



REGIONAL HELICOPTER SYSTEM PLAN

For the Maryland and Metropolitan Washington Area

EXECUTIVE SUMMARY

Throughout the Metropolitan Washington region, helicopters are used on a daily basis – by the military, government, and public and private operators – to perform a variety of missions. In order to document these current helicopter operations, as well as to determine both the ways in which they are affecting the region today and may do so in the future, the Metropolitan Washington Council of Governments (COG) sponsored a helicopter system plan study for the metropolitan area. The COG study was conducted in conjunction with a similar study for the Maryland Aviation Administration.

**This is an Executive Summary of the Regional Helicopter System Plan Draft
Final Report dated November 2004.**

WHY WAS THIS STUDY CONDUCTED?

While the existence of current helicopter activity in the study area is apparent to many residents and visitors, the impact of that activity in terms of social costs and benefits, as well as the needs of the helicopter users, have not been systematically evaluated in recent years. This study captures up-to-date information on helicopter activity, examines the costs and benefits of this activity on the community, and identifies future system needs and recommendations.

The goals of the Metropolitan Washington study are as follows:

1. Ensure that the current helicopter system meets the region's transportation and public services needs.
2. Manage the system better to help reduce community noise impacts.
3. Establish land use and permitting guidelines for helistops/heliports.
4. Document the relationship between the transportation and public service benefits of helicopter operations and the economic well-being of the metropolitan area.

WHO USES HELICOPTERS?

Helicopters are operated by a wide variety of public and private agencies. These public entities include local police and fire departments, as well as a number of federal agencies responsible for law enforcement, homeland security, and public safety. Among them are the Federal Bureau of Investigation, the Drug Enforcement Administration, the Coast Guard, and the Customs Service, for example. The different branches of the U. S. military, such as the Army, Navy, Air Force and the Marine Corps also frequently utilize helicopters. Private entities employing helicopters in their regular activities may include hospitals, the media (traffic and news reports), commercial operators, and others.

WHERE DO THESE HELICOPTERS OPERATE?

In 2002 there were 48 active heliports in the Metropolitan Washington area, as well as 14 public-use airports and two (2) military airports that support rotorcraft operations.



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Medical use landing facilities make up the largest share of heliports with 46% (22 out of 48). Private and corporate heliports make up 25% (12 out of 48), while government and military facilities make up 27% (13 out of 48) of heliport facilities. There is one public-use heliport located in the District of Columbia (South Capitol Street), but it has been unavailable to non-military and non-police operations since September 11, 2001.

EXISTING HELICOPTER FACILITIES IN METROPOLITAN WASHINGTON (2002)

Facility	Private/ Corp	Gov.	Military	Medical	Public- Use	Total
Heliport	12	10	3	22	1	48
Airport	0	0	2	0	14	16
Total	12	10	5	22	15	64

Source: EK Analysis of FAA, MAA, and HAI records

There are 8 main helicopter routes within the Metropolitan Washington area. The altitude of each route varies due to airspace requirements (e.g., flying below the air traffic at Ronald Reagan National Airport) and the need to minimize noise impacts. The 8 routes are as follows:

- Route 1 is located along the east side of the Potomac River from Tyson's Corner, across the tidal basin, up the Anacostia River, and along the Baltimore-Washington Parkway. The flight path altitude starts at 1300' near Cabin John Parkway, drops to 700', down to 300' near the Washington Monument, to 200' across the tidal basin and lower Anacostia River, back up to 500' and up to 700' along the Anacostia River, and then back up to 1300' above the Baltimore Washington Parkway.
- Route 2 is located along Pennsylvania Avenue and the Suitland Parkway. The route altitude starts at 500' along the Anacostia River and then climbs to and stays at 1000' along the Suitland Parkway.
- Route 3 consists of flights around the Capital Beltway, with a cutoff down the Northeast Corridor rail line, with a direct path down to the junction of I-495 with Virginia Highway 337. The route altitude is constant 1300' from the Woodrow Wilson Bridge clockwise around I-495 to the junction with the Baltimore-Washington Parkway and down to 1000' to the Woodrow Wilson Bridge.
- Route 4 consists of flights straight up the middle of the Potomac River from Fort Washington to Washington Reagan National Airport. The route altitude descends from 1000' at Fort Washington to 300' at the Woodrow Wilson Bridge and to 200' at the junction of Route 1 and the Anacostia River.
- Route 5 consists of flights up Route I-395 from the Beltway to Washington Reagan National Airport. The route altitude on Route 5 over I-395 starts at 1300' south of Virginia Highway 7 and then descends to 200' at Washington Reagan National Airport.



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- Route 6 consists of flights from Washington Reagan National Airport to Bolling Air Force Base, and then straight over to Woods Corner. The altitude is 1000' along the entire route.
- Route 7 consists of flights from Tyson's Corner down Virginia Highway Route 7 to I-395, up along Route 5 over I-395, and then a cut over to Washington Reagan National Airport. The route altitude is 1300' from Tyson's Corner to I-395 along Virginia Route 7 and then descends to 1000' on the cutover to Washington Reagan National Airport.
- Route 8 consists of a southern continuation of Routes 2 and 6 from Woods Corner down Branch Avenue and Brandywine Road, and then south on U.S. Route 301. The altitude along Route 8 is constant at 1000' along the entire route.

CIVILIAN AND MILITARY HELICOPTERS BASED IN THE STUDY AREA

There is no single source of data for based helicopters or helicopter operations (takeoffs and landings). Even at towered airports, air traffic control personnel count helicopter operations as "general aviation," so there is no database of helicopter activity (operations) on a local or statewide level. Although owners are required to register their helicopters with the FAA, registration data only shows the owner's address, not where the helicopter is actually based and operating. A survey of local helicopter operators revealed that there were 71 helicopters based in the Metropolitan Washington area in 2002. Using the survey and existing FAA data, it was estimated that there were about 202,000 helicopter operations in Metropolitan Washington in 2002. The current airspace restrictions within the District, however, do not permit private general aviation operations, with the exception of air ambulance flights. The operators of the helicopters based in Metropolitan Washington area include:

Operator	Base	Helicopters
AOL/Time Warner	Dulles International Airport	3
Bechtel Nevada	Andrews AFB	1
Capital Helicopter	Fairfax Heliport	2
CVC Helicopter Inc.	Darlington, MD	1
Fairfax County Police Dept.	Fairfax, VA	1
HeloAir	Sandston VA	5
Inova Hospital	Fairfax County Hospital	1
Metropolitan Police Dept.	South Capitol Street	1
Prince George's County Police Dept.	Washington Executive Airport	2
US Air Force - 89th Airlift Wing	Andrews AFB	20
U.S. Park Police	District of Columbia	2
12th Aviation Battalion	Davison Airfield	18
D.C. National Guard	Davison Airfield	14



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A single helicopter operator often serves multiple missions, and both civilian and military helicopters can provide similar services, such as emergency medical and disaster relief. The missions flown by the helicopters based in the metropolitan area is very diverse, but generally fall into the following broad categories:

HELICOPTER MISSIONS IN METROPOLITAN WASHINGTON

Mission	Percent of Operations
EMS – Trauma Pick-up	5.7%
EMS – Hospital Transfers	10.2%
Airborne Law Enforcement	13.8%
Military/VIP	51.2%
Electronic News Gathering	1.8%
Personal/Recreational	0.4%
Training	6.4%
Corporate/Air Taxi	6.1%
Film/Aerial Photo	2.3%
Utility	0%
Agricultural/Spraying	0%
Wildlife Management	0.2%
Other (pipeline patrol, etc.)	1.9%
Total	100%

Source: Edwards and Kelcey, Inc. Helicopter Operators Survey, 2002

FORECAST OF FUTURE ACTIVITY

Although civilian helicopter activity in the District has been significantly constrained since September 11, 2001, a number of recent national and local developments indicate the potential for growing utilization of helicopters throughout the Metropolitan Washington area. These include:

- Increased demand for airborne law enforcement and emergency medical services;
- Increased need for security for high level government officials and business executives;
- Continued development of new technologies used by a number of regional operators (such as police departments, for example) including communications and navigation, forward looking infrared radar (FLIR), improved flight management systems, heads-up-displays (HUD), etc.;
- Increased traffic congestion throughout the region; and
- Rotorcraft manufacturers are continuing to introduce new and more efficient models of civil helicopters, and corporate/business use is predicted to steadily rise.



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Two methodologies were used to forecast future activity within the Metropolitan Washington area. These include a Status Quo Forecast Scenario and an Unconstrained Forecast Scenario. The status quo scenario assumes that current trends will remain the same throughout the forecast period, while the unconstrained scenario assumes that the current barriers to growth, such as the current airspace restrictions, will be removed.

FORECASTS OF TOTAL BASED HELICOPTERS IN METROPOLITAN WASHINGTON

	2002	2005	2010	2020
Based Helicopters (Status Quo Scenario)	71	70	68	67
Based Helicopters (Unconstrained Scenario)	71	74	77	83

FORECASTS OF TOTAL HELICOPTER OPERATIONS IN COMBINED STUDY AREA

	2002	2005	2010	2020
Helicopter Operations (Status Quo Scenario)	202,000	200,000	197,000	193,000
Helicopter Operations (Unconstrained Scenario)	202,000	210,000	220,000	236,000

The status-quo scenario reveals a slight decline in the number of helicopters based in the study area, while the unconstrained scenario reveals a slight increase.

ECONOMIC AND SOCIAL BENEFITS

Helicopters perform a level of community service that is often unrecognized, and has been referred to as a vital utility that is one of the many key infrastructure elements that improves the quality of life through increased safety, security, and access to business. These benefits can be measured in terms of their economic impact and social benefits.

Economic impacts measured include employment, payroll, and expenditures attributable to the presence of helicopter operations. It was estimated that helicopter operations created the following annual direct economic impacts in the Metropolitan Washington area:

DIRECT ANNUAL ECONOMIC IMPACTS OF HELICOPTER ACTIVITY IN 2002

	Economic Impacts
Jobs	158
Payroll	\$5,530,000
Local Expenditures	\$1,382,500
Total Direct Impacts	\$6,912,500

The direct impact estimates are based on typical expenditures by helicopter type (i.e. twin engine, piston, etc.) and standard personnel requirements to operate a helicopter.



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Personnel requirements are also based on operation types. For example, medevac operations will include paramedic personnel as well as pilots, maintenance and administrative personnel.¹

Induced impacts are estimated through the use of a “multiplier”. Any direct expenditure into the local economy by helicopter operators will be re-spent by the recipients of these initial expenditures, creating additional economic activity. This process continues as the second recipient of the “initial” expenditure spends money in the local economy. The “multiplier” is a measure of the total economic impact of all stages of the initial expenditure. The FAA uses multipliers based upon a region’s population. As both Maryland’s and Metropolitan Washington’s population exceeds 3 million, a multiplier of 1.0 is used per the FAA. Thus, the total induced impacts are equal to 1.0 times the direct impacts. Total impacts are the sum of both direct and induced impacts.

TOTAL ANNUAL ECONOMIC IMPACTS OF HELICOPTER ACTIVITY (DIRECT & INDUCED)

	Economic Impacts
Direct Impacts	\$6,912,500
Induced Impacts (x1.0)	\$6,912,500
Total Economic Impacts	\$13,825,000

Non-traditional and intangible benefits, such as enhanced law enforcement, improved access to medical facilities, and other benefits resulting from the availability rather than the activity of helicopter services provides a significant social benefit. For example, helicopters provide:

- Disaster relief – services in response to both natural (hurricanes, floods, earthquakes, etc.) and man-made disasters (high-rise fires, terrorist activities, etc.)
- Airborne law enforcement – police patrol and surveillance
- Aerial observation – monitoring pipelines and power lines, geotechnical survey, etc.
- Corporate/business/air taxi – business executive/VIP transportation
- Construction work – install rooftop HVAC equipment and antennas, erect pre-assembled electric power transmission towers, and move heavy equipment
- Agricultural and forestry operations – spread seeds, fertilizer, weed killers, and insecticides, monitor forest conditions, assist logging operations
- Emergency medical service (EMS) – serve as flying ambulances, transporting medical supplies, personnel and by rushing the injured to hospitals

¹ Economic impact assumptions for each helicopter type were obtained from the interviews with operators and the “heliport and helicopter Master Plan for the City of New York”. Commercial fleet mix data from Report No. 1 was used to aggregate economic impacts.



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- Electronic news coverage/gathering (ENG) – monitor traffic congestion and report on breaking news events
- Flight training

MODIFICATION OF HELICOPTER ROUTES

Helicopter overflights are of particular concern for communities within the Metropolitan Washington area. The majority of helicopters that fly within this region fly on the various helicopter routes published by the FAA and identified on the Helicopter Route Chart for Baltimore-Washington. However, there are a number of helicopter overflights by medevac and police helicopters that do not operate on the routes, but rather within the metro area airspace.

Medical and police helicopters present a unique problem because of their specific mission profiles. In particular, these helicopters do not operate on the designated routes when performing their missions. For instance, medevac helicopters do not always fly the helicopter routes when responding to an accident scene or when they transport a patient from the accident scene to a particular hospital. They will take a direct route to the scene and to the hospital to minimize time, a critical component to the survivability of the patient. While enroute, however, they try to fly at altitudes of 1,000' when possible to minimize noise impacts.

Police helicopters operate under much different conditions. In many cases, police helicopters will fly at the altitudes established on the helicopter route chart. However, many times their mission requires them to operate at much lower altitudes in order to support ground patrols. These operations often generate noise complaints because they are typically at night, which is when the ambient noise is low, making the helicopter operations much more pronounced.

Most of the helicopter routes within the Metropolitan Washington area overfly major highways, which help to mask the helicopter noise. Other routes overfly major rivers including the Potomac and Anacostia Rivers. An analysis of helicopter operations on the various helicopter routes within the Metropolitan Washington area suggests that noise effects of helicopter overflights at higher altitudes produce less noise than for helicopters flying at lower altitudes. For helicopters flying at between 1,000' and 1,300', noise effects are minimal due to altitude. However, helicopters flying at altitudes below 500' have a more pronounced noise effect. Three routes in and around Reagan National Airport have altitude minimums of 500' or lower. This is due to airspace requirements around Reagan National that cause helicopters to drop from 1,300' down to as low as 200' in close proximity to the airport. The specific routes include Route 1 west and east of Washington Reagan National Airport along the Potomac and Anacostia Rivers, respectively, and Route 4 which proceeds south from Washington Reagan National Airport along the Potomac.

Two options to reduce the effects of helicopter noise on these three routes were reviewed in the study. The first option would be to reroute helicopter traffic around Washington Reagan National Airport if they are transitioning to the east or west. This



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would shift helicopters onto routes running along I-495 that are at 1,300' rather than the much lower altitudes associated with Routes 1 and 4 within the vicinity of the airport. Although there would be the potential for more helicopters on these other routes, their altitude and location over major highways would minimize noise effects in the heavily populated areas along the Potomac and Anacostia Rivers.

The second option would be to increase the altitude of various helicopter routes, especially along the periphery of the current route system. Increasing the altitudes by even 100' would create a corresponding decrease in helicopter noise impact. This could only be done along certain helicopter routes that are not in close proximity to the major airports such as Washington Reagan National and Dulles International Airports. Changing the altitude would require a high level of coordination between the FAA, the MD and VA Aeronautics Divisions, and helicopter operators.

HELICOPTER OPERATOR AND MARKET NEEDS

Several common needs for both the Maryland and Metropolitan Washington helicopter systems were identified. For example, all hospitals providing trauma and critical care facilities should be equipped with an established helistop. Additionally, EMS, charter/air taxi, and to some extent the corporate operators, would benefit from a small network of helistops strategically located along major transportation routes. These helistops would provide established landing areas for the quick loading and unloading of injured persons or passengers. And finally, both the corporate and charter/air taxi operators would benefit from established heliports in centrally located areas in downtown Baltimore and Washington, DC.

To meet these needs, three types of facilities were identified. They are:

1. Private Use Hospital Heliports: All hospitals providing trauma and critical care services should be equipped with an established heliport. Hospital heliports are privately owned facilities providing a unique service to the public by facilitating the fast and safe transfer of patients.

- Annual activity levels would range from over 2,000 operations at the large trauma centers to 150 operations at the smaller hospitals.
- Minimal facilities would be provided including a cleared and paved landing and takeoff area, markings, and edge lighting.
- Clear approaches capable of supporting a GPS instrument approach procedure.

2. Public-Use Helistops: EMS, public service, charter/air taxi, and corporate operators would all benefit from a small network of helistops strategically located and easily accessible along major transportation routes. These helistops would provide established landing areas for the efficient loading and unloading of injured persons or passengers as well as provide a landing site with Instrument Approach Procedures (IAP) for use during periods of low visibility.

- Annual activity levels would range between 100 and 250 operations.



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- Minimal facilities would be provided including a cleared and stabilized landing and takeoff area, either paved or turf, markings, and edge lighting.
- Clear approaches capable of supporting a GPS instrument approach procedure.
- Located at or near an existing transportation related facility that is well marked, is conveniently located, and easily accessible by ground and air (such as a park and ride, metro station, or highway rest area).
- Located an acceptable distance away from noise sensitive areas and facilities.

3. Public-Use Downtown Heliports: Charter and corporate operators in the region would both benefit greatly from established heliports in centrally located downtown Baltimore and Washington, DC. These heliports would provide a small terminal building, hangar facilities and refueling capabilities, and would also be part of a larger system of heliports connecting the Mid Atlantic Region and beyond.

- Annual activity levels would range between 3,500 and 13,500 operations.
- Facilities would including a paved landing and takeoff area, at least two aircraft parking areas, markings, edge lighting, area lighting, a small terminal building and pilot's lounge, security fencing, and fire suppression systems.
- Clear approaches capable of supporting a GPS instrument approaches.
- Centrally located within the central business district and easily identifiable and accessible by ground and air.
- Located an acceptable distance away from noise sensitive areas.

IMPLEMENTING THE STUDY RECOMMENDATIONS

COG provides planning assistance to municipalities within its geographic boundaries and supports 19 governments in the Washington Metropolitan area. COG also interacts with state and federal agencies related to issues affecting the metropolitan area, such as transportation and environmental related issues. Several recommendations were identified to continue to address helicopter issues in the Metropolitan Washington area. These are:

Create a program to collect helicopter activity data. COG has various programs that address aviation activity at airports within their respective jurisdictions. Similar programs could also be developed to address helicopter activity and to assist in the implementation of the recommended system of helistops and heliports within the region. One potential method would be to use a transponder-based system to collect activity data. This system uses the transponder codes from aircraft and helicopters to record aircraft and activity data. Information that can be obtained includes altitude, speed, and course. A pilot program to assess the ability and usefulness of such a system should be conducted.

Establish a program to create several user groups and committees. The user groups may include a Government /Military User Group, a Civilian/Police/EMS User Group, a Helicopter Route Advisory Committee, and an Airspace Restriction Advisory Committee.



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The user groups should be used to periodically review and update helicopter routes, airspace, and noise impacts.

Create a program to address noise complaints. Currently, there is no program to report helicopter noise complaints within the Metropolitan Washington area. Developing a noise complaint program that allows residents of the region the opportunity to address their noise concerns should be created and coordinated with the user groups.

Establish a program to support helicopter operator and market needs and to address zoning issues. It is recommended that COG extend its existing transportation policies to formally include helistops, heliports, and helicopter operations within the region. For example, heliport and helicopter activities could be formally incorporated into the Transportation Planning Board Technical Committee, in particular the Aviation Technical Subcommittee. This committee could be used to address future helicopter user and system needs.

Furthermore, not all jurisdictions within the COG area have detailed zoning regulations related to helicopter landing facilities. Moreover, the jurisdictions that do regulate helicopter landing facilities generally are larger and more developed, while those without regulations tend to be smaller and less developed in area, density, and intensity. In order to provide a uniform approach to land use and zoning issues related to helicopters and heliports, it is recommended that local planning agencies review their zoning regulations with the general land use approach and guidelines provided in the study report. Existing COG committees could be used to facilitate improvements to zoning regulations.

QUESTIONS OR COMMENTS

Questions or comments should be directed to George Nichols of COG (202-962-3355 or gnichols@mwcog.org) or David Fish of Edwards and Kelcey (410-646-4505 or dfish@ekmail.com).