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Hampton Roads Air Study

Exploring New Business Sectors in Aviation Transformation

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Prepared by

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Acknowledgements

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Background

Elected leaders and board directors of both public and private airport entities bear the responsibility of ensuring that managed assets yield revenue or operate at peak efficiency. Airports often serve as economic engines for their surrounding communities. However, various obstacles can hinder the realization of maximum efficiency. It is imperative for airport planning to grasp current and emerging markets while accurately assessing asset performance to lay the groundwork for long-term success.

Given the prevailing national trends in commercial air service for smaller airports across the U.S., the Hampton Roads Alliance, supported by major regional aviation stakeholders, engaged third-party expertise from Universal Solutions International, Inc. & Swelbar-Zhong Consultancy to conduct research and analysis. The aim was to comprehensively evaluate the regional asset inventory, pinpointing strengths, weaknesses, opportunities, and threats with a focus on enhancing efficiency, competitiveness, and collaboration. The timing for such an endeavor has never been more opportune as it presents an ideal moment to reassess the current allocation of commercial air service regionally and explore new aviation markets and alternative revenue sources.

Globally, industries are expanding to support companies in the Advanced Air Mobility (AAM) sector, Urban Air Mobility (UAM) (including eVTOL or electric vertical takeoff and landing for air taxi services), Regional Air Mobility (RAM) (for both cargo and passenger transport over regional distances), Unmanned Air Mobility (with multiple use cases), and Fast Ferry Transportation Services (utilizing Seaplanes or Wing-in-Ground Effect craft) among others. This diverse landscape underscores the need for strategic foresight and collaboration to navigate the evolving aviation ecosystem effectively.

Virginia's Advanced Air Mobility Future study estimates that AAM will generate $16 billion in new business activity, create 17,000 new jobs, and produce $2.8 billion in tax revenues by 2045. The widespread use of drones (sUAS) presents unique challenges and opportunities in aviation and local community security as detailed in the Virginia UAV Activity Study. Additionally, the DOAV "Minimum Viable Infrastructure (MVI)" report outlines the foundational infrastructure needed to support AAM operations, highlighting the importance of strategic investments in sensors, data sharing networks, and public-private partnerships to create a robust and self-sustaining AAM ecosystem. [1] [2] [3]

Special Topic: Transforming the Newport News / Williamsburg Airport Asset

Airports are widely recognized as economic engines. Norfolk International Airport (ORF) exemplifies this with its record-setting passenger activity. In contrast, Newport

News/Williamsburg International Airport (PHF) has faced declining economic impact and significant financial struggles, operating at a loss for 16 of the 17 months ending November 2023 and losing $4.2 million. PHF's loss of commercial air service, coupled with a difficult financial outlook, highlights the need for strategic change.

Authorities should consider transitioning PHF to focus on non-traditional sectors such as Advanced Air Mobility (AAM), encompassing both manned and unmanned systems. By leveraging regional strengths and emerging market opportunities, PHF can transform into a hub for innovation and economic growth, ensuring long-term success in the Hampton Roads region. This approach aligns with broader shifts within the aviation sector, positioning PHF as a center for technological advancement and economic revitalization. Detailed insights into the opportunities within these new business sectors are provided in Appendix 6, underscoring Hampton Roads' potential to lead the future of aviation.

Recommendations: Improving Regional Efficiency, Competitiveness & Collaboration
Hampton Roads boasts a wealth of assets including 10 civil airports, 7 military-federal airports, numerous heliports, and over 60 aviation stakeholder entities. AAM development in the region is supported by the presence of the Army, USSOCOM, and NASA. Furthermore, one of our major industry partners has set up an Unmanned Center of Excellence in Hampton, while Virginia Tech is establishing a Hydrogen Research Center in Newport News. The Hampton Roads region stands at the forefront of advanced air mobility (AAM) innovation. To fully leverage this potential, it is essential to prioritize key recommendations that will enhance regional efficiency, competitiveness, and collaboration in the aviation sector. The following table outlines ten strategic planning recommendations aimed at driving regional development and positioning Hampton Roads as a leader in AAM.

These recommendations, summarized in tables 1 & 2 below, are identified and prioritized based on their readiness for implementation, current developmental progress, and projected future advancements, ensuring both immediate and long-term benefits for the region. Notably, the role of the private sector, particularly at Hampton Roads Executive Airport (PVG), is highlighted for its ability to expedite innovation and market penetration through entrepreneurial agility. By implementing these recommendations, Hampton Roads can leverage its existing assets and strategic advantages to become a leader in Advanced Air Mobility, driving regional growth and innovation.

Table 1 - Strategic Planning Recommendations

10 - Prioritized Recommendations	Priority	Impact	Timeline
1. Establish Aviation Master Planning Governance for Hampton Roads	High	🔴 ⭐	Immediate
2. Develop Hampton Roads Regional Aviation Master Plan	High	🔴 ⭐	Immediate
3. Position Norfolk International as Traditional Commercial Air Services Regional Leader	Medium	🟡 ⭐	Short-term
4. Transform Newport News/Williamsburg Airport into a Premier Advanced Aviation Business & Research Center	Medium	🟢 ⏰ ⭐	Mid-term
5. Exploit Private Sector Agility at Hampton Roads Executive Airport for Rapid Innovation and Market Penetration	High	🔴 ⏰ ⭐	Short-term
6. Establish a UAS Key Site in Hampton Roads	High	🔴 ⏰ ⭐	Short-term
7. Develop a Regional AAM Strategic Development Plan	Medium	🟡 ⏰	Mid-term
8. Support Army's Development of an AAM Dual-Use Technology Center (AAMDTC)	High	🔴 ⏰	Short-term
9. Create a Focused Regional OEM Manufacturing Capture Plan	High	🔴 ⏰ 💲	Short-term
10. Expand Regional Air Cargo Commercial Services	Low	🟢	Long-term

Legend		
Priority	**Impact**	**Indicators**
High — Critical initiatives needing immediate attention.	🔴 High Impact - Major effect on objectives or results.	⭐ Indicates a major positive effect or benefit.
Medium — Important but not urgent.	🟡 Medium Impact - Significant but not crucial.	⏰ Time-sensitive or urgent.
Low — Beneficial but can be deferred without immediate con	🟢 Low Impact - Minor consequences.	💲 High cost or significant investment required.

Lastly, the Hampton Roads region should capitalize on the emergence of at least nine AAM new business sectors, prioritized & summarized in table 2 below.

Table 2 - Hampton Roads AAM New Business Sector Recommendations

9 - New Business Sectors	Priority	Impact	Timeline
1. UAS Services - Training and Development	High	🔴 ⭐	1-2 years
2. Regional Air Mobility - Regional Air Services	Medium	🟢 ⏰	2-5 years
3. Charging Services for Electric Aviation	Medium	🟢 ⏰ 💲	2-5 years
4. Vertiport	Dropneport Development	High	🔴 ⭐	2-5 years
5. Hydrogen Aviation	Medium	🟢 ⏰ 💲	2-5 years
6. Coastal Transportation	High	🔴 ⏰ ⭐	2-5 years
7. Electric Aviation Flight Training Services	Medium	🟢 ⏰	5-10 years
8. Private Air Mobility	Low	🟢	5-10 years
9. Urban Air Mobility	Low	🔴 ⭐	5-10 years

Legend		
Priority	**Impact**	**Indicators**
High — Critical initiatives needing immediate attention.	🔴 High Impact - Major effect on objectives or results.	⭐ Indicates a major positive effect or benefit.
Medium — Important but not urgent.	🟡 Medium Impact - Significant but not crucial.	⏰ Time-sensitive or urgent.
Low — Beneficial but can be deferred without immediate con	🟢 Low Impact - Minor consequences.	💲 High cost or significant investment required.

Each sector presents unique opportunities for growth and innovation, positioning Hampton Roads as leaders in the Advanced Air Mobility (AAM) landscape. See Appendix 7 for amplification. This aligns with aviation sector shifts, positioning Hampton Roads as a hub for AAM innovation and economic growth.

Introduction

The Hampton Roads Alliance commissioned this AIR Study to assess the current state of the Hampton Roads Aviation Industry and its assets. Additionally, to provide recommendations to position it as an efficient and dynamic system that can meet the region's future aviation demands and opportunities.

This AIR Study is an assessment of the Aviation, Aerospace, and Air Mobility infrastructure in Hampton Roads. This appraisal includes an updated list of aviation facilities (military and civilian), manufacturers and service providers to the aviation industry, air mobility providers (both existing and planned), air corridors (both planned and considered), educational support structure for aviation industry, and opportunities for growth in these commercial enterprises.

This study is bounded by the Commonwealth geographic region known as "Hampton Roads." Hampton Roads falls within region five of the nine district Virginia Initiative for Growth and Opportunity regions within the Commonwealth. The initiative is referred to as GO Virginia and is a bipartisan business-led economic development initiative that is changing the way Virginia's diverse regions collaborate on economic and workforce development activities. GO Virginia supports programs to create more high-paying jobs through incentivized collaboration between business, education, and government to diversify and strengthen the economy in every region of the Commonwealth.

GO Virginia Region five represents sixteen communities in the Hampton Roads region comprised of 10 cities; Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg; and 6 counties: Accomack, Isle of Wight, James City, Northampton, Southampton, and York. [4]

This study leverages the findings from "Virginia's Advanced Air Mobility Future" and the "Virginia UAV Activity Study" to support its recommendations and strategic directions. These foundational documents provide key insights into the potential economic, technological, and societal benefits of integrating AAM and UAV technologies into the region's aviation infrastructure.

Regional Aviation Asset Summary

Hampton Roads has a population of 1.727M citizens served by 10 civil airports and 7 military-federal airports supporting major federal entities in the region. These airport assets are complemented by associated aviation-related businesses, either civil aviation or federal aviation focused. These businesses are further binned by business sectors – on airport, off airport, and potential new sectors. A summary of Regional Airports is provided in Table 3 below: [5]

Table 3 - Hampton Roads Civil & Military-Federal Airports

Airport Name	ID	Class	Fuel	# RWY	RWY Length (ft)	Acres	Han-gars	FBO	Fuel Provider
Accomack County	MVF	GA - Regional	Jet A, 100LL	1	5000	100	No	Accomack County Airport	Avfuel
Chesapeake Regional	CPK	Reliever	Jet A, 100LL	1	5500	430	Yes	Horizon Aviation Services	Phillips 66 Contract Fuel
Franklin Municipal	FKN	GA - Community	Jet A, 100LL	1	4977	313	Yes	Franklin Municipal Airport	Titan Aviation Fuels
Hampton Roads Executive	PVG	Reliever	Jet A+, 100LL	2	3525, 5000	511	Yes	HR Executive Airport	Titan Aviation Fuels
Middle Peninsula Regional	FYJ	GA - Regional	Jet A+, 100LL	1	5000	310	No	Middle Peninsula Reginal Airport Authority	Titan Aviation Fuels
Newport News-Williamsburg	PHF	Commercial	Jet A, 100LL	2	8003, 6526	1800	Yes	Rick Aviation/ Atlantic Aviation	Titan/ Independent
Norfolk International	ORF	Commercial	Jet A, 100LL	2	9001, 4876	1300	Yes	Signature Aviation	Independent
Suffolk Executive	SFQ	GA - Regional	Jet A, 100LL, MOGAS	2	5007, 3750	655	No	Suffolk Executive Airport	Phillips 66 Contract Fuel
Tangier Island	TGI	GA - Community	None	1	2426	121	No	Town of Tangier	None
Williamsburg – Jamestown	JGG	GA - Community	Jet A+, 100LL	1	3204	107	Yes	Williamsburg-Jamestown Airport	Titan Aviation Fuels
Camp Perry	W94	Federal	DoD Restricted	1	5018	Not Shown	No	Federal	NA
Felker AAF	FAF	U.S. Army	PPR	1	3025	Not Shown	No	U.S. Army	NA
Langley AFB	LFI	U.S. Air Force	PPR	1	10,002	3152	Yes	U.S. Air Force	NA

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Airport Name	ID	Class	Fuel	# RWY	RWY Length (ft)	Acres	Han-gars	FBO	Fuel Provider
NASA Langley Research Center	LFI	NASA	PPR	1	10,002	3152	Yes	NASA	NA
NASA Wallops Flight Facility	WAL	NASA	PPR, Jet A	3	8748, 8005, 4808	617	No	NASA	NA
Norfolk NS	NHU	U.S. Navy	PPR	1	1705	4631	No	U.S. Navy	NA
Oceana NAS	NTU	U.S. Navy	PPR	3	12,001, 8001, 8000	6000	No	U.S. Navy	NA

Asset Summary – Civil Airports

The Hampton Roads Region competes for State & Federal resources as part of a larger Commonwealth Airport Ecosystem consisting of 66 airports of various sizes and designations across all nine GO Virginia regions. Figure 1 below geographically depicts the Virginia Airport System. [6]

Figure 1 - Virginia Civil Airport Summary

Civil Airport Categories

There are approximately 14,400 private-use (closed to the public) and 5,000 public-use (open to the public) airports, heliports, and seaplane bases located in the United States. Civil airports are categorized by type of activities, including commercial service, primary, cargo service, reliever, and general aviation airports, as described below: [7]

Commercial Service Airports. Commercial Service Airports are publicly owned airports with scheduled air carrier service and at least 2,500 annual enplanements.

Primary airports. Primary airports are commercial service airports with more than 10,000 annual enplanements. Enplanements refers to the total number of revenue passengers boarding an aircraft in service of air commerce. Commercial air service airports are further delineated by size, Large Hub, Medium Hub, Small Hub, Non-Hub, Non-Hub Non-Primary, as defined figure 2, below:

Large Hub	Medium Hub	Small Hub	Nonhub	NHNP
> 1% of the total ACE	Between .25% and 1% of total ACE	Between .05% and .25% of total ACE	Less than .05% of the total ACE, but more than 10,000 total	Between 2,500 and 10,000 ACE

ACE: Annual U.S. commercial enplanements   NHNP: Non-hub Non-Primary Airports

Figure 2 - Commercial Service Airport Sizes

Cargo Service Airports: Airports that, in addition to any other air transportation services that may be available, are served by aircraft providing air transportation of only cargo with a total annual landed weight of more than 100 million pounds. "Landed weight" means the weight of aircraft transporting only cargo in intrastate, interstate, and foreign air transportation. An airport may be both a commercial service and a cargo service airport.

Reliever Airports. Defined as non-primary airports designated to relieve congestion and traffic at larger commercial service airports. They also support more general aviation traffic in larger metro areas.

General Aviation Airports. Public-use non-primary airports without scheduled air carrier service and less than 2,500 total annual enplanements.

Civil Airport Economic Impacts
Economic contributions of Virginia airports are measured in terms of jobs, payroll, and economic activity, as expended on in Figure 3, below. [8]

Jobs represent the total number of individuals employed, including both part- and fulltime positions.

Wages represent the annual salary, wages and benefits for employees, including all taxes.

Economic Activity includes annual gross sales for commercial firms and budget expenditures for government or non-profit entities.
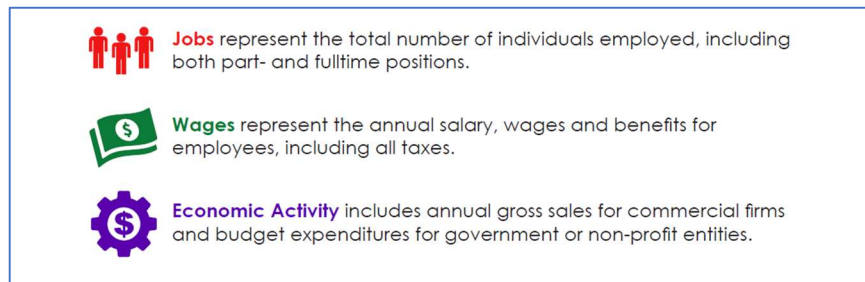
Figure 3 - Virginia Airports Economic Measurements

Total Economic Impacts for a given airport is the sum of six components: Direct Impacts, Indirect Impacts, and Induced Impacts for the Airport and similarly for its visitors. The visitor impact is often referred to as the "multiplier effect." Elements for each impact are depicted in Figure 4 below:
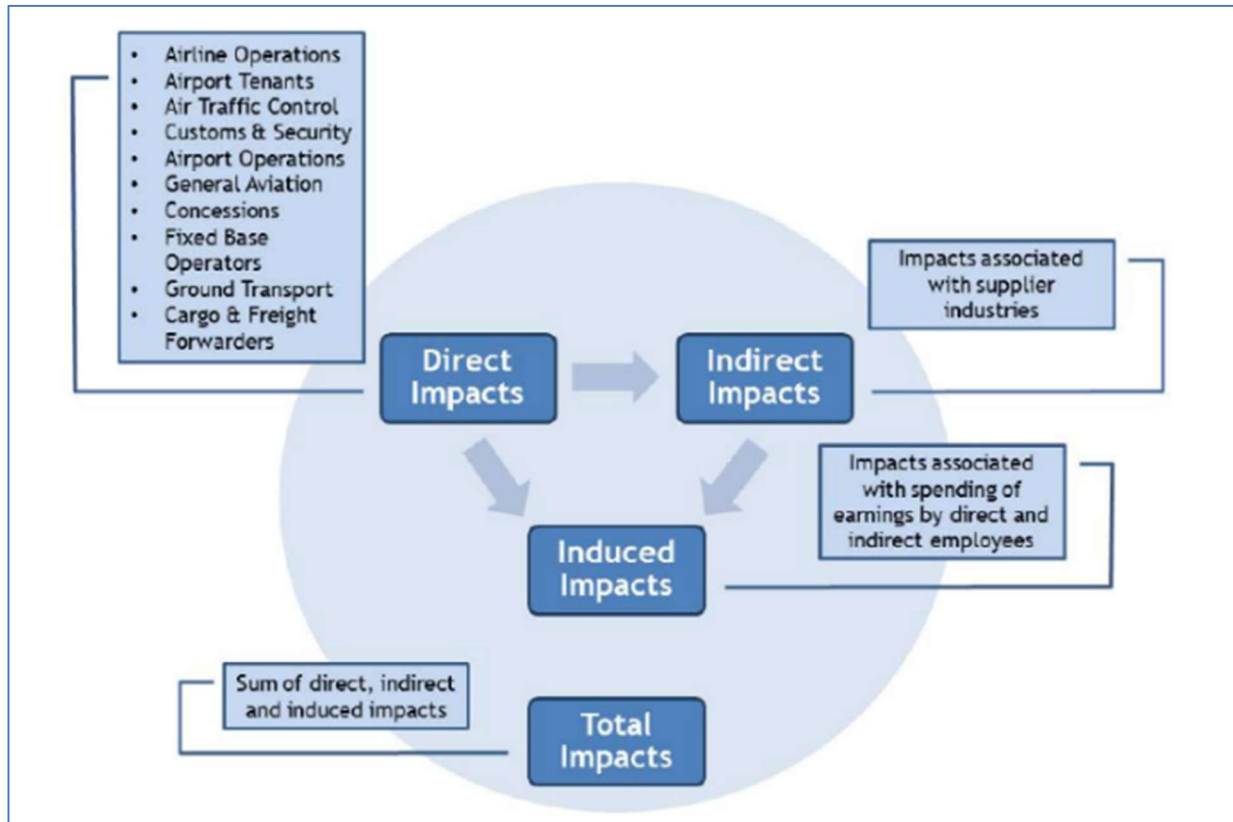
Figure 4 - Total Economic Impact Components

Hampton Roads Civil Airports by Type & Location

Hampton Roads Civil Airports. The Hampton Roads Region's diverse system of 10 public-use airports plays a vital role in the state and regional economies by creating jobs and contributing to overall economic development, as depicted in Figure 5 below. [8] In addition, airports in Virginia serve as gateways to the nation's air transportation system and connect the Region to the Commonwealth and the global economy.

Figure 5 - Hampton Roads Civil Airports Type & Location

Hampton Roads Commercial Service. These airports provide scheduled airline services (air carrier or regional / commuter services) and accommodate at least 10,000 annual passenger enplanements. Hampton Roads has two Commercial Service airports, ORF and PHF, that create over 17,410 jobs in the Region and 2.21 billion in economic activity. ORF is classified as a Medium Hub airport. The Newport News-Williamsburg International Airport is identified in the FAA's National Plan of Integrated Airports System (NPIAS) as a primarily Commercial Service, Small Hub facility. Table 4 depicts the economic impact from commercial service in the Region based on 2016 statistics. [6]

Table 4 - Annual Economic Impact of HR Commercial Service Airports

HR - Commercial Service	Jobs	Wages ($Thousands)	Economic Activity
Norfolk International	14,920	$600,000	$1,800,000
Newport News-Williamsburg	2,490	$120,000	$410,000
Total: Commercial Service	**17,410**	**$720,000**	**$2,210,000**

Hampton Roads Reliever Airports: Reliever airports are general aviation airports located in metropolitan areas that serve to reduce congestion at nearby commercial service airports by providing comparable landside and airside facilities to general aviation operators. Hampton

Roads has two Reliever airports, Hampton Roads Executive (PVG) and Chesapeake Regional (CPK), contribute over 575 jobs and nearly $73.1 million in economic activity based on 2016 statistics, as shown in table 5 below. [6]

Table 5 - Annual Economic Impact of HR Reliever Airports

HR – GA Reliever Airports	Jobs	Wages ($Thousands)	Economic Activity
Hampton Roads Executive	449	$18,725	$60,543
Chesapeake Regional	126	$5,030	$12,572
Total: GA Reliever	**575**	**$23,755**	**$73,115**

General Aviation – Regional: These airports serve large geographic areas and are often the only airport facilities in the region. General Aviation Regional airports serve the needs of businesses as well as recreational users by offering services and amenities such as jet fuel, instrument approaches, FBO services and aircraft hangars. Hampton Roads's 2 General Aviation Regional airports generated over237 jobs and $26.5 million in activity based on 2016 statistics as depicted in Table 6 below. [6]

Table 6 - Annual Economic Impact of HR General Aviation Airports

HR General Aviation - Regional	Jobs	Wages ($Thousands)	Economic Activity
Accomack	45	1,603	4,198
Middle Peninsula	141	5,255	15,831
Suffolk Executive	51	2,521	6,555
Total: GA Regional	**237**	**9,379**	**26,584**

General Aviation – Community: These airports serve the needs of businesses and recreational users but often serve a more limited market area than the regional airports. They provide services such as aircraft rentals, flight instruction and AvGas fuel. Hampton Roads's 3 General Aviation Community airports create about 96 jobs and 3.36M in activity (2016 statistics), as depicted in Tables 7 and 8 below. [6]

Table 7 - Annual Economic Impact of HR General Aviation Airports

HR General Aviation - Community	Jobs	Wages ($Thousands)	Economic Activity
Franklin	19	1,153	2,657
Tangier Island	4	169	419
Williamsburg-Jamestown	73	2,039	5,716
Total: GA Community	**96**	**3,361**	**8,792**

Past Total Annual Economic Impacts (2016) of Hampton Roads GA Airports ($ in Thousands) is depicted in Table 8, below:

Table 8 - Past Economic Impact of HR General Aviation Airports

HR General Aviation	Jobs	Wages ($Thousands)	Economic Activity
Total: General Aviation	**18,318**	**756,855**	**2,318,491**

General Aviation Aircraft Assets. A summary of Regional General Aviation aircraft by location is depicted in table 9, below. Hampton Roads Executive leads the region by quantity (159) with Tangier Island with no assets. For completeness, the region has one Gliderport (Tidewater glider Society in Garner) and zero seaplane bases. [5]

Table 9 - GA Aircraft Numbers by HR Airport

Airport	Category	Identifier	Based Aircraf
Accomack County	GA Regional	MVF	24
Chesapeake Regional	GA Reliever	CPK	119
Franklin Municipal	GA Community	FKN	17
Hampton Roads Executive	GA Reliever	PVG	159
Middle Peninsula	GA Regional	FYJ	38
Newport News-Williamsburg	Commercial	PHF	141
Norfolk International	Commercial	ORF	89
Suffolk Executive	GA Regional	SFQ	66
Tangier Island	GA Community	TGI	0
Williamsburg-Jamestown	GA Community	JGG	0
			653

GA Airport Assets – Direct On-Airport Economic Impacts

Hampton Roads GA direct on-airport economic impacts are depicted in Table 10, below, with Hampton Roads Executive leading the region by total output. [6]

Table 10 - GA Direct On-Airport Economic Impacts

Airport	Direct Impacts (dollars in thousands)			
	Jobs	Wages	GDP	Output
Accomack County	$ 7	$ 685	$ 830	$ 1,410
Chesapeake Regional 1	$ 50	$ 2,299	$ 2,718	$ 4,786
Franklin Municipal	$ 3	$ 178	$ 232	$ 480
Hampton Roads Executive	$110	$ 6,629	$10,460	$25,765
Middle Peninsula Regional	$ 50	$ 2,290	$ 2,778	$ 6,811
Suffolk Executive	$ 24	$ 1,331	$ 1,693	$ 3,211
Tangier Island	$ 1	$ 98	$ 119	$ 201
Total	**$245**	**$13,510**	**$18,830**	**$42,664**

Asset Summary – Military-Federal Airports

Hampton Roads is home to a network of seven military airports, encompassing branches such as the Army, Air Force, Navy, as well as agencies like NASA and the Defense Intelligence Agency (DIA). These airports house a diverse array of aircraft assets crucial to national defense and

exploration efforts. Among the notable fleet are H-47 and SH-60 helicopters, alongside various research and development aircraft. Additionally, the airports host a formidable lineup of fighter and cargo aircraft including the F-18, F-22, P-3, and C-130, as depicted in Figure 6, below. This robust infrastructure underscores the region's significance in supporting critical military operations, technological advancements, and intelligence missions on both domestic and international fronts.
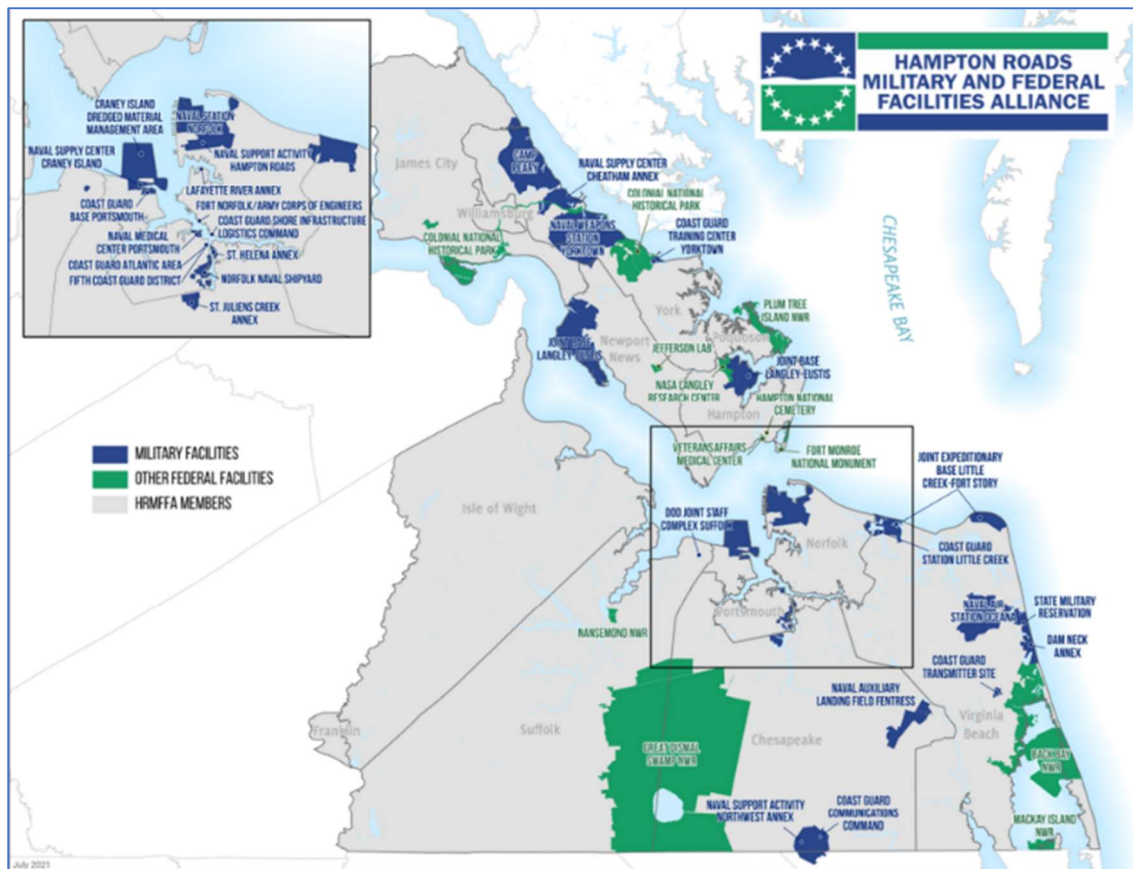
Figure 6 - Hampton Roads Military-Federal Airport Locations

Military-Federal Airports by Type & Location

Table 11 - HR Military-Federal Airports by Type & Location

Airport	Identifier	Location	Department
Felker Army Airfield	FAF	Newport News	Army
Langley AFB	LFI	Hampton	Air Force
Norfolk NAS	NGU	Norfolk	Navy
Oceana NAS	NTU	Virginia Beach	Navy
Camp Perry	W94	Williamsburg	CIA
NASA Langley RC	LFI	Hampton	NASA Langley
NASA Wallops FF	WAL	Wallops Island	NASA Glenn

Military-Federal Aircraft Assets by Military-Federal Airports

Table 12 - Mil-Federal Aircraft Assets by HR Location

Airport	Identifier	Location	Pri Aircraft
Felker Army Airfield	FAF	Newport News	H-47, R&D
Langley AFB	LFI	Hampton	F-22
Norfolk NAS	NGU	Norfolk	SH-60
Oceana NAS	NTU	Virginia Beach	F-18
Camp Perry	W94	Williamsburg	Various
NASA Langley	LFI	Hampton	Various
NASA Wallops	WAL	Wallops Island	P-3, C-130

Asset Summary – Heliports & Helipads

A Heliport is usually defined as "an area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and includes its buildings and facilities if any". A heliport will consist of one or more helipads, which are defined as "a small, designated area, usually with a prepared surface, on a heliport, airport, landing/take-off area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters". Early advocates of helicopters hoped that heliports would become widespread, but they have become contentious in urban areas due to the excessive noise caused by helicopter traffic. Published heliports and/or helipads in Hampton Roads are as follows:

- Mary Immaculate Hospital
- Sentara Norfolk General Hospital
- Nightingale Regional Air Ambulance (125-mile radius)
- Sentara Hospital
- Chesapeake Energy Center
- Armada-Hoffler Business Center
- Fort Story Spier Heliport
- CINCLANTFLT Heliport
- Chambers Field, NAS Norfolk
- Signature Flight Support, ORF
- Sentara Virginia Beach Heliport

Asset Summary – UAS Facilities & Ranges

USN Training and Logistics Support Activity (TALSA) East

Located at Joint Expeditionary Base (JEB) Little Creek-Fort Story in Virginia Beach, TALSA is dedicated to training Sailors who will operate the service's Family of Small Unmanned Aircraft Systems (FoSUAS). TALSA East is the first dedicated Navy facility for unmanned aircraft operators to complete SUAS training.

The TALSA is a central location for scheduling and formal entry-level SUAS courses that provide Initial Qualification Training for systems currently in use by the operating forces. It also supports centralized storage of unit systems, supply, and maintenance services.

Navy TALSA East currently supports training for The Vertical Take-Off and Landing SkyRaider R80D, Skydio X2D and PD-100 Black Hornet 3. Supports the Naval Special Warfare community and the Naval Expeditionary Combat Command.

NASA Langley CERTAIN UAS Range
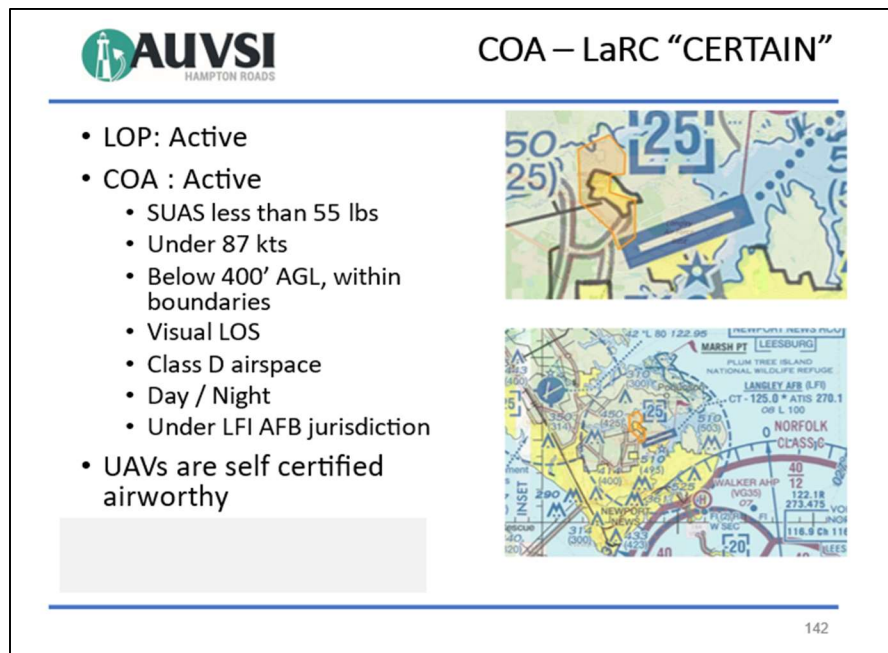
Figure 7 - NASA Langley CERTAIN UAS Range

NASA Langley "Beaver Dam" COA
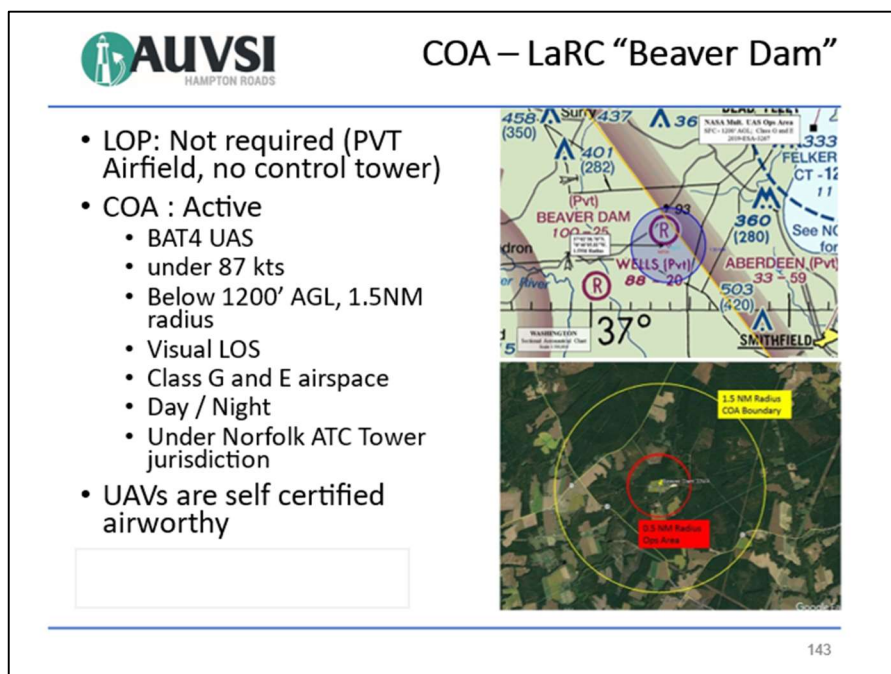
Figure 8 - NASA Langley "Beaver Dam" COA

NASA Wallops Flight Facility (WFF) Mid Atlantic Regional Spaceport (MARS) UAS Facility
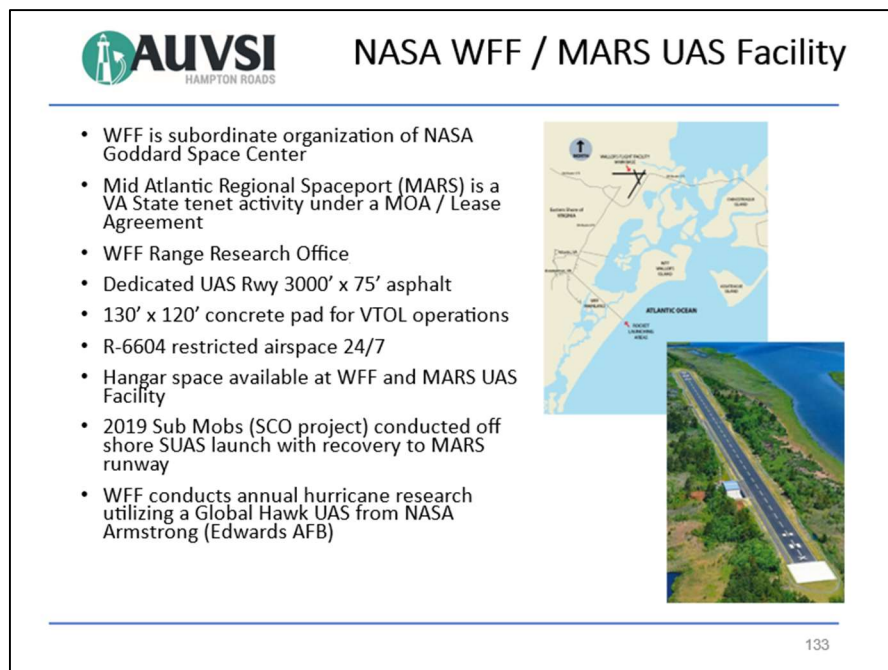
Figure 9 - MARS UAS Facility

Asset Summary – Hampton Roads Special Use Airspace

Hampton Roads, Virginia, is home to a complex system of special use airspace (SUA), designed for military activities. This airspace ensures the security and effectiveness of military operations, from restricted training exercises to restricted zones for sensitive installations like naval bases and research facilities. Temporary flight restrictions may be implemented for special events or VIP movements. This network maintains the safety of military personnel and civilian aircraft while supporting the diverse training and operational needs of the armed forces.

SUA Definition

The FAA defines SUA as that airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both. SUA areas are depicted on aeronautical charts, except for controlled firing areas (CFA), temporary military operations areas (MOA), and temporary restricted areas. [9], [5]. Hampton Roads SUA types are depicted in Figures 10-18, below: A list of SUA in Virginia outside Region 5 is listed in Appendix 3.

Figure 10 - Special Use Airspace Types

Restricted Airspace Definition

Figure 11 - Restricted Airspace Definition

Dam Neck Virginia Capes (VACAPES) Range Complex

Figure 12 - Dam Neck VACAPES Range Complex R-6606 & W-50 A-C SUA

Figure 13 - Dam Neck VACAPES Range Complex Information

Figure 14 - HR Southside R-6606 & W-50 A-C SUA

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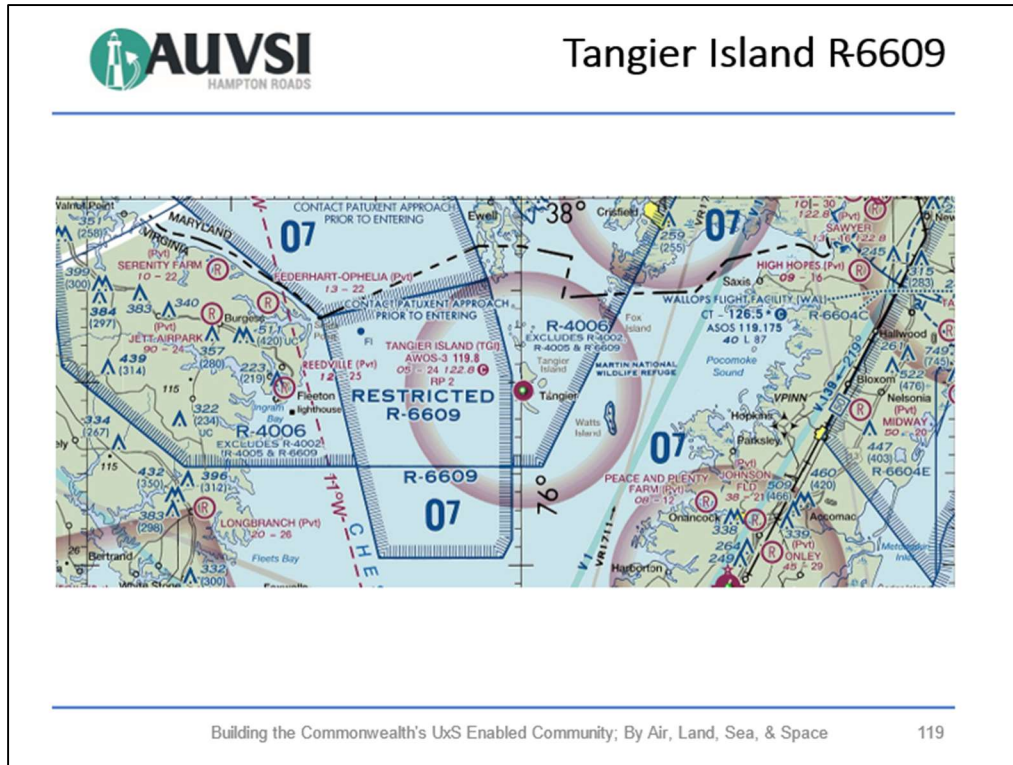
Tangier Island

Figure 15 - Tangier Island R-6609 SUA

Wallops Flight Facility
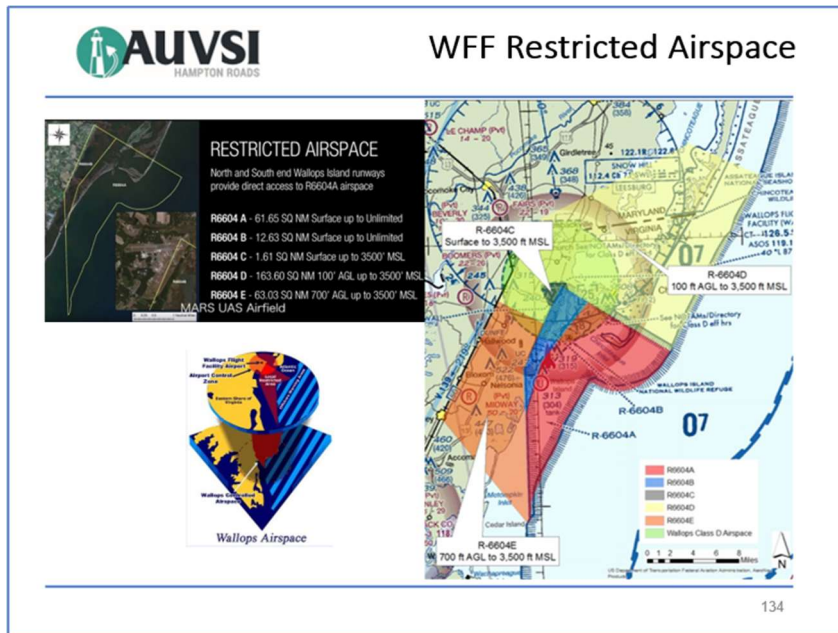
Figure 16 - Wallops R-6604A-E SUA

Figure 17 – Wallops - 66004A-E SUA
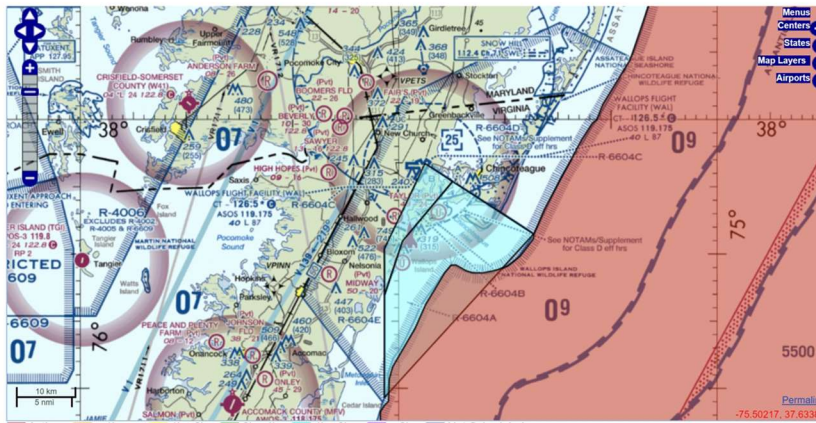
Figure 18 - NASA Wallops R-6604 & W-386 SUA

Asset Summary – Airspace Control

Airspace Control for the National Airspace System (NAS) is composed of airport towers (Federal and contract towers), terminal radar control (TRACON) facilities, and air route traffic control centers (ARTCCs).

Airport Approach Control (APP CNTL) is an air traffic control service provided by an airport's approach control facility for arriving and departing VFR/IFR aircraft and, on occasion, enroute aircraft. At some airports not served by an approach control facility, the TRACON or ARTCC provides a limited approach control service.

TRACONs handle descending flights received from a center or ascending flights received from an ATC tower (see Figure 19 below).

ARTCCs handle all enroute flights operating on Instrument Flight Rule (IFR) flight plans. Centers receive flights from or hand off flights to other Centers throughout the flight's enroute phase of operation. They also receive flights or hand off flights to TRACONs when flights enter or exit the enroute phase of operation.

Figure 19 - Airspace Control Depiction

ARTCC Washington Center (ZDC)
The Washington ARTCC covers 165,000 square miles (430,000 km2) of airspace that includes airports in Maryland, Pennsylvania, West Virginia, Delaware, New Jersey, Virginia, and North Carolina, as depicted in Figure 20 below.

ZDC is divided into 8 areas, numbered 1 through 8, that make up 46 sectors. They are broken down into low altitude, intermediate, high altitude, and Super High-Altitude sectors. There are 18 low sectors, 14 high sectors, 5 super high sectors and 4 various other type sectors, including 1 high/low altitude sector and 3 intermediate altitude sectors. Hampton Roads is in Area 5.

Figure 20 - United States Air Route Traffic Control Centers

Potomac Consolidated TRACON (PCT)

PCT, located in Warrenton VA, provides air traffic control service to the Baltimore-Washington and the Richmond-Charlottesville Areas, as shown in Figure 21 below. PCT controls the airspace over Andrews, BWI, Ronald Reagan, Dulles, Richmond, and many other area airports. PCT provides approach / departure services for the Middle Peninsula Regional airport (FYJ).

Figure 21 - Potomac Consolidated TRANCON (PCT)

Norfolk (ORF) Approach & Departure Control

Norfolk Approach is an approach control facility that provides for arriving and departing VFR/IFR aircraft and, on occasion, enroute aircraft. Norfolk Approach provides this support for most Hampton Roads airports.

Patuxent (NHK) Approach & Departure Control

Patuxent Approach / Departure supports the following Hampton Roads airports: Tangier Island, Accomack County, and NASA Wallops Flight Facility. APCH/DEP Services provided by POTOMAC TRACON when Patuxent Approach Control closed.

FAA Flight Service Program

The Flight Service program provides pilots with weather and aeronautical information through pilot briefings, flight planning, inflight advisory services, weather cameras, search and rescue initiation, aircraft emergencies, and Notices to Air Missions (NOTAMs). Flight Service delivers services for Hampton Roads via the Leesburg, VA Flight Service Station (FSS). Leesburg FSS is collocated with the ARTCC Washington Center.

Asset Summary – Civil Aviation Organizations

 Civil Air Patrol - The Civilian Auxiliary of the United States Air Force. For Patriots ages 12 and up, Civil Air Patrol is a vital force that protects Americans in need by responding to disaster, preserves the values that make our country great by developing young leaders and ensures our country's preeminence in Aerospace and Cyberspace Education.

With just over 2000 members in 22 squadrons across the state, the Virginia Wing of Civil Air Patrol uses its 29 vehicles and 12 single engine aircraft to serve the local community. In 2019, we participated in 8 Search and Rescue missions (with 8 finds), 23 air defense intercept training and evaluation missions, 11 AFROTC & AFJROTC cadet orientation flight missions, and more. Our pilots flew over 2176 hours in training time and service to the community. Nationally, it is estimated that Civil Air Patrol volunteer hours are valued at over $167 million as we perform missions for America.

 Coastal Composite Squadron (Virginia Beach, VA). Coastal Composite Squadron serves Virginia's eastern and southeastern shorelines and the greater Hampton Roads area.

 Hampton Roads Composite Squadron (Chesapeake, VA).

 Langley Composite Squadron (Langley AFB, VA). Langley Composite Squadron consists of 100 adult and youth members from diverse backgrounds, volunteering together to serve our community, state, and Nation.

 Tidewater Composite Squadron (Suffolk, VA).

Asset Summary – Region's Aviation Business Sectors

Across the diverse array of on-airport and off-airport business sectors in the region, each category reflects a vibrant ecosystem of specialized services tailored to meet specific needs. On-airport businesses provide 85 services, while off-airport establishments offer an even broader spectrum of 180 services. A comprehensive overview that illustrates the wide range of on-airport establishments and off-airport enterprise present in the region and the multitude of services they offer are depicted in Appendixes 4 &5.

On-Airport Business Sectors

On-airport businesses provide a total of 85 services across various categories. These include:

- Aerial Photography Services (1 service)
- Air Cargo Services (11 services)
- Air Charter Services (7 services)
- Air Medical Services (2 services)
- Airport Management (19 services)
- Airport Services (30 services)
- Aviation Research (4 services)
- Civil Service (4 services)
- Commercial Air Services (9 services)

Off-Airport Business Sectors

Off-airport businesses offer a wide range of 180 services. These encompass:

1	Advocacy Services (10 services)	12	Economic Development (52 services)
2	Aerial Photography Services (1 service)	13	Economic Growth (2 services)
3	Air Medical Services (1 service)	14	Education (22 services)
4	Airport Management (1 service)	15	Federal Services (1 service)
5	Airport Services (2 services)	16	Flight Training (1 service)
6	AV Research (37 services)	17	OEM (2 services)
7	Business Innovation (5 services)	18	Policy & Regulation (2 services)
8	Civil Service (1 service)	19	Real Estate (1 service)
9	Consultant Services (1 service)	20	Suppliers (4 services)
10	DOD Organizations (11 services)	21	UAS Services (10 services)
11	DOD Services (1 service)	22	UAS Software (1 service)

Asset Summary – Regional Aviation Advocacy

Virginia Airport Operators Council (VAOC).

Serve as a forum for the common interest of owners, operators, and users of the 66 public-use airports located throughout Virginia. The VAOC also provides a unified voice for airport operators to State and Federal agencies, the Virginia General Assembly, and the United States Congress on proposed or pending legislation and regulations. [10]

Virginia Aviation Business Associates (VABA).

The VABA is a 501(c)6 non-profit organization which serves as the voice of aviation business in Virginia to promote the development of aviation business within the Commonwealth of Virginia and represent the Aviation Industry with the Commonwealth of Virginia's legislature. The VABA

strives to enhance the development of infrastructure of GA and regional airports in support of the Commonwealth and support continued improvement of airport and flight safety operations of all Virginia aviators. [11]

Virginia AeroSpace Business Association (VASBA).
The VASBA is the premier statewide nonprofit trade association representing all aspects of the aerospace industry in the Commonwealth of Virginia. Founding membership includes more than 25 companies, nonprofits, and individuals representing many facets of the industry with the intent to make VASBA an effective advocate for the aerospace industry before federal, state, and local policymakers. [12]

Association of Uncrewed Vehicle Systems International (AUVSI).
AUVSI is the world's largest nonprofit organization dedicated to the advancement of uncrewed systems and robotics, represents corporations and professionals from more than 60 countries involved in industry, government, and academia. AUVSI members work in the defense, civil and commercial markets. The local AUVSI Hampton Roads Chapter serves the needs of emerging defense and industry technologists who were supporting uncrewed systems development. The Chapter region includes the U.S. Navy, U.S. Air Force, U.S. Army, U.S. Coast Guard, and NASA and 18 local municipalities that comprise Hampton Roads. Their growing base includes members from academia, industry, and local governments. We reach from Northeast North Carolina to the Eastern Shore of Virginia, to Richmond. [13]

Vertical Flight Society (VFS).
 The VFS is the world's only international technical society for engineers, scientists and others working to advance vertical flight technology. They bring together industry, academia, and government to tackle the toughest challenges in vertical flight. [14]

Vertical Aviation International (VAI).
VAI is a global leader in leveraging, innovating, advocating, and expanding the unique operational capabilities of vertical flight on behalf of our members and for the benefit of society. VAI internationally represent all aspects of the Vertical Take-off & Landing (VTOL) industry, promoting safety, community compatibility, professionalism, innovation, and the economic viability of the industry. [15]

American Institute of Aeronautics and Astronautics (AIAA).
AIAA is the voice of the aerospace profession through innovation, technical excellence, and global leadership and exists to help aerospace professionals and their organizations succeed "Shaping the Future of Aerospace." [16]

National Business Aviation Association (NBAA).

TNBAA's mission is to foster an environment that allows business aviation to thrive in the United States and around the world. [17]

Regional Aviation Governance

Virginia Department of Aviation (DOAV) defines the entity that is legally, financially, and otherwise able to assume and carry out the certifications, representations, warranties, assurances, covenants, and other obligations required as an airport "sponsor." An airport sponsor has many obligations for its airport, ranging from financial dealings and long-term development planning to daily maintenance and operational activities. A sponsor is solely responsible for ensuring that the airport is compliant with federal and state grant assurances, Virginia Aviation Board policies, and relevant federal and state regulations. Sponsor types are municipality-owned (City or County), Airport Commissions or Authorities, Interstate Compact, or privately owned. Hampton Roads airports, by type sponsor, is depicted in Figure 22 below.

Airport	Category	Identifier	Sponsor Type
Accomack County	GA Regional	MVF	Municipal
Chesapeake Regional	GA Reliever	CPK	Authority
Franklin Municipal	GA Community	FKN	Municipal
Hampton Roads Executive	GA Reliever	PVG	Private
Middle Peninsula	GA Regional	FYJ	Authority
Newport News-Williamsburg	Commercial	PHF	Authority
Norfolk International	Commercial	ORF	Authority
Suffolk Executive	GA Regional	SFQ	Municipal
Tangier Island	GA Community	TGI	Municipal
Williamsburg-Jamestown	GA Community	JGG	Private

Figure 22 - Hampton Roads Airports by Sponsor Type

Recommendation.
- **Establish an Aviation Master Planning Governance for Hampton Roads.** Create a dedicated body to oversee and coordinate aviation development in the region, ensuring alignment with emerging State & Federal AAM technologies and associated policy, regulation, and law.

Regional Aviation Development Planning

Virginia Air Transportation System Plan (VATSP)
The Virginia Air Transportation System Plan (VATSP), last updated in 2016, sets the vision for the Commonwealth's aviation network by addressing Virginia's aviation infrastructure and policy needs. The plan documents the existing system with photos, maps, and data; identifies airport

improvements needed; sets priorities for funding; proposes aviation policy and continuously supports the system through special studies, updates and reviews as the system evolves.

Airport Master Plans

FAA Advisory Circular (AC) 150/5070-6B [18] provides guidance for the preparation of master plans for airports that range in size and function from small general aviation to large commercial service facilities. The AC's intent is to foster a flexible approach to master planning that directs attention and resources to critical issues. The scope of each master plan is tailored to the individual airport under evaluation. Master Plans typically have a 5, 10, or 20 forecast time horizons.

Airport master plans are usually stored electronically or in physical form within the offices of airport management, planning departments, or relevant government agencies overseeing aviation. They may also be available online through the airport operator's website or aviation authority's platform. Two examples are shown below:

The Newport News/Williamsburg International Airport (PHF) has a master plan that outlines future growth and economic development over the next 20 years. The airport is owned by the Peninsula Airport Commission and the master plan can be viewed at https://masterplan.newportnewsairport.com/. [19]

The Norfolk Airport Authority updating their Master Plan for Norfolk International Airport (ORF) in 2021 to account for changes at the Airport, in the aviation industry, and in the region since the Airport's 2008 Master Plan. The Master Plan Update (MPU) includes projects that extend the useful life and value of the Airport to meet the air transportation needs of the region over the next 20 years. ORF Airport Master Plans are updated every 10 years to analyze market trends, assess facility requirements to accommodate anticipated growth, and guide future airport development. The airport is owned and operated by the Norfolk Airport Authority and the master plan can be viewed at http://orfmasterplan.com/. [20]

AAM Infrastructure Planning

According to the "Virginia's Advanced Air Mobility Future" study, [21] several key infrastructure components are necessary to support AAM operations, including vertiports, charging stations, and UTM systems. Existing underutilized airports can be developed to support AAM as part of a strategic plan to enhance regional connectivity.

MVI: The "Minimum Viable Infrastructure (MVI)" report by Virginia Tech's Mid-Atlantic Aviation Partnership outlines the foundational infrastructure needed to support AAM operations. This includes investments in sensors, data sharing networks, and public-private partnerships to create a robust and self-sustaining AAM ecosystem. [3] Additionally, integrating UAV operations into existing infrastructure can maximize efficiency and safety, as discussed in the "Virginia UAV Activity Study. [1]

Vertiports: Vertiports are essential for the operation of electric vertical takeoff and landing (eVTOL) aircraft. These facilities need to be strategically located near urban centers, airports, and key transportation hubs.

- Potential Sites: Underutilized airports such as Newport News/Williamsburg International Airport (PHF) and Suffolk Executive Airport (SFQ) can be developed to include vertiports, leveraging existing aviation infrastructure.

Charging Stations: Charging stations for eVTOL aircraft are critical to ensure efficient and rapid turnaround times. These stations need to support fast-charging technology and be integrated into existing airport facilities.

- Implementation: Incorporating charging infrastructure at major airports like Norfolk International Airport (ORF) and smaller regional airports will support a robust AAM network.

Unmanned Traffic Management (UTM) Systems: UTM systems are necessary to manage the safe and efficient operation of UAVs within shared airspace. These systems facilitate the coordination of UAV flights, ensuring compliance with safety regulations.

- Integration: Existing air traffic control infrastructure can be enhanced with UTM capabilities, particularly at airports with significant UAV activity.

Sensors and Data Sharing Networks: Investments in sensors and data sharing networks to create a robust and self-sustaining AAM ecosystem. These technologies are crucial for real-time monitoring and coordination of AAM and UAV operations.

Public-Private Partnerships: Establishing partnerships between public entities and private companies to develop and maintain the necessary infrastructure for AAM and UAV operations.

Maintenance and Support Facilities: Dedicated maintenance and support facilities for eVTOL aircraft and UAVs are essential to ensure operational readiness and safety. These facilities should be equipped to handle the unique requirements of electric aircraft and UAVs.

- Development: Establishing these facilities at existing airports, like the proposed advanced aviation business and research park at PHF, will centralize maintenance operations and support industry growth.

Logistics and Supply Chain Hubs: Logistics hubs are crucial for supporting UAV operations, particularly for package delivery and medical supply transport. These hubs should be strategically located to optimize delivery routes and minimize transit times.

- Strategic Locations: Utilizing existing logistics infrastructure at airports and integrating UAV operations can enhance delivery efficiency and expand service areas.

Public Safety and Emergency Services Integration: Integrating UAVs into public safety and emergency services can provide significant benefits, such as enhanced incident response and real-time situational awareness. Infrastructure to support these operations includes dedicated UAV launch and recovery sites and real-time data communication systems.

- Applications: Public safety agencies can utilize UAVs for search and rescue, firefighting, and law enforcement, leveraging existing airport facilities for UAV operations.

By addressing these infrastructure requirements, Hampton Roads can position itself as a leader in AAM and UAV technologies, fostering economic growth, enhancing regional mobility, and creating new opportunities for innovation.

Applicable Legislation

See Appendix 8.

Regional SWOT Summary

Hampton Roads Aviation Strengths

Hampton Roads regionally has many strengths across diverse communities and aviation business sectors. Here are the notable highlights are:

- **Significant Military, Federal, and Commercial Aviation Industry in a Single Geographic Region:** The presence of a robust military, federal, and commercial aviation industry within the Hampton Roads area provides a strong foundation for growth and development in the aviation sector.
- **Strong State and Congressional Representation for the Aviation Industry and Communities: T**he region benefits from strong advocacy and support from state and congressional representatives, which helps in securing resources and advancing the aviation industry.
- **Numerous Aviation Business Sectors:** Hampton Roads hosts 13 on-airport and 5 off-airport aviation business sectors, showcasing a diverse and vibrant aviation ecosystem.
- **Steady Growth in ORF Commercial Air Services:** Norfolk International Airport (ORF) continues to experience strong and steady growth in commercial air services, contributing to the region's economic vitality.
- **Exceptional Service-Oriented Tenants at PHF:** Newport News/Williamsburg International Airport (PHF) has several strong service-oriented tenants, enhancing its operational capacity and service quality.
- **Aerospace Research Services Industry:** The region has a thriving aerospace research services industry focused on regional federal agencies, fostering innovation and collaboration in aviation research.

- **Strong General Aviation Presence:** Hampton Roads has a significant General Aviation (private pilot) presence, providing opportunities for recreational flying and aviation-related activities.
- **DroneUp Headquarters in Virginia Beach:** DroneUp, supporting Walmart drone package delivery, is headquartered in Virginia Beach, positioning the region as a leader in drone technology and services.
- **ODU's Established Research Institutes:** Old Dominion University (ODU) has established three research institutes: the Virginia Modeling, Analysis, and Simulation Center (VMASC), the Virginia Institute for Spaceflight and Autonomy (VISA), and the new Autonomous and Intelligent Systems Consortium (AISC).
- **ODU's Unmanned & Autonomous Vehicle Lab:** ODU has also established a lab dedicated to Unmanned & Autonomous Vehicle research, supporting advancements in this critical area.
- **CNU's New Engineering School:** Christopher Newport University (CNU) is establishing a new engineering school, which will contribute to the region's educational and technological capabilities.
- **HU's School for Engineering, Architecture, & Aviation:** Hampton University (HU) maintains a School for Engineering, Architecture, & Aviation, supporting the development of skilled professionals in these fields.
- **Denbigh Air Academy's Exceptional Facilities:** The Denbigh Air Academy provides exceptional facilities for secondary high school students, fostering early interest and education in aviation.
- **Recurring Advanced Air Mobility Event by AUVSI:** The Association for Unmanned Vehicle Systems International (AUVSI) has established a recurring Advanced Air Mobility annual event focused on Virginia, promoting the state's leadership in this emerging sector.

These strengths collectively position Hampton Roads as a significant player in the aviation industry, capable of leveraging its diverse resources and strategic advantages to drive regional growth and innovation.

Hampton Roads Aviation Weaknesses

The Hampton Roads region has several key weaknesses that limit growth across existing aviation business sectors. Here are the notable highlights:

- **Decline in PHF Commercial Air Services:** Newport News/Williamsburg International Airport (PHF) is experiencing a decline in commercial air services, which negatively impacts the region's aviation industry.
- **Lack of a Unified Representation:** The region lacks a focused single body that represents all airports, cities, and counties, leading to fragmented efforts and inefficiencies in promoting and developing aviation activities.

- **No Manned Aircraft Manufacturing Base:** There is no manned aircraft manufacturing presence in the regional base, which limits opportunities for growth and development in this sector.
- **Lack of AAM Adoption Plans:** Current airlines or operators that are early adopters of Advanced Air Mobility (AAM) do not include Hampton Roads in their near-term expansion plans.
- **Limited Helicopter Industry Presence:** The region only has small businesses representing the helicopter industry, which restricts the potential for significant growth in this area.
- **Limited UAS Developmental Locations:** There are limited locations within the region to conduct Unmanned Aerial Systems (UAS) developmental operations, hampering innovation and testing capabilities.
- **Inadequate UAS Training Capability & Capacity:** The region lacks sufficient training capability and capacity for UAS operations, which is crucial for developing a skilled workforce in this emerging field.
- **Minimal UAS Manufacturing:** There is extremely limited UAS manufacturing in the region, which restricts the growth and development of this industry.
- **Workforce Development Needs:** Workforce development needs to pivot towards the AAM marketplace as a clear objective to ensure that the region can support and sustain new aviation technologies and operations.

Addressing these weaknesses will be critical for Hampton Roads to strengthen its aviation sector and fully capitalize on emerging opportunities in AAM and UAS technologies.

Hampton Roads Aviation Opportunities

Pioneering the Future of AAM: A Beacon of Innovation in AAM
Hampton Roads, with its rich maritime heritage, is not just a hub of naval history but is now poised at the forefront of Advanced Air Mobility (AAM). The region's comprehensive aviation infrastructure, featuring 10 civil airports, 7 military-federal airports, numerous heliports, and an array of influential aviation stakeholders, provides a robust foundation for cutting-edge aviation projects.

This strategic advantage positions Hampton Roads to lead in the rapidly evolving AAM landscape, ready to harness opportunities in at least nine innovative business sectors. These sectors, which promise substantial economic and technological advancements, are detailed in table 13 below. This table outlines the emerging sectors positioned to transform the region into a leader in next-generation aviation technologies.

Prioritized New Sector Recommendations

Table 13 - Hampton Roads New Business Sectors

9 - New Business Sectors	Priority	Impact	Timeline
1. UAS Services - Training and Development	High	🔴 ⭐	1-2 years
2. Regional Air Mobility - Regional Air Services	Medium	🟢 ⏰	2-5 years
3. Charging Services for Electric Aviation	Medium	🟢 ⏰ $	2-5 years
4. Vertiport | Dropneport Development	High	🔴 ⭐	2-5 years
5. Hydrogen Aviation	Medium	🟢 ⏰ $	2-5 years
6. Coastal Transportation	High	🔴 ⏰ ⭐	2-5 years
7. Electric Aviation Flight Training Services	Medium	🟢 ⏰	5-10 years
8. Private Air Mobility	Low	🟢	5-10 years
9. Urban Air Mobility	Low	🔴 ⭐	5-10 years

Legend		
Priority	**Impact**	**Indicators**
High Critical initiatives needing immediate attention.	🔴 High Impact - Major effect on objectives or results.	⭐ Indicates a major positive effect or benefit.
Medium Important but not urgent.	🟡 Medium Impact - Significant but not crucial.	⏰ Time-sensitive or urgent.
Low Beneficial but can be deferred without immediate con	🟢 Low Impact - Minor consequences.	$ High cost or significant investment required.

These sectors present unique opportunities for growth and advancement, positioning Hampton Roads as a leading hub of AAM innovation. The following sections outline these prioritized sectors, their strategic importance, and timelines for implementation: A more comprehensive evaluation is provided in Appendix 7.

1. <u>UAS Services (1-2 years)</u>

Objectives: Establish a core training and development capability and enhance regional capabilities in surveillance, logistics, and emergency response through advanced Unmanned Aerial Systems (UAS).

Training and Development

- Establish a Beyond Visual Line of Sight (BVLOS) training facility to position Hampton Roads as a leader in UAS operations.
- Army Collaboration: Engage with the Army to co-develop and test AAM technologies.
- NASA Partnership: Leverage relationships with NASA Langley to support AAM research and development.
- Academic Support: Encourage local universities to develop and enhance UAS-related programs, aligning educational outcomes with industry needs.

Surveillance / Survey / Inspection

- Develop a UAS LOS/BVLOS Training and Development Site to enhance regional UAS capabilities, supporting maintenance, training, and development.
- Grow public safety UAS services to enhance emergency response capabilities.

- Support regional federal organizations with their training and development needs, particularly in surveillance and data collection.

Unmanned Small & Large Cargo Delivery
- Expand UAS package and medical supply delivery systems in collaboration with regional hospitals and industry leaders to improve efficiency.
- Partner with VTOL operators and energy companies for infrastructure inspections and offshore services.
- Establish a regional hub for large cargo UAS operations, leveraging existing air cargo assets and infrastructure.

2. Regional Air Mobility – Regional Air Services (2-5 years)

Objectives: Establish Hampton Roads as a central hub for Regional Air Mobility (RAM), enhancing connectivity and transport efficiency across short-haul regional routes.

- Public Charter Development: Encourage the establishment and growth of the public charter sector.
- RAM Hub: Develop infrastructure and policy support to establish Hampton Roads as a key player in RAM.
- Innovative Partnerships: Cultivate relationships with early adopters and potential investors.
- Wind Farm Services Use Case: Partner with VTOL operators and Dominion Energy for offshore wind farm services.

3. Charging Services (2-5 years)

Objectives: Develop and implement a robust infrastructure for charging electric and hybrid-electric aircraft, supporting the expansion of UAS and eVTOL operations.

- Initial Capability Setup: Establish basic charging infrastructure to meet current demands.
- Long-Term Network Development: Expand the charging network to support a growing number of electric aircraft.

4. Vertiport | Droneport Development (2-5 years)

Objectives: Develop infrastructure to support the safe and efficient operation of eVTOL and drones, enhancing unmanned operations, urban mobility, and regional air mobility.

- Infrastructure Planning: Plan and build vertiports and droneports in strategic locations.
- Certification and Regulation: Work with regulatory bodies to ensure compliance and safety.

- Community Engagement: Involve local communities in planning and development processes to foster public acceptance.

5. Hydrogen Aviation (2-5 years)

Objectives: Develop and implement hydrogen fuel technologies for aviation, positioning Hampton Roads as a leader in sustainable aerospace solutions.

- Development Partnerships: Collaborate with aerospace manufacturers and research institutions to advance hydrogen technology in aviation.
- Infrastructure Investments: Build the necessary infrastructure for hydrogen production, storage, and refueling at airports.
- Policy and Regulatory Support: Advocate for supportive policies and regulations that facilitate the adoption of hydrogen in aviation.

6. Coastal Transportation (2-5 years)

Objectives: Enhance transportation options for coastal and island communities through innovative electric air and sea mobility solutions.

- Coastal Transportation Services: Develop and deploy seaglider, seaplane, and/or vertical takeoff and landing (VTOL) services tailored to coastal areas.
- Partnerships and Collaborations: Work with local governments, transportation authorities, manufacturers, tourism boards, marinas, and private operators to integrate these services into existing and new transport networks.
- Environmental and Regulatory Compliance: Ensure that new services adhere to environmental standards and receive necessary regulatory approvals.

7. Electric Aviation Flight Training Services (5-10 years)

Objectives: Establish an East Coast Hub for Electric Flight Training Aircraft OEMs: Attract manufacturers and service providers to create a hub for electric flight training.

- Training Program Development: Create specialized curricula that focus on the nuances of electric flight.
- Facility Upgrades: Equip existing flight schools with the necessary technology and aircraft for electric flight training.
- Industry Partnerships: Engage with aircraft manufacturers and tech companies to support training programs with the latest technologies.

8. Private Air Mobility – Tourism | Recreational (5-10 years)

Objectives: Develop and promote private air mobility options for tourism and recreational purposes, enhancing the travel experience and providing high-end transport solutions.

- Luxury VTOL Services: Launch services that offer exclusive air travel experiences for tourists and recreation seekers.
- Partnership with Hospitality Industry: Integrate air mobility solutions with resorts, event planners, and tourist attractions.
- Safety and Comfort Innovations: Focus on enhancing the safety, comfort, and convenience of private air services to attract high-end clientele.

9. Urban Air Mobility – Air Taxi (5-10 years)

Objective: Implement air taxi services within urban centers to reduce ground traffic congestion and provide efficient, on-demand air transport.

- Infrastructure Development: Build the necessary vertiport and air traffic management infrastructure to support air taxis.
- Regulatory Engagement: Work closely with city governments and aviation authorities to ensure safe and regulated service operations.
- Public Adoption and Outreach: Conduct public information campaigns to educate and encourage usage of air taxi services.

Across the globe, industries are experiencing rapid growth to support companies involved in Advanced Air Mobility (AAM). This burgeoning sector includes Urban Air Mobility utilizing eVTOL for air taxi services, Regional Air Mobility for cargo and passenger transportation over regional distances, Unmanned Air Mobility with diverse applications, and Fast Ferry Transportation Services employing Seaplanes or Wing-in-Ground Effect craft. Detailed insights into the opportunities within these new business sectors are outlined in Appendix 7. These insights underscore the potential for Hampton Roads to emerge as a leader in shaping the future of aviation, positioning the region at the forefront of AAM innovation and development.

Hampton Roads Aviation Threats

Threats come in many forms as the tides in population, natural resources, leadership, economic development, and technology advances over time. Some watch items are listed below.

- **Legislation**
  - Current legislative frameworks may not fully support the rapid integration of Advanced Air Mobility (AAM) and Unmanned Aerial Vehicles (UAVs). Changes in legislation are required to accommodate new aviation technologies and operations.

- The "Minimum Viable Infrastructure (MVI)" report emphasizes the need for updated legislation to support the safe and efficient integration of AAM and UAV operations, ensuring that new regulations facilitate growth rather than hinder it.
- **Policy**
  - Existing policies may not align with the advancements in aviation technology, creating barriers to the adoption and implementation of AAM and UAVs.
  - According to the "MVI" report, establishing policies that promote innovation while ensuring safety is crucial for the successful deployment of AAM and UAV technologies in Hampton Roads.
- **Fragmented Governance**
  - The lack of a unified governance structure can lead to disjointed efforts and inefficient use of resources. Different entities managing various aspects of aviation can result in conflicting priorities and strategies.
  - The "MVI" report recommends creating a centralized governance body to oversee AAM and UAV initiatives, ensuring coordinated and cohesive development across the region.
- **Fragmented Planning**
  - Inconsistent planning efforts across different jurisdictions can impede the development of a comprehensive and integrated aviation strategy. Fragmented planning can lead to gaps in infrastructure and services.
  - The "MVI" report highlights the importance of developing a regional aviation master plan that integrates AAM and UAV infrastructure needs, promoting a holistic approach to aviation development in Hampton Roads.
- **Population**
  - The growing population in Hampton Roads presents both opportunities and challenges. While a larger population can support more robust aviation services, it also increases the complexity of integrating new technologies and managing airspace.
  - Addressing population-related challenges requires careful planning and investment in infrastructure, as outlined in the "MVI" report, to ensure that AAM and UAV operations can be safely and effectively integrated into the region's existing aviation framework

Addressing these threats requires careful planning, legislative updates, cohesive governance, and strategic policy alignment to ensure that the region can effectively integrate and benefit from advancements in AAM and UAV technologies.

Special Topic – PHF Commercial Air Services

Airports are widely accepted as economic generating engines. In February 2024, Norfolk International Airport (ORF) achieved its 13th consecutive month of record-setting performance, with a 13.2% increase in passenger activity, reaching 298,452 passengers. In contrast, Newport

News/Williamsburg International Airport (PHF) has faced significant financial difficulties, with a negative cash basis for 16 of the last 17 months and a loss of $4.2 million. This situation presents a critical challenge for regional officials and the Peninsula Airport Commission. For a more comprehensive analysis, refer to Appendix 7.

Summary – Financial Performance
Despite ORF's success, PHF has experienced substantial financial losses, exceeding $4.2 million over 17 months. Authorities face tough decisions to prevent PHF from becoming a financial burden on Newport News. Transitioning from traditional commercial air service to non-traditional sectors, such as advanced air mobility (AAM), is challenging but essential for long-term viability.

Today's Commercial Air Service Narrative
PHF's competitiveness is undermined by proximity to highways leading to Norfolk or Richmond Airports, which offer more consumer choices. The airport has struggled to attract and retain commercial air service, with recent discontinuations highlighting this challenge.

Non-hub Airports
PHF, classified as a non-hub airport, has become less of an economic generator and faces significant financial challenges. Authorities must consider repurposing the airport to create a positive cash-generating and job-creating asset for the Hampton Roads region.

An Airport's Economic Impact On The Community / Region
The Newport News/Williamsburg International Airport (PHF) has historically been a cornerstone of the Hampton Roads economy, contributing significantly to local economic activity. However, current trends suggest that non-commercial uses of airport assets may generate more economic benefits, necessitating a reevaluation of PHF's role.

It Is No Longer Just About Commercial Air Service
Repurposing PHF presents a unique opportunity for strategic resurgence. By leveraging emerging market opportunities in AAM and urban air mobility (UAM), and capitalizing on regional strengths, leaders can position PHF as a hub for innovation and economic growth, aligning with broader aviation sector trends.

Financial Performance of the Newport News / Williamsburg International Airport
PHF has been operating at a loss, heavily relying on one-time capital infusions to maintain liquidity. Authorities must evaluate whether to continue with commercial air service or transition to non-traditional sectors to ensure long-term financial stability.

Scenario 1: No Commercial Air Service

Discontinuing commercial air service at PHF could lead to significant cost reductions, potentially improving the airport's financial position. Repurposing PHF to support emerging aviation markets, such as AAM and UAM, could transform it into a vital economic engine for the region.

Revenue Reductions

Maintaining commercial air service at PHF has proven financially unsustainable. Transitioning to non-traditional sectors could help mitigate revenue losses and improve the financial outlook.

Expense Reductions

Ending commercial air service could result in substantial cost reductions, enhancing PHF's financial sustainability. Strategic investments in emerging aviation markets are essential to ensure the airport's long-term success.

Conclusions of the Financial Assessment

To address PHF's financial challenges, a series of steps must be taken. The first step is to decide whether to maintain commercial air service. Given the current financial data, maintaining commercial service may not be viable. Analyses indicate that PHF is a loss-making enterprise, reliant on one-time capital infusions. Discontinuing commercial service could lead to significant cost reductions and improve financial stability.

Repurposing PHF to align with current trends in unmanned flight and advanced air mobility could transform it into a vital economic engine for the region. This strategic shift would not only address the current financial deficits but also leverage PHF's infrastructure to support future growth in aviation technology sectors.

Air Study Recommendations

Hampton Roads is regionally asset-rich, with 10 civil airports, 7 military-federal airports, numerous heliports, and over 60 stakeholder entities. It is also a hub for AAM development, with significant contributions from the Army, USSOCOM, and NASA. One of the largest industry partners has established an Unmanned Center of Excellence in Hampton, and Virginia Tech is setting up a Hydrogen Research Center in Newport News. Recommendations for enhancing regional efficiency, competitiveness, and collaboration are summarized in Table 14, prioritized based on readiness for implementation, developmental progress, and projected future advancements.

Table 14 - Strategic Recommendations

10 - Prioritized Recommendations	Priority	Impact	Timeline
1. Establish Aviation Master Planning Governance for Hampton Roads	High	🔴 ⭐	Immediate
2. Develop Hampton Roads Regional Aviation Master Plan	High	🔴 ⭐	Immediate
3. Position Norfolk International as Traditional Commercial Air Services Regional Leader	Medium	🟡 ⭐	Short-term
4. Transform Newport News/Williamsburg Airport into a Premier Advanced Aviation Business & Research Center	Medium	🟢 ⏰ ⭐	Mid-term
5. Exploit Private Sector Agility at Hampton Roads Executive Airport for Rapid Innovation and Market Penetration	High	🔴 ⏰ ⭐	Short-term
6. Establish a UAS Key Site in Hampton Roads	High	🔴 ⏰ ⭐	Short-term
7. Develop a Regional AAM Strategic Development Plan	Medium	🟡 ⏰	Mid-term
8. Support Army's Development of an AAM Dual-Use Technology Center (AAMDTC)	High	🔴 ⏰	Short-term
9. Create a Focused Regional OEM Manufacturing Capture Plan	High	🔴 ⏰ 💲	Short-term
10. Expand Regional Air Cargo Commercial Services	Low	🟢	Long-term

Legend		
Priority	**Impact**	**Indicators**
High — Critical initiatives needing immediate attention.	🔴 High Impact - Major effect on objectives or results.	⭐ Indicates a major positive effect or benefit.
Medium — Important but not urgent.	🟡 Medium Impact - Significant but not crucial.	⏰ Time-sensitive or urgent.
Low — Beneficial but can be deferred without immediate con	🟢 Low Impact - Minor consequences.	💲 High cost or significant investment required.

The private sector, especially at Hampton Roads Executive Airport (PVG), is emphasized for its potential to drive innovation and market penetration. Implementing these recommendations will enable Hampton Roads to leverage its assets and strategic advantages, positioning it as a leader in Advanced Air Mobility and Unmanned Aerial Systems, thus driving regional growth and innovation. The recommendations are elaborated on in more detail below with a more comprehensive analysis shown in Appendix 7:

Regional Aviation Governance
- **Establish an Aviation Master Planning Governance for Hampton Roads.** Set up a centralized authority to strategically oversee aviation development, similar to the successful Metropolitan Washington Airports Authority, ensuring cohesive growth aligned with AAM and UAS advancements

Regional Aviation Development Planning
- **Develop a Hampton Roads Regional Aviation Master Plan.** Craft a detailed strategic plan integrating AAM and UAS infrastructure needs, like vertiports and UTM systems, drawing from successful national models, to enhance infrastructure integration and regional connectivity.
- **Position Norfolk International Airport (ORF) as the Regional Leader for Traditional Commercial Air Services.** Elevate ORF's role in commercial aviation to support escalating regional and AAM-related demands, while fostering its capacity as a central hub for traditional air travel.
- **Transform Newport News-Williamsburg International Airport (PHF) into a Premier Advanced Aviation Business & Research Center.** Reposition PHF from traditional commercial air service provider to a leader in advanced aviation and research, focusing

on new markets of Air Cargo, UAS, and electric aircraft (UAM/RAM), while retaining existing non-commercial tenants and attracting new tenants like the Army and NASA.

- **Exploiting Private Sector Agility at Hampton Roads Executive Airport (PVG) for Rapid Innovation and Market Penetration.** Utilize the entrepreneurial agility of PVG's private ownership to expedite innovation and market entry. The airport's management harnesses deep market insights and operational flexibility to rapidly pilot and scale new business ventures in emerging sectors, setting a benchmark for efficient development in advanced aviation and related technologies.
- **Establish a UAS Key Site in Hampton Roads.** Create a premier site for UAS development and training, positioning Hampton Roads as a leader akin to the FAA-designated test sites, enhancing capabilities in BVLOS and UTM systems to attract new investment.
- **Develop a Regional AAM Strategic Development Plan.** Formulate a targeted strategy to foster AAM markets in the region, drawing on economic impact studies like those highlighted in the "Virginia's Advanced Air Mobility Future" study, to maximize job creation and economic benefits.
- **Support Army's Development of an AAM Dual-Use Technology Center (AAMDTC).** Collaborate with the Army to develop a strategic plan for AAMDTC capabilities leveraging local assets, strategic partnerships, and regional resources to strengthen defense and commercial aviation capabilities.
- **Create a Focused Regional OEM Manufacturing Capture Plan.** Develop a targeted plan to attract and secure original equipment manufacturers (OEMs) by preparing shovel-ready infrastructure and offering incentives to the region by preparing shovel-ready sites and offering incentives.
- **Expand Regional Air Cargo Commercial Services.** Develop strategies to broaden ORF's infrastructure to support the growth of regional traditional air cargo operations. Consider expansion of air cargo services to the PHF airport.

Conclusion

As we navigate the rapidly shifting landscape of aviation and transportation, we must embrace innovation and bold thinking to harness opportunities to ensure sustained success so that our airports remain major economic engines for our communities.

The recommendations proposed here offer a road map for strategic foresight and adaptability in airport planning that will transform our region into a vital economic hub, powering our reginal economy and driving growth. By establishing solid governance structures, creating strategic master plans, and seizing on new market opportunities, we can strategically position Hampton Roads as an industry innovator in Advanced Air Mobility (AAM) and Urbon Air Mobility (UAM) to position ourselves to capitalize on these trends.

While challenges such as the revitalization of the Newport News/Williamsburg International

Airport (PHF) might seem daunting, they also offer an instructive example of the transformative power of adaptability in the face of the shifting circumstances of economic vitality. By redefining PHF as a premier sophisticated aviation business and research park, we can use creative solutions to navigate obstacles and unlock new opportunities for growth and prosperity within Hampton Roads.

Finally, Universal Solutions International, Inc. & Swelbar-Zhong Consultancy analysis advocates for a proactive approach to airport management by encompassing initiatives such as master planning, collaboration with key stakeholders, and diversification of services. Converting assets such as such as the Newport News/Williamsburg International Airport (PHF) offers a unique opportunity for strategic repositioning and resurgence. It emphasizes the importance of seizing opportunities presented by emerging markets like AAM and UAM, as well as leveraging reginal strengths and partnerships to drive economic growth and competitiveness.

This strategic orientation aligns with the dynamic shifts of the aviation sector, ensuring the long-term success and relevance of regional aviation assets in the face of shifting market trends and challenges. By adopting and implementing these progressive strategies, Hampton Roads leaders can not only safeguard and revitalize the rich historical legacy of PHF but also position it as an international hub for leading-edge aviation advancements and economic growth and prosperity for their communities.

HAMPTON ROADS AIR STUDY

Appendixes

Appendix 1 Asset Summaries – Civil Airports

Accomack County (MFV)

Airport Overview

ACCOMACK COUNTY (MVF)   **1 W**

Airport Point of Contact:
Barbara Haxter

Airport Telephone:
757-787-4600

Airport Location:
29194 Pkwy N
Melfa, VA 23410

Hours of Operation:
0830-1730

Website:
www.co.accomack.va.us/departments/airport

Eastern Shore of Virginia Tourism Commission
www.esvatourism.org

Economic Development
www.economicdevelopmentaccomack.com

Eastern Virginia Chamber of Commerce
www.esvachamber.org

Sectional Chart: Washington
Runway: 3-21: 5,000 x 100 (ASPH-G)
Traffic Pattern: Left
Runway Lights: MIRLS
Fuel Type: 100LL, Jet A
Fuel 24 hours: Yes (100LL and A)
Weather Data Sources: AWOS-3: 118.175, 757-787-5660
Communications: CTAF/UNICOM: 122.8
Available Approaches: RNAV, VOR/DME
Approach Lighting: RWY3-21 PAPI, REIL
FBO: None
Maintenance Services: None

MELFA

| Latitude | N37°38.82' | **Field Elevation** |
| Longitude | W75°45.67' | **47.6 ft. MSL** |

Figure 1. 1 - Accomack County (MFV) Airport Overview

Economic Impact Summary

Table 1. 1 Accomack (MFV) Economic Impact Summary

Summary of 2016 Economic Impact and Changes Since 2010
Accomack County Airport
$ in thousands (000's)

	Metric	2010	2016	Change	% Change
Activity Measures	GA Passengers *	N/A	8,816	N/A	N/A
	Estimated Visitors	3,360	8,816	5,456	162%
	GA Departures **	N/A	3,112	N/A	N/A
Economic Impact	**Airport Operations**				
	Employment	15	14	(1)	-8%
	Labor Income	$ 310	$ 922	$ 612	198%
	GDP	N/A	$ 1,218	N/A	N/A
	Economic Output	$ 1,180	$ 2,147	$ 967	82%
	Visitor Spending				
	Employment	17	32	15	86%
	Labor Income	$ 400	$ 681	$ 281	70%
	GDP	N/A	$ 1,031	N/A	N/A
	Economic Output	$ 1,190	$ 2,050	$ 860	72%
	Total Economic Impact				
	Employment	32	45	13	42%
	Labor Income	$ 700	$ 1,603	$ 903	129%
	GDP	N/A	$ 2,249	N/A	N/A
	Economic Output	$ 2,380	$ 4,198	$ 1,818	76%

Notes * Estimated traffic based on itinerant operations
** Estimated itinerant aircraft departures only

Table 1. 2 MFV Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	N/A	8,816	N/A	N/A
Estimated Visitors	3,360	8,816	5,456,000	162381%
GA Departures	N/A	3,112	N/A	N/A

Airport Operations	2010	2016	Change	% Change
Employment	15	14	(1)	-7%
Labor Income	$ 310,000	$ 922,000	$ 612,000	197%
GDP	N/A	$ 1,218	N/A	N/A
Economic Output	$ 1,180	$ 2,147	$ 967	82%

Visitor Spending	2010	2016	Change	% Change
Employment	17	32	15	88%

1.2

Labor Income	$ 400,000	$ 681,000	$ 281,000	70%
GDP	N/A	$ 1,031,000	N/A	N/A
Economic Output	$ 1,190,000	$ 2,050,000	$ 860,000	72%

Total Economic Impact	2010	2016	Change	% Change
Employment	32	45	13	41%
Labor Income	$ 700,000	$ 1,603,000	$ 903,000	129%
GDP	N/A	$ 2,249,000	N/A	N/A
Economic Output	$ 2,380,000	$ 4,198,000	$ 1,818,000	76%

Acreage

410 acres.

Hangars

18 T-hangars.

Tenants

Table 1. 3 MFV Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Accomack Airport	HR	Off Airport	Airport Management	MFV	Accomack	VA
CARAN Flying Services	HR	On Airport	Crop dusting, Charters	MFV	Accomack	VA
Shore Ice Inc.	HR	On Airport	Packaged Ice	MFV	Accomack	VA

Table 1. 4 MFV Operations Statistics

Airport Operation Statistics	
Aircraft Based on Field:	17
Single Engine Airplanes:	17
Aircraft operations: Average 21 Per Day	
Transient General Aviation	45%
Local General Aviation	39%
Military	9%
Air Taxi	8%
* for 12-month period ending 31 December 2018	

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1.3

Chesapeake Regional (CPK)

Airport Overview

Figure 1. 2 Chesapeake Reginal (CPK) Airport Overview

CHESAPEAKE REGIONAL (CPK)   **12 S**

5500 x 100

Airport Point of Contact:
Chris Schrantz

Airport Telephone:
757-432-8110

Airport Location:
2800 Airport Dr
Chesapeake, VA 23323

Hours of Operation: 0800-2000
Website: www.chesapeakeairport.com

Chesapeake Parks, Recreation & Tourism & Visitors Center
www.visitchesapeake.com

Hampton Roads Chamber of Commerce
www.hamptonroadschamber.com

Department of Economic Development
www.chesapeakeva.biz

NORFOLK/ CHESAPEAKE

Sectional Chart: Washington
Runway: 5-23: 5,500 x 100 (GRVD ASPH-G)
Traffic Pattern: Right RWY23
Runway Lights: HIRLS
Fuel Type: 100LL, Jet A
Fuel 24 hours: After Hours: Call in Advance 757-421-9000
Weather Data Sources: AWOS-3: 123.675, 757-421-0252
Communications: CTAF/UNICOM: 123.075
Available Approaches: RNAV, ILS or LOC, VOR/DME
Approach Lighting: RWY5 PAPI, MALSR; RWY23 PAPI, REIL
FBO: Horizon Aviation Services, 757-421-9000; EPIX Aviation, 757-421-4973
Maintenance Services: Major AF & PP

Latitude   N36°39.94'   Field Elevation
Longitude   W76°19.24'   19 ft. MSL

Appendix 1 Asset Summaries – Civil Airports

Economic Impact

Table 1. 5 Chesapeake Regional (CPK) Economic Impact Summary

Summary of 2016 Economic Impact and Changes Since 2010
Chesapeake Regional Airport
$ in thousands (000's)

	Metric	2010	2016	Change	% Change
Activity Measures	GA Passengers *	N/A	12,219	N/A	N/A
	Estimated Visitors	19,958	12,219	(7,739)	-39%
	GA Departures **	N/A	2,633	N/A	N/A
Economic Impact	**Airport Operations**				
	Employment	102	82	(20)	-20%
	Labor Income	$ 3,890	$ 3,841	$ (49)	-1%
	GDP	N/A	$ 5,214	N/A	N/A
	Economic Output	$ 14,580	$ 9,134	$ (5,446)	-37%
	Visitor Spending				
	Employment	80	45	(35)	-44%
	Labor Income	$ 2,420	$ 1,189	$ (1,231)	-51%
	GDP	N/A	$ 1,846	N/A	N/A
	Economic Output	$ 4,040	$ 3,438	$ (602)	-15%
	Total Economic Impact				
	Employment	182	126	(56)	-31%
	Labor Income	$ 6,310	$ 5,030	$ (1,280)	-20%
	GDP	N/A	$ 7,061	N/A	N/A
	Economic Output	$ 21,670	$ 12,572	$ (9,098)	-42%

Notes   * Estimated traffic based on itinerant operations
        ** Estimated itinerant aircraft departures only

Table 1. 6 CPK Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	N/A	12,219	N/A	N/A
Estimated Visitors	19,958	12,219	(7,739)	-39%
GA Departures	N/A	2,633	N/A	N/A

Airport Operations	2010	2016	Change	% Change
Employment	102	82	(20)	-20%
Labor Income	$ 3,890,000	$ 3,841,000	$ (49,000)	-1%
GDP	N/A	$ 5,214,000	N/A	N/A
Economic Output	$ 14,580,000	$ 9,134,000	$ (5,446,000)	-37%

1.5

Appendix 1 Asset Summaries – Civil Airports

Visitor Spending	2010	2016	Change	% Change
Employment	80	45	(35)	-44%
Labor Income	$ 2,420,000	$ 1,189,000	$ (1,231,000)	-51%
GDP	N/A	$ 1,846,000	N/A	N/A
Economic Output	$ 4,040,000	$ 3,438,000	$ (602,000)	-15%

Total Economic Impact	2010	2016	Change	% Change
Employment	182	126	(56)	-31%
Labor Income	$ 6,310,000	$ 5,030,000	$ (1,280,000)	-20%
GDP	N/A	$ 7,061,000	N/A	N/A
Economic Output	$ 21,670,000	$ 12,572,000	$ (9,098,000)	-42%

Acreage

430 acres.

Hangars

88 T-hangars.

Tenants

Table 1. 7 CPK Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Chesapeake Airport	HR	On Airport	Airport Management	CPK	Chesapeake	VA
Chesapeake Airport Authority	HR	On Airport	Airport Management	CPK	Chesapeake	VA
Civil Air Patrol - Hampton Roads Squadron	HR	On Airport	Civil Service	CPK	Chesapeake	VA
Epix Aviation	HR	On Airport	Flight Training & Maintenance	CPK	Chesapeake	VA
Experimental Aircraft Assoc (EAA) #339	HR	On Airport	Advocacy: Experimental Aircraft	CPK	Chesapeake	VA
Horizon Aviation	HR	On Airport	Maintenance & FBO	CPK	Chesapeake	VA
Horizon Flight Center	HR	On Airport	Flight Training (Part 141)	CPK	Chesapeake	VA
Jet Air Charter LLC	HR	On Airport	Jet Charter (Part 135)	CPK	Chesapeake	VA

Table 1. 8 CPK Operations Statistics

Airport Operation Statistics	
Aircraft Based on Field:	120
Single Engine Airplanes:	109
Multi Engine Airplanes:	9
Helicopters:	2
Aircraft Operations: Average 138 Per Day	
Local General Aviation	67%
Transient General Aviation	27%
Air Taxi	4%
Military	2%
* for 12-month period ending 31 December 2019	

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1.6

Franklin Municipal (FKN)
Airport Overview

FRANKLIN MUNICIPAL (FKN)   **2 NE**

4976 x 100

Airport Point of Contact: Jimmy Gray

Airport Telephone: 757-562-8764

Airport Location:
32470 John Beverly Rose Dr
Franklin, VA 23851

Hours of Operation:
0800-1700

Website: www.franklinva.com/airport

Downtown Franklin Association
www.downtownfranklinva.com

Franklin-Southampton Area Chamber of Commerce
www.fsachamber.com

Franklin Southampton Economic Development
www.franklinsouthamptonva.com

Sectional Chart: Washington

Runway: 9-27: 4,976 x 100 (GRVD ASPH-E)

Traffic Pattern: Left

Runway Lights: MIRLS

Fuel Type: 100LL, Jet A

Fuel 24 hours: No

Weather Data Sources: AWOS-3: 124.675, 757-562-8765

Communications: CTAF/UNICOM: 122.8

Available Approaches: RNAV

Approach Lighting: RWY9-27 PAPI

FBO: Shelby Performace Aviation, 757-516-8383

Maintenance Services: Major AF & PP

FRANKLIN

Latitude	N36°42.02'	Field Elevation
Longitude	W76°54.13'	40 ft. MSL

Figure 1. 3 Franklin Municipal (FKN) Airport Overview

1.7

Appendix 1 Asset Summaries – Civil Airports

Economic Impact

Table 1. 9 Franklin Municipal (FKN) Economic Impact Summary

Summary of 2016 Economic Impact and Changes Since 2010
Franklin Municipal Airport
$ in thousands (000's)

	Metric	2010	2016	Change	% Change
Activity Measures	GA Passengers *	N/A	2,336	N/A	N/A
	Estimated Visitors	2,237	2,336	99	4%
	GA Departures **	N/A	834	N/A	N/A
Economic Impact	**Airport Operations**				
	Employment	8	11	3	42%
	Labor Income	$ 350	$ 913	$ 563	161%
	GDP	N/A	$ 1,249	N/A	N/A
	Economic Output	$ 1,670	$ 2,033	$ 363	22%
	Visitor Spending				
	Employment	11	8	(3)	-31%
	Labor Income	$ 240	$ 240	$ 0	0%
	GDP	N/A	$ 352	N/A	N/A
	Economic Output	$ 800	$ 624	$ (176)	-22%
	Total Economic Impact				
	Employment	19	19	(0)	0%
	Labor Income	$ 600	$ 1,153	$ 553	92%
	GDP	N/A	$ 1,601	N/A	N/A
	Economic Output	$ 2,470	$ 2,657	$ 187	8%

Notes * Estimated traffic based on itinerant operations
** Estimated itinerant aircraft departures only

Table 1. 10 FKN Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	N/A	2,336	N/A	N/A
Estimated Visitors	2,237	2,336	99	4%
GA Departures	N/A	834	N/A	N/A

Airport Operations	2010	2016	Change	% Change
Employment	8	11	3	38%
Labor Income	$ 350,000	$ 913,000	$ 563,000	161%
GDP	N/A	$ 1,249,000	N/A	N/A
Economic Output	$ 1,670,000	$ 2,033,000	$ 363,000	22%

1.8

Appendix 1 Asset Summaries – Civil Airports

Visitor Spending	2010	2016	Change	% Change
Employment	11	8	(3)	-27%
Labor Income	$ 240,000	$ 240,000	$ -	0%
GDP	N/A	$ 1,846,000	N/A	N/A
Economic Output	$ 800,000	$ 624,000	$ (176,000)	-22%

Total Economic Impact	2010	2016	Change	% Change
Employment	19	19	-	0%
Labor Income	$ 600,000	$ 1,153,000	$ 553,000	92%
GDP	N/A	$ 1,601,000	N/A	N/A
Economic Output	$ 2,470,000	$ 2,657,000	$ 187,000	8%

Acreage

313 acres.

Hangers

16 T-hangars

Tenants

Table 1. 11 FKN Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Franklin Municipal Airport	HR	On Airport	Airport Management	FKN	Franklin	VA
Shelby Performance Aviation	HR	On Airport	GA Maintenance	FKN	Franklin	VA

Table 1. 12 FKN Operations Statistics

Airport Operation Statistics	
Aircraft Based on Field:	12
Single Engine Airplanes:	12
Aircraft Operations: Average 91 Per Week	
Local General Aviation	38%
Transient General Aviation	30%
Air Taxi	28%
Military	4%
* for 12-month period ending 31 December 2021	

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1.9

Hampton Roads Executive (PVG)

Airport Overview

HAMPTON ROADS EXECUTIVE (PVG)   7 SW

Airport Point of Contact:
Steve Fox
Airport Telephone: 757-465-0260
Airport Location:
5172 West Military Hwy
Chesapeake, VA 23321
Hours of Operation: 0700-2100
Website: www.flypvg.com

**Chesapeake Tourism
& Visitors Center**
www.visitchesapeake.com
**Hampton Roads Chamber of
Commerce**
www.hamptonroadschamber.com
**Department of Economic
Development**
www.chesapeakeva.biz

Sectional Chart: Washington
Runway: 10-28: 5350 x 100 (ASPH-G); 2-20: 3,525 x 70 (ASPH-G)
Traffic Pattern: Right RWY20, 10
Runway Lights:
Fuel Type: 100LL, Jet A
Fuel 24 hours: Yes
Weather Data Sources: AWOS-3: 118.375, 757-465-2175
Communications: CTAF/UNICOM: 122.975
Available Approaches: RNAV
Approach Lighting: N/A
FBO: Virginia Aviation Associates, 757-488-3166, 757-465-0260; Bay Avionics, Ltd., 757-488-7700
Maintenance Services: Major AF & PP

**NORFOLK/
PORTSMOUTH**

Latitude	N36°46.81'	Field Elevation
Longitude	W76°26.93'	23 ft. MSL

Figure 1. 4 Hampton Roads Executive (PVG) Airport Summary

1.10

Economic Impact

Table 1. 13 Hampton Roads Executive (PVG) Economic Impact Summary

Summary of 2016 Economic Impact and Changes Since 2010
Hampton Roads Executive Airport
$ in thousands (000's)

	Metric	2010	2016	Change	% Change
Activity Measures	GA Passengers *	N/A	59,670	N/A	N/A
	Estimated Visitors	28,933	59,670	30,737	106%
	GA Departures **	N/A	12,860	N/A	N/A
Economic Impact	**Airport Operations**				
	Employment	121	231	110	91%
	Labor Income	$ 5,320	$ 12,876	$ 7,556	142%
	GDP	N/A	$ 20,721	N/A	N/A
	Economic Output	$ 19,120	$ 43,618	$ 24,498	128%
	Visitor Spending				
	Employment	116	218	102	88%
	Labor Income	$ 3,490	$ 5,849	$ 2,359	68%
	GDP	N/A	$ 9,124	N/A	N/A
	Economic Output	$ 10,280	$ 16,926	$ 6,646	65%
	Total Economic Impact				
	Employment	237	449	212	90%
	Labor Income	$ 8,810	$ 18,725	$ 9,915	113%
	GDP	N/A	$ 29,845	N/A	N/A
	Economic Output	$ 29,400	$ 60,543	$ 31,143	106%

Notes   * Estimated traffic based on itinerant operations
** Estimated itinerant aircraft departures only

Table 1. 14 PVG Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	N/A	59,670	N/A	N/A
Estimated Visitors	28,933	59,670	30,737	106%
GA Departures	N/A	12,860	N/A	N/A

Airport Operations	2010	2016	Change	% Change
Employment	121	231	110	91%
Labor Income	$ 5,320,000	$ 12,876,000	$ 7,556,000	142%
GDP	N/A	$ 20,721,000	N/A	N/A
Economic Output	$ 19,120,000	$ 43,618,000	$ 24,498,000	128%

Appendix 1 Asset Summaries – Civil Airports

Visitor Spending	2010	2016	Change	% Change
Employment	116	218	102	88%
Labor Income	$ 3,490,000	$ 5,849,000	$ 2,359,000	68%
GDP	N/A	$ 9,124,000	N/A	N/A
Economic Output	$ 10,280,000	$ 16,926,000	$ 6,646,000	65%

Total Economic Impact	2010	2016	Change	% Change
Employment	237	449	212	89%
Labor Income	$ 8,810,000	$ 18,725,000	$ 9,915,000	113%
GDP	N/A	$ 29,845,000	N/A	N/A
Economic Output	$ 29,400,000	$ 60,543,000	$ 31,143,000	106%

Acreage

634 acres.

Hangars

170 T-hangars and 35 corporate hangars.

Plans

Future plans include an additional 350,000 SF of hangars, 20,000 SF of offices and 500,000 SF of warehousing and air freight facilities.

Tenants

Table 1. 15 PVG Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Aerodyne Corp	HR	On Airport	MRO Services	PVG	Chesapeake	VA
AEROGROUP Inc	HR	On Airport	PVT AV Management	PVG	Chesapeake	VA
Aloft Aviation LLC	HR	On Airport	Jet Charter (Part 135)	PVG	Chesapeake	VA
Backus Aerial Photography	HR	On Airport	Aerial Photography	PVG	Chesapeake	VA
CBH Aviation	HR	On Airport	Flight Training	PVG	Chesapeake	VA
eAviation & Drone Academy	HR	On Airport	UAS Workforce Development	PVG	Chesapeake	VA
Forgotten Heroes Foundation	HR	On Airport	STEM Education	PVG	Chesapeake	VA
GreyCat Aviation	HR	On Airport	Flight Training	PVG	Chesapeake	VA
Hampton Road Charter Service	HR	On Airport	Helo Charters	PVG	Chesapeake	VA
Hampton Roads Executive Airport	HR	On Airport	Airport Management	PVG	Chesapeake	VA
Hampton Roads Helicopters	HR	On Airport	GA Aviation Full Services	PVG	Chesapeake	VA
Long Hill Enterprises, LLC	HR	On Airport	GA Aviation Maintenance	PVG	Chesapeake	VA
Metro Aviation Inc	HR	On Airport	VTOL Maintenance	PVG	Chesapeake	VA
N-aviation Air, LLC	HR	On Airport	GA Maintenance	PVG	Chesapeake	VA
Nightingale Air Ambulance	HR	On Airport	VTOL Ambulance	PVG	Chesapeake	VA
Norfolk Flight Center	HR	On Airport	Flight Training Services	PVG	Chesapeake	VA
Old School Flight School	HR	On Airport	Flight Training (Part 61)	PVG	Chesapeake	VA
PrecisionHawk	HR	On Airport	UAS Services	PVG	Chesapeake	VA
Prevailance Aerospace	HR	On Airport	Flight Training: FW	PVG	Chesapeake	VA
Protocom Aviation	HR	On Airport	Flight Training & Charter	PVG	Chesapeake	VA
Virginia Aviation Associates LLC	HR	On Airport	Airport Management - FBO	PVG	Chesapeake	VA

1.12

Table 1. 16 PVG Operations Statistics

Airport Operation Statistics	
Aircraft Based on Field:	128
Single Engine Airplanes:	85
Multi Engine Airplanes:	19
Jet Airplanes	11
Helicopters:	13
Aircraft Operations: Average 191 Per Day	
Local General Aviation	72%
Transient General Aviation	25%
Air Taxi	2%
Military	<1%
* for 12-month period ending 31 Dec 2019	

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1.13

Middle Peninsula (FYJ)

Airport Overview

MIDDLE PENINSULA REGIONAL (FYJ)   **2 SE**

5007 x 75

Airport Point of Contact:
Bill Dale
Airport Telephone: 804-785-9725
Airport Location:
1000 Airport Rd, Mattaponi, VA 23110
Hours of Operation: 0800-1700
Website: www.fly-fyj.com

West Point/Tri-Rivers Chamber of Commerce
www.westpointvachamber.com
King and Queen County Economic Development Authority
ww.yeskingandqueen.com
King William Chamber
www.kingwilliamchamber.org
Gloucester County Chamber
www.gloucestervachamber.org

Sectional Chart: Washington
Runway: 10-28: 5,007 x 75 (ASPH-G)
Traffic Pattern: Left
Runway Lights: MIRLS
Fuel Type: 100LL, Jet A
Fuel 24 hours: Yes
Weather Data Sources: AWOS-3: 132.825, 804-785-2307
Communications: CTAF/UNICOM: 123.0
Available Approaches: RNAV, VOR
Approach Lighting: RWY10-28 PAPI, REIL
FBO: None
Maintenance Services: None

WEST POINT

| Latitude | N37°31.28' | Field Elevation |
| Longitude | W76°45.77' | 20 ft. MSL |

Figure 1. 5 Middle Peninsula (FYJ) Airport Overview

Economic Impact

Table 1. 17 Middle Peninsula (FYJ) Economic Impact Summary

Summary of 2016 Economic Impact and Changes Since 2010
Middle Penninsula Regional Airport
$ in thousands (000's)

	Metric	2010	2016	Change	% Change
Activity Measures	GA Passengers *	N/A	8,784	N/A	N/A
	Estimated Visitors	4,034	8,784	4,750	118%
	GA Departures **	N/A	3,100	N/A	N/A
Economic Impact	**Airport Operations**				
	Employment	73	97	24	33%
	Labor Income	$ 1,610	$ 4,376	$ 2,766	172%
	GDP	N/A	$ 6,076	N/A	N/A
	Economic Output	$ 5,600	$ 12,885	$ 7,285	130%
	Visitor Spending				
	Employment	20	44	24	120%
	Labor Income	$ 470	$ 879	$ 409	87%
	GDP	N/A	$ 1,385	N/A	N/A
	Economic Output	$ 1,430	$ 2,945	$ 1,515	106%
	Total Economic Impact				
	Employment	93	141	48	51%
	Labor Income	$ 2,090	$ 5,255	$ 3,165	151%
	GDP	N/A	$ 7,461	N/A	N/A
	Economic Output	$ 7,030	$ 15,831	$ 8,801	125%

Notes * Estimated traffic based on itinerant operations
** Estimated itinerant aircraft departures only

Table 1. 18 FYJ Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	N/A	8,784	N/A	N/A
Estimated Visitors	4,034	8,784	4,750	118%
GA Departures	N/A	3,100	N/A	N/A

Airport Operations	2010	2016	Change	% Change
Employment	73	97	24	33%
Labor Income	$ 1,610,000	$ 4,376,000	$ 2,766,000	172%
GDP	N/A	$ 6,076,000	N/A	N/A
Economic Output	$ 5,600,000	$ 12,885,000	$ 7,285,000	130%

1.15

Appendix 1 Asset Summaries – Civil Airports

Visitor Spending	2010	2016	Change	% Change
Employment	20	44	24	120%
Labor Income	$ 470,000	$ 879,000	$ 409,000	87%
GDP	N/A	$ 1,385,000	N/A	N/A
Economic Output	$ 1,430,000	$ 2,945,000	$ 1,515,000	106%

Total Economic Impact	2010	2016	Change	% Change
Employment	93	141	48	52%
Labor Income	$ 2,090,000	$ 5,255,000	$ 3,165,000	151%
GDP	N/A	$ 7,461,000	N/A	N/A
Economic Output	$ 7,030,000	$ 15,831,000	$ 8,801,000	125%

Acreage

310 acres with planned development of a 368-acre industrial site. Recently received a DHCD Go Virginia Planning Grant (100K).

https://www.gazettejournal.net/100000-planning-grant-approved-for-middle-peninsula-airport/

Hangars

6 T-hangars

Plans

6 Box-hangars to be built beginning CY2025

Tenants

Table 1. 19 FYJ Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Audemus	HR	On Airport	Maintenance (Part 43)	FYJ	Mattaponi	VA
Fulcrum Concepts	HR	On Airport	AV Research: Wpns	FYJ	Mattaponi	VA
Hill Flying Service	HR	On Airport	Flight Training	FYJ	Mattaponi	VA
LifeEvac	HR	On Airport	Air Medical Services	FYJ	Mattaponi	VA
Middle Peninsula Regional Airport	HR	On Airport	Airport Management	FYJ	Mattaponi	VA
Middle Peninsula Regional Airport Authority	HR	On Airport	Airport Management	FYJ	Mattaponi	VA
No Limits Skydiving	HR	On Airport	Skydiving	FYJ	Mattaponi	VA

1.16

Appendix 1 Asset Summaries – Civil Airports

Table 1. 20 FYJ Operations Statistics

Airport Operation Statistics	
Aircraft Based on Field	32
Single Engine Airplanes	29
Multi Engine Airplanes	2
Helicopters:	1
Aircraft Operations: Average 28 Per Day	
Local General Aviation	39%
Transient General Aviation	31%
Military	30%
* for 12-month period ending 31 December 2019	

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1.17

Newport News – Williamsburg (PHF)

Airport Overview

NEWPORT NEWS - WILLIAMSBURG INTERNATIONAL (PHF)   9 NW

6526 x 150

8003 x 150

Airport Point of Contact: Sandy Wanner

Airport Telephone: 757-877-0221

Airport Location: 900 Bland Blvd, Suite G Newport News, VA 23602

Hours of Operation: All

Website: www.flyphf.com

Hampton Convention & Visitor Bureau www.visithampton.com

Greater Williamsburg Chamber & Tourism Alliance www.williamsburgcc.com

Newport News Tourism Development Office www.newport-news.org

Sectional Chart: Washington

Runway: 7-25: 8,003 x 150 (GRVD ASPH-G); 2-20: 6,526 x 150 (GRVD CONC-G)

Traffic Pattern: Left

Runway Lights: HIRLS

Fuel Type: 100LL, Jet A

Fuel 24 hours: No

Weather Data Sources: ASOS: 128.65, 757-874-3682

Communications: CTAF: 118.7; UNICOM: 122.95; ATIS: 128.65; See AFD for ATC information

Available Approaches: RNAV, ILS or LOC, LOC/DME, NDB

Approach Lighting: RWY2 PAPI; RWY20 PAPI, REIL; RWY7 MALSR; RWY25 VASI, REIL

FBO: Rick Aviation, 757-874-6415; Atlantic Aviation, 757-886-5755; Freedom Aviation, 757-969-1600; Mid Atlantic Aviation, Inc, 757-645-2820, 757-645-9271

Maintenance Services: Major AF & PP

NEWPORT NEWS

Latitude	N37°07.91'	Field Elevation
Longitude	W76°29.58'	42 ft. MSL

Figure 1. 6 Newport News/Williamsburg (PHF) Airport Overview

Appendix 1 Asset Summaries – Civil Airports

Economic Impact

https://doav.virginia.gov/contentassets/ab031db6ded94e008f22a57a3bf082d4/virginia-airports-economic-impact-technical-report-final-accessible-01may2018.pdf

Table 1. 21 Newport News-Williamsburg (PHF) Economic Impact Summary

Table VIII-1: Summary of 2016 Results vs. 2010 Results, Commercial Service Airports (*Impacts of visitor spending excluded*)
(dollars in millions)

Airport	2016 Total Results				2010 Total Results				Change			
	Jobs	Wages	GDP	Output	Jobs	Wages	GDP	Output	Jobs	Wages	GDP	Output
Charlottesville Albermarle	1,168	$74	$119	$214	363	$15	N/A	$51	805	$59	N/A	$162
Lynchburg Regional	1,075	$46	$68	$130	389	$16	N/A	$67	686	$30	N/A	$63
Newport News - Williamsburg International	1,468	$92	$159	$327	984	$41	N/A	$152	484	$51	N/A	$175
Norfolk International	5,697	$335	$543	$1,026	2,852	$109	N/A	$394	2,845	$226	N/A	$632
Richmond International	7,111	$407	$705	$1,269	2,304	$99	N/A	$323	4,807	$308	N/A	$946
Roanoke - Blacksburg Regional	1,831	$99	$186	$373	995	$30	N/A	$104	836	$69	N/A	$269
Ronald Reagan Washington National	28,995	$1,910	$3,169	$6,117	18,863	$983	N/A	$2,533	10,132	$926	N/A	$3,584
Shenandoah Valley Regional	353	$20	$31	$58	157	$4	N/A	$19	196	$15	N/A	$39
Washington Dulles International	35,551	$2,322	$3,741	$6,724	26,012	$1,403	N/A	$5,718	9,539	$919	N/A	$1,006
Total All Airports	**83,249**	**$5,305**	**$8,722**	**$16,237**	**52,919**	**$2,701**	**N/A**	**$9,360**	**30,330**	**$2,604**	**N/A**	**$6,877**

Note: N/A = Not available. The 2010 study did not publish information on GDP, so comparisons are unavailable.
Figures may not sum to total due to rounding.

Table VIII-2: Summary of 2016 Results vs. 2010 Results, Commercial Service Airports, *Impacts of Visitor Spending Only* (MWAA Airports excluded) (dollars in millions)

Airport	2016 Total Results				2010 Total Results				Change			
	Jobs	Wages	GDP	Output	Jobs	Wages	GDP	Output	Jobs	Wages	GDP	Output
Charlottesville Albermarle	1,055	$31	$48	$87	904	$26	N/A	$77	151	$5	N/A	$10
Lynchburg Regional	698	$15	$24	$49	522	$14	N/A	$42	176	$1	N/A	$7
Newport News - Williamsburg International	1,023	$29	$46	$84	2,398	$73	N/A	$222	(1,375)	($44)	N/A	($138)
Norfolk International	9,227	$266	$429	$778	7,417	$232	N/A	$681	1,810	$34	N/A	$97
Richmond International	8,650	$285	$472	$820	8,606	$251	N/A	$760	44	$34	N/A	$60
Roanoke Regional	1,217	$37	$60	$106	1,194	$38	N/A	$112	23	($1)	N/A	($6)
Shenandoah Valley Regional	73	$2	$3	$5	95	$2	N/A	$7	(22)	$0	N/A	($2)
Subtotal	**21,942**	**$665**	**$1,082**	**$1,929**	**21,136**	**$636**	**N/A**	**$1,901**	**806**	**$29**	**N/A**	**$28**

Note: N/A = Not available. The 2010 study did not publish information on GDP, so comparisons are unavailable.
Figures may not sum to total due to rounding.

Table 1. 22 PHF Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	534,767	199,113	(335,654)	-63%
Estimated Visitors	N/A	199,113	N/A	N/A
GA Departures	9,716	4,313	(5,403)	-56%

Airport Operations	2010	2016	Change	% Change
Employment	984	1,468	484	49%
Labor Income	$ 41,000,000	$ 92,000,000	$ 51,000,000	124%
GDP	N/A	$ 159,000,000	N/A	N/A
Economic Output	$ 152,000,000	$ 327,000,000	$ 175,000,000	115%

Visitor Spending	2010	2016	Change	% Change
Employment	2,398	1,023	(1,375)	-57%
Labor Income	$ 73,000,000	$ 29,000,000	$ (44,000,000)	-60%

1.19

Appendix 1 Asset Summaries – Civil Airports

GDP	N/A	$ 46,000,000	N/A	N/A
Economic Output	$ 222,000,000	$ 84,000,000	$ (138,000,000)	-62%

Total Economic Impact	2010	2016	Change	% Change
Employment	3,382	2,492	(890)	-26%
Labor Income	$ 114,000,000	$ 121,000,000	$ 7,000,000	6%
GDP	N/A	$ 205,000,000	N/A	N/A
Economic Output	$ 374,000,000	$ 411,000,000	$ 37,000,000	10%

Acreage

1,800 acres.

Hangars

Minimum of 29 hangars.

Tenants

Table 1. 23 PHF Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Aery Aviation	HR	On Airport	AV Engineering Services	PHF	Newport News	VA
American Airlines - PHF	HR	On Airport	Commercial Air	PHF	Newport News	VA
ATAC - Airborne Tactical Advantage Company	HR	On Airport	DOD Threat Services	PHF	Newport News	VA
Atlantic Aviation	HR	On Airport	FBO	PHF	Newport News	VA
AVIS - PHF	HR	On Airport	Airport Services: Rental Car	PHF	Newport News	VA
Budget Rental Car	HR	On Airport	Rental Car	PHF	Newport News	VA
Civil Air Patrol - Newport News Composite Squadron	HR	On Airport	Civil Service	PHF	Newport News	VA
Enterprise (PHF)	HR	On Airport	Airport Services: Rental Car	PHF	Newport News	VA
Hertz Corporation - PHF	HR	On Airport	Airport Services: Rental Car	PHF	Newport News	VA
Hudson Group - PHF	HR	On Airport	Airport Retail Stores	PHF	Newport News	VA
National Car Rental	HR	On Airport	Airport Services: Rental Car	PHF	Newport News	VA
Peninsula Airport Commission	HR	Off Airport	Airport Management	PHF	Newport News	VA
Rick Aviation	HR	On Airport	FBO & Flight Training	PHF	Newport News	VA
Smithfield Foods Flight Det	HR	On Airport	Business Flight Ops	PHF	Newport News	VA
TSA - PHF	HR	On Airport	Airport Security	PHF	Newport News	VA

Table 1. 24 PHF Operation Statistics

Airport Operation Statistics	
Aircraft Based on Field	137
Single Engine Airplanes	84
Multi Engine Airplanes	17
Jet Airplanes	36
Aircraft Operations: Average 166 Per Day	
Local General Aviation	37%
Transient General Aviation	34%
Military	19%
Commercial	1%
* for 12-month period ending 31 January 2023 2019	

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1.20

Norfolk International (ORF)

Airport Overview

NORFOLK INTERNATIONAL (ORF)   3 NE

9001 x 150

4875 x 150

T

14

P

P

P

32

5

G.A.

NORFOLK
INTERNATIONAL
AIRPORT

Airport Point of Contact:
Robert Bowen

Airport Telephone:
757-857-3344

Airport Location:
2200 Norview Ave
Norfolk, VA 23518

Hours of Operation: All

Website: www.norfolkairport.com

VisitNorfolk
www.visitnorfolktoday.com

**Hampton Roads Chamber of
Commerce**
www.hamptonroadschamber.com

Economic Development
www.norfolkdevelopment.com

Sectional Chart: Washington
Runway: 5-23: 9,001 x 150 (GRVD CONC-G); 4-32: 4,875 x 150
(ASPH-G)
Traffic Pattern: Right RWY5, 14
Runway Lights: 5-23 HIRL, CL; 14-32 MIRLS
Fuel Type: 100LL, Jet A
Fuel 24 hours: Yes
Weather Data Sources: ASOS: 127.15, 757-460-9348
Communications: ATIS: 127.15 757-464-1390; See AFD for ATC
Information
Available Approaches: RNAV, ILS or LOC, VOR, VOR/DME,
VISUAL
Approach Lighting: RWY5 PAPI, MALSR, TDZL, RWY23 PAPI,
MALSR; RWY14/32 PAPI, REIL
FBO: Lankmark Aviation, 757-857-3463
Maintenance Services: Major AF & PP

NORFOLK

| Latitude | N36°53.68' | Field Elevation |
| Longitude | W76°12.07' | 27 ft. MSL |

Figure 1. 7 Norfolk Internation (ORF) Airport Overview

Economic Impact

[ORF-Economic-Impact-2019-FINAL-REPORT-22Jul2020.pdf (norfolkairport.com)](ORF-Economic-Impact-2019-FINAL-REPORT-22Jul2020.pdf)

Figure 1. 8 ORF Economic Impact Summary

Figure E-7: Comparison of 2016 vs. 2019 Economic Impacts (Constant 2019 Dollars)

Category	Impact	Jobs 2016	2019	Change	Wages ($ Millions) 2016	2019	Change	GDP ($ Millions) 2016	2019	Change	Output ($ Millions) 2016	2019	Change
Airport Operations	Direct	2,780	3,180	14%	$198	$227	15%	$314	$426	36%	$627	$696	11%
	Total	5,520	5,910	7%	$347	$383	10%	$563	$683	21%	$1,064	$1,143	7%
Capital Improvements	Direct	120	200	67%	$6	$12	100%	$9	$7	-22%	$17	$16	-6%
	Total	180	290	61%	$10	$17	70%	$14	$17	21%	$27	$33	22%
Visitor Spending	Direct	6,980	8,460	21%	$164	$228	39%	$251	$348	39%	$466	$583	25%
	Total	9,230	11,120	20%	$283	$376	33%	$456	$603	32%	$827	$1,026	24%
Total	Direct	9,880	11,840	20%	$368	$467	27%	$574	$781	36%	$1,110	$1,295	17%
	Total	14,930	17,320	16%	$640	$776	21%	$1,033	$1,303	26%	$1,918	$2,202	15%

Figure 1. 9 ORF Economic Impact Breakdown

Metric	2016	2019	Change	% Change
GA Passengers	N/A	N/A	N/A	N/A
Estimated Visitors	741,000	909,000	168,000	23%
GA Departures	N/A	N/A	N/A	N/A

Airport Operations	2016	2019	Change	% Change
Employment	5,520	5,910	390	7%
Labor Income	$ 198,000,000	$ 227,000,000	$ 29,000,000	15%
GDP	$ 563,000,000	$ 683,000,000	$ 120,000,000	21%
Economic Output	$ 1,064,000,000	$ 1,143,000,000	$ 79,000,000	7%

Visitor Spending	2016	2019	Change	% Change
Employment	9,230	11,120	1,890	20%
Labor Income	$ 283,000,000	$ 376,000,000	$ 93,000,000	33%
GDP	$ 456,000,000	$ 603,000,000	$ 147,000,000	32%
Economic Output	$ 827,000,000	$ 1,026,000,000	$ 199,000,000	24%

Total Economic Impact	2016	2019	Change	% Change
Employment	14,930	17,320	2,390	16%
Labor Income	$ 640,000,000	$ 776,000,000	$ 136,000,000	21%
GDP	$ 1,033,000,000	$ 1,303,000,000	$ 270,000,000	26%
Economic Output	$ 1,918,000,000	$ 2,202,000,000	$ 284,000,000	15%

Appendix 1 Asset Summaries – Civil Airports

Acreage

1,300 acres.

Hangars

The General Aviation Facility (29.5 acres) contains 50 hangars. Of the 50 hangars, 5 are utilized as community hangars, and 41 are T-hangars.

NAA-ORF-Request-for-Information-FBO-FINAL.pdf (norfolkairport.com)

Tenants

Figure 1. 10 ORF Tennant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Air Center Helicopters	HR	On Airport	DOD Range Support Services	ORF	Norfolk	VA
Allegiant	HR	On Airport	Commercial Air	ORF	Norfolk	VA
American Airlines - ORF	HR	On Airport	Commercial Air	ORF	Norfolk	VA
American Rental	HR	On Airport	Ground Transport Services	ORF	Norfolk	VA
AVIS	Budget - ORF	HR	On Airport	Airport Services: Rental Car	ORF	Norfolk	VA
Back Bay Bistro (HMSHost)	HR	On Airport	Dining Services	ORF	Norfolk	VA
Breeze	HR	On Airport	Commercial Air	ORF	Norfolk	VA
Burger King (HMS Host)	HR	On Airport	Dining Services	ORF	Norfolk	VA
Costa Coffee (HMSHost)	HR	On Airport	Dining Services	ORF	Norfolk	VA
Crossfire Logistics	HR	On Airport	Air Cargo Warehousing / Transport	ORF	Norfolk	VA
Customs & Border Protection (CBP)	HR	On Airport	Port of Entry Security	ORF	Norfolk	VA
Delta Airlines	HR	On Airport	Commercial Air	ORF	Norfolk	VA
Delta Cargo	HR	On Airport	Air Cargo	ORF	Norfolk	VA
Enterprise Holdings - Enterprise, National, Alamo (ORF)	HR	On Airport	Airport Services: Rental Car	ORF	Norfolk	VA
FEDEX Air Freight Forwarding	HR	On Airport	Air Cargo	ORF	Norfolk	VA
Fresh Attractions (HMSHost)	HR	On Airport	Dining Services	ORF	Norfolk	VA
Frontier Airlines	HR	On Airport	Commercial Air	ORF	Norfolk	VA
Gourmet Gang	HR	On Airport	Airport Services: Dining	ORF	Norfolk	VA
Great American Bagel Bakery (HMSHost)	HR	On Airport	Dining Services	ORF	Norfolk	VA
Here's to the Heroes (HMSHost)	HR	On Airport	Dining Services	ORF	Norfolk	VA
Hertz Corporation - ORF	HR	On Airport	Airport Services: Rental Car	ORF	Norfolk	VA
HMSHost	HR	On Airport	Airport Dining Services	ORF	Norfolk	VA
Hudson Group - ORF	HR	On Airport	Airport Retail Stores	ORF	Norfolk	VA
James River Grill (HMSHost)	HR	On Airport	Airport Services: Dining	ORF	Norfolk	VA
La Tapenade (HMSHost)	HR	On Airport	Dining Services	ORF	Norfolk	VA
MKT (HMSHost)	HR	On Airport	Airport Services: Dining	ORF	Norfolk	VA
Mountain Air Cargo	HR	On Airport	Air Cargo	ORF	Norfolk	VA
ORF First Aid & Medical Department	HR	On Airport	Airfield Services: Fire / Police / EMT	ORF	Norfolk	VA

1.23

Pilot Freight Services (Maersk)	HR	On Airport	Air Cargo	ORF	Norfolk	VA
Prologix	HR	On Airport	Air Cargo	ORF	Norfolk	VA
Quantem Aviation Services (AA)	HR	On Airport	Air Cargo	ORF	Norfolk	VA
Realterm	HR	On Airport	Air Cargo - Terminal Investment	ORF	Norfolk	VA
Rideshare - Lyft	HR	On Airport	Airport Services: Rideshare	ORF	Norfolk	VA
Rideshare - Uber	HR	On Airport	Airport Services: Rideshare	ORF	Norfolk	VA
Signature Aviation - ORF	HR	On Airport	FBO	ORF	Norfolk	VA
Smartecarte	HR	On Airport	Carte Distribution	ORF	Norfolk	VA
Southwest Airlines	HR	On Airport	Commercial Air	ORF	Norfolk	VA
Southwest Cargo	HR	On Airport	Air Cargo	ORF	Norfolk	VA
Spirit Airlines	HR	On Airport	Commercial Air	ORF	Norfolk	VA
Starbucks (HMSHost)	HR	On Airport	Dining Services	ORF	Norfolk	VA
Taxicab Firms - ORF (9)	HR	On Airport	Airport Services: Cabs	ORF	Norfolk	VA
The Local @ORF (HMSHost)	HR	On Airport	Dining Services	ORF	Norfolk	VA
TSA - ORF	HR	On Airport	Airport Security	ORF	Norfolk	VA
United Airlines	HR	On Airport	Commercial Air	ORF	Norfolk	VA
UPS	HR	On Airport	Air Cargo	ORF	Norfolk	VA

Figure 1. 11 ORF Operation Statistics

Airport Operation Statistics	
Aircraft Based on Field	108
Single Engine Airplanes	52
Multi Engine Airplanes	31
Jet Airplanes	23
Helicopters:	2
Aircraft Operations: Average 28 Per Day	
Local General Aviation	62%
Transient General Aviation	25%
Air Taxi	12%
Military	<1%
Local General Aviation	<1%
* for 12-month period ending 31 December 2021	

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1.24

Suffolk Executive (SFQ)

Airport Overview

SUFFOLK EXECUTIVE (SFQ)   **3 SW**

Airport Point of Contact:
Tim Daniel

Airport Telephone:
757-514-4411

Airport Location:
1200 Gene Bolton Dr
Suffolk, VA 23434

Hours of Operation: 0800-1700 M-F
0800-1600 Saturday and Sunday

Website: www.suffolkva.us/airport

Suffolk Division of Tourism
www.suffolk-fun.com

Hampton Roads Chamber of Commerce
www.hamptonroadschamber.com

Suffolk Economic Development
www.yessuffolk.com

Sectional Chart: Washington

Runway: 4-22: 5,007 x 100 (ASPH-G); 7-25: 3,750 x 100 (ASPH-F)

Traffic Pattern: Right RWY4, 25

Runway Lights: 4-22 HIRLS; 7-25 MIRLS

Fuel Type: 100LL, Jet A, MOGAS

Fuel 24 hours: Yes (100LL & MoGas)

Weather Data Sources: AWOS-3: 119.375, 757-934-3942

Communications: CTAF/UNICOM: 122.7; Norfolk APP/DEP: 127.9

Available Approaches: RNAV, LOC

Approach Lighting: RWY4-22 PAPI, REIL

FBO: Decker Aviation: 757-925-0040

Maintenance Services: Major AF & PP

SUFFOLK

Latitude	N36°40.92	**Field Elevation**
Longitude	W76°36.06'	70 ft. MSL

Figure 1. 12 Suffolk Executive (SFQ) Airport Overview

1.25

Economic Impact

Table 1. 25 Suffolk Executive (SFQ) Economic Impact Summary

Summary of 2016 Economic Impact and Changes Since 2010

Suffolk Executive Airport

$ in thousands (000's)

	Metric	2010	2016	Change	% Change
Activity Measures	GA Passengers *	N/A	1,540	N/A	N/A
	Estimated Visitors	12,008	1,540	(10,468)	-87%
	GA Departures **	N/A	479	N/A	N/A
Economic Impact	**Airport Operations**				
	Employment	85	45	(40)	-47%
	Labor Income	$ 2,990	$ 2,352	$ (638)	-21%
	GDP	N/A	$ 3,350	N/A	N/A
	Economic Output	$ 11,040	$ 6,110	$ (4,930)	-45%
	Visitor Spending				
	Employment	51	6	(45)	-89%
	Labor Income	$ 1,420	$ 169	$ (1,251)	-88%
	GDP	N/A	$ 245	N/A	N/A
	Economic Output	$ 4,270	$ 445	$ (3,825)	-90%
	Total Economic Impact				
	Employment	136	51	(85)	-62%
	Labor Income	$ 4,410	$ 2,521	$ (1,889)	-43%
	GDP	N/A	$ 3,595	N/A	N/A
	Economic Output	$ 15,300	$ 6,555	$ (8,745)	-57%

Notes * Estimated traffic based on itinerant operations

** Estimated itinerant aircraft departures only

Table 1. 26 SFQ Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	N/A	1,540	N/A	N/A
Estimated Visitors	12,008	1,540	(10,468)	-87%
GA Departures	N/A	479	N/A	N/A

Airport Operations	2010	2016	Change	% Change
Employment	85	45	(40)	-47%
Labor Income	$ 2,990,000	$ 2,352,000	$ (638,000)	-21%
GDP	N/A	$ 3,350,000	N/A	N/A
Economic Output	$ 11,040,000	$ 6,110,000	$ (4,930,000)	-45%

1.26

Appendix 1 Asset Summaries – Civil Airports

Visitor Spending	2010	2016	Change	% Change
Employment	51	6	(45)	-88%
Labor Income	$ 1,420,000	$ 169,000	$ (1,251,000)	-88%
GDP	N/A	$ 245,000	N/A	N/A
Economic Output	$ 4,270,000	$ 445,000	$ (3,825,000)	-90%

Total Economic Impact	2010	2016	Change	% Change
Employment	136	51	(85)	-63%
Labor Income	$ 4,410,000	$ 2,521,000	$ (1,889,000)	-43%
GDP	N/A	$ 3,595,000	N/A	N/A
Economic Output	$ 15,300,000	$ 6,555,000	$ (8,745,000)	-57%

Acreage

655 acres.

Hangars

58 T-hangars; 7 Box-hangars (3 x city owned, 4 x privately owned on land lease)

Tenants

Table 1. 27 SFQ Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Civil Air Patrol - Tidewater Squadron	HR	On Airport	Civil Service	SFQ	Suffolk	VA
Curtis Eads Flight School	HR	On Airport	Flight Training	SFQ	Suffolk	VA
McClellan Aviation	HR	On Airport	GA Maintenance	SFQ	Suffolk	VA
McKenzie Air Services	HR	On Airport	RW Services (Part 135 & 91)	SFQ	Suffolk	VA
Skydive Suffolk	HR	On Airport	Sky Diving	SFQ	Suffolk	VA
Suffolk Executive Airport	HR	On Airport	Airport Management	SFQ	Suffolk	VA

Table 1. 28 SFQ Operation Overview

Airport Operation Statistics	
Aircraft Based on Field	57
Single Engine Airplanes	46
Multi Engine Airplanes	8
Jet Airplanes	1
Helicopters	1
Glider Airplanes	1
Aircraft Operations: Average 28 Per Day	
Local General Aviation	88%
Transient General Aviation	9%
Air Taxi	2%
Military	1%
* for 12-month period ending 31 December 2019	

[22]

1.27

Tangier Island (TGI)

Airport Overview

TANGIER ISLAND (TGI)   **4 W**

Airport Point of Contact:
Renee Tyler

Airport
Telephone: 757-891-2438
Airport Location:
16320 West Ridge Rd
Tangier, VA 23440

Hours of Operation:
Attended Apr-Oct Sa-Su
0800-1630, Closed SS-SR Daily

Website:
www.airnav.com/airport/KTGI

Eastern Shore Tourism Board
www.esvatourism.org

Accomack County Economic
Development Authority
www.economicdevelopmentaccomack.com

Sectional Chart: Washington
Runway: 2-20: 2,426 x 75 (ASPH-G)
Traffic Pattern: Right RWY2
Runway Lights: N/A
Fuel Type: None
Fuel 24 hours: No
Weather Data Sources: AWOS-3: 119.8, 757-891-2246
Communications: CTAF/UNICOM: 122.8
Available Approaches: RNAV, VOR/DME
Approach Lighting: N/A
FBO: None
Maintenance Services: None

TANGIER

Latitude N37°49.56' **Field Elevation**
Longitude W75°59.87' 5 ft. MSL

Figure 1. 13 Tangier Island (TGI) Airport Overview

Economic Impact

Table 1. 29 Tangier Island (TGI) Economic Impact Overview

Summary of 2016 Economic Impact and Changes Since 2010
Tangier Island Airport
$ in thousands (000's)

	Metric	2010	2016	Change	% Change
Activity Measures	GA Passengers *	N/A	497	N/A	N/A
	Estimated Visitors	1,800	497	(1,303)	-72%
	GA Departures **	N/A	177	N/A	N/A
Economic Impact	**Airport Operations**				
	Employment	2	2	(0)	-5%
	Labor Income	$ -	$ 132	$ 132	N/A
	GDP	N/A	$ 174	N/A	N/A
	Economic Output	$ 10	$ 307	$ 297	2968%
	Visitor Spending				
	Employment	9	2	(7)	-82%
	Labor Income	$ 210	$ 37	$ (173)	-82%
	GDP	N/A	$ 56	N/A	N/A
	Economic Output	$ 640	$ 112	$ (528)	-82%
	Total Economic Impact				
	Employment	11	4	(7)	-68%
	Labor Income	$ 220	$ 169	$ (51)	-23%
	GDP	N/A	$ 230	N/A	N/A
	Economic Output	$ 650	$ 419	$ (231)	-36%

Notes   * Estimated traffic based on itinerant operations
      ** Estimated itinerant aircraft departures only

Table 1. 30 TGI Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	N/A	497	N/A	N/A
Estimated Visitors	1,800	497	(1,303)	-72%
GA Departures	N/A	177	N/A	N/A

Airport Operations	2010	2016	Change	% Change
Employment	2	2	-	0%
Labor Income	$ -	$ 132,000	$ 132,000	N/A
GDP	N/A	$ 174,000	N/A	N/A
Economic Output	$ 10,000	$ 307,000	$ 297,000	2970%

Visitor Spending	2010	2016	Change	% Change
Employment	9	2	(7)	-78%
Labor Income	$ 210,000	$ 37,000	$ (173,000)	-82%

GDP	N/A	$ 56,000	N/A	N/A
Economic Output	$ 640,000	$ 112,000	$ (528,000)	-83%

Total Economic Impact	2010	2016	Change	% Change
Employment	11	4	(7)	-64%
Labor Income	$ 220,000	$ 169,000	$ (51,000)	-23%
GDP	N/A	$ 230,000	N/A	N/A
Economic Output	$ 650,000	$ 419,000	$ (231,000)	-36%

Acreage

121 acres.

Hangars

~ 2

Tenants

None Reported

Table 1. 31 TGI Operation Statistics

Airport Operation Statistics	
Aircraft Based on Field	
Single Engine Airplanes	None
Multi Engine Airplanes	
Helicopters	
Aircraft Operations: Average 83 Per Month	
General Aviation	47%
Air Taxi	46%
Military	6%
* for 12-month period ending 31 December 2019	

[22]

1.30

Williamsburg – Jamestown (JGG)

Airport Overview

WILLIAMSBURG - JAMESTOWN (JGG) 3 SW

13
V5
H
T
3204 x 60
V5
31

Airport Point of Contact:
Larry T. Waltrip

Airport Telephone: 757-229-9256

Airport Location:
100 Marclay Rd
Williamsburg, VA 23185

Hours of Operation:
0800-1700 November to February
0700-1900 March to October

Website: www.williamsburgairport.com

Greater Williamsburg Chamber and Tourism Alliance
www.williamsburgcc.com

Williamsburg Area Destination Marketing Committee
www.visitwilliamsburg.com

Williamsburg Economic Development
www.yeswilliamsburg.com

Sectional Chart: Washington

Runway: 13-31: 3,204 x 60 (ASPH-G)

Traff c Pattern: Right RWY13

Runway Lights: MIRLS

Fuel Type: 100LL, Jet A

Fuel 24 hours: No, Night fueling available by calling the airport during open hours to schedule

Weather Data Sources: AWOS-3: 120.625, 757-220-8810

Communications: CTAF/UNICOM: 122.8

Available Approaches: RNAV, VOR

Approach Lighting: RWY13-31 PNIL, REIL

FBO: Williamsburg Jamestown Airport, 757-206-2995

Maintenance Services: Major AF & PP

WILLIAMSBURG

Latitude	N37°14.35'	Field Elevation
Longitude	W76°42.97'	49 ft. MSL

Figure 1. 14 Williamsburg-Jamestown (JGG) Airport Overview

1.31

Appendix 1 Asset Summaries – Civil Airports

Economic Impact

Table 1. 32 Williamsburg-Jamestown (JGG) Economic Impact Summary

Summary of 2016 Economic Impact and Changes Since 2010
Williamsburg - Jamestown Airport
$ in thousands (000's)

	Metric	2010	2016	Change	% Change
Activity Measures	GA Passengers *	N/A	12,635	N/A	N/A
	Estimated Visitors	6,571	12,635	6,064	92%
	GA Departures **	N/A	4,512	N/A	N/A
Economic Impact	**Airport Operations**				
	Employment	36	23	(13)	-36%
	Labor Income	$ 510	$ 829	$ 319	63%
	GDP	N/A	$ 1,134	N/A	N/A
	Economic Output	$ 1,750	$ 2,121	$ 371	21%
	Visitor Spending				
	Employment	26	50	24	91%
	Labor Income	$ 780	$ 1,209	$ 429	55%
	GDP	N/A	$ 1,836	N/A	N/A
	Economic Output	$ 2,340	$ 3,594	$ 1,254	54%
	Total Economic Impact				
	Employment	62	73	11	17%
	Labor Income	$ 1,290	$ 2,039	$ 749	58%
	GDP	N/A	$ 2,969	N/A	N/A
	Economic Output	$ 4,080	$ 5,716	$ 1,636	40%

Notes * Estimated traffic based on itinerant operations
** Estimated itinerant aircraft departures only

Table 1. 33 JGG Economic Impact Breakdown

Metric	2010	2016	Change	% Change
GA Passengers	N/A	12,635	N/A	N/A
Estimated Visitors	6,571	12,635	6064	92%
GA Departures	N/A	4,512	N/A	N/A

Airport Operations	2010	2016	Change	% Change
Employment	36	23	(13)	-36%
Labor Income	$ 510,000	$ 829,000	$ 319,000	63%
GDP	N/A	$ 1,134,000	N/A	N/A
conomic Output	$ 1,750,000	$ 2,121,000	$ 371,000	21%

1.32

Appendix 1 Asset Summaries – Civil Airports

Visitor Spending	2010	2016	Change	% Change
Employment	26	50	24	92%
Labor Income	$ 780,000	$ 1,209,000	$ 429,000	55%
GDP	N/A	$ 1,836,000	N/A	N/A
Economic Output	$ 2,340,000	$ 3,594,000	$ 1,254,000	54%

Total Economic Impact	2010	2016	Change	% Change
Employment	62	73	11	18%
Labor Income	$ 1,290,000	$ 2,039,000	$ 749,000	58%
GDP	N/A	$ 2,969,000	N/A	N/A
Economic Output	$ 4,080,000	$ 5,716,000	$ 1,636,000	40%

Acreage

134 acres.

Hangars

44 hangars.

Tenants

Table 1. 34 JGG Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Experimental Aircraft Assoc (EAA) #156	HR	On Airport	Advocacy: Experimental Aircraft	JGG	Jamestown	VA
Tidewater Drone Club	HR	On Airport	UAS Recreational	JGG	Jamestown	VA
Williamsburg Aviation Scholarship Program (WASP)	HR	On Airport	Non-Profit Advocacy	JGG	Jamestown	VA
Williamsburg-Jamestown Airport	HR	On Airport	Airport Management	JGG	Jamestown	VA

Table 1. 35 JGG Operation Statistics

[22]

Airport Operation Statistics	
Aircraft Based on Field	59
Single Engine Airplanes	58
Multi Engine Airplanes	1
Aircraft Operations: Average 80 Per Day	
Local General Aviation	52%
Transient General Aviation	38%
Air Taxi	9%
Military	<1%
* for 12-month period ending 31 December 2019	

1.33

Appendix 2 Asset Summaries – Military-Federal Airports
Felker Army Airfield (FAF), Joint Base Langley-Eustis (JBLE)

Felker Army Airfield's primary mission remains rotary-wing aviation; and while Felker provides a short runway (3025' x 75') capable of launching fixed-wing assets, all its movements come via helicopter traffic. The Army runs several operations out of Felker, including maintenance training by the post's 128th Aviation Brigade. The brigade's 1st Battalion, 210th Aviation Regiment conducts armament and maintenance training in hangars at the airfield, supported by working simulators of the AH-64 Apache Longbow.

The Army Reserve's 5th Battalion (GSAB), 159th Aviation Regiment flies its CH-47 Chinooks from Felker. Core mission is combat operations support, but also stands ready to provide capabilities supporting fire suppression, civil support, and humanitarian relief missions in the U.S.

In addition to these functions, the four flying tenants and visiting services operate a large array of rotary-wing aircraft at Felker, including, but not limited to the Army's UH-60 Black Hawk, AH-64 Apache, the Navy's SH-60 Seahawk and CH-53 Sea Stallion, the Coast Guard's HH-60 Jayhawk and a series of experimental and test aircraft operated by research, development, test and evaluation outfits on post. In total, more than 25 different airframes take to the skies over Felker. The Navy uses the airfield and its airspace to train SH-60 Seahawk pilots stationed on the south side at Naval Station Norfolk.

Figure 2. 1 Felker Army Airfield (FAF) Aerial Depiction

Tenants

Table 2. 1 Felker Army Airfield Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
AFC / CCDC / AvMC / TDD-A	HR	On Airport	Federal - DOD	FAF	Fort Eustis	VA
AMC / AMCOM / DIR SP	HR	On Airport	Federal - DOD	FAF	Fort Eustis	VA
Felker Army Airfield	HR	On Airport	Airport Management	FAF	Fort Eustis	VA
FORSCOM / USARC / 5/159th GSAB	HR	On Airport	Federal - DOD	FAF	Fort Eustis	VA
TRADOC / USAACE / 128th Aviation Brigade	HR	On Airport	Federal - DOD	FAF	Fort Eustis	VA
Tyonek	HR	On Airport	AV Research Support	FAF	Fort Eustis	VA
USSOCOM / AT&L / PEO RW	HR	On Airport	Federal - DOD	FAF	Fort Eustis	VA

Appendix 2: Asset Summary – Federal Airports

Langley AFB, JBLE (LFI)

The Air Force mission at Langley is to sustain the ability for fast global deployment and air superiority for the United States or allied armed forces. It is situated on 3,152 acres of land between the cities of Hampton (south), NASA LaRC (west), and the northwest and southwest branches of the Back River.

"Air Power over Hampton Roads" is a recurring airshow held at Langley in the spring. Many demonstrations take place, including the F-22 Raptor Demonstration, Aerobatics, and parachute demos.

On February 4, 2023, an F-22 Raptor took off from the base and shot down a Chinese balloon, marking the jet's first-ever combat air kill.

Figure 2. 2 Langley ABF | JBLE (LFI) Airport Aerial Depiction

Tenants

Table 2. 2 Langley AFB Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
192ND Wing (VA ANG)	HR	On Airport	Federal	Langley AFB	Langley AFB	VA
1st Fighter Wing	HR	On Airport	Federal	Langley AFB	Langley AFB	VA
363rd ISR Wing	HR	On Airport	Federal	Langley AFB	Langley AFB	VA
480th ISR Wing	HR	On Airport	Federal	Langley AFB	Langley AFB	VA
633d Air Base Wing	HR	On Airport	Federal	Langley AFB	Langley AFB	VA
633d Air Base Wing / 733rd Mission Support Group	HR	On Airport	Federal	Langley AFB	Langley AFB	VA
Civil Air Patrol - Langley Composite Squadron	HR	On Airport	Civil Service	Langley AFB	Langley AFB	VA

2.2

Appendix 2: Asset Summary – Federal Airports

Norfolk NAS (NGU)

Naval Station Norfolk is a United States Navy base in Norfolk, Virginia, which is the headquarters and home port of the U.S. Navy's Fleet Forces Command. The installation occupies about 4 miles (6.4 km) of waterfront space and 11 miles (18 km) of pier and wharf space of the Hampton Roads peninsula known as Sewell's Point. It is the world's largest naval station, with the largest concentration of U.S. Navy forces through 75 ships alongside 14 piers and with 134 aircraft and 11 aircraft hangars at the adjacently operated Chambers Field. Port Services control more than 3,100 ships' movements annually as they arrive and depart their berths.

Air Operations conducts over 100,000 flight operations each year, an average of 275 flights per day or one every six minutes. Over 150,000 passengers and 264,000 tons of mail and cargo depart annually on Air Mobility Command (AMC) aircraft and other AMC-chartered flights from the airfield's AMC Terminal.

Figure 2. 3 Norfolk NAS (NGU) Arial Depiction

Tenants

Table 2. 3 Norfolk NAS Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Air Mobility Command, Air Terminal Norfolk	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Airborne Command & Control and Logistics Wing (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA

2.3

Appendix 2: Asset Summary – Federal Airports

Airborne Command & Control Squadron (VAW) 120 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Aircraft Carrier John F. Kennedy (CVN 79)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Aircraft Carrier USS Dwight D. Eisenhower (CVN 69)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Aircraft Carrier USS George H.W. Bush (CVN 77)	HR	On Airport	Federal DOD	Norfolk NAS	Norfolk	VA
Aircraft Carrier USS Gerald R. Ford (CVN 78)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Aircraft Carrier USS Harry S. Truman (CVN 75)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Aviation Survival Training Center Norfolk, Norfolk NAS	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Center for Naval Aviation Technical Training	HR	On Airport	Federal DOD: Aviation Training	Norfolk NAS	Norfolk	VA
Commander, Helicopter Sea Combat Wing Atlantic, Norfolk NAS	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Commander, Navy Region Mid-Atlantic (CNRMA)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Commander, Patrol Recon Group (COMPATRECONGRU)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Fleet Readiness Center Mid-Atlantic (FRCMA), Det Norfolk NAS	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Helicopter Mine Countermeasures Squadron (HM-12) Sea Dragons (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Helicopter Sea Combat Squadron 2 (HSC-2), Norfolk NAS	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Helicopter Sea Combat Weapons School Atlantic (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
HM-15 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
HSC-11 Dragon Slayers (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
HSC-26 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
HSC-28 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
HSC-5 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
HSC-7 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
HSC-9 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Naval Air Force Atlantic (AIRLANT)	HR	Off Airport	Federal DOD	Norfolk NAS	Norfolk	VA
NAVAL AIR FORCES ATLANTIC (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Naval Safety Command	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
Naval Survival Training Institute	HR	Off Airport	Federal DOD: Aviation Training	Norfolk NAS	Norfolk	VA
Norfolk NAS Airport	HR	On Airport	Airport Management	Norfolk NAS	Norfolk	VA
VAW-121 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
VAW-123 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA
VAW-124 (Norfolk NAS)	HR	On Airport	Federal: DOD	Norfolk NAS	Norfolk	VA

2.4

Appendix 2: Asset Summary – Federal Airports

Oceana NAS (NTU)

Naval Air Station (NAS) Oceana or NAS Oceana (NTU) is a United States Navy Naval Air Station located in Virginia Beach, Virginia. The station is located on 23.9 square kilometers. It has total of 250 aircraft deployed and buildings valued at $800 million in plant replacement value. The total Navy community (which includes spouses) numbers around 20,000 people. The base is under the authority of Navy Region Mid-Atlantic and is the headquarters of Strike Fighter Wing Atlantic and Carrier Air Wings 1, 3, 7 and 8. As home to all East Coast strike fighter jet squadrons, the Naval Air Station is classified as a master jet base.

NAS Oceana has been home to carrier-based aircraft since its inception. The field serves as home for 14 deployable Strike Fighter squadrons operating the F/A-18E/F Super Hornet, a Strike Fighter Fleet Replacement Squadron, an adversary squadron, and a logistics squadron. Additionally, NAS Oceana operates Dam Neck Annex, a separate military installation that is home to other non-flying commands, including various schoolhouses, and Naval Auxiliary Landing Field Fentress, a practice carrier landing field, in nearby Chesapeake, VA. The air station is not open to the public except one weekend each year, usually in September, when it hosts the NAS Oceana Air Show.

Figure 2. 4 Oceana NAS (NTU) Aerial Depiction

Tenants

Table 2. 4 Oceana NAS Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Air Mobility Command, Air Terminal Oceana	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
Aviation Support Detachment Oceana, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA

2.5

Appendix 2: Asset Summary – Federal Airports

Carrier Air Wing Eight (CVW-8), Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
Carrier Air Wing One (CVW-1), Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
Carrier Air Wing Seven (CVW-7), Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
Carrier Air Wing Three (CVW-3), Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
Fleet Readiness Center Mid-Atlantic (FRCMA), Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
Oceana NAS Airport	HR	On Airport	Airport Management	Oceana NAS	Virginia Beach	VA
Strike Fighter Squadron 11 (VFA 11), Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
Strike Fighter Weapons School Atlantic, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-103, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-105, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-106, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-131, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-143, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-211, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-213, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-31, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-32, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-34, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-37, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-81, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-83, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA
VFA-87, Oceana NAS	HR	On Airport	Federal: DOD	Oceana NAS	Virginia Beach	VA

Appendix 2: Asset Summary – Federal Airports

Fentress Navy Auxiliary Landing Field (NFE)

Naval Auxiliary Landing Field Fentress is a military use airport located in Chesapeake, Virginia. This military airport is owned by the U.S. Navy and is under the operational control of Naval Air Station Oceana, Virginia. The airfield primarily supports day and night Field Carrier Landing Practice (FCLP) operations by US Navy and US Marine Corps F/A-18 Hornet, and US Navy F/A-18 Super Hornet, E-2 Hawkeye and C-2 Greyhound aircraft based in Virginia and the Carolinas.

Armed Forces Experimental Training Activity (AFETA)

AFETA is a 9,000-acre U.S. military reservation in York County near Williamsburg, Virginia. Officially referred to as an Armed Forces Experimental Training Activity (AFETA), figure 2.5 below, under the authority of the Department of Defense, which is used to train members of the Defense Intelligence Agency (DIA), among other intelligence entities. Its facilities are also available to the members of the intelligence community for "off-site" activities such as conferences and working groups. [23]
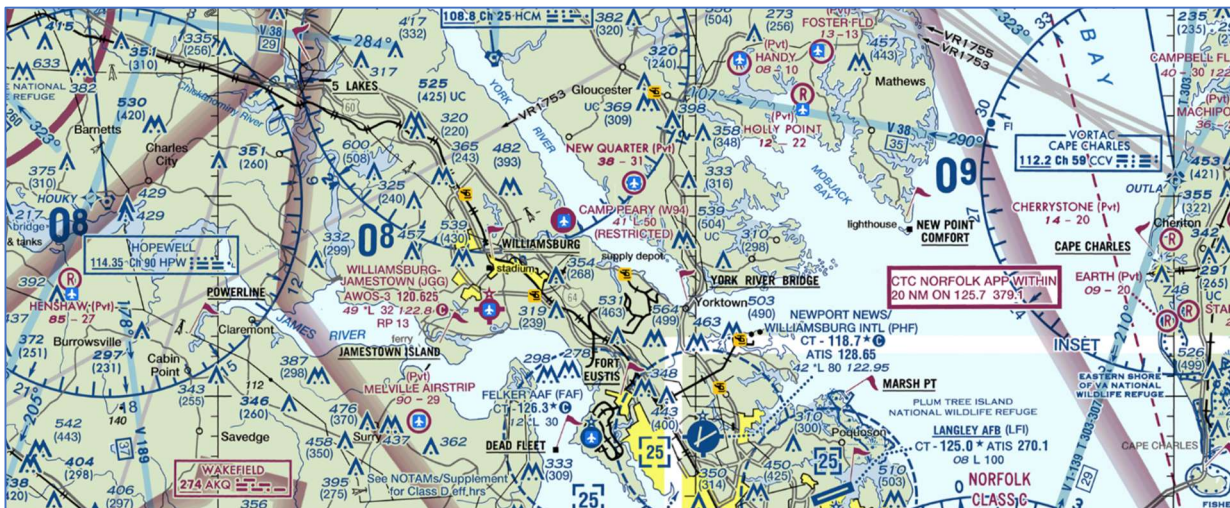
Figure 2. 5 Armed Forces Experimental Training Activity (AFETA) on Sectional Map

2.7

Appendix 2: Asset Summary – Federal Airports

NASA Langley Research Center

The Langley Research Center (LaRC or NASA Langley), located in Hampton, Virginia near the Chesapeake Bay front of Langley Air Force Base, is the oldest of NASA's field centers. LaRC has focused primarily on aeronautical research but has also tested space hardware such as the Apollo Lunar Module. Established in 1917 by the National Advisory Committee for Aeronautics (NACA), the research center devotes two-thirds of its programs to aeronautics and the rest to space. LaRC researchers use more than 40 wind tunnels to study and improve aircraft and spacecraft safety, performance, and efficiency.

Figure 2. 6 NASA Langley Research Center Aerial Depiction

Tenants

Table 2. 5 NASA Langley Research Center Tenant Overview

Organization Name	Location	Type Sector	Subsector	Airport	City	ST
Analytical Mechanics Associates, Inc. (AMA)	HR	On Airport	AV Research	Langley AFB	Hampton	VA
Jacobs	HR	On Airport	AV Research	Langley AFB	Hampton	VA
NASA Langley Research Center	HR	On Airport	AV Research	Langley AFB	Hampton	VA

2.8

Appendix 2: Asset Summary – Federal Airports

NASA Goddard Space Flight Center, Wallops Flight Facility (WAL)

Wallops Flight Facility (WFF) (WAL**)** is a rocket launch site on Wallops Island on the Eastern Shore of Virginia. The facility is operated by the Goddard Space Flight Center in Greenbelt, Maryland, and primarily serves to support science and exploration missions for NASA and other Federal agencies. WFF includes an extensively instrumented range to support launches of more than a dozen types of sounding rockets; small expendable suborbital and orbital rockets; high-altitude balloon flights carrying scientific instruments for atmospheric and astronomical research; and, using its **Research Airport, flight tests of aeronautical research aircraft, including unmanned aerial vehicles**.

The Wallops Flight Facility also supports science missions for the National Oceanic and Atmospheric Administration (NOAA) and occasionally for foreign governments and commercial organizations. Wallops also supports development tests and exercises involving United States Navy aircraft and ship-based electronics and weapon systems in the Virginia Capes operating area, near the entrance to the Chesapeake Bay. In addition to its fixed-location instrumentation assets, the WFF range includes mobile radar, telemetry receivers, and command transmitters that can be transported by cargo planes to locations around the world, in order to establish a temporary range where no other instrumentation exists, to ensure safety, and to collect data in order to enable and support suborbital rocket launches from remote sites.

The WFF mobile range assets have been used to support rocket launches from locations in the Arctic and Antarctic regions, South America, Africa, Europe, Australia, and at sea. Workers at Wallops include approximately 1,000 full-time NASA civil service employees and the employees of contractors, about 30 U.S. Navy personnel, and about 100 employees of NOAA.

Figure 2. 7 NASA Goddard Space Flight Center, Wallops Field Aerial Depiction

Tenants

Table 2. 6 NASA Goddard Space Flight Center Tenant Overview

Organization Name	Type Sector	Subsector	Airport	City	ST
Atlantic Group & Associates	Off Airport	Real Estate: Architectural Design	Wallops FTC	Wallops	VA
MARS UAS Facility	On Airport	UAS Services: Facilities	Wallops FTC	Wallops	VA
NASA Wallops Flight Facility	On Airport	AV Research	Wallops FTC	Wallops	VA
NOAA Wallops Command and Data Acquisition Station	On Airport	Federal Organization	Wallops FTC	Wallops	VA
Rocket Lab	On Airport	Space	Wallops FTC	Wallops	VA

Sentinel Robotic Solutions	Off Airport	UAS Services	Wallops FTC	Wallops	VA
US Coast Guard (USCG) Station Chincoteague	Off Airport	DOD Organization	Wallops FTC	Wallops	VA
US Navy Surface Combat Systems Center (SCSC)	On Airport	DOD Organization	Wallops FTC	Wallops	VA

Mid-Atlantic Regional Spaceport (MARS) UAS Facility

The MARS UAS Facility, located on Wallops Island VA, features a runway/pressure rated VTOL pad for unmanned aircraft testing, certification, and research. The facility is officially known as the Mid-Atlantic Regional Spaceport's Unmanned Aircraft Systems (MARS UAS) Airfield. The facility presents a significant capability for Wallops and the Hampton Roads region. The MARS UAS Airfield at Wallops provides government and commercial users with a runway under restricted airspace on a secure federal facility.
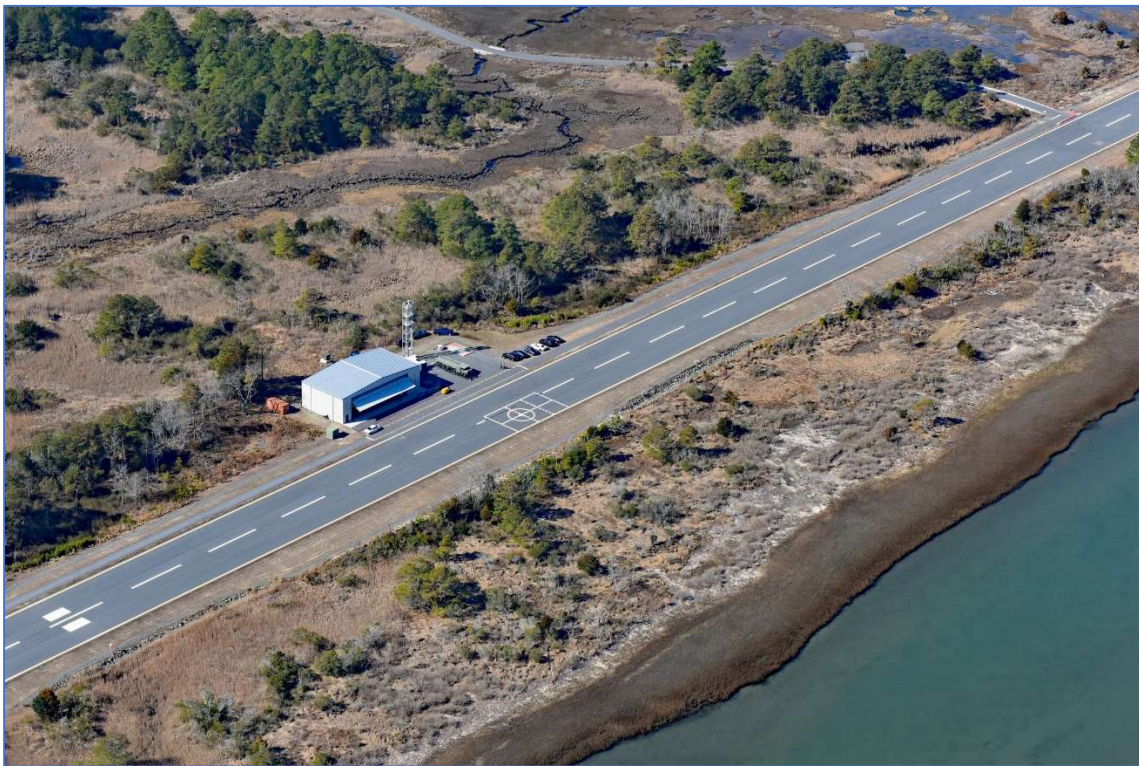
Figure 2. 8 Mid-Atlantic Regional Spaceport (MARS) UAS Facility

Tenants

N/A

WAIC Economic Impact

The Wallops Island Aerospace Cluster (WIAC) significantly boosts Virginia's economy, benefiting regions like Hampton Roads. Key impacts include:

- **Job Creation:**
  - WIAC added 3,300 to 4,600 jobs annually from 2018 to 2022, spanning aerospace, defense, engineering, and related sectors.

2.10

- **High Wages:**
  - Average annual wage in WIAC was $110,069 in 2022, significantly higher than local and state averages.
- **Industrial Output Growth:**
  - Increased Virginia's annual industrial output by $1.2 billion to $1.5 billion from 2018 to 2022.
- **Future Projections:**
  - Expected to contribute nearly $2 billion annually by 2030.
- **Return on Investment:**
  - Each $1 appropriated to the Virginia Spaceport Authority resulted in a $2.9 increase in industry output.
- **Resilience and Stability:**
  - Despite economic challenges, including the COVID-19 pandemic, WIAC maintained and grew employment opportunities.
    - The cluster's activities have been crucial in supporting local economies, preventing economic downturns, and providing high-tech jobs that contribute to regional economic stability.
    - The presence of the Wallops Flight Facility (WFF) and the employers in the WIAC has been a boon to counties with lower levels of educational attainment, median household income, and higher poverty rates, aligning with Virginia's goal of increasing STEM-related jobs.

For more detailed economic impact information, please refer to the full WAIC economic impact study [24].

Appendix 3 - Other Virginia Special Use Airspace
Virginia Special Use Airspace (SUA)
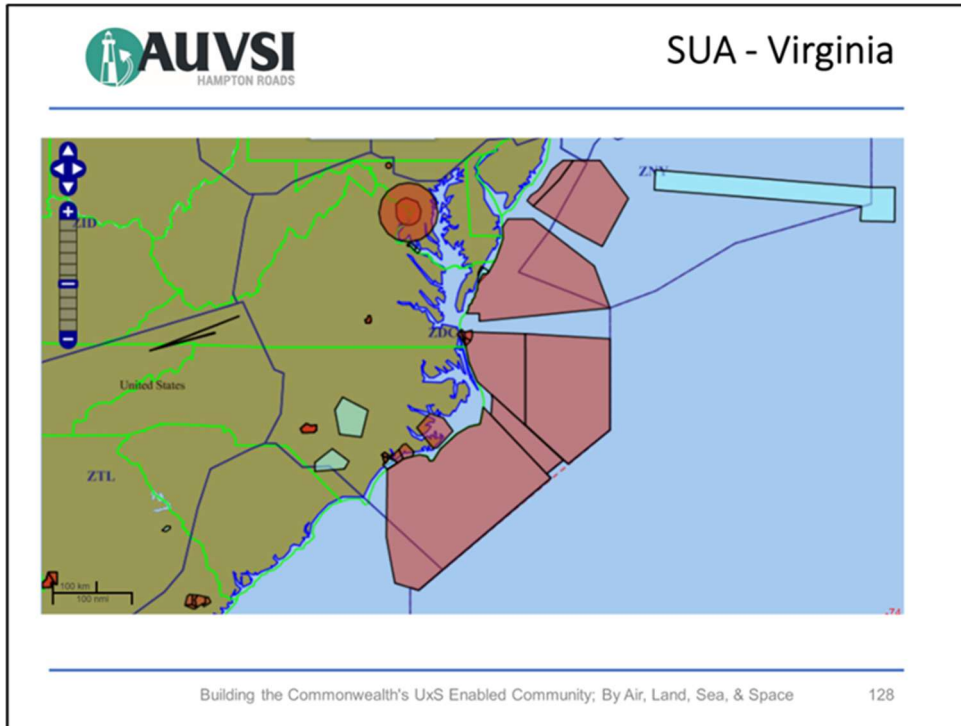
Figure 3. 1 – Virginia Special Use Airspace

Table 3. 1 Virginia Special Use Airspace (SUA)

Type	SAA/NOTAM II	CENTER	ST	MIN Al	MAX Al	Group	Activity	Controlling Agency
R	6602A	ZDC	VA	000*	040	SAA	Blackstone AAF, Fort Pickett	
R	6602B	ZDC	VA	040	110	SAA	Blackstone AAF, Fort Pickett	
R	6604A	ZDC	VA	000*	999	SAA	Wallops Flight Facility	
R	6604B	ZDC	VA	000*	999	SAA	Wallops Flight Facility	
R	6604C	ZDC	VA	000*	035	SAA	Wallops Flight Facility	
R	6604D	ZDC	VA	001*	035	SAA	Wallops Flight Facility	
R	6604E	ZDC	VA	007*	035	SAA	Wallops Flight Facility	
R	6606	ZDC	VA	00*	230	SAA	Dam Neck, VACAPES Range Complex	
R	6609		MD			SAA	Tangier Island (VA)	
W	386	ZDC	VA	00*	999	SAA		
W	50A	ZDC	VA	00*	750	SAA		
W	50B	ZDC	VA	00*	750	SAA		
W	50C	ZDC	VA	00*	750	SAA		
W	72A	ZDC	VA	00*	999	SAA		
?	W94	ZDC	VA	00*	?	SAA	Camp Peary	
R	6601A	ZDC	VA	00*	45	SAA	AP Hill AAF	FAA, Potomac TRACON
R	6601B	ZDC	VA	45	75	SAA	AP Hill AAF	FAA, Potomac TRACON
R	6601C	ZDC	VA	75	90	SAA	AP Hill AAF	FAA, Potomac TRACON
R	6611A	ZDC	VA	00*	100	SAA	Dahlgren, Surface Warfare Center	
R	6612	ZDC	VA	00*	70	SAA	Dahlgren, Surface Warfare Center	
R	6613A	ZDC	VA	00*	100	SAA	Dahlgren, Surface Warfare Center	

3.1

Fort Barfoot (Blackstone AAF)
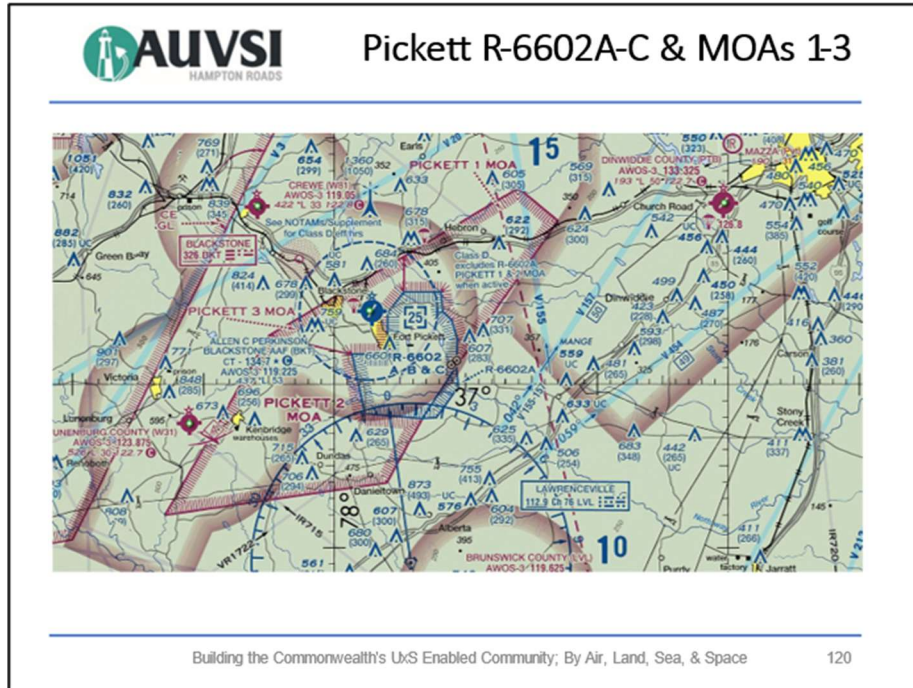
Figure 3. 2 – Fort Barfoot R-6602A-C & MOAs 1-3 SUA
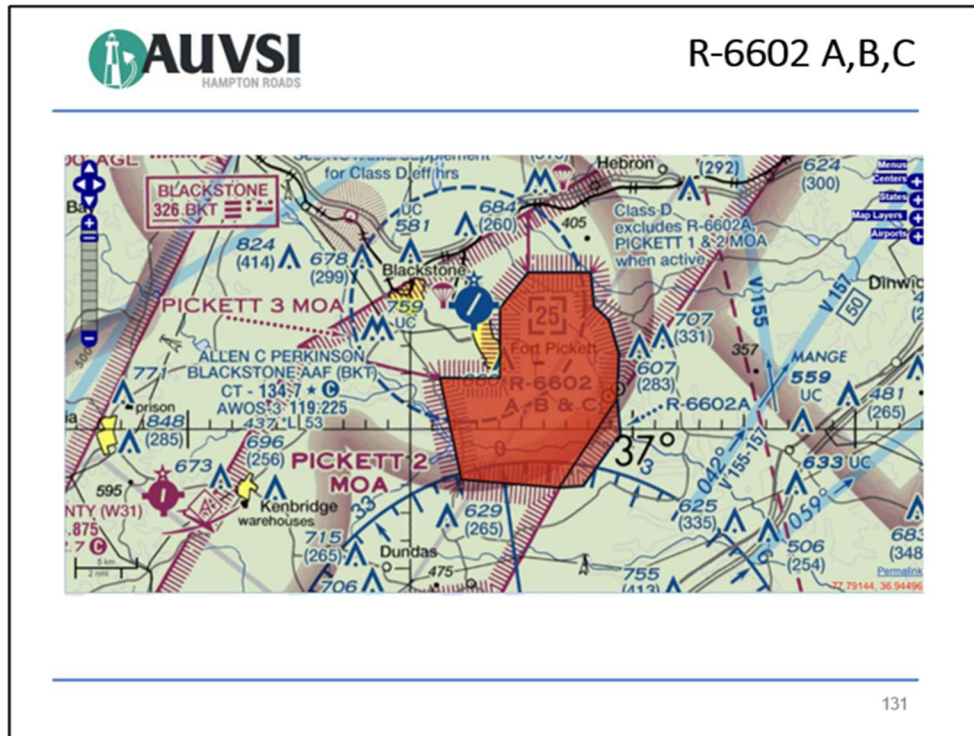
Figure 3. 3 - Fort Barfoot R-6602 (A-C)

Appendix 3: Special Use Airspace

Blackstone AAF SUA
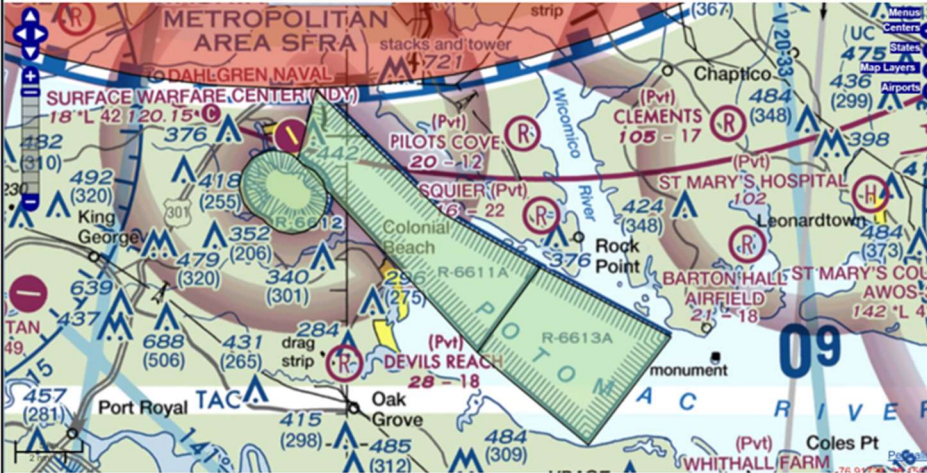
Figure 3. 4 - Blackstone AAF

Dahlgren Naval Surface Warfare Center (NSWC)

Figure 3. 5 - Dahlgren NSWC R-6611A, R-6612, R-6613A SUA

3.3

Fort Walker (A.P. Hill)
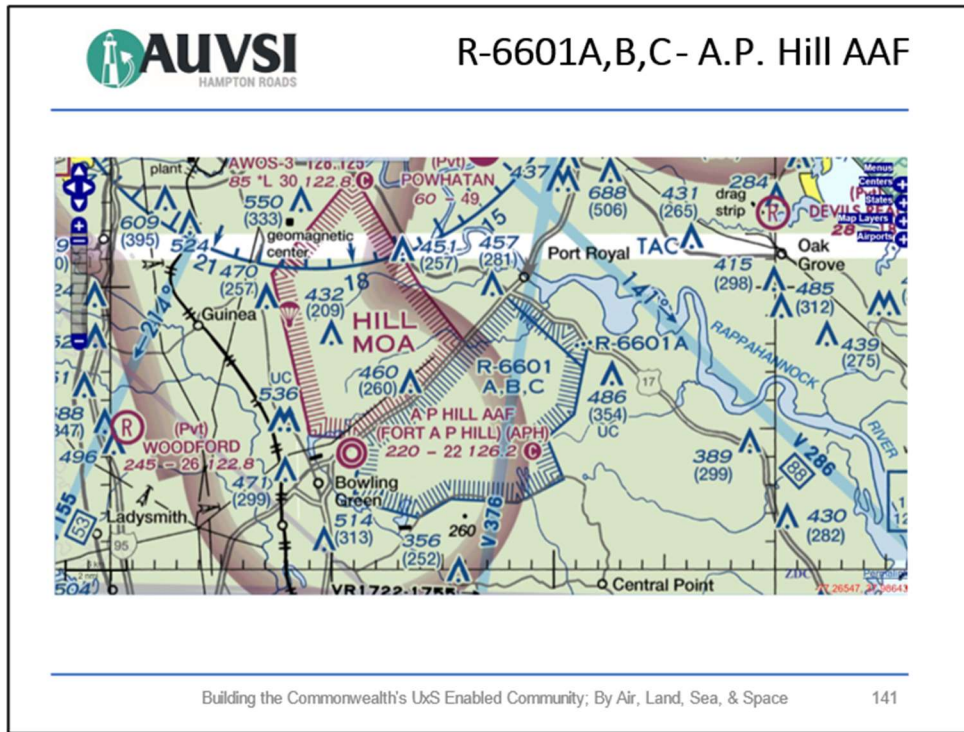
Figure 3. 6 - Fort A.P. Hill R-6601 A-C SUA

3.4

Appendix 4 - Existing Business Sectors – ON AIRPORT

The Table below captures a summary of existing business sectors **on-airport** across the Regions airports.

Table 4. 1 On Airport Existing Business Sectors

On-Airport Business Sectors	
1	Aerial Photography Services
2	Air Cargo Services
3	Air Charter Services
4	Air Medical Services
5	Airport Management
6	Airport Services
7	AV Research
8	Civil Service
9	Commercial Air Services
10	DOD Organization
11	DOD Services
12	Education
13	GA MRO Services
14	Gliding
15	Part 135 Commercial Operations
16	Sky Diving
17	Suppliers
18	Tourism
19	UAS Services: Facilities

Aerial Photography Services

Table 4. 2 Aerial Photography Services

Organization Name	Type Sector	Subsector	Airport	City
Backus Aerial Photography	On Airport	Aerial Photography	PVG	Chesapeake

Air Cargo Services

Table 4. 3 Air Cargo Services

Organization Name	Type Sector	Subsector	Airport	City
Crossfire Logistics	On Airport	Air Cargo	ORF	Norfolk
Delta Cargo	On Airport	Air Cargo	ORF	Norfolk
DHL	On Airport	Air Cargo	ORF	Norfolk
FEDEX Air Freight Forwarding	On Airport	Air Cargo	ORF	Norfolk
Mountain Air Cargo	On Airport	Air Cargo	ORF	Norfolk
Pilot Freight Services (Maersk)	On Airport	Air Cargo	ORF	Norfolk
Prologix	On Airport	Air Cargo	ORF	Norfolk

4.1

Quantem Aviation Services (AA)	On Airport	Air Cargo	ORF	Norfolk
Realterm	On Airport	Air Cargo	ORF	Norfolk
Southwest Cargo	On Airport	Air Cargo	ORF	Norfolk
UPS	On Airport	Air Cargo	ORF	Norfolk

Air Charter Services

Table 4. 4 Air Charter Services

Organization Name	Type Sector	Subsector	Airport	City
Smithfield Foods Flight Det	On Airport	Air Charter: Corporate	PHF	Newport News
CARAN Flying Services	On Airport	Air Charter: Crop dusting	MFV	Accomack
Aloft Aviation LLC	On Airport	Air Charter: Jet (Part 135)	PVG	Chesapeake

Air Medical Services

Table 4. 5 Air Medical Services

Organization Name	Type Sector	Subsector	Airport	City
LifeEvac	On Airport	Air Medical Services	FYJ	Mattaponi
Nightingale Air Ambulance	On Airport	Air Medical Services	PVG	Chesapeake

Airport Management

Table 4. 6 Air Management

Organization Name	Type Sector	Subsector	Airport	City
Accomack Airport	On Airport	Airport Management	MFV	Accomack
Chesapeake Airport	On Airport	Airport Management	CPK	Chesapeake
Chesapeake Airport Authority	On Airport	Airport Management	CPK	Chesapeake
Felker Army Airfield	On Airport	Airport Management	FAF	Fort Eustis
Franklin Municipal Airport	On Airport	Airport Management	FKN	Franklin
Hampton Roads Executive Airport	On Airport	Airport Management	PVG	Chesapeake
Middle Peninsula Regional Airport	On Airport	Airport Management	FYJ	Mattaponi
Middle Peninsula Regional Airport Authority	On Airport	Airport Management	FYJ	Mattaponi
Norfolk International Airport	On Airport	Airport Management	ORF	Norfolk
Norfolk International Airport Authority	On Airport	Airport Management	ORF	Norfolk
Norfolk NAS Airport	On Airport	Airport Management	Norfolk NAS	Norfolk
Oceana NAS Airport	On Airport	Airport Management	Oceana NAS	Virginia Beach
Peninsula Airport Commission	On Airport	Airport Management	PHF	Newport News
Suffolk Executive Airport	On Airport	Airport Management	SFQ	Suffolk
Virginia Aviation Associates LLC	On Airport	Airport Management	PVG	Chesapeake
Virginia Beach Airport (Private)	On Airport	Airport Management	42VA	Virginia Beach
Williamsburg-Jamestown Airport	On Airport	Airport Management	JGG	Jamestown

4.2

Appendix 4: Existing Business Sectors – ON Airport

Airport Services

Table 4. 7 Airport Services

Organization Name	Type Sector	Subsector	Airport	City
Taxicab Firms - ORF (9)	On Airport	Airport Services: Cabs	ORF	Norfolk
Back Bay Bistro (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
Burger King (HMS Host)	On Airport	Airport Services: Dining	ORF	Norfolk
Costa Coffee (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
Fresh Attractions (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
Gourmet Gang	On Airport	Airport Services: Dining	ORF	Norfolk
Great American Bagel Backery (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
Here's to the Heroes (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
HMSHost	On Airport	Airport Services: Dining	ORF	Norfolk
James River Grill (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
La Tapenade (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
MKT (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
Starbucks (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
The Local @ORF (HMSHost)	On Airport	Airport Services: Dining	ORF	Norfolk
Atlantic Aviation	On Airport	Airport Services: FBO	PHF	Newport News
Signature Aviation	On Airport	Airport Services: FBO	ORF	Norfolk
First Aid & Medical Department	On Airport	Airport Services: First Responders	ORF	Norfolk
American Rental	On Airport	Airport Services: Rental Car	ORF	Norfolk
AVIS - PHF	On Airport	Airport Services: Rental Car	PHF	Newport News
AVIS | Budget - ORF	On Airport	Airport Services: Rental Car	ORF	Norfolk
Budget Rental Car	On Airport	Airport Services: Rental Car	PHF	Newport News
Enterprise (PHF)	On Airport	Airport Services: Rental Car	PHF	Newport News
Enterprise Holdings (ORF)	On Airport	Airport Services: Rental Car	ORF	Norfolk
Hertz Corporation - ORF	On Airport	Airport Services: Rental Car	ORF	Norfolk
Hertz Corporation - PHF	On Airport	Airport Services: Rental Car	PHF	Newport News
National Car Rental	On Airport	Airport Services: Rental Car	PHF	Newport News
Hudson Group - ORF	On Airport	Airport Services: Retail Stores	ORF	Norfolk
Hudson Group - PHF	On Airport	Airport Services: Retail Stores	PHF	Newport News
Rideshare - Lyft	On Airport	Airport Services: Rideshare	ORF	Norfolk
Rideshare - Uber	On Airport	Airport Services: Rideshare	ORF	Norfolk
TSA - ORF	On Airport	Airport Services: Security	ORF	Norfolk
TSA - PHF	On Airport	Airport Services: Security	PHF	Newport News

AV Research

Table 4. 8 AV Services

Organization Name	Type Sector	Subsector	Airport	City
NASA Langley Research Center	On Airport	AV Research	Langley AFB	Hampton

4.3

NASA Wallops Flight Facility	On Airport	AV Research	Wallops FTC	Wallops
Tyonek	On Airport	AV Research: Airfield Support	FAF	Fort Eustis
Fulcrum Concepts	On Airport	AV Research: Wpns	FYJ	Mattaponi

Civil Service

Table 4. 9 Civil Service

Organization Name	Type Sector	Subsector	Airport	City
Civil Air Patrol - Hampton Roads Squadron	On Airport	Civil Service	CPK	Chesapeake
Civil Air Patrol - Langley Composite Squadron	On Airport	Civil Service	Langley AFB	Langley AFB
Civil Air Patrol - Newport News Composite Squadron	On Airport	Civil Service	PHF	Newport News
Civil Air Patrol - Tidewater Squadron	On Airport	Civil Service	SFQ	Suffolk

Commercial Air Services

Table 4. 10 Commercial Air Services

Organization Name	Type Sector	Subsector	Airport	City
Allegiant	On Airport	Commercial Air	ORF	Norfolk
American Airlines - ORF	On Airport	Commercial Air	ORF	Norfolk
American Airlines - PHF	On Airport	Commercial Air	PHF	Newport News
Breeze	On Airport	Commercial Air	ORF	Norfolk
Delta Airlines	On Airport	Commercial Air	ORF	Norfolk
Frontier Airlines	On Airport	Commercial Air	ORF	Norfolk
Southwest Airlines	On Airport	Commercial Air	ORF	Norfolk
Spirit Airlines	On Airport	Commercial Air	ORF	Norfolk
United Airlines	On Airport	Commercial Air	ORF	Norfolk

DOD Organizations

Table 4. 11 DOD Organizations

Organization Name	Type Sector	Subsector	Airport	City
Center for Naval Aviation Technical Training	On Airport	DOD Organization	Norfolk NAS	Norfolk
192ND Wing (VA ANG)	On Airport	DOD Organization	Langley AFB	Langley AFB
1st Fighter Wing	On Airport	DOD Organization	Langley AFB	Langley AFB
363rd ISR Wing	On Airport	DOD Organization	Langley AFB	Langley AFB
480th ISR Wing	On Airport	DOD Organization	Langley AFB	Langley AFB
633d Air Base Wing	On Airport	DOD Organization	Langley AFB	Langley AFB
633d Air Base Wing / 733rd Mission Support Group	On Airport	DOD Organization	Langley AFB	Langley AFB
AFC / CCDC / AvMC / TDD-A	On Airport	DOD Organization	FAF	Fort Eustis
Air Combat Command	On Airport	DOD Organization	Langley AFB	Langley AFB
Air Mobility Command, Air Terminal Norfolk	On Airport	DOD Organization	Norfolk NAS	Norfolk

Appendix 4: Existing Business Sectors – ON Airport

Air Mobility Command, Air Terminal Oceana	On Airport	DOD Organization	Oceana NAS	Virginia Beach
Airborne Command & Control and Logistics Wing (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Airborne Command & Control Squadron (VAW) 120 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Aircraft Carrier John F. Kennedy (CVN 79)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Aircraft Carrier USS Dwight D. Eisenhower (CVN 69)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Aircraft Carrier USS George H.W. Bush (CVN 77)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Aircraft Carrier USS Gerald R. Ford (CVN 78)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Aircraft Carrier USS Harry S. Truman (CVN 75)	On Airport	DOD Organization	Norfolk NAS	Norfolk
AMC / AMCOM / DIR SP	On Airport	DOD Organization	FAF	Fort Eustis
Aviation Support Detachment Oceana, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
Aviation Survival Training Center Norfolk, Norfolk NAS	On Airport	DOD Organization	Norfolk NAS	Norfolk
Carrier Air Wing Eight (CVW-8), Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
Carrier Air Wing One (CVW-1), Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
Carrier Air Wing Seven (CVW-7), Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
Carrier Air Wing Three (CVW-3), Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
Commander, Helicopter Sea Combat Wing Atlantic, Norfolk NAS	On Airport	DOD Organization	Norfolk NAS	Norfolk
Commander, Navy Region Mid-Atlantic (CNRMA)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Commander, Patrol Recon Group (COMPATRECONGRU)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Fleet Readiness Center Mid-Atlantic (FRCMA), Det Norfolk NAS	On Airport	DOD Organization	Norfolk NAS	Norfolk
Fleet Readiness Center Mid-Atlantic (FRCMA), Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
FORSCOM / USARC / 5/159th GSAB	On Airport	DOD Organization	FAF	Fort Eustis
Helicopter Mine Countermeasures Squadron (HM-12) Sea Dragons (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Helicopter Sea Combat Squadron 2 (HSC-2), Norfolk NAS	On Airport	DOD Organization	Norfolk NAS	Norfolk
Helicopter Sea Combat Weapons School Atlantic (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
HM-15 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
HSC-11 Dragon Slayers (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
HSC-26 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
HSC-28 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
HSC-5 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
HSC-7 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
HSC-9 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk

NAVAL AIR FORCES ATLANTIC (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
Naval Safety Command	On Airport	DOD Organization	Norfolk NAS	Norfolk
Strike Fighter Squadron 11 (VFA 11), Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
Strike Fighter Weapons School Atlantic, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
TRADOC / USAACE / 128th Aviation BDE	On Airport	DOD Organization	FAF	Fort Eustis
USSOCOM / AT&L / PEO RW	On Airport	DOD Organization	FAF	Fort Eustis
VAW-121 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
VAW-123 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
VAW-124 (Norfolk NAS)	On Airport	DOD Organization	Norfolk NAS	Norfolk
VFA-103, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-105, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-106, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-131, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-143, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-211, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-213, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-31, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-32, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-34, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-37, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-81, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-83, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach
VFA-87, Oceana NAS	On Airport	DOD Organization	Oceana NAS	Virginia Beach

DOD Services

Table 4. 12 DOD Services

Organization Name	Type Sector	Subsector	Airport	City
Air Center Helicopters	On Airport	DOD Services: Range Support Services	ORF	Norfolk
ATAC - Airborne Tactical Advantage Company	On Airport	DOD Services: Threat Services	PHF	Newport News

Education

Table 4. 13 Education

Organization Name	Type Sector	Subsector	Airport	City
Forgotten Heroes Foundation	On Airport	Education: Non-profit STEM	PVG	Chesapeake
Williamsburg Aviation Scholarship Program (WASP)	On Airport	Education: Non-Profit STEM	JGG	Jamestown
eAviation & Drone Academy	On Airport	Education: Workforce Development UAS	PVG	Chesapeake
Curtis Eads Flight School	On Airport	Education: Flight Training	SFQ	Suffolk
Epix Aviation	On Airport	Education: Flight Training	CPK	Chesapeake

GreyCat Aviation	On Airport	Education: Flight Training	PVG	Chesapeake
Hill Flying Service	On Airport	Education: Flight Training	FYJ	Mattaponi
Norfolk Flight Center	On Airport	Education: Flight Training	PVG	Chesapeake
Protocom Aviation	On Airport	Education: Flight Training	PVG	Chesapeake
Horizon Flight Center	On Airport	Education: Flight Training (Part 141)	CPK	Chesapeake
Old School Flight School	On Airport	Education: Flight Training (Part 61)	PVG	Chesapeake
Prevailance Aerospace	On Airport	Flight Training: Special Skills	PVG	Chesapeake

GA MRO Services

Table 4. 14 GA MRO Services

Organization Name	Type Sector	Subsector	Airport	City
AEROGROUP Inc	On Airport	GA AV Management	PVG	Chesapeake
Hampton Roads Helicopters	On Airport	GA MRO Maintenance	PVG	Chesapeake
Long Hill Enterprises, LLC	On Airport	GA MRO Maintenance	PVG	Chesapeake
McClellan Aviation	On Airport	GA MRO Maintenance	SFQ	Suffolk
N-aviation Air, LLC	On Airport	GA MRO Maintenance	PVG	Chesapeake
Shelby Performance Aviation	On Airport	GA MRO Maintenance	FKN	Franklin
Audemus	On Airport	GA MRO Maintenance (Part 43)	FYJ	Mattaponi
Metro Aviation Inc	On Airport	GA MRO Maintenance (VTOL)	PVG	Chesapeake
Aerodyne Corp	On Airport	GA MRO Services	PVG	Chesapeake

Gliding

Table 4. 15 Gliding

Organization Name	Type Sector	Subsector	Airport	City
Tidewater Soaring Society	On Airport	Gliding	Garner Glider port (3VA8)	Windsor

Part 135 Commercial Operations

Table 4. 16 Part 135 Commercial Operations

Organization Name	Type Sector	Subsector	Airport	City
McKenzie Air Services	On Airport	Part 135 & Part 91 RW Services	SFQ	Suffolk
Aery Aviation	On Airport	Part 135 Commercial Operations	PHF	Newport News
CBH Aviation	On Airport	Part 135 Commercial Operations	PVG	Chesapeake
Hampton Road Charter Service	On Airport	Part 135 Commercial Operations	PVG	Chesapeake
Horizon Aviation	On Airport	Part 135 Commercial Operations	CPK	Chesapeake
Jet Air Charter LLC	On Airport	Part 135 Commercial Operations	CPK	Chesapeake

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Rick Aviation	On Airport	Part 135 Commercial Operations	PHF	Newport News

Sky Diving

Table 4. 17 Skydiving

Organization Name	Type Sector	Subsector	Airport	City
Skydive Suffolk	On Airport	Sky Diving	SFQ	Suffolk
No Limits Skydiving	On Airport	Skydiving	FYJ	Mattaponi

Suppliers

Table 4. 18 Suppliers

Organization Name	Type Sector	Subsector	Airport	City
Smartecarte	On Airport	Supplier: Carte Distribution	ORF	Norfolk

Tourism

Table 4. 19 Tourism

Organization Name	Type Sector	Subsector	Airport	City
Military Aviation Museum	On Airport	Tourism - Museum	42VA	Virginia Beach
Fighter Factory	On Airport	Tourism: Aircraft Restoration	42VA	Virginia Beach

UAS Services

Table 4. 20 UAS Services

Organization Name	Type Sector	Subsector	Airport	City
MARS UAS Facility	On Airport	UAS Services: Facilities	Wallops FTC	Wallops

Appendix 5 - Existing Business Sectors – OFF AIRPORT

The Table below captures a summary of existing business organizations off-airport across the Regions civil airports. Having captured the existing on-airport businesses for the region's civil airports, these firms, based on top-level and dominant offerings, are further binned by general business sectors. These off-airport sectors are as follows:

Table 5. 1 On-Airport Business Sectors

	OFF-Airport Business Sectors
1	Advocacy Services
2	Aerial Photography Services
3	Air Medical Services
4	Airport Management
5	Airport Services
6	AV Research
7	Business Innovation
8	Civil Service
9	Consultant Services
10	DOD Organizations
11	DOD Services
12	Economic Development
13	Economic Growth
14	Education
15	Federal Services
16	Flight Training
17	OEM
18	Policy & Regulation
19	Real Estate
20	Suppliers
21	UAS Services
22	UAS Software

Advocacy Services

Table 5. 2 Advocacy Services

Organization Name	Type Sector	Subsector	City
AUVSI Hampton Roads	Off Airport	Advocacy: AAM	Yorktown
American Institute of Aeronautics & Astronautics (AIAA) Hampton Roads	Off Airport	Advocacy: Aerospace	Hampton
Virginia Airport Operator Council (VAOC)	Off Airport	Advocacy: Airport Operators	Winchester
Future of Hampton Roads, Inc.	Off Airport	Advocacy: Economic Development	Virginia Beach

5.1

Appendix 5: Existing Business Sectors – Off Airport

Experimental Aircraft Assoc (EAA) #156	Off Airport	Advocacy: Experimental Aircraft	Jamestown
Experimental Aircraft Assoc (EAA) #339	Off Airport	Advocacy: Experimental Aircraft	Chesapeake
Virginia Aerospace Business Association (VASBA)	Off Airport	Advocacy: HR Aerospace	Hampton
Hampton Roads Military & Federal Facilities Alliance (HRMFFA)	Off Airport	Advocacy: HR Federal Facilities	Chesapeake
Tidewater Drone Club	Off Airport	Advocacy: UAS Recreational	Jamestown
Vertical Flight Society Hampton Roads	Off Airport	Advocacy: Vertical Flight	Fort Eustis
Virginia Aviation Business Association (VABA)	Off Airport	Advocacy: Virginia Aerospace	Richmond

Aerial Photography Services

Table 5. 3 Aerial Photography Services

Organization Name	Type Sector	Subsector	City
Coastal Imagery LLC	Off Airport	Aerial Photography: UAS Real Estate	Virginia Beach

Air Medical Services

Table 5. 4 Air Medical Services

Organization Name	Type Sector	Subsector	City
Sentara Healthcare	Off Airport	Air Medical Services	Norfolk

Airport Services

Table 5. 5 Airport Services

Organization Name	Type Sector	Subsector	City
Colliers	Off Airport	Airport Services: Property Management	Norfolk
Guardian Systems, LLC	Off Airport	Airport Services: Security Systems	Suffolk

AV Research

Table 5. 6 AV Research

Organization Name	Type Sector	Subsector	City
Adaptive Aerospace Group, Inc.	Off Airport	AV Research	Hampton
Aerospace Innovations, LLC	Off Airport	AV Research	Yorktown
Analytical Mechanics Associates, Inc. (AMA)	Off Airport	AV Research	Hampton
Avid Aerospace	Off Airport	AV Research	Yorktown
Bihrle Applied Research, Inc.	Off Airport	AV Research	Hampton
Boeing	Off Airport	AV Research	Newport News
Booz	Allen	Hamilton	Off Airport	AV Research	Norfolk
CACI	Off Airport	AV Research	Hampton
CALSPAN	Off Airport	AV Research	Newport News
CGI	Off Airport	AV Research	Newport News
Cruz Associates	Off Airport	AV Research	Yorktown
Daniel H. Wagner Associates, Inc.	Off Airport	AV Research	Hampton
Defense Systems & Services (DSS)	Off Airport	AV Research	Yorktown

5.2

Appendix 5: Existing Business Sectors – Off Airport

Huntington Ingalls Industries - Mission Technologies	Off Airport	AV Research	Newport News
Huntington Ingalls Industries - Mission Technologies / C5ISR	Off Airport	AV Research	Newport News
ITA International, LLC.	Off Airport	AV Research	Newport News
Jacobs	Off Airport	AV Research	Hampton
JHNA	Off Airport	AV Research	Newport News
Leidos	Off Airport	AV Research	Virginia Beach
Lockheed Martin	Off Airport	AV Research	
MAG Aerospace	Off Airport	AV Research	Newport News
ManTech (former Gryphon Technologies)	Off Airport	AV Research	Virginia Beach
MITechnical Solutions	Off Airport	AV Research	Chesapeake
National Institute of Aerospace (NIA)	Off Airport	AV Research	Hampton
Northrup Grumman Corp	Off Airport	AV Research	Williamsburg
RTX - Raytheon Technologies	Off Airport	AV Research	Hampton
SAIC	Off Airport	AV Research	Hampton
Serco North America	Off Airport	AV Research	Williamsburg
Sierra Lobo	Off Airport	AV Research	Newport News
The Boeing Company	Off Airport	AV Research	Virginia Beach
USFalcon	Off Airport	AV Research	Fort Eustis
USI, Inc	Off Airport	AV Research	Newport News
C2 Technologies, Inc.	Off Airport	AV Research: C2 Systems	Newport News
Spectrum	Off Airport	AV Research: Digital Services	Newport News
Genex Systems	Off Airport	AV Research: Engineering	Newport News
Forensic Analysis and Engineering Corp	Off Airport	AV Research: Forensics	Hampton
G2 Ops	Off Airport	AV Research: Intelligence	Virginia Beach
Spatial Integrated Systems, Inc	Off Airport	AV Research: SaaS & Cloud Computing	Virginia Beach
Global Technical Systems	Off Airport	AV Research: Structures	Virginia Beach
The Longbow Group, LLC.	Off Airport	AV Research: UAS	Hampton

Business Innovation

Table 5. 7 Business Innovation

Organization Name	Type Sector	Subsector	City
VIPC - Public Safety Center	Off Airport	Business Innovation - State	Newport News
Arcphor	Off Airport	Business Innovation: Local	Yorktown
Hampton Roads Innovation Collaborative (HRIC)	Off Airport	Business Innovation: Local	Chesapeake
Innovate Hampton Roads	Off Airport	Business Innovation: Local	Yorktown
Reaktor Technology Innovation Center	Off Airport	Business Innovation: Local	Hampton

5.3

Appendix 5: Existing Business Sectors – Off Airport

Civil Service

Organization Name	Type Sector	Subsector	City
Civil Air Patrol - Coastal Composite Squadron	Off Airport	Civil Service	Virginia Beach

Consultant Services

Organization Name	Type Sector	Subsector	City
Michael Fry Defense, LLC	Off Airport	Consultant: UxS	Dutton

DOD Organizations

Organization Name	Type Sector	Subsector	City
AFC / Futures & Concepts Center	Off Airport	DOD Organization	Fort Eustis
Mid-Atlantic Tech Bridge	Off Airport	DOD Organization	Norfolk
Naval Air Force Atlantic (AIRLANT)	Off Airport	DOD Organization	Norfolk
Naval Surface Force Atlantic	Off Airport	DOD Organization	Norfolk
Naval Surface Force Atlantic / USS Gettysburg	Off Airport	DOD Organization	Virginia Beach
Naval Survival Training Institute	Off Airport	DOD Organization	Norfolk
Office of Naval Research (ONR) Global	Off Airport	DOD Organization	Norfolk
TRADOC Headquarters	Off Airport	DOD Organization	Fort Eustis
USASOC / USASOAC / TAPO	Off Airport	DOD Organization	Fort Eustis
USN	Off Airport	DOD Organization	Norfolk
US Coast Guard (USCG) Station Chincoteague	Off Airport	DOD Organization	Wallops

DOD Services

Organization Name	Type Sector	Subsector	City
Threat Tec, LLC.	Off Airport	DOD Services: Operational Environment	Hampton

Economic Development

Organization Name	Type Sector	Subsector	City
Economic Development, City of Chesapeake	Off Airport	Economic Development: City	Chesapeake
Economic Development, City of Hampton	Off Airport	Economic Development: City	Hampton
Economic Development, City of Newport News	Off Airport	Economic Development: City	Newport News
Economic Development, City of Norfolk	Off Airport	Economic Development: City	Norfolk
Economic Development, City of Norfolk	Off Airport	Economic Development: City	Norfolk
Economic Development, City of Poquoson	Off Airport	Economic Development: City	Poquoson

Appendix 5: Existing Business Sectors – Off Airport

Economic Development, City of Portsmouth	Off Airport	Economic Development: City	Portsmouth
Economic Development, City of Suffolk	Off Airport	Economic Development: City	Suffolk
Economic Development, City of Virginia Beach	Off Airport	Economic Development: City	Virginia Beach
Economic Development, City of Williamsburg	Off Airport	Economic Development: City	Williamsburg
Mayor's Office - Suffolk	Off Airport	Economic Development: City	Suffolk
Mayor's Office - Virginia Beach	Off Airport	Economic Development: City	Virginia Beach
Mayor's Office: Chesapeake	Off Airport	Economic Development: City	Chesapeake
Mayor's Office: Franklin	Off Airport	Economic Development: City	Franklin
Mayor's Office: Hampton	Off Airport	Economic Development: City	Hampton
Mayor's Office: Newport News	Off Airport	Economic Development: City	Newport News
Mayor's Office: Norfolk	Off Airport	Economic Development: City	Norfolk
Mayor's Office: Portsmouth	Off Airport	Economic Development: City	Portsmouth
Mayor's Office: Williamsburg	Off Airport	Economic Development: City	Williamsburg
Board of Directors: James City County	Off Airport	Economic Development: County	James City
Economic Development, Accomack County	Off Airport	Economic Development: County	Accomack
Economic Development, Franklin & Southampton County	Off Airport	Economic Development: County	Franklin
Economic Development, Gloucester County	Off Airport	Economic Development: County	Gloucester
Economic Development, Isle of Wight County	Off Airport	Economic Development: County	Isle of Wight
Economic Development, James City County	Off Airport	Economic Development: County	Williamsburg
Economic Development, Northampton County	Off Airport	Economic Development: County	Eastville
Economic Development, York County	Off Airport	Economic Development: County	Yorktown
United States Congress, Senator Kaine	Off Airport	Economic Development: Federal	Richmond
United States Congress, Senator Warner	Off Airport	Economic Development: Federal	Alexandria
United States Congress, VA 1st District	Off Airport	Economic Development: Federal	Yorktown
United States Congress, VA 2nd District	Off Airport	Economic Development: Federal	Virginia Beach
United States Congress, VA 3rd District	Off Airport	Economic Development: Federal	Newport News
Hampton Roads Alliance	Off Airport	Economic Development: Regional	Norfolk
Virginia Peninsula Chamber of Commerce (VPCC)	Off Airport	Economic Development: Regional	Hampton
Local State Delegate, District 100	Off Airport	Economic Development: VA House	Accomack, Northampton
Local State Delegate, District 21	Off Airport	Economic Development: VA House	Virginia Beach
Local State Delegate, District 64	Off Airport	Economic Development: VA House	Surry, Isle of Wight, Prince George, Southampton
Local State Delegate, District 76	Off Airport	Economic Development: VA House	Suffolk
Local State Delegate, District 77	Off Airport	Economic Development: VA House	Chesapeake
Local State Delegate, District 78	Off Airport	Economic Development: VA House	Chesapeake
Local State Delegate, District 79	Off Airport	Economic Development: VA House	Portsmouth
Local State Delegate, District 80	Off Airport	Economic Development: VA House	Portsmouth
Local State Delegate, District 81	Off Airport	Economic Development: VA House	Virginia Beach
Local State Delegate, District 82	Off Airport	Economic Development: VA House	Virginia Beach
Local State Delegate, District 83	Off Airport	Economic Development: VA House	Virginia Beach
Local State Delegate, District 84	Off Airport	Economic Development: VA House	Virginia Beach

Local State Delegate, District 85	Off Airport	Economic Development: VA House	Virginia Beach
Local State Delegate, District 89	Off Airport	Economic Development: VA House	Norfolk
Local State Delegate, District 90	Off Airport	Economic Development: VA House	Norfolk
Local State Delegate, District 91	Off Airport	Economic Development: VA House	Hampton
Local State Delegate, District 92	Off Airport	Economic Development: VA House	Hampton
Local State Delegate, District 93	Off Airport	Economic Development: VA House	Williamsburg, James City
Local State Delegate, District 94	Off Airport	Economic Development: VA House	Newport News
Local State Delegate, District 95	Off Airport	Economic Development: VA House	Newport News
Local State Delegate, District 69	Off Airport	Economic Development: VA House	York County
Senate of Virginia, District 17	Off Airport	Economic Development: VA Senate	Smithfield
Senate of Virginia, District 18	Off Airport	Economic Development: VA Senate	Portsmouth
Senate of Virginia, District 19	Off Airport	Economic Development: VA Senate	Chesapeake
Senate of Virginia, District 20	Off Airport	Economic Development: VA Senate	Virginia Beach
Senate of Virginia, District 21	Off Airport	Economic Development: VA Senate	Norfolk
Senate of Virginia, District 22	Off Airport	Economic Development: VA Senate	Virginia Beach
Senate of Virginia, District 23	Off Airport	Economic Development: VA Senate	Hampton
Senate of Virginia, District 24	Off Airport	Economic Development: VA Senate	Yorktown

Economic Growth – Regional

Table 5. 13 Economic Growth - Reginal

Organization Name	Type Sector	Subsector	City
Go Virginia Region 5	Off Airport	Economic Growth: Regional	Norfolk
Hampton Roads Roundtable	Off Airport	Economic Growth: Regional	Norfolk

Education

Table 5. 14 Education

Organization Name	Type Sector	Subsector	City
Tidewater Community College	Off Airport	Education: Community College	Chesapeake
Virginia Peninsula Community College	Off Airport	Education: Community College	Hampton
Denbigh High School Aviation Academy	Off Airport	Education: High School	Newport News
Aviation Institute of Maintenance (AIM)	Off Airport	Education: Institute Maintenance	Virginia Beach
Virginia Space Grant Consortium (VSGC)	Off Airport	Education: Non-profit STEM	Hampton
Christopher Newport University	Off Airport	Education: University	Newport News
Embry-Riddle Aeronautical University	Off Airport	Education: University	Hampton
Hampton University	Off Airport	Education: University	Hampton
ODU	Off Airport	Education: University	Norfolk
ODU Batten College of Engineering	Off Airport	Education: University	Norfolk
ODU Center for Secure and Intelligent Critical Systems	Off Airport	Education: University	Norfolk
ODU Dept of Political Science & Geography	Off Airport	Education: University	Norfolk
ODU Global	Off Airport	Education: University	Norfolk
ODU Hydrogen Energy Lab	Off Airport	Education: University	Norfolk

ODU Institute for Autonomous & Connected Systems (IACS)	Off Airport	Education: University	Norfolk
ODU Transportation Research Institute	Off Airport	Education: University	Norfolk
ODU Unmanned & Autonomous Vehicle Lab	Off Airport	Education: University	Norfolk
ODU VISA	Off Airport	Education: University	Norfolk
ODU VMASC	Off Airport	Education: University	Suffolk
ODU Wind Tunnel Lab	Off Airport	Education: University	Norfolk
William & Mary University	Off Airport	Education: University	Williamsburg
HR Workforce Council	Off Airport	Education: Workforce Development	Norfolk

Federal Services

Table 5. 15 Federal Services

Organization Name	Type Sector	Subsector	City
National Oceanic & Atmospheric Administration	Off Airport	Federal: NOAA	Virginia Beach

Flight Training

Table 5. 16 Flight Training

Organization Name	Type Sector	Subsector	City
Aerofeather Aviation Inc.	Off Airport	Flight Training	Newport News

Original Equipment Manufacturers (OEMs)

Table 5. 17 Original Equipment Manufacturers (OEM)

Organization Name	Type Sector	Subsector	City
Advanced Aircraft Company	Off Airport	OEM: UAS	Hampton
Hush Aerospace LLC	Off Airport	OEM: UAS	Virginia Beach

Policy & Regulation

Table 5. 18 Policy and Regulation

Organization Name	Type Sector	Subsector	City
Virginia Aviation Board	Off Airport	Policy & Regulation: State	Fredericksburg
Governor's Aerospace Advisory Committee (GAAC)	Off Airport	Policy & Regulation: State	Norge

Real Estate

Table 5. 19 Real Estate

Organization Name	Type Sector	Subsector	City
Atlantic Group & Associates	Off Airport	Real Estate: Architectural Design	Wallops

Suppliers

5.7

Appendix 5: Existing Business Sectors – Off Airport

Table 5. 20 Suppliers

Organization Name	Type Sector	Subsector	City
Saft America, Inc.	Off Airport	Supplier: Battery Manufacturer	Virginia Beach
Silicon Forest Electronics, Inc.	Off Airport	Supplier: Electronics	Lenoir
ADS, Inc.	Off Airport	Supplier: Federal UAS	Virginia Beach
Ideal Aerosmith, Inc.	Off Airport	Supplier: Test Instrumentation	Virginia Beach

UAS Services

Table 5. 21 UAS Services

Organization Name	Type Sector	Subsector	City
Lyfted Media	Off Airport	UAS Services	Virginia Beach
PrecisionHawk	Off Airport	UAS Services	Chesapeake
Zimbro Aerial Drone	Off Airport	UAS Services	Wicomico Church
Sentinel Robotic Solutions	Off Airport	UAS Services	Wallops
Virginia Spaceport Authority	Off Airport	UAS Services: Facility Management	Norfolk
Crenshaw, Ware & Martin PLC	Off Airport	UAS Services: Legal Services	Norfolk
Air Aspects	Off Airport	UAS Services: Photography	Chesapeake
Barton Ventures Inc	Off Airport	UAS Services: Pilot Services	Suffolk
The Drone Farm	Off Airport	UAS Services: Range Services	Fort Monroe
Ardenna (Acquired by Ondas Holdings)	Off Airport	UAS Services: Software Services	Hampton
TRC (former Draper Arden Associates)	Off Airport	UAS Services: Survey Services	Newport News
BNSF Railway	Off Airport	UAS Services: Survey Software	Seaford
DroneUp	Off Airport	UAS Services: Package Delivery	Virginia Beach

UAS Software

Table 5. 22 UAS Software

Organization Name	Type Sector	Subsector	City
Atlantic Drone Pros, LLC	Off Airport	UAS Software	Hampton

5.8

Appendix 6 - PHF Detailed Financial Analysis

Annual Economic Activity of Virginia's Nine Commercial Airports

Annual Economic Impact Overview

The annual economic impact of commercial airports in Virginia underscores the critical role these facilities play in the state's economy. Norfolk International Airport (ORF) generates significant economic activity with 14,920 jobs, $600 million in wages, and $1.8 billion in total economic activity. In contrast, Newport News/Williamsburg International Airport (PHF) contributes 2,490 jobs, $120 million in wages, and $410 million in economic activity. Despite the stark differences in scale, PHF's economic contributions are still vital to the regional economy, emphasizing the need for strategic planning to enhance its financial sustainability, as shown in the table 6.1 below.

Key Points:

- ORF has a substantial economic impact, with almost 15,000 jobs and $1.8 billion in economic activity.
- PHF, although smaller, still plays a significant role with nearly 2,500 jobs and $410 million in economic activity.
- The comparison highlights the importance of maximizing the economic potential of smaller airports like PHF.

Table 6. 1 Annual Economic Activity of Virginia's Nine Commercial Airports

Over 140,000 jobs, $7 Million in Wages and $21.8 Billion in Activity are Generated Annually by the 9 Commercial Airports in Virginia

	Total Consolidated Impacts $ in Millions		
	Jobs	**Wages**	**Economic Activity**
Charlottesville - Albemarle	2,220	$100	$300
Lynchburg Regional	1,770	$60	$180
Newport News – Williamsburg International	2,490	$120	$410
Norfolk International	14,920	$600	$1,800
Richmond International	15,760	$690	$2,090
Roanoke – Blacksburg Regional	3,050	$140	$480
Ronald Reagan Washington National	48,750	$2,690	$8,130
Shenandoah Valley Regional	430	$20	$60
Washington Dulles International	51,159	$2,950	$8,340
Total – All Commercial Service Airports	**140,540**	**$7,370**	**$21,790**

Source: Virginia Airport System Economic Impact Study 2018.

Appendix 6: PHF Detailed Financial Analysis

PHF FY23 and 1st 5-Months of FY24 Baseline Income Statement

Baseline Financial Performance

An analysis of PHF's baseline income statement for FY23 and the first five months of FY24 reveals a consistent financial struggle. In FY23, the airport generated $5.2 million in revenue but incurred $8.4 million in expenses, resulting in a $3.2 million loss. The first five months of FY24 show a similar trend, with $2.3 million in revenue against $2.7 million in expenses, leading to a $400,000 loss. This ongoing deficit highlights the urgency for the Peninsula Airport Commission (PAC) to explore alternative revenue streams and operational efficiencies. See table 6.2 below:

Key Points:
- The consistent financial loss over the analyzed periods shows a structural deficit.
- Expenses far exceed revenues, indicating inefficiencies or unsustainable operational costs.
- The necessity to explore new revenue streams and reduce expenses is critical for PHF's sustainability.

Table 6. 2 PHF FY23 and 1st 5-Months of FY24 Baseline Income Statement

BASELINE INCOME STATEMENT – For Illustration ONLY

Newport News/Williamsburg International Airport
FY 2023 and 1st 5 Months FY 2024

	CY2022/FY2023						CY 2023/FY2023						FY2023	CY2023/FY2024				
	July	August	September	October	November	December	January	February	March	April	May	June		July	August	September	October	November
Revenue																		
Airline Fees	$ 43,792	$ 47,903	$ 45,074	$ 41,791	$ 40,647	$ 34,730	$ 31,621	$ 32,896	$ 27,884	$ 29,074	$ 31,598	$ 29,164	$ 436,174	$ 39,062	$ 40,946	$ 42,733	$ 39,333	$ 35,581
Fixed Base Operators	76,056	16,092	44,998	45,934	41,833	42,193	41,643	42,009	38,697	51,251	48,517	52,315	541,539	52,019	50,497	46,135	49,230	47,283
Parking Lot	66,240	83,990	62,445	61,436	63,174	61,246	66,281	59,757	58,154	64,950	55,023	50,142	752,838	61,422	66,130	66,359	64,152	59,202
Property Rental	114,114	82,581	111,123	86,238	94,765	108,895	82,785	96,396	91,109	92,490	91,341	96,007	1,147,843	114,144	88,664	141,327	99,804	96,888
Rental Cars	169,957	178,134	181,131	234,952	180,663	154,252	158,985	104,027	120,646	141,729	144,095	172,831	1,941,402	159,079	181,489	186,788	169,992	158,025
Restaurant	25,173	32,844	31,367	36,538	35,583	42,254	31,758	26,926	30,729	23,391	19,190	26,648	362,442	31,172	28,440	22,500	24,191	25,482
Trailor Park	29	-	-	-	-	-	-	-	-	-	-	-	29	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	$ 495,362	$ 441,543	$ 476,138	$ 506,888	$ 456,666	$ 443,610	$ 413,673	$ 362,010	$ 367,219	$ 402,886	$ 389,764	$ 427,106	$ 5,182,266	$ 456,898	$ 456,165	$ 506,273	$ 446,701	$ 422,461
Expenses																		
Labor and Benefits	$329,807	$346,835	$370,768	$358,568	$392,101	$396,439	$352,690	$374,139	$367,417	$368,393	$336,973	$324,756	$4,318,886	$301,457	$302,978	$305,973	$291,971	$291,511
Marketing and Adv.	21,982	69,974	40,518	43,220	61,630	70,562	65,147	60,542	22,784	55,707	23,915	24,390	560,370	25,633	5,072	89	6,034	1,751
Office and Admin.	179,534	77,641	62,454	90,693	62,463	81,170	40,153	65,071	86,658	35,909	51,629	42,950	876,325	288,153	39,652	21,336	20,169	87,257
Repairs and Maint.	70,717	82,613	49,797	190,879	70,664	345,743	114,765	190,441	90,625	37,302	36,623	118,741	1,398,909	59,632	54,550	25,293	29,566	33,723
Restaurant	38,309	39,878	34,221	40,780	56,011	40,479	43,398	42,773	41,504	37,476	31,441	35,593	481,863	21,898	26,105	22,138	20,114	20,227
Utilities	65,982	58,791	60,224	50,494	104,893	46,730	66,708	75,633	56,455	55,919	105,239	51,453	798,520	54,133	70,895	68,890	66,115	111,550
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Operating Expense	$706,331	$675,732	$617,981	$774,633	$747,761	$961,124	$682,860	$808,599	$665,444	$590,705	$585,819	$597,883	$8,434,873	$750,905	$499,253	$443,720	$433,969	$546,019
Interest Expense on Bond Debt	$18,325	$21,112	$19,360	$19,205	$17,554	$18,892	$18,735	$18,577	$18,419	$18,260	$18,101	$20,534	$227,072	$55,100	$55,100	$55,100	$55,100	$55,100
Op Income After Interest	($229,293)	($255,300)	($161,204)	($286,950)	($308,649)	($556,406)	($288,522)	($465,166)	($316,644)	($206,079)	($214,156)	($191,311)	($3,479,679)	($349,107)	($98,188)	$7,453	($42,368)	($178,658)
- Cumulative Income After Interest		($484,593)	($645,797)	($932,747)	($1,241,396)	($1,797,801)	($2,086,323)	($2,551,489)	($2,868,133)	($3,074,213)	($3,288,368)	($3,479,679)		($3,828,786)	($3,926,974)	($3,919,521)	($3,961,890)	($4,140,546)

6.2

PHF Income Comparison of 1st 5-Months of FY24 to FY23

Comparative Income Analysis

Comparing the first five months of FY24 to the same period in FY23, PHF managed to reduce its operating expenses by $850,000. However, this reduction was partially offset by a $90,000 decline in revenue and a $180,000 increase in interest expenses. Despite these efforts, the airport still faced a net loss, indicating that expense reductions alone are insufficient to achieve financial stability. This comparison underscores the need for more significant structural changes, such as repurposing the airport for new aviation markets. See table 6.3 below:

Key Points:

- Significant reduction in expenses shows efforts to control costs.
- The decline in revenue despite cost-cutting measures indicates deeper issues.
- Increased interest expenses further strain financial stability.
- The need for new business models and markets to ensure long-term sustainability.

Table 6. 3 PHF Income Comparison of 1st 5-Months of FY24 to FY23

COMPARING 1ST 5 MONTHS OF FY 2024 V. FY 2023 – For Illustration ONLY

Newport News/Williamsburg International Airport
FY 2023 and 1st 5 Months FY 2024

	2022					2023					1st 5 Mos. FY 2024 v. FY 2023
	July	August	September	October	November	July	August	September	October	November	
Revenue											
Airline Fees	$ 43,792	$ 47,903	$ 45,074	$ 41,791	$ 40,647	$ 39,062	$ 40,946	$ 42,733	$ 39,333	$ 35,581	($21,552)
Fixed Base Operators	76,056	16,092	44,998	45,934	41,833	52,019	50,497	46,135	49,230	47,283	20,250
Parking Lot	66,240	83,990	62,445	61,436	63,174	61,422	66,130	66,359	64,152	59,202	(20,020)
Property Rental	114,114	82,581	111,123	86,238	94,765	114,144	88,664	141,327	99,804	96,888	52,006
Rental Cars	169,957	178,134	181,131	234,952	180,663	159,079	181,489	186,788	169,992	158,025	(89,464)
Restaurant	25,173	32,844	31,367	36,538	35,583	31,172	28,440	22,930	24,191	25,482	(29,290)
Trailer Park	29	-	-	-	-	-	-	-	-	-	(29)
Other	-	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	$495,362	$441,543	$476,138	$506,888	$456,666	$456,898	$456,165	$506,273	$446,701	$422,461	($88,098)
Expenses											
Labor and Benefits	$ 329,807	$ 346,835	$ 370,768	$ 358,568	$ 392,101	$301,457	$302,978	$305,973	$291,971	$291,511	($304,188)
Marketing and Adv.	21,982	69,974	40,518	43,220	61,630	25,633	5,072	89	6,034	1,751	($198,743)
Office and Admin.	179,534	77,641	62,454	90,693	62,463	288,153	39,652	21,336	20,169	87,257	($16,218)
Repairs and Maint.	70,717	82,613	49,797	190,879	70,664	59,632	54,550	25,293	29,566	33,723	($261,905)
Restaurant	38,309	39,878	34,221	40,780	56,011	21,898	26,105	22,138	20,114	20,227	($98,716)
Utilities	65,982	58,791	60,224	50,494	104,893	54,133	70,895	68,890	66,115	111,550	$31,200
Other	-	-	-	-	-	-	-	-	-	-	-
Total Operating Expense	$706,331	$675,732	$617,981	$774,633	$747,761	$750,905	$499,253	$443,720	$433,969	$546,019	($848,571)
Interest Expense on Bond Debt	$18,325	$21,112	$19,360	$19,205	$17,554	$ 55,100	$ 55,100	$ 55,100	$ 55,100	$ 55,100	$ 179,946
Op Income After Interest	($229,293)	($255,300)	($161,204)	($286,950)	($308,649)	($349,107)	($98,188)	$7,453	($42,368)	($178,658)	
	$ (229,293)	$ (484,593)	$ (645,797)	$ (932,747)	$(1,241,396)	$ (349,107)	$(447,295)	$(439,842)	$(482,210)	$ (660,869)	580,287

Appendix 6: PHF Detailed Financial Analysis

PHF Liquidity/Certain Assets for FY23 and 1st 5-Months of FY24

Liquidity Position

PHF's liquidity position is precarious, with its most liquid asset balances decreasing by over $5 million from the start of FY23 to the first five months of FY24. This decline is despite the sale of airport-owned land generating $4.5 million in cash. The airport's reliance on one-time cash infusions from asset sales and grants to maintain liquidity is unsustainable in the long term. This scenario stresses the importance of developing consistent revenue streams to stabilize the airport's financial health. See table 6.4 below:

Key Points:
- A significant decrease in liquid assets highlights cash flow issues.
- Reliance on one-time cash infusions is not a sustainable financial strategy.
- The need for stable and recurring revenue sources to improve liquidity.

*Table 6. 4 **PHF Liquidity/Certain Assets for FY23 and 1st 5-Months of FY24***

LIQUIDITY/CERTAIN ASSETS – For Illustration ONLY

Newport News/Williamsburg International Airport
FY 2023 and 1st 5 Months FY 2024

	Beg. Balance @ July 1, 2022	Beg. Balance @ July 1, 2023	July	August	September	October	November	Balance @ Nov. 30, 2023
PRIMIS OPERATING ACCOUNT	$ 1,897,646	$ 2,627,064	($301,238)	($114,682)	$45,990	$169,672	($41,747)	$ 2,385,058
CASHFLOW MONEY MRKT	6,411,771	6,470,663	5,496	5,500	5,150	5,687	0	6,492,496
PRIMIS CAPITAL ACCOUNT	4,128,395	3,445,262	0	(51,901)	(22,394)	484,735	(26,213)	3,829,490
PFC FUNDS	2,787,795	3,021,553	2,575	35,839	2,431	53,894	4	3,116,296
TOWNE BANK OPERATING ACCOUNT	-	-	0	0	895,209	0	0	895,209
-- SUB-TOTAL	$ 15,225,607	$ 15,564,542	($293,167)	($125,243)	$926,386	$713,988	($67,956)	$ 16,718,549
ACCOUNTS RECEIVABLE	43,892	58,968	16,291	(86,965)	11,541	7,271	57,677	$ 64,784
ACCOUNTS RECEIVABLE-FAA	442,451							442,451
ACCOUNTS RECEIVABLE-OTHER	197,250	202,000	0	0	0	0	0	202,000
ADVANCE/PREPAIDS	221,420	15,062	380	(3,466)	(4,893)	490	483	8,056
SUB-TOTAL ACCOUNTS RECIEVABLE/ ADVANCES/PREPAIDS	$ 462,562	$ 718,482	$16,671	($90,431)	$6,648	$7,762	$58,160	$ 717,291
BB&T BANK TRAILER PARK/CLOSURE	$ 872,282	$ 871,677	($55)	$0	($871,622)	$0	$0	($895,209)
BB&T BANK TRAILER PARK SECURITY DEPOSITS	23,532	23,532	0	0	(23,532)	0	0	(23,532)
CIP	$ 6,479,111	$ 1,826,068	$18,216	$62,039	($85,220)	$0	($200,356)	$1,620,746
Other	116,713	-	$0	$0	($0)	($917)	$0	($213,684)
Total Current Assets	$ 23,179,806	$ 19,004,300	($258,336)	($153,635)	($47,340)	$720,833	($210,152)	$17,924,162
Asset Sale Proceeds Included in Balance		$ 4,219,249				$ 195,000		
Change v. July 1, 2022								($5,255,645)
Change v. July 1, 2023								($1,080,138)

Source: PHF General Ledger

6.4

Appendix 6: PHF Detailed Financial Analysis

HF Line-Item Adjustments for FY23 and 1st 5-Months of FY24

Potential Cost Savings through Line-Item Adjustments

A detailed line-item adjustment analysis indicates significant potential for cost savings if PHF transitions away from commercial air service. Key adjustments include eliminating airline fee revenue, reducing parking lot revenue by 75%, and removing certain reimbursements. On the expense side, substantial cuts could be made in terminal maintenance, labor and benefits, and advertising. These adjustments reflect the operational shifts necessary for PHF to pivot towards more sustainable business models in emerging aviation sectors. See table 6.5 below:

Key Points:

- Potential cost savings through significant reductions in various expense categories.
- The elimination of specific revenue sources tied to commercial air service suggests a shift in business strategy.
- Focus on reducing high-cost areas such as terminal maintenance and labor.

*Table 6. 5 **PHF Line-Item Adjustments for FY23 and 1st 5-Months of FY24***

LINE-ITEM ADJUSTMENTS ASSUMING NO COMMERCIAL SERVICE – For Illustration ONLY — Newport News/Williamsburg International Airport — FY 2023 and 1st 5 Months FY 2024

6.5

PHF Pro Forma Income Statement FY23 and 1st 5-Months of FY24

Pro Forma Financial Performance without Commercial Air Service

The pro forma income statement, adjusted for the removal of commercial air service, shows PHF generating $5.6 million in revenue over the 17-month period, with expenses totaling $7.7 million. This would result in a reduced net loss of $2.1 million compared to the actual $3.6 million loss. Although the pro forma adjustments improve the financial picture, PHF would still need to explore additional revenue sources to achieve a break-even or profitable status. See table 6.6 below:

Key Points:

- Adjustments show potential improvement in financial performance without commercial air service.
- The need for additional revenue sources remains crucial to achieving profitability.
- Highlights the financial impact of transitioning away from traditional commercial air service models.

Table 6. 6 PHF Pro Forma Income Statement FY23 and 1st %-Months of FY24

PRO FORMA INCOME STATEMENT – NO COMMERCIAL SERVICE

Newport News/Williamsburg International Airport
FY 2023 and 1st 5 Months FY 2024

	CY2022/FY2023 July	August	September	October	November	December	CY2023/FY2023 January	February	March	April	May	June	FY 2023	CY2023/FY2024 July	August	September	October	November
Revenue																		
Airline Fees	-	-	-	-	-	-	-	-	(14,923)	-	-	-	(14,923)	-	-	-	-	-
Fixed Base Operators	76,056	16,092	44,998	45,934	41,833	42,193	41,643	42,009	38,697	51,251	48,517	52,315	541,539	52,019	50,497	46,135	49,230	47,283
Parking Lot	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Property Rental	104,208	71,973	79,991	72,745	77,158	87,625	72,378	82,318	80,656	82,037	80,804	85,452	977,344	103,589	78,083	105,812	83,884	85,665
Rental Cars	9,737	10,163	10,145	12,801	9,652	8,228	7,496	6,012	5,998	7,366	8,096	9,917	105,612	8,683	9,999	10,209	9,194	8,548
Restaurant	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-
Trailer Park	59	-	-	-	-	-	-	-	-	-	-	-	59	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Operating Revenue	$190,061	$98,227	$135,134	$131,480	$128,643	$138,047	$121,516	$130,339	$119,428	$140,655	$137,417	$147,684	$1,609,630	$164,291	$138,579	$162,157	$142,307	$141,497
Expenses																		
Labor and Benefits	120,191	127,755	133,134	127,863	127,886	132,545	118,289	128,020	118,984	132,123	118,840	115,183	1,500,813	101,677	110,272	101,972	100,496	96,351
Marketing and Adv.	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-
Office and Admin.	88,696	29,623	27,328	51,060	20,646	47,136	22,380	19,071	34,150	18,967	21,687	15,766	396,511	146,117	23,063	8,720	12,972	71,622
Repairs and Maint.	28,160	20,864	20,441	9,558	28,667	309,511	23,115	104,920	11,042	20,929	19,630	19,027	615,864	30,401	15,506	17,078	20,722	17,704
Restaurant	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-
Utilities	9,269	13,345	10,415	12,411	66,745	11,731	22,387	35,519	19,570	16,699	67,160	6,788	292,038	8,792	10,230	9,544	11,538	66,164
Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Operating Expense	$246,316	$191,587	$191,317	$200,892	$243,945	$500,923	$186,171	$287,538	$183,747	$188,758	$227,316	$156,764	$2,805,226	$286,987	$159,071	$137,314	$145,727	$251,841
Interest Expense on Bond Debt	$18,325	$21,112	$19,360	$19,205	$17,554	$18,892	$18,735	$18,577	$18,419	$18,260	$18,101	$20,534	$227,072	55,100	55,100	55,100	55,100	55,100
Op Income After Interest	($74,580)	($114,471)	($75,543)	($88,617)	($132,855)	($381,768)	($83,389)	($175,768)	($91,738)	($66,324)	($108,000)	($29,614)	($1,422,668)	($177,796)	($75,592)	($30,257)	($58,520)	($165,444)
- Cumulative Income After Interest	($574,580)	($689,052)	($764,595)	($853,213)	($986,066)	($867,835)	($951,224)	($1,126,992)	($1,218,729)	($1,285,053)	($1,393,054)	($1,422,668)		($1,600,464)	($1,676,056)	($1,706,313)	($1,764,833)	($1,930,278)

Appendix 6: PHF Detailed Financial Analysis

PHF Liquidity/Certain Assets (No PFCs) for FY23 and 1st 5-Months of FY24
Liquidity Impact without Passenger Facility Charges (PFCs)
Without Passenger Facility Charges (PFCs), PHF's liquidity position would become even more strained. The unrestricted cash balance would be limited, making it challenging to cover operating expenses without external financial support. This scenario emphasizes the importance of maintaining a diversified revenue base that is not overly reliant on any single source, such as PFCs, to ensure financial resilience. See table 6.7 below:

Key Points:
- Further strain on liquidity without PFC revenue.
- Unrestricted cash balance becomes critically low.
- Necessitates diversification of revenue streams to ensure financial stability.

Table 6. 7 PHF Liquidity/Certain Assets (No PFCs) for FY23 and 1st 5-Months of FY24

LIQUIDITY/CERTAIN ASSETS [NO PFCs] – For Illustration ONLY

Newport News/Williamsburg International Airport
FY 2023 and 1st 5 Months FY 2024

	Beg. Balance @ July 1, 2022	Beg. Balance @ July 1, 2023	July	August	September	October	November	Balance @ Nov. 30, 2023
PRIMIS OPERATING ACCOUNT	$ 1,897,646	$ 2,627,064	($301,238)	($114,682)	$45,990	$169,672	($41,747)	$ 2,385,058
CASHFLOW MONEY MRKT	6,411,771	6,470,663	5,496	5,500	5,150	5,687	0	6,492,496
PRIMIS CAPITAL ACCOUNT	4,128,395	3,445,262	0	(51,901)	(22,394)	484,735	(26,213)	3,829,490
PFC FUNDS	2,787,795	-						0
TOWNE BANK OPERATING ACCOUNT	-	-	0	0	895,209	0	0	895,209
-- SUB-TOTAL	$ 15,225,607	$ 12,542,989	($295,742)	($161,083)	$923,955	$660,094	($67,960)	$ 13,602,253
ACCOUNTS RECEIVABLE	43,892	58,968	16,291	(86,965)	11,541	7,271	57,677	$ 64,784
ACCOUNTS RECEIVABLE-FAA		442,451						442,451
ACCOUNTS RECEIVABLE-OTHER	197,250	202,000	0	0	0	0	0	202,000
ADVANCE/PREPAIDS	221,420	15,062	380	(3,466)	(4,893)	490	483	8,056
SUB-TOTAL ACCOUNTS RECIEVABLE/ ADVANCES/PREPAIDS	$ 462,562	$ 718,482	$16,671	($90,431)	$6,648	$7,762	$58,160	$ 717,291
BB&T BANK TRAILER PARK/CLOSURE	$ 872,282	$ 871,677	($55)	$0	($871,622)	$0	$0	($895,209)
BB&T BANK TRAILER PARK SECURITY DEPOSITS	23,532	23,532	0	0	(23,532)	0	0	(23,532)
CIP	$ 6,479,111	$ 1,826,068	$18,216	$62,039	($85,220)	$0	($200,356)	$1,620,746
Other	116,713	-	$2,575	$35,839	$2,431	$52,977	$4	$2,668,854
Total Current Assets	$ 23,179,806	$ 15,982,747	($258,336)	($153,635)	($47,340)	$720,833	($210,152)	$17,690,403
Asset Sale Proceeds Included in Balance		$ 4,219,249				$ 195,000		
					Change v. July 1, 2022			($5,489,403)
					Change v. July 1, 2023			$1,707,656

Source: PHF General Ledger

6.7

Appendix 6: PHF Detailed Financial Analysis

What Should the CPE be at PHF - FY23 and 1st 5-Months of FY24?

Cost Per Enplanement (CPE) Analysis

A detailed analysis of the Cost Per Enplanement (CPE) at Newport News-Williamsburg International Airport (PHF), table 6.8 below, reveals a significant shortfall in the funds collected versus what is required to maintain operations. The analysis, which considers both monthly and annual data, indicates that the actual CPE collected falls short of the necessary amounts to cover the airport's costs.

Table 6. 8 What Should the CPE be at PHF - FY23 and 1st 5-Months of FY24?

For FY23, the actual CPE collected was $1.2 million, whereas the required CPE to cover costs was $7.2 million, resulting in a shortfall of $6 million. The first five months of FY24 show a similar disparity, with $500,000 collected against the required $3 million, leading to a shortfall of $2.5 million. The table 6.9 below illustrates these figures in detail:

Table 6. 9 – PHF Actual vs. Required CPE

Period	Actual CPE Collected	Required CPE	Shortfall
FY23	$1.2M	$7.2M	$6M
First 5 Months of FY24	$0.5M	$3M	$2.5M

Appendix 6: PHF Detailed Financial Analysis

By comparing the actual CPE collected with the required amounts, figure 6.1, it becomes evident that the current rates are inadequate, necessitating a comprehensive review and adjustment to ensure the airport's operational efficiency and financial health.
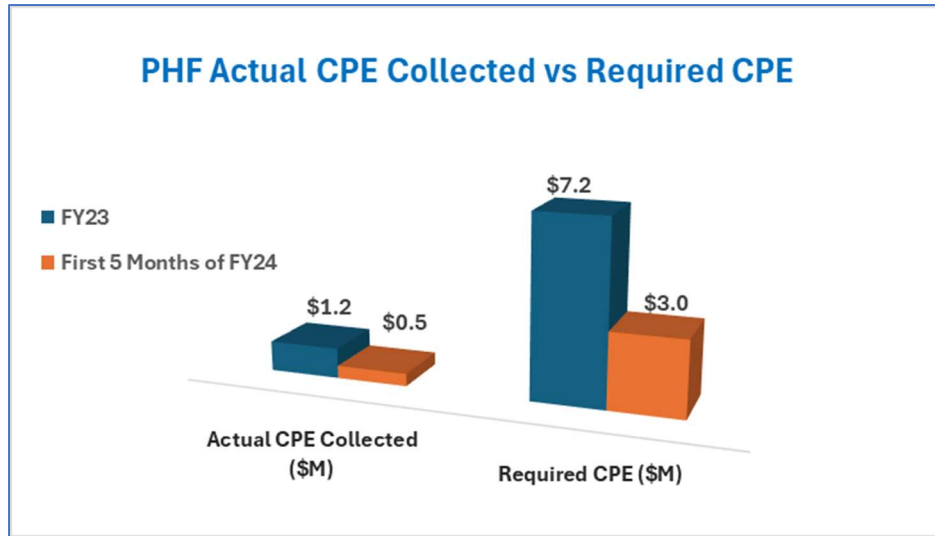
Figure 6. 1 PHF Actual vs Collected CPE

Appendix 6: PHF Detailed Financial Analysis

Airports Reliance on Small Jets for Over 90% of Departures

Analysis of Small Jet Reliance

Many airports, including PHF, rely heavily on small jets for the majority of their departures, as shown on table 6.9 below. However, the trend shows a significant reduction in the use of these smaller aircraft, with many airports losing this service as airlines phase out smaller jets in favor of larger, more efficient models. This shift has a profound impact on airports like PHF, which may struggle to maintain commercial service without these smaller jets.

Key Points:

- Decline in small jet usage across many airports.
- Impact on airports that rely heavily on small jets for departures.
- Need to adapt to changing airline strategies and aircraft types.

Table 6. 10 Airports Reliance on Small Jets for Over 90% of Departures

Airports That Rely on the Small Jet for 90% or More of Their Departures

	March 2023	No Longer Fit the Pct. of Depts. Definition	New Airports That Fit the Pct. of Depts. Definition	Airports That Have Consistently Fit the Pct. of Depts. Definition	Airports Fitting the Pct. of Depts. Definition in March 2024
American	19	-5	3	14	17
Delta	27	-27	0	0	0
United (Excl. CRJ-550)	59	-12	3	47	50
AA+DL+UA Overall*	63	-27	5	36	45

* Removed duplicates among the three network carriers.

6.10

Appendix 6: PHF Detailed Financial Analysis

FAA Definitions of Airports by Hub Size

FAA Airport Classification

The FAA classifies airports based on hub size, which affects their funding, resources, and strategic planning, see figure 6.1 below. PHF is classified as a non-hub airport, which means it faces different challenges and opportunities compared to larger hub airports. Understanding these classifications helps in planning and optimizing the airport's operations and development. See figure below:

Key Points:

- FAA classification impacts funding and strategic planning.
- Non-hub airports like PHF face unique challenges and opportunities.
- Importance of aligning airport strategy with FAA classifications.

FAA Definitions of Airports by Hub Size

Percent of 2022 Passenger Enplanements by Hub Size

	Large Hub	Medium Hub	Small Hub	Nonhub - Primary
FAA Definition (Pct. of Total U.S. Enplanements)	>1%	<1% but >0.25%	<0.25 but >0.05%	<0.05% with a minimum annual enplanement of 10,000
Number of Airports	31	33	73	256
Share of Total U.S. Enplanements	71.3%	16.6%	8.9%	3.1%
High (Enplanements in Millions)	ATL – 45.3	DAL– 7.8	ORF – 2.0	
Low (Enplanements in Millions)	HNL – 8.9	RNO – 2.1	MSO – 0.42	

Figure 6. 2 FAA Definitions of Airports by Hub Size

Average Airport Daily Seats & Airport Accessibility Index

Airport Accessibility and Capacity

The average daily seat available at an airport and its accessibility index are critical metrics that determine its competitiveness and service levels. PHF's average daily seats and accessibility index, figure 6.2, highlight the challenges it faces in attracting and retaining commercial air service compared to larger airports with higher capacity and better accessibility.

Key Points:

- Average daily seats and accessibility index are key competitiveness metrics.
- PHF faces challenges in maintaining service levels compared to larger airports.
- Need to improve accessibility and capacity to enhance competitiveness.
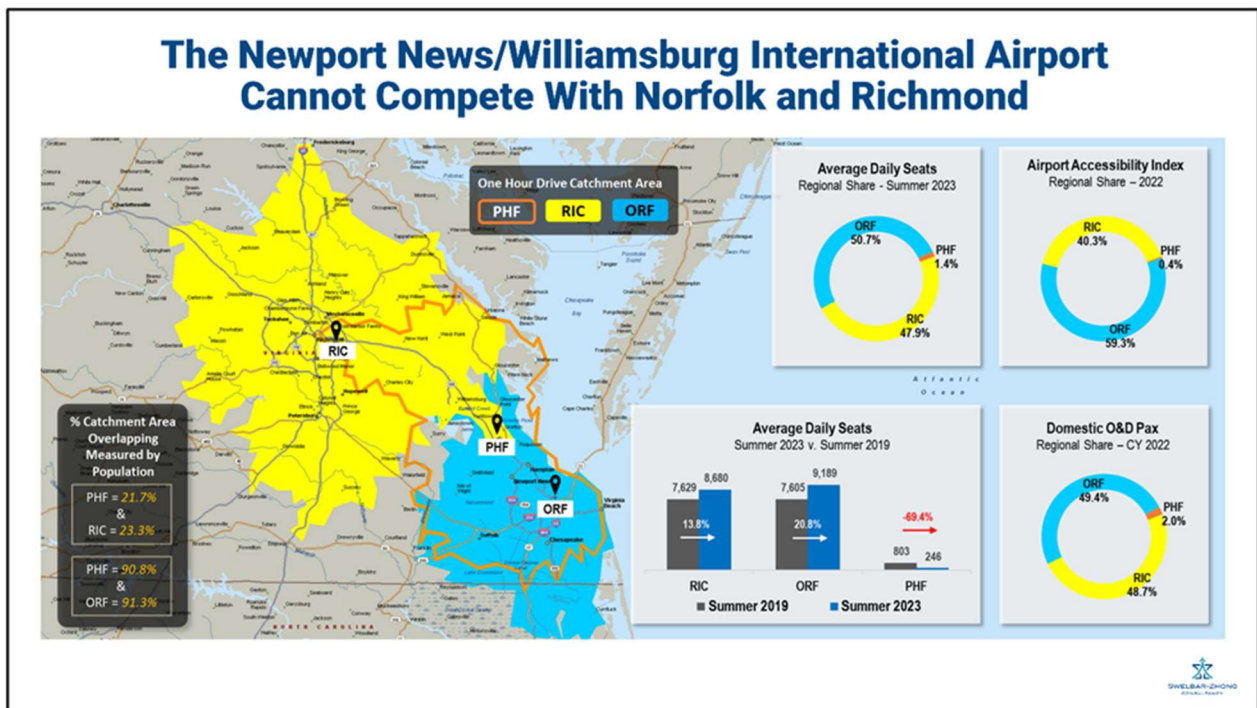
Figure 6. 3 Average Airport Daily Seats & Airport Accessibility Index

Conclusion

The detailed financial analysis of Newport News/Williamsburg International Airport (PHF) illustrates the profound challenges it faces in maintaining commercial air service. Several key issues have been identified:

- **Persistent Financial Deficits:** PHF consistently operates at a loss, with expenses far exceeding revenues. This unsustainable financial model highlights the urgent need for strategic changes.
- **Reliance on One-Time Cash Infusions:** PHF's financial stability has been heavily reliant on one-time cash infusions from asset sales and grants. This is not a sustainable long-term strategy, emphasizing the need for stable and recurring revenue sources.
- **Inadequate Passenger Facility Charge (PFC) Collections:** The current PFC rates are insufficient to cover the costs associated with maintaining commercial air service. There is a significant shortfall between the PFC collected and what is required, reinforcing the need to reassess and adjust PFC rates or find alternative revenue sources.
- **Decline in Small Jet Usage:** The reduction in the use of small jets, which PHF heavily relies on for departures, presents a significant challenge. As airlines phase out smaller jets in favor of larger, more efficient models, PHF must adapt to these changing strategies to maintain commercial service.
- **FAA Classification and Strategic Planning:** As a non-hub airport, PHF faces unique challenges and opportunities compared to larger hub airports. Understanding and aligning with FAA classifications is crucial for strategic planning and optimizing operations.
- **Airport Accessibility and Capacity:** PHF's average daily seats and accessibility index indicate challenges in attracting and retaining commercial air service. Improving accessibility and capacity is essential to enhance the airport's competitiveness.

Strategic Recommendations:

- **Explore New Revenue Streams:** PHF must diversify its revenue base by exploring new business opportunities in emerging aviation markets such as Advanced Air Mobility (AAM) and Unmanned Aerial Systems (UAS). This transition can help mitigate revenue losses from declining commercial air service.
- **Cost Reduction Initiatives:** Implementing significant cost reduction measures, such as reducing terminal maintenance, labor, and advertising expenses, can help improve the airport's financial performance.
- **Adjust PFC Rates:** Reassessing and adjusting PFC rates to align with the actual costs of maintaining commercial air service is essential. Alternatively, exploring other revenue sources to supplement PFC collections can help bridge the funding gap.
- **Leverage Strategic Partnerships:** Forming strategic partnerships with aviation and aerospace industries can position PHF as a hub for innovation and economic growth. These partnerships can attract new business opportunities and investments to the region.
- **Enhance Accessibility and Capacity:** Improving airport accessibility and increasing daily seat capacity can enhance PHF's competitiveness and attractiveness to airlines and passengers.

By focusing on these strategic recommendations, PHF can transform into a self-sustaining economic engine that supports the Hampton Roads region's economic development. Repurposing the airport to support emerging aviation markets presents a viable strategy for long-term financial stability and growth.

Appendix 7 - New Business Sectors

Background

Electric propulsion is reshaping the aviation landscape, introducing a diverse array of platforms, configurations, designs, and applications. This transformation in air transportation, often referred to as advanced air mobility (AAM), was conceptualized by NASA to encapsulate the evolving nature of aviation. The growth of Advanced Air Mobility (AAM) and Unmanned Aerial Vehicles (UAVs) presents new business opportunities within the on-and-off airport sectors. These activities include the establishment of maintenance and support facilities for eVTOL aircraft and UAVs, the integration of Unmanned Traffic Management (UTM) systems to manage UAV operations, and the development of logistics hubs to support UAV package delivery and medical supply transport. These new business activities can enhance the economic impact of airports and contribute to the region's innovation ecosystem. The status of this paradigm shift is encapsulated in the following figures 7.1 – 7.5, providing a comprehensive overview of the emerging platforms and their capabilities. [25]

AAM Funding: April 2024
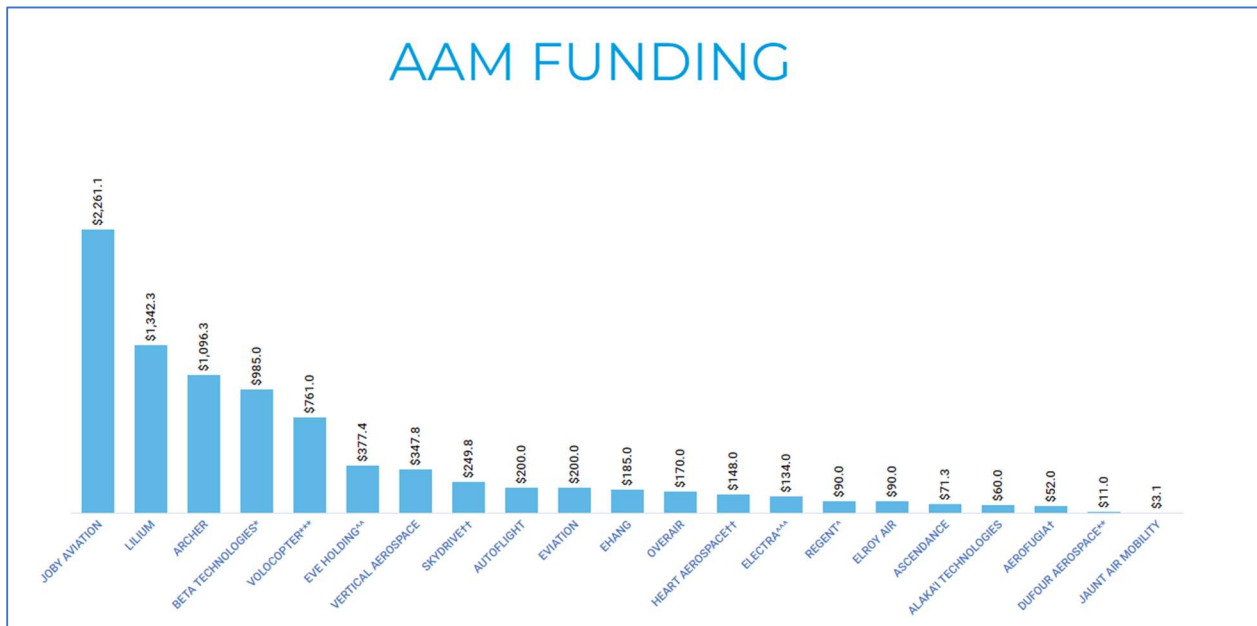
Figure 7. 1 AAM Funding April 2024

Appendix 7: New Business Sectors

AAM Entry Into Service (EIS): April 2024
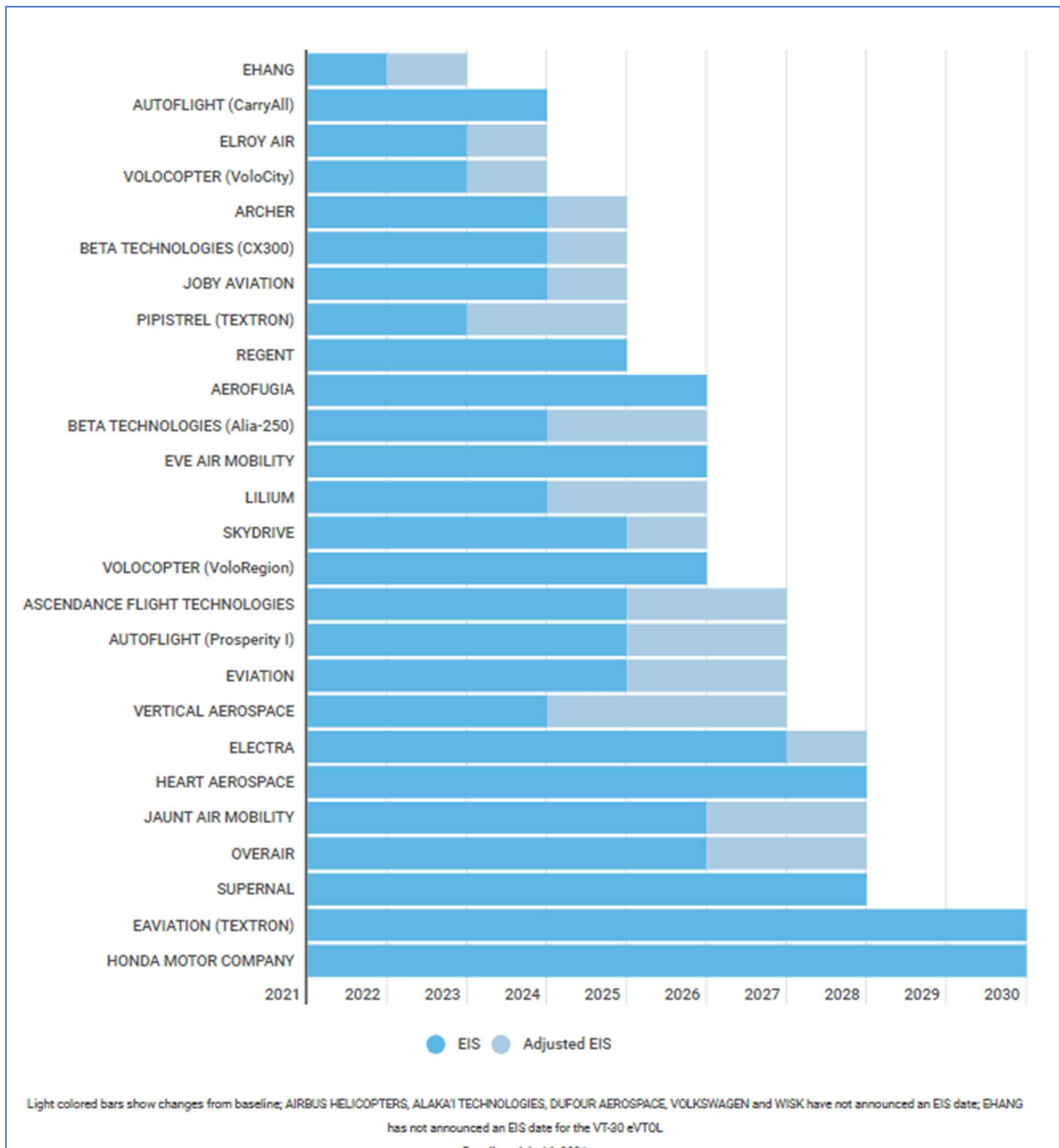
Figure 7. 2 AAM Entry Into Service (EIS) April 2024

Appendix 7: New Business Sectors

AAM Orders: April 2024
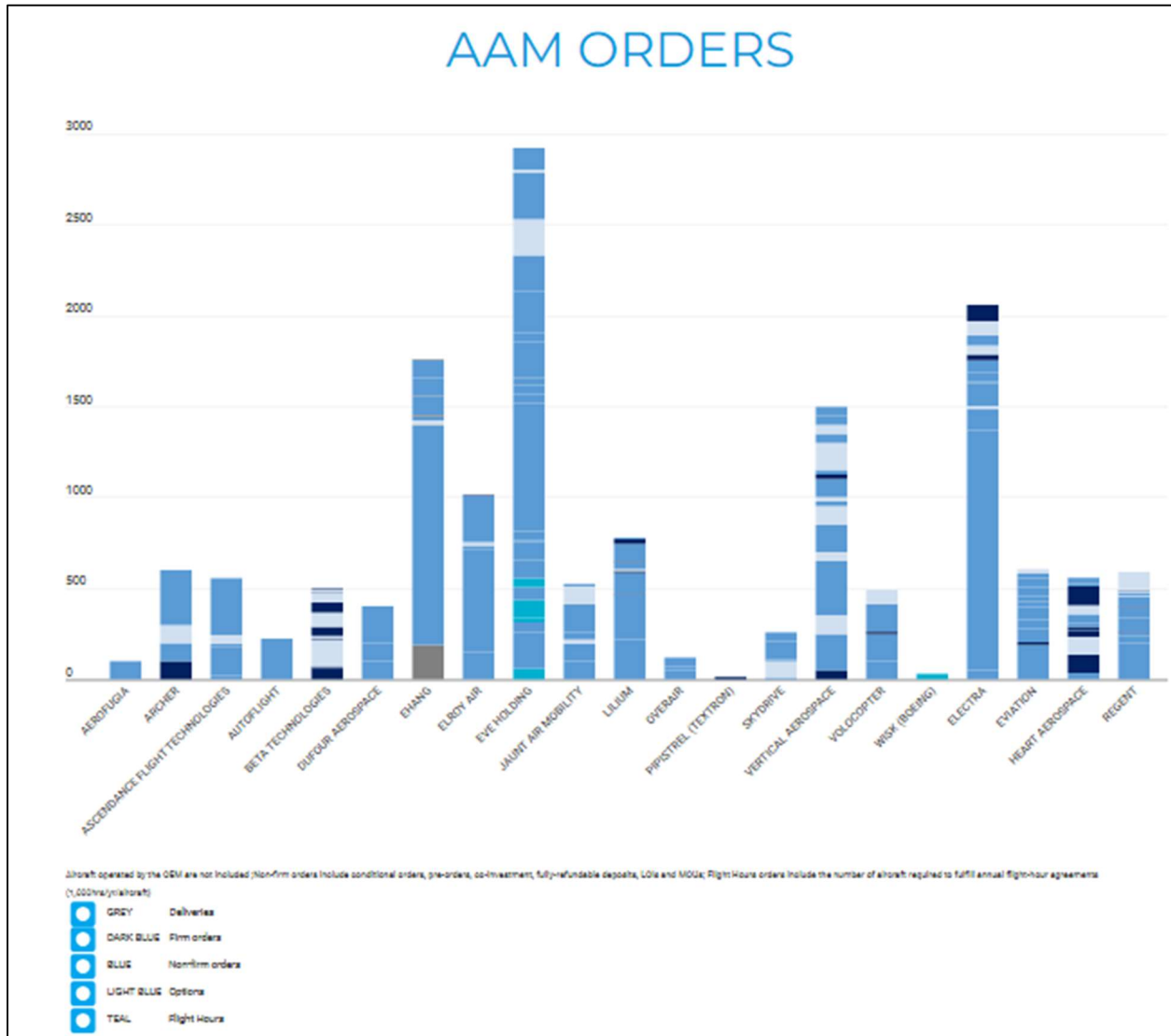
Figure 7. 3 AAM Orders April 2024

Appendix 7: New Business Sectors
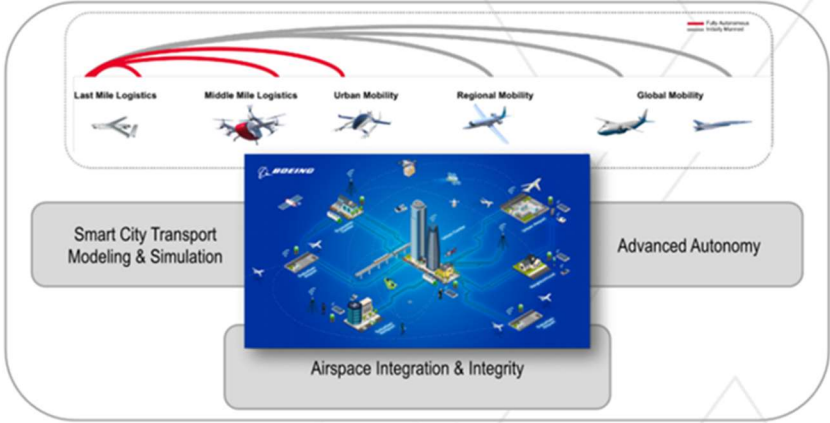
Figure 7. 4 AAM Launch Cities

Figure 7. 5 AAM Across the Size Spectrum

7.4

Appendix 7: New Business Sectors

Aviation Transformation by New Business Sectors

The Hampton Roads region is uniquely positioned to capitalize on emerging business sectors in advanced air mobility (AAM). By strategically prioritizing the development of infrastructure and services across various sectors, the region can enhance its capabilities, attract investment, and establish itself as a leader in the AAM industry. The following nine sectors, as summarized in table 7.1 below, are prioritized based on their anticipated timeline for technology readiness, current development status, and planned advancements. This strategic prioritization ensures that the region can harness immediate benefits while planning for long-term growth and sustainability

Rationale for Prioritization

The prioritization of these business sectors is driven by a comprehensive assessment of technological readiness, current developments, and strategic planning. The timeline for each sector is based on the anticipated maturity of technologies and the readiness for deployment, ensuring that Hampton Roads can maximize its economic impact and technological leadership. Sectors such as UAS Services and Charging Services are prioritized for immediate and short-term development due to their advanced state and regulatory support, while sectors like Hydrogen Aviation and Urban Air Mobility are positioned for long-term growth due to their evolving technologies and infrastructure requirements. This strategic approach ensures that Hampton Roads can capitalize on immediate opportunities while laying the groundwork for sustained future advancements.

Table 7. 1 Hampton Roads New Business Sectors (Minimum)

9 - New Business Sectors	Priority	Impact	Timeline
1. UAS Services - Training and Development	High	🔴 ⭐	1-2 years
2. Regional Air Mobility - Regional Air Services	Medium	🟢 ⏰	2-5 years
3. Charging Services for Electric Aviation	Medium	🟢 ⏰ $	2-5 years
4. Vertiport | Dropneport Development	High	🔴 ⭐	2-5 years
5. Hydrogen Aviation	Medium	🟢 ⏰ $	2-5 years
6. Coastal Transportation	High	🔴 ⏰ ⭐	2-5 years
7. Electric Aviation Flight Training Services	Medium	🟢 ⏰	5-10 years
8. Private Air Mobility	Low	🟢	5-10 years
9. Urban Air Mobility	Low	🔴 ⭐	5-10 years

Legend		
Priority	**Impact**	**Indicators**
High — Critical initiatives needing immediate attention.	🔴 High Impact - Major effect on objectives or results.	⭐ Indicates a major positive effect or benefit.
Medium — Important but not urgent.	🟡 Medium Impact - Significant but not crucial.	⏰ Time-sensitive or urgent.
Low — Beneficial but can be deferred without immediate con	🟢 Low Impact - Minor consequences.	$ High cost or significant investment required.

Appendix 7: New Business Sectors

New Sector 1 - UAS Services

Expanding unmanned aircraft systems (UAS) to include continual development, training, surveillance/survey/inspection operations, thus leveraging ongoing near-term FAA rulemaking to overcome regulatory barriers and enable Beyond Line of Sight (BVLOS) operations.

Establishing a core training and development capability enables regional new sub-markets in surveillance/survey/inspection, public safety, and cargo delivery (small & large) through advanced Unmanned Aerial Systems (UAS).

New Sector 1a – Training & Development Initiatives

Objectives: Training and Development
- Establish a Line of Sight (LOS) and Beyond Visual Line of Sight (BVLOS) training facility to position Hampton Roads as a leader in UAS operations.
- Army Collaboration: Engage with the Army to co-develop and test AAM technologies.
- NASA Partnership: Leverage relationships with NASA Langley to support continual AAM research and development.
- Education & Workforce Development: Encourage local universities & colleges to develop and enhance UAS-related programs, aligning educational outcomes with industry needs.

Rationale: UAS technology plays a crucial role in enhancing regional security, logistics, and emergency management capabilities. It provides:
- Improved surveillance and monitoring efficiencies, critical for both safety and environmental monitoring.
- Enhanced emergency response times and capabilities, crucial for rapid medical deliveries and disaster response.
- Economic benefits through job creation in high-tech sectors and the establishment of Hampton Roads as a hub for innovation and industry leadership.

Example:
- FAA's UTM Pilot Program [26]: Demonstrates the feasibility of BVLOS operations, encouraging the adoption of UAS in regional operations.
- DroneUp package delivery operations: Showcases successful commercial drone delivery, proving the concept for expanded services in Hampton Roads. [27]
- Choctaw Nation's Emerging Aviation Technology Center [28]: Offers insights into extensive BVLOS testing and its benefits to regional development.
- Pendleton UAS Test Range [29]: Demonstrates how regional facilities can enable comprehensive UAS testing and development.

Implementation Actions:
- Plan and develop the BVLOS training facility.
- Establish formal partnerships and collaboration projects.

Appendix 7: New Business Sectors

- Integrate UAS technologies into regional emergency response strategies.

Expected Outcomes:
- Operational training facility within two years.
- Enhanced regional capabilities in UAS operations.

Timeline: Short-term goals expected to be achieved within 1-2 years.

Ongoing Research: Ongoing developmental research in Virginia supports UAS LOS & BVLOS advancements:

Regional Robotics Hub Innovation Study (2021). Detailed insights are provided in Table 7.2.

Table 7. 2 Reginal Robotics Hub Innovation Study

Project Name GO Virginia Award Match & $ Paid Grant Period	Outcomes Achieved to date	Barriers	Products/Deliverables At Completion	Status
Regional Robotics Hub Innovation Study <u>Grant:</u> $ 73,000 <u>Match:</u> $ 38,000 <u>Paid:</u> **$ 26,676.85** 10/19/2020 -10/18/2021	• Feasibility study revised, finalized, and completed.	NONE	• Regional Robotics Innovation Hub Feasibility Study	⭐ COMPLETE

UxS Route/Corridor Study by ODU-VISA: Recently completed, with findings in Table 7.3.

Table 7. 3 UxS Route/Corridor Study

Project Name GO Virginia Award Match & $ Paid Grant Period	Outcomes Achieved to date	Barriers	Products/Deliverables At Completion	Status
Unmanned Autonomous Systems (UxS) Route/Corridor Study <u>Grant:</u> $100,000 <u>Match:</u> $ 74,500 <u>Paid:</u> **$ 99,233.19** 1/1/2022 – 12/31/2023	• Partnership with Riverside Health Systems and DroneUp yields $75K contract from VIPC to explore routes on Eastern Shore. • **RECEIVED a $1.9 M DOT SMART grant to support Drone Medical Package Delivery.** • Working with Sec. of Defense to link across services. • UxS Route Corridor Study COMPLETE	NONE	• Development and delivery of Unmanned Systems (UxS) Route/Corridor Study to include modeling/route planning, and market and feasibility study.	⭐ COMPLETE

7.7

Appendix 7: New Business Sectors

Preliminary AAM Routes and Corridors for SE Virginia: Illustrated in Figure 7.6.
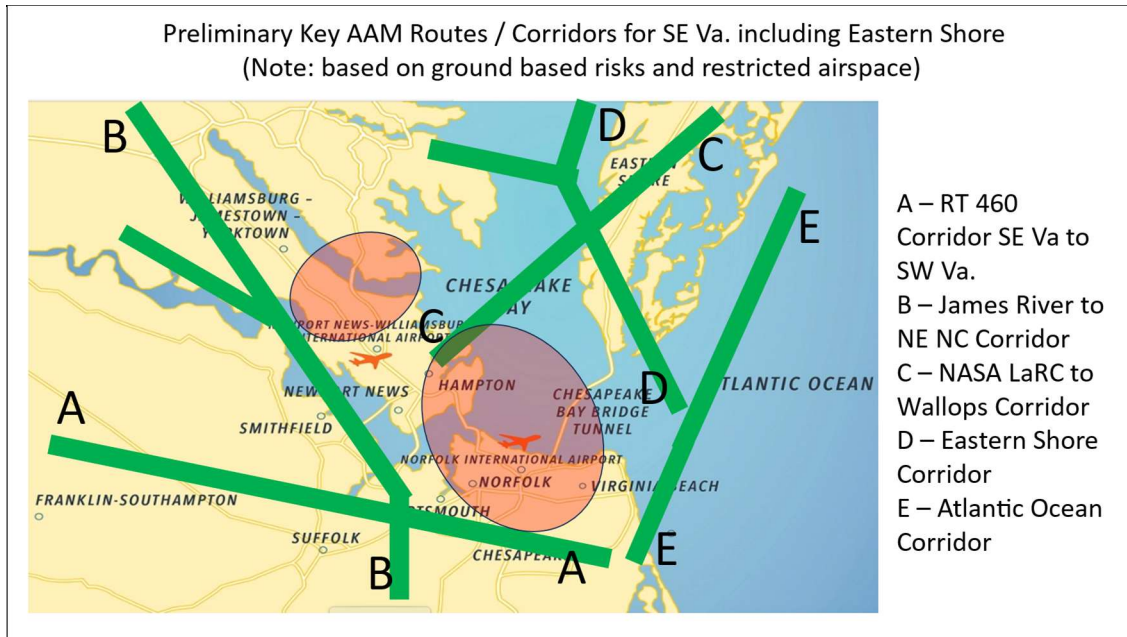
Figure 7. 6 SE Virginia Preliminary Routes/Corridors

USAF Tactical Autonomy University Affiliated Research Center (UARC).
The USAF has recently designated a HBCU led UARC for tactical autonomy. Resource planning is 90M over a five-year period. Led by Howard University, HBCU consortium partners include Norfolk State and Hampton Universities [30].

Army / USSOCOM AAM Infrastructure Research.
Army, via a Cooperative Research and Development Agreement (CRADA) with USI Inc, is developing an AAM infrastructure strategy to support three lines of operation for development and demonstration purposes; 1) UAS developments focused on intelligent teaming with Launched Effects 2) eVTOL and eSTOL use case evaluations, and 3) hydrogen propulsion applications.

NASA Langley High Density Vertiport Research.
NASA. Via the Space Act Agreement (SAA) with Longbow Group, is studying high density vertiports using drones as surrogates. BVLOS flights are intended to be completed from the NASA CERTAIN range to the airfield at Fort Monroe. Longbow Group, long term, is looking at coastal surveillance for the Hampton PD as an extension of this research.

eAviation & Drone Academy (eADA) UAS Development & Training Site.
eADA, located at Hampton Roads Executive Airport, has UAS LOS & BVLOS ranges in planning for training and developmental purposes. KPVG, supporting UAS operations since the early days of Hazon Aviation LLC, currently has a standing SOP for UAS Flight Operations. Planned ranges to support LOS & BVLOS operations are depicted in figure 7.7 below:

7.8

Figure 7. 7 eADA UAS Training and Development Site

Smart Cities "Tri-Airport" Middle-Mile Corridor Demonstration.
VIPC has seeded an effort to develop AAM infrastructure to support middle-mile distribution efforts connecting the Winchester, Stafford, and Warrenton airports as part of a "Smart Cities" initiative.

Eastern Shore Medical Supply Delivery Demonstration.
Riverside hospitals have partnered with DroneUp, Virginia Institute for Spaceflight & Autonomy (VISA) at Old Dominion University, the Accomack-Northampton Planning District Commission, and the Virginia Innovation Partnership Corporation (VIPC) to deliver prescription medications to patients who live on the Eastern Shore and Tangier Island.

Multi-State AAM Policy Collaboration.
VIPC has also recently established a multi-state collaboration forum with BVLOS infrastructure as one of the major topics. Effort has grown to 24 participating states.

AAM Minimal Viable Infrastructure Study.
VA Airport-Wide Study on AAM Minimum Viable Infrastructure, authored by VT MAAP, sponsored by DOAV recently released.

Talent Pathways Planning Initiative.
The Hampton Roads Workforce Council (HRWC) is developing the Region 5 Talent Pathways Initiative (TPI) plans for Region 5's cybersecurity/data analytics/modeling and simulation cluster, as well as the *unmanned systems and aerospace cluster*. HRWC will serve as the industry cluster talent-coordinating entity, utilizing labor market information and projections verified by an employer collaborative to form a tailored approach to the identified industry clusters.

First Responder Programs.
UAS programs, as a support tool for first responders, are in progress (varying levels of maturity) across the region. Programs include the communities of Norfolk, York County, Newport News, Virginia Beach, Chesapeake, and the Virginia State Police.

Blackstone AAF's FAA Vertiport Designation.
Military and federal airports in the region can play a pivotal role in the integration of Unmanned Aerial Vehicles (UAVs). By enhancing existing infrastructure with Unmanned Traffic Management (UTM) systems and dedicated UAV operational areas, these airports can support both military and commercial UAV applications. The "Minimum Viable Infrastructure (MVI)" report highlights the importance of leveraging existing military-federal assets to develop a robust UAV ecosystem

New Sector 1b - UAS Surveillance & Survey Applications

FAA rulemaking for BVLOS will potentially industry to scale rapidly for surveillance or survey purposes where distance and endurance are vital for commercial acceptance and growth.

Objectives: Surveillance / Survey / Inspection

- Develop a UAS LOS/BVLOS Training and Development Site to enhance regional UAS capabilities, supporting maintenance, training, and development.
- Grow public safety UAS services to enhance emergency response capabilities.
- Support regional federal organizations with their training and development needs, particularly in surveillance and data collection.

Assets: UAS OEMs, UAS Ranges, LOS & BVLOS (future). Dominion Energy UAS program, programs for First Responders across all communities, and the regional Virginia State Police. Military Small UAS organizations in Army, USMC, USN, and USSOCOM. The USN/USMC sUAS operator qualification facility at Fort Story.

Examples (OEM): Notable local UAS OEMs in this subsector include:
Advanced Aircraft Company (AAC). A manufacturer of distributed electric propulsion tilt-wing and multi-rotor uncrewed aircraft vehicles (UAV), selected by AFWERX, figure 7.8, for a Direct-to-Phase II contract in the amount of $1.25M focuses on its Hybrid Advanced Multirotor Unmanned Aircraft System (HAMR) to address the most pressing challenges in the Department of the Air Force (DAF).

Figure 7. 8 Advance Aircraft Company AFWERX

Hush Aerospace. Hush Aerospace, figure 7.9, is a UAV Design and Manufacturing company located in an 88k square foot facility in Virginia Beach, VA with an international office located in the UK. Hush Aerospace Headquarters houses an Indoor Flight Test Range, Design, and Manufacturing floors within the facility.

Figure 7. 9 Hush Aerospace

Examples (Service User): Notable local service users in this subsector include:

<u>Railways in Virginia.</u> Railway inspections are a critical component of maintaining the safety and efficiency of Virginia's extensive rail network. Utilizing UAS technology for these inspections offers significant advantages, including enhanced precision, reduced inspection times, and the ability to access hard-to-reach areas. Figure 7.10 below illustrates the comprehensive railway system in Virginia, highlighting the key routes that can benefit from UAS surveillance and survey applications.
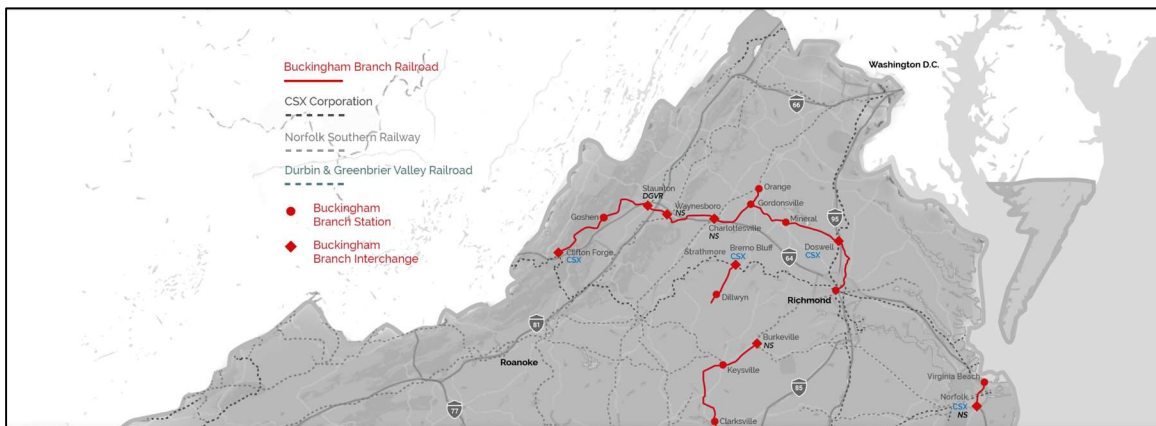
Figure 7. 10 Railways in Virginia

<u>Offshore Wind Farms</u>. Offshore wind energy is rapidly becoming a significant focus in Hampton Roads, contributing to the region's clean energy goals and economic development. UAS technology plays a crucial role in this sector by providing efficient and cost-effective surveillance and survey capabilities for wind farms. These applications enhance the maintenance, monitoring, and operational efficiency of offshore wind turbines, ensuring their optimal performance and reducing the need for hazardous manual inspections. The Coastal Virginia

Appendix 7: New Business Sectors

Offshore Wind (CVOW) project, spearheaded by Dominion Energy, is a prominent example in the Hampton Roads area. Located off the coast of Virginia Beach, CVOW aims to generate clean, renewable energy and significantly contribute to the region's economic growth. Integrating UAS into offshore wind operations aligns with the broader goals of the Hampton Roads Economic Development Plan, which include fostering sustainable economic growth, creating high-quality jobs, and positioning the region as a leader in advanced energy technologies. See figure 7.11 below for a visual representation of the CVOW project under construction:

Figure 7. 11 CVOW Project Under Construction

Recommendations:
- Develop a UAS training and development range to support UAS end users, military and civil, and the use-cases they require for longevity.
- Service end user needs for maintenance, currency training, development work, and training of advanced skills for LOS and BVLOS flight requirements.
- A training and development center will foster continued growth in this sector attracting more end users and OEMs.

7.13

New Sector 1c - Unmanned Small Cargo Delivery

Based on initial efforts, expand small cargo delivery services across all Riverside hospitals, all Walmart stores in the region, and establish UAS Delivery Kiosk deliveries for high population centers across the region.

Objectives: Unmanned Small & Large Cargo Delivery

- Expand UAS package and medical supply delivery systems in collaboration with regional hospitals and industry leaders to improve efficiency.
- Partner with VTOL operators and energy companies for infrastructure inspections and offshore services.
- Establish a regional hub for large cargo UAS operations, leveraging existing air cargo assets and infrastructure.

Assets. ODU VISA experimentation on the Eastern Shore. DroneUp headquarters in Virginia Beach. DroneUp executing WalMart aerial deliveries from two regional WalMart stores.

Examples. The top three small cargo, final-mile delivery firms are:

DroneUp, figure 7.12.

Figure 7. 12 DroneUp

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Zipline, figure 7.13.

Figure 7. 13 Zipline

Wing, figure 7.14.

Figure 7. 14 Wing

Recommendations:
- Pursue UAS package & medical supply delivery expansion across the region.
- Seek partnerships with other hospitals in the region.
- Partner with industry leaders to support a regional package delivery plan.

7.15

New Sector 1d - Unmanned Large Cargo Delivery

Autonomy and electric technologies are rapidly enabling unmanned services for large cargos (hundreds of lbs) to supplement current manned Air Cargo routes and potentially establish new "middle mile" routes connecting distribution centers for UPS, FEDEX, AMAZON, etc.

Objectives: Unmanned Large Cargo Delivery

- Expand large UAS package and medical supply delivery systems in collaboration with regional distribution center and industry leaders to improve efficiency.
- Partner with VTOL operators and energy companies for middle-mile distribution delivery and offshore services.
- Establish a regional hub for large cargo UAS operations, leveraging existing air cargo assets and infrastructure.

Assets: ORF maintains traditional air cargo services for the region.

Examples:

Reliable Robotics. Reliable Robotics, figure 7.15, Has Earned Military Airworthiness for Remotely Piloted Caravan.

Figure 7. 15 Reliable Robotics – Remotely Piloted Caravan

Elroy Air. Elroy Air, figure 7.16, Autonomous Hybrid Electric VTOL Makes Historic First Flight

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Figure 7. 16 Elroy Air Autonomous eVTOL

Recommandation(s) :

- Expand existing Air Cargo business sector support to include eVTOL & UAS operations.
- Pursue Air Cargo OEMs or Operator Early Adopters to develop in Hampton Roads.
- Pursue Early Adopter, preferably military or federal, near term.
- Pursue long term development of UAS Large Cargo Vertiport Hub connecting regional distribution centers to service the Hampton Roads Communities.
- Engage VTOL operators & Dominion Energy on Wind Farm VTOL services.

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New Sector 2 - Regional Air Mobility
Developing operations to support regional air services that connect Hampton Roads with the mid-Atlantic region, utilizing new electric and hybrid aircraft technologies. Hampton Roads should be a good fit for Regional Air Services to connect the HR communities (10+7 airports) as well the mid-Atlantic region (HR as hub to Richmond, Raleigh, Wash DC Metro, Baltimore, Outer Banks)

Objective: Establish Hampton Roads as a central hub for Regional Air Mobility (RAM), enhancing connectivity and transport efficiency across the region.
- Public Charter Development: Encourage the establishment and growth of the public charter sector.
- RAM Hub: Develop infrastructure and policy support to establish Hampton Roads as a key player in RAM.
- Innovative Partnerships: Cultivate relationships with early adopters and potential investors.
- Wind Farm Services Use Case: Partner with VTOL operators and Dominion Energy for offshore wind farm services.

Rationale: RAM offers a solution to urban and regional transport challenges, providing efficient, sustainable alternatives to traditional transport methods. It aligns with environmental goals and public demand for quicker, more efficient travel options.

Implementation Actions:
- Conduct market and feasibility studies.
- Develop partnerships for infrastructure and operational support.
- Implement pilot projects to test and refine services.

Expected Outcomes:
- Established RAM operations enhancing regional connectivity.
- Infrastructure and policy framework supporting sustainable air transport.

Timeline: Medium-term implementation with milestones set for 2-5 years.

Assets: Existing Charter service providers utilizing business jets or helicopters.

Examples:
- Lilium and Atlantic Aviation: Preparation for the launch of regional air mobility services in the U.S. [31].
- Investments in RAM: Over $1.1 billion invested since 2015, demonstrating growing industry interest and potential. [32].

- NASA Advanced Air Mobility Study for Public Good: Highlights the economic and social benefits of AAM [33].
- JSX's Aircraft Acquisition Plans. JSX Announces Order for up to 332 Electric Hybrid Aircraft. Air carrier JSX, which currently flies 50-seat regional jets with just 30 seats and operates their all-first-class product from private terminals, announced plans to acquire up to 332 hybrid electric aircraft with expected delivery beginning in 2028. Example shown in figures 7.17 to 7.19 below:

Figure 7. 17 Up to 150 19-seat Aura Aero Eras (50 firm orders, 100 options)

Figure 7. 18 Up to 82 9-seat Electra eSTOLs (32 firm orders, 50 options)

Figure 7. 19 Up to 100 30-seat Heart Aerospace ES-30s (50 firm order, 50 options)

Recommendation(s):

- Attract Public Charter on-demand business segment for potential growth.
- Attract an Early Adopter, preferably military or federal, near term.
- Establish a Regional Air Mobility hub in Hampton Roads for regional, state, or mid-Atlantic support.
- Pursue long term development of civil Regional Air Services Hub w/multiple regional airports and/or vertiports to service the Hampton Roads Communities.

New Sector 3 - Multi-Modal Charging Services
Establishing a network of charging stations to support the growing fleet of electric vertical takeoff and landing (eVTOL) aircraft and other electric vehicles. There are no public eVTOL charging systems currently in the Hampton Roads region. Identify potential needs and use-cases that are attractive to early adopter developers and users.

Objective: Develop and implement a robust infrastructure for charging electric and hybrid-electric aircraft, supporting the expansion of UAS and eVTOL operations.
- Initial Capability Setup: Establish basic charging infrastructure to meet current demands.
- Long-Term Network Development: Expand the charging network to support a growing number of electric aircraft.

Rationale: Charging infrastructure is crucial for the adoption and sustainability of electric aviation, which promises reduced emissions and operational costs.

Implementation Actions:
- Identify strategic locations for initial charging stations.
- Partner with technology providers and infrastructure experts.

Expected Outcomes:
- Functional charging stations operational within five years.
- Enhanced support for electric and hybrid-electric aviation operations.

Timeline: Develop initial infrastructure within 2-5 years, with ongoing expansion aligned with sector growth.

Assets. KPVG currently has single charging system to support private customer's Pipestrel Electro.

Examples: Details on charging infrastructure developments are showcased in Figures 7.20 to 7.23. Additionally:
- FAA's Vertiport Design and Electrical Infrastructure Study: Highlights the importance of integrating charging infrastructure into new vertiports [34].
- Atlantic Aviation and BETA Technologies: Partnership to deploy charging stations across the U.S. [35].
- Virginia Department of Aviation's 2024 Grants: For developing EV and eVTOL charging infrastructure bolster this initiative by providing necessary funding and support [36].
- Department of Defense's successful demonstration of eVTOL capabilities, which includes the development of military eVTOL charging solutions [37].

Beta Charge Cube. Beta Technologies provides, figure 7.20, a Combined Charging System (CCS)

Figure 7. 20 Beta Charge Cube
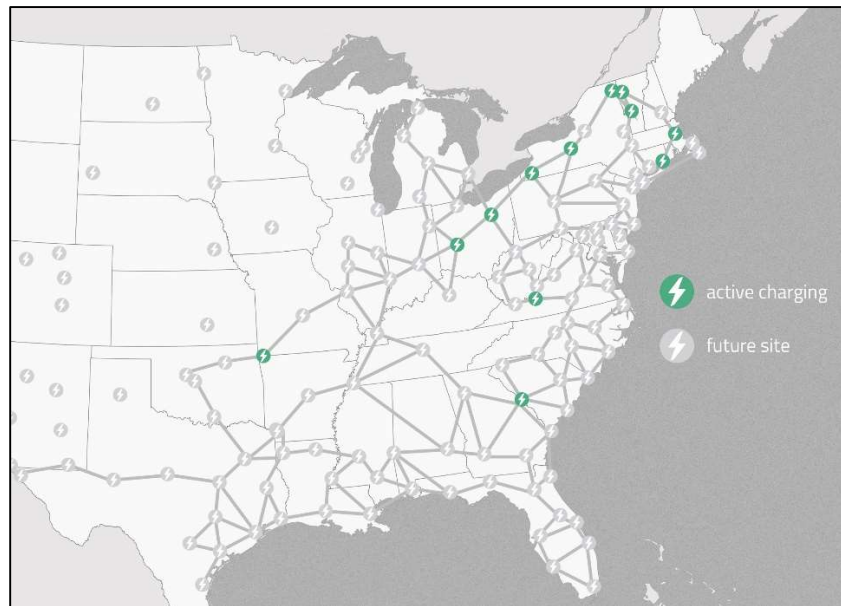
Figure 7. 21 Beta Nation-Wide Charging Network

Beta's nation-wide charging network is being built out now. They have 9 publicly accessible electric chargers online, more than 55 sites in permitting or construction, and plans for 150 online by 2025. Beta, teamed with Atlantic Aviation, may implement charging at PHF. Beta has indicated a potential of six charging locations in VA to support early adopters of the Alia-250 CTOL.

Joby GEACS. The installation of electrical infrastructure to support Joby's Global Electric Aviation Charging System (GEACS), figure 7.22, comes as part of Clay Lacy's planned $100 million

redevelopment of its fixed-based operator (FBO) terminal at SNA, targeting completion in mid-2025.

Figure 7. 22 Joby's Global Electric Aviation Charging System (GEACS)

Recommendations:

- Attract an Early Adopter, preferably military or federal, near term with a need for eVTOL Charging development and fielding in the Hampton Roads region.
- Pursue long term development of an eVTOL charging system network to service early adopters for the Hampton Roads Communities.

Appendix 7: New Business Sectors

New Sector 4 - Vertiport |Droneport Development & Management
There are no Vertiports | Droneports currently in detailed planning or in build for the Hampton Roads region. Establishing an Air Taxi hub or a Regional Air Mobility services hub requires vertiport development across Hampton Roads. The successful integration of Advanced Air Mobility (AAM) into Hampton Roads' aviation infrastructure requires significant investment in specialized infrastructure. Underutilized airports such as Newport News/Williamsburg International Airport (PHF) and Suffolk Executive Airport (PVG) present valuable opportunities for development. These airports can be enhanced to include vertiports and charging stations for electric vertical takeoff and landing (eVTOL) aircraft, leveraging existing aviation infrastructure to support the growth of AAM in the region. Creating specialized infrastructure at underutilized airports to support Vertiport and Droneport operations, will enhance connectivity and service capabilities in the region.

Objectives: Develop infrastructure to support the safe and efficient operation of eVTOL and drones, enhancing urban and regional air mobility.

- Infrastructure Planning: Plan and build vertiports and droneports in strategic locations.
- Certification and Regulation: Work with regulatory bodies to ensure compliance and safety.
- Community Engagement: Involve local communities in planning and development processes to foster public acceptance.

Rationale: Vertiports and droneports are essential for the integration of new air mobility technologies into existing urban environments, supporting both commercial and emergency service applications.

Implementation Actions:
- Develop design and construction standards for vertiports/droneports.
- Engage with regulatory authorities and community stakeholders.

Expected Outcomes:
- Operational vertiports and droneports facilitating new air mobility solutions.
- Regulatory and community support for expanded air mobility operations.

Timeline: Medium-term goals with completion expected within 2-5 years.

Assets: None regionally. Blackstone AAF recently designated by FAA and Virginia as the nation's first vertiport.

Examples:
- Blackstone Vertiport: The nation's first vertiport, serving as a model for other regions [38].

7.24

- DroneUp's operations in Virginia Beach [27] demonstrate the growing viability of droneport infrastructure.
- Skyports Collaboration: Port Authority of New York and New Jersey to explore middle-mile drone logistics [39].

Ferrovial. A Leading Global Infrastructure Investor and Operator, figure 7.23. They are leading the way to develop networks of interconnected, sustainable vertiports around the world. We aim to design, build, and operate the infrastructure required by eVTOL aircraft.
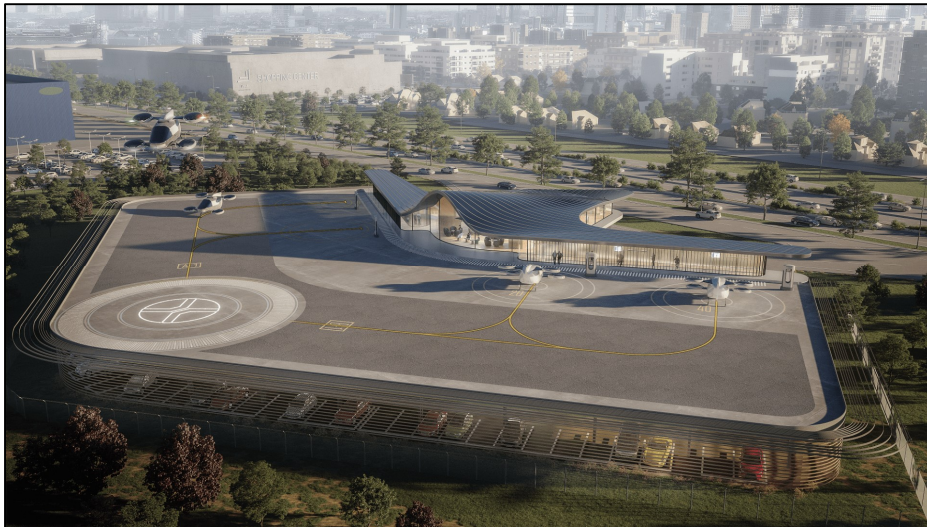

Figure 7. 23 Ferrovial Global Infratsructure

Skyports. Skyports designs, figure 7-24, builds, owns, and operates networks of vertiports, enabling safe and efficient urban air transport in major markets around the globe.

Figure 7. 24 Skyports Vertiports

7.25

Recommendations:

- Seek Vertiport qualifications, leveraging Blackstone, where regionally appropriate.
- Regional Master Planning or recurring Airport Master Plans should be updated, when appropriate, to consider Vertiports as part of a future vision and footprint.

Appendix 7: New Business Sectors

New Sector 5 - Hydrogen Aviation

Developers and early adopters all recognize the technological limitations of pure battery propulsion solutions. Subsequently, industry is pursuing solutions that are hybrid-electric or hydrogen as feedstock for propulsion.

Subsectors. H2 Fixed Wing Passenger Carriers, H2 eVTOL, H2 UAS, H2 Production, H2 Storage, H2 Transportation, H2 Servicing.

Objectives: Develop and implement hydrogen fuel technologies for aviation, positioning Hampton Roads as a leader in sustainable aerospace solutions.

- Development Partnerships: Collaborate with aerospace manufacturers and research institutions to advance hydrogen technology in aviation.
- Infrastructure Investments: Build the necessary infrastructure for hydrogen production, storage, and refueling at airports.
- Policy and Regulatory Support: Advocate for supportive policies and regulations that facilitate the adoption of hydrogen in aviation.

Rationale: Hydrogen offers a clean, efficient alternative to traditional fossil fuels, aligning with global efforts to reduce aviation emissions and dependence on oil. The development of hydrogen hubs across the United States plays a crucial role in decarbonizing hard-to-electrify sectors, including aviation [40].

Implementation Actions:

- Initiate pilot projects to test hydrogen-powered aircraft.
- Develop partnerships for hydrogen supply and technology development.
- Engage with regulatory bodies to ensure safety and compliance.

Expected Outcomes:

- Established hydrogen infrastructure supporting aviation needs.
- Initial deployment of hydrogen-powered aircraft for regional flights.

Timeline: Medium-term goals, with infrastructure development and initial testing from 2-5 years.

Assets:

Research and Development Initiatives.

GO Virginia Region 5 Hampton Roads Energy Needs Assessment, table 7.4 below.

Appendix 7: New Business Sectors

Table 7. 4 GOVA Region 5 Hampton Roads Energy Needs Assessment

Project Name GO Virginia Award Match & $ Paid Grant Period	Outcomes Achieved to date	Barriers	Products/Deliverables At Completion	Status
Hampton Roads Energy Needs Assessment <u>Grant:</u> $ 84,000 <u>Match:</u> $ 42,000 <u>Paid:</u> $ 84,000 **10/1/2021 – 6/1/2023**	• PA Consulting delivered final document for the Hampton Roads Energy Roadmap which provides 14 actions, grouped under 8 goals, within 3 areas of focus (Stakeholder Collaboration and Education, Gas Supply and Infrastructure, and Electric Infrastructure and Technology. • Inflation Reduction Act Addendum	Federal Inflation Reduction Act (IRA) has yet to be finalized.	• Hampton Roads Regional Energy Needs Assessment	⭐ **COMPLETE**

<u>Dominion Energy.</u> Figures 7.25 to 7.28 below.
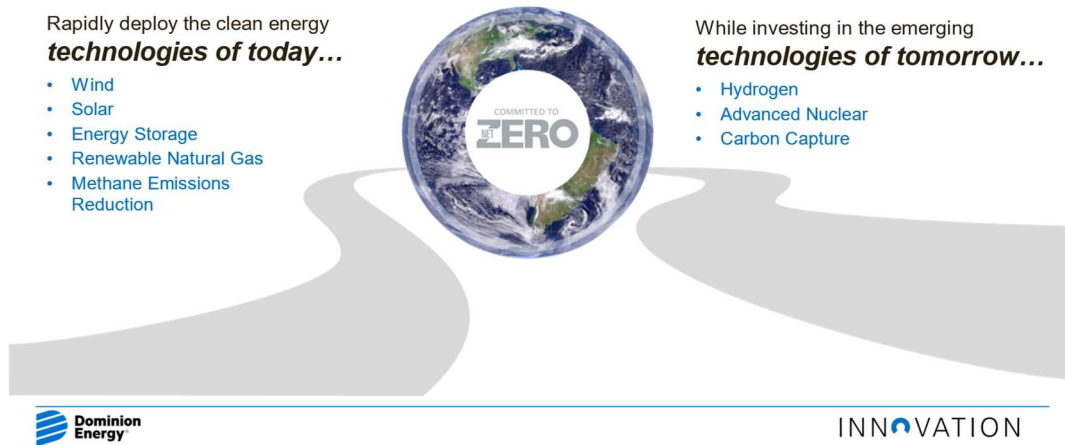
Figure 7. 25 Net Zero by 2050

Figure 7. 26 Virginia Coastal Offshore Wind (CVOW)

Figure 7. 27 Dominion Energy Hydrogen Exploration
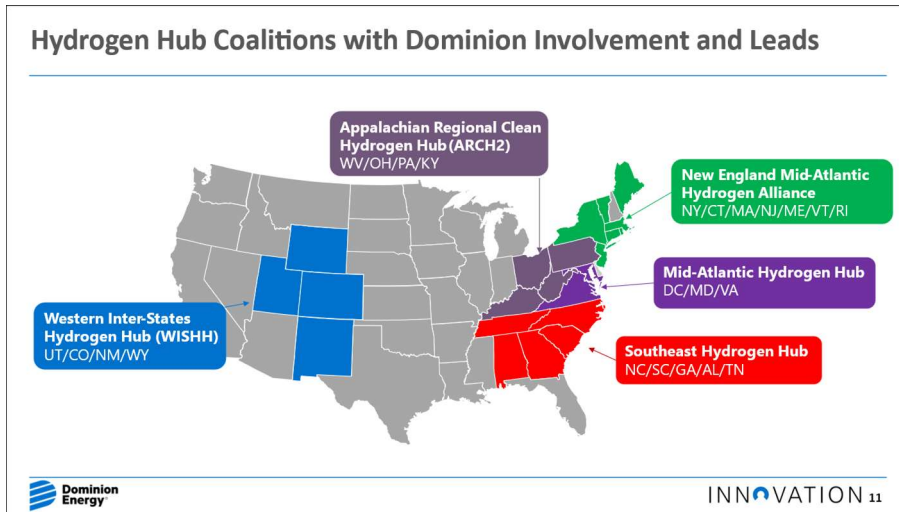
Figure 7. 28 Dominion Energy Hydrogen Hub Coalitions

E1 AIR. Figures 7.29 to 7.30 below.
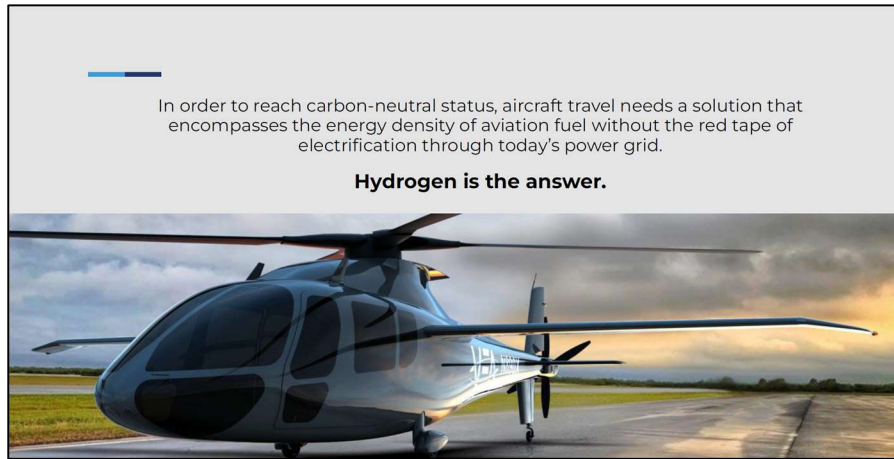
Figure 7. 29 E1 Air Hydrogen
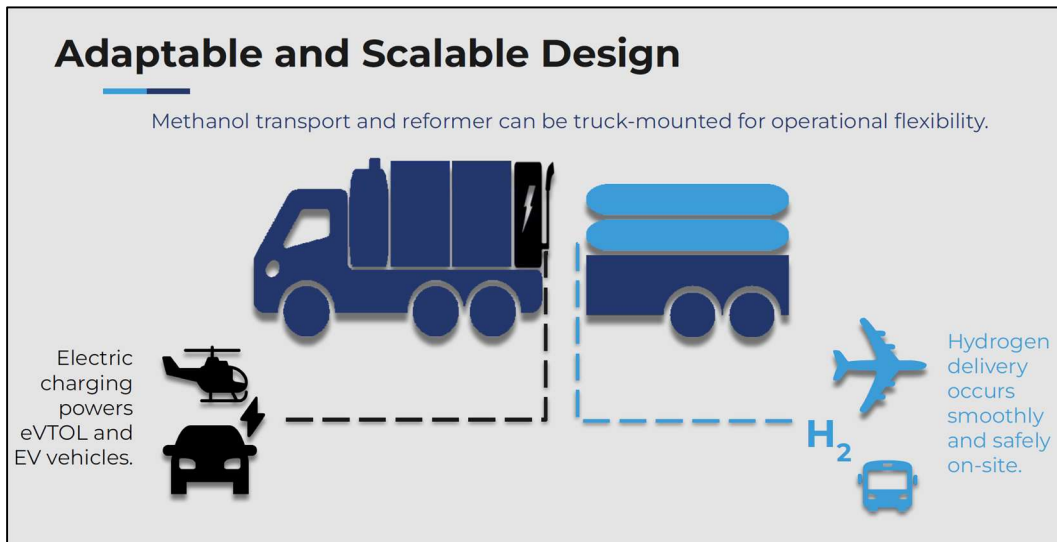
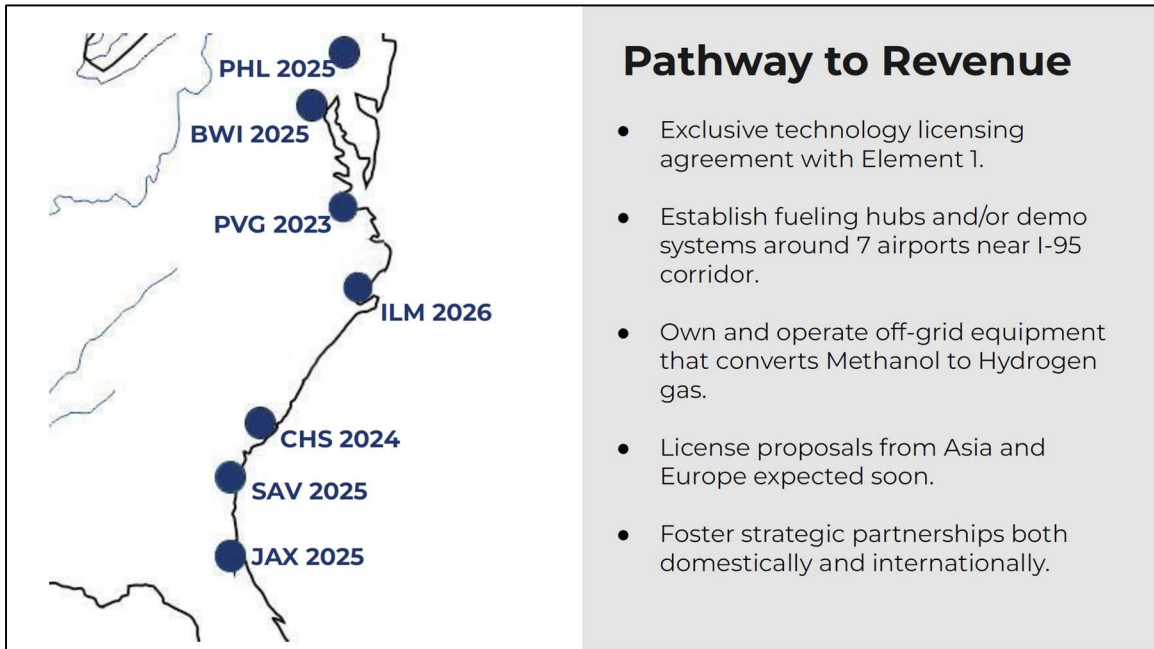*Figure 7. 30 E1 Adaptable & Scalable Design (Hydrogen)*

7.30

Figure 7. 31 E1 Air Methanol to Hydrogen (M2H) Generation

Virginia Hydrogen Research Center**.**

Managed by Virginia Tech CTC and under construction in Newport News, figure 7.32.

Project Name GO Virginia Award Match & $ Paid Grant Period	Outcomes Achieved to date	Barriers	Products/Deliverables At Completion	Status
Demonstration Site for Clean Energy Transition to Green Hydrogen (HRH2) Grant: $ 1,497,452.19 Match: $ 1,305,480.77 PAID: $ 0 5/1/2023 – 4/30/2025	• 7.5 M in capital raised (7.4% of goal) • 48 Jobs created (21% of goal) • 1 business attracted and 2 new hydrogen industry prospect leads (10% of goal)	Delayed due to gathering programming information from stakeholders, & negotiation on benefits of HTC production features	• 100 M in capital raised (contingent on DOE grant award) • 230 Jobs created/filled • 10 businesses attracted • 64 participants trained (students trained) • 50 certificates earned • 25 businesses served	🟢 **ON TRACK DESPITE DELAYS**

Figure 7. 32 Virginia Hydrogen Research Center

Examples:

- Airbus Hydrogen Initiatives. Development of hydrogen-powered aircraft demonstrates feasibility and commitment to emission reduction [41].
- Huntington Ingalls Industries. Investment in hydrogen research at their Newport News Shipbuilding facility highlights the strategic importance of hydrogen technologies for future aviation [42].
- DOE.
  - Regional Clean Hydrogen Hubs [43], funded by the Department of Energy (DOE).
  - Hydrogen Shot initiative aims to reduce the cost of hydrogen production by 80% within a decade [44] [45].

<u>Zeroavia</u>. Making Aviation History, figure 7.33, Zeroavia Flies World's Largest Aircraft Powered with a Hydrogen-Electric Engine

Figure 7. 33 ZeroAvia Hydrogen Electric Engine

Recommendations.

- Pursue developer or early adopter use of HR assets to support developments and/or use case validations.
- Regional Master Planning or recurring Airport Master Plans should be updated, when appropriate, to consider Hydrogen Aviation as part of a future vision and footprint.

New Sector 6 - Coastal Transportation
Hampton Roads, with the unique geography and waterways, may be well suited to implement Seaplanes | Seagliders, figures 7.36 to 7.37, as coastal transportation to connect inner-harbor destinations as well serve as a "Chesapeake Bay" connector. Introducing new forms of transportation such as electric Seaplanes and Seagliders may enhance connectivity and accessibility across coastal and island locations.

Objectives: Enhance transportation options for coastal and island communities through innovative air and sea mobility solutions.
- Seaplane and VTOL Services: Develop and deploy seaplane and vertical takeoff and landing (VTOL) services tailored to coastal areas.
- Partnerships and Collaborations: Work with local governments, tourism boards, and private operators to integrate these services into existing transport networks.
- Environmental and Regulatory Compliance: Ensure that new services adhere to environmental standards and receive necessary regulatory approvals.

Rationale: Coastal transportation services can significantly improve accessibility and economic opportunities for isolated regions, while reducing travel time and environmental impact.

Implementation Actions
- Conduct feasibility studies for seaplane and VTOL routes.
- Develop infrastructure such as docks and vertiports.
- Launch marketing campaigns to promote new services.

Expected Outcomes
- Operational seaplane and VTPI services enhancing coastal access.
- Increased tourism and improved local economy due to enhanced connectivity.

Timeline: Plans to be executed within 2-5 years, with continuous evaluation and scaling.

Assets.

DoD Chesapeake Bay Program (CBP). The CBP integrates restoration, pollution prevention, and stewardship initiatives for the Chesapeake Bay into DoD's daily mission of providing the military forces needed to deter war and protect the security of the United States. CBP engages all levels of DoD military, civilians, and their families to be environmental stewards of the watershed where they live. CBP, figure 7.34, partners with federal, state, and local governments, and organizations and citizen groups to maximize resources and strengthen Bay restoration and protection efforts.

DoD installations encompass 400,000 acres across the region, making up approximately 1 percent of the Chesapeake Bay watershed and 20 percent of the total Federal footprint.
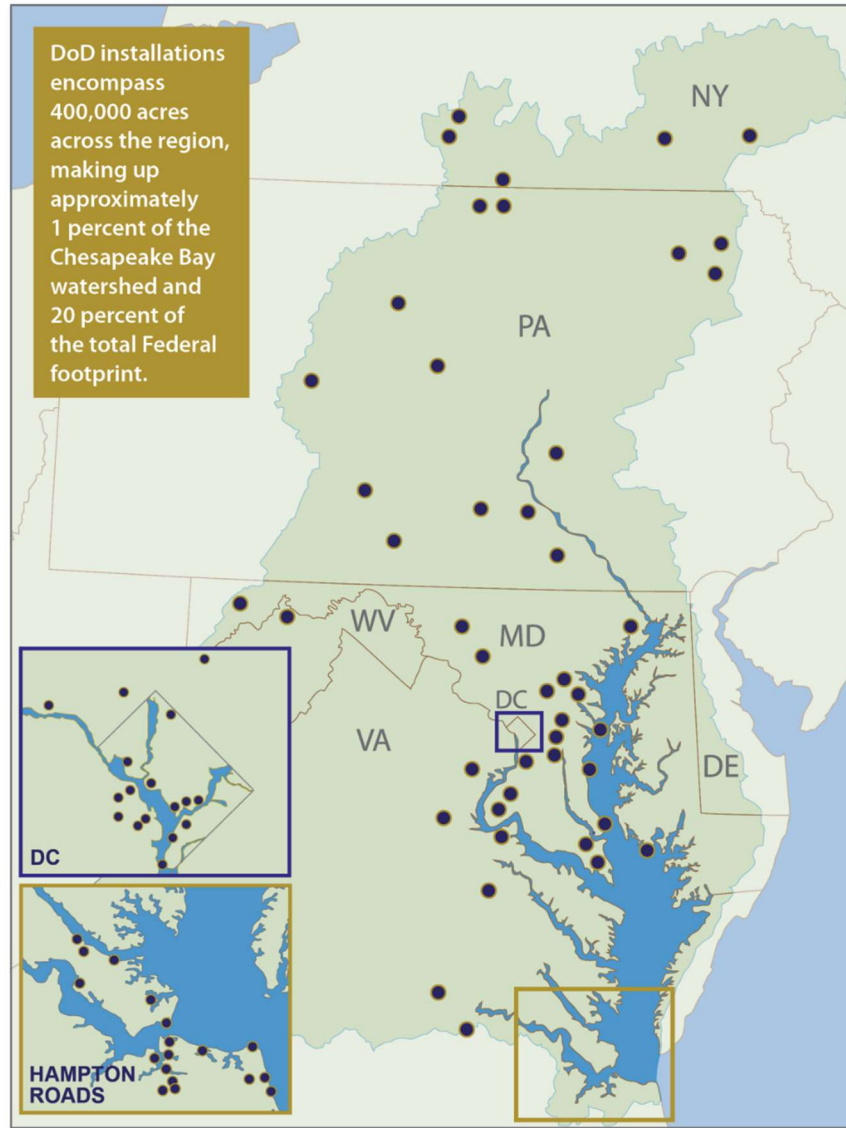
Figure 7. 34 DoD Chesapeake Bay Program (CBP)

<u>Tidal Flight.</u> Based in Hampton Roads, Tidal Flight, a new start firm, is developing a commuter-class electric seaplane for sustainable and affordable coastal transportation. Their mission is to drive coastal transportation toward a sustainable and affordable future. For the 40% of the world's population that lives in coastal areas, seaplanes are the fastest and most convenient form of transportation. Seaplanes also offer unparalleled access to island and coastal destinations and the only access to certain remote communities. Tidal Flight's modern, clean-sheet, composite, electric aircraft brings a 40% reduction in direct operating costs while enabling quiet, sustainable operations. These improvements will make seaplane aviation accessible and unlock the regional mobility of coastal populations.

Examples:

- REGENT Craft Seaglider. Being developed and tested with plans for commercial service by the middle of the decade [46]. Regent Craft raised significant funding to support the development and testing of their Seaglider, figure 7.35, and they are exploring Virginia, figure 7.36 as a potential site for testing [47].
- Mokulele Airlines. A partner in the Hawaii Seaglider Initiative, expects to be the world's first Seaglider operator [48].

Figure 7. 35 Regent Seaglider

Figure 7. 36 Regent Chesapeake Connector

7.37

<u>Tidal Flight</u>. Developer of electric amphibious aircraft, figure 7.37, designed to unlock direct, affordable, and sustainable access to city centers and coastal communities. The company's platform is designing and building an electric amphibious aircraft that is quiet, emissions-free, and capable of taking off and landing from both land and water, enabling urbanites and coastal residents to have direct, affordable, and sustainable access to transportation, regardless of the location.
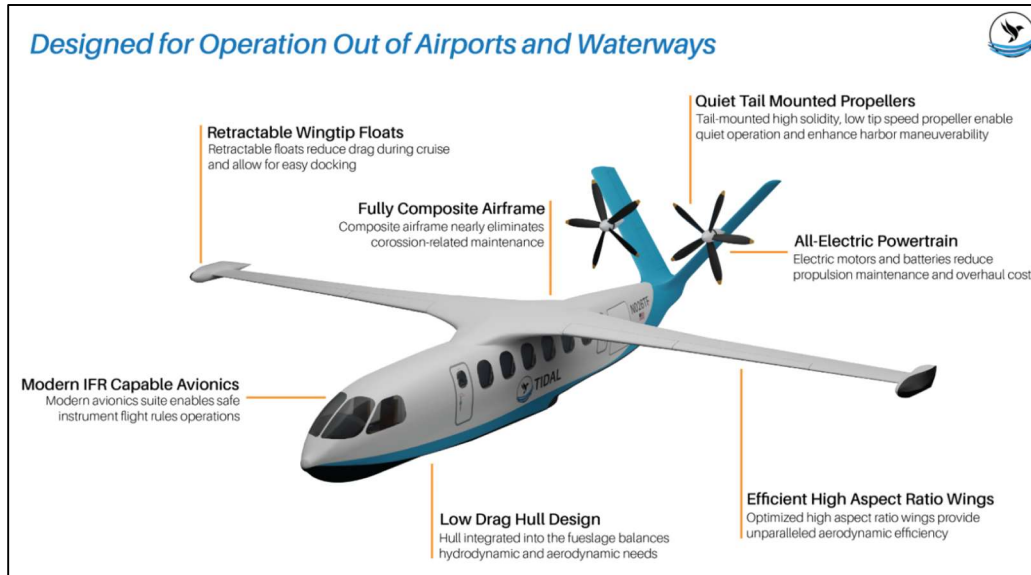

Figure 7. 37 Amphibious Aircraft

Recommendations.
- Pursue Coastal Transportation in Chesapeake Bay region from Baltimore to include Outer Banks.
- Develop a Chesapeake Bay use-case utilizing a Hampton Roads hub and existing marinas.
- Standup a development team representing appropriate stakeholders to assess feasibility.

Appendix 7: New Business Sectors

New Sector 7 - Electric Aviation Flight Training Services
OEMs are developing electric, or hybrid electric aircraft, for flight training. Leverage existing facilities and training firms to provide state-of-the-art training for pilots and technicians on electric and hybrid aircraft, ensuring a skilled workforce to support the growing industry.

Objectives: Establish an East Coast Hub for Electric Flight Training Aircraft OEMs: Attract manufacturers and service providers to create a hub for electric flight training.
- **Training Program Development**: Create specialized curricula that focus on the nuances of electric flight.
- **Facility Upgrades**: Equip existing flight schools with the necessary technology and aircraft for electric flight training.
- **Industry Partnerships**: Engage with aircraft manufacturers and tech companies to support training programs with the latest technologies.

Rationale: As the aviation industry moves towards electric propulsion, there is a growing need for pilots skilled in these new technologies, ensuring safe and efficient operations.

Implementation Actions:
- Update existing training facilities with electric aircraft and simulators.
- Develop certification standards for electric aircraft pilots.
- Launch pilot training programs with industry partners.

Expected Outcomes:
- Skilled workforce capable of operating next-generation electric aircraft.
- Leading training facilities recognized for pioneering in electric flight education.

Timeline: Long-term goals, with program development and initial rollouts expected within 5-10 years.

Assets. Diamond Aircraft has an Authorized Service Center at Chesapeake Municipal Airport. A Textron / Pipistrel Velis Electro training aircraft is maintained at Hampton Roads Executive Airport.

Examples:
- Textron / Pipistrel Electric Trainer. Successful implementation of electric flight training using Pipistrel aircraft. [49]. FAA approval is part of a broader effort to integrate electric aircraft into mainstream aviation training [50]. Pipistrel Velis Electro, figure 7.38.

Figure 7. 38 Pipistrel Velis Electro Trainer

- <u>CAE Electric Flight Simulation.</u> Development of simulators specifically for electric aircraft, enhancing pilot training without the need for extensive flights [51].

- <u>Diamond Aircraft</u>. Diamond's industry leading electric trainer is depicted at figure 7.39.

Figure 7. 39 Diamond Aircraft Trainer

Recommendations: Pursue an east coast hub (Sales & Service) in Hampton Roads for electric flight training aircraft OEMs.

Appendix 7: New Business Sectors

New Sector 8 - Private Air Mobility – Recreational / Tourism
The private air mobility sector (2 passenger or less) is growing with market acceptance with only one manufacturer dedicating early adoption on the east coast. Expand the market for private and recreational air mobility solutions, focusing on innovative eVTOL designs and partnerships.

Objectives: Develop and promote private air mobility options for tourism and recreational purposes, enhancing the travel experience and providing high-end transport solutions.
- Luxury VTOL Services: Launch services that offer exclusive air travel experiences for tourists and recreation seekers.
- Partnership with Hospitality Industry: Integrate air mobility solutions with resorts, event planners, and tourist attractions.
- Safety and Comfort Innovations: Focus on enhancing the safety, comfort, and convenience of private air services to attract high-end clientele.

Rationale: Private air mobility can transform the tourism industry by offering unique, efficient, and personalized travel options, setting the region apart as a premier destination for luxury travel.

Implementation Actions:
- Develop exclusive air tour packages in partnership with local tourism stakeholders.
- Ensure top-tier safety and service training for operators and staff.
- Market private air mobility as a distinct and desirable travel option.

Expected Outcomes:
- Increased tourism revenue from high-end travel services.
- Enhanced global reputation as a leader in innovative tourism solutions.

Timeline: Long-term development, with market introduction and growth over 5-10 years.

Assets: General Aviation Airports, Aviation Enthusiasts

Examples:
- Suzuki Skydrive. Partnership with South Carolina developing private air mobility solutions [52].
- Dubai VTOL Tours. Successful deployment of VTOL for sightseeing and luxury commutes in Dubai [53].
- Pivotal. Launches single seat Helix eVTOL sales, figure 7.40.

Figure 7. 40 Pivotal Helix eVTOL

- <u>AIR</u>. Operating from Fort Worth, TX, targeting private operators, the AIR One vehicle is depicted in figure 7.41.

Figure 7. 41 Pivotal Air eVTOL

Recommendations:

- Examine the deal Suzuki Skydrive executed with South Carolina and a local Part 135 Operator to establish U.S. sales & operations.

7.42

Appendix 7: New Business Sectors

New Sector 9 - Urban Air Mobility – Air Taxi

Service Expansion Plans. Exploring the potential for air taxi services to reduce urban congestion and provide efficient transportation options, utilizing analysis of population and movement data to plan services. OEMs in this market space have made no commitments to Virginia or Mid-Atlantic cities. Hampton Roads is considered a 2nd Tier market space based on population and cell phone movement data analysis.

Objectives: Implement air taxi services within urban centers to reduce ground traffic congestion and provide efficient, on-demand air transport.
- Infrastructure Development: Build the necessary vertiport and air traffic management infrastructure to support air taxis.
- Regulatory Engagement: Work closely with city governments and aviation authorities to ensure safe and regulated service operations.
- Public Adoption and Outreach: Conduct public information campaigns to educate and encourage usage of air taxi services.

Rationale: Urban air mobility solutions, like Air taxis, represent a breakthrough in urban transportation, offering a fast, efficient alternative to traditional road travel and helping reduce urban congestion. Operational and regulatory challenges include airspace integration, noise pollution, and air traffic management.

Implementation Actions:
- Develop vertiports in key urban locations.
- Collaborate with tech companies to ensure reliable and safe service operations.
- Engage with the community through outreach programs to build trust and interest.

Expected Outcomes:
- Functional air taxi services operational in select urban areas.
- Reduced traffic congestion and quicker intra-city travel times.

Timeline: Medium to long-term goals, with pilot programs and full-scale operations phased in over 5-10 years.

Assets: Hampton Roads GA Airports & Heliports

Examples:

NASA. NASA's AAM mission is collaborating with industry partners and the FAA to develop new air traffic management technologies [54].

eVTOL Certification. Simulations and flight testing with electric vertical take-off and landing (eVTOL) aircraft have shown promising results [55]. For example, Volocopter successfully

demonstrated and planned implementation of air taxis for a densely populated urban environment [56].

Joby. Joby, in partnership with Delta Air Lines announced that they anticipate launching initial eVTOL service in New York and Los Angeles. See Figure 7.42

Figure 7. 42 Joby eVTOL

Archer. Archer, leading the charge to bring eVTOL aircraft service nationwide in partnership with United Airlines, has signed a memorandum of understanding with fixed-base operator Atlantic to establish sites for electric aircraft operations, or vertiports, in America's most congested cities; Miami, Los Angeles, San Francisco and New York City. See Figure 7.43

Figure 7. 43 Archer eVTOL

Supernal. Supernal revealed its eVTOL air taxi, the S-A2 (Figure 7.44), at CES 2024. The South Korean company aims to establish itself as a leader in electric aircraft, with plans for the S-A2 to

7.44

take flight as early as 2028. The battery-powered eVTOL air taxi can accommodate four passengers, their luggage, and a pilot, featuring eight rotors for vertical takeoff and horizontal flight.

Figure 7. 44 Supernal S-A2 eVTOL

Vertical. UK based Vertical continues to target VX4 (Figure 7.45) Type Certification towards the end of 2026. Vertical has a leading pre-order book from a diverse global customer base, creating multiple potential near term and actionable routes to market. Customers include airlines, aircraft lessors, helicopter operators, mobility firms and tourism groups, including American Airlines, Virgin Atlantic, and Bristow Group.

Figure 7. 45 Vertical eVTOL

Recommendations:
- Develop UAM use case(s) supported by cell phone data analysis.
- Attract an Early Adopter, preferably military or federal, near term.
- Pursue long term development of civil Air Taxi Hub w/multiple regional vertiports to service the HR Communities.

Appendix 8 - Related Legislation

Recent legislative efforts and regulatory frameworks have been established to support the growth of Advanced Air Mobility (AAM) and Unmanned Aerial Vehicles (UAVs). Key policies include:

- **Federal Aviation Administration (FAA) Regulations:** Updated regulations for the operation of eVTOL aircraft and UAVs, including the integration of Unmanned Traffic Management (UTM) systems.
- **State and Local Incentives:** Incentive programs to attract AAM and UAV manufacturers and service providers to the region.
- **Public Safety Initiatives:** Legislation enabling the use of UAVs for public safety and emergency response applications.
- **Infrastructure Development Grants:** Funding opportunities for the development of vertiports, charging stations, and other AAM infrastructure.

Recent legislative efforts and regulatory frameworks have been established to support the growth of Advanced Air Mobility (AAM) and Unmanned Aerial Vehicles (UAVs). Key policies include:

Federal.

The AAM Coordination & Leadership Act: Legislation act aimed at coordinating and providing leadership in the realm of Advanced Air Mobility (AAM). It involves establishing structures or agencies responsible for overseeing the development, regulation, and integration of AAM technologies and operations into the national airspace system. The act aims to promote collaboration among various stakeholders, including government agencies, industry players, and research institutions, to ensure safe and efficient deployment of AAM solutions.

The National Drone & AAM Act: This act focuses on regulating and governing the use of drones and AAM technologies at the national level. It includes provisions related to drone operations, airspace integration, safety standards, privacy protections, and economic considerations. The act also addresses the growing role of drones and AAM in various sectors such as transportation, logistics, infrastructure inspection, and public safety.

S.1939 FAA Reauthorization Act: This legislation is of a Federal Aviation Administration (FAA) reauthorization bill, specifically designated with the identifier "S.1939," covering a wide range of aviation-related topics, including funding for FAA programs, air traffic control modernization, safety regulations, airport infrastructure, and more. S.1939 contains provisions related to AAM, drone operations, airspace management, research and development initiatives, and other aviation-related matters.

Appendix 8: Related Legislation

Federal Aviation Administration (FAA) Regulations: Updated regulations for the operation of eVTOL aircraft and UAVs, including the integration of Unmanned Traffic Management (UTM) systems.

Virginia.

HB446: Abandoned or derelict aircraft; disposal.

Virginia HB446 pertains to the disposal of abandoned or derelict aircraft within the state. This legislation grants authority to airport sponsors to address such situations, allowing them to take necessary actions for the removal and disposal of abandoned or derelict aircraft on airport premises. The bill outlines prescriptive measures aimed at streamlining the process, thereby saving time and resources for both airport sponsors and regulatory authorities.

Additionally, HB446 ensures that the policies for handling abandoned, or derelict aircraft align with existing regulations for vehicles and watercraft, promoting consistency in enforcement and management practices. Ultimately, the legislation aims to uphold the integrity of airports designated for aeronautical purposes by facilitating the efficient resolution of issues related to abandoned or derelict aircraft.

These regulatory frameworks are designed to facilitate the safe and efficient integration of AAM and UAV technologies, driving innovation and economic growth in Hampton Roads.

Appendix 9 - Glossary

- **AAM (Advanced Air Mobility):** The emerging field of aviation that focuses on the development and integration of innovative air transportation systems, including electric vertical takeoff and landing (eVTOL) aircraft and other advanced aerial vehicles.
- **AAM (Advanced Air Mobility):** The use of air transportation systems to move people and goods in new, innovative ways, including urban and regional air mobility services.
- **AAM Hub:** A centralized location or facility that serves as a focal point for the development, testing, and deployment of advanced air mobility technologies and services.
- **AAM Innovation:** The development and implementation of new technologies, systems, and services in the field of Advanced Air Mobility (AAM), including eVTOL aircraft and urban air mobility solutions.
- **AAM Marketplace:** The market for Advanced Air Mobility (AAM) technologies and services, including eVTOL aircraft, air taxis, and other innovative transportation solutions.
- **Advanced Aviation Business & Research Park:** A specialized area designed to accommodate businesses, research facilities, and other organizations focused on advanced aviation technologies and services.
- **Aerospace:** The branch of engineering and science that deals with the design, development, and production of aircraft and spacecraft.
- **Aerospace Business Sectors:** The different segments or industries within the aerospace sector, such as commercial aviation, defense and military aerospace, space exploration, and unmanned systems.
- **Aerospace Infrastructure:** The physical facilities, equipment, and systems that support aerospace operations, including airports, air traffic control systems, manufacturing facilities, and research centers.
- **Aerospace Industry:** The sector of the economy that encompasses the design, development, production, and maintenance of aircraft, spacecraft, and related components and systems.
- **Aerospace Policy:** The set of rules, regulations, and guidelines that govern the aerospace industry, including safety standards.
- **Aerospace Research:** The scientific investigation and study of aerospace-related topics, including aircraft design, propulsion systems, materials, and aerodynamics.
- Aerospace Research Services Industry: The sector of the economy that provides research and development services for aerospace-related projects, often working with regional federal agencies.
- **Air Cargo:** The transportation of goods and products by air, typically using dedicated cargo aircraft or the cargo holds of passenger aircraft.
- **Air Taxi:** A form of urban air mobility that involves the use of small aircraft or eVTOL vehicles for on-demand transportation within urban areas.

Appendix 9: Glossary

- **Air Traffic Control:** The service provided by ground-based controllers to guide and manage the movement of aircraft in controlled airspace, ensuring safe separation and efficient flow of air traffic.
- **Airports:** Facilities designed for the takeoff, landing, and maintenance of aircraft, including runways, terminals, control towers, and other infrastructure.
- **Aviation:** The operation of aircraft, including both commercial and private air transportation.
- **BVLOS (Beyond Visual Line of Sight):** A mode of unmanned aircraft operation where the remote pilot does not maintain direct visual contact with the aircraft, often enabled by advanced technology and regulatory approvals.
- **BVLOS (Beyond Visual Line of Sight):** UAV operations conducted beyond the visual line of sight of the operator, typically requiring advanced navigation and communication technologies.
- **Civil Aviation Organizations:** Organizations involved in the regulation, promotion, and development of civil aviation.
- **Commercial Air Services:** Air transportation services provided by commercial airlines.
- **Drone:** An unmanned aircraft system (UAS) or remotely piloted aircraft used for various purposes, including aerial photography, surveillance, and delivery services.
- **Economic Generator:** Something that stimulates economic activity and generates revenue.
- **Economic Growth:** An increase in the production and consumption of goods and services in an economy.
- **Economic Impact:** The effect that an activity or industry has on the economy, including job creation and revenue generation.
- **Economic Impact Analysis:** The assessment of the economic effects of a particular activity or industry.
- **Efficiency:** The ability to accomplish tasks or goals with minimal waste of time, effort, or resources, often measured by comparing input to output.
- **Electric Aviation:** The use of electric propulsion systems in aircraft, which can reduce emissions and noise compared to traditional combustion engines.
- **eVTOL (Electric Vertical Takeoff and Landing):** Aircraft that use electric power to hover, take off, and land vertically.
- **FAA Airport Categories:** Categories that classify civil airports based on their activities, such as commercial service, primary, cargo service, reliever, and general aviation airports.
- **Fast Ferry Transportation Services:** A mode of transportation that utilizes high-speed watercraft, such as seaplanes or wing-in-ground effect craft, to transport passengers and cargo over short to medium distances.
- **General Aviation:** Non-commercial aviation activities, including private and recreational flying, flight training, and aerial work such as crop dusting or aerial surveying.
- **GO Virginia:** The Virginia Initiative for Growth and Opportunity, a bipartisan economic development initiative aimed at fostering collaboration between business, education, and government to stimulate economic growth and job creation in Virginia.

- **Governance:** The system and processes by which an organization or region is governed and managed.
- **Hydrogen Aviation:** The use of hydrogen as a fuel source for aircraft, which has the potential to reduce carbon emissions and contribute to sustainable aviation.
- **Regional Aviation Advocacy:** Efforts to promote and support the growth and development of aviation in the region.
- **Regional Aviation Development Planning:** Planning activities aimed at enhancing and expanding the aviation infrastructure and services in the region.
- **Regional SWAT:** A team or group focused on analyzing the strengths, weaknesses, opportunities, and threats (SWOT) related to a specific region or industry.
- **Special Use Airspace (SUA):** Airspace designated for specific purposes such as military training, research, or restricted access.
- **UAS (Unmanned Aerial Systems):** Also known as drones, UAS refers to aircraft operated without a human pilot on board.
- **UAS Developmental Operations:** The testing and evaluation of unmanned aerial systems (UAS) in order to develop and refine their capabilities and performance.
- **UAS Facilities & Ranges:** Locations designated for the operation and testing of unmanned aerial systems.
- **UAS Manufacturing:** The production and assembly of unmanned aerial systems (UAS), including drones and other types of unmanned aircraft.
- **UAS Training Capability & Capacity:** The ability and resources available to provide training for operators and pilots of unmanned aerial systems, including simulators, training facilities, and qualified instructors.
- **UAV (Unmanned Aerial Vehicle):** An aircraft operated without a human pilot on board, commonly referred to as a drone.
- **UAV Manufacturing:** The production and assembly of unmanned aerial vehicles, including drones and other types of unmanned aircraft.
- **UAV Operator:** An individual or organization that operates unmanned aerial vehicles for various purposes, such as aerial photography, surveying, or delivery services.
- **UAV Training Capability & Capacity:** The ability and resources available to provide training for operators of unmanned aerial vehicles, including facilities, instructors, and curriculum.
- **UAV (Unmanned Aerial Vehicle):** An aircraft operated without a human pilot on board, commonly referred to as a drone.
- **UAV Manufacturing:** The production and assembly of unmanned aerial vehicles, including drones and other types of unmanned aircraft.
- **UAV Operator:** An individual or organization that operates unmanned aerial vehicles for various purposes, such as aerial photography, surveying, or delivery services.
- **UAV Training Capability & Capacity:** The ability and resources available to provide training for operators of unmanned aerial vehicles, including facilities, instructors, and curriculum.

- **Urban Air Mobility (UAM):** A subset of AAM that specifically focuses on the use of aviation technology to provide on-demand transportation services within urban and metropolitan areas.
- **UTM (Unmanned Traffic Management):** A system designed to manage the safe and efficient operation of UAVs within shared airspace.
- **Virginia Air Transportation System Plan (VATSP):** A comprehensive plan for the development and improvement of the air transportation system in Virginia.

Appendix 10   - Related Reports

Virginia Airport System Economic Impact Study – Technical Report and Executive Study:
This report, prepared by the Virginia Department of Aviation (DOAV), assessed the economic contributions and significance of airports across the state of Virginia. It provided valuable insights into the economic impact generated by airport operations, including job creation, revenue generation, and other economic indicators. [57]

Hampton Roads UAS Playbook (VIPC / ODU VISA):
The Hampton Roads UAS Playbook, a collaborative effort between the Virginia Institute for Procurement, and Old Dominion University's Virginia Institute for Spaceflight and Autonomy (VISA), outlines strategies and guidelines for the integration and utilization of unmanned aerial systems (UAS) in the Hampton Roads region. It serves as a comprehensive resource for stakeholders interested in leveraging UAS technology for various applications.

Virginia AAM Economic Impact Report (VIPC / NEXA Capital):
Prepared jointly by the Virginia Innovation Partnership (VIPC) and NEXA Capital, this report evaluates the economic impact of Advanced Air Mobility (AAM) initiatives in Virginia. It examines the potential economic benefits, investment opportunities, and job creation associated with the development and deployment of AAM technologies and services within the state. [21]

VAAMA Report – Virginia UAM / RAM Market Report (VIPC / VAAMA):
The Virginia Advanced Air Mobility Association (VAAMA), in collaboration with the Virginia Innovation Partnership Corporation (VIPC), produced the VAAMA Report, focusing on the UAM (Urban Air Mobility) and RAM (Regional Air Mobility) markets in Virginia. This comprehensive analysis provides insights into market trends, regulatory frameworks, infrastructure requirements, and investment opportunities within the state's AAM ecosystem.

Hampton Roads AAM Air Corridor & Area Study (GO Virginia / ODU VISA):
Sponsored by GO Virginia and conducted in partnership with Old Dominion University's Virginia Institute for Spaceflight and Autonomy (VISA), the Hampton Roads AAM Air Corridor & Area Study investigates the feasibility and potential benefits of establishing air corridors and AAM infrastructure in the Hampton Roads region. The study aims to identify opportunities for integrating AAM solutions into the area's transportation network.

Virginia AAM Minimal Viable Infrastructure Study (DOAV / VT MAAP):
The Virginia Department of Aviation (DOAV) collaborated with the Virginia Tech Mid-Atlantic Aviation Partnership (VT MAAP) to conduct the Virginia AAM Minimal Viable Infrastructure Study. This study focuses on identifying the essential infrastructure requirements necessary to

support the deployment and operation of Advanced Air Mobility (AAM) systems in Virginia, ensuring safe and efficient integration into the existing aviation ecosystem.

Virginia's Advanced Air Mobility Future:
A comprehensive study outlining the potential economic impact, job creation, and tax revenue generation from the integration of AAM in Virginia.

Virginia UAV Activity Study:
An in-depth analysis of the current and future use cases of UAVs in Virginia, highlighting opportunities and challenges in the aviation and local community security sectors.

Minimum Viable Infrastructure (MVI) Report :
A detailed report by Virginia Tech's Mid-Atlantic Aviation Partnership outlining the foundational infrastructure needed to support AAM operations.

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