Concept 4 is detailed in **Figure 5-5** and the costs are presented in **Table 5-7**.

Table 5-7 – Terminal Concept 4 Cost Estimate

Project Component	Units	Cost ($)
Terminal Building Demolition	32,600 SF @ $15/SF	489,000
Partial Building Rehab/Reconfiguration	10,000 SF @ $160/SF	1,600,000
New Terminal Building Construction – Landside	42,750 SF @ $350/SF	14,962,850
New Terminal Building Construction – Airside	12,070 SF @ $350/SF	4,224,850
Passenger Boarding Bridges	3 units @ $575,000/ea	1,750,000
Apron Expansion/Rehabilitation	2,900 SY @ $150/SY	435,000
Parking/Access Improvements (Low Cost)	2,000 SY @ $81/SY	162,000
Parking/Access Improvements (High Cost)	15,000 SY (±270 spaces) @ $238/SY	3,570,000
TOTAL COST		**27,168,700**

Source: CHA, 2013

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)
0 75 150

Figure 5-5
Terminal Concept 4:
Separated Airside and Landside Buildings

5.2.5 Comparison and Preferred Terminal Concept

These four concepts were evaluated and compared based on the eight criteria described in **Table 5-1**. The evaluation considered the PAL 2 building requirements and not the ultimate expandability. A comparison of the concept costs is presented in **Table 5-8**. For each criterion, the concepts were ranked on their ability to meet the parameters of that criterion. The ranking values range from 0 (least benefit / most impact or cost) to 3 (largest benefit / least impact or cost). The ranking value was then multiplied by the weighting factor to arrive at point value score. The highest cumulative score was used to determine the preferred development concept. The terminal concept scoring matrix is presented in **Table 5-9**.

Based on this evaluation, the preferred terminal building concept is Concept 4 – Separated Airside and Landside Buildings. This concept provides the best overall balance of achieving the Authority's goals while allowing the Airport to improve its level of service to the travelling public. This concept also provides extensive flexibility in development phasing and can accommodate a variety of business and stakeholder needs thereby increasing the economic impact of the Airport and strengthening the overall economic health of the region.

Table 5-8 – Terminal Development Concept Cost Comparison

Project Component	Development Concepts 1 Maintain Existing	 2 Rehab/Expand	 3 New Building	 4 Separated Building
Terminal Building Demolition ($)	0	67,500	489,000	489,000
Terminal Building Rehabilitation/Reconfiguration ($)	5,216,000	4,496,000	0	1,600,000
Terminal Building Expansion ($)	0	6,750,000	0	0
New Terminal Building Construction ($)	0	0	17,710,000	19,187,700
Passenger Boarding Bridges ($)	0	0	1,725,000	1,725,000
Apron Expansion/Rehabilitation ($)	0	435,000	435,000	435,000
Access Road Relocation/Improvements (Low Cost) ($)	0	0	0	162,000
Access Road Relocation/Improvements (Medium Cost) ($)	0	0	312,000	0
Access Road Relocation/Improvements (High Cost) ($)	0	3,570,000	3,570,000	3,570,000
TOTAL COST ($)	**5,216,000**	**15,318,500**	**24,241,000**	**27,168,700**

Source: CHA, 2013

Table 5-9 –Terminal Building Concept Scoring Matrix

		Development Concept							
		1 No Development		2 Rehab/Expand		3 New Terminal		4 Separated Terminal	
Evaluation Criteria	Weight	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Meets Existing and Forecasted User Demand	5	1	5	2	10	3	15	3	15
Improves User Convenience and Safety	5	0	0	1	5	2	10	3	15
Implementation Costs	5	3	15	2	10	1	5	0	0
Supports Regional Economic Development Initiatives	4	0	0	1	4	2	8	2	8
Expandability / Flexibility for Future and Unforeseen Needs	4	0	0	1	4	2	8	3	12
Promotes Additional Revenue Generation for Continued Airport Operation and Maintenance	3	0	0	1	3	2	6	2	6
Supports Airport Mission / Vision	2	0	0	1	2	3	6	3	6
Integrates with Other Master Plan Recommendations	1	0	0	1	1	1	1	2	2
TOTAL SCORE		**4**	**20**	**10**	**39**	**16**	**59**	**18**	**64**

Source: CHA, 2013

5.3 AUTOMOBILE PARKING AND ACCESS

The existing parking facilities at HTS include approximately 402 public parking spaces, 73 rental car spaces, and 33 employee parking spaces, for a total of 508 parking spaces. As described in in **Section 4.8**, there is a deficit in available parking to meet the PAL 2 requirement of 606 spaces. The PAL 4 requirement is 841 spaces. This deficit in parking often results in passengers parking in the unpaved overflow lot or on the unmarked shoulders of the terminal loop road. Parking in these areas also results in passengers having to walk along the roadways or cross the terminal loop road. For the Airport, this means a loss of revenue, poor service to the travelling public, and safety/security concerns. While already a considerable concern, these problems will become more pronounced over the planning horizon.

Consistent with the facility demands described in **Chapter 4**, and building upon the preferred terminal concept identified previously, the following are the parking and access goals to be achieved in the ongoing development program for the Airport:

- Automobile parking should be expanded to provide convenient, passenger-friendly, preferably covered facilities to accommodate approximately 606 parking spaces (PAL 2).
- Additional pick-up/drop-off lanes should be provided to relieve existing and projected congestion levels and improve circulation at the terminal curbfront.
- Consistent with the goals of the Authority and intermodal needs of the region, a dedicated transit lane (bus, shuttle, taxi) should be incorporated into the curbfront road circulation.

Figure 5-6 – KYOVA 2009 Parking Concept

There are three basic alternatives for providing the needed airport parking facilities: expand the surface parking, provide remote surface parking, or build a parking garage. In addition to the analyses conducted for this Master Plan Update, the KYOVA Interstate Planning Commission prepared the *Huntington Intermodal Transportation Planning Study* (completed in 2009), which addressed the parking shortage and lack of intermodal connectivity at HTS. The result of that study was the plan depicted in **Figure 5-6**, which entails a combination of new surface parking, and a parking garage/intermodal center that provides approximately total 920 spaces.

The following subsections describe the three basic parking concepts and how they address the issues of terrain constraint and passenger convenience/safety. Costs were estimated using the order-of-magnitude cost estimates summarized in **Table 5-10**.

Table 5-10 – Order of Magnitude Cost Estimates (Parking and Access Concepts)

Project Component	Cost Assumption
Parking/Access Improvements (Low Cost)[1]	$81 (per SY)
Parking/Access Improvements (Medium Cost)[2]	$156 (per SY)
Parking/Access Improvements (High Cost)[3]	$238 (per SY)
Parking Garage Construction	$63 (per SF)

Source: CHA, 2013
[1]Involves no cut/fill or retaining walls
[2] Involves a moderate amount of cut/fill and retaining walls
[3] Involves substantial cut/fill and retaining walls

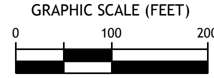
5.3.1 Concept 1: Expanded Surface Parking

This concept includes realigning Airport Road and expanding surface parking within the resultant terminal loop road. The realignment of Airport Road is intended to provide contiguous parking without requiring passengers to cross an active roadway to reach the terminal. This concept would require flattening the hill between Airport Road and the unpaved remote lot and could provide approximately 800 total parking spaces. The greatest physical challenge of this concept is realigning Airport Road within the hilly terrain and disposing of material from the earthwork cuts. To overcome the ±100-foot elevation difference between the terminal area and existing road alignment, within acceptable DOT roadway gradient standards, the new alignment entry point would have to begin near the FedEx ground facility and run approximately 1,200 linear feet along the west side of the ridgeline. This concept is depicted in **Figure 5-7** and is estimated to cost $6,527,000 as presented in **Table 5-11**.

Table 5-11 – Parking Concept 1 Estimated Development Cost

Item	Units	Cost ($)
Parking/Access Improvements (Low Cost)	13,000 SY @ $81/SY	1,053,000
Parking/Access Improvements (High Cost)	23,000 SY @ $238/SY	5,474,000
TOTAL COST ($)		**6,527,000**

Source: CHA, 2013



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 5-7
Parking Concept 1:
Expanded Surface Parking

5.3.2 Concept 2: Remote Surface Parking

This concept does not include the realignment of Airport Road and relies on providing shuttle service between one or multiple remote parking sites. The Authority operates one passenger shuttle bus on a limited basis – when the main lot is full and the unpaved remote lot is being utilized. As depicted in **Figure 5-8**, several potential sites exist on airport property that could be developed into remote parking. The closest of these to the terminal area, Site A, includes the existing unpaved remote lot. Site B is an extension of the general aviation area following the ridgeline near the existing cell phone tower. Sites C, D and E are the most remote options and are between 2½ and 3 miles from the terminal area. Due to its proximity to the terminal area, development of Site A appears to be the most logical and is depicted in **Figure 5-9** as Concept 2.

By maximizing use of the existing ridgeline, this site could be developed to accommodate upwards of 1000 total parking spaces. This concept is consistent with the preferred terminal concept, as well as the previous KYOVA study, and could be initiated relatively easily. The complete build-out of this site could also be accomplished in phases consistent with experienced demand. It should be reiterated that additional surface parking would be needed for any significant terminal or parking garage development to accommodate the temporary relocation of lost public parking during construction. In effect, the first phase of surface parking at this site would be needed to enable construction of the terminal building.

The estimated cost for this concept is $3,570,000 (15,000 SY x $238/SY).

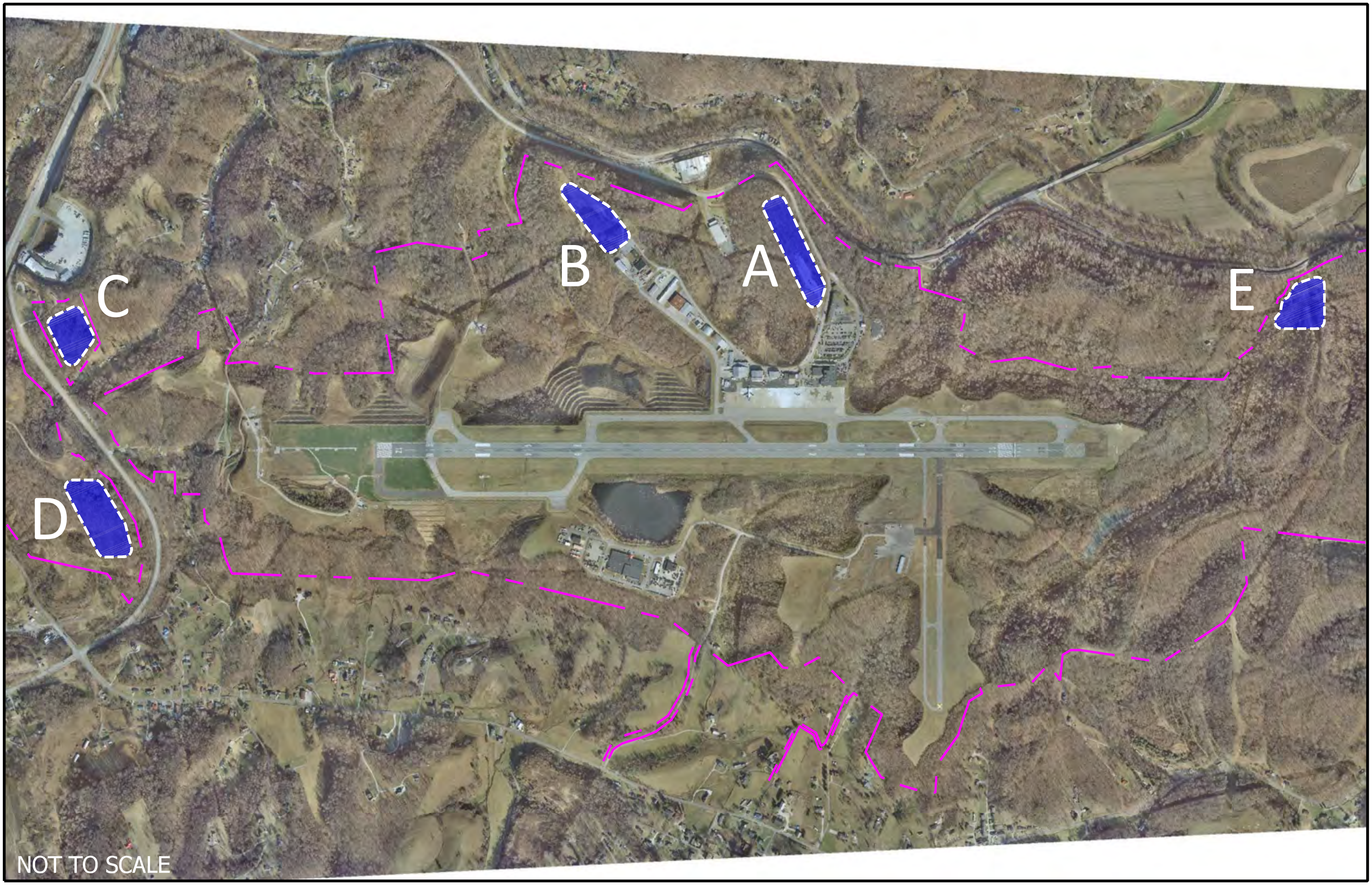
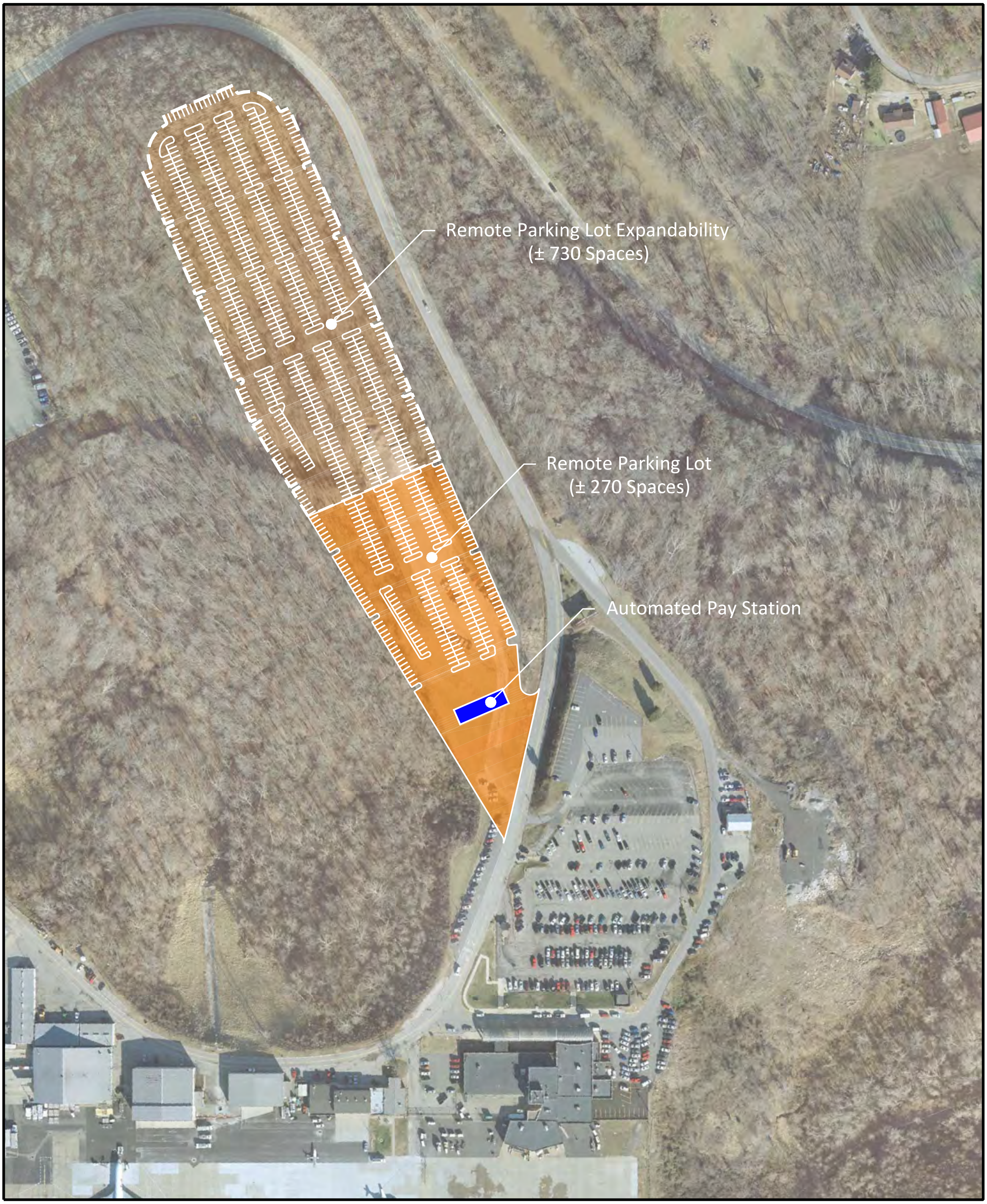


Figure 5-8
Potential Remote Parking Sites



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)
0 125 250

Figure 5-9
Parking Concept 2:
Remote Surface Parking

5.3.3 Concept 3: Parking Garage

The benefit of a parking garage is that places covered passenger parking close to the terminal building. In areas of inclement weather and/or aging populations, structured parking is usually preferred. Structured parking can also warrant premium parking fees thereby helping to offset any additional operations and maintenance expense.

There are essentially two locations within the terminal area available for development of a parking garage – in the surface parking lot or in the low terrain immediately east of the rental car lot. Both would require additional temporary parking to be developed for public use during construction. A parking garage to the east would be significantly more costly due to the steep terrain grades. As depicted in **Figure 5-10**, a parking garage would be compatible with the preferred terminal concept and could be developed in either Site A, as an integral part of the landside terminal, or in Site B as a standalone structure. Should parking demand increase beyond capacity in the future, the parking garage could be expanded northward and/or supplemented with additional remote surface parking in one of the sites identified in Concept 2. The estimated cost for this concept is $14,442,000 as presented in **Table 5-12**. Please note that this includes paving the remote surface lot for use during construction of the garage.

Table 5-12 – Parking Concept 3 Estimated Development Cost

Item	Units	Cost ($)
Parking/Access Improvements (Low Cost)	2,000 SY @ $81/SY	162,000
Parking/Access Improvements (High Cost)	15,000 SY @ $238/SY	3,570,000
Parking Garage Construction	170,000 SF @ $63/SF	10,710,000
TOTAL COST ($)		**14,442,000**

Source: CHA, 2013

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)
0 150 300

Figure 5-10
Parking Concept 3:
Parking Garage

5.3.4 Comparison and Preferred Parking Concept

These three concepts were evaluated and compared based on the eight criteria described in **Table 5-1**. For each criterion, the concepts were ranked on their ability to meet the parameters of that criterion. The ranking values range from 0 (least benefit / most impact or cost) to 2 (largest benefit / least impact or cost). The ranking value was then multiplied by the weighting factor to arrive at point value score. The highest cumulative score was used to determine the preferred development concept. Based on this evaluation, the parking garage is the preferred concept. This concept provides the best overall balance of achieving the Authority's goals while allowing the Airport to improve its level of service to the travelling public. This concept also provides flexibility in that it can be developed in concert with the landside terminal and accommodate intermodal facilities or be developed as standalone facility. As mentioned previously, additional surface parking would be needed to accommodate the temporary relocation of lost public parking during construction. The parking concept scoring matrix is depicted in **Table 5-13**.

Table 5-13 –Parking Concept Scoring Matrix

		Development Concept					
		1 Expanded Surface Parking		2 Remote Surface Parking		3 Parking Garage	
Evaluation Criteria	Weight	Rank	Score	Rank	Score	Rank	Score
Meets Existing and Forecasted User Demand	5	2	10	2	10	2	10
Improves User Convenience and Safety	5	1	5	0	0	2	10
Implementation Costs	5	1	5	2	10	0	0
Supports Regional Economic Development Initiatives	4	1	4	1	4	1	4
Expandability / Flexibility for Future and Unforeseen Needs	4	0	0	1	4	1	4
Promotes Additional Revenue Generation for Continued Airport Operation and Maintenance	3	0	0	1	3	2	6
Supports Airport Mission / Vision	2	1	2	1	2	2	4
Integrates with Other Master Plan Recommendations	1	0	0	1	1	2	2
TOTAL SCORE		6	26	9	34	12	40

Source: CHA, 2013

5.4 RECOMMENDED TERMINAL AREA DEVELOPMENT PLAN

Based on the previously described evaluations, the preferred long-term improvements for the terminal area include separate airside and landside terminal buildings combined with a parking garage and intermodal facility (refer to **Figure 5-5** and **Figure 5-10**). While these facility improvements best meet the needs of the traveling public and regional business communities, their combined implementation costs would require a sizeable investment over a relatively short period of time. The combined cost of these preferred concepts, including the necessary pre-design and environmental approvals, would be over $38 million. A cursory financial feasibility assessment of this program, excluding any other airfield or facility improvements that may be needed, indicates that portions of the terminal area program would be eligible for FAA Airport Improvement Program (AIP) and West Virginia DOT funding. Portions of the program would also be eligible for FAA Passenger Facility Charge (PFC) and local Customer Facility Charge (CFC) funding. Even with these funding sources, the resultant Authority share of the program cost would likely be over $13 million. Without significant third-party investment, or additional grant support, pursuit of the preferred terminal area program appears infeasible at this time. It should still, however, be considered a reasonable alternative, or long-term "vision", for the terminal area facilities.

Due to the inherent flexibility of this preferred program, a more modest interim program can still be pursued without hindering the long term potential of developing the preferred facilities should the funding outlook become more favorable. Of the four terminal concepts, Terminal Concept 2: Rehabilitate and Expand Existing Building is approximately $22 million less than the cost of the preferred concept and would satisfy the existing and PAL 2 activity levels. Additionally, immediate investment in the existing terminal is needed to repair HVAC, electrical and fire prevention systems to satisfactorily maintain existing customer service levels regardless of what longer term concept is pursued. Of the three parking facility concepts, Concept 2: Remote Surface Parking is the most readily developable, the most scalable to meet demand, and a portion of the site would need to be developed anyway to support construction of the terminal expansion. Driven by the estimated costs of the preferred terminal area program, the current economy and financial situation of the Airport, and the fact that something has to be done with the existing terminal facilities now – the recommended terminal area program includes the more modest combination of expanding the existing building and constructing a paved remote surface parking lot with the expectation that a landside terminal and parking garage will be pursued as funding becomes available. The recommended terminal area program is anticipated to cost approximately $15,800,000 (refer to **Table 5-14**) and is depicted in **Figure 5-11**.

Table 5-14 – Recommended Terminal Area Development Cost Estimate

Project Component	Cost ($)	AIP	WV DOT	Sponsor	PFC	CFC	Other
Program Definition and Pre-Design	**76,000**				**38,000**	**38,000**	
Environmental Assessment	**400,000**	**360,000**	**20,000**		**20,000**		
Rehabilitate/Expand Existing Terminal Building	**15,318,500**	**8,493,953**	**471,886**	**4,266,875**	**471,886**	**1,113,900**	**500,000**
Parking/Access Improvements (Remote Lot)	*3,570,000*	*1,477,980*	*82,110*	*713,900*	*82,110*	*713,900*	*500,000*
Terminal Building Demolition (Hold Room)	*67,500*	*45,563*	*2,531*	*16,875*	*2,531*		
Terminal Rehabilitation/Reconfiguration	*4,496,000*	*2,630,160*	*146,120*	*1,323,600*	*146,120*	*250,000*	
Terminal Building Expansion	*6,750,000*	*3,948,750*	*219,375*	*2,212,500*	*219,375*	*150,000*	
Apron Expansion/Rehabilitation	*435,000*	*391,500*	*21,750*		*21,750*		
TOTAL COST	**15,794,500**	**8,853,953**	**491,866**	**4,266,875**	**529,886**	**1,151,900**	**500,000**

Source: CHA, 2013

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 5-11
Recommended Terminal Area Development Plan

5.5 ALTERNATIVE TERMINAL AREA DEVELOPMENT PLAN

The Alternative Terminal Area Development Plan outlined in this section can be considered a long-term goal for the Airport. As previously described, because of the inherent flexibility of the preferred program, the long-term potential of developing a separate airside and landside terminal along with a parking garage, is not hindered. If the funding outlook at HTS becomes more favorable in the future, this alternative development plan should be pursued. The Alternative Terminal Area Development plan is anticipated to cost approximately over $38 million (refer to **Table 5-15**) and is depicted in **Figure 5-12**.

Table 5-15 – Alternative Terminal Area Development Cost Estimate

Project Component	Cost ($)	AIP	WV DOT	Sponsor	PFC	CFC	Other
Program Definition and Pre-Design	**76,000**				**38,000**	**38,000**	
Environmental Assessment	**400,000**	**360,000**	**20,000**		**20,000**		
Separate Airside & Landside Terminal Buildings	**27,168,700**	**15,004,932**	**833,607**	**4,669,402**	**1,173,607**	**1,213,900**	**4,273,252**
Parking/Access Improvements (Remote Lot)	*3,570,000*	*1,477,980*	*82,110*	*713,900*	*82,110*	*713,900*	*500,000*
Terminal Building Demolition	*489,000*	*330,075*	*18,338*	*122,250*	*183,385*		
Interim Building Rehab/Reconfiguration	*1,600,000*	*1,080,000*	*60,000*	*60,000*	*400,000*		
New Construction – Landside Terminal	*14,962,850*	*7,137,279*	*396,516*	*3,266,270*	*396,516*	*500,000*	*3,266,270*
New Construction – Airside Terminal	*4,224,850*	*2,889,797*	*160,544*	*506,982*	*160,544*		*506,982*
Passenger Boarding Bridges	*1,725,000*	*1,552,500*	*86,250*		*86,250*		
Apron Expansion/Rehabilitation	*435,000*	*391,500*	*21,750*		*21,750*		
Parking/Access Improvements (Curbside Road)	*162,000*	*145,800*	*8,100*		*8,100*		
Parking Garage (3 Levels)	**10,710,000**			**8,568,000**		**2,142,000**	
TOTAL COST	**38,354,700**	**15,364,932**	**853,607**	**13,237,402**	**1,231,607**	**3,393,900**	**4,273,252**

Source: CHA, 2013

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)
0 100 200

Figure 5-12
Alternative Terminal Area Development Plan

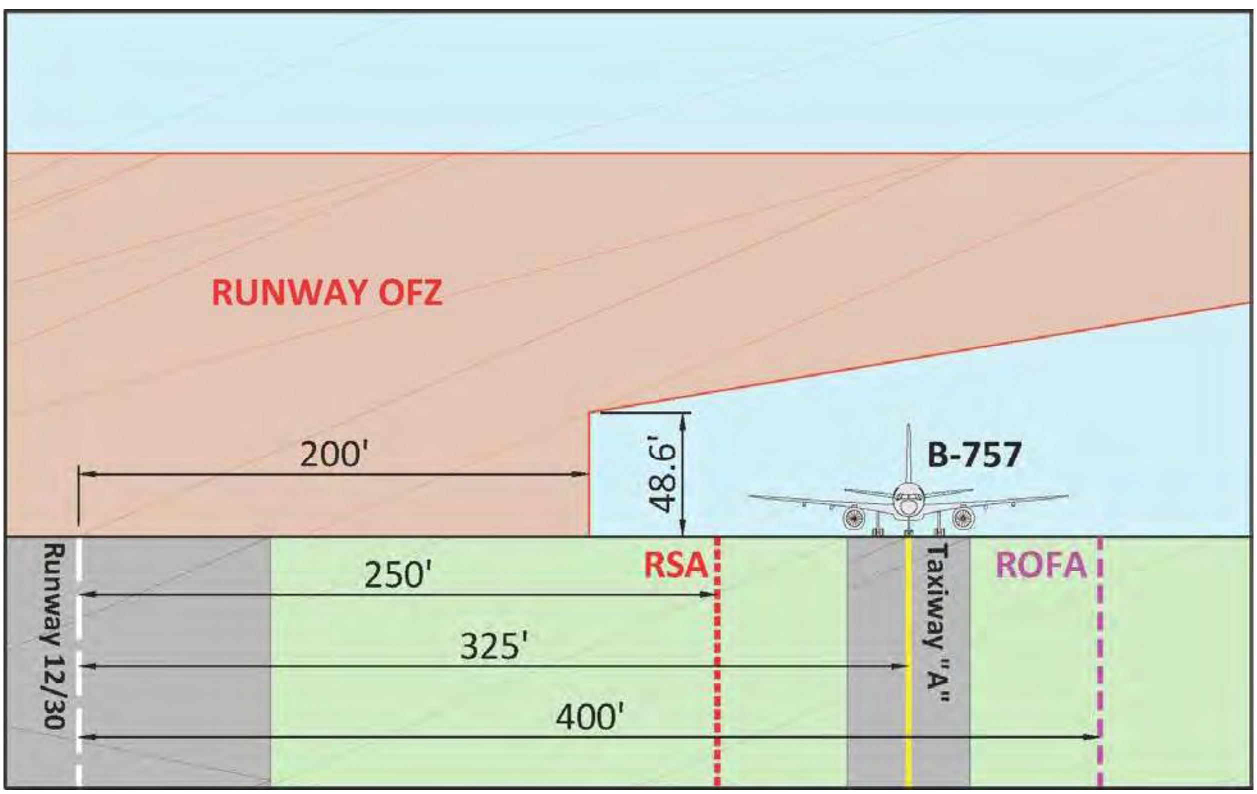
5.6 AIRFIELD

Recommended airfield improvements at HTS are largely driven by the operational demands of the critical aircraft, which is the Boeing 757-200. As discussed in **Chapter 4**, the B-757 is classified as a Group-IV aircraft, whereas the previous critical aircraft, the Boeing 727-200, is classified as a Group-III aircraft. Ideally, the airport facilities should be developed to full FAA Group-IV design standards. However, in some locations, terrain constraints make this impractical and extremely expensive. In these locations, application of modified standards based on the B-757 (consistent with guidance in FAA AC 150/5300-13 *Airport Design*) should be employed where appropriate.

5.6.1 Parallel Taxiway Improvements

The existing centerline-to-centerline separation between Runway 12-30 and Taxiway A is 325 feet. The standard for Group-III and Group-IV separation is 400 feet. The FAA approved a Modification of Standard (MOS) for the 325-foot separation in 2004 with the justification that while commercial aircraft operating on Taxiway A would be within the ROFA, they would be outside the RSA and OFZ (See **Figure 5-13**).

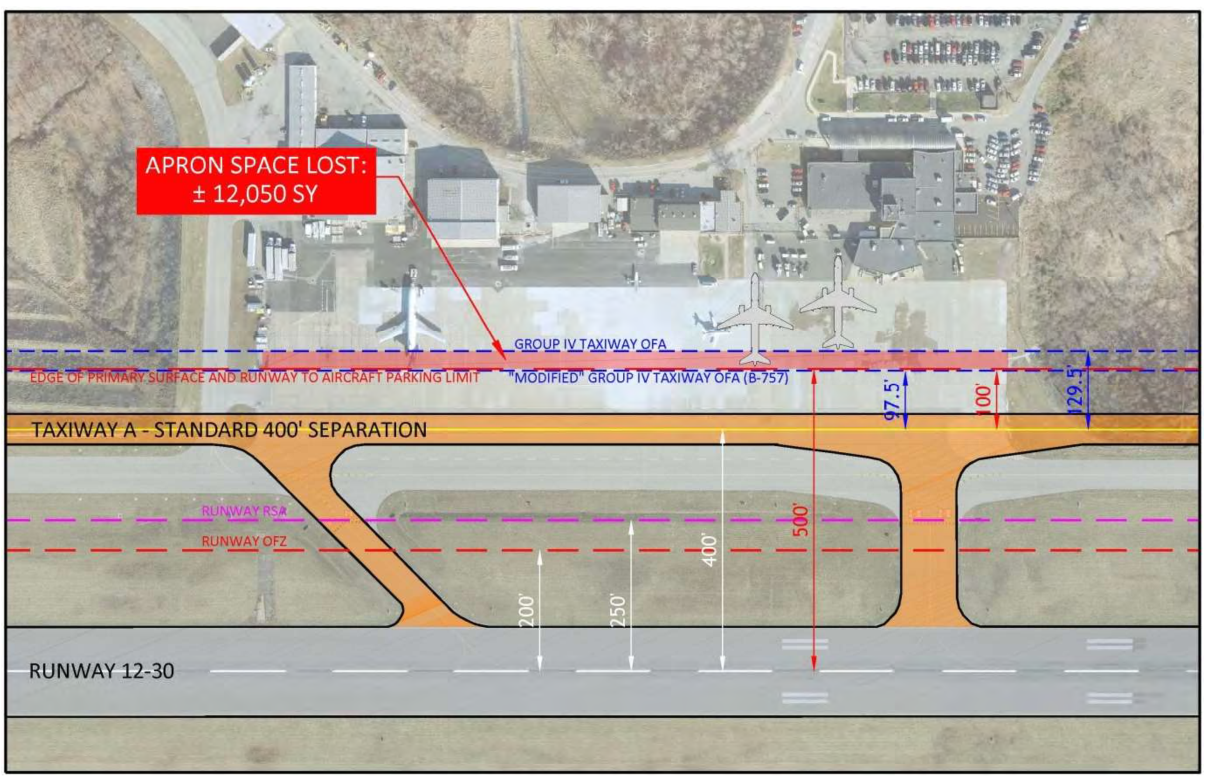
Figure 5-13 – Runway 12-30 Obstacle Free Zone (OFZ)



Source: CHA, 2013

In general, this Master Plan Update recommends maintaining the MOS for a 325-foot runway to parallel taxiway separation, but where feasible and cost effective, expanding the separation to 400 feet. Not only would relocating the parallel taxiway to 400 feet be very costly, due to terrain constraints and the large amount of required earthwork, it would reduce the amount of apron space available for commercial operations. As depicted in **Figure 5-14**, with a 400-foot separation and Group-IV standard Taxiway Object Free Area (TOFA), approximately 12,050 SY of apron space (i.e. 30-feet of depth) would be lost. The TOFA could be modified however, based on the B-757 wingspan, which would place it within 2.5 feet of the FAA Standard runway to aircraft parking limit (i.e. 500 feet). Considering that the existing parallel taxiway separation is operationally viable, and that any future construction of a full length parallel taxiway at a 400-foot separation would have significant terrain issues to overcome, it is recommended that Taxiway A along the apron edge be maintained at a 325-foot separation. Taxiway A east of the glide slope antennae could however be developed with a 400-foot separation. This can be reasonably accommodated with consideration of the existing terrain in that area and would provide added separation between the glide slope and B-757 wingtip. As of early 2012, rehabilitation and improvement of Taxiway A, east of the glide slope, is being designed and the 400-foot separation is being considered. Any extension or shift of Taxiway A west of the terminal area would require extensive earthwork, and therefore, is not a recommendation of this Master Plan. However, the capability to extend and shift Taxiway A west should be preserved.

Figure 5-14 – Standard Parallel Taxiway Separation Impacts



Source: CHA, 2013

5.6.2 Other Taxiway Improvements

The FAA standard Group-IV taxiway width is 75 feet. Several of the existing taxiways at HTS are currently 50 to 60 feet wide. AC 150/5300-13 indicates that 60-foot wide taxiways are acceptable for the B-757, which is a Group-IV aircraft, as long as a 15-foot safety edge margin is maintained. While it would be desirable to widen all taxiways to 75 feet, it may be more fiscally realistic, at least in the near term, to improve the taxiways to accommodate the characteristics and operational needs of the B-757. This would include widening the taxiways traveled by the B-757 to a minimum of 60 feet as well as improving the taxiway fillet geometry and centerline marking to provide adequate edge safety margin during turning movements.

Other recommended taxiway improvements include the establishment of bypass capability at both runway ends. Preliminary analysis indicates that constructing traditional hold pads on either runway end would not be practical due to the steep sloping terrain, required earthwork and the associated high construction costs. The current and projected aircraft activity at HTS does not warrant that level of investment at this time. However, bypass capability to Runway 12 is provided by Taxiway G1 and it is recommended that this configuration be maintained. To provide bypass capability to Runway 30, a new bypass taxiway, tying into the landing threshold, should be is provided. Use of a new bypass taxiway to Runway 30 would have to observe the glide slope critical area and would only be available when there are no aircraft on an ILS approach.

According to airport and air traffic control staff, Taxiway H and the associated hold pad are occasionally used for aircraft holding prior to departure and RON parking. Use of this taxiway however requires either crossing Runway 12-30 from Taxiway G or back-taxiing along the runway from Taxiway A. Maintaining use of this taxiway, while operationally viable, may be desirable in the near term. As additional facilities become available on the south side, use of this limited access taxiway will become less of an issue. It is therefore recommended that this pavement remain in place for its usable life and at some future point, it may be incorporated into any future westerly extension of Taxiway A.

5.6.3 Remain Overnight (RON) Apron

Consistent with the Airport’s goals, and to meet the operational needs of the various aircraft operators, additional parking areas should be provided for both large and small aircraft. It is common for large aircraft such as a charter B-737 or an Army National Guard C-17 to “overnight” at the Airport. When this occurs, aircraft are parked wherever space is available – GA Apron, Taxiway H/hold-pad or Taxiway B. Since the terminal apron is undersized and will be strictly for air carrier use in the future, a remain-overnight (RON) parking apron on the south side of the airfield is recommended. Considering terrain and Part 77 concerns, the area directly south of Runway 12-30 and east of Taxiway B provides adequate space for aircraft parking while maximizing developable space for GA facilities west of Taxiway B. In order to limit unnecessary runway crossings and maintain operational efficiency, aircraft de-icing operations on this apron may also be warranted. To that end, installation of a glycol recovery and storage system should be considered during the apron’s design.

5.6.4 Recommended Airfield Development Plan

The following summarizes the recommended airfield improvements for HTS. These improvements are also depicted in **Figure 5-15**.

- Taxiways that are less than 60 feet in width should to be widened to 60 feet.
- Taxiway fillets and marking should be improved to provide a 15-foot taxiway safety edge margin for the B-757.
- The eastern portion of Taxiway A should be shifted northward to provide a 400-foot runway-taxiway separation and to ensure adequate glide slope clearance.
- Bypass taxiways should be provided at both ends of Runway 12-30. Maintain Taxiway G1 for Runway 12 and a construct a new bypass taxiway to serve Runway 30.
- The Runway Safety Area, south of Taxiway B near the Runway 30 end, should be brought up to the FAA standard 500 foot width.
- A remain overnight (RON) parking apron with de-icing capability should be provided on the south side of the airfield to accommodate both small and large aircraft.
- Though consisting of steep slopes, adequate land should be preserved for the ultimate extension and shift of Taxiway A to the Runway 12 end.

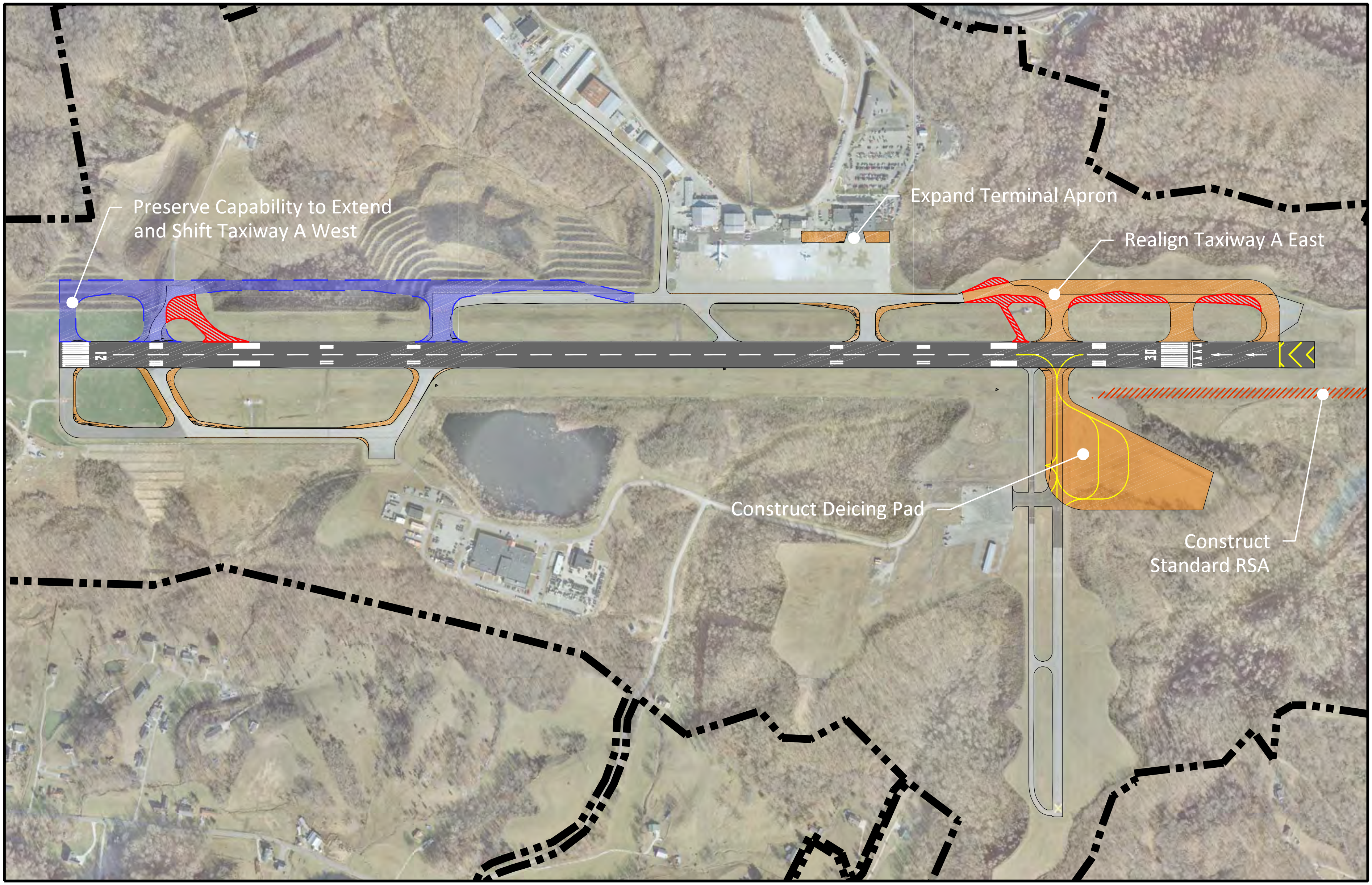


Figure 5-15
Recommended Airfield Improvements

5.7 GENERAL AVIATION / SOUTH SIDE

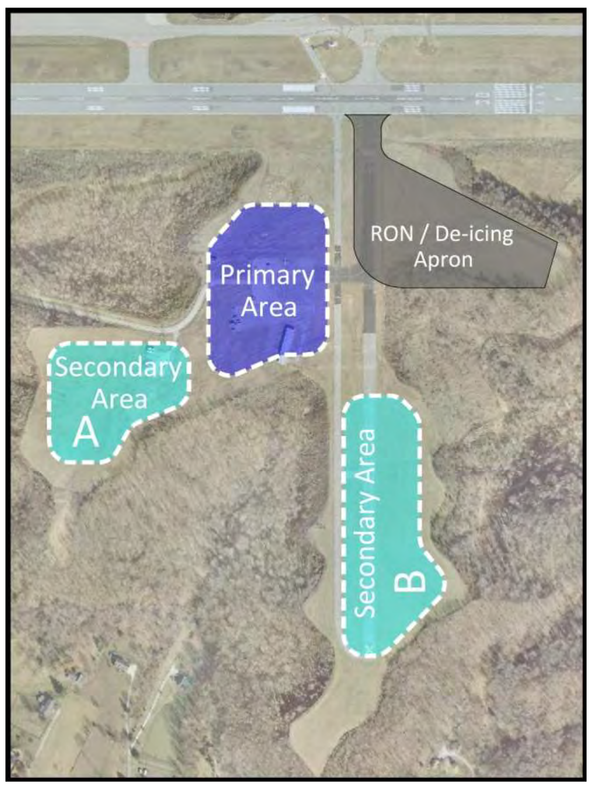
The long term land use concept for HTS is to relocate all general aviation facilities to the south side of the airfield. Taxiway B (formerly Runway 3-21) will provide the primary airfield access to this site. Aside from an existing small GA apron, one T-hangar structure, the ASOS tower, and the windcone / segmented circle, this area is relatively undeveloped. To meet user and operational needs, as described in **Chapter 4**, the following facilities are recommended for relocation/construction on the south side:

- 10,000-20,000 SF General Aviation terminal.
- Up to 28,000 SY General Aviation Apron
- Provide adequate space for a Maintenance, Repair, and Overhaul (MRO) type facility capable of accommodating Boeing 757 size aircraft.
- An Aircraft Rescue and Firefighting (ARFF) facility.
- Additional aircraft storage including at least one 10-unit T-hangar and one community hangar for the near-term period and an additional T-Hangar and community hangar for the extended timeframe.
- Long-term development of storage facilities for both large and small aircraft, as tenant demands warrant.
- Preserve flexible development space to accommodate a variety of aviation and non-aviation type uses.

There are numerous configurations that could be pursued in the development of these facilities. Therefore, development plans should be flexible to meet the needs of the Airport and tenants, as demand dictates.

The most readily developable portion of the south side area is currently occupied by the existing T-hangar and small GA apron. This site is considered the Primary Development Area (see **Figure 5-16**) and should be reserved for the general aviation and operational facilities most immediately needed. The Secondary Development Areas ("A" and "B") will require additional site infrastructure (access roads, utilities) to support their development. These Secondary Areas can be developed to accommodate a range of facilities and aircraft types to meet emerging industry trends and tenant needs. The subsequent sections discuss these two areas in more detail.

Figure 5-16 – South Side Development Areas



5.7.1 Primary Development Area

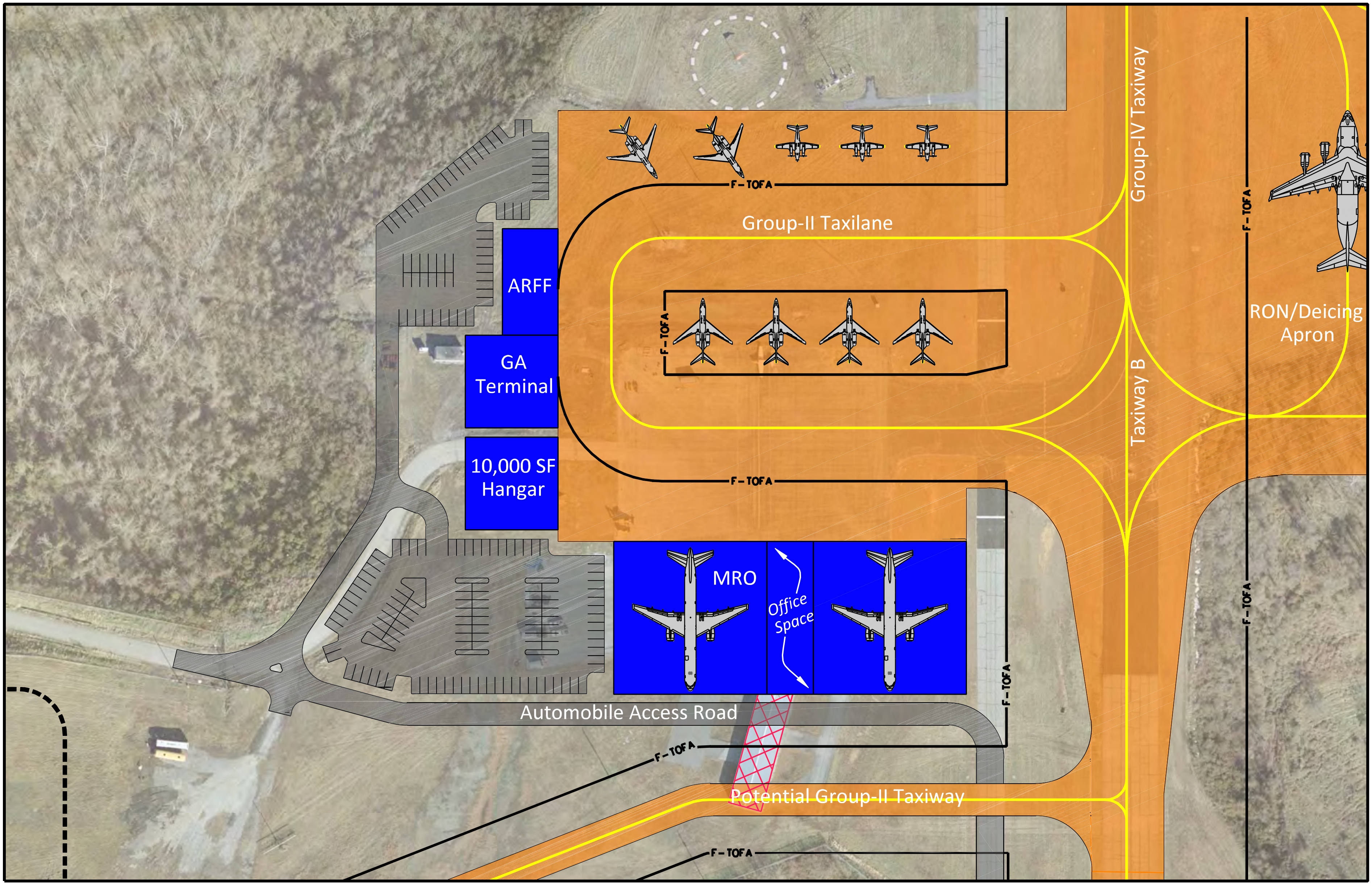
The Primary Development Area (See **Figure 5-16**) is envisioned to accommodate the GA terminal/FBO, transient and based aircraft parking, the relocated ARFF building, a potential MRO facility and FBO/corporate hangar. Following the closure of Runway 3-21, the Authority improved Taxiway M in 2010 and anticipates extending utilities to this area in 2013.

To accommodate the immediate facility needs, the following planning parameters were used to guide the development concept for this area.

1. All buildings must be clear of the Part 77 Transitional Surface.
2. Provide direct access from the ARFF facility to the service road to maintain adequate airfield response time.
3. Preserve Taxiway B for use by Group-IV aircraft.
4. Provide Group-II aircraft circulation and transient parking on the apron.
5. Provide adequate automobile parking for the GA terminal and tenants.
6. Provide controlled automobile access to the airfield.

The recommended concept for the Primary Development Area is depicted in **Figure 5-17**. This plan requires the removal of the existing T-hangar building and expansion of the existing apron. The conceptual MRO facility, due to its height in relation to the Part 77 Transitional Surface, would need to be located on the southern side of the apron. The GA terminal, ARFF building, clear-span hangar, and associated automobile parking would be located on the western side of the apron. A circular Group-II taxilane would provide access to the GA terminal and power-in/power-out transient parking positions for corporate aircraft. Tie-downs and additional corporate aircraft parking would also be provided along the northern side of the apron.

Although the MRO facility is conceptualized to accommodate up to two Boeing 757s (a Group-IV aircraft) the circular apron taxilane would provide Group-II object free area clearance. Attempting to provide a Group-IV access taxilane to the MRO would neutralize the majority of apron space available for other aircraft parking and circulation. Due to the nature of MRO activities, large aircraft movements would be infrequent and could be easily coordinated with FBO staff. When an aircraft being serviced by the MRO needs access to the facility, any parked transient aircraft could be temporarily moved while the serviced aircraft is maneuvered into the hangar.



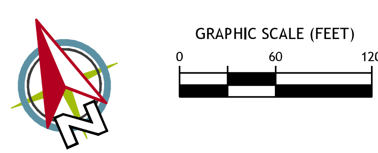


Figure 5-17
Primary Development Area Concept
(South Side)

5.7.2 Secondary Development Areas

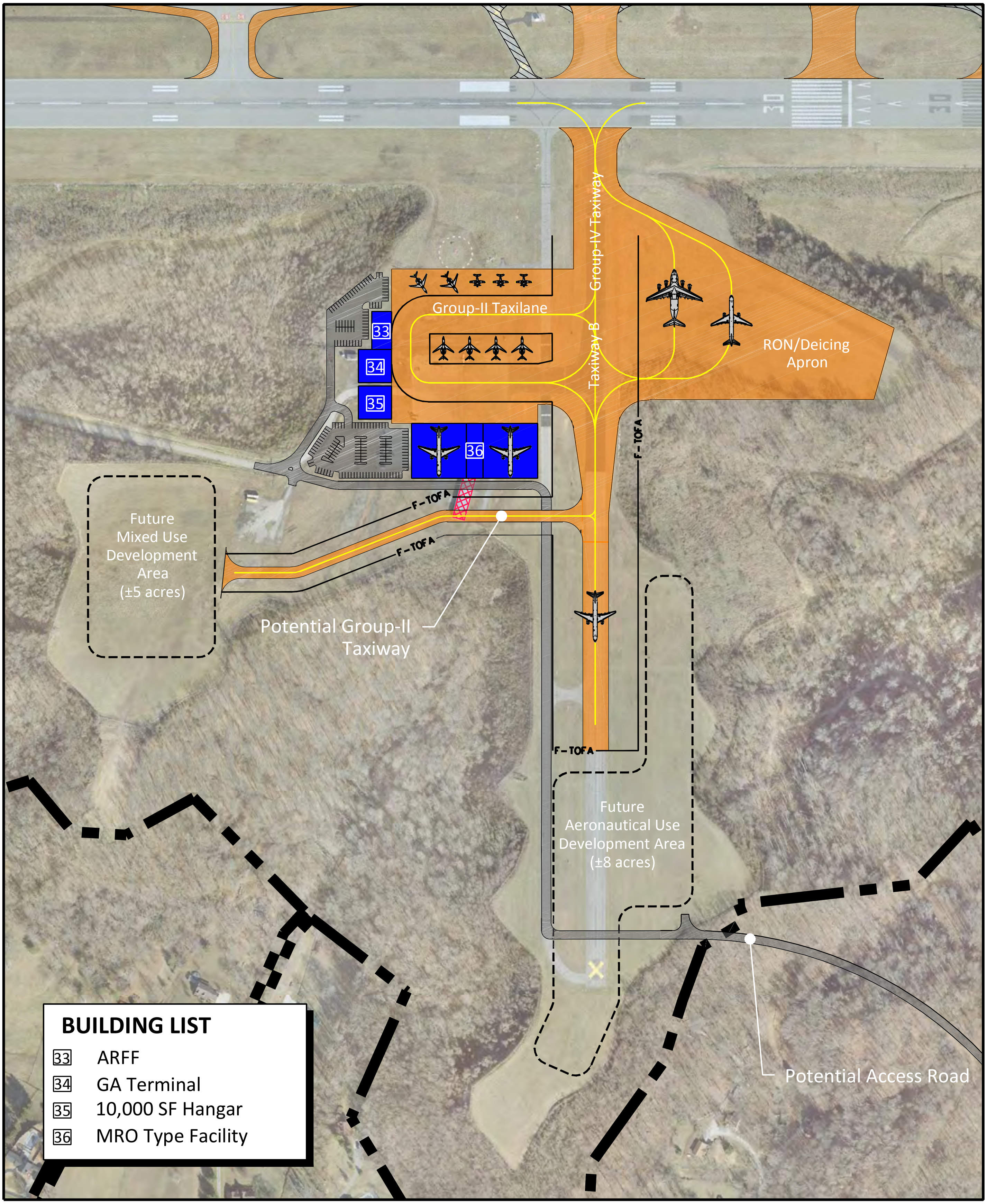
The Secondary Development Areas (See **Figure 5-16**) can be configured to meet the needs of various aviation and non-aviation type uses. By maintaining Taxiway B to Group-IV standards and maximizing use of the Primary Development Area, Secondary Development Area "A" should most logically be preserved for Group-I and Group-II aircraft facilities including a mix of corporate, group and T-hangars. However, being the least accessible area for aviation traffic on the southside, this area could also be developed for other "non-aviation" uses, should the opportunity arise. As long as the ability to provide a Group-II taxiway to this area is preserved, non-aviation tenants would provide additional revenue opportunities without jeopardizing the long-term aeronautical use of this area.

Secondary Development Area "B" could be configured to accommodate a mix of small and large aircraft up to Group-IV. Effective use of this area would require additional infrastructure including automobile access from Booth Road and the primary development area and/or via a new access road from Route 75.

Figure 5-18 depicts a reasonable configuration for the overall development of the south side facilities. Actual development will be dependent on future demand and the specific facility needs of the tenants.

5.7.3 Alternative Overlay Scenarios

While **Figure 5-18** depicts a logical development plan for the south side, consideration should be given to what happens in the event that regional demand for a particular market segment evolves more quickly than others. For example, what if the needs of cargo or MRO operators at HTS outgrow the needs for personal and corporate aircraft storage; or vice versa? To provide guidance should this situation occur, an alternative development configuration depicting the south side maximized for small aircraft parking is presented in **Figure 5-19**, a configuration depicting the site maximized for large aircraft storage is presented in **Figure 5-20**, and a configuration depicting the sites maximized for non-aviation uses is presented in **Figure 5-21**. Cargo operations could be accommodated in the large hangar scenario but access roads would have to be developed to accommodate tractor-trailer truck use.

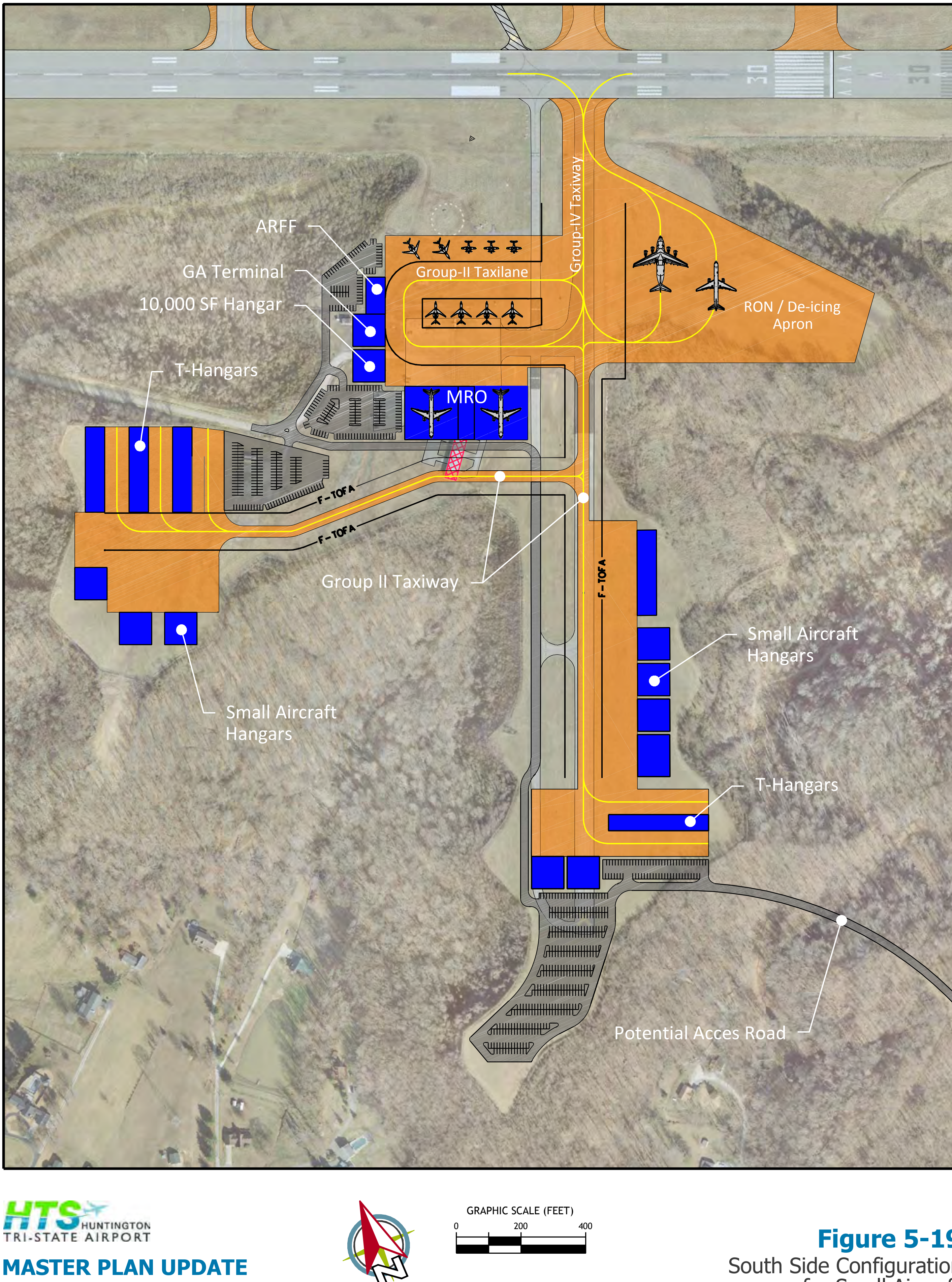


GRAPHIC SCALE (FEET)
0 200 400

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

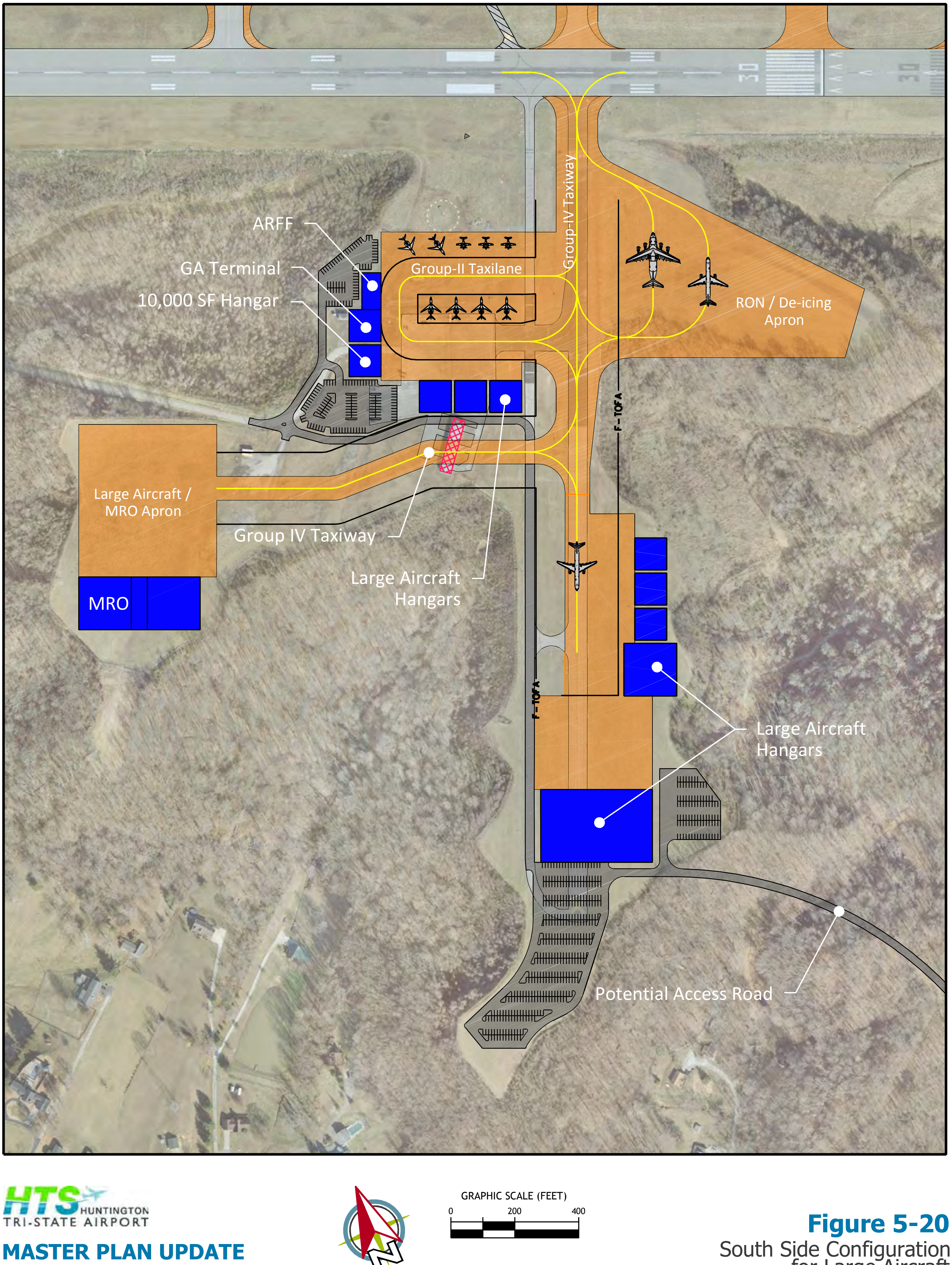
Figure 5-18
Overall South Side Development



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

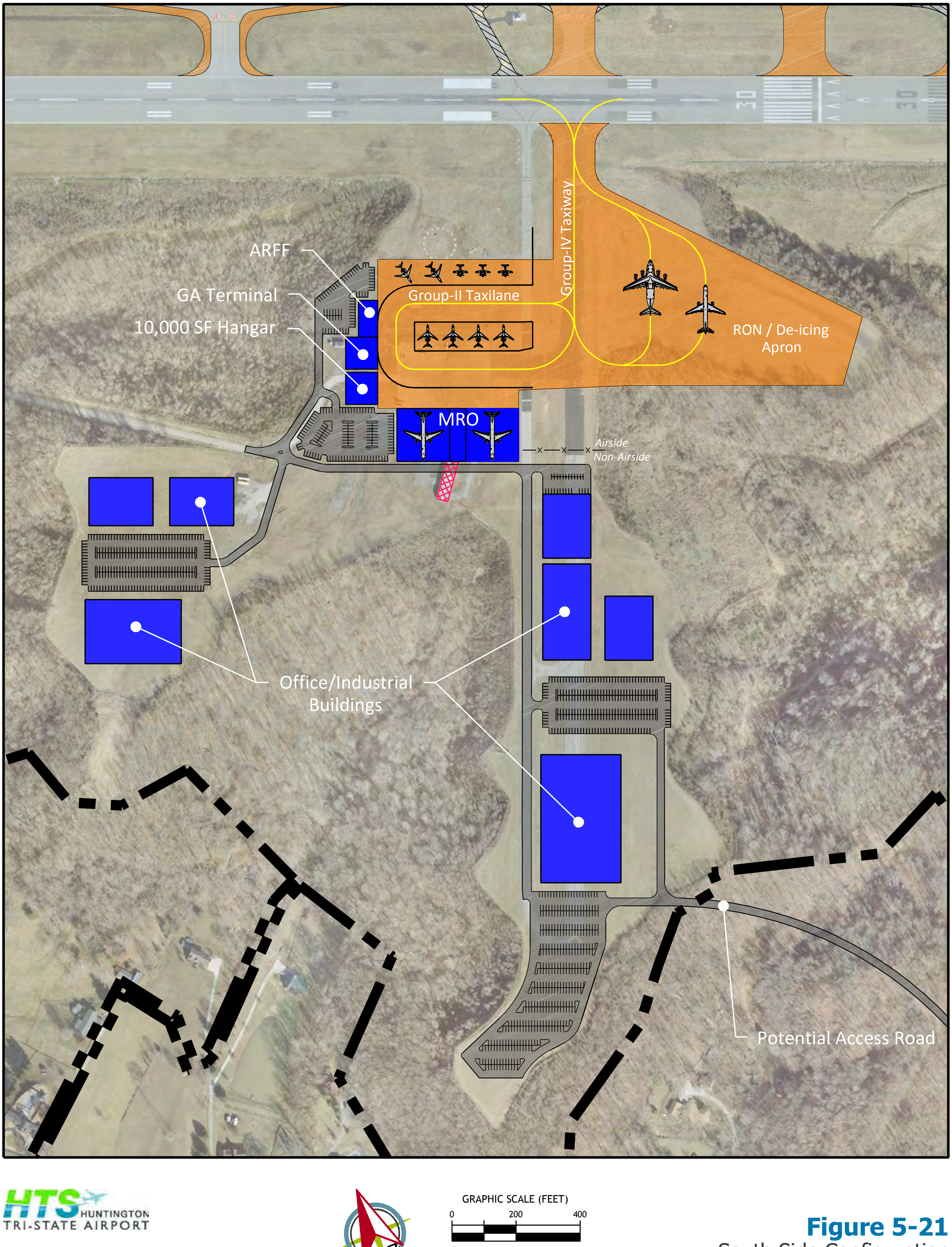
Figure 5-19
South Side Configuration for Small Aircraft



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 5-20
South Side Configuration for Large Aircraft



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 5-21
South Side Configuration for Non-Aviation Uses

5.8 SUPPORT FACILITIES

Various improvements to the Airport's support facilities are recommended to enhance operational efficiency. Based on the requirements identified in **Chapter 4**, the following describes the various needed improvements:

5.8.1 Consolidated HAZMAT Area / Airport Maintenance and Storage

As described in the previous chapter, fuel, de-icing fluids, and waste materials are stored at numerous locations on the Airport, resulting in system redundancy and containment difficulties. Additional fuel storage capacity is also needed. The Authority desires to consolidate these hazardous materials (HAZMATs) into one site and provide room for expansion. Doing so would allow the Airport to maximize efficient use of the space on the airfield and mitigate the potential risk of contamination in the event of a spill or leak. Due to infrastructure and access, the existing fuel farm area is the most plausible site for a consolidated HAZMAT facility. As depicted in **Figure 5-22**, development of this site to accommodate additional storage tanks and circulation would involve the removal/relocation of two T-hangar buildings.

Airport maintenance and equipment storage facilities are becoming constrained. Some equipment is not able to be stored indoors thus reducing its usable life. This site could be developed to accommodate an additional airport maintenance/storage building - possibly by reconfiguring part of the existing T-hangars. Additionally, as new GA facilities are constructed on the south side, many of the other buildings along Taxiway F could possibly be converted for airport use, storage, and maintenance, depending on what remains of their usable lifespan at that time.

The Authority has considered the potential development of an automobile fuel station to serve the rental car companies and the regional law enforcement and emergency service providers. Co-located with the fuel farm and HAZMAT storage, such a facility could be developed on the non-secure side of the airfield fence and could conceivably be available for retail/public service.

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 5-22
Consolidated Hazmat Facility Concept

5.8.2 Internal Access

An internal access road connecting the north and south side facilities of the airfield would be operationally beneficial as it would reduce the need for operations and maintenance vehicles to cross the runway. As explained in **Chapter 4** this could be accomplished by either a tunnel under the runway or a service road around the eastern end of the runway. Neither option was deemed feasible at this time due to the terrain challenges and associated development costs. Until such time as additional access can be developed, operations staff (including fueling operations) will have to continue coordinating with air traffic control to cross the runway. Of the two access options, an eastern service road could be constructed within the ROFA and below Part 77 surfaces with little to no impact to runway operations. It is therefore recommended that space be preserved for a future access road should the project become warranted, and financially viable, in the future.

5.8.3 External Access

Airport access is provided by Airport Road to the north side terminal area facilities and by Route 75 and Booth Road to the south side general aviation area. Excluding the recommended reconfiguration of the terminal loop road and surface parking, there is no immediate need to provide new or additional roadway access to the north side of the Airport. However, consideration has been given to the potential long term need for an additional access point from Airport Road to the facilities along Taxiway F near the old National Guard building. Extending the roadway in this direction would help separate passenger traffic to the terminal from tenant, cargo and aviation services traffic. Additionally, to support development of the south side facilities, and reduce the need to tenant automobiles to access the airfield, consideration has been given to developing new roadway access from Route 75 that could also be developed to accommodate tractor-trailer trucks should cargo or MRO type facilities be developed in this area. The general locations of these potential access roads are presented on the Future On-Airport Land Use Plan (**Figure 5-2**) and in more detail on the Overall Long-Term Development Plan (**Figure 5-24**).

5.8.4 Rental Car Facilities

The existing rental car maintenance/wash facility is located at the end of the terminal loop road. This facility is not the most aesthetically pleasing structure, as seen from customers departing the Airport, it is also undersized and nearing the end of its usable life. An improved and relocated facility is desired by both the Airport staff and the rental car companies. The ability to expand the facility in its current location is limited due to steep terrain constraints, recent ground slippage, and the high construction cost of stabilizing sufficient land in that area. Incorporating a relocated rental car facility into the recommended paving and improvement of the remote parking lot is a cost effective solution that also allows car washing and maintenance activities to be performed away from the general terminal area traffic. As shown in **Figure 5-24**, this would satisfy operational demand, provide room for future expansion, and improve the departing traffic viewshed thus promoting a better “gateway” image to the community.

5.9 AIR TRAFFIC CONTROL TOWER (ATCT)

The existing control tower is an integral structural feature of current terminal building. The FAA has indicated that they have no need to relocate the control tower at this time. However, continued line of sight concerns and phased improvements to the terminal area may warrant the eventual relocation of the ATCT. To identify the optimum site and tower characteristics for such relocation, a detailed siting study in accordance with FAA Order 6480.4B, *Airport Traffic Control Tower Siting Process* would be needed to validate the operational benefits and ensure technical feasibility. Due to Part 77 requirements and the lack of flat terrain, there are few locations on airport property that could accommodate an ATCT. While provisions for a control tower could be incorporated into the design of any future terminal replacement or expansion, for the purpose of this Master Plan Update four sites were preliminarily identified and evaluated as potential locations for a future ATCT. These four sites are identified in **Figure 5-23** and should be considered in the long term planning of facility development.

Location 1

This site is located adjacent to the National Guard complex on the southwest side of the airfield. Access could be provided relatively easily from the Guard facility. Concerns associated with this site include Part 77 Transitional Surface requirements limiting the tower cab height to approximately 860 feet MSL. A preliminary line-of-sight analysis indicates that trees located near the intersection of Runway 12-30 and Taxiway B would need to be cleared or the tower cab would need to be in excess of 864 feet MSL to provide a clear view of Runway 30. Potential glare from the stormwater pond is also a concern.

Location 2

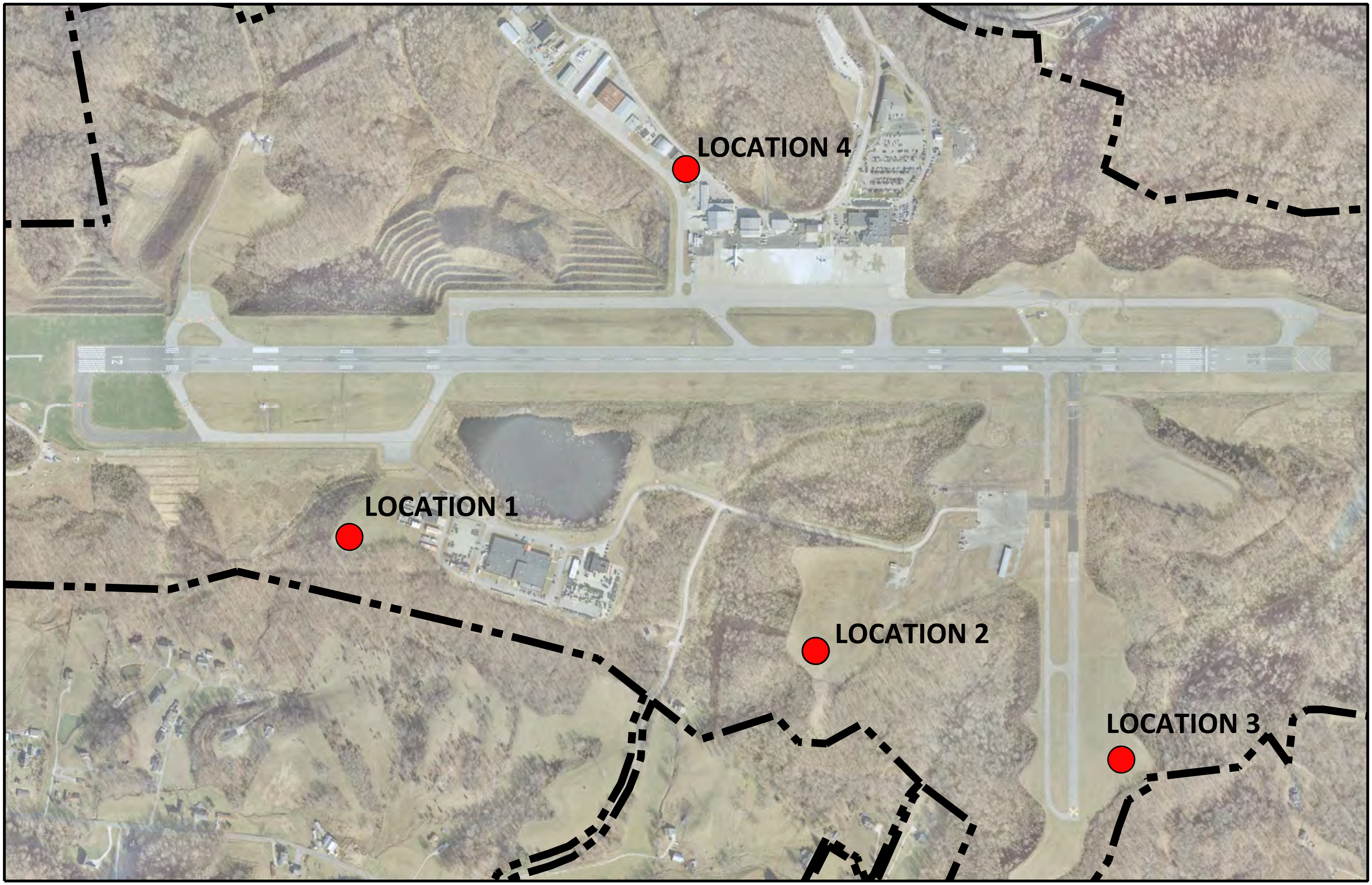
Site 2 is located in the western secondary development area of the south side. Access would be provided via Booth Road. Part 77 requirements would allow the cab elevation to be approximately 960 feet MSL. Concerns with this site include line-of-sight limitations on the height of general aviation buildings developed on the south side. As with the first site, potential glare form the stormwater pond is also a concern.

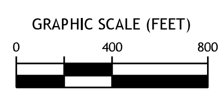
Location 3

This site is located on the east side of Taxiway B and would require roadway improvements to access the facilities. Being furthest from the runway, this location would provide the greatest cab height (up to 1,060 feet MSL). However, as with the second location, line-of-sight concerns may limit the height of general aviation buildings in the south side’s primary development area. Potential glare form the stormwater pond is also a concern.

Location 4

Aside from the existing tower location on the terminal building, this site is probably the most reasonable of anything able to be developed on the north side of the airfield. Access is readily available however it would require the removal/relocation of at least one of the existing hangar buildings. Tower cab height could be approximately 910 feet MSL however proximity to the FAA relay antennae array is a potential concern.





HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 5-23
Potential ATCT Relocation Sites

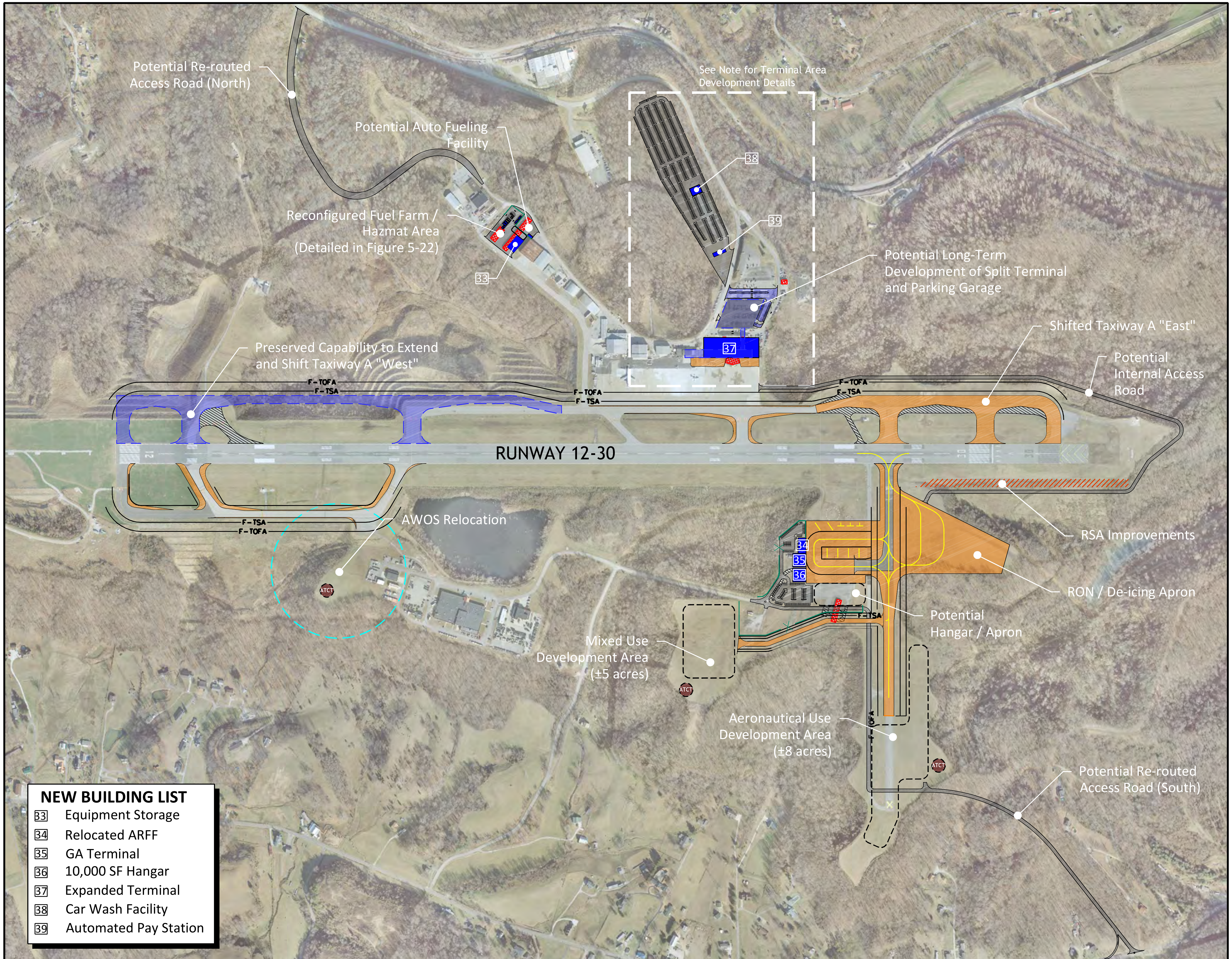
5.10 SUMMARY OF RECOMMENDED IMPROVEMENTS

Based on the recommendations and facility configurations described in this chapter, the overall development plan for Huntington Tri-State Airport is presented in **Figure 5-24**. This is still an aggressive plan that includes substantial facility development to meet the existing and growing needs of the regional aviation and business communities. The primary focus of this plan is on improving the passenger terminal and automobile parking facilities. This plan includes pursuing the "recommended terminal area program" in the near future while preserving the ability to develop the "preferred terminal area program" in the long-term future. Some of the planned airfield improvements (i.e. taxiway configuration and pavement rehabilitations) are already underway as of early 2012. While no less important, development of general aviation facilities on the south side will be pursued more directly in response to tenant demands and as funding becomes available. The Authority is preparing the south side for initial development by extending utilities into the site. Although it is recommended that Taxiway G1 be maintained for bypass capability, it will be shown as removed in order to align with the Authority's plan to no longer maintain this pavement.

This Master Plan Update is intended to function as a logical guide for the continued improvement of the Airport and its facilities. Additional detailed site planning, environmental approval and design will be needed to effectively implement these various projects. The following chapter presents a phased implementation plan and corresponding Airport Capital Improvement Plan (ACIP) for these improvements over the planning horizon.

HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE



GRAPHIC SCALE (FEET)

0 350 700

Note - Terminal Area Development

Short-term development includes:

- Rehabilitated/expanded terminal
- Remote parking lot - Phase 1
- Rehabilitated / Expand Apron
- Relocated Rental Car Wash / Maintenance Facility

Long-term development includes:

- Landside terminal and parking garage
- Demolition of existing terminal building
- Airside concourse with passenger boarding bridges
- Reconfigured curbside road
- Remote parking lot - Phase 2

Figure 5-24

Overall Recommended Development Plan

6 IMPLEMENTATION PLAN

In order to maintain a high level of customer service and promote the economic health of the Tri-State area, the Authority needs an aggressive development program that supports the success of its Airport tenants and users (i.e. airlines, rental cars, concessionaires, local businesses). This implementation plan generalizes the phasing schedules and variance may be necessary, especially during the mid- and long-term phases, due to changes in tenant/user demands, unforeseen business opportunities, changes in the regulatory environment, and availability of funds.

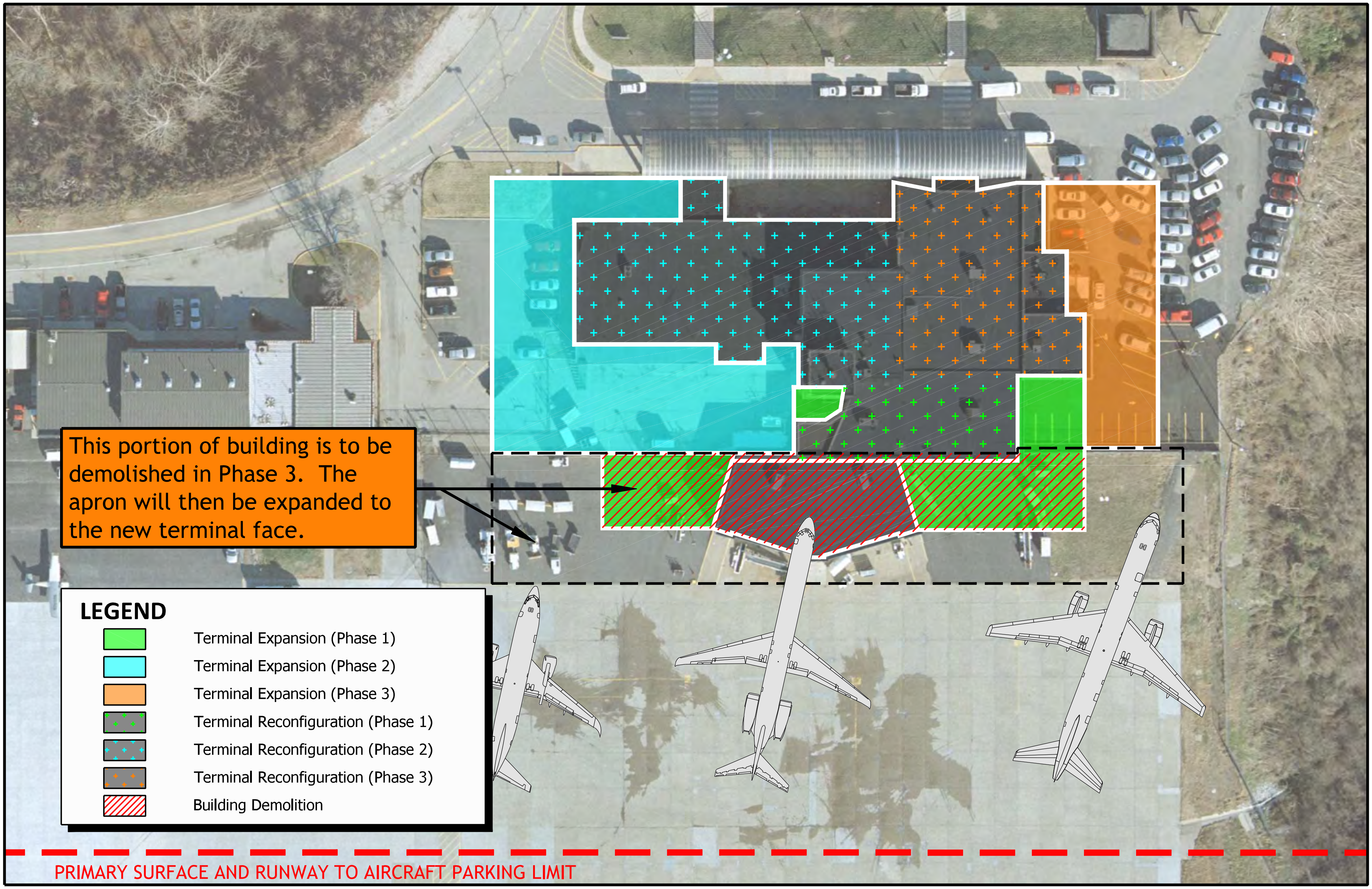
6.1 SUB-DIVIDED TERMINAL AREA PROGRAM

While the preferred intermodal terminal building and parking garage concepts provide a long-term vision for the terminal area facilities, the recommended terminal area program described previously is considered the reasonable means of addressing the immediate facility deficiencies and satisfying passenger demands. As market conditions change and funding opportunities arise (i.e. grants, third-party investors) additional facilities and expanded public amenities could be pursued.

Unfortunately, to pursue all the needed terminal area improvements, along with the needed airfield projects, a substantial funding stream over a relatively short period of time would be required. Due to the economy and financial position of the Airport as of mid-2013, the recommended terminal area program was further divided into sub-parts to expedite initial development and address the most pressing passenger needs. As depicted in **Figure 6-1**, this includes expanding and reconfiguring the terminal building in three stages and paving the remote parking lot in two stages. Due to the added complexity of multiple construction stages, this strategy includes the use of interim building expansions and the total development cost would increase from the $15.3 million identified in **Table 5-8** to approximately $17.1 as identified **Table 6-1**. This strategy does however provide a more manageable initial development cost thereby enabling the Authority to pursue the first stage of improvements in the near future.

Table 6-1 – Terminal Area Program Cost by Stage

Project Component	Part 1	Part 2	Part 3	Total
Pave Remote Parking Lot	**1,904,000**	**1,666,000**		**3,570,000**
Rehabilitate/Expand Existing Terminal Building	**2,831,000**	**6,460,000**	**4,281,500**	**13,572,500**
Terminal Building Demolition			*166,500*	*166,500*
Terminal Rehabilitation/Reconfiguration	*656,000*	*2,560,000*	*1,280,000*	*4,496,000*
Terminal Building Expansion (interim)	*1,650,000*			*1,650,000*
Terminal Building Expansion(permanent)	*450,000*	*3,900,000*	*2,400,000*	*6,750,000*
Apron Expansion/Rehabilitation	*75,000*		*435,000*	*510,000*
TOTAL COST	**4,735,000**	**8,126,000**	**4,281,500**	**17,142,500**



HTS HUNTINGTON TRI-STATE AIRPORT

MASTER PLAN UPDATE

Figure 6-1
Recommended Terminal Area Program by Phase

6.2 DEVELOPMENT PLAN BY PHASE

The implementation plan described in this chapter summarizes and prioritizes the proposed facility improvements into three general development time frames:

- Phase 1: near-term (0-5 years)
- Phase 2: mid-term (6-10 years)
- Phase 3: long-term (11-20 years)

The near- and mid-term phases of this plan focus on taxiway improvements, Part 1 of the recommended terminal area improvements and providing adequate general aviation (GA) facilities. The long-term phase is more conceptual in nature, and in effect, represents a potential ultimate build-out scenario that includes the preferred terminal area improvements (i.e. new split-terminal building and parking garage).

6.2.1 Phase 1: Near-Term Planning Horizon (0-5 Years)

The Phase 1 projects include taxiway rehabilitation and configuration improvements, terminal building improvements (rehabilitation, expansion, reconfiguration), development of a remote parking lot and relocation of the rental car wash/maintenance facility, relocation/development of GA facilities to the south side, and property acquisition within the Runway 12 RPZ. Other projects, such as the development of additional hangar facilities, could be pursued if they become warranted or fundable. Additionally, in accordance with recent FAA initiatives, it is likely that development of a Safety Management System would also need to be pursued within the near-term planning horizon.

It should be noted that several of the recommended projects, including south side development and land acquisition, will be dependent upon the results, or federal finding, of an environmental evaluation. In accordance with the federal and state funding programs, and in support of the National Environmental Policy Act of 1969 (NEPA), a determination from the FAA that the proposed projects will not have a significant impact on the environment will be needed prior to pursuing the improvements and prior to becoming eligible for grant-in-aid construction funding. To ensure that these critical improvements are implemented expeditiously and are available to meet the user needs, environmental coordination must be pursued as early in Phase 1 as possible.

6.2.2 Phase 2: Mid-Term Planning Horizon (5-10 Years)

Realizing that the availability of funding and the time needed to complete the environmental evaluation and facility design will take most of the Phase 1 five-year period, it is likely that some of the near-term improvements will wind up being pursued or completed in the Phase 2 horizon. The Phase 2 projects will include expanding the fuel farm, developing a consolidated HAZMAT storage area, improving the maintenance and equipment storage facilities, and RSA improvements. Additional south side hangars may be developed as tenant demands warrant.

The improvements being pursued in this phase will also need environmental approval prior to design and construction. However, with the finding on an Environmental Assessment typically being valid for three years, any needed Phase 2 environmental evaluation may be considered an update to the previous Phase 1 assessment. Additionally, depending on the findings of the Phase 1 environmental evaluation, and the fact that many of these Phase 2 projects will be repurposing developed areas, the evaluation requirements may be satisfied with a Categorical Exclusion (CATEX) or possibly an abbreviated Short Form Environmental Assessment. Coordination with the FAA to determine the appropriate combination of projects to include in each environmental evaluation will be needed to ensure that the intent of NEPA's "cumulative effects analysis"[19] is met.

With the highly dynamic economy, uncertainty of the FAA funding programs and fluctuation in the air travel industry, a Master Plan Update should also be pursued during the mid-term planning horizon. This update would reassess the assumptions contained in this Master Plan Update and allow the Authority to confirm and/or refine the ongoing development program for the Airport. This update would pay particular attention to changes in the market and experienced levels of user demand relative to the improvements performed earlier in Phases 1 and 2.

6.2.3 Phase 3: Long-Term Planning Horizon (10-20 Years)

This phase is more conceptual in nature and will ultimately be dependent on what actually occurs over the preceding ten years. Specific long term projects that might be pursued in this phase include development of a landside and intermodal terminal and parking garage (i.e. the preferred terminal area development plan), development of a new airside terminal with passenger boarding bridges, relocation of the Air Traffic Control Tower, internal service road connecting the northern terminal area with the south side, westerly runway extension, westerly Taxiway A extension, and continued south side apron and hangar development. To maximize use of airport land in generating operational revenue and regional economic impact, consideration must be given to the long-term potential of the airport property and any aviation dependent users/businesses that would consider proximity to the Airport a desirable business factor. This could include development of additional leasable office/industrial space and expanded intermodal or hotel facilities. Any development of non-aviation land uses within airport property would have to be closely coordinated with the FAA and be in accordance with federal grant assurances related to use of airport land.[20]

6.3 PRELIMINARY COST ESTIMATES

Preliminary cost estimates have been prepared for each of the projects recommended in this Master Plan Update. These estimates are based on 2012 dollars and were derived from similar, recent airport improvement projects with the implied assumption that incomes and expenses will generally rise commensurate with inflation. These estimates are intended for planning purposes only and should not be construed as detailed construction cost estimates, which can

---

[19] FAA Order 5050.4B *NEPA Implementing Instructions for Airport Actions*, Section 706 "EA Format and Content"

[20] http://www.faa.gov/airports/aip/grant_assurances/

only be compiled following the preparation of detailed design documentation. Spreadsheets outlining the cost assumptions and calculations are provided in **Appendix C.**

The recommended improvement projects, and associated costs, for each of the three development phases are identified in **Table 6-2**. Keep in mind this is an aggressive development program and the outlined phasing reflects somewhat unconstrained financial resources.

Table 6-2 – Phased Development Plan and Preliminary Cost Estimates

Project Description	Total Cost ($)
Phase 1: Near-Term Planning Horizon (0-5 Years)	
Program Definition & Environmental Assessment (5 Year Development Program)	**476,000**
Pave Remote Parking Lot (Part 1)	**1,904,000**
Recommended Passenger Terminal Rehabilitation & Expansion (Part 1)	**2,831,000**
Terminal Rehabilitation/Reconfiguration	*656,000*
Terminal Building Expansion (interim)	*1,650,000*
Terminal Building Expansion(permanent)	*450,000*
Apron Expansion/Rehabilitation	*75,000*
Taxiway Rehabilitation & Configuration Improvements (see note 3)	**13,042,000**
Land Acquisition Runway 12 RPZ	**263,000**
South Side Development Program	**8,200,000**
General Aviation Terminal and Apron	*7,850,000*
Fuel Facility	*350,000*
Relocated Rental Car Wash / Maintenance Facility	**500,000**
Safety Management System	**250,000**
TOTAL PHASE 1 COST	**27,466,000**
Phase 2: Mid-Term Planning Horizon (5-10 Years)	
Master Plan Update	**500,000**
Realign Taxiway A East (see note 3)	**10,900,000**
Airport Maintenance & Storage Building	**1,000,000**
Consolidated HAZMAT & Fuel Farm Expansion	**400,000**
Auto Fuel Center	**650,000**
Pave Remote Parking Lot (Part 2)	**1,666,000**
RSA Improvement Program	**9,900,000**
Environmental & Design	*900,000*
RSA Improvements Construction	*9,000,000*
TOTAL PHASE 2 COST	**25,016,000**

Table continues on next page.

Table 6-2 (Continued)

Phase 3: Long-Term Planning Horizon (10-20 Years)	
Replacement Terminal Building, Parking Garage & Intermodal Facility (i.e. the "Alternative" or "*Preferred Terminal Area Development Program*")	**39,429,500**
Environmental	*400,000*
Landside & Intermodal Terminal	*14,777,000*
Parking Garage Levels	*10,710,000*
Access Road Improvements (Curbside)	*162,000*
Old Terminal Building Demolition	*1,000,500*
Replacement Airside Terminal	*10,080,000*
Passenger Bridges	*2,300,000*
Relocate ARFF to South Side	**2,500,000**
Internal Service Road (Eastern)	**9,000,000**
Air Traffic Control Tower Relocation	**8,000,000**
Runway 12-30 Extension (1,000' West)	**18,000,000**
Parallel Taxiway A Westerly Extension Program	**11,500,000**
Environmental & Design	*1,000,000*
TW A Westerly Extension Construction	*10,500,000*
TOTAL PHASE 3 COST	**88,429,500**
TOTAL PROGRAM DEVELOPMENT COST (PHASES 1-3)	**140,911,500**

Prepared by: CHA 2013
Notes:

1. Cost estimates include all associated property/easement acquisition, design and construction phase services.
2. Cost estimates are in 2012 dollars.
3. Cost estimate provided by Kimley Horn, (2013)

6.4 COMPREHENSIVE AIRPORT CAPITAL IMPROVEMENT PLAN (ACIP)

The actual timing or phasing of the specific projects, or project elements, may change in response to tenant/user demands, unforeseen business opportunities, changes in the regulatory environment and availability of federal and state funds. Care must also be taken to provide adequate lead-time for detailed planning, permitting, and construction to ensure that the proposed facilities are operational when warranted by the user demands. It is also important to minimize any disruptive scheduling where a portion of one facility may become inoperative due to construction of another, and to prevent extra costs resulting from improper project scheduling.

Table 6-3 combines the specific Phase 1 and Phase 2 projects (broken down into design and construction elements as appropriate) with the Authority's current ACIP, thereby creating a comprehensive, updated 10-year funding program. For planning purposes, unless otherwise indicated, it is assumed that West Virginia Department of Transportation funding assistance will match eligible FAA AIP grants at five percent and that the Authority will provide the remaining five percent local share. In recent history, the state has been able to fund the full ten percent match. An annual funding summary is provided in **Table 6-4**. A financial feasibility analysis of this program is further described in **Chapter 7**.

Table 6-3 – Proposed 10-Year Airport Capital Improvement Program (ACIP)

	Project Component	Cost ($)	AIP	WV DOT	Sponsor	PFC	CFC	Other
Year 1								
1	Improve Airport Drainage – Des & Construct	248,421	223,579	12,421		12,421		
2	Snow Removal Equipment – Acquisition	453,300	407,970	22,665		22,665		
3	Perimeter Fence & Gate Operators	23,000	20,700	1,150		1,150		
4	Update PFC Application	26,034				26,034		
5	Access Road Repair – Des & Construct	500,000	450,000	25,000		25,000		
6	Terminal Building Repairs – Des & Construct	948,100	760,770	84,530		102,800		
7	Terminal Area Program Definition (Phase-1)	46,545				23,950	22,595	
	Totals	**2,245,400**	**1,863,019**	**145,766**	**0**	**214,020**	**46,545**	**0**
Year 2								
8*	Rehabilitate Taxiway G and A West - Construction	6,092,000	5,482,800	609,200				
9	Terminal Area Program Definition (Phase-2)	30,000				18,000	12,000	
	Totals	**6,122,000**	**5,482,800**	**609,200**	**0**	**18,000**	**12,000**	**0**
Year 3								
10	Environmental Assessment (for 5 year program)	400,000	360,000	20,000		20,000		
11*	Rehabilitate Taxiway A East, C, E, F and AFL Control	6,450,000	5,805,000	645,000				
12	Pave Remote Auto Parking Lot – Design (Part 1)	190,400			64,500	75,900	50,000	
13	Rehabilitate & Expand Terminal Building – Design (Part 1)	283,100				283,100		
14	Southside GA Terminal and Apron, – Design	650,000	327,600	18,200		18,200		286,000
15	Land Acquisition Runway 12 RPZ – Services	63,000	56,700	3,150		3,150		
	Totals	**8,036,500**	**6,549,300**	**686,350**	**84,500**	**380,350**	**50,000**	**286,000**

	Project Component	Cost ($)	AIP	WV DOT	Sponsor	PFC	CFC	Other
Year 4								
16	Pave Remote Auto Parking Lot – Construct (Part 1)	1,713,600			1,213,600		500,000	
17	Rehabilitate & Expand Terminal Building – Construct (Part 1)	2,547,900			2,195,600	352,300		
18	Terminal Building Security Enhancements	300,000	270,000	15,000		15,000		
19	Southside GA Terminal and Apron – Construct	7,200,000	3,628,800	201,600		201,600		3,168,000
20*	Land Acquisition Runway 12 RPZ – Fee Simple	200,000	180,000	10,000		10,000		
21	Replace Terminal/Airfield Backup Generators	425,000	382,500	21,250		21,250		
	Totals	**12,386,500**	**4,461,300**	**247,850**	**3,409,200**	**600,150**	**500,000**	**3,168,000**
Year 5								
22*	Realign Taxiway A (East) – Design	500,000	450,000	25,000		25,000		
23	Relocate Rental Car Wash/Maintenance Facility	500,000					250,000	250,000
24	Southside Fuel Farm – Design & Construct	350,000						350,000
25	Safety Management System Planning	250,000	225,000	12,500		12,500		
26*	Seal Coat Runway	350,000	315,000	17,500		17,500		
	Totals	**1,950,000**	**990,000**	**55,000**	**0**	**55,000**	**250,000**	**600,000**

	Project Component	Cost ($)	AIP	WV DOT	Sponsor	PFC	CFC	Other
Year 6								
27*	Realign Taxiway A (East) – Construct Earthwork & Drainage	4,300,000	3,870,000	215,000		215,000		
28*	Realign Taxiway A (East) – Construct Paving & Lighting	6,600,000	5,940,000	330,000		330,000		
29	Consolidated HAZMAT & Fuel Farm Expansion – Design & Construct	400,000	90,000	5,000	150,000	5,000		150,000
	Totals	**11,300,000**	**9,900,000**	**555,000**	**150,000**	**550,000**	**0**	**150,000**
Year 7								
30	Master Plan Update – Phase 2	500,000	450,000	25,000		25,000		
31	Maintenance & Storage Building – Des & Construct	1,000,000	360,000	20,000	600,000	20,000		
	Totals	**7,712,000**	**5,383,800**	**299,100**	**600,000**	**299,100**	**0**	**1,130,000**
Year 8								
32*	Runway Safety Area Improvement – Env. & Design	900,000	810,000	45,000		45,000		
33	Pave Remote Auto Parking Lot – Design (Part 2)	166,000			124,950		41,650	
	Totals	**1,066,600**	**810,000**	**45,000**	**124,950**	**450,000**	**41,650**	**0**
Year 9								
34	Pave Remote Auto Parking Lot – Construct (Part 2)	1,499,400			999,400		500,000	
35*	Runway Safety Area Improvement – Construct	9,000,000	8,100,000	45,000		450,000		
	Totals	**10,499,400**	**8,100,000**	**45,000**	**99,400**	**450,000**	**500,000**	**0**
Year 10								
36	Auto Fuel Center – Design & Construct	650,000			130,000			520,000
37	Relocate ARFF to Southside – Design	250,000	126,000	7,000	117,000			
	Totals	**900,000**	**126,000**	**7,000**	**247,000**	**0**	**0**	**520,000**
	TOTAL 10 YEAR PROGRAM COST	**56,006,400**	**39,092,419**	**2,841,166**	**5,615,050**	**2,357,520**	**1,376,245**	**4,724,000**

Source: CHA, 2012

Note: Gray cells indicate projects that are underway as of mid-2013

* Cost estimate provided by Kimley Horn

Table 6-4 – Proposed 10-Year ACIP – Summary by Year

Year	Cost ($)	AIP	WV DOT	Sponsor	PFC	CFC	Other
Year 1 (2012)	$2,245,400	$1,863,019	$145,766	$0	$214,020	$22,595	$0
Year 2	$6,122,000	$5,482,800	$609,200	$0	$18,000	$12,000	$0
Year 3	$8,036,500	$6,549,300	$686,350	$84,500	$380,350	$50,000	$286,000
Year 4	$12,386,500	$4,461,300	$247,850	$3,409,200	$600,150	$500,000	$3,168,000
Year 5	$1,950,000	$990,000	$55,000	$0	$55,000	$250,000	$600,000
Year 6	$11,300,000	$9,900,000	$550,000	$150,000	$550,000	$0	$150,000
Year 7	$1,500,000	$810,000	$45,000	$600,000	$45,000	$0	$0
Year 8	$1,066,600	$810,000	$45,000	$124,950	$45,000	$41,650	$0
Year 9	$10,499,400	$8,100,000	$450,000	$999,400	$450,000	$500,000	$0
Year 10	$900,000	$126,000	$7,000	$247,000	$0	$0	$520,000
TOTAL 10 YEAR PROGRAM	**56,006,400**	**39,092,419**	**2,841,166**	**5,615,050**	**2,357,520**	**1,376,245**	**4,724,000**

7 FINANCIAL PLAN

This section presents financial projections for HTS based on the Airport's Capital Improvement Program (ACIP) presented in Chapter 6 and the aviation activity forecasts presented in Chapter 3. The Airport's Fiscal Year (FY) ends June 30. Financial projections were developed for the first two planning periods: Phase 1 (1-5 years or FY 2012 through FY 2016) and Phase 2 (6-10 years or FY 2017 through FY 2021). The FY 2012 numbers included in this chapter are as presented in the in the 2012 Audited Financial Statements (2012 Audit), the FY 2013 amounts represent unaudited actual results through June 30, 2013 (2013 Estimate), and the FY 2014 amounts are as presented in the budget approved on June 20, 2013 (2014 Budget).

7.1 AUTHORITY'S FINANCIAL STRUCTURE

The Authority is a corporation created under the authority of the State of West Virginia. The Authority is owned and operated by an 16-member board (the Board). The Board is comprised of appointees from City of Huntington, WV; City of Ashland, KY; Town of Kenova, WV; Town of Ceredo, WV; Village of Barboursville, WV; Cabell County Commission; Wayne County Commission; Lawrence County Commission; Lawrence County EDO/Chamber; Boyd County Fiscal Court; Huntington Regional Chamber of Commerce; Huntington Area Development Council; Ashland Alliance; and the Northeast Industrial Authority. The Authority provides passenger and freight transportation to the public of the Tri-State area.

The Authority accounts for its operation in a proprietary fund using the economic resources measurement focus and the accrual basis of accounting. Revenues are recognized when earned and expenses are recognized when a liability is incurred, regardless of the timing of the related cash flows. A proprietary fund distinguishes operating revenues and expenses from non-operating items.

7.2 AIRPORT CAPITAL IMPROVEMENT PROGRAM

All airports receiving federal AIP funding are required to maintain a current ACIP with the FAA, which identifies projects to be undertaken at an airport over a specified period of time. This plan further estimates the order of implementation as well as total project costs and funding sources. It incorporates all projects recommended as part of this Master Plan Update from FY 2012 through FY 2021.

The recommended ACIP and its corresponding cost estimates are based on a planning level of detail and are presented in **Table 7-1**. While accurate for master planning purposes, actual project costs will likely vary from these planning estimates once project design and engineering estimates are developed. The cost estimates presented in the table are in 2012 dollars inflated at 3.2% annually and also include contingencies, design costs, and construction management costs. As shown in the table, the ACIP is estimated to cost approximately $56.0 million in 2012 dollars and approximately $63.8 million in inflated dollars.

Table 7-1 – 10-Year ACIP

	Project Costs[1] 2012 Dollars	Project Costs Inflated[2]	Funding Sources					
			Federal[3]	State	PFC	CFC	Private Investment	HTS
FY 2012	$2,245,400	$2,245,400	$1,863,019	$145,766	$214,020	$22,595	$0	$0
FY 2013	**6,122,000**	**6,122,000**	**5,482,800**	**609,200**	**18,000**	**12,000**	**0**	**0**
FY 2014	8,036,500	8,559,000	6,974,568	730,926	400,626	50,000	304,480	98,400
FY 2015	**12,386,500**	**13,614,000**	**4,903,956**	**272,442**	**624,742**	**500,000**	**3,482,160**	**3,830,700**
FY 2016	1,950,000	2,212,000	1,123,200	62,400	62,400	283,500	680,500	0
5 Year Total	$30,740,400	$32,752,400	$20,347,543	$1,820,734	$1,319,788	$868,095	$4,467,140	$3,929,100
FY 2017- 2021	**$25,266,000**	**$31,072,000**	**$24,165,108**	**$1,342,506**	**$1,204,260**	**$541,650**	**$695,500**	**$3,122,976**
10 Year Total	$56,006,400	$63,824,400	$44,512,651	$3,163,240	$2,524,048	$1,409,745	$5,162,640	$7,052,076

[1] Represents ACIP as presented in Chapter 6.
[2] Project costs were inflated at 3.2%, which reflects the five-year average of *Engineering News-Record's* Construction Cost Index.
[3] Federal funds include funds from FAA AIP (entitlement and discretionary).
Source: RW Armstrong

Table 7-1 also presents the ACIP's estimated funding sources for the 10-year planning period. Potential funding sources for any proposed improvements at HTS can be found at a variety of agencies, both federal and state. Many of the available funds come in the form of grants, should the project meet eligibility requirements. Additional financing options are available such as passenger facility charges (PFCs), customer facility charges (CFCs), other funds, and HTS funds.

The following sections will list available sources and detail the eligibility requirements for each. The amount of funding available from these sources will depend primarily on future levels of aviation activity at HTS and future federal reauthorizations.

7.2.1 Federal Grants

Grants administered by the FAA through the AIP represent a critical capital funding source to implement the projects recommended in this Master Plan Update. Although the future status of the AIP is currently uncertain, for the purpose of this Master Plan Update, it is assumed that the AIP will continue to be authorized and appropriated at levels consistent with H.R. 658, the FAA Modernization and Reform Act of 2012.

The U.S. DOT classifies HTS as a small hub primary airport; therefore, the AIP formula stipulates that HTS is entitled to receive 90% in federal funding for AIP-eligible projects. AIP funds can be used for most airport improvement needs but not operating costs. Note, however, that AIP funds are typically not available for revenue-generating projects, so it may be difficult, though not impossible, for the Authority to use these funds for projects designated to generate revenue.

As shown on Table 7-1, federal grants are estimated to be approximately $44.5 million from FY 2012 through FY 2021. Of this amount, approximately $13.6 million is assumed to be funded with entitlement grants and approximately $30.9 million with discretionary grants both of which are further described below.

Entitlement Grants: The FAA's AIP consists of entitlement funds and discretionary funds. Entitlement funds are distributed through grants by a formula currently based on the number of enplanements and the amount of landed weight of arriving cargo at individual airports. In cases where entitlement funds are not used during the current federal fiscal year, these funds are redistributed to other airport sponsors as discretionary funds and become "protected entitlement" funding in the next federal fiscal year. **Table 7-2** presents the AIP entitlement calculation for HTS. This calculation is based on the "baseline growth scenario" for PAL 2 enplanements as presented in Chapter 4, annualized to reflect actual 2012 activity levels of 104,797 enplanements. As shown in the table, it is estimated that HTS will receive approximately $13.6 million in entitlement AIP grants from FY 2012 through FY 2021.

Table 7-2 – AIP Entitlement Calculation

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017-2021
Enplanements for Entitlement	**104,797**	**106,369**	**107,964**	**109,584**	**111,228**	**581,671**
FAA Formula[1]						
$7.80 for 1st 50,000 Enplanements	**$390,000**	**$390,000**	**$390,000**	**$390,000**	**$390,000**	**$1,950,000**
$5.20 for next 50,000 Enplanements	**260,000**	**260,000**	**260,000**	**260,000**	**260,000**	**1,300,000**
$2.60 for next 400,000 Enplanements	**12,000**	**17,000**	**21,000**	**25,000**	**29,000**	**213,000**
$0.65 for next 500,000 Enplanements	**0**	**0**	**0**	**0**	**0**	**0**
$0.50 for the remaining Enplanements	**0**	**0**	**0**	**0**	**0**	**0**
Total Calculated Entitlements	$662,000	$667,000	$671,000	$675,000	$679,000	$3,463,000
Total Calculated Entitlements x 2	$1,324,000	$1,334,000	$1,342,000	$1,350,000	$1,358,000	$6,926,000
2 Year Lag in Receipt of Grants [2]	$1,379,368	$1,384,000	$1,324,000	$1,334,000	$1,342,000	$6,836,000
Cumulative AIP Entitlement Grants		$2,763,368	$4,087,368	$5,421,368	$6,763,368	$13,599,368

[1] **The FAA formula is defined in 49 United States Code § 47114.**

[2] **The FY 2012 grant amount represents AIP 3-54-0010-48-2012 and AIP 3-54-0010-49-2012 approved September 7, 2012.**

Discretionary Grants: At the beginning of each federal fiscal year, the FAA sets aside the amount of discretionary funds to cover the Letter-of-Intent (LOI) payment schedules. The total of discretionary funds in all LOIs subject to future obligation is limited to approximately 50% of the forecast discretionary funds available for that purpose. The authorizing statute directs the FAA to allocate certain discretionary funding to specific airport types and "set-aside" categories such as noise, reliever airports, military airport program, and projects relating to capacity, safety, security, and noise. However, the FAA has some discretion in funding specific projects within these discretionary funding "set-aside" categories. The FAA approves discretionary funds for use on specific projects after consideration of project priority and other selection criteria. The recommended ACIP projects include runway reconstruction, construction of taxiways, apron expansion, and taxiway improvements, which meet the eligibility requirements for discretionary funding. As previously mentioned, HTS currently estimates receiving approximately $30.9 million in discretionary funding.

Table 7-3 presents the federal grants that are assumed to fund the eligible portions of the ACIP. As shown in the table, available entitlement and discretionary are sufficient to fund the eligible portions of the ACIP in total; however, annual grant collections in certain years may not be sufficient to fund certain project costs requiring short-term funding until the project costs can be reimbursed.

Table 7-3 – Application of Federal Grants

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017-2021	Total
Available AIP Grants							
Entitlement Grants	**$1,379,368**	**$1,384,000**	**$1,324,000**	**$1,334,000**	**$1,342,000**	**$6,836,000**	**$13,599,368**
Discretionary Grants	**450,000**	**4,282,800**	**5,751,168**	**4,483,656**	**0**	**15,945,659**	**30,913,283**
Total Available AIP Grants	$1,829,368	$5,666,800	$7,075,168	$5,817,656	$1,342,000	$22,781,659	$44,512,651
Federally Eligible Portion of ACIP[1]	$1,863,019	$5,482,800	$6,974,568	$4,903,956	$1,123,200	$24,165,108	$44,512,651
Difference	($33,651)	$184,000	$100,600	$913,700	$218,800	($1,383,449)	$0

[1] **Represents federally eligible portion of the ACIP as presented in Table 7-1.**

7.2.2 State Grants

The West Virginia Aeronautics Commission (WVAC) administers the grant program to encourage and support needed capital improvements to West Virginia's public airports. According to this program if an airport meets the criteria to receive FAA AIP funds, they would also qualify for funding from the state program. Currently, West Virginia airports that meet the WVAC's criteria can qualify for up to half of the local share required to match FAA funds. WVAC's grant program is supported by the state tax on aircraft fuel and general revenue funds. As shown on Table 7-1, approximately $3.2 million of the ACIP is anticipated to be funded with state grants.

7.2.3 Passenger Facility Charges

PFCs are authorized by Title 14 of the Code of Federal Regulations, Part 158 and are administered by the FAA. PFCs collected from qualified enplaned passengers are used to fund eligible projects. An airport operator can impose a PFC of $1.00, $2.00, $3.00, $4.00, or $4.50 per eligible enplaned passenger. Once a PFC is imposed, it is included as part of the ticket price paid by passengers enplaning at the airport, collected by the airlines, and remitted to the airport operator, less an allowance for airline processing expenses. The PFC legislation stipulates that if a medium- to large-hub airport institutes a PFC of $1.00, $2,00, or $3.00, they must forego 50% of their AIP entitlement funds. This increases to 75% if they charge a $4.00 or $4.50 PFC. Since HTS is classified as a small hub airport, it does not have to forego any of its annual AIP entitlement funds.

Projects that are eligible for PFC funding are those that preserve or enhance the capacity, safety, or security of the air transportation system; reduce noise or mitigate noise effects; or furnish opportunities for enhanced competition between or among air carriers. PFCs cannot be used for revenue-generating facilities at airports, such as restaurants and other concession space, rental car facilities, public parking facilities, or construction of exclusively leased space or facilities.

The Authority submitted its first PFC application in FY 1996, receiving approval from the FAA to charge a PFC of $3.00 per enplaned passenger. Since that time, the Authority has received approval for six additional applications, with PFC Application #7 being the only active application. In April 2012, the FAA approved PFC Application #7 to collect $2,369,532 in PFC revenues at a $4.50 per enplaned passenger charge. PFC #7 has an expiration date of October 1, 2017, which occurs during the 10-year planning period of this analysis. This analysis assumes the Authority will submit additional PFC applications to the FAA when necessary to fund the remaining PFC-eligible portions of the ACIP. **Table 7-4** presents the PFC calculation for the Authority based on the "baseline growth scenario" enplanement projections presented in Chapter 4, and adjusted for actual 2012 activity levels.

Table 7-4 – Application of PFCs

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017-2021	Total
Revised Forecast		**106,369**	**107,964**	**109,584**	**111,228**		
Enplanements for PFC (99%)		**105,305**	**106,885**	**108,488**	**110,115**		
$4.50 per Enplanement[1]		**$4.50**	**$4.50**	**$4.50**	**$4.50**		
Annual PFCs		**$474,000**	**$481,000**	**$488,000**	**$496,000**	**$2,591,000**	
LESS: Carrier Compensation		**(12,000)**	**(12,000)**	**(12,000)**	**(12,000)**	**(63,000)**	
PLUS: Investment Earnings		**6,000**	**6,000**	**6,000**	**6,000**	**31,000**	
Total PFC Revenue[2]	$333,793	$468,000	$475,000	$482,000	$490,000	$2,559,000	$4,807,793
PFC Eligible Portion of ACIP[3]	$214,020	$18,000	$400,626	$624,742	$62,400	$1,204,260	$2,524,048
Annual Difference	$119,773	$450,000	$74,374	($142,742)	$427,600	$1,354,740	$2,283,745
Cumulative Difference		$569,773	$644,147	$501,405	$929,005	$2,283,745	

[1] **The PFC formula is defined in 49 United States Code § 40117.**

[2] **The FY 2012 amount represents the actual PFC revenues as presented in the 2012 Audit.**

[3] **Represents PFC eligible portion of the ACIP as presented in Table 7-1.**

As shown in the table, HTS is estimated to collect approximately $4.8 million in PFCs from FY 2012 through FY 2021, which is sufficient to fund the PFC-eligible portions of the ACIP of approximately $2.5 million. Annual PFC collections in certain years may not be sufficient requiring short-term funding until the project costs can be reimbursed.

7.2.4 Customer Facility Charges

The Authority does not have a formal CFC agreement with the rental cars; however, in 2010, they formed a CFC Committee comprised of airport management and representatives from each rental car agency. The CFC Committee meets regularly to discuss among other things the budget and level of CFC being charged. In 2010, the CFC Committee recommended the Authority institute a $3.00 per transaction day charge. It was agreed that the revenue received from this CFC charge would fund construction bonds, loans, matching grants, or other fiscal obligations related to the design and construction for other improvements or purchases for the benefit of rental car facilities at HTS.

Table 7-5 presents the CFC calculation for HTS based on the terms in the lease agreement with the rental cars. CFCs are used to fund certain projects in the ACIP related to the rental cars totaling approximately $1.4 million. As shown in the table, CFCs are sufficient to fund the eligible portions of the ACIP; however, collections in certain years may not be sufficient to fund certain project costs requiring short-term funding until the project costs can be reimbursed.

Table 7-5 – Application of CFCs

	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017-2021	Total
Revised Forecast	**104,797**	**106,369**	**107,964**	**109,584**	**111,228**		
Estimated Rental Car Transactions	**56,096**	**56,938**	**57,792**	**58,658**	**59,538**		
Rate per Transaction	**$3.00**	**$3.00**	**$3.00**	**$3.00**	**$3.00**		
Annual CFCs	$168,288	$171,000	$173,000	$176,000	$179,000	$934,000	
Actual CFC Revenue	$94,040	N/A	N/A	N/A	N/A	N/A	
Cumulative CFC Revenue	$262,328	$433,328	$606,328	$782,328	$961,328	$1,895,328	
CFC Revenue[1]	$262,328	$171,000	$173,000	$176,000	$179,000	$934,000	$1,895,328
CFC Eligible Portion of ACIP[2]	$22,595	$12,000	$50,000	$500,000	$283,500	$541,650	$1,409,745
Difference	$239,733	$159,000	$123,000	($324,000)	($104,500)	$392,350	$485,583

[1] The FY 2012 CFC revenue amount includes FY 2011 and FY 2012 actual CFC revenues.

[2] Represents CFC eligible portion of the ACIP as presented in Table 7-1.

7.2.5 Private Investment

Many airports use private third party investment when the planned improvements will be primarily used by a private business or other organization. Such projects are not ordinarily eligible for federal funding. Projects of this kind typically include hangars, fixed based operator facilities, fuel storage, exclusive aircraft parking aprons, industrial aviation use facilities, non-aviation office/commercial/industrial developments, and other similar projects. Private development proposals are considered on a case-by-case basis. Often, airport funds for infrastructure, preliminary site work, and site access are required to facilitate privately developed projects on airport property.

As shown on Table 7-1, approximately $5.2 million in private investment is assumed from FY 2012 through FY 2021 to fund the construction of a general aviation terminal, apron, and fuel farm located on the south side of HTS, a consolidated hazard material and fuel farm expansion, and an auto fuel center and the relocation of a car wash/maintenance facility.

7.2.6 Authority Funds

The Authority generates revenue through airline revenues, terminal concessions, ground and facility leases, fuel flowage fees, landing fees, ramp fees, and parking revenue. Typically, such revenues are used to cover operations and maintenance expenses along with debt service obligations. However, any surplus revenues can be applied directly to the ACIP. As shown on Table 7-1, approximately $7.1 million in Authority funding is required to fund the ACIP. This analysis assumes the local funding requirement will be funded from the issuance of general airport revenue bonds (GARBs), which are described further in the next section.

7.3 FINANCIAL FEASIBILITY

This section of the financial analysis presents the existing debt service, projected operating expenses, and projected revenues resulting from the daily operation of the Authority. In addition, the expense and revenue increases resulting from the implementation of the ACIP are layered into the projections to determine if it is feasible for the Authority to undertake the program within the FY 2012 through FY 2021 planning period.

7.3.1 Outstanding Long-Term Debt

The Authority currently has one long-term debt obligation with United Bank. This obligation has an interest rate of 4.32% payable in monthly installments of $4,198. It is secured by equipment and matures on December 6, 2015, which occurs in FY 2016. **Table 7-6** presents the Authority's outstanding and future debt service requirements.

Table 7-6 – Outstanding Long-Term Debt

	Principal	Interest	Total
FY 2012	$42,947	$0	$42,947
FY 2013	**$42,947**	**$7,423**	**$50,370**
FY 2014	$44,839	$5,531	$50,370
FY 2015	**$46,815**	**$3,555**	**$50,370**
FY 2016	$56,769	$1,520	$58,289

Source: 2012 Audit

7.3.2 Operating Expenses

Operating expenses of the Authority include the cost of sales and services and administrative expenses. These include items such as salary and wages, professional services, travel and training, communications and freight, insurance, utility services, repairs and maintenance, marketing and promotional activities, operating supplies, dues, memberships, publications, and other charges and obligations.

The FY 2012 operating expenses reflect the actual expenses presented in the 2012 Audit, the FY 2013 amounts reflect unaudited actual expenses through June 30, 2013, and the FY 2014 operating expenses reflect the amounts presented in the 2014 Budget. **Table 7-7** presents operating expenses by line item for FY 2012 through FY 2016 and FY 2021.

Table 7-7 – Operating Expenses

	Actual FY 2012	YTD FY 2013	Budget FY 2014	Projected FY 2015	Projected FY 2016	Projected FY 2021
Salary and Wages	$1,625,128	$1,571,306	$1,529,398	$1,567,700	$1,607,000	$1,818,500
Professional Services	**122,695**	**59,129**	**80,985**	**83,100**	**85,300**	**96,300**
Travel and Training	32,413	15,070	25,000	25,700	26,400	29,900
Communications and Freight	**24,926**	**23,960**	**27,906**	**28,600**	**29,300**	**32,800**
Insurance	41,784	61,332	73,648	75,400	77,300	87,400
Utility Services	**179,295**	**202,719**	**209,840**	**215,100**	**220,500**	**249,900**
Repairs and Maintenance	127,229	111,049	113,832	116,600	119,500	134,800
Marketing and Promotional Activities	**98,858**	**88,720**	**90,231**	**92,500**	**94,700**	**106,500**
Operating Supplies	68,629	66,388	94,951	97,400	100,000	113,300
Dues, Memberships, Publications	**6,629**	**5,800**	**7,435**	**7,600**	**7,800**	**8,800**
Other Charges and Obligations	91,531	72,667	80,082	82,100	84,100	95,100
Total	**$2,419,117**	**$2,278,140**	**$2,333,308**	**$2,391,800**	**$2,451,900**	**$2,773,300**
Percent Increase		-5.8%	2.4%	2.5%	2.5%	
CAGR FY 2012 - FY 2016					0.3%	
CAGR FY 2012 - FY 2021						1.5%
CAGR FY 2014 - FY 2016					2.5%	
CAGR FY 2014 - FY 2021						2.5%

Sources: Authority FY 2012, FY 2013, and FY 2014, MAC Consulting, LLC, FY 2015-FY 2021

As shown in the table, operating expenses were approximately $2.4 million in FY 2012 and are estimated to decrease 5.8% to approximately $2.28 million in FY 2013. This decrease is primarily the result of a decrease in salaries and wages for overtime, performance incentives, worker's compensation, and retirement and professional services for consulting services being reprogrammed to FY 2014. FY 2014 operating expenses are budgeted to increase 2.4% over FY 2013 estimates to $2.33 million primarily as a result of an increase in professional services for consulting services being reprogrammed from FY 2013, an increase in property and casualty insurance, and an increase in custodial supplies.

Operating expenses are forecast to be approximately $2.8 million in FY 2021, reflecting a compound annual growth rate of 2.5% from FY 2014 through FY 2021. Operating expenses are projected based on a review of historical trends and the anticipated effects of inflation assumed at 2.5% annually, reflecting a 10-year average of the Consumer Price Index.

7.3.3 Operating Revenues

Major sources of operating revenue at HTS are derived from non-airline and airline sources. Non-airline revenues account for 90% of total revenue in the 2014 Budget and include items such as parking, fuel sales, building and land leases, rental car, restaurant, ground handling, and hangar rentals. A summary of major non-airline tenant leases is presented in **Table 7-8** and a summary of major hangar leases is presented in **Table 7-9**.

Table 7-8 – Major Non-airline Tenants

Lessee	Lease Date	Term (yrs)	Option (yrs)	Expires w/options	Area (sq. ft. / acres)	Rental Rate
FAA	10/1/12	5		9/30/17	Office Space: 6589 sq. ft. Non-Exclusive Space: sq. ft. # Reserved Veh. Parking Spaces	$4,961 / month
Avis Rent A Car System, Inc.	3/1/05	3		2/28/14	Counter: 272 sq. ft. Commission 10% # Reserved Veh. Parking Spaces 25	272 @ $14.47 $327.96 $857.96 / month Car Wash $185.00 25 @ $13.80 $345.00
Enterprise Rent A Car	4/1/08	3		2/28/14	Counter: 276 sq. ft. Commission 10% # Reserved Veh. Parking Spaces 25	276 @ $14.63 $336.49 $971.49 / month Car Wash $185.00 25 @ $18 $450.00
The Hertz Corporation	3/1/05	3		2/28/14	Counter: 296 sq. ft. Commission 10% # Reserved Veh. Parking Spaces 26	296 @ $16.70 $412.08 $987.08 / month Car Wash $185.00 26 @ $15 $390.00
LDE, Inc (Landing Restaurant)						$1,000 / month 2% Commission
Better Foods Inc.	5/17/12	5	5	5/31/22		$1,166.67 / month or 3% of monthly Gross Revenue
Better Foods Inc.	12/1/12					$100 / month Internet Services $100 / month Trash pick-up Services
TSA	9/1/12	5	5	1/1/13	610 sq. ft.	$1,742.06 / month
Catlettsburg Refining	6/1/12	1			Station Site 16' x 20'	$1,800.00 / year
Lamar	10/1/09			10/1/15		$1,800.00 / year
Screentronix USA, LLC	5/16/12	10	10	5/16/32		$20,000 or 10% of net revenue If net rev is over $500,000, $75,000 for that yr
R & W Properties	8/1/87			7/31/17		$1.00 / year
Societe Internationale De Telecommunications	11/3/05	monthly			12 S. F.	$4,800.00 / year
WV PCS Alliance, L.C. (SBA Tower)	4/21/05	5	5	8/1/30	6,000 S.F.	$5,400.00 / year
WV Armory Board	5/20/93			5/19/43		$1.00 / year
Professional Aeronautics Academy, LLC	1/1/12	2	2	12/31/15		$492.18 / month

Source: Authority records

Table 7-9 – Major Hangar Tenants

Lessee	Hangar	Rental Rate
Hangars		
Precision Components & Machine	3	$150/ month
Federal Express	**4**	**$11,643.15/ month**
Attitude AV Inc	6	$1,600/ month
Davis & Burton Con	**7**	**$225/ month**
Fred Hitchings	8	$100/ month
Adrien A Johnson	8	$100/ month
Kenco Associates	8	$150/ month
LETS Trucking	8	$135/ month
Debbie Bunting	8	$100/ month
Jerry Cooper	8	$140/ month
McCoy Construction	8	$128/ month
E. E. McGuire	8	$106/ month
Marlin Schauland	8	$100/ month
San Jay Shah	8	$100/ month
Sky Hawk Flying Club	8	$100/ month
Tri-State Flying Club	8	$135/ month
Delta Trans LLC	**12**	**$185/ month**
Edward Maher	13	$135/ month
TSFS, Ltd.	13	$135/ month
Lynn Howell	**14**	**$185/ month**
Gerald Mansbach	16	$1,350/ month
R J Corman Derail	**23**	**$3,877.50/ month + 1% starting**
Null's Mfg. Inc	24	$1/ year
JBF Inc	**25**	**$800/ month**
MDN Aviation LLC	**25**	**$450/ month**
Ross Brothers	**25**	**$800/ month**
Sabre Transportation	**25**	**$800/ month**

Lessee	Hangar	Rental Rate
Private Aircraft Storage		
James Duncan	9	$128/month
Eagle Air Service, LLC	9	$275/month
Daniel Ward	**10**	**$185/month**
Bruce Sprouse (William Hall)	14	$185/month
Greg Ward	14	$185/month
Wayne Manning Ins	14	$128/month
Adkins Heating	**16**	**$128/month**
Sam Rice	17	$123/month
N Compass Net Work	**18**	**$123/month**
Ernie Clay	19	$123/month
William May	**21**	**$123/month**
McCoy Freightliner	**21**	**$185/month**
Paul Dorris	**21B**	**$185/month**
Shane Bowen	22	$123/month
David Alan Stern	**23**	**$185/month**
Steve Hogsett	**25**	**$123/month**
Tiedown		
John Bowman	Tiedown	$34/month

Source: Authority records

Airline revenues account for 10% of total FY 2013 budgeted revenues and include revenues generated from the airlines for landing fees and terminal rentals (i.e., ticket counter, bag room, office, and hold room). **Table 7-10** presents a summary of the airline rates and charges at HTS for FY 2012 through FY 2016 and for FY2021.

Table 7-10 – Airline Rates and Charges

	Actual FY 2012	YTD FY 2013	Budget FY 2014	Projected FY 2015	Projected FY 2016	Projected FY 2021
Passenger Holding Area Charges						
Airline's Enplanement Market Share	$3,526.39	$3,526.39	$3,526.39	$5,289.59	$5,289.59	$7,934.38
Fixed Share per Airline	$587.74	$587.74	$587.74	$881.61	$881.61	$1,322.42
Landing Fee						
Per 1,000 lb.	**$0.30**	**$0.30**	**$0.30**	**$0.35**	**$0.35**	**$0.40**
Per Landing	**$500.00**	**$500.00**	**$500.00**	**$580.00**	**$580.00**	**$660.00**
Airline Cost per Enplanement	$3.08	$2.73	$2.29	$2.89	$2.88	$3.45

Source: Airline Agreements through FY 2014, MAC Consulting, LLC FY 2015 through FY 2021

The existing airline agreements were executed in January 1989 and contained fixed rentals for landing fees and terminal rentals for a three-year period. After 1991, several amendments were executed instituting revised fixed rates and charges with the most recent being October 2010 and are reflected in the table for FY 2012 through FY 2014. Currently, the airlines are operating on a month-to-month lease. For purposes of this analysis, it was assumed that the fixed rates the Authority is currently charging would increase every five years to pay for increases in operating expenses and capital projects in the terminal and airfield. Therefore, the fixed rates were increased in FY 2015 and FY 2020.

Table 7-11 presents operating revenues for FY 2012 through FY 2016 and FY 2021. As shown in the table, operating revenues were approximately $2.6 million in FY 2012 and are forecast to be approximately $2.9 million in FY 2021, reflecting a compound annual growth rate of 1.1%.

Table 7-11 – Revenues

	Actual FY 2012	YTD FY 2013	Budget FY 2014	Projected FY 2015	Projected FY 2016	Projected FY 2021
Airline Revenues						
Terminal Rentals	$61,759	$45,084	$41,336	$74,054	$74,054	$111,082
Landing Fees	260,551	245,207	206,119	242,900	246,500	302,400
Subtotal	$322,310	$290,291	$247,455	$316,954	$320,554	$413,482
Percent Increase		-9.9%	-14.8%	28.1%	1.1%	
FBO						
Fuel Sold	**$2,006,942**	**$1,801,919**	**$1,827,008**	**$1,863,500**	**$1,900,700**	**$2,098,500**
Cost of Sales	**(1,473,194)**	**(1,363,506)**	**(1,302,410)**	**(1,328,500)**	**(1,355,100)**	**(1,496,100)**
Other	**41,393**	**51,854**	**60,750**	**62,000**	**63,200**	**69,500**
Subtotal	**$575,141**	**$490,267**	**$585,348**	**$597,000**	**$608,800**	**$671,900**
Percent Increase		**-14.8%**	**19.4%**	**2.0%**	**2.0%**	
Concession and Rental Revenues						
Parking	$736,871	$767,355	$650,000	$658,600	$690,980	$764,726
Building and Land Leases	333,557	381,279	384,450	392,200	400,100	441,500
Rental Car	285,377	256,348	213,870	224,700	228,200	246,400
Other Leases/Fees	152,214	136,530	138,000	141,400	144,900	163,700
Nonairline Terminal Space Rentals	72,948	79,416	79,417	79,400	79,400	79,400
Terminal Concessions	3,712	17,389	36,596	37,300	37,900	41,200
Miscellaneous Income	500	5,647	5,850	6,000	6,100	6,600
Subtotal	$1,585,180	$1,643,964	$1,508,183	$1,539,600	$1,587,580	$1,743,526
Percent Increase		3.7%	-8.3%	2.1%	3.1%	
Total Operating Revenues	**$2,482,631**	**$2,424,522**	**$2,340,986**	**$2,453,554**	**$2,516,934**	**$2,828,908**
Nonoperating Revenues						
Contributions	**$143,801**	**$89,000**	**$89,000**	**$89,000**	**$89,000**	**$89,000**
Royalties	**19,278**	**19,278**	**0**	**0**	**0**	**0**
Interest	**410**	**370**	**500**	**500**	**500**	**500**
Subtotal	**$163,489**	**$108,648**	**$89,500**	**$89,500**	**$89,500**	**$89,500**
Percent Increase		**-33.5%**	**-17.6%**	**0.0%**	**0.0%**	
Total Revenues	**$2,646,120**	**$2,533,170**	**$2,430,486**	**$2,543,054**	**$2,606,434**	**$2,918,408**
Percent Increase		-4.3%	-4.1%	4.6%	2.5%	
CAGR FY 2012 - FY 2016					-0.4%	
CAGR FY 2012 - FY 2021						1.1%
CAGR FY 2014 - FY 2016					3.6%	
CAGR FY 2014 - FY 2021						2.6%

Sources: Authority FY 2012, FY 2013, and FY 2014, MAC Consulting, LLC, FY 2015-FY 2021

FY 2013 operating revenues are estimated to decrease 4.3% over FY 2012 actuals primarily as a result of a decrease in airline revenue due to Allegiant Air phasing out its Ft. Lauderdale flights beginning in April 2013 and a decrease in fuel sales. FY 2014 revenues are budgeted to decrease an additional 4.1% to account for the final phase of the discontinued Ft. Lauderdale service, which is scheduled to occur in August 2013. FY 2015 through FY 2021 operating revenues are projected based on the following:

- Historical trends and lease provisions.
- Revenues from parking, terminal concessions, and rental cars are projected to increase with prospective enplanement growth. Remaining operating revenues were inflated at 2.0% annually to reflect a more conservative growth rate than that used for operating expenses.
- Parking revenues are increased in FY 2016 and FY 2021 as a result of parking rate increases to cover the costs related to the completion of parking improvements included in the ACIP.
- Currently, the rental car concession leases expire on February 28, 2014. This analysis assumes these leases are renegotiated with an increased rental rate to reflect inflationary impacts since the date of the original lease. As a result, rental car concession revenues were increased in FY 2015 by 5%.
- It was assumed that the Authority would renegotiate the remaining leases that expire during the planning period with terms and conditions that would implement changes in rate structures and business practices, as necessary, to maintain positive financial performance.
- Airline terminal fixed rentals were increased every five years by 50% beginning in FY 2015 to pay for increases in operating expenses and capital projects in the terminal.
- The landing fee was increased from $0.30 to $0.35 in FY 2015 and to $0.40 in FY 2020 to help fund increases in operating expenses and capital projects in the airfield.

7.3.4 Pro Forma Cash Flow

Table 7-12 presents the pro forma cash flow of the Authority for the 10-year planning period based on the projection of operating revenues, operating expenses, and outstanding long-term debt discussed above. As a result of the analysis discussed herein, net income remains positive during the planning period.

Table 7-12 – Net Income

		Actual FY 2012	YTD FY 2013	Budget FY 2014	Projected FY 2015	Projected FY 2016	Projected FY 2021
Revenue							
Operating Revenue		$2,482,631	$2,424,522	$2,340,986	$2,453,554	$2,516,934	$2,828,908
Nonoperating Revenue	Table 7-11	163,489	108,648	89,500	89,500	89,500	89,500
Subtotal		$2,646,120	$2,533,170	$2,430,486	$2,543,054	$2,606,434	$2,918,408
LESS: Operating Expenses	Table 7-7	(2,419,117)	(2,278,140)	(2,333,308)	(2,391,800)	(2,451,900)	(2,773,300)
Net Revenues		$227,003	$255,030	$97,178	$151,254	$154,534	$145,108
LESS: Debt Service							
Existing	Table 7-6	($42,947)	($50,370)	($50,370)	($50,370)	($58,289)	$0
Net Income		$184,056	$204,660	$46,808	$100,884	$96,245	$145,108

According to Table 7-1, the Authority is responsible for funding approximately $7.1 million in project costs. As of June 30, 2012, the Authority had an operating fund balance of $244,312; and therefore, does not have the cash on hand to fund its portion. As a result, this analysis assumes the Authority would issue bonds in three phases: $3.55 million in 2015, $1.85 million in 2017, and $1.7 million in 2020. It is assumed that these amounts would be bonded at an interest rate of 5%, 6%, and 6%, respectively for 30 years. **Table 7-13** presents the cash flow analysis reflecting the bond issuances and the payment of the local share of the ACIP.

Table 7-13 – Funding of the ACIP Local Share

	YTD FY 2013	Budget FY 2014	Projected FY 2015	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021
Net Income	$204,660	$46,808	$100,884	$96,245	$133,754	$112,254	$90,154	$140,882	$145,108
Less: Dbt Svc - Local Share ACIP	0	0	0	(251,940)	(251,940)	(399,768)	(399,768)	(399,768)	(531,781)
Adjusted Net Income	$204,660	$46,808	$100,884	($155,695)	($118,186)	($287,514)	($309,614)	($258,887)	($386,673)
Beginning Balance[1]	$244,312	$448,972	$397,380	$217,564	$61,869	$1,618,183	$605,869	$129,905	($34,856)
Plus: Deposit from Operating	$204,660	$46,808	$100,884	($155,695)	($118,186)	($287,514)	($309,614)	($258,887)	($386,673)
Plus: Deposit from Bond Funds	$0	$0	$3,550,000	$0	$1,850,000	$0	$0	$1,652,076	$0
Less: Local Contribution to ACIP	$0	($98,400)	($3,830,700)	$0	($175,500)	($724,800)	($166,350)	($1,557,950)	($498,376)
Ending Balance	$448,972	$397,380	$217,564	$61,869	$1,618,183	$605,869	$129,905	($34,856)	($919,905)

[1] The beginning balance represents the unrestricted cash on hand as of June 30, 2012 per the 2012 Audit.

As shown in the table, the Authority does not have sufficient funds to support the additional debt service required to fund its share of the ACIP. This is based on the operating expense and revenue projections as they are presented in this document and the ACIP as it is currently phased. There are several actions the Authority could pursue to meet the financial requirements of the ACIP some of which are presented as follows:

- Re-phase certain projects in the ACIP moving them to years when the Authority can afford the local share component.
- Identify another funding source for the projects in the ACIP currently assigned to local share.
- Obtain additional air service.
- Renegotiate the airline agreement to reflect a formula based rate for terminal rentals and landing fees that recover the costs of the facilities.
- Renegotiate the rental car lease reflecting financial terms higher than projected.
- Increase parking rates higher than projected.

7.4 SUMMARY

The financial feasibility of future projects will be determined by the provisions of existing and future leases, funding levels and participation rates of federal grant programs, the availability of PFC and CFC revenues and other funding sources, bonding capacity, and the ability to generate internal cash flow from operations at HTS.

The financial projections were prepared on the basis of available information and assumptions set forth in this chapter. It is believed that such information and assumptions provide a reasonable basis for the projections to the level of detail appropriate for an airport master plan. Some of the assumptions used to develop the projections may not be realized, and unanticipated events or circumstances may occur. Therefore, the actual results will vary from those projected, and such variations could be material.

Based on these assumptions, the ACIP as it is presented cannot be financed in the future by the Authority. As the Authority has done in the past, it needs to continue to monitor its financial situation to determine which projects should be undertaken and when. In addition, the Authority should review and evaluate current leases and service incentives to enhance revenues and provide financial solvency while improving the facilities.

8 AIRPORT PLANS

This Master Plan Update has resulted in a comprehensive long term development plan for the Huntington Tri-State Regional Airport. Evaluations of major airport facilities have been documented in the various chapters of this report. The Airport Layout Plan (ALP) drawing set is a graphical representation resulting from the findings in this report. The drawing set is an invaluable tool for the Authority, airport personnel, FAA, West Virginia Aeronautics Commission, and the general public for understanding the airport facilities, the design standards which the Airport is subject to, and the future and potential ultimate “build-out” plans for the Airport. The drawing set must be approved by the Authority and the FAA. In order for improvement projects to be eligible for federal Airport Improvement Program (AIP) funding, the projects must appear on a FAA-approved ALP. Pending FAA approval of the proposed projects, this ALP will serve as the guide for the ongoing development program at HTS.

The ALP drawing set is comprised of seven sheets, each of which is briefly described in the subsequent sections. Other sheets that are commonly included in ALP sets were removed from the scope of work for this project, but may be pursued at a later date. These plans were prepared in accordance with FAA Advisory Circular 150/5070-6B, *Airport Master Plans*, Advisory Circular 150/5300-13, *Airport Design*, and the guidance in the FAA Eastern Region ALP Checklist. The drawings in the HTS ALP set include:

- Title Sheet
- Airport Data
- Existing Facilities – 2011
- Airport Layout Plan
- Terminal Area Plan – Terminal Area
- Terminal Area Plan – South Side
- Airport Land Use Plan

The following paragraphs describe the specific elements found on each drawing sheet. A reduced, or half-size, drawing set of the ALP is also included.

8.1 TITLE SHEET

This introductory sheet provides basic information about the Airport and serves as the front cover for the ALP set. Information identified consists of a drawing set index, WVAC, FAA, and Airport Authority approval signature blocks, location maps, and other pertinent information required by the ALP Checklist. Also shown is the FAA grant number and disclaimer statement.

8.2 AIRPORT DATA

The Airport Data sheet includes general airport data and detailed runway, taxiway and approach system data. The data includes the Airport Reference Code (ARC) which identifies the largest group of aircraft expected to operate at the Airport and therefore establishes the appropriate facility design standards. Also included are meteorological data and wind roses for all weather, visual flight rules (VFR) and instrument flight rules (IFR) weather conditions. All tables give information on existing and future conditions. Future information is based on the assumption that the improvements described in the previous chapters will be implemented.

8.3 EXISTING FACILITIES – 2011

This plan details the existing facilities found at the Airport during this Master Planning process. This sheet identifies the terminal, support, and ancillary facilities; airfield pavements and associated clearances; navigational aid critical areas; property and fence lines; roads in the vicinity; and the Airport Reference Point (ARP). This sheet also identifies all existing buildings and, if available, the heights of these buildings as determined from aerial surveys.

8.4 AIRPORT LAYOUT PLAN

The Airport Layout plan graphically depicts the Airport layout and proposed improvements to the Airport throughout the 20-year planning horizon. Included in the plan are: proposed airfield pavements with associated clearances, critical areas and dimensions; proposed terminal area improvements with support and ancillary facilities identified; geodetic controls (PACS/SACS); and recommended ground access infrastructure improvements. Also included are approval blacks and title and revision blocks.

8.5 TERMINAL AREA PLAN – TERMINAL AREA

Because the scale of the ALP sheets makes it difficult to present enough detail, this sheet depicts the existing terminal area and the proposed terminal area development at a larger scale. Shown at a 1 inch=100 feet scale, this plan focuses on the terminal area on the north side of Runway 12-30 and does not include all areas of the Airport. The plan shows the proposed improvements and future facilities for the terminal area in greater detail.

8.6 TERMINAL AREA PLAN – SOUTH SIDE

Because the scale of the ALP sheets makes it difficult to clearly illustrate all of the proposed improvements within the terminal area, this sheet depicts proposed development at a larger scale. Shown at a 1 inch=100 feet scale, this sheet focuses on the general aviation area located south of Runway 12-30, and depicts the proposed improvements and future facilities therein.

8.7 ON-AIRPORT LAND USE PLAN

This plan will identify recommended on-Airport land uses for all areas under airport control, including both aeronautical and commercial use. For planning purposes, this sheet identifies future on-Airport land uses that are expected to be adopted by the Airport and City. The on-airport land uses are associated with all areas within the proposed property line and consist of: Airfield Operations, Passenger Terminal and Parking, Air Cargo, General Aviation, Aeronautical Support, Federal Aviation Administration (FAA) Use, Aeronautical Mixed Use, Non-Aeronautical Mixed Use, and Mixed Use (Aeronautical or Non-Aeronautical). Additionally, this sheet shows the Airport's 65 DNL and potential ATCT and ASOS relocation sites.