

2040 Regional Airport System Plan (RASP)



JULY 2014



The Delaware Valley Regional Planning Commission is dedicated to uniting the region's elected officials, planning professionals, and the public with a common vision of making a great region even greater. Shaping the way we live, work, and play, DVRPC builds consensus on improving transportation, promoting smart growth, protecting the environment, and enhancing the economy.

We serve a diverse region of nine counties: Bucks, Chester, Delaware, Montgomery, and Philadelphia in Pennsylvania; and Burlington, Camden, Gloucester, and Mercer in New Jersey. DVRPC is the federally designated Metropolitan Planning Organization for the Greater Philadelphia Region — leading the way to a better future.



The symbol in our logo is adapted from the official DVRPC seal and is designed as a stylized image of the Delaware Valley. The outer ring symbolizes the region as a whole while the diagonal bar signifies the Delaware River. The two adjoining crescents represent the Commonwealth of Pennsylvania and the State of New Jersey.

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Acknowledgments:

This report is funded by the U.S. Department of Transportation, Federal Aviation Administration, Harrisburg Airports District Office (HARADO), under Award Number 3-42-0125-013-2012.

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Executive Summary

Access to aviation infrastructure creates more livable communities by offering transportation and recreational choices and amenities, as well as enhancing business linkages. Aviation planning has many challenges, including congestion, competing land uses, and economic uncertainty. As the Delaware Valley moves forward into the 21st century, it is important that aviation planning be factored into decisions to ensure the economic vitality of the region.

The purpose of this report is to provide an update to the 2035 Regional Airport System Plan (RASP) on base data (such as based aircraft and traffic counts), population, employment, operational and capacity forecasts, and recommendations to 2040. In addition, the report will provide an overview and analysis of the issues and trends impacting regional airport system development. Based on that analysis, the report makes detailed airport system development and investment recommendations to guide aviation in the region for the foreseeable future.

The challenge for aviation going forward is no doubt with general aviation (GA), at both the business and recreational level. It was noted that privately owned GA facilities are those most at risk, as publically owned facilities are supported by the operating authority. In addition, community outreach and aviation career education are both important components of a successful airport system plan. Therefore, the objectives for the 2040 RASP took these factors into account, and the following priorities were agreed upon by the RASP subcommittee:

1. Expand commercial air service capacity within the region.
2. Preserve the existing public-use GA airport system.
3. Sustain and improve infrastructure to attract more users.
4. Improve community outreach to inform the public of the importance of airports to the local and regional economy.
5. Improve efforts to attract students to careers in aviation fields.

This report is being prepared with the support of the Federal Aviation Administration (FAA) and with input from aviation-related professionals in state and local government, airport administration, interest groups, and academia. To provide stakeholder input throughout the development of the 2040 RASP, a subcommittee of Regional Aviation Committee (RAC) members was formed to attend steering meetings. A listing of the meetings and attendees is provided in Appendix A.

Introduction

Aviation planning at the Delaware Valley Regional Planning Commission (DVRPC) covers a larger area than the traditional nine-county jurisdiction, adding Salem County in New Jersey, New Castle County in Delaware, and Cecil County in Maryland. “Aviation” to most people in the region will likely be associated with Philadelphia International Airport (PHL), the 11th busiest airport in the world (in terms of aircraft operations), but the Delaware Valley is also served by two other commercial service airports, Trenton-Mercer (TTN) and Wilmington (ILG), as well as a number of reliever and General Aviation (GA) airports. Public-use heliports also play a role in regional aviation planning and complement the airports. The importance of aviation facilities to the region can be seen in the regional airport system map, which shows that facilities are located in all counties of the Delaware Valley (Figure 1).

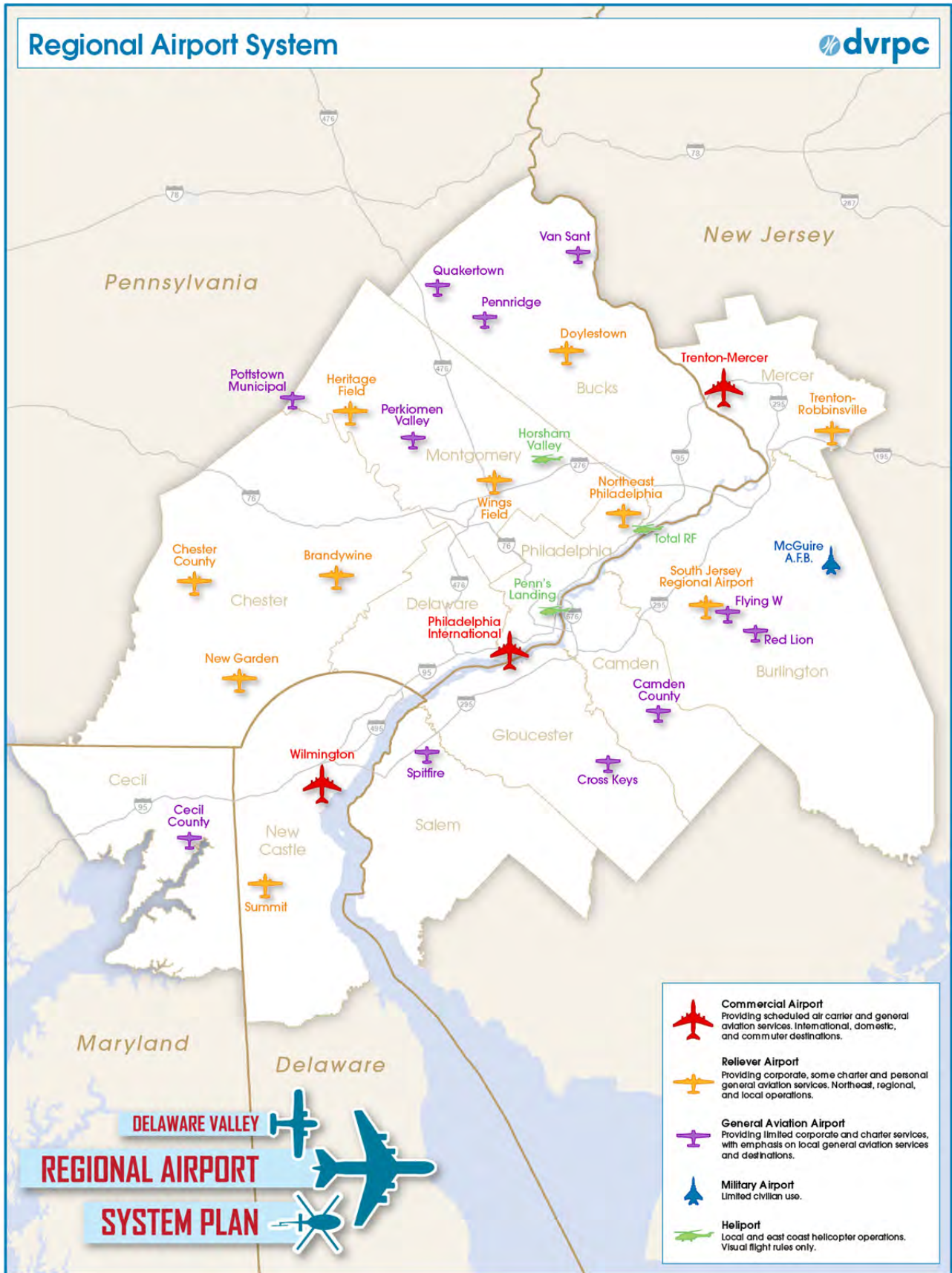
DVRPC's work in aviation is guided by the Regional Aviation Committee (RAC). The RAC meets on a quarterly basis on the third Thursday of the months of March, June, September, and December and provides technical and policy guidance concerning regional airport systems planning to the Federal Aviation Administration (FAA), the states, and the DVRPC. Membership is open to all aviation-related professionals, local governments, consultants, and interested citizens. The RAC is the main mechanism with which topics of aviation planning are discussed and presented to officials in the region.

DVRPC Connections 2040 Plan

The Connections 2040 Plan is the long-range plan for the DVRPC region. It addresses land use, environmental, economic competitiveness, and transportation policies, and includes a set of fiscally constrained transportation projects. The Connections 2040 Plan places a strong emphasis on rebuilding our transportation system and investigating additional transportation funding that is needed to maintain the system we have today, as well as to make necessary improvements to maintain our quality of life and enhance economic competitiveness. The Plan focuses on creating livable communities, managing growth and protecting resources, building the economy, and establishing a modern multi-modal transportation system.

As aviation links the region to the rest of the nation and the world, it is essential that aviation planning synergize with the goals of DVRPC's Connections 2040 Plan. Connectivity is a major element of the Plan and, as such, aviation planning needs to take into account the movement of travelers to, from, and between the airports in our area.

Figure 1: Regional Airport System Map



CHAPTER 1:

Aviation Issues and Trends

Aviation and the Economy

Civil aviation accounts for 5.2 percent of the U.S. gross domestic product (2009) and is a critical link in connecting the region with the rest of the world. Having an accessible and efficient aviation system helps foster a high quality of life for both residents and businesses and allows access to people and markets worldwide.

The financial burdens on corporate and GA airports from security, airspace restrictions, reduced number of pilots, fewer hours flown, and higher fuel prices are threatening facility preservation. Since 2001, commercial airlines have had to deal with tremendous fuel price increases, mandated expensive security measures, fluctuations in passenger demand, and reorganizations and mergers.

With development pressures increasing, the survival of many existing airports is in question. Preservation of these facilities is paramount to future aviation success in stimulating regional economic activity and relieving congestion at commercial service airports. The replacement cost and feasibility of building new airports is prohibitive, and available open land in the region is non-existent for future replacement airports. Current long-range planning must therefore emphasize the preservation of existing facilities.

One specific economic aid for the region comes with the availability of U.S. Customs and Border Protection (CBP) facilities at the region's airports. All three commercial service airports – PHL, TTN, and ILG – have these facilities. Additionally, Northeast Philadelphia Airport (PNE) has on-call services with 24 hours' notice. With the presence of these facilities, international commercial and private aircraft are able to enter or transit the region, providing a competitive advantage to these airports. In addition to passengers, international inbound and outbound cargo is another economic attribute that keeps the Greater Philadelphia Region competitive with other large cities nationwide.

FAA and State Departments of Transportation (DOTs)

Airports and aviation are regulated at many different levels of government. In general, when an aircraft is airborne, it is under the authority of the federal government; when it is on the ground, it falls under the purview of state and local governments. The U.S. Department of Transportation's FAA is the federal regulatory authority for airspace access, approach patterns, and pilot requirements and licensing. The FAA also works with airports by funding infrastructure improvements. Each state's DOT also implements rules and regulations governing airport operations, as well as funding of capital improvement. Although state DOTs have no role in the control of airspace, a number of state governments have enacted legislation and regulations requiring local hazard zoning and review of airspace proposals. Local governments, and in some cases states, through hazard zoning can help protect airspace. At the municipal level, counties, townships, or cities may have an aviation authority or other regulatory body for the airports in their locales (in many cases public-use airports are owned by a municipality or an aviation authority); these bodies play a regulatory role in controlling land use around the airports through zoning or other land use restrictions, but again, as with state DOTs, they do not have authority over airspace or pilot licensing.

Currently, the FAA classifies all public-use airports into one of three categories: commercial, reliever, or GA. Many of these airports are classified as part of the National Plan of Integrated Airport Systems (NPIAS) by the FAA. Being part of NPIAS makes them eligible for grant funding through the Airport Improvement Program. Of the 24 airports in the DVRPC planning area, 15 are classified as NPIAS airports.

The FAA is currently redesigning the airspace in the New York/New Jersey/Philadelphia metropolitan area to reduce delays and to migrate air traffic control systems from radar based to satellite based. The current airspace environment is inefficient for aviation users and has not been significantly overhauled since first being developed in the 1960s.

In 2012, the FAA released its report *General Aviation Airports: A National Asset* (referred to as “the Asset report”). The report looked into the current classification of airports and how they could be better classified based on the primary flight activities taking place. The NPIAS airports were grouped into the following four categories:

- **National:** serving national and global markets with an average of 200 based aircraft, including 30 jets;
- **Regional:** serving regional and national markets with an average of 90 based aircraft, including 3 jets;
- **Local:** serving local and regional markets with an average of 33 based aircraft and no jets; and
- **Basic:** serving critical functions within local and regional markets with an average of 10 based aircraft and no jets.

These groupings are intended to help the FAA make better planning decisions, and the FAA is asking state DOTs and airport operators to provide updated information on the functions supported at each airport. These updates will be part of the normal state system planning process, supported by individual master plan updates and regional or metropolitan system plans.

Future development of GA airports included in the NPIAS will continue to be based on eligible and justified needs and priorities, with these new categories providing a more consistent framework within which to evaluate proposed projects. Future NPIAS reports, starting with the Fiscal Year (FY) 2013–17 report to be issued later this year, will incorporate the new categories developed in this report.

Next Generation Air Transportation System (NextGen) Development

NextGen is an FAA initiative to increase efficiency and capacity in U.S. air travel. NextGen is implementing measures that stretch across the lifecycle of a flight: from airport operations and air traffic technology, in-flight efficiency, to takeoff and landing approach developments. With regard to the communities in the DVRPC region, these measures will ensure that airports are better neighbors than in previous decades and protect and preserve the role of airports in the community.

Of special interest to the DVRPC region is the New York/New Jersey/Philadelphia Airspace Redesign Project. The project, begun in 2007, is scheduled to be fully implemented by 2018. Currently, the New York/New Jersey/Pennsylvania airports combined serve over 8,000 flights a day, and all four major airports (PHL, Newark Liberty International [EWR], LaGuardia [LGA], John F. Kennedy International [JFK]) are on the list of the top 10 delayed airports in the nation. The redesign will result in route realignment and airspace redesign, including revised approach and departure paths. Dispersal headings are being implemented that will allow air traffic controllers to space departing aircraft on the same runway at decreased one-mile separations. This increases efficiency and optimizes runway capacity. For approaching aircraft, new technology, once implemented, will allow spacing of three miles between approaching aircraft.

NextGen’s revised takeoff and approach procedures will also lead to decreased noise through more direct climb and descent routes. Currently, with aircraft using the traditional step-up/step-down approaches, aircraft climb or descend to certain altitude levels before continuing their trajectory. With newly designed continuous

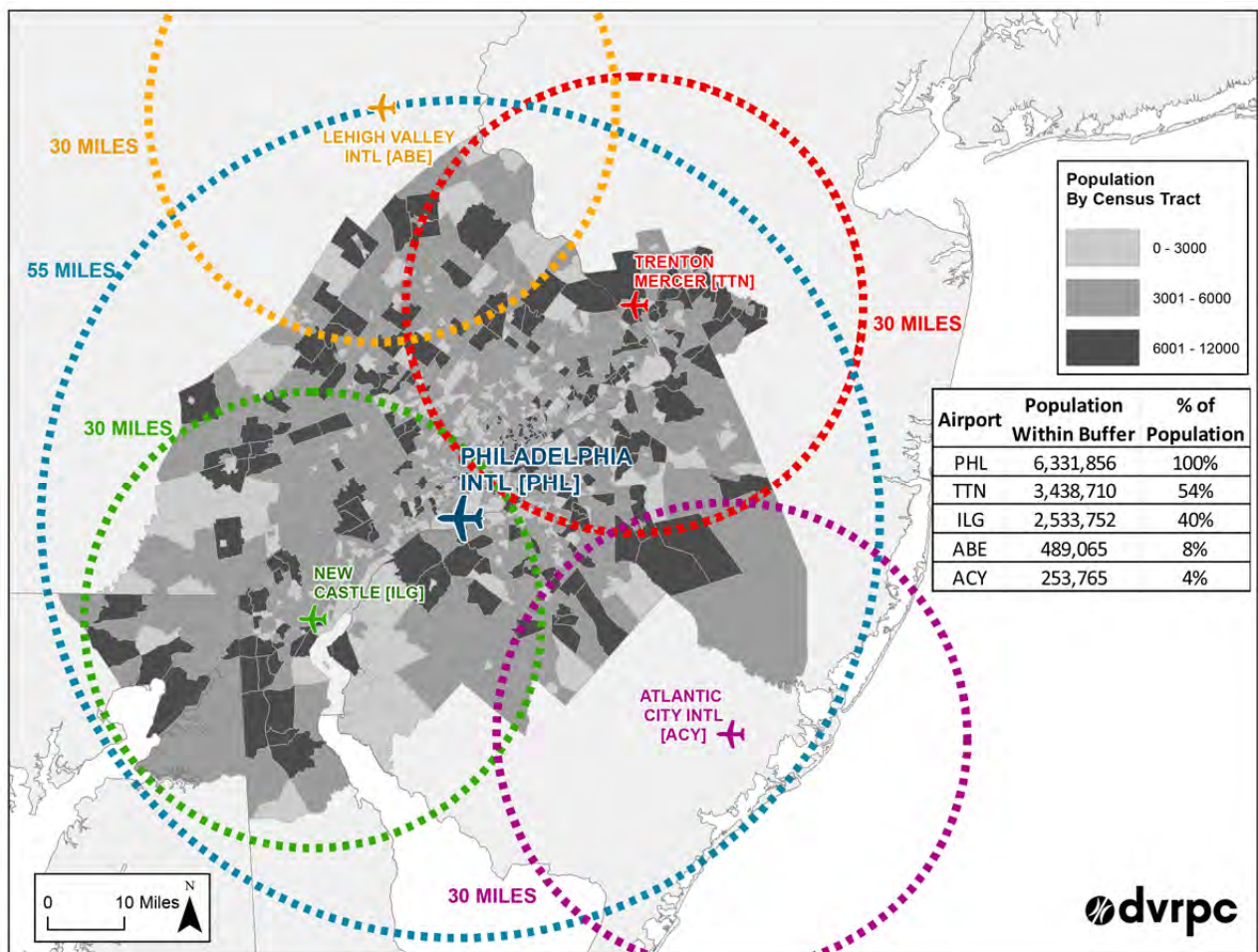
climbs and descents, aircraft use less fuel and delay their initial descent to the runway, decreasing the noise impacts to local residents. A study done at Louisville International Airport confirmed that noise was decreased from peak noise levels by 3.9 to 6.5 decibel A-weighting (dBA) at seven locations along the approach path.

Delaware Valley Airport System and Funding

The Delaware Valley airport system is a comprehensive set of public-use airports and heliports to serve the travel, recreational, business, and aviation education needs of the Greater Philadelphia area, extending to counties in Delaware and Maryland. Altogether, there are currently 24 public-use airports and three public-use heliports. The 2035 plan had recommended conversion of the former Willow Grove Naval Air Station to a public-use facility; however, the runways have now been decommissioned and aviation activity will no longer take place at the site, which is now under the authority of the Pennsylvania Air National Guard.

Commercial service airports serve scheduled service airlines, corporate aviation, and in the case of ILG and TTN, some military operations. These airports are publicly owned and receive formula funds from FAA each year in relation to passenger enplanements. They are also eligible for discretionary grants from FAA, and state grants, on a project by project basis. In addition, some local funds are generated directly and from bond issues to support projects. As shown in Figure 1, PHL is very centrally located within the region, and the entire population of the DVRPC airport planning area is within 55 miles of PHL. In the past year, limited commercial service has been introduced at both TTN and ILG, which both have a significant portion of the region’s population within 30 miles of the respective airport.

Figure 2: Commercial Service Airport Proximity to Population



Outside of the DVRPC Aviation Planning Area, but worth noting, are Lehigh Valley International Airport (ABE) and Atlantic City International Airport (ACY). As Figure 2 illustrates, 8 percent of the region's population is within 30 miles of ABE and 4 percent of the population is within 30 miles of ACY. As can be seen in the chart accompanying Figure 2, as a major international hub PHL dominates over other airports in the region and adjacent areas. While service is comparatively limited at other commercial service airports in the area, they do offer an additional option for travelers to or from the region, as well as additional competition among commercial service airports.

Reliever airports surround the central commercial service airports and are located throughout the region. Their role is providing a high level of capacity for operation and storage of single-engine, twin, and small jet aircraft away from the commercial service airports and near business centers. This has the two-fold systematic benefit of (1) reducing private aircraft demand at the commercial service airports so the operating capacity of the taxiway-runway systems can be devoted to high-passenger-volume commercial aircraft; and (2) distributing operations around the region and out of the most congested central air traffic control sectors, thereby reducing delay, noise impacts, and improving safety.

Reliever airports, which can be either publicly or privately owned, are eligible to apply for federal and state aviation development grants distributed on a project basis by the states or FAA. Several privately owned relievers in the region have had significant owner investment in their facilities without receiving any federal, state, or local grants. Facilities at reliever airports vary in size from 2,800-foot runways with visual approaches to 5,500-foot runways with precision approaches. Reliever airports in the DVRPC region typically have higher based aircraft and operations usage or serve a critical market area in the suburbs where no other aviation capacity exists, compared to non-reliever GA airports in this region. PNE is the largest reliever airport in the region, and its traffic is on par with other non-international commercial service airports in the area.

GA airports serve GA and business traffic similar to relievers but usually have a lower volume of users and smaller aircraft, or serve market areas where other capacity options exist. These airports, if recognized in the federal NPIAS and publicly owned, are also eligible for federal discretionary funds and state funding. If privately owned, they are only eligible for state-based grants, assigned on a project basis in competition with other airports. These grants vary in sponsor cost from 10 to 25 percent of project cost.

CHAPTER 2:

Inventory and Update of Base Data and Plan Objectives

Status of the 2035 RASP and Update of Objectives and Priorities

The last RASP was prepared during a time of recession and economic uncertainty. The report strenuously recommended the preservation of existing facilities as land to build new airports in the region is non-existent and therefore the loss of any additional airports would erode the overall availability of aviation in the area. The 2035 RASP stated:

The objectives for the recommended system-wide improvements generally can be stated as expanding passenger capacity at PHL and smaller commercial service airports, while preserving locational options and improving storage, capacity, and safety features for business and general aviation facilities.

The 2035 RASP also laid out four priorities:

1. airside and landside capacity improvements at commercial service airports;
2. runway extensions for reliever airports and the conversion of Willow Grove Naval Air Station to allow controlled business use;
3. preserving endangered reliever/GA airports; and
4. acquisition of surrounding land for storage capacity, runway safety area protection, and obstruction control and encroachment prevention, at reliever airports.

Concerning the second priority, Willow Grove Naval Air Station was decommissioned in 2011 and, as of 2012, Horsham Township's plan is to bring a mix of housing, retail, open space, and an office park to the site. Furthermore, the extension of runways is not feasible from a political and land use perspective at most airports. The loss of Willow Grove as an airport highlights the importance of preserving and sustaining the existing airport and heliport facilities in the region. In addition to Willow Grove Naval Air Station, three other area airports (Bridgeport, Shannon, and Turner) have closed in the last 20 years.

As the economy recovers it remains to be seen to what extent the aviation industry will recover as well. The outlook for commercial aviation is good and airlines will need to find enough qualified pilots to meet their needs as experienced pilots retire. In the Delaware Valley, commercial service is now available from three airports, and ABE and ACY airports are just outside the region and derive market share from the DVRPC Aviation Planning Area.

The 2035 RASP objective was discussed at the November RASP subcommittee meeting. Considering the commercial capacity constraints present at PHL, the budding use of TTN and ILG for scheduled commercial service, and the proximity of ABE and ACY to the region, it was decided that "expanding passenger capacity at PHL and smaller commercial service airports" should be modified to "expanding commercial capacity in the region."

Furthermore, it was discussed that the focus should be on sustaining existing facilities rather than expansion efforts. In addition, helicopter activity and heliports were absent from the 2035 objectives and priorities. Considering the importance of the helicopter industry to the Delaware Valley and the increase in helicopter traffic in the region, it is important that this component of aviation planning not be neglected. Therefore, the objective for the 2040 RASP is defined as follows:

The objective for the 2040 RASP is expanding commercial capacity in the region while sustaining storage, capacity, and safety features for reliever and general aviation airports and heliports.

The challenge for aviation going forward is, no doubt, with GA, at both the business and recreational levels. It was noted that privately owned GA facilities are those most at risk, as publically owned facilities are supported by the operating authority. In addition, community outreach and aviation career education are both important components of a successful airport system plan. Therefore, the objectives for the 2040 RASP took these factors into account, and the following priorities were agreed upon by the RASP subcommittee:

1. Expand commercial capacity within the region.
2. Preserve the existing public-use general aviation airport system;
3. Sustain and improve infrastructure to attract more users.
4. Improve community outreach to inform the public of the importance of airports to the local and regional economy.
5. Improve efforts to attract students to careers in aviation fields.

1. Expand commercial capacity within the region

The Delaware Valley now has commercial service from three area airports. While PHL will most certainly always be the dominant commercial service airport for the region, TTN and ILG now offer alternatives. Frontier Airlines began service to both airports in 2013 and has continued to expand since its introduction. Previously scheduled commercial service at both airports was structured to provide service as part of the hub-and-spoke system so that flights were limited to major airline hubs that already had sufficient service from PHL. Frontier has operated on a point-to-point model whereby flights are offered to leisure destinations or other major U.S. cities several days a week (but not daily).

In addition, ABE and ACY are within 30 miles from parts of the DVRPC Aviation Planning Area. ABE offers service to other airline hubs, while ACY has limited service to other hubs, as well as flights to leisure destinations.

The recent merger of U.S. Airways (the primary carrier at PHL) and American Airlines was supported by city government and will hopefully lead to increased international service at PHL. Network airlines like American Airlines make the most money on long-haul international flights, and PHL offers a convenient connection point to all cities in the Mid-Atlantic and New England, as well as all major cities in the rest of the United States. The lack of non-stop service to Asia was, in part, due to U.S. Airways not having aircraft capable of flying from PHL to Asia. With the combined fleet of American and U.S. Airways, there is the potential to utilize an American 777 for such service. In addition, American Airlines partner Qatar Airways has just launched service from PHL to Doha, providing onward connections to the Middle East, South Asia, and Africa. As such, PHL now has strong non-stop service to both Europe and the Middle East; so initiating service to Asia and Latin America would now be the priority.

2. Preserve endangered privately owned airports

Of the 24 airports in the DVRPC Aviation Planning Area, 11 are owned either by a city or township, county or county airport authority, state, or a bi-state authority. The following 13 are privately owned:

1. Brandywine (OQN);
2. Camden County (19N);
3. Claremont [*formerly Cecil County*] (58M);
4. Cross Keys (17N);

5. Flying W (N14);
6. Heritage Field (PTW);
7. Pennridge (CKZ);
8. Perkiomen Valley (N10);
9. Red Lion (N73);
10. Spitfire Aerodrome (7N7);
11. Summit (EVY);
12. Trenton-Robbinsville (N87); and
13. Wings Field (LOM).

Of these, EVY is owned by Greenwich Aerogroup, a Wichita-based corporation with operations in seven states, as well as Brazil. The remaining privately owned airports are owned by local entities or, in some cases, individual families. This group of airports is most in danger of being unable to keep up operations as they do not have the resources or legal standing of publically owned airports. Since 1986, three airports have closed in the Delaware Valley. In addition, the Willow Grove Naval Air Station, which was recommended to be converted to civil aviation in the 2035 RASP, has been transferred to the local township, had its runways deactivated, and will be redeveloped as residential and commercial property.

Once an airport is lost it will not return and, with the lack of open land in the Delaware Valley, the building of new airports is impractical. Therefore, efforts must be made at the federal, state, and local level to preserve these 13 privately owned airports to ensure both air mobility and economic vitality of the region. If local preservation efforts fail, regional contingency planning needs to provide sufficient capacity elsewhere in the system to accommodate future regional GA demand.

3. Sustain and improve infrastructure to attract more users

An airport's economic success can be gauged by the availability and condition of its infrastructure. Well-maintained runways, availability of fuel and Jet-A, and on-site fixed base operator (FBO) services are hallmarks of a high-quality facility.

4. Improve community outreach to inform the public of the importance of airports to the local and regional economy

In general, the public is not well aware of the benefits of airports and their importance to the economy. When airports are located in residential areas they are associated with noise pollution. In our interviews, airport managers told many stories of people moving into an area with a long-established airport only to complain to the facility about the noise it is generating.

Therefore, it is incumbent on airports to have active community relations and outreach. Many of the airports in the Delaware Valley already have robust programs in place. The most common initiative is a community day event geared to families and children. Some airports have restaurants that are open to the public where people can come to eat and watch planes take off and land. The manager of New Garden Airport (N57) remarked on the importance of having the airfield open (i.e., not fenced in), to better present the airport as a community asset where residents can come to picnic and children (or adults) can become inspired to learn to fly.

Airports in the Delaware Valley provide more than 200,000 jobs and generate \$15 billion in economic output. While PHL is responsible for the majority of this total, other airports are economic catalysts for their locale. For example, the four airports in Bucks County provide 147 jobs and an economic output of \$16.7 million and

the single GA airport in Gloucester County, 17N, provides \$2 million in payroll and \$5 million in economic output to the county.

5. Improve efforts to attract students to careers in aviation fields

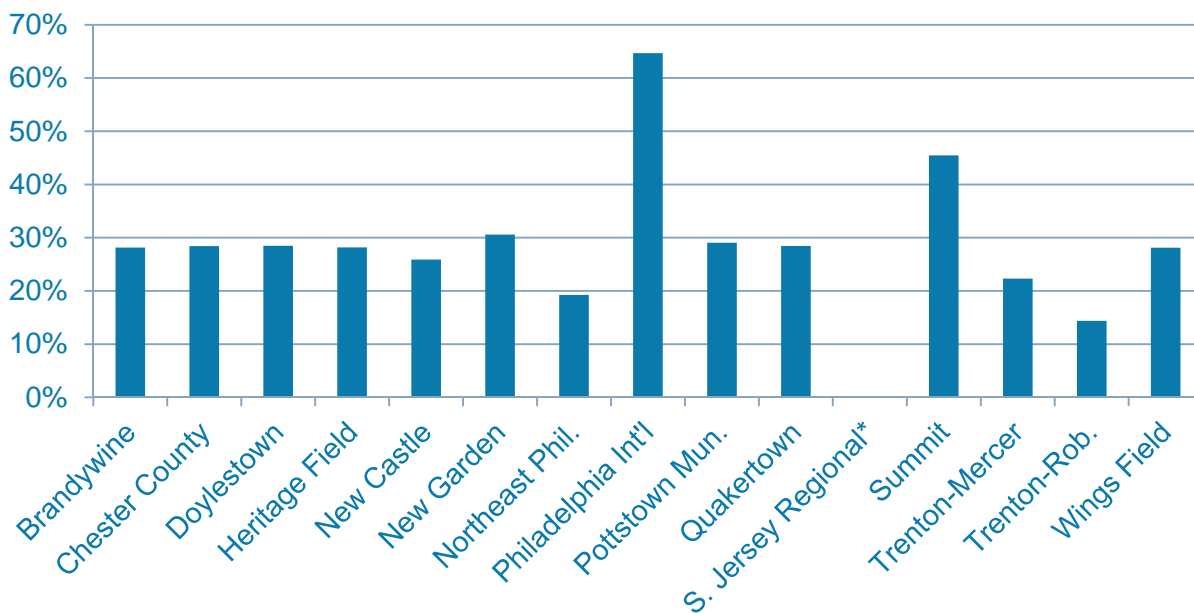
The continuation of economically viable airports depends on the growth of careers in aviation. While the recession led to a downturn in aviation-related positions, significant growth is on the horizon. Airlines are recruiting pilots, and there is also need for mechanics. In our visit to EVY, the manager remarked on the difficulty of finding skilled aircraft maintenance technicians, and that young people today are much more interested in computer-related work. To meet both the flight and ground needs, there must be greater outreach to students to educate them about the potential and variety of careers in aviation. With PHL a major East Coast hub, the helicopter manufacturing industry in the area, and the need for maintenance positions throughout the region’s airports, a career in aviation in the Delaware Valley should be easily attainable for those with the right skills.

Airport-Specific Operational Activity and Based Aircraft Trends, 1986–2012 and Forecasts

DVRPC has conducted aircraft operations counts at the non-towered airports in the 12-county, four-state Delaware Valley RASP since 1986. These operations counts complemented the data obtained directly from the air traffic control towers at PHL, PNE, TTN, and ILG.

The recession hit aviation hard. As can be seen in Table 1, from 1999 to 2012, there has been a downturn of 26 percent in flight activity in the region. However, from today to 2040 there is forecast to be significant growth in flight activity throughout the region, as shown in Figure 3 of the FAA’s terminal area forecasts (TAFs) to 2040. As the economy recovers we can expect greater flight activity at the region’s airports; this is already witnessed in the commercial growth at both TTN and ILG. As those airports increase their share of commercial traffic, there will no doubt be shifts of corporate, training, and recreational traffic from these two airports to reliever airports in the region and a trickle-down effect to the smaller area airports.

Figure 3: Projected Growth (NPIAS Airports), 2013–2040

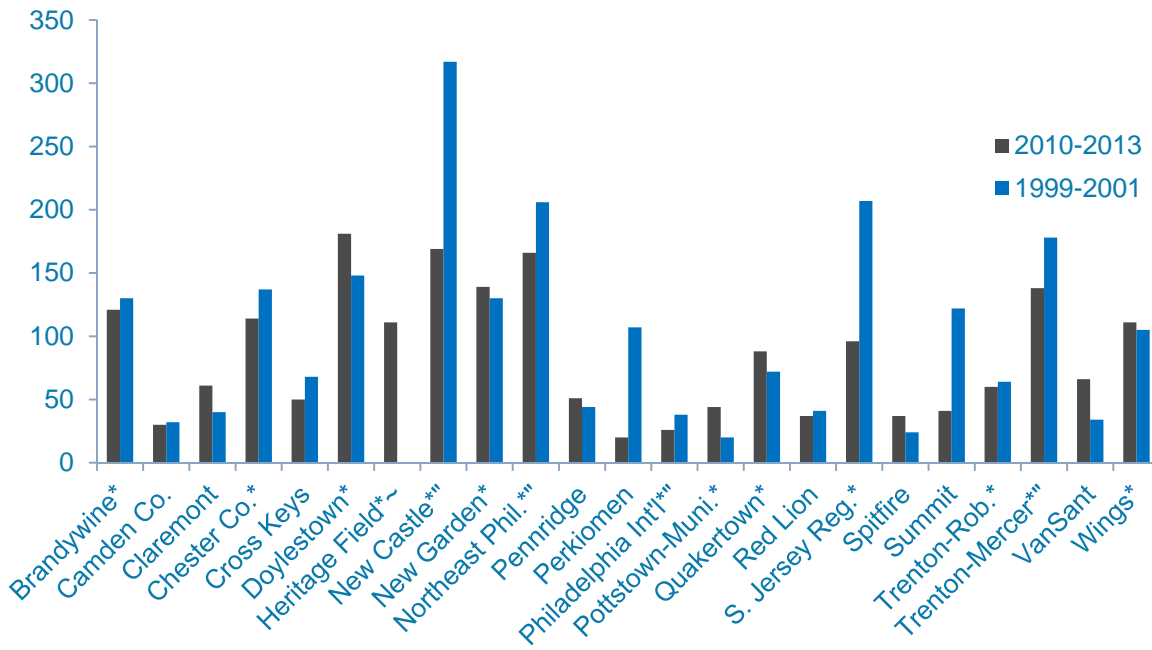


*No projected growth over this time period
 Source: FAA Terminal Area Forecasts 2013–2040

Table 1: Airport Operations Counts, 2009–2013 versus 1999–2002

Airport		2009–2013 Counting Cycle	1999–2002 Counting Cycle	Percentage Change	
Brandywine		42,521	44,431	-4%	
Camden County		5,230	13,418	-61%	
Claremont		12,626	9,662	31%	
Chester County		41,774	45,996	-9%	
Cross Keys		22,824	32,145	-29%	
Doylestown		34,046	51,974	-34%	
Flying W		56,389	37,250	51%	
New Garden		27,331	26,340	4%	
Pennridge	Non-Towered (DVRPC data)	20,557	24,818	-17%	
Perkiomen		6,608	22,682	-71%	
Heritage Field		29,795	44,209	-33%	
Pottstown Municipal		15,848	9,929	60%	
Quakertown		19,951	12,627	58%	
Red Lion		6,386	13,294	-52%	
South Jersey Regional		23,229	59,466	-61%	
Spitfire		11,463	8,363	37%	
Summit		20,409	40,652	-50%	
Trenton-Robbinsville		21,926	29,762	-26%	
Van Sant		14,013	16,785	-17%	
Wings		36,652	32,626	12%	
<i>Subtotal, Non-towered</i>			<i>469,578</i>	<i>576,429</i>	<i>-19%</i>
Philadelphia Int'l		Towered (FAA data)	443,236	483,567	-8%
Northeast Philadelphia			70,574	176,676	-60%
Wilmington			53,524	130,021	-59%
Trenton-Mercer	76,717		146,537	-48%	
<i>Subtotal, Towered</i>		<i>644,051</i>	<i>936,801</i>	<i>-31%</i>	
Region Total		1,113,629	1,513,230	-26%	

Figure 4: Total Based Aircraft, 2010–2013 versus 1999–2002



* NPIAS Airport; ** Towered airport; ~ No historical based aircraft data

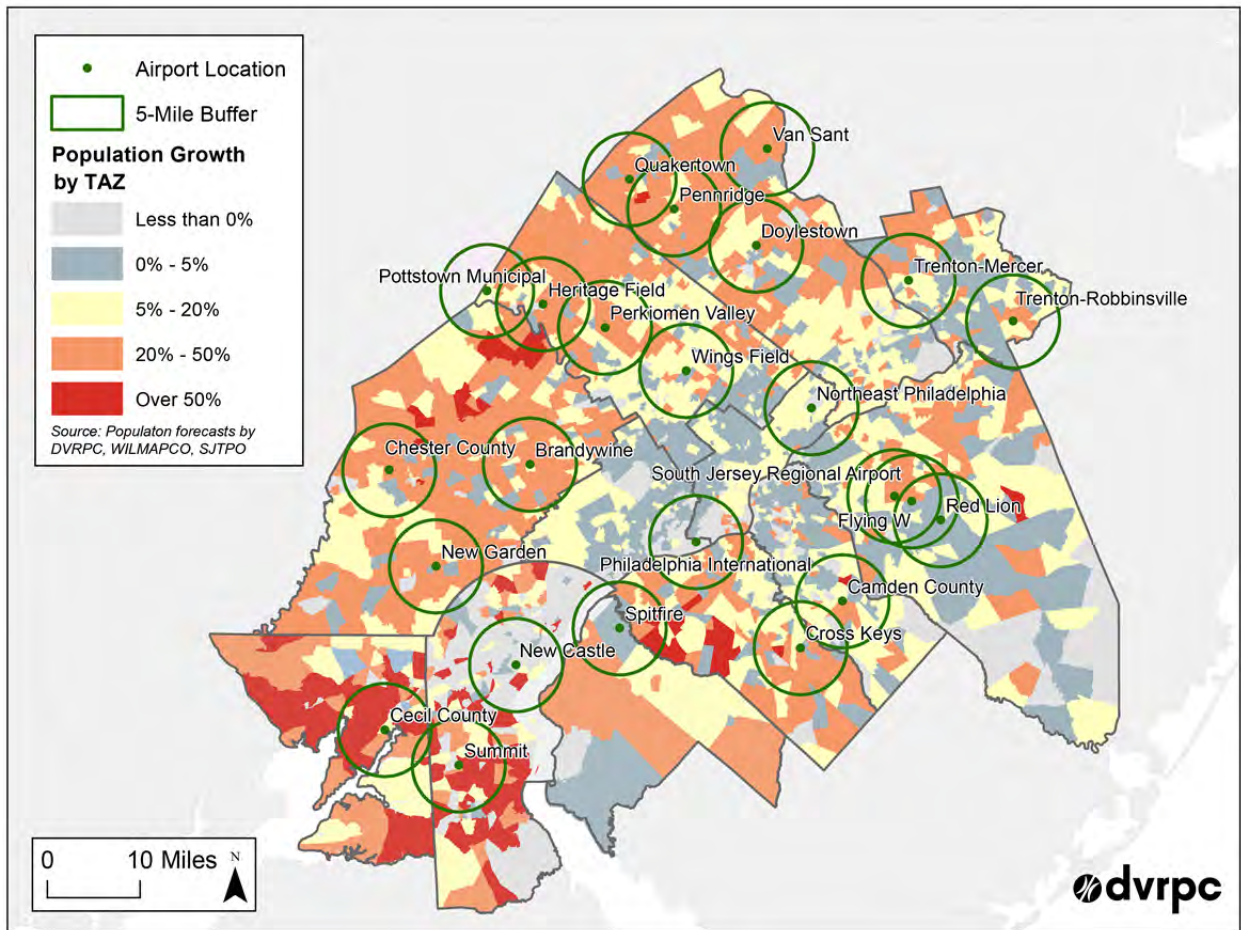
Population Growth

The DVRPC Aviation Planning Area is expected to undergo growth in most regions by 2040. In Figure 5, divided by Traffic Analysis Zones (TAZs), it can be seen that the areas with the highest projected growth are Cecil County, southern New Castle County, southern Gloucester County in New Jersey; and parts of northern Chester County (highlighted in dark red). These population growth centers coincide within five-mile buffers with several DVRPC airports: 58M, EVY, 7N7, Pottstown Municipal (N47), and PTW.

Of particular interest to this study, the areas of the least projected growth (in light grey and blue) are northern New Castle County, most of Burlington County, areas surrounding Philadelphia County, and parts of Mercer County near Trenton. The airports within five miles of large swaths of low-growth areas include ILG, N73, N14, South Jersey Regional (VAY), TTN, N87, and PHL. Of course, that PHL is in a specific low-growth area does not mean it is expected to have decreased operations by 2040; in fact, the FAA has projected its growth to be nearly 65 percent from 2013 to 2040.

Population growth in these areas will likely result in increased land use pressure on airport facilities and limit their ability to expand. Local governments must be aware of this projected growth and economic importance of the airport to the community and region, and engage in strategies to preserve the airport facilities. Airports must also work to educate the surrounding residential population about the benefits of the airport and strive to be regarded as a “good neighbor” within the community.

Figure 5: Projected Population Growth by TAZ, 2010–2014



Airport Market Areas

To establish airport market areas, we made use of ESRI’s Business Analyst feature of geographical information systems (GIS). Using Business Analyst, we created 20-minute drive time polygons around each airport. The 20-minute interval gives coverage to nearly the entire Delaware Valley area without as much overlap as would be created by 30- or 60-minute drive times. In reality, pilots choose an airport for a variety of factors: fuel price, hangar availability, FBO services—therefore, pilots may drive much longer than 20 minutes to reach their preferred airport. However, the 20-minute threshold gives us a solid sense of the surrounding area of the airport, both in residential and business factors.

The demographics we examined in the airport market areas were residential population, employee population (i.e., number of people employed within the market area whether living there or elsewhere), the population growth from 2000 to 2013, and the ratio of residents to employees. The results in Table 2 show that there is a variety of demographics in each market area but that no market is losing population, or is exclusively residential or commercial. This demonstrates that there are encroaching land use patterns that may eventually push airports to be redeveloped as residential or commercial property, as with Willow Grove.

Table 2: Airport Market Areas

Airport	State	Population 2000	Population 2013	Population Increase	Median Household Income	Median Home Value	Businesses	Employees	Residents	Employee Residential Pop. Ratio
12 County Region		6,037,905	6,387,072	5.8%	\$59,750	\$244,433	354,948	2,596,378	6,387,072	0.41
Brandywine	PA	218,363	242,104	10.9%	\$93,346	\$385,965	19,776	160,457	242,104	0.66
Camden County	NJ	443,247	465,222	5.0%	\$72,740	\$235,103	25,206	158,852	465,222	0.34
Claremont	MD	74,074	90,240	21.8%	\$67,046	\$267,177	4,489	30,460	90,240	0.34
Chester County	PA	133,866	159,733	19.3%	\$75,644	\$274,881	9,198	55,587	159,733	0.35
Cross Keys	NJ	437,510	462,771	5.8%	\$64,252	\$205,529	21,520	120,903	462,771	0.26
Doylestown	PA	221,470	246,954	11.5%	\$88,105	\$332,170	17,405	107,115	246,954	0.43
Flying W	NJ	259,999	269,241	3.6%	\$82,616	\$272,490	17,016	125,739	269,241	0.47
Heritage	PA	232,247	277,723	19.6%	\$75,166	\$256,272	15,220	108,507	277,723	0.39
New Garden	PA	166,443	188,932	13.5%	\$88,734	\$349,875	11,135	66,600	188,932	0.35
Northeast Philadelphia	PA	846,839	888,479	4.9%	\$44,984	\$204,016	43,234	357,765	888,479	0.4
Penridge	PA	156,005	171,279	9.8%	\$75,014	\$283,307	11,537	74,402	171,279	0.43
Perkiomen Valley	PA	209,819	242,050	15.4%	\$80,889	\$286,397	13,639	99,730	242,050	0.41
Pottstown Municipal	PA	180,431	213,137	18.1%	\$72,047	\$235,471	11,368	75,037	213,137	0.35
Quakertown	PA	179,390	200,096	11.5%	\$69,177	\$258,460	12,578	77,636	200,096	0.39
Red Lion	NJ	143,607	152,575	6.2%	\$81,355	\$279,758	8,471	49,643	152,575	0.33

South Jersey	NJ	265,212	276,824	4.4%	\$83,112	\$271,529	18,266	139,547	276,824	0.5
Spitfire	NJ	256,128	270,829	5.7%	\$54,645	\$184,407	12,588	91,395	270,829	0.34
Summit	DE	171,806	218,907	27.4%	\$70,886	\$267,355	10,610	71,773	218,907	0.33
Trenton-Mercer	NJ	542,204	555,296	2.4%	\$72,188	\$270,708	33,325	263,483	555,296	0.47
Trenton-Robbinsville	NJ	396,966	435,676	9.8%	\$70,155	\$293,471	22,364	195,188	435,676	0.45
Van Sant	PA	20,532	21,667	5.5%	\$85,144	\$347,803	1,678	6,188	21,667	0.29
Wilmington	DE	495,279	518,089	4.6%	\$58,008	\$233,999	29,885	246,334	518,089	0.48
Wings	PA	620,299	631,249	1.8%	\$66,835	\$270,272	43,354	330,240	631,249	0.52

Aviation Education

There has been much discussion in recent news regarding a looming pilot shortage in the United States. The reasons for this are threefold. According to the Bureau of Labor Statistics (BLS), between 2010 and 2020 many pilots will reach the mandated retirement age of 65. Also, a new FAA requirement recently put into effect for Part 121 commercial carriers, requires all pilots to have a minimum 1,500 flight hours, an increase from the former 250-hour requirement. Further, required rest periods for flight crews have been increased, which will legally limit flight crews to working fewer hours in a day. This change will require hiring more pilots to fill in the resulting gaps in crew scheduling. Nationally, BLS projects that the commercial and airline pilot profession will grow 11 percent between 2010 and 2020. Worldwide, Boeing has made projections that 460,000 pilots will be needed, with 15 percent of the demand in the United States and Canada. The Asia Pacific region, including China and India, is a rapidly growing aviation market that is expected to require 40 percent of these positions. The DVRPC region will be affected by the need and competition for pilots, so it is essential that the educational programs available in the region be supported to meet the upcoming demand for flight crew, as well as aircraft maintenance positions.

The DVRPC region includes vocational and degree programs for aviation education. Mercer County Community College (MCCC) in West Windsor, New Jersey, offers associate degree programs in aviation. For those interested in working in airport service positions, MCCC offers Aviation Customer Relations (Associate in Applied Science) or Aviation Management (Associate in Science). The Aviation Flight Technology program (Associate in Applied Science) enables students to earn FAA flight ratings while also taking academic courses. Flight training is performed at N87 with the Royal Karina Air Service. According to data available from the MCCC website, each semester an average of eight students achieve the flight ratings of private, commercial, and/or instrument in conjunction with the program.

Delaware State University also offers an aviation program. Curriculum in the program leads to a Bachelor's of Science degree with concentrations in aviation management or professional pilot. The aviation management program leads to careers in airport management, air and ground safety, economics and finance, personnel management, and aviation law and regulations. Professional pilot graduates will complete their FAA requirements for Private Pilot, Instrument, Commercial, Multi-Engine, and Certified Flight Instructor ratings while earning their bachelor's degree.

In addition, the majority of airports in the region have some type of education component to train new pilots, either for careers or recreation. These programs not only train new pilots but generate revenue to sustain airport businesses.

There is a long history of economic support from rotary wing manufacturing and remanufacturing companies in the DVRPC region. These companies, such as Piasecki Aircraft Corporation, Sikorsky Helicopter, and Boeing Rotorcraft Systems (formerly Boeing Vertol), create a demand for educated employees from the region. Currently, vocational training is offered at the Aviation School of Maintenance located at PNE. The FAA-approved Airframe and Powerframe (A&P) school offers certificate programs in Aviation Maintenance Technician Electronics, Aviation Maintenance Technician, and Avionics Technician.

For those interested in flight careers, there are multiple rotary wing and fixed-wing flight schools stationed at DVRPC airports throughout the region. The training for rotary wing pilots involves a series of FAA licenses, and the types of licenses achieved depend on one's career interests. The training for a helicopter pilot generally begins with a student license that enables the student to fly solo. This is followed by a private helicopter license with a minimum of 30 hours of flight time, and then instrument and commercial licenses can be earned with 35 and 150 flight hours, respectively. If a student desires a flight career in the rotary wing

industry, they may pursue a Certified Flight Instructor (CFI) or Certified Flight Instrument Instructor (CFII) certification that would enable them to instruct students while also gaining experience. This can be an economical way to gain flight hours. Once a student has reached 1,200 hours of total time, as well as minimum numbers of night, helicopter, and cross-country hours, they can enroll in an ATP (Airline Transport Pilot) course, which is required for many commercial positions.

The fixed-wing pilot program is similar to the helicopter program with a few extra certifications to achieve. With fixed-wing aircraft, pilots are expected to achieve an FAA multi-engine rating, which requires a minimum of a private pilot's license (PPL). For commercial and airline positions, experience in both single- and multi-engine planes is often required. For students interested in a career in fixed-wing aircraft, there is a Multi-Engine Instructor rating available. Additionally, there are certain other optional certifications that are available for fixed-wing aircraft and not rotary wing, such as complex aircraft, high altitude, and tail wheel endorsements. Further, the minimum hour requirements for fixed-wing aircraft are comparably higher than rotary wing, due to the fact that fixed-wing aircraft normally fly longer distances and have a greater range.

As one can imagine, flight instruction and aircraft rental are expensive for either career path. Costs vary widely depending on geographic location, the type and complexity of the aircraft and how many hours of instruction the student needs for each license before they feel confident to take the FAA exams. As a financial example, the ATP School, with one location at TTN, has a comprehensive 150-day program for complete fixed-wing beginner pilots interested in airline careers where the student can receive 275 flight hours and all licenses, including all instructor ratings for \$64,995. For rotary wing, there is a program at PNE run by Independence Helicopters that includes all beginning training through a CFII for \$71,000. These costs can sometimes be prohibitively expensive for potential pilots and are certainly a limiting factor in the number of pilots at flight schools today.

Student Survey

To gather information on aviation education students in the Delaware Valley, an online survey was created and distributed in the fall of 2013. A total of 16 questions were asked in order to provide information on the demographics and goals of aviation students; the questions were reviewed at the August RASP meeting prior to being distributed. The survey link (hosted by Survey Monkey) was sent to staff of flight schools throughout the region with the request to distribute to their students.

A total of 20 responses were received between October 15 and December 11. The demographic results showed that 90 percent of the responders were men and 55 percent were 25 or younger (with the remaining age groups equally split between 26–40, 41–55, and 56 and older). All responders had completed at least a high school or GED education, and 45 percent had completed education beyond high school.

Responses were obtained from students at the following schools: Leading Edge Aviation, Advanced Wings, MCCC, Delaware State University, and New Garden Flight Connection. Multiple responses were received from all schools with the exception of New Garden. The largest responses came from MCCC and Delaware State University, with six responses from each of those schools. Only two responders indicated that they had moved to the region to attend flight school. Most of the students are employed outside of school with 45 percent working 40 or more hours, 35 percent working less than 40 hours, while 20 percent are not employed.

In terms of qualifications, 40 percent have less than 25 hours of flight time and none have more than 300 hours. A student pilot license is held by 40 percent of responders with 33 percent holding a PPL. One also reported an Aviation Maintenance Specialist (AMS) license and one a commercial license.

Students demonstrated a variety of goals for their aviation education. One-third indicated they hoped to obtain a commercial license and one-third also hoped to obtain some kind of instructor license; 40 percent hoped to obtain an ATP license, and 47 percent hoped to obtain a complex aircraft license. Only one indicated a desire to obtain an Aviation Maintenance Engineer license, and none indicated a desire to obtain an AMS license. Students were free to choose as many desired licenses or certificates as they wished. Two students indicated that (prior to current instruction) they had work experience in A&P, and one indicated prior experience in ground handling.

Aviation education goals also showed variety. More than half (58.3 percent) listed their goal as ATP certificate, while 25 percent listed simply a PPL. Two responders stated their goal as air traffic control, and others choose commercial pilot license and helicopter ATP license. Only one marked “undecided.”

Overall, students were well satisfied with the education they are receiving; 87 percent chose extremely or very satisfied, and none indicated they were less than satisfied. Location (53 percent) and price (33 percent) were the top factors in choosing a flight school; only one responder indicated that type of aircraft available was the most important factor.

After completing their education, only 20 percent indicated that they planned to seek employment in the Philadelphia area, and 20 percent indicated they did not intend to seek employment in the Philadelphia area—however, 60 percent were undecided. This is somewhat surprising, given that only two students indicated they had moved to the area for aviation education. There was no clear destination for those looking outside the area, with 53 percent choosing “undecided” while 27 percent chose “international.” Only one responder chose “do not intend to work.”

The results of the survey show that there are a variety of students studying aviation in the DVRPC Aviation Planning Area, and those students have a variety of goals, whether simply recreation or the majority who are seeking careers in aviation. The results also show that the region is not attracting students to the area specifically for aviation education and that those learning here are eager, or at least willing, to relocate to other areas after completing their education. Like many new graduates, aviation students may see the need to relocate based on job availability and other factors, but with the importance of aviation to the DVRPC Aviation Planning Area economy it is important that efforts be taken to retain new graduates within the region. Perhaps new graduates are not aware of the variety of employers in the aviation sector in the region, or they simply may be eager to explore new areas of the country or world. Either way, it is important that greater efforts be made to match local students and employers within the region.

CHAPTER 3:

Regional Aviation Capacity Assessment and Forecast

While business has been down in recent years due to the economic recession and rising fuel prices, the FAA is projecting an increase in flight activity of more than 40 percent by 2040. To ascertain the ability of the region to meet increased capacity in the future, DVRPC sent a survey form to all airports in the region (with the exception of PHL) and asked airport managers to complete data on the number of hangars and tie-down spaces, as well as their current utilization (Table 3).

Data was provided from all airports with the exception of N10 (which had closed for the winter and is in a period of transition). The results show that hangars are at capacity at nine of 23 airports and tie-downs are at capacity at three of 23 airports, while only one airport is at less than 50 percent of capacity. For the region, the average airport capacity is 78 percent (92 percent for hangars, 64 percent for tie downs) and the total capacity is at 76 percent (92 percent for hangars, 57 percent for tie-downs). Detailed assessments of each airport are shown in Tables 4 and 5.

Table 3: Regional Aviation Capacity Assessment: Total

Class	Based Aircraft	Capacity	Percentage
General Aviation			
Hangars	274	286	96%
Tie-down	205	340	60%
<i>Subtotal</i>	<i>479</i>	<i>626</i>	<i>77%</i>
Reliever			
Hangars	825	893	92%
Tie-down	370	668	55%
<i>Subtotal</i>	<i>1,195</i>	<i>1,561</i>	<i>77%</i>
Commercial			
Hangars	156	192	81%
Tie-down	45	77	58%
<i>Subtotal</i>	<i>201</i>	<i>269</i>	<i>75%</i>
Region Total	1,875	2,456	76%

The results show that as a region we are making good use of our hangar and tie-down inventory with marginal room for growth. However, the FAA's TAF projects growth of more than 20 percent by 2040 at 12 of the NPIAS airports in the region. Of these, Doylestown (DYL), N57, Quakertown (UKT), and LOM are already at 100 percent capacity for hangars, and Chester County (MQS) and N47 are at 100 percent capacity for tie-downs. Therefore, an increase of both hangar and tie-down space is necessary within the region to support increased activity by 2040.

Table 4: Regional Aviation Capacity Assessment: Hangars

Airport	Type	State	Based Aircraft	Capacity	Percentage
Brandywine	Reliever	PA	88	92	96%
Camden County	GA	NJ	10	10	100%
Claremont	GA	MD	29	32	91%
Chester County	Reliever	PA	107	121	88%
Cross Keys	GA	NJ	8	9	89%
Doylestown	Reliever	PA	125	125	100%
Flying W	GA	NJ	49	54	91%
Heritage	Reliever	PA	89	93	96%
New Garden	Reliever	PA	105	105	100%
Northeast Philadelphia	Reliever	PA	128	145	88%
Penridge	GA	PA	36	36	100%
Perkiomen Valley	GA	PA	-	-	-
Pottstown Municipal	GA	PA	33	36	92%
Quakertown	GA	PA	64	64	100%
Red Lion	GA	NJ	9	9	100%
South Jersey	Reliever	NJ	56	71	79%
Spitfire	GA	NJ	10	10	100%
Summit	Reliever	DE	47	53	89%
Trenton-Mercer	Commercial	NJ	37	53	70%
Trenton-Robbinsville	Reliever	NJ	24	32	75%
Van Sant	GA	PA	26	26	100%
Wilmington	Commercial	DE	119	139	86%
Wings	Reliever	PA	56	56	100%
Subtotal:			1,255	1,371	92%

Table 5: Regional Aviation Capacity Assessment: Tie-Downs

Airport	Type	State	Based Aircraft	Capacity	Percentage
Brandywine	Reliever	PA	35	46	76%
Camden County	GA	NJ	18	40	45%
Claremont	GA	MD	11	24	46%
Chester County	Reliever	PA	32	32	100%
Cross Keys	GA	NJ	30	72	42%
Doylestown	Reliever	PA	54	81	67%
Flying W	GA	NJ	45	60	75%
Heritage	Reliever	PA	30	45	67%
New Garden	Reliever	PA	12	35	34%
Northeast Philadelphia	Reliever	PA	44	186	24%
Pennridge	GA	PA	21	38	55%
Perkiomen Valley	GA	PA	-	-	-
Pottstown Municipal	GA	PA	21	21	100%
Quakertown	GA	PA	20	30	67%
Red Lion	GA	NJ	10	10	100%
South Jersey	Reliever	NJ	44	89	49%
Spitfire	GA	NJ	12	18	67%
Summit	Reliever	DE	13	30	43%
Trenton-Mercer	Commercial	NJ	28	55	51%
Trenton-Robbinsville	Reliever	NJ	51	62	82%
Van Sant	GA	PA	17	27	63%
Wilmington	Commercial	DE	17	22	77%
Wings	Reliever	PA	55	62	89%
Subtotal:			620	1,085	57%

In addition, working with the state DOTs of Pennsylvania, New Jersey, and Maryland, we completed a survey of Runway Safety Area (RSA) compliance for the NPIAS airports in the region (RSA compliance is only determined for NPIAS airports). The results, shown in Table 6:, identified RSA deficiencies at all but TTN and ILG. Therefore, it is recommended that all airports complete RSA improvement recommendations within the next five years.

Table 6: Runway Safety Area Analysis

Airport	State	Runway	Runway Ref.	RSA Standard Length Beyond Departure End	RSA Deficiencies	RSA Improvement Recommendations
Brandywine	PA	9-27	B-I	120' x 240'	Grade issues, retention pond, private non-airport access roadway, public roadway	Maintain displaced landing thresholds.
Chester County	PA	11-29	C-II	400' x 1,000'	Grade issues, public roadway.	Provide standard RSA to maximum feasible cost by placing embankment and grading for existing runway, or sponsor planned new runway.
Doylestown	PA	5-23	B-II	120' x 240'	Grade issues, airport security fence, public roadway	While maintaining existing runway length, improve to extent practicable without public road relocation.
Heritage	PA	10-28	B-II	150' x 300'	Airport security fence, grade issues, and airport roadway	Lengthen displaced RW 28 landing threshold to meet RSA standard.
New Garden	PA	6-24	B-I	120' x 240'	Grade issues	Fill and grade to meet standards as part of the runway rehabilitation and widening project.
Northeast	PA	6-24	C-III	500' x 1,000'	Airport security fence, grade issues, and public roadway	Displace RW 6 landing threshold and apply Declared Distances.
Northeast	PA	15-33	D-II	500' x 1,000'	Airport security fence and public roadway	Displace RW 33 landing threshold and apply Declared Distances.
Pottstown	PA	8-26	B-I	120' x 240'	Grade issues, airport security fence, and public roadway	While maintaining existing runway length, improve to extent practicable without public road relocation.
Quakertown	PA	11-29	B-II	150' x 300'	Stream	Maintain RW 29 displaced landing threshold.
Wings Field	PA	6-24	B-II	150' x 300'	Public road	Maintain RW 6 displaced landing threshold.

Trenton-Mercer	NJ	6-24	C-III	500' x 1,000'	None	EMAS installation: correct deficiencies.
Trenton-Robb	NJ	11-29	B-I	120' x 240'	Public road and fence RWY 29	Displace both road and fence.
South Jersey	NJ	8-26	B-I	120' x 240'	Grade issues RWY 26	Master plan calls for extending runway.
Wilmington	DE	9-27	D-III	500' x 1,000'	Public road	N/A (RSA deficiency resolved by Declared Distances).
Wilmington	DE	1-19	D-III	500' x 1,000'	Public road	N/A (RSA deficiency resolved by EMAS Rwy 19).

Airport System Deficiencies and Needs Analysis

While the DVRPC Aviation Planning Area is home to a robust airport system, there are a number of factors to be considered in addressing its future needs. First and foremost, the region is already built up with little room for expansion. Airport zoning, therefore, plays a part in preserving the current use of airports and preventing incompatible land uses. FAA's use of NextGen technology will also be a factor going forward to 2040. NextGen has already been implemented at PHL and the benefits should be felt by all airports in the region as the system is further implemented. Other issues specific to an individual airport are also provided in an analysis by facility.

Airport Zoning

Airport zoning districts are intended to aid communities in limiting the impact of aviation on residents and land use. This type of zoning can be two-dimensional or three-dimensional:

- **Two-dimensional** regulations affect only the land use on the ground with regards to development and restrictions. This could include restrictions on where an airport can be sited, and also buffer zones around the airport for incompatible land uses such as schools.
- **Three-dimensional** zoning adds the component of airspace restrictions. Communities may enact three-dimensional zoning for reasons such as concerns about low-flying aircraft, obstructions, or sensitive security areas.

Airport zoning protects not only communities but also airports. With appropriately zoned land use, airport approaches are safer due to the regulation of obstructions such as tree height and building development.

The DVRPC Aviation Planning Area encompasses four states, 12 counties, and nearly 400 townships or municipalities. Needless to say, there is not a uniform set of airport zoning regulations for our planning area. However, each state has created its own version of an airport zoning ordinance for municipalities and/or counties to enact. However, many jurisdictions have yet to fully implement such ordinances.

Pennsylvania

Pennsylvania's legislature has enacted Act 164, Chapter 59, which requires all municipalities to adopt an Airport Hazard Zoning Ordinance. As of June 2013, 36 out of 80 municipalities in Chester, Montgomery, Bucks, Philadelphia, and Delaware counties had adopted such an ordinance.

Pennsylvania Department of Transportation (PennDOT) has been proactive in assisting municipalities with the ordinance process by listing a model airport zoning ordinance on their website. The ordinance includes information on establishment of airport hazard zones, including the approach surface zone, conical surface zone, horizontal surface zones, primary surface zone, and transitional surface zone. Many of these include areas that surround the runway, and the ordinance gives specific recommended dimensions for each zone. It also includes information on permit applications, variances, use restrictions, pre-existing non-conforming uses, obstruction marking and lighting, and the procedures for non-compliance.

With the introduction of mandated airport zoning in Pennsylvania, some opposition has arisen to the new regulations. The Chester County Airport Authority told residents that they were updating their zoning and would need homeowners to pay for removal of trees in the approach path for MQS. Discussions are ongoing with homeowners regarding the removal cost.

Delaware

The State of Delaware does not have a mandated municipal ordinance act in effect, although it does monitor development near airports. The Delaware Department of Transportation (DelDOT) requires permit approval for all structures within a set perimeter of any public-use airport (see Delaware State Code, Title 2, Transportation, Chapter 6, for specific dimensions). In New Castle County (the only county in Delaware covered in this report), there is also information in the county Department of Land Use's Unified Development Code (UDC) regarding airports. The UDC states that airports may be classified as limited uses under Office Regional, Business Park, or Industrial. Both of the airports in the county, ILG and EVY, fall under Industrial. This situation is less ideal than a specific airport zoning ordinance because it does not account for the unique needs of airports, such as low tree lines and noise issues.

New Jersey

The State of New Jersey has regulations similar to Pennsylvania in place. In the New Jersey Administrative Code, Title 16, Air Safety and Zoning, Chapter 62, the state discusses the necessary ordinance inclusions. The New Jersey code states that Airport Safety Zones (ASZs) are required for each runway at an airport. Further, municipalities that contain any ASZs are required to have a municipal airport ordinance and also incorporate it into their Master Plan. The ASZs include a Runway Subzone, two Runway End Subzones, and two Clear Zones, with exact dimensions available in the code. It also lists obstruction height standards, permitted/prohibited land uses within the ASZ, and the permitting process for the creation of a non-conforming use of vertical height development within the zone.

Maryland

Maryland's Cecil County is at the southeast corner of the DVRPC aviation planning region and has one GA airport, located in the town of Elkton. The Maryland Aviation Administration of the Maryland Department of Transportation defines airports at a state level under Maryland State Code Title 11, Maryland Aviation Administration, Subtitle 3, as Certified Noise Zones and/or Airport Zoning Districts. Currently, only the two largest airports in the state, Baltimore-Washington International Airport and Martin State Airport, qualify for those classifications.

Neither Cecil County nor the Town of Elkton has a specific airport zoning ordinance in place. The only mention of aviation is in the county zoning ordinance, which allows airports as a special exception in: Northern Agricultural-Residential, Southern Agricultural-Residential, Low-Density Residential, Suburban Transition Residential, Business-Intensive, Light Industrial, Heavy Industrial, and Open Space. This is a broad range of land use districts and does not protect residents or airports well since it provides for the possibility that airports could be sited in a variety of land uses that may not be conducive for safe and efficient airport activities.

NextGen at PHL

PHL has already implemented several NextGen technologies to streamline landside and airside efficiency. Landside, the FAA has implemented Airport Surface Detection Equipment-Model X and Converging Runway Display Aids.¹ The surface detection equipment allows air traffic controllers to track the surface movements of aircraft and vehicles and is intended to reduce the rate of runway incursions. Visual runway display aids are used to assist in spacing on converging runways. In airside movements, PHL has installed Performance Based Navigation procedures that use technology such as satellite-based Area Navigation and required navigation performance to improve access and flexibility for point-to-point operations. Optimized profile

¹ "NextGen Philadelphia International Airport." FAA- Performance Snapshots. Accessed March 10, 2014. <https://www.faa.gov/nextgen/snapshots/airport/?locationId=42>.

descent technology also allows for a decreased route distance due to a reduction in distance between level flight and the descent to the runway. Further, PHL has installed a Traffic Management Advisor, which measures flights in time instead of distance, improving system efficiency. Finally, overall PHL plans an overall airspace redesign in its capital programs, which will lead to more efficiency over the next 15 years.

The FAA's metrics on this technology track six indicators of efficiency from 2009 to 2012, with mostly positive results thus far. Average gate arrival delay, calculated as the actual versus scheduled arrival time at the destination, has decreased from 6.9 minutes in 2009 to -0.1 minutes in 2012, demonstrating a slightly earlier than scheduled average arrival time. However, average gate-to-gate time, defined as the difference between actual gate-in time and actual gate-out time, has increased from 144.5 minutes to 150.2 minutes. The average number of level-offs per flight, referring to optimized profile descent technology, has been tracked since 2011 and shows a slight decrease of 3.9 to 3.8 per flight. Also measuring this technology is the "distance in level flight from top of descent to runway threshold," which has decreased from 2011 to 2012 from 63.0 nautical miles (NM) per flight to 60.8 NM per flight. Looking forward, PHL has an FAA Destination 2025 target of decreasing the NM per flight by 10 percent. The taxi-in and taxi-out times have also decreased from 2009 to 2012, with taxi-in showing a one-minute decrease and taxi-out showing a 3.7-minute decrease.

Analysis by Facility

As part of the RASP planning process, site visits were conducted at all airports in the area, as well as Penn's Landing Heliport (P72). In most cases, DVRPC staff met with airport managers or other on-site staff. In some cases, no airport manager or staff was present and we simply observed the airport conditions and surrounding areas. The results below summarize observations and recommendations by airport class and facility.

Commercial

There are three commercial service airports in the region. PHL is, by far, the largest and there is no indication that will change any time in the foreseeable future. In addition, commercial service returned to both TTN and ILG airports in 2012 and, to date, the new services have been successful at both airports.

Philadelphia International Airport (PHL), Pennsylvania

Owned by the City of Philadelphia and located partially in both Delaware and Philadelphia counties, PHL serves as the aviation hub for the DVRPC region with more than 600 daily departures to 124 cities, including 38 international destinations.

Since the last RASP update, the airport has opened the Terminal E expansion and combined Terminal D/E baggage claim area. Looking forward, PHL is currently in the midst of a Capacity Enhancement Program that was approved by the FAA in 2011. Major airside enhancements include a new runway and two runway expansions, designed to accommodate today's larger aircraft. There are also new terminals, cargo facilities, and an automated people-mover system slated for construction.

With the recent merger between U.S. Airways (the primary carrier at PHL) and American Airlines, it is hoped that additional international service can be added from PHL. Direct flights to business hubs in both Asia and Latin America would benefit the region, which already has strong service to Europe and the Middle East and offers domestic connections throughout the United States, especially to smaller cities in the Mid-Atlantic and New England.

Service to Asia has not been possible in the past, in part, because the U.S. Airways fleet did not include equipment necessary to travel the distance from PHL to Asia (such as the Boeing 777). American Airlines

already has service to Asia from its hubs in Chicago and Dallas with the 777. As the airlines merge their fleets, a new non-stop flight from PHL to Tokyo, Beijing, or Shanghai may be possible in the near future. Alternatively, American Airlines partner Japan Airlines could be incentivized to establish service from Tokyo with onward domestic connections from PHL. The ability to offer connections under the OneWorld airline alliance was the impetus for Qatar Airways to launch service from Doha to PHL in the spring of 2014.

Trenton-Mercer (TTN), New Jersey

TTN, owned by Mercer County, is the only commercial service airport on the New Jersey side of the DVRPC Aviation Planning Area. The airport has had intermittent commercial service throughout its history. In 2012, commercial service from the airport was reintroduced by Frontier Airlines.

The airport is marketing itself as an alternative to PHL and EWR, offering less hassle. During the fall of 2013, the airport underwent renovations to accommodate the new commercial service and expand passenger amenities. A separate baggage claim facility was added and paid parking was implemented. The commercial service has been successful and, as of the summer of 2014, there are now scheduled flights to 17 destinations throughout the eastern half of the United States. However, GA is still the primary flight activity at the airport, and scheduled service accounted for only 3 percent of operations in 2013—yet this share of airport activity is likely to climb in coming years. The airport also receives significant operations and based aircraft from corporations headquartered in central New Jersey.

The airport is near the West Trenton SEPTA station (with service to Philadelphia) and just six miles from the Trenton Transit Center (with Amtrak, NJ Transit, and SEPTA service toward both New York and Philadelphia). However, there is no direct public transit service to the airport. The airport now charges for parking and has increased available parking spaces. Considering the commercial growth the airport is likely to experience, direct public transit access would be of tremendous benefit.

Wilmington (ILG), Delaware

Known variously as New Castle County Airport or Wilmington Airport, ILG is owned by New Castle County and operated by the Delaware River and Bay Authority. In 2013, the airport embarked on a rebranding program to market the airport as Wilmington-Philadelphia Regional Airport. This is the only commercial service airport in Delaware and is referred to throughout the RASP as ILG.

Like TTN, ILG has also experienced intermittent commercial service. After a five-year hiatus, commercial service was reintroduced in 2013 by Frontier Airlines following their success at TTN. Frontier's business strategy is to replicate the successful routes out of TTN at ILG. Today, there is service to seven destinations throughout the United States. With two 7,000-foot runways, Frontier is able to use larger equipment to fly as far as Denver or Houston, while Trenton's shorter 6,000-foot runway limits flights to the eastern United States. The terminal has direct public transit service to the Wilmington Amtrak Station (which also includes SEPTA service), and the airport recently converted apron space to parking to accommodate the influx of commercial passengers.

While commercial service is increasing, the primary flight activities remain corporate flights and maintenance, repair and overhaul (MRO) services. Local large corporations DuPont and Campbell's both have their fleets based at ILG. In addition, the airport offers CBP services to incoming flights, which is very important for corporate traffic.

Airport management remarked that there are great relations with neighbors and few noise complaints. The three runways have all recently been rehabilitated, but there is now a need to merge taxiways and create taxiways parallel to the main runway.

There are no known issues at this airport that would prevent it from increasing activity in the future.

Reliever

There are 10 reliever airports in the DVRPC Aviation Planning Area. With the exception of Maryland, each state has at least one reliever airport. In site visits to reliever airports, it was found that some are doing quite well, while others are experiencing severe downturns owing to the economy and other factors.

Brandywine (OQN), Pennsylvania

OQN is a pilot-owned airport with an excellent location near the Route 202 West Chester Industrial Corridor. It is well located to provide corporate and recreational flight operations in this growing suburban area. PennSTAR medevac helicopters were based there but left a few years ago, which put a financial strain on the airport.

Overall, use is approximately 95 percent recreational. There is a flight school that provides critical financial revenue in the form of fuel sales, and the adjacent QVC studio accounts for some traffic. The airport recently completed an automated weather observing system (AWOS), beacon, and full taxiway. Upcoming projects include new lighting and widening the runway.

Due to residential development in the area there are occasional complaints by neighbors about noise. In addition, a new subdivision has recently been developed that could potentially lead to more noise complaints. Relations with West Goshen Township are good, and the township has airport zoning in place. The airport hosts school groups, as well as Boy Scout troops working on their aviation merit badge.

OQN had a 6-percent decline in flight operations in the 2011–2012 counting period. This decline is attributed to both the overall economic downturn and to a 27-percent downturn in helicopter operations. The loss of helicopter operations is mostly due to losses in the student flight training operations. OQN continues to draw additional itinerant flight operations from both the American Helicopter Museum and Penn Avionics, which is one of the larger GA avionic repair stations in Pennsylvania.

Chester County (MQS), Pennsylvania

Also known as G. O. Carlson Airport, MQS is currently a thriving reliever airport in the western part of the DVRPC region. The airport is owned by the county through the Chester County Airport Authority and is one of the busiest non-towered airports in the region. The majority of users are corporate and charter flights, and with a 5,400-foot runway it is able to accommodate business jets. The airport leases a variety of hangar spaces and has many corporate turbine aircraft based at the airport. The nearby QVC studio accounts for a significant amount of business.

The airport hosts an annual open house, and there is also an on-site restaurant open to the public. As Chester County is a fast-growing county, there is currently encroaching residential development near the airport. Airport management has been proactive in contacting developers and ensuring full disclosure about the airport's proximity to prospective homebuyers. In addition, the airport has distributed an economic benefits report, *Explaining the Benefits of the Chester County/G.O. Carlson Airport*, to help the township and residents see the airport as a positive asset to the community. The report quantifies the economic benefits, both in jobs

and wages, gained by workers directly and indirectly from the airport and addresses resident concerns about approaches, noise mitigation, and future airport development.

In the 2012–2013 counting period, MQS had a 15-percent decline in overall flight operations. This is attributed to a reduction of 15 based aircraft and the economic conditions. Sikorsky Aircraft Corporation is based adjacent to MQS and continues to contribute to overall flight operations and the local economy. The South Apron project is the only project currently ongoing, with a projected 2014 completion date. All funds are on hold for other projects until that is completed.

MQS provides an example of a successful reliever airport that is proactive in addressing community concerns and relations. There are 14 municipalities with proximity to the airport, and 11 of those are without airport zoning. Due to its importance to the western part of the region, it is recommended that adjacent land be acquired for future extensions. In addition, airport zoning should be enacted by the following municipalities: Modena, West Brandywine, East Bradford Township, East Fallowfield Township, West Caln Township, West Bradford Township, Pocopson Township, Caln Township, Highland Township, City of Coatesville, and Newlin Township.

Doylestown (DYL), Pennsylvania

The airport is owned and managed by the Bucks County Aviation Authority (BCAA). BCAA was formed in the 1960s and has a municipal board of five members appointed by the county commissioners—all are volunteers and all are pilots (although that is not a requirement). BCAA also owns and operates UKT and manages Van Sant Airport (9N1), which is owned by the county's parks department.

Leading Edge Aviation is the FBO at DYL and offers an active flight school, Aero Summer Camp, aircraft maintenance services, aircraft rental fleet, and aircraft charter operations—all of which contribute to overall flight operations and the long-term stability of this airport.

As Doylestown is the county seat, the courthouse accounts for some activity (lawyers and trial witnesses), and there are frequent charter operations. In addition, as there is no landing fee, there are significant transient operations. The pharmaceutical firm Merck & Co. uses the airport for occasional helicopter operations, and the FBO's flight school activity has also been increasing.

BCAA would like to build a new terminal building, and currently runway repaving and updated lighting, as well as bypass taxiways, are reported as the major capital needs. While there were historically good relations with the township, there has been recent community opposition to the runway extension and further growth at the airport. BCAA has purchased houses next to the airport as rental property, and the airport hosts a large open house in June, as well as a Boy Scout aviation merit badge event. In addition, at Christmas the FBO brings in a Santa Claus in a helicopter. It was remarked by airport management that many in the community are not aware of the airport or see it as a country club.

In the 2012–2013 counting period, flight operations at DYL were 10 percent lower than those reported three years prior. While based aircraft have increased to 181 from 177, the reduction in flight operations is on par with the rest of the airports in the region. Although Bucks County is the fast growing area of the region, increases in population do not translate into increases in flight traffic (as opposed to other economic sectors).

While the airport is expected to remain healthy for the foreseeable future, it is recommended that the airport embark on a more robust community outreach program to better educate the community about the benefits of

the airport to engender more community support and appropriate municipalities should enact Act 164 airport zoning.

Heritage Field (PTW), Pennsylvania

PTW, previously known as Pottstown Limerick Airport, is a privately owned airport that was sold by Exelon Corporation (the owner of the nearby Limerick Nuclear Power Plant) in 2009 to Limerick Aviation and then rebranded as Heritage Field.

The airport's business focuses on corporate clients, as well as two flight schools: Fare Share Ltd. and Limerick Flight Center. In addition, PTW is home to an active Experimental Aircraft Association (EAA) chapter. The airport recently lost a major client, a medical equipment company, which relocated to MQS due to its longer runway being able to accommodate business jets.

The airport envisions a runway extension of 1,200 feet (from the current 3,400 feet), allowing it to compete with MQS for corporate jet traffic. The extension will be entirely privately funded.

The airport maintains good relations with the township and neighbors and hosts an annual community event. The surrounding area is a mix of low-density residential, commercial, and industrial uses. Although airport zoning is in place, there are residential tree obstructions that neither the township nor state has enforced on the homeowner.

PTW had a decline in overall flight operations of 10 percent during the 2012–2013 counting period. This decline is in line with the other airports surveyed during this same time period. While based aircraft declined slightly from the 116 reported in 2009–2010 to 111 in 2012–2013, it had little impact on the overall flight operations, which should recover as the economy expands.

New Garden Airport (N57), Pennsylvania

N57, also known as New Garden Flying Field, was originally owned by the DuPont family. New Garden Township purchased the airport nine years ago when it was in need of update and repair, and the northeast side of the facility is envisioned as a future business park by the township. Unlike many other area airports (and reliever airports, in particular) there is no perimeter fencing, and airport management wants to keep it that way so that the airport is more accessible to the community.

The airport was struggling when the new management came in, and management has been proactive at both community relations and fuel sales. There are currently 120 based aircraft and hangar rents, and fuel sales account for 90 percent of revenue.

New Garden management has developed a successful program that offers instruction to 7–15-year-olds. The program attracted 104 children to the Future Aviators camp in the summer of 2013. In addition, there is an annual two-day air show for the community. The airport wants to remain open and accessible to the community (i.e., without perimeter fencing). Management feels that fencing would cut the airport off from the community and would have no effect on reducing wildlife incursions.

Planned improvement projects include the widening and reconstructing of the runway for all weather conditions. The airport is looking into a hangar/house concept. Another issue for the airport is the lack of rental car or taxi service. The airport manager has been in talks with the township about using old police cars as courtesy cars for airport users.

In the 2011–2012 counting period, N57 had close to 6,000 additional flight operations, which is a 28 percent overall increase in flight operations reported during the 2008–2009 counting period. This is attributed to the opening of a new flight school, New Garden Flight Connections, and the completion of their new extended taxiway. The new flight school has added three aircraft to the based aircraft count and has had success in attracting new student. The flight training operations are major contributors to this increase, along with seven additional newly based aircraft. The completion of the extended taxiway project has also brought more transient flight operations to N57.

N57 provides an example of a once-struggling airport whose new management was proactive about community relations and attracting new users. The Future Aviators camp brings in children from throughout the country to get first-hand experience in aviation, which hopefully will inspire them to careers in aviation. Part 164 airport zoning should be adopted by London Grove Township, Avondale Borough, and East Marlborough Township.

Northeast Philadelphia (PNE), Pennsylvania

PNE is owned by the City of Philadelphia and managed jointly with PHL. PNE is the largest reliever airport in the region and also the only reliever airport to have an air traffic control tower. In addition, international flights can schedule CBP service using CBP staff from PHL. The airport markets itself as “Philadelphia’s Executive Airport.”

The airport has two FBOs, and the 8th Police District and Police Aviation Unit are based at the airport. Airport use is primarily corporate, and transient flights account for more business than based aircraft. The airport stays open during snow storms and did not close at any time during the harsh winter of 2014. The tower is staffed by FAA personnel and is also used as a training tower. The airport operates at a deficit, which is offset by revenue from PHL.

The airport is also the site of an Agusta helicopter manufacturing facility and is currently receiving strong demand that translates into increased helicopter flights at PNE.

The airport has good relations with the community. They host an annual run to benefit youth sports leagues, they have donated green space on the property for memorial to deceased children, and trails now encircle the airport perimeter that nearby residents can use for walking, jogging, or cycling.

It has been mentioned that the City does not do a good job of marketing and promoting the airport to corporate users. Although the number of corporate flights at PHL is fairly low, these flights could be shifted to PNE to free up slots for commercial service at PHL. It is recommended that the city should better market PNE to corporations in the area and that Part 164 airport zoning be adopted by Langhorne Borough, Bensalem Township, Bristol Township, Langhorne Manor Borough, Penndel Borough, Falls Township, Lower Southampton Township, Lower Moreland Township, and Hulmeville Borough.

South Jersey (VAY), New Jersey

VAY is one of only two reliever airports on the New Jersey side of the DVRPC planning area. The airport is owned by NJDOT but managed by the same team responsible for N14, which is only two miles away. VAY and N14 complement one another, as VAY focuses on corporate clients and can Very Light Jet class and smaller Light Jet class aircraft, while N14 is a popular recreational airport.

Flight Operations at VAY have declined 9 percent during the 2012–2013 counting. This decline is well within the norm for airports counted in this period. Based aircraft have also declined by 7 percent from 103 reported in 2009–2010 to 96 in 2012–2013, which would account for the flight operations decline.

Several aircraft maintenance operations are based at VAY, and one of them, BP Air, has the maintenance contract for all regional Civil Air Patrol aircraft. The airport remains a busy reliever airport with multiple successful businesses on-site. Going forward, the airport needs a runway widening to meet RSA criteria, and the airport's master plan shows plans for a runway extension.

Summit (EYV), Delaware

EYV, also known as Summit Airport or Summit Airpark, is a privately owned airport in southern New Castle County, Delaware. Originally built by the DuPont family in the 1960s, it was sold to Greenwich Aerogroup of Wichita, Kansas, in 2008. Although currently classified as an NPIAS airport, it has not received FAA funding in over 20 years and current management has no plans to request FAA funds in the future. The airport remained unclassified in the FAA Asset study.

The airport's primary business activity is maintenance and modifications to helicopters for police departments, the U.S. Army, and Boeing. The entire northeast region of the country is a market for the airport's MRO activities, and they also have international clients. There are not many business attractions nearby, so most flight activity is for MRO services or touch-and-go training flights.

There is a 4,500-foot paved runway and a 3,600-foot grass runway. Current hangar facilities are adequate to meet needs, and while there is a footprint for future hangars, nothing has yet been planned.

Although there are residential subdivisions near the airport, the airport property encompasses 500 acres, so encroachment issues are not envisioned. The airport had an open house for all the neighbors and has good support from DelDOT and local government.

In the 2012–2013 counting period, EYV is shown to be down 30 percent in overall flight operations. However, airport management did not provide helicopter flight operations data to DVRPC. Historically, helicopter operations have been about 20 percent of overall operations.

EYV is an example of a successful privately owned airport that fills a strategic business niche. However, within the DVRPC Aviation Planning Area it is likely to remain focused on MRO activities and not serve as an airport used for travelers to and from the area.

Trenton-Robbinsville (N87), New Jersey

N87 is a privately owned reliever airport in Mercer County. The airport has several aviation businesses located at the airfield featuring a traditional FBO operation with airframe and power-plant services, an Air-Mods and aircraft type maintenance facility (specializing in airframe modifications to Mooney aircraft in addition to offering full services to all GA aircraft), a flight school, and an aircraft rental operation. The Posey Brothers, specializing in the care and restoration of antique aircraft, are also located at this airport and are internationally recognized for their aircraft restorations. Reese Aircraft (KD Aviation) has been based here since 1981 and is a highly regarded aircraft painting business.

In the 2010–2011 counting period, traffic at N87 had increased 12 percent since the count in 2007–2008. There were 21,926 operations in 2010–2011 compared to 19,645 operations in 2007–2008. N87 was one of only two airports in the 2010–2011 counting period to have experienced a traffic increase. Combined, these

successful operations are responsible for maintaining a healthy business climate at N87 in spite of current economic conditions.

Wings Field (LOM), Pennsylvania

LOM is a privately owned airport in Montgomery County near the intersection of the Pennsylvania Turnpike and I-476. Its central location within the Delaware Valley and its 3,700-foot runway make it an important facility for the region. Recently, a new FBO, Fly Advanced, was selected to manage and enhance airport operations. In addition, during the past year, the terminal building was remodeled to provide better services to chartered flight operations. In addition, several older hangars have been replaced by new ones and helicopter operations were moved to a new paved transient area.

Airport operations cover business and personal charter operations, flight school, and Angel Flight East (a charity set up to transport individuals and families for medical treatment). There is a members-only club on-site with a private dining room. Community relations are good, and the airport hosts an annual event that includes display aircraft and classic cars.

In the 2012–2013 counting period, flight operations had declined 13 percent since the 2009–2010 period. This is in line with most of the airports counted in this period. However, based aircraft were reported to have increased to 111 from the previous 102, which presents a positive indication of airport vitality.

LOM has been in business for more than 80 years and is the closest airport to Philadelphia, outside of the city limits. It is also the closest airport to the King of Prussia commercial area. As that area of Montgomery County continues to develop, encroaching land uses can be expected to occur in the near future. Currently, of the five townships in the vicinity of LOM, only Plymouth and East Norriton have enacted Act 164 airport zoning. It is therefore recommended that Whitpain, Upper Dublin, and Whitemarsh also adopt Act 164 airport zoning.

General Aviation

There are 11 general aviation airports in the DVPRC aviation planning area, and these airports fill a variety of niches. While some are healthy, others are suffering and likely to close in the coming years if enhancements do not take place.

Camden County (19N), New Jersey

19N is a privately owned airport that has been in business since 1954; and it is the only airport in Camden County. The facility previously included a flight school. Today, a large share of the airport's business is generated from users of the nearby Pine Valley Golf Club. The airport manager estimates that golf traffic accounts for 30 percent of the airport's business.

The airport has a good relationship with NJDOT and the township, while there is limited interaction with Camden County. The adjacent neighbors are a salvage yard, bus maintenance facility, and swampland and there are no issues with noise complaints or other related issues. The airport hosts no community events, and there is no residential development in the nearby vicinity. The manager remarked that business is good and no capital improvements are planned for the near future.

In the 2011–2012 counting period, 19N had a modest 7 percent increase in overall flight operations. This is almost all due to helicopter operations, which have increased 45 percent during that counting period and account for approximately 20 percent of all flight operations. Based fixed-wing aircraft have also increased by four aircraft (up 14 percent), which will continue to contribute to the financial health of the airport.

All of the helicopter operations are from transient aircraft since there are no based helicopters at 19N. A large number of these flights are because of the nearby Pine Valley Golf Course, which is only one mile west of the airport. 19N is a well-maintained facility and, with an improvement in the U.S. business cycle, operations should continue to grow.

Claremont (58M), Delaware

58N is a privately owned airport known in the region as a high quality-airport with good infrastructure. However, its continuation was in question over the last few years, but in early 2014 the airport was purchased by an investor from New York who owns an airport and flight school in Florida. As a result, the airport recently completed the process of rebranding from its previous name of “Cecil County Airport” and now coordinates with the sister flight school in Florida.

The airport facilities are considered first rate, with a new terminal building, improved taxiway, and 10 new “T” hangars completed recently. The current runway surface is in excellent condition and well marked with a recently completed parallel taxiway extension. Aircraft major maintenance is available for both airframe and power plant along with flight instruction and aircraft rentals.

Currently, there is a small flight school and Young Eagles program. The school is expected to be expanded in coordination with the Florida location. There are significant transient operations in the spring and summer. Anticipated improvement projects at the airport are a runway extension (to accommodate small jets), 141 school, perimeter fencing, additional hangars, a restaurant, and condominiums. All of these projects would be privately funded.

The airport has good relations with city and county government, as well as with their neighbors. No annual events take place, although an open house is planned as part of the rebranding.

In the 2011–2012 counting period, 58N had a reported growth of 1 percent in overall flight operations. 58N provides an example of a vulnerable airport that was able to regain itself through new investment and ownership.

Cross Keys (17N), New Jersey

17N is a privately owned airport and the only airport in Gloucester County. There is increasing residential construction in the area, including a retirement community, which may impact future opportunities for growth.

There is a skydiving company based at 17N, which is a major contributor to flight operations. They offer skydiving instruction and also provide services to experienced skydivers. 17N also has an avionics repair shop on the field that specializes in avionics sales, repair, and installation. Airport hangars are full and the flight school has been holding up, although management has remarked that business has been slow.

Flight operations declined 11 percent during the 2011–2012 counting period. There are five less aircraft based at the airport since 2009, a 9 percent loss, which most likely accounts for a portion of the decline in flight operations. Based aircraft have gone down from 100 to 40 since the 1990s.

It is recommended that the airport conduct a feasibility study for runway repaving and also consider hosting a community event to make the airport and skydiving school better known to the community.

Flying W (N14), New Jersey

N14 is one of the busiest airports in the region and indeed the busiest GA airport. This privately owned airport is a destination in itself, as it is home to the Flying W Resort which includes a Western themed hotel, restaurant, playground, and airplane-shaped swimming pool. The airport is a popular destination for recreational flyers to bring friends and family for day or overnight trips.

N14 has recorded a significant downturn in flight operations (24 percent) in the 2011–2012 counting period. The reduction has been attributed to the loss of student training flights due to the closing of the flight school. Additionally, there was a loss in helicopter operations, which was partially due to the relocation of one based helicopter to VAY. Since completion of the 2011–2012 counting period, Free Flight Aviation has opened up flight training operations at N14, and this should increase flight operations.

A reduction in based aircraft from 115 (based a 2009 survey) to the current 104 has contributed to loss of flight operations. Many of these lost based aircraft were originally based at VAY, which is located nearby, and relocated to N14 during a period of difficulties with the former FBO at VAY. The new FBO at VAY has recently reported a growth of more than 15 new based aircraft, and it is assumed that many of these were formerly based at VAY.

Penridge (CKZ), Pennsylvania

CKZ is the only privately owned airport in Bucks County. Total aircraft traffic at CKZ stayed flat since 2007–2008. In 2010–2011 there were 20,527 operations, whereas three years earlier there were 20,552 operations. A notable shift in activity from the previous count in 2007–2008 was observed. Fixed-wing operations declined by 1,087 operations, or 5 percent. Helicopter operations, on the contrary, increased by 1,114 operations. The significant increase in helicopter activity at CKZ is primarily attributed to a new based helicopter.

While business at CKZ has remained relatively stable, its status as the only privately owned public-use airport in Bucks County indicates that it may be vulnerable over the next 20 years to land use constraints. CKZ is within distance of eight municipalities, and only three of those have Act 164 zoning in place.

It is therefore recommended that Act 164 airport zoning be enacted by Richland, Hilltown, West Rockhill, and Bedminster townships, as well as Silverdale Borough, to protect the airport from encroaching development.

Perkiomen Valley (N10), Pennsylvania

N10 is a privately owned airport in a residential area of Montgomery County. Flight operations at N10 have declined 45 percent between the 2009–2010 and 2012–2013 counting period. This can be partially attributed to the reduction in based aircraft, from 41 reported in 2009–2010 to three in 2012–2013. In addition, the skydiving school based at the airport has ceased operations after several years, resulting in further reduced flight operations. Today, N10 is open only during daylight hours (if the runway is plowed free of snow). There are no longer flight instruction, fuel sales, or aircraft rental services.

Considering it is a family-owned airport in a growing residential area, N10 is likely the most vulnerable airport within the DVRPC Aviation Planning Area. Of the five surrounding municipalities, only Skippack Township has enacted Art 164 airport zoning; it is therefore recommended that Perkiomen, Lower Providence, and Trappe townships, along with Collegetown Borough, enact airport zoning as well.

Pottstown Municipal Airport (N47), Pennsylvania

The Borough of Pottstown has owned the airport since the 1960s. There is an active flight school, which includes the region's only full-motion flight simulator, and a specialty repair business that specializes in wood-wing airplanes attracting business from the eastern half of the United States. There is also a hot air balloon

business that makes sightseeing trips for up to 12 passengers. Most fuel sales are local (as opposed to transient) or to pilots based at MQS who find cheaper fuel at Pottstown. The airport used to sell Jet-A, but the market died off.

The airport is included in the comprehensive plan for Montgomery County. Local government and community relations are good, and they have worked with neighboring townships on obstructions. The airport hosts a community day in September. There also are benches for people to come and watch planes, and they typically get visitors on weekends.

The runway was constructed in 1961, and they are considering doing a full rebuild and plan to put the development in their plan for future funding. All-new runway lighting was installed within the past two years. A rerouting of an adjacent road would allow for a runway extension, as the 2,700-foot runway is too short for jets. However, a feasibility study showed there are not enough operations for the borough to justify a runway extension.

Flight Operations declined 11 percent in the 2012–2013 counting period, which is in line with other airports covered during the period. Based aircraft also declined from 56 in the 2009–2010 counting period to 44 reported during the 2012–2013 counting period. This 12 percent decline in based aircraft closely matches the overall flight operations decline of 11 percent.

N47 remains a stable, municipally owned airport with the possibility to extend the runway should future market conditions point in that direction. It is therefore recommended that the municipality plan to reserve land at the east end of the runway for a possible future extension. In addition, North Coventry and Union townships should enact Act 164 airport zoning.

Quakertown (UKT), Pennsylvania

UKT is owned by the Bucks County Aviation Authority (BCAA). UKT is larger in area but has less operations and commercial activity than BCAA's sister airport, DYL. The airport is in good shape in terms of capital needs, and tree removal is the most pressing issue. A tenant that performs maintenance on Medivac helicopters recently located at the airport, increasing helicopter activity. UKT hosts a Young Eagles program and EAA program.

Overall flight operations increased 27 percent in the 2011–2012 period, as opposed to the previous count in 2008–2009. The increase is attributed to the completion of construction activities after a multi-year effort. The runway was under reconstruction during the 2008–2009 count period. This construction activity had, for a time, closed the runway and placed flight restrictions limiting use of the taxiway for takeoff and landing only by airport tenants. The construction activities did not allow for transient flight operations during the construction period.

UKT is envisioned to remain a healthy airport serving the northwest portion of the DVRPC Aviation Planning Area. Only one of the five area municipalities has enacted airport zoning, so it is recommended that Richland Township, Trumbauersville Borough, Milford Township, and Quakertown Borough do so as well.

Red Lion (N73), New Jersey

N73 is a privately owned airport located within an approximate two-mile radius of both N14 and VAY. The surrounding land use is primarily low-density residential. The decrease of 15 percent in overall flight operations in the 2011–2012 counting period is mostly due to the current economic business cycle and the

recreational nature of this airport. N73 continues to be an airport of choice for local pilots who want a personal relationship with their airport owner and fellow tenants.

Spitfire Aerodrome (7N7), New Jersey

7N7 is a privately owned airport and the only airport in Salem County. The airport has a helicopter instruction company, Heli Air, but the primary users are recreational. The owner planned facilities improvements include new hangars and a runway extension but both are on hold until the economy improves. The addition of a security gate and fuel farm is also being considered. The runway, taxiway and aprons have recently been reconstructed and paved, including all line markings. There are good relations with the township and neighbors.

It is anticipated that with an economic upswing, 7N7 will be able to complete its planned capital improvement program and attract additional based aircraft.

Van Sant (9N1), Pennsylvania

Located in the northern most part of the DVRPC Aviation Planning Area, 9N1 is owned by the Bucks County Department of Parks and Recreation and managed by the BCAA. The airport consists of a grass field and is therefore, closed to transient traffic during winter months. Flight activity consists of small recreational aircraft and gliders. In summer months, 9N1 offers airplane rides, picnics, and movie nights for the local community.

During the 2010–2011 counting period, flight operations were down an overall 18 percent, which can be explained by abnormally wet weather that left the turf runway difficult to use at times. The low winter operations are not unusual for turf runways. In addition, during this counting period many township bridges providing access to the airport were closed for repair, making the journey difficult for visitors and pilots who did not live locally and possibly affected the operations at the airport negatively. The bridge closing situation is improving and is not expected to be an issue in coming years.

The airport is recreational in nature, and operations are expected to remain slightly above the current levels of activity as no expansions are planned.

Heliport

There are three public-use heliports in the DVRPC Aviation Planning Area, but only one—Penn’s Landing—received regular traffic. Horsham Valley (next to the former Willow Grove Naval Air Station) and Total RF are now used infrequently.

Penn’s Landing Heliport (P72), Pennsylvania

P72 is a privately owned public-use heliport that began operations in 1984. It is the only heliport in the area with FBO services. Business is good, but the pier the heliport is located on is nearly 100 years old and needs restoration of the seawall. The heliport is used by corporations, newsgathering operations, law enforcement, and Medivac services. A helicopter can fly from Penn’s Landing to Wall Street in New York in 25 minutes, so it is a convenient facility for many business executives going between Philadelphia and Manhattan.

Relations with the community are good, and they have an advantage in that they are on the water and outside PHL airspace using a landing approach over water. There is a plan to expand the pier out as they cannot currently handle the new generation of Osprey helicopters (see Table 7 for details).

Both seawall restoration and pier expansion are recommended, as the heliport plays an important role in completing the airport system and offers swift access for executives going to and from Center City.

Capital Needs

Capital improvement needs by facility were gathered from a variety of sources. State DOTs provided their capital improvement plans, aviation consultants provided their schedule of projects for their airport clients in Pennsylvania, and some individual airport capital improvement plans were also available.

Table 7: Capital Improvement Needs by Facility

Airport	Capital Improvement Needs	Completed Costs (through FY2013)	Future Costs (FY2014–onward)	Percentage Remaining
Commercial				
Philadelphia Int'l	Airside capacity enhancements, possible parallel runway terminal and landside improvement	\$391,975,100	\$999,000,000	72%
Trenton-Mercer	Phase 2 EMAS	\$67,850,000	\$14,000,000	17%
New Castle County	Wildlife management plan, easement acquisition, fencing and lighting enhancements, obstruction removal, rehabilitation of apron, rehabilitation and expansion of taxiway and runway	\$7,600,000	\$32,455,000	81%
Reliever				
Brandywine	Widening runway, updating airport layout plan, obstruction mitigation, parking lot rehabilitation, taxiway enhancements, apron rehabilitation, fencing and gate installation	\$369,444	\$4,740,776	93%
Chester County	South apron construction, runway relocation 400 ft. south, extension of runway to 6100 ft., obstruction mitigation, taxiway to Sikorsky, rehabilitate taxiway, land acquisition, west hangar construction	\$1,447,222	\$34,628,339	96%
Doylestown	Airport layout plan, obstruction removal, apron construction, rehabilitation and widening of runway, land acquisition, ramp construction, T-hangar and maintenance hangar construction, road relocation	\$102,778	\$18,380,558	99%
Heritage Field	Runway rehabilitation, runway extension, taxiway rehabilitation and extension, terminal apron expansion, new hangar/terminal construction.	\$116,112	\$9,696,613	99%
New Garden	Runway and taxiway construction, east hangar construction, zoning ordinance development, apron rehabilitation, terminal construction, approach technology installation, fencing construction, easement acquisition	\$217,444	\$14,175,847	98%
Northeast	Airport layout plan, new taxiway and extension	\$421,000	\$5,158,000	92%
South Jersey Regional	Update master plan, runway extension to 4220 ft., 10 T-hangars	No info	No info	No info
Summit	No projects planned	\$0	\$0	N/A
Trenton-Robbinsville	No projects planned	\$0	\$0	N/A

Wings	Rehabilitation of terminal apron, access road construction, apron construction, Cirrus Center Clear Span Hangar construction, T-hangar and T-hangar taxiway construction, fuel farm relocation, AWOS improvements, updated master plan, corporate apron construction, 10 nested T-hangar construction	\$181,227	\$18,907,871	99%
General Aviation				
Camden County	No projects planned	\$0	\$0	N/A
Claremont	No information	No info	No info	No info
Cross Keys	Reconstruction of 200 ft. of runway lost during construction	No info	No info	No info
Flying W	No projects planned	\$0	\$0	N/A
Pennridge	Reconstruction and construction of taxiway A and apron, snow removal equipment acquisition, perimeter fencing installation	\$200,000	\$2,795,000	93%
Perkiomen Valley	Obstruction removal, T-hangar construction, install runway lighting, rehabilitate and widen runway, terminal building and transient apron construction, taxiway construction, wildlife perimeter fence construction	\$0	\$7,345,000	100%
Pottstown Municipal	Runway rehabilitation and extension to 3,600 ft., obstruction mitigation, taxiway rehabilitation, ALP update, AWOS installation, property acquisition	\$888,888	\$14,263,890	94%
Quakertown	Obstruction mitigation, easement acquisition, rehabilitation and expansion of terminal apron, installation of fuel facility, taxiway construction, construction of 20 T-hangars, taxiway lighting enhancement	\$1,202,894	\$5,023,887	81%
Red Lion	No projects planned	\$0	\$0	N/A
Spitfire Aerodrome	No projects planned	\$0	\$0	N/A
Van Sant	No projects planned	\$0	\$0	N/A
Heliports				
Horsham Valley	No projects planned	\$0	\$0	N/A
Penn's Landing	Heliport rehabilitation, heliport safety equipment acquisition, conduct heliport layout plan update, seawall rehabilitation, storage hangar expansion	\$0	\$1,192,717	100%
Total RF	No projects planned	\$0	\$0	N/A
Grand Total		\$472,572,109	\$1,180,570,781	71%
Total excluding PHL		\$80,597,009	\$181,570,781	69%

Plan Recommendations

The recommendations are based on the goals of the RASP and analysis and discussion of the data and research done as part of the RASP planning process:

1. **Expand commercial air service capacity within the region.** Commercial capacity is essential to the health and growth of the region, and it is essential that solutions be found to manage passenger traffic growth in the congested Northeast Corridor. As globalization continues to occur, it is important that there be ready access to major international markets. In addition, to increase the utilization of the secondary commercial service airports in the area, it is important to offer good ground transportation links to provide better access and reduce adjacent road congestion. Specific recommendations are therefore provided at the following airports:
 - a. PHL: establish non-stop service to Asia and South America by American Airlines or foreign flag carrier.
 - b. TTN: establish a direct bus link between the airport terminal and the Trenton Transit Center.

2. **Preserve public-use GA and reliever facilities.** The Philadelphia area is one of the oldest metropolitan areas in the United States. As such, land available for new large-scale infrastructure projects is minimal, and once an airport closes, it is lost to the region forever. To preserve the region's airports, it is essential that airport zoning be implemented where it has not been already. By preventing encroachment, we can better sustain our regional airport system. Specific recommendations are therefore provided at the following airports:
 - a. MQS: zoning enactment in adjacent municipalities.
 - b. N57: zoning enactment in adjacent municipalities.
 - c. PNE: zoning enactment in adjacent municipalities.
 - d. LOM: zoning enactment in adjacent municipalities.
 - e. CKZ: zoning enactment in adjacent municipalities.
 - f. N10: zoning enactment in adjacent municipalities.
 - g. UKT: zoning enactment in adjacent municipalities.
 - h. 7N7: explore possibility of public acquisition of airport.

3. **Sustain and improve infrastructure to attract more users.** Many factors come into play when deciding which airports pilots and businesses will select. Factors include not only runway length and location, but also FBO services, Jet-A availability, hangar rents, and ease of access. The most successful airports are the ones that can fulfill an essential business niche. Therefore, the following infrastructure recommendations are being made:
 - a. All airports: ensure Americans with Disabilities Act compliance of facilities.
 - b. All airports: explore possibilities for Public-Private Partnerships and a community hangar approach.
 - c. Reliever airports: consider adding transient hangars to attract greater corporate jet traffic.
 - d. GA airport: explore feasibility of adding Jet-A to attract Medivac services, especially for airports near hospitals.
 - e. VAY: achieve runway design guidelines.
 - f. OQN: achieve runway design guidelines.
 - g. N57: achieve runway design guidelines.
 - h. P72: seawall restoration and pier expansion.

4. **Improve community outreach to inform the public of the importance of airports to the local and regional economy.** In our visits to airports, it was often remarked that the community was unaware of the value of the airport to the community (in regards to both residents and local government). Airports offer both business and hobby activities and it is important that airports work toward educating their host communities about their facilities. Many airports do this through community days or other annual events. In addition, it is recommended that there be greater involvement by pilots and airport operators in local government; this can range from attending government meetings to seeking elective office.
5. **Improve efforts to attract students to careers in aviation fields.** As cliché as it sounds, the children are indeed our future. Today, many children and young adults are more attracted to hobbies or interests involving computer graphics, video games, and the like. Aviation offers career and hobby activities that can be highly rewarding and life-long.



Appendix A

Appendix A. RASP Subcommittee

To provide stakeholder input throughout the development of the RASP, a selection of RAC members were chosen to serve on the RASP subcommittee. Members were chosen to ensure representation from federal, state, and local government; airport managers; aviation interest groups; and the private sector. Four meetings took place from August 2013 to May 2014.

Table A-1: RASP Subcommittee Membership

Member	Organization
John Brewer	PNE Airport
Sean Campbell	Penn's Landing Heliport
Nattiel Chambers	PNE Airport
Dawn Fithian	Penn's Landing Heliport
Matt Lawson	Mercer County Planning
Lori Ledebohm	FAA HARADO
Jerry Leipfinger	NJDOT
Jon Martin	New Garden Airport
Mike McCartney	PHL Airport
Roger Moog	NJAA
Ashwin Patel	NJDOT
Tom Shaffer	Delaware County Planning Dept.
Fran Strouse	L.R. Kimball
Tom Thatcher	L.R. Kimball
Tom Tomczyk	PennDOT
Ted Dahlburg	DVRPC
Kale Driemeier	DVRPC
Dave Metzler	DVRPC

2040 Regional Airport System Plan

Publication Number: 13064

Date Published: July 2014

Geographic Area Covered:

New Castle County in Delaware; Cecil County in Maryland; Burlington, Camden, Gloucester, Mercer, and Salem counties in New Jersey; Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania.

Key Words:

Aviation, Airports, Heliports, Based Aircraft, Aircraft Operations, Traffic Demand Projections, Commercial Airports, Reliever Airports, General Aviation Airports, Airspace Congestion, Airport Improvement Program, Airport Zoning, Funding Eligibility, Runway Extensions, Storage Capacity, Airside Capacity, Aviation Legislation.

Abstract:

This report describes the 2040 Regional Airport System Plan (RASP) for the 12-county, four-state Delaware Valley aviation planning region. The plan includes three commercial service airports, 12 reliever/business airports, nine general aviation airports, and three existing heliports. Specific policy, capital project, and programmatic recommendations are made to the States and the Federal Aviation Administration to direct necessary development. This Plan supersedes the 2035 Regional Airport System Plan adopted in 2012.

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