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**An Assessment of Factors Affecting Air Cargo  
Operations at Washington Dulles International  
Airport**

By

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## **Abstract**

Though it is the primary airport serving the United States' fifth-largest metropolitan area<sup>1</sup>, Washington Dulles International Airport only ranks 21<sup>st</sup> in the nation in terms of air cargo activity. The amount of air cargo handled at Dulles Airport has declined significantly since 2000, largely due to structural declines in the domestic air cargo industry. While opportunities do exist for Dulles Airport to expand its international air cargo activities, it will continue to be at a competitive disadvantage relative to other airports that have more flights to more international destinations. If air cargo activity does increase at Dulles Airport, there will need to be significant investments in both on- and off-airport infrastructure, including better road connections on the airport's west side. If built, these road improvements could also influence a modest share of international shippers in the market area to choose Dulles over other airports.

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<sup>1</sup> Ranked by Gross Domestic Product (GDP) by Metropolitan Area, as reported by the Bureau of Economic Analysis

## Background: the U.S. Air Cargo System

Before considering air cargo activity at Dulles Airport, it is first useful to understand the factors that influence how the U.S. air cargo system works, how it has been changing over the past 15 years, and how local issues affect decisions by air cargo operators.

### The dominance of gateway airports

There are two distinct methods for moving air cargo: air freighter and belly cargo. Air freighters are airplanes that only carry cargo, while belly cargo is carried in the storage area of passenger flights. Air freighter operations fall into two distinct categories: integrators and cargo airlines. Integrators, which include FedEx, UPS, and DHL, provide “door to door service for shippers or importers, usually providing their own road transport...handling, transit warehousing facilities, often through an airport terminal dedicated to their use, and aircraft...”<sup>2</sup> All-cargo airlines only provide service between airports, and not the supplementary surface transportation.

The distinction between integrators and all-cargo airlines is an important one. Integrators operate in most major airports, collecting and distributing packages from population centers, carrying them to central hubs, and then sorting and shipping them around the world. By contrast, all-cargo airlines rely on intermediaries known as freight forwarders, which match up shippers with carriers—forwarders reportedly account for 80 percent of international air cargo.<sup>3</sup> Forwarders maintain their dominance in the industry by ensuring the maximization of airplane capacity, which reduces the cost to each individual shipper.<sup>4</sup>

Under this system, the most important factor affecting where air cargo is handled is volume. Freight forwarders have come to rely on a small number of “gateway” airports that offer the greatest number of destinations and flight frequencies.<sup>5</sup> As documented below, the two dominant gateway airports on the east coast are New York-JFK and Miami International Airport (MIA). Since most of the eastern U.S. is located within a day’s drive of one or both of those airports, it is difficult for other airports to attract air freighter operations. As such, nearly all air freighter operations in and out of all other airports are from integrators, not all-cargo airlines.

Another factor that has challenged non-gateway airports is the Known Shipper Program, instituted by the U.S. government in response to the September 11, 2001 terrorist attacks. This program limits the use of belly cargo to shippers that have done business in the past with forwarders or carriers and have undergone background checks.<sup>6</sup> As a result, any businesses or individuals that are not considered to be “known shippers” by the Transportation Security Administration (TSA) are not permitted to send their

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<sup>2</sup> CalTrans, “Air Cargo Mode Choice and Demand Study,” July 2, 2010, p.3

<sup>3</sup> George Mason University TPOL Practicum, “Capitalizing on Potential,” p. 6

<sup>4</sup> Ibid., p. 5

<sup>5</sup> Ibid., p. 5

<sup>6</sup> Ibid., p. 7

goods in the belly of passenger aircraft. This restriction reinforces the reliance on all-cargo carriers using gateway airports.

Air cargo operations in the U.S. are strongly concentrated in a small number of such gateway airports. According to the Airports Council International, American airports handled a total of 25.6 million metric tons of cargo in 2012. Of this amount, 14.9 million metric tons (58 percent) were loaded or unloaded in one of seven airports: Memphis, Anchorage, Louisville, Miami, Los Angeles, New York (JFK), and Chicago O'Hare. Each of these airports handled more than 1.2 million metric tons of cargo in 2012, placing all seven among the top 20 busiest cargo hubs in the world.

Each of these airports has a key strategic advantage that contributes to its prominence in the air cargo world. Memphis and Louisville are the central hubs, respectively, for FedEx and UPS, the world's two largest cargo integrators. Anchorage and Miami are the closest major U.S. airports to East Asia and South America, respectively. Los Angeles, JFK, and O'Hare are the primary airports for the country's three largest metropolitan areas. The importance of the top three metro areas to the air cargo industry is reinforced by the fact that each region has a second airport that processed at least 400,000 metric tons of cargo in 2012<sup>7</sup>.

Air cargo operations in the Washington-Baltimore region are far smaller than in the top seven markets. Washington Dulles International Airport (IAD) ranks as the 21<sup>st</sup> busiest cargo airport in the country; it handled about 267,000 metric tons of cargo in 2012. Thurgood Marshall Baltimore-Washington International Airport (BWI) ranked #34, with a total cargo load of 110,000 metric tons. Together, the 378,000 metric tons handled by the region's two major cargo airports was less than the amount of cargo handled in Atlanta, Dallas, Cincinnati, Oakland, Honolulu, Philadelphia, or San Francisco.

### **The decline of domestic air cargo**

The total volume of domestic air cargo has been on the decline for nearly 10 years. According to the U.S. Bureau of Transportation Statistics (BTS), the total revenue ton-miles<sup>8</sup> of domestic air cargo decreased 25 percent between 2004 and 2012. A recent study commissioned by the California Department of Transportation (CalTrans)<sup>9</sup> outlined some of the factors contributing to this decline, including:

- Increased air cargo security measures in the wake of September 11 (including the Known Shipper Program);
- Saturation of the domestic air express market;
- Decline in volume of air mail due to electronic communications;
- Rising air fuel surcharges;
- Advances in manufacturing that have led to smaller, lighter products; and

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<sup>7</sup> Indianapolis, which is ranked #8, is not in the Chicago metro area, but it effectively serves as an alternative for customers located in the southern portion of metropolitan Chicago; it is also a regional hub for FedEx and home to a USPS sorting center. Newark (#9) and Ontario (#16) are located in the New York and Los Angeles metro areas, respectively.

<sup>8</sup> Defined as one ton of revenue cargo (freight or mail) carried for one mile.

<sup>9</sup> CalTrans, op. cit.

- Improved efficiency by ground carriers.

The net result of all of these factors has been a marked shift of the movement of products within the continental U.S. to from airplanes to trucks or trains. According to the CalTrans report: “much of what is ‘sold’ as 2nd- or 3rd-day air cargo never sees the inside of an airplane and is transported by truck or train in a tightly-coordinated “time-definite” fashion.”<sup>10</sup>

The future growth outlook for domestic air cargo looks dim. The amount of domestic air cargo only increased 2.8 percent from its post-recession trough in 2009 to 2012, and actually declined in both 2011 and 2012. Looking ahead, the CalTrans report concluded that, “An ample portion of the market has been permanently ceded to surface modes of transport, which have historically enjoyed a substantial edge in pricing over air-freight but which have also grown more efficient in recent years in satisfying even the most demanding supply-chain managers.”<sup>11</sup>

International air cargo has been more resilient than domestic cargo. BTS reports that, from 2004 to 2012, the total international ton-miles enplaned or deplaned in the U.S. increased by 6.3 percent, and by 14.5 percent from 2009 to 2012. While there has been some evidence of shifting from air cargo to ocean shipping, only high-value commodity goods tend to be attractive for transport by ship. In a recent study Boeing concluded that products only became candidates for international air shipping, “as they matured in their product life cycles and no longer warranted the speed and reliability of air cargo.”<sup>12</sup>

### **Fast and slow cargo: why airports are unique**

Cargo falls into one of two categories: fast or slow. “Fast” cargo consists of items that are lightweight, perishable, and/or high-value, and thus the speed of arrival is the predominant factor, so it is typically transported by airplane and/or truck. For “slow” cargo, which includes durable, heavy, and/or lower-value items, lower cost takes precedence over speed, so it is typically moved via ship and/or rail.<sup>13</sup>

Given the fundamental differences between the two categories of cargo, the infrastructure systems that support the movement of each type are mostly separate. Fast cargo relies on airports, limited-access highways, and warehouses. Slow cargo relies on seaports, freight rail lines, and intermodal transfer facilities. The disparate systems that support each cargo type in the Washington region provide an excellent example of how the two types of cargo differ from one another.

The system of moving fast cargo in and out of Washington Dulles International Airport begins with on-airport facilities where trucks move cargo to and from airplanes. There are six cargo buildings located on the west side of the airport, adjacent to Taxiway Z (Fig. 1). The buildings front on Autopilot Drive and Cargo Drive, which are both truck routes that connect to Route 267 and Route 28. These highways, in turn, connect to Interstates 66 and 495, which provide truck access to the entire Washington region.

<sup>10</sup> CalTrans, op. cit., p. 30

<sup>11</sup> Ibid., p. 41

<sup>12</sup> Boeing, “World Air Cargo Forecast, 2008-09,” p. 7

<sup>13</sup> From interview with air cargo consultant David Hoppin, as quoted in “Capitalizing on Potential,” p. 4

The slow cargo system for the region is entirely separate. The region has two major seaports: the Port of Baltimore and the Port of Virginia, located at Hampton Roads. Virginia also operates the Virginia Inland Port (VIP), located near the interchange of Interstates 66 and 81. While Dulles Airport is linked to each of these facilities, the divergent characteristics of the cargo being moved through these different facilities makes it unlikely to link their operations more closely.

A 2006 George Mason University study examined the limited relationships between Dulles Airport and Virginia's port system, particularly VIP. The study documented that "VIP handles bulk goods, such as wood and machine parts, which are not time sensitive and, therefore, travel slowly—by rail and/or ship. Shippers have little incentive to pay the cost of expedited shipping associated with air cargo movement."<sup>14</sup> The study went on to conclude that, "there appears to be little, if any, opportunity for IAD to capitalize on VIP cargo flow at this time."<sup>15</sup>

### Sensitivity to ground transportation issues

The efficiency of air cargo operations is directly tied to the surface transportation systems that support it. Because air cargo is so heavily dependent on moving "fast cargo," the ability to move trucks to and from airports quickly and easily is a key issue. The fact that several of the country's busiest cargo airports like JFK and LAX are located in areas with limited and extremely congested highway access is a persistent problem, but one that is largely overcome by the fact that the cargo integrators and many all-freight airlines operate overnight to allow for delivery during the business day.

As part of its study of the state's air cargo system, CalTrans surveyed major air cargo operators across the state. While traffic congestion around LAX and San Francisco (SFO) airports were cited as concerns, the only specific comments made about traffic related to surface streets around the airports, and not highways.<sup>16</sup>

A survey of freight forwarders conducted by George Mason University as part of its study of the potential for cargo development at Dulles produced similar findings. Forwarders that did not do business at IAD were asked whether or not potential issues contributed to their decision to use other airports. More than two-thirds of respondents pointed to three factors as the primary drivers of their

**Figure 1: Location of Cargo Facilities at Washington Dulles International Airport**



Source: Google Earth

<sup>14</sup> "Capitalizing on Potential," op. cit., p. 13

<sup>15</sup> Ibid., p. 13

<sup>16</sup> CalTrans, op. cit., Appendix B, p. 89

decisions: schedules, route diversity, and lack of capacity. Traffic congestion was only cited by 17 percent of forwarders as a contributing factor.<sup>17</sup>

In brief, while local traffic congestion around airports is undoubtedly an annoyance to air cargo operators, it is typically not a primary factor in deciding which airports to use or not use. An exception to this rule is for integrators like FedEx and UPS that offer guaranteed overnight delivery to their customers. As these carriers are obligated to deliver packages to customers in central city areas in the morning hours, integrators must account for peak-hour traffic congestion. It is for this reason that FedEx opened a facility at Ronald Reagan Washington National Airport (DCA)—that airport’s central location makes it far easier to get packages from there to downtown Washington or Arlington than from IAD<sup>18</sup>. However, the FedEx operation at DCA is very small, and only accounts for about three percent of their total activity in the Washington-Baltimore region.<sup>19</sup>

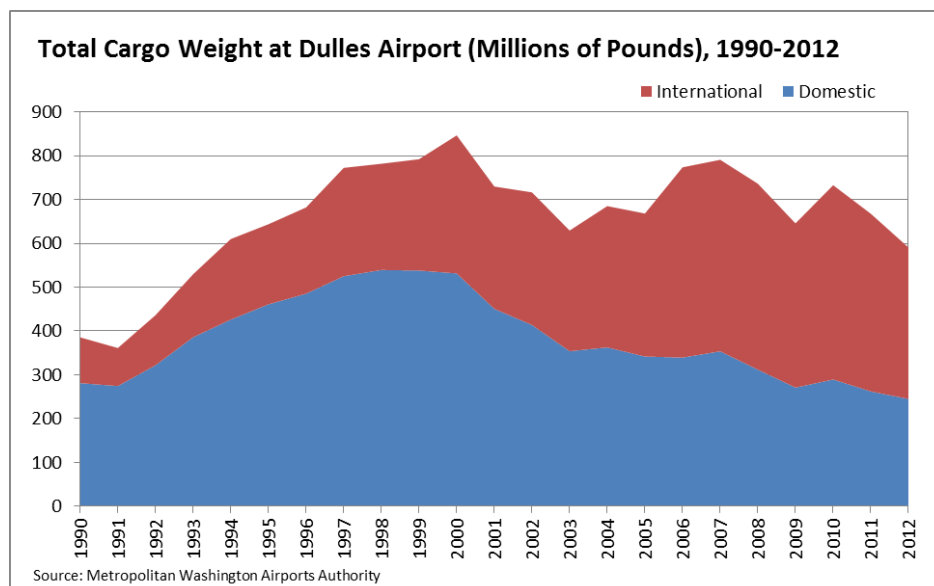
## Air Cargo at Dulles Airport

Recent performance trends, sources of demand, and the future outlook of air cargo at Dulles Airport are presented below.

### Current Profile and Historical Trends

As discussed earlier Washington Dulles International Airport (IAD) is only the 21<sup>st</sup> most active airport in the U.S. in terms of cargo weight. IAD handles nowhere near the volume of the country’s top seven gateway airports. In 2012, IAD only handled seven percent as much cargo as Memphis, which is the leading cargo hub, and just 21 percent as much as Chicago O’Hare, the seventh largest hub.

Figure 2



<sup>17</sup> “Capitalizing on Potential,” op. cit., p. 6

<sup>18</sup> Interview by author with Leo Schefer and Keith Meurlin from Washington Airports Task Force, August 29, 2013

<sup>19</sup> Statistic provided by Campbell-Hill Aviation Group, LLC



The Metropolitan Washington Airports Authority reports cargo operations in terms of millions of pounds of weight enplaned or deplaned. By this measure IAD handled 590.7 million pounds of cargo in 2012, the lowest amount since 1993. Total cargo weight at IAD was at its highest in the late 1990s before peaking at 846.4 million pounds in 2000. The twin effects of the dot-com bust and the September 11, 2001 terror attacks reduced cargo weight by 26 percent from 2000 to 2003. A recovery followed between 2003 and 2007, followed by a dip during the national recession through 2009, a spike in 2010, and then a sharp decline between 2010 and 2012.

As with the national trend, the decline in cargo at IAD can be attributed to the shrinking of the domestic air cargo market. In 1998, at the peak of the domestic market, a total of 539.2 million pounds of domestic cargo were enplaned or deplaned at IAD; by 2012 the domestic cargo weight was just 245.0 million pounds, a decrease of 55 percent. During the same period the weight of international cargo actually increased by 43 percent. As a result, there has been a dramatic shift in the domestic-to-international ratio of cargo at IAD. In 1991, 76 percent of the total cargo weight handled at IAD was domestic cargo; in 2012 the domestic share was just 41 percent.

Most of the international cargo activity at Dulles goes to or from Europe. MWAA officials estimate that, in spite of the recent addition of more flights to and from Asia, 85 percent of the international air cargo at IAD is attributable to Europe.<sup>20</sup> International cargo activity at IAD has been hampered in the past few years by the reduction in the U.S. military presence in Iraq and Afghanistan; IAD had been one of the primary departure points for military supply aircraft serving those locations.<sup>21</sup>

Another factor that has harmed both domestic and international cargo activity at IAD has been United Airlines' shift from widebody to narrowbody aircraft. United, which accounts for nearly half of the international tonnage at IAD, used to carry fresh produce from California to Europe and the Middle East via its IAD flights. The aircraft that United now used for these routes are not able to carry these products, which has reduced both inbound domestic and outbound international cargo.<sup>22</sup>

### **Sources of Demand**

Demand for air cargo at IAD originates from a variety of different commodities and geographic areas. The most comprehensive examination of demand for air cargo comes from the 1997 regional airport system plan prepared by the Metropolitan Washington Council of Governments<sup>23</sup>. Though this plan was completed before the collapse of the domestic air cargo industry, it does contain useful information about the types of markets potentially available to the Washington-Baltimore region's two cargo airports: IAD and BWI. The study examined demand by commodity group for the eight-state region surrounding the two airports (DC, Maryland, Virginia, West Virginia, Delaware, Pennsylvania, North Carolina, and New Jersey).

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<sup>20</sup> Neibauer, "Dulles Airport cargo down, but plans to expand remain."

<sup>21</sup> Interview by author with Joseph Maly from Metropolitan Washington Airports Authority, September 27, 2013.

<sup>22</sup> Ibid.

<sup>23</sup> Metropolitan Washington Council of Governments (MWCOC), "Washington-Baltimore Regional Airport System Plan, Vol. III: Air Cargo," 1997.

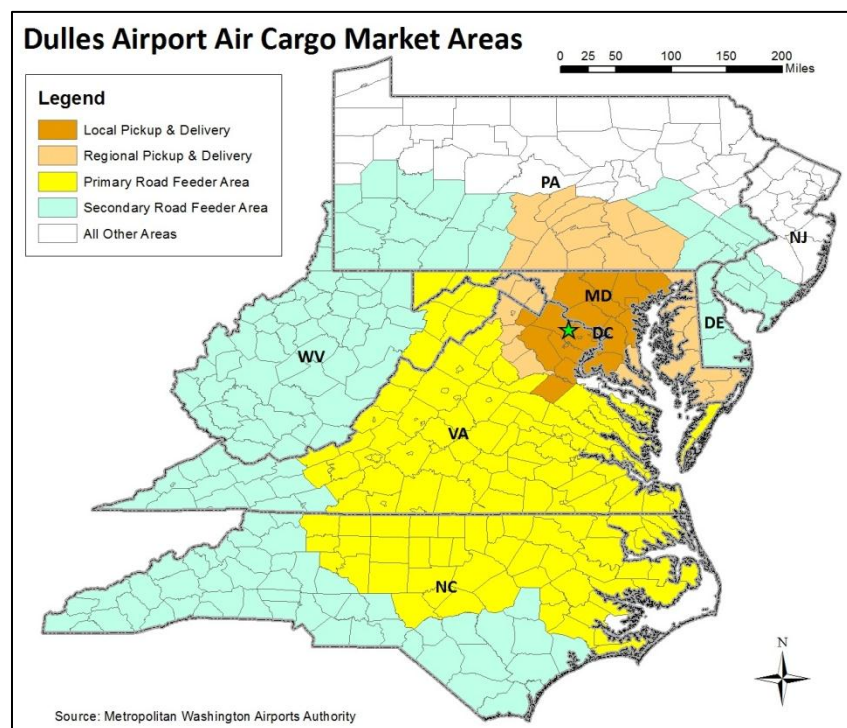


The MWCOG study documented a contrast between the types of commodities desired by domestic and international customers. About one-half of domestic air cargo market demand was attributed to agriculture (26 percent) or electrical/computer equipment (21 percent). Other significant sectors included chemicals (6.5 percent), apparel/fabric (6.3 percent), and transportation equipment/parts (5.8 percent).<sup>24</sup> The international market was led by electrical/computer equipment (24 percent), followed by apparel/fabric (14 percent), agriculture (11 percent), and chemicals (10 percent).

The study additionally segmented the region into five geographic market areas, as follows:

- Local pickup & delivery (Washington and Baltimore Metro Areas)
- Regional pickup & delivery (northern I-81 corridor, southern/eastern Maryland)
- Primary road feeder area (western Maryland, southern I-81, I-95 corridor in VA/NC, I-85 corridor in VA and NC)
- Secondary road feeder area (Delaware, southern PA, southern NJ, balance of WV, VA, and NC)
- All other areas (balance of PA and NJ)

**Figure 3**



<sup>24</sup> Ibid., p. 23.

The local pickup and delivery area different from the regional and other markets in one key aspect: the federal government accounted for the largest share of cargo activity. In all other markets agriculture was the dominant commodity group.<sup>25</sup>

### Profile of Exporting Sectors in Target Market Areas

Assuming that little, if any growth is likely to occur from domestic air cargo in the future the vast majority of potential growth for air cargo service at IAD is likely to stem from the international market. While MWAA and its partners have undertaken and continue to undertake aggressive marketing efforts to attract all-cargo service, IAD remains a secondary spoke in the international air cargo market.

The most likely way that more cargo activity can be added at IAD is through enticing international exporters in the market area to ship their products from IAD as opposed to JFK, MIA, or other gateway airports. If IAD can provide air cargo carriers with full loads on their outbound trips, it will stand a better chance of attracting inbound air cargo.

The ability of IAD to attract new markets will most likely depend on growth in the key industry groups that support international air cargo operations. There are four major economic sectors that will influence future air cargo markets at IAD:

- Agriculture, forestry, and fishing
- Federal government/military
- Durable goods manufacturing
- Nondurable goods manufacturing

**Table 1**  
**Forecasted Gross State Product Growth in Key Exporting Sectors, 2013-2023**  
**Totals for District of Columbia, Maryland, Virginia, and West Virginia**  
*Millions of \$, Not Adjusted for Inflation*

Sector	Current 3Q 2013	Forecasted 3Q 2023	10-Year Change	CAGR*
Agriculture, forestry, and fishing	\$ 2,471.97	\$ 2,837.39	\$ 365.4	1.4%
Federal government/military	\$ 86,652.94	\$ 105,473.91	\$ 18,821.0	2.0%
Durable goods manufacturing	\$ 27,722.46	\$ 50,373.72	\$ 22,651.3	6.2%
Nondurable goods manufacturing	\$ 40,600.05	\$ 50,800.81	\$ 10,200.8	2.3%

\*Compound Annual Growth Rate

Source: IHS Global Insight; GMU Center for Regional Analysis

Of the major exporting economic sectors in the four-state region surrounding IAD (DC, MD, VA, and WV), only durable goods manufacturing is expected to experience significant growth over the next ten years in terms of Gross State Product. This sector is forecasted to grow by \$22.7 billion, a compound annual growth rate (CAGR) of 6.2 percent, not adjusted for inflation. The unadjusted CAGRs for the other major

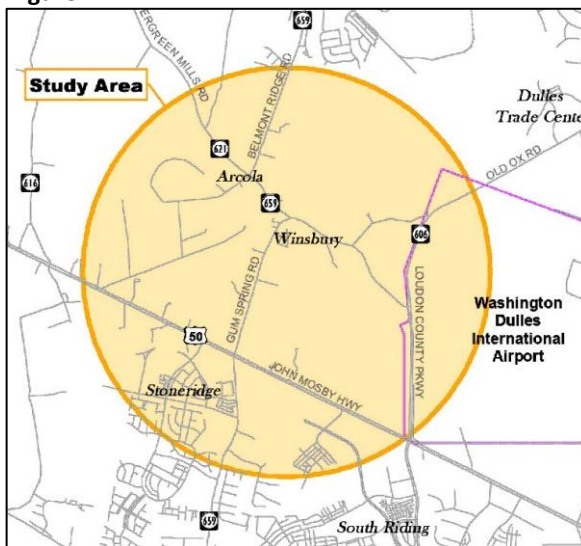
<sup>25</sup> MWCOG, op. cit., p. 23.

sectors are expected to be 2.3 percent or below, meaning that there will be little, if any, real growth in these sectors over the next decade.

### Potential impacts of improved accessibility

The Virginia Department of Transportation (VDOT) has been undertaking a comprehensive evaluation of the potential need for enhanced access to Dulles Airport from its western side. According to the project website: “The purpose of this project is to enhance the movement of people, passenger services and air cargo traffic to Washington Dulles International Airport...”<sup>26</sup> The study is specifically focused on the area between US Route 50 and Virginia Route 606 (Fig. 4). This potential road connection would link with the planned Bi-County Parkway, that would connect I-66 in Prince William County with Route 50 in Loudoun County.

Figure 4



Source: Virginia Department of Transportation

VDOT's planning activities have incorporated a study of future air cargo needs at Dulles, commissioned by MWAA.<sup>27</sup> This study, completed in early 2010, projected future air cargo needs at IAD and then evaluated alternatives for accommodating potential expansion of cargo activities. The study's cargo activity forecasts were calculated by applying trend lines from 1990 through 2006. As a result, total cargo volume through 2030 was projected to grow by 4.6 percent annually, with increases predicted for both domestic (2.4 percent) and international (6.8 percent) cargo activity. The amount of cargo weight handled at IAD was forecasted to increase from 746 million pounds in 2006 to 1.76 billion by 2030.

This forecast now seems ambitious, as the actual cargo weight in 2012 had declined to 591 million pounds. Additionally, 2013 forecasts by the National Capital Region Transportation Planning Board (TRB) only foresee a 97 percent increase in total cargo tonnage in the region to 2040.<sup>28</sup> If that forecast were to hold true there would only be 1.16 billion pounds handled at Dulles by 2040.

<sup>26</sup> Virginia Department of Transportation (VDOT), “Improving Access to Dulles Airport” webpage, [http://www.virginiadot.org/projects/northernvirginia/improving\\_access\\_to\\_dulles.asp](http://www.virginiadot.org/projects/northernvirginia/improving_access_to_dulles.asp)

<sup>27</sup> Ricondo & Associates, Inc., “Washington Dulles International Airport, Cargo Area Study.”

<sup>28</sup> National Capital Region Transportation Planning Board, *TPB Weekly Report*, September 24, 2013

Using these forecasts the study found that, by 2030, IAD would need at least 103 acres of landside cargo facilities in order to accommodate demand, which is far in excess of the existing 68-acre cargo area.<sup>29</sup> The report examined the relative merits of different options for the location of air cargo facilities and concluded that the preferred approach would be to relocate integrator and freighter operations from its present location (Site #1 on in Fig. 5) to the Airport Support Zone (Site #4), which has about 160 acres of usable land area. Belly cargo operations would remain at the present location due to its proximity to the airport's passenger terminals.

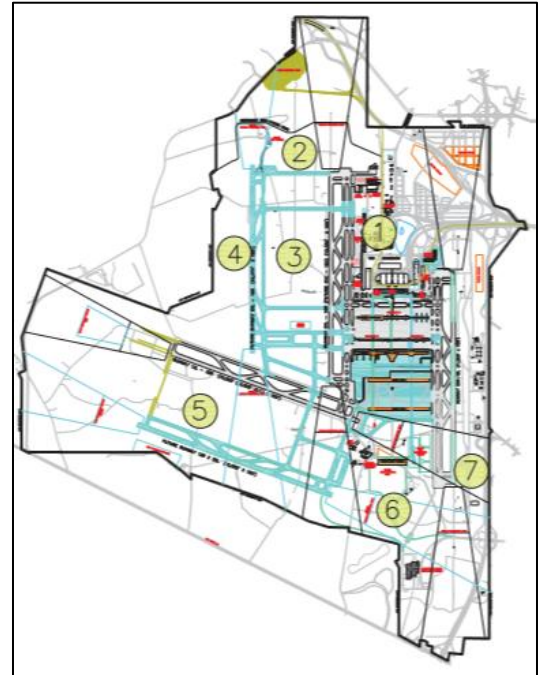
Though relocating cargo operations to the Airport Support Zone would enhance the capacity and efficiency of air cargo operations at IAD, it would require major on- and off-site infrastructure improvements. Within the airport, the relocation would require additional taxiways around the airport and new roads for trucks.<sup>30</sup> Outside the airport, this area would not be reachable from the airport's main entrance, so new connections would be needed with Route 606 and the west side of the airport.

If the cargo area were to be relocated to the preferred location better road access from the west side of the airport would be needed to support the air cargo operation. However, considering that the actual amount of air cargo being handled at IAD had already begun to decline from 2000 to 2006 and has declined further to the present, the 2030 projections that informed the recommendation to shift the cargo area may no longer be valid. While there still may be other justifications for relocating the air cargo operation at IAD, there does not appear to be an immediate need to undertake this project with the sole purpose of expanding capacity. Still, MWAA believes that there is still a long-range need for additional cargo space, and plans to proceed with the expansion project in the next few years.<sup>31</sup>

Assuming that the cargo facilities will remain in their current location, then, could there be positive impacts on air cargo business resulting from improved access from the west? This question is best answered by revisiting the five market areas (see p. 8) from MWCOG's study to see how much demand from each market area could be impacted by avoiding the traffic bottlenecks along the Dulles Toll Road and Route 28:

- The local area would not likely be affected very much, as most of its government and manufacturing base is located to the east of IAD, either in the urban core or along the I-95 corridor.

**Figure 5: Potential Air Cargo Sites at IAD**



<sup>29</sup> Ibid., p. 18.

<sup>30</sup> Ibid., p. 43.

<sup>31</sup> Neibauer, op. cit.

- The western portions of the regional area would be somewhat affected, but the larger areas of south-central Pennsylvania and southern and eastern Maryland would not be affected.
- The primary road feeder area, which takes in most of central, western, and southern Virginia, would be the most affected, as it is mostly west of IAD and much of it is not closer to any other major airports.
- The secondary area is not likely to be affected much, as it is closer to other major airports; few shippers would choose IAD based on slightly shorter travel times.
- The “all other areas” category is too far from IAD—and too close to JFK—to be affected at all by better access.

The potential impacts of improved western road access on each market area are documented in Table 2.

**Table 2:**  
**Potential Impact of Improved Western Access on IAD Air Cargo Markets**

	<b>% of Total Market Demand (1997 figures)</b>	<b>% of Area Potentially Impacted by Improved Western Access</b>	<b>% of Total Market Demand Potentially Affected by Access</b>
Local Pickup & Delivery	7.3%	5.0%	0.4%
Regional Pickup & Delivery	9.2%	15.0%	1.4%
Primary Road Feeder Area	22.7%	25.0%	5.7%
Secondary Road Feeder Area	29.7%	2.0%	0.6%
All Other Areas	31.1%	0.0%	0.0%
<b>Total Amount of Demand Potentially Affected by Improved Western Access</b>			<b>8.0%</b>

Source: Metropolitan Washington Council of Governments; George Mason University Center for Regional Analysis

Based on this review, it is estimated that only about eight percent of the potential demand for air cargo operations at Dulles Airport could be affected by improving accessibility to the airport from the west.

## Key Findings

- The U.S. air cargo system is very rigidly organized around a small number of gateway airports that dominate most of the international air cargo market.
- The two primary gateway airports on the east coast are JFK and MIA; these airports offer access to more international destinations and have greater flight frequencies than does Dulles.
- The domestic air cargo business has declined substantially since 2000 due to a number of economic, technological, and political changes; these changes are structural in nature and are likely to be permanent.
- Air cargo caters to products that are high-value, lightweight, and/or time-sensitive; as such, there is very little overlap between the types of products that are sent by ship and rail and those sent by airplane and truck.
- Most air cargo movement occurs overnight and is therefore not very sensitive to the negative impacts of traffic congestion on surface highways around airports; the one exception to this is for cargo integrators (like FedEx and UPS) that offer guaranteed overnight delivery.
- The overall weight of air cargo operations at IAD has declined substantially from its peak in 2000, due largely to a decline nationally in domestic air cargo activity—the domestic share of cargo at IAD declined from 76 percent in 1991 to just 41 percent in 2012.
- The characteristics of domestic and international air cargo at IAD are different: domestic cargo is dominated by agriculture and computer/electronic products while international cargo is less weighted towards agriculture and more concentrated in electrical/computer equipment, apparel/fabric, and chemicals.
- The Washington-Baltimore air cargo market is most dependent on the federal government while the predominant commodity type from surrounding markets is agriculture.
- Though forecasted growth in durable goods manufacturing creates the potential for additional air cargo activity from that sector, other exporting sectors are not expected to show much growth in the next ten years.
- Based on recent trends in air cargo activity, there is less market pressure to relocate the cargo facilities at IAD to a new site on the airport's western side than there was a few years ago.
- Improved accessibility on the western side of Dulles Airport would potentially have a positive effect on about eight percent of demand for air cargo activity.



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