



MASTER PLAN UPDATE
Norfolk International Airport

December 2008



Building on Success

From its modest beginnings in 1938 to its current status as southeastern Virginia's primary link to the global air transportation network, Norfolk International Airport has continually grown and adapted to meet the region's ever-changing aviation needs.

Nearly 4 million arriving and departing passengers use the Airport each year, placing it in the top 15% of the country's commercial-service airports in terms of total passengers. More than 68 million pounds of air cargo (freight and mail) and more than 128,000 aircraft departures and arrivals are accommodated at the Airport each year. Seven major airlines serve the Airport, operating nearly 200 daily arrivals and departures.

Within the past decade, the Norfolk Airport Authority, which owns and operates the Airport, has completed many important Airport improvement projects, including construction of the new Arrivals Terminal and nine-story parking garage, renovation and expansion of Concourses A and B, improvement of Airport security systems, and installation of a ground run-up enclosure designed to reduce noise generated by required aircraft engine testing.

Since beginning operations more than 70 years ago, the Airport continues to meet the anticipated demand for air transportation while the Norfolk Airport Authority continues working with the communities it serves.

An Economic Engine

Airports across the world have historically proven to be economic engines for their communities. Norfolk International Airport is one of the most powerful economic generators in the Hampton Roads region. The Airport generates nearly 1,700 jobs and over \$135 million in direct economic impacts annually. More than 760,000 annual visitors use the Airport and other facilities in the region and contribute an additional \$565 million in indirect economic impacts that create more than 12,500 local jobs with a payroll in excess of \$210 million.

The Norfolk Airport Authority

The Norfolk Airport Authority is a political sub-division of the Commonwealth of Virginia and is governed by a Board of nine commissioners who are appointed by the Norfolk City Council. An Executive Director oversees the day-to-day operations of the Airport.



What is an Airport Master Plan?

An Airport Master Plan is a tool used to analyze market trends, assess facility requirements to accommodate anticipated growth, and guide future airport development. The Norfolk International Airport Master Plan is reviewed and updated every 10 years and is intended to provide the Authority with a plan that identifies necessary capital improvements. The current update includes projects that will extend the useful life and value of the Airport to meet the air transportation needs of the Hampton Roads region through 2024.

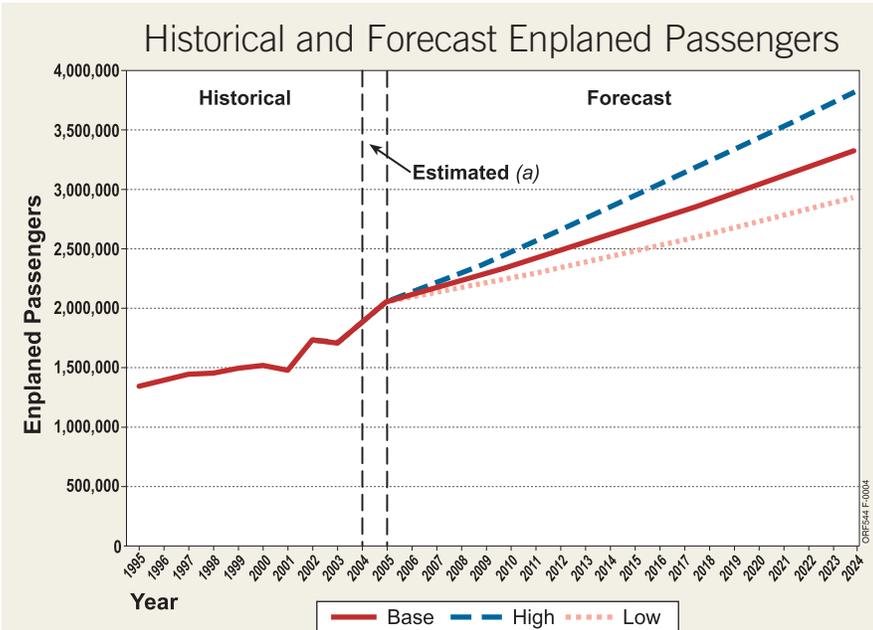
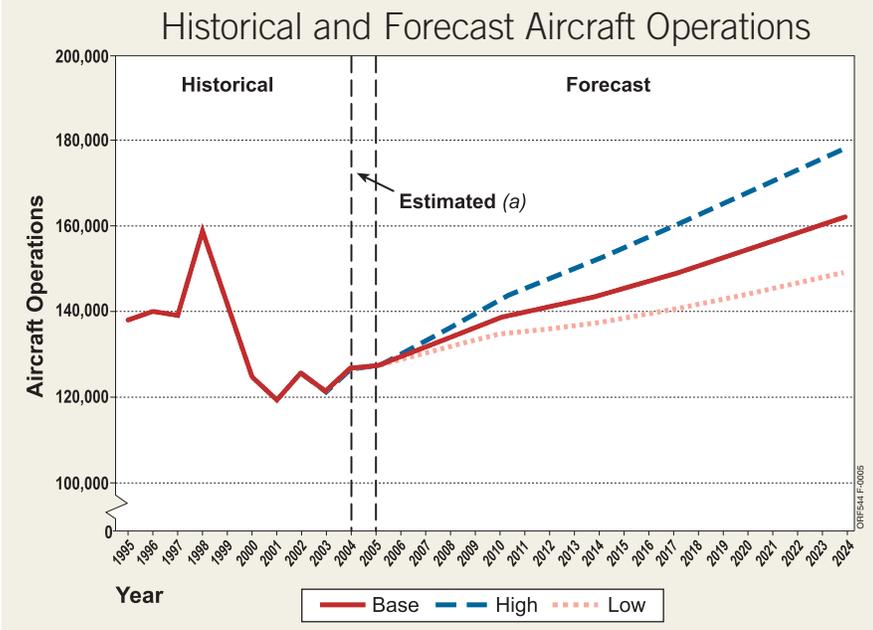
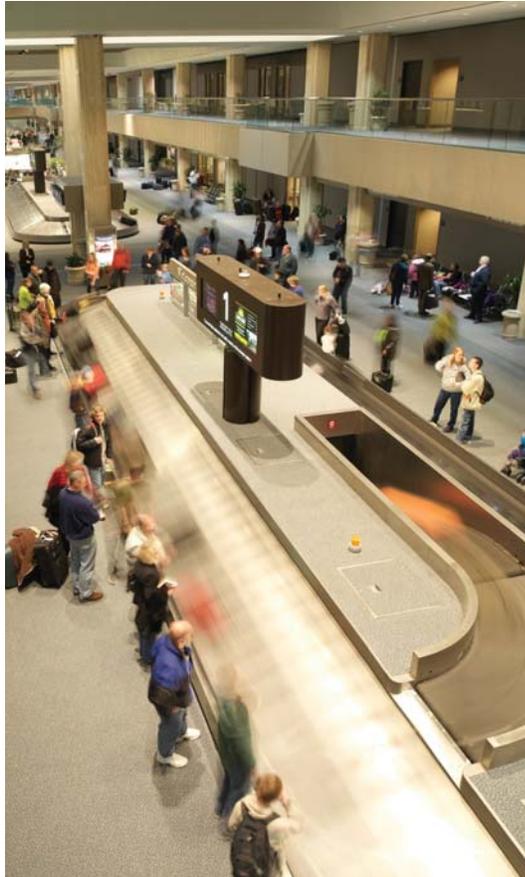
The following work was completed by the Master Plan Team, led by Jacobs Consultancy to prepare the Master Plan Update:

- Evaluated the existing conditions of Airport facilities and determined future needs based on those conditions.
- Developed forecasts of aviation demand.
- Assessed facility requirements to accommodate forecast demand.
- Evaluated various runway configurations, including a proposed parallel runway, to best serve Airport users while meeting federal guidelines.
- Evaluated potential environmental and financial impacts associated with recommended improvements.
- Updated the Airport Layout Plan (ALP) to clearly depict needed improvements and serve as a development guide for the Federal Aviation Administration (FAA) and the Authority.
- Identified and considered emerging aviation trends.
- Established flexibility in the plan to meet evolving needs.
- Established and encouraged community involvement in the Master Plan Update process.

Forecasts of Aviation Activity

Aviation activity forecasts were developed for passenger, air cargo, general aviation (private and corporate aircraft), and military activity. The forecasts were based on historical activity, industry trends, and other key factors that typically affect aviation demand.

As shown in the graphs to the left, the total number of passengers is forecast to increase an average of 2.6% per year, from 1.9 million enplaned passengers (departing and connecting only) in 2006 to nearly 3.3 million enplaned passengers in 2024. In addition, the total number of aircraft operations (landings and takeoffs) is forecast to increase an average of 1.3% per year, from 128,715 in 2006 to more than 162,150 operations in 2024.



(a) Estimated on the basis of 6 months of actual data. The forecasts presented in these graphs were developed using the information and assumptions described in the accompanying text. Inevitably, some assumptions used to develop the forecasts will not be realized and unanticipated events and circumstances may occur. Therefore, there are likely to be differences between the forecast and actual results, and those differences may be material.

Historical Activity

2005:	122,641 aircraft operations
	1,944,905 enplaned passengers
2006:	128,715 aircraft operations
	1,855,392 enplaned passengers

The forecasts for the Master Plan Update were developed in October 2005 and approved by the FAA in December 2005. Historical data for calendar years 2005 and 2006 are presented above to provide a context for the forecasts.

Sources: Historical: Norfolk Airport Authority records.
Estimated and Forecast: Jacobs Consultancy, September 2005.

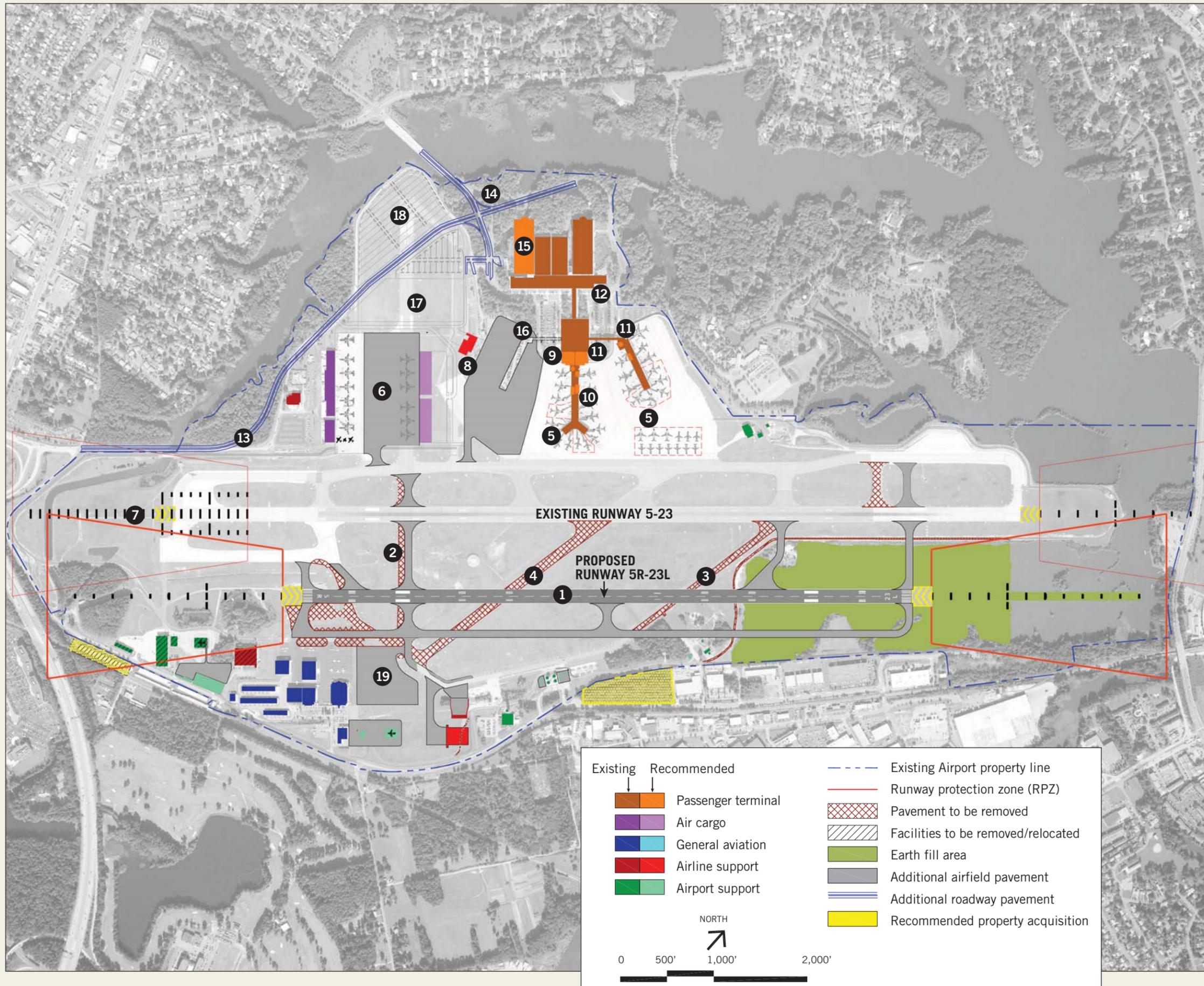
Recommended Development Plan

Airfield

- 1 Construct new parallel Runway 5R-23L and associated taxiways
- 2 Close Runway 14-32
- 3 Remove Taxiway F
- 4 Remove Taxiway G
- 5 Add remain-overnight (RON) aircraft parking positions on the commercial aircraft apron and add passenger loading bridges
- 6 Expand the air cargo aircraft parking area and reserve land for future development
- 7 Upgrade the instrument landing system serving existing Runway 5 from Category I to Category II capability

Other Airport Facilities

- 8 Construct a remote consolidated receiving facility
- 9 Expand outbound baggage room
- 10 Expand existing concourses to their ultimate build-out
- 11 Expand passenger security screening checkpoints
- 12 Expand rental car company check-in positions
- 13 Construct new south access corridor
- 14 Activate Norview Avenue and outbound arrivals roadway signals
- 15 Construct new public parking garage
- 16 Reserve land for future Concourse C and parking apron
- 17 Reserve land for future aviation-related development
- 18 Reserve land for future long-term parking
- 19 Replace/expand general aviation apron





Recommended Development Plan

On the basis of the aviation activity forecasts, facility requirements were developed for all major Airport functional elements. Several development alternatives were identified and evaluated in terms of their operational capability, constructibility, estimated cost, potential environmental impacts, and compatibility with Authority planning goals and objectives. The facility requirements were combined on the Recommended Development Plan for the Airport, which includes phased development recommendations for the airfield and numerous other Airport facilities.

Airfield

Analyses of airfield requirements confirmed that a longer secondary runway is required. The decision was made in consideration of the larger, high-performance aircraft expected to operate at the Airport in the future and the need to maintain the Airport's capability to accommodate these aircraft. It was determined no viable means are available to extend the existing secondary runway – Runway 14-32 – to serve commercial aircraft. The most feasible manner of providing a secondary runway is to construct a new runway parallel to and east of the existing primary runway – Runway 5-23.

The new parallel runway is required to:

- Enhance the Airport's safety and reliability.
- Enable the Airport to comply with all current federal design standards.
- Maximize capacity and efficient use of the airfield.
- Eliminate runway intersection crossings.
- Offer an additional runway of adequate length to accommodate aircraft operations at times when the primary runway may be closed for repair.

Additional airfield initiatives that are part of the Recommended Development Plan include:

- Remove Taxiway F and Taxiway G southeast of existing Runway 5-23.

- Upgrade the ILS serving existing Runway 5 (future Runway 5L) from Category I to Category II capability.
- Add RON parking positions on the commercial aircraft apron.
- Expand the air cargo aircraft parking apron.

Other Airport Facilities

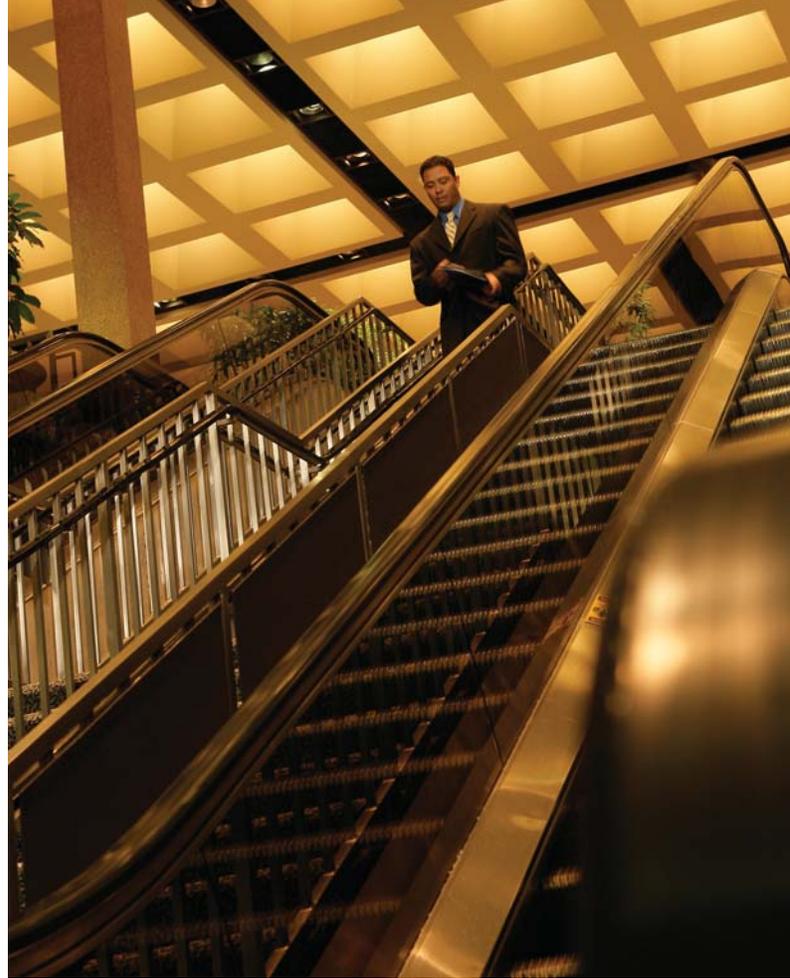
Although many facilities at the Airport will accommodate requirements through 2024, the following improvements to other Airport facilities were identified in addition to the airfield improvements:

- Replace general aviation facilities displaced by construction of the new parallel runway.
- Relocate the Airport maintenance facility, aircraft maintenance hangar, and aircraft rescue and fire fighting training facility to clear the Runway Protection Zone (RPZ) at the southern end of proposed Runway 5R-23L. The RPZ is a trapezoidal-shaped area that has specific land use limitations to keep the approach to an airport runway clear of obstacles. The function of the RPZ is to protect people and property on the ground beyond the ends of runways.
- Expand the baggage make-up facilities to accommodate forecast demand. The make-up facilities are used to prepare baggage to be loaded onto aircraft.
- Reconfigure the passenger security screening checkpoints at Concourse B to accommodate an additional screening lane.
- Expand rental car facilities.
- Widen and realign Robin Hood Road to improve Airport access.
- Construct a new public parking garage.
- Construct a remote consolidated receiving facility to security screen deliveries to the Airport destined for the secure airside area.
- Provide reserve areas for long-term development of airline maintenance facilities, fuel storage facilities, general aviation facilities, air cargo facilities, and public/rental car parking facilities.

Environmental Considerations

Major airport capital improvements recommended in an Airport Master Plan must be evaluated in terms of the potential impact they may cause on the environment. A key objective in this process is to identify development options that improve airport operations with minimal impacts on the surrounding environment.

To meet federal and Commonwealth environmental regulations, major construction projects at the Airport must undergo stringent environmental review prior to receiving the necessary environmental approvals. As such, all projects recommended in the Master Plan were analyzed to determine their potential impacts on noise, air quality, and the physical Airport environment. Recommended projects with the greatest impact potential include the parallel runway, public parking garage, and south access corridor. These projects will undergo greater environmental scrutiny prior to initiation of any construction.



Capital Improvement Program and Financial Considerations

Cost estimates were developed and financial analyses were conducted to determine the Authority's ability to fund and implement the Recommended Development Plan described in the Master Plan Update. Individual project costs were estimated, potential funding sources were identified, the Authority's funding capacity was estimated, and a project-phasing plan was developed to determine the cost for each project taking into account the future costs of labor and goods as they change/increase over time. The total cost of the Recommended Development Plan, including inflation and typical increases, is estimated to be approximately \$352 million over 10 years.

It was determined through the financial analysis that the Recommended Development Plan is financially feasible and within the Authority's financing capacity, assuming that appropriate grants from other funding sources are made available to implement the recommended developments.

The Airport is fully self-sufficient financially through the imposition of various user fees. The local communities provide no financial assistance for the operation, maintenance, or development of the Airport.

Public Involvement Process

During the master planning process, the Authority encouraged the public to participate in all major decisions affecting the Airport. To facilitate public involvement in an open and proactive manner, two information sessions were held—one during the generation of development alternatives and a second following completion of the Recommended Development Plan. The input received during and subsequent to these public sessions guided the Authority and its consulting team in developing specific Master Plan recommendations.



Next Steps

Norfolk International Airport is well positioned to serve the needs of the Hampton Roads region through 2024. The next steps in implementing the Recommended Development Plan include:

- Completing follow-on work related to the new parallel runway, including supplemental airfield studies and an Environmental Impact Statement to be prepared by the FAA.
- Enhancing the Airport development program and revenue generation by targeting commercial development on Airport land (e.g., for additional air cargo, general aviation, or landside facilities).
- Monitoring aviation activity to identify the appropriate timing for Airport development.

Norfolk Airport Authority Contact Information

For additional information regarding Norfolk International Airport, or to see a copy of the completed Master Plan Update, please contact:

Mr. Kenneth Scott
Executive Director
Norfolk Airport Authority
Norfolk International Airport
2200 Norview Avenue
Norfolk, Virginia 23518-5807
Telephone: (757) 857-3351
E-mail: kscott@norfolkairport.com
Authority website: www.norfolkairport.com

Prepared by

JACOBS
CONSULTANCY

in association with blueskies environmental associates, inc.,
Cordell & Crumley Communication Strategists,
R. Kenneth Weeks Engineers, Inc.,
Talbert & Bright Engineers and Planners, Inc.