

# NATIONAL ALLIANCE SUPPORTS ADVANCEMENT OF NEXTGEN INITIATIVE

By Susan M. Baer

**A**BOUT 15 MONTHS AGO, MY predecessor at the Port Authority of New York & New Jersey, Bill DeCota, spearheaded the creation of the National Alliance to Advance NextGen — a coalition of business, civic, and aviation travel industry leaders who are concerned about air traffic delays and want to do something about them.

FAA's Next Generation Air Transportation System, known as NextGen, is a total upgrade of the national airspace system, including its airports, using 21st century technologies to ensure future safety, capacity and environmental needs are met.

Sadly, Bill passed away suddenly last September. But the work he started continues in earnest. One of my mandates is to remain committed to the cause and advocate for relief from delays and congestion while we all work toward finding ways to increase capacity for every air traveler in the country.

Many of us grapple with this issue every moment of our professional lives. But even an outsider understands that delays plague the U.S. air traffic control system, especially in the New York City metropolitan region. The reason is fairly obvious. The airports operated by the Port Authority

of New York & New Jersey in this region — Kennedy International (JFK), Newark Liberty International, LaGuardia and Teterboro — share the same airspace. Each day, they combine to generate 4,100 flights within a 15-mile radius of the Statue of Liberty. Given their close prox-

imity, these four airports function as one from an airspace perspective, so it's no surprise that they consistently are ranked among the most delayed in the country.

Reducing delays has driven our agenda as much as anything. It's important to our customers, our business partners and our economy. And because studies have shown that up to 75 percent of delays across the country originate at one of the New York area airports, we believe it's important to the entire country.

In many ways, NextGen holds the key, but the answer is not always technology. We need operational and procedural changes, too, and sometimes these are even more elusive than equipment. The bottom line is that aircraft delays pose a huge threat to our economy, and they result in staggering losses: more than \$9 billion in U.S. productivity is lost annually due to flight delays; the cost to our region alone is \$2.6 billion a year.

As demand for air travel has risen, FAA continues to advance research, but the implementation of solutions that would have helped to mitigate delays has not kept pace.

However, we now are starting to see real action.

Elements of NextGen already are in place or are being tested around the country, from Alaska to the Gulf of Mexico, in Louisville and Philadelphia, and in our backyard, too. The port authority is working with Continental, Honeywell and FAA to launch a ground-based augmentation system at Newark Liberty to allow planes to fly more precise paths. Eventually this will allow airlines to fly planes closer together and to land more aircraft without compromising safety.

At the port authority, we're investing hundreds of millions of dollars to make a difference. If it's in our purview, we're doing something about it.





At JFK, for instance, we're currently reconstructing our three-mile-long bay runway, which also will provide a number of additional benefits as

part of a comprehensive delay-reduction program. This includes new access points on taxiways near the runway and three high-speed exits to improve aircraft queuing, enable swifter departures, and allow easier access from taxiways to terminal gates. Ultimately, the work will save time on the ground for every passenger at JFK. Who can't use more time?

The bay runway project also includes new infrastructure to enable the use of future navigational aids. With grant funding from FAA, we've undertaken work at JFK for up to 11 runway access projects. Many will be completed in 2010 along with the bay runway reconstruction project.

Last summer, we brought Airport Surface Detection Equipment—Model X (ASDE-X) online at JFK, from touchdown to the gate, and what a difference it has made. We worked with FAA on this project, which works like a Global Positioning System by pinpointing the exact location of all aircraft. The information is used to manage swifter movement of aircraft between the terminals and runways. ASDE-X saves more than \$10 million annually in aircraft operating costs and value of passenger time, and this system also should help us monitor aircraft so that they don't run afoul of DOT's new tarmac delay rule.

We also extended taxiways at JFK to improve departure procedures on Runway 22-Right, cutting takeoff times by up to two and one-half minutes for every departing flight and equating to more than \$82 million in annual savings. And we constructed a new taxiway hold pad to create more efficient queuing and sequencing procedures for Runway 4-Left departures, reducing delays there by about a minute per operation, for an annual savings of nearly \$24 million.

We've also done airside work at Newark Liberty, where we widened 32 fillets to enable more efficient operations, and we are scheduled to widen six more. We even purchased an airport in 2007, Stewart International in New York's mid-Hudson Valley, in part to create capacity for our customers in the northern reaches of the region while helping to ease congestion

These graphics depict every flight path, totalling about 4,100, that took place at Teterboro, Newark, LaGuardia and JFK on April 29, 2010. At left, green-colored paths are below 4,000 feet; yellow are 4,000-6,000; red above 6,000. At right, arrivals are blue, departures green.

at JFK, Newark Liberty and LaGuardia.

All of our delay-reduction initiatives on the ground will deliver incremental improvements. However, FAA and DOT ultimately are the most critical players in helping to reduce delays, because the fundamental problem is the continued use of 1950s-era radar-based equipment when what we really need is widespread use of 21st-century satellite systems.

There's still a lot more to do, and NextGen is fundamental to all our efforts. But NextGen won't be cheap. Total FAA spending over the first 10 years is expected to range from \$8 billion-\$10 billion, and estimates through 2025 range from \$15 billion-\$22 billion. And that's just the cost to the federal government. It doesn't include the cost to equip aircraft or modify airports.

Twenty-two billion dollars sounds like a big number, and it is. But let's give that number some perspective. Our three major commercial airports — JFK, Newark Liberty and LaGuardia — currently are capped with an operational limitation on the number of aircraft movements per hour for 16 hours of the day. It's the equivalent of a "no vacancy" sign, because every year that those caps are in place, someone is left behind. Someone who wanted to make the trip into or out of the New York region can't, because, essentially, there is no room at the inn.

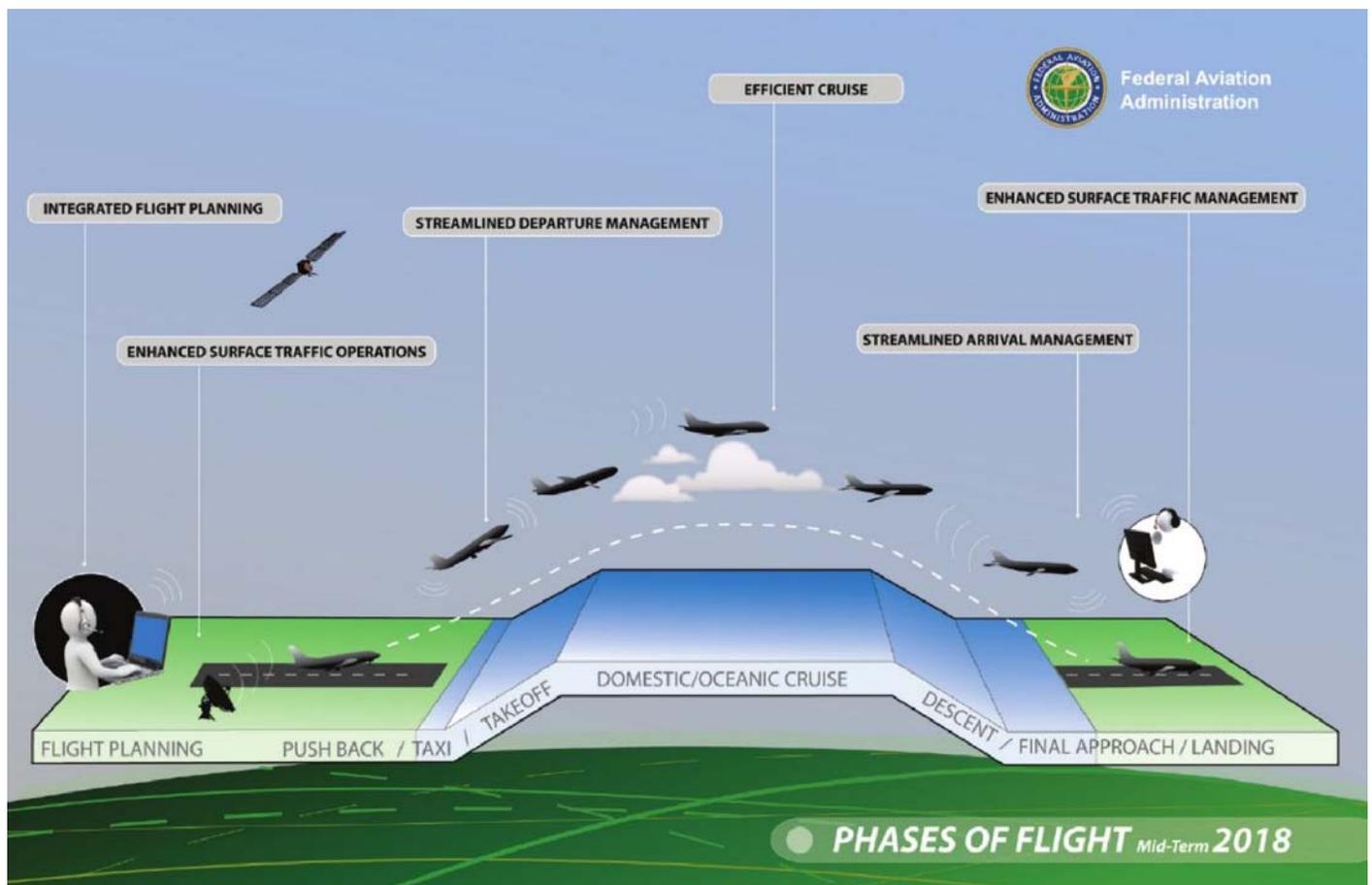
Our estimates say that if there is no material improvement in the congestion and delay situation in the New York region by 2025, we will be leaving behind some 40 million "someones" — the equivalent of the 2009 passenger traffic at Washington's Dulles International and Reagan National airports combined. And the cumulative loss of economic activity that those 40 million passengers would have brought over the next 15 years is far more than \$22 billion. In fact, it's closer to \$130 billion.

So the cost of inaction is too great, and that's where the National Alliance to Advance NextGen can be an important player by urging the federal government to move quickly

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# WHAT WILL NEXTGEN DO FOR AIRPORTS?

By Victoria Cox



**O**VER THE NEXT DECADE, AIR TRAFFIC operations are expected to increase about 2 percent per year. This increase in demand will put pressure on our nation’s airports to provide additional capacity but in a safe, efficient and environmentally responsible manner.

NextGen technologies and procedures, along with infrastructure construction and improvements, will provide the tools needed to make this happen.

NextGen is the planned evolution of the nation’s airspace from a ground-based system of air traffic

control (ATC) to a satellite-based system of air traffic management. It focuses on allowing airports the flexibility to deal with changing demand without investment in costly infrastructure that may not be required on a continuing basis, or to meet demand in locations where new pavement is not feasible.

## NEXTGEN PROCEDURES

Performance-based navigation (PBN) procedures can increase airport capacity by offering more efficient arrival and departure paths. Two types of PBN are area navigation (RNAV) and required

navigation performance (RNP).

RNAV provides an aircraft with the ability to navigate from point to point, using Global Positioning System (GPS) technology.

RNP will be used at specific locations where extra precision is needed for aircraft navigation — such as approaches to airports with challenging terrain or congested metroplex areas where precise navigation is needed to de-conflict arrival and departure routes for multiple airports in close proximity.

NextGen envisions the use of RNAV nearly everywhere and RNP only where needed.

On departure, an aircraft will be able to use multiple available departure paths with the flexibility afforded by RNAV. This is already the case at Hartsfield-Jackson Atlanta International and Dallas/Fort Worth International where standard instrument departures based on RNAV are in use. Delta saved more than \$100 million in three years in fuel with basic RNAV departures that streamline departure routings. This resulted in carbon emissions reductions of 6,700 tons per year.

And that's not all that's involved in improving operations at airports. Tailored arrivals and optimized profile descents (OPDs), which also are referred to as continuous descent approaches (CDAs), mean aircraft will stay at cruise levels much longer and then descend at near idle power. OPDs will reduce fuel burn while also cutting down on noise and emissions over local communities. At Los Angeles International, for example, 300 to 400 OPDs are being flown each day. Each one saves 25 gallons of fuel and reduces the amount of level flying during approach by 26 percent.

Another important initiative to improve efficiency is closely spaced parallel runway operations (CSPO). Typically, such runways can be used for simultaneous arrivals and departures in visual flight conditions. However, in low visibility, capacity is dramatically cut. So that reduced visibility doesn't slash runway capacity, several efforts are underway. The use of RNAV and RNP, staggered approaches, and multilateration technology for more precise tracking of aircraft on parallel approaches is being explored.

The benefits of NextGen add up, and many initiatives such as CSPO are aimed at increasing capacity with existing infrastructure rather than requiring that airports invest in new runway construction.

## SURFACE BENEFITS

Some of the key benefits NextGen will bring to the table are on the surface side of the equation. This is where many larger airports already are reaping tangible benefits with better situational awareness, not only for pilots and controllers, but for everyone working on the airfield and at traffic management centers. Improved situational awareness can support collaborative decision-making and help stakeholders to make better decisions and reduce taxi times.

Improved surface situational awareness is achieved

today using Airport Surface Detection Equipment—Model X (ASDE-X). Of the airports that have ASDE-X, those with data distribution units allow air traffic controllers, traffic managers, airline operations centers and airport operators — anyone who subscribes to the data and a data display — to view movement of aircraft vehicles on the airport surface, including the ramp areas if sensors are placed there.

Surface management demonstrations using shared ASDE-X data at New York's Kennedy International and Memphis International airports demonstrated that taxi times can be reduced on average from two to four minutes.

Tracking aircraft more accurately on the surface also will be of interest to many airport managers for business reasons. Once an airport operator can identify aircraft and obtain a location on the ramp or a runway, correct billing will be facilitated for landing and parking fees.

NextGen already is benefiting smaller airports in many ways. For example, at airports that do not have an Instrument Landing System (ILS) or comparable procedure, Wide Area Augmentation System (WAAS) localizer performance with vertical guidance (LPV) procedures can provide precision approaches — to near Category 1 ILS minimums. As of January of this year, FAA has published 1,929 LPV approaches serving 1,023 airports, including 1,127 LPV approaches to non-ILS runways. Other than approach and runway lighting, WAAS/LPV does not require radio navigation aids on the ground, such as a localizer antenna for ILS.

A key enabler for NextGen at airports is the Airport Geographic Information System (AGIS) program. AGIS surveys are being conducted to provide detailed geospatial data about airports. The data will be used for new LPV approaches, including obstruction analyses, as well as electronic notices to airmen and flight deck airport moving maps.

The central database for airport GIS data enhances sharing of both safety-critical data, such as runway end points or the location of navigational aids, and non-safety-critical data, such as the location of a building on the airfield. In addition to providing users with current airport data, it will improve airport planning efforts with more efficient reviews of airport layout plan updates.

## ADS-B SYSTEM

Just as airports have depended primarily on ILS for precision approaches, they also have depended on radar for decades as the primary tool used by ATC to track aircraft in the air and on the ground. But not all airports are equipped with radar for surveillance.

That's where the new Automatic Dependent Surveillance-Broadcast (ADS-B) system will help many airports. ADS-B allows aircraft or other vehicles or obstacles to broadcast a message on a regular basis, which includes their position. Other aircraft or systems can receive this information for use in a wide variety of applications. In NextGen, ADS-B is intended to be

the primary surveillance system that will provide more precision than radar.

ADS-B has been demonstrating initial operating capability (IOC) in various regions of the country, with IOC being achieved in Louisville, Ky., in the Gulf of Mexico in 2009 and in Philadelphia and Juneau earlier this year. The ADS-B program is expected to be approved for operational service later this year.

Aircraft will need to have ADS-B “out” avionics installed to transmit their GPS position to FAA and other aircraft. This capability will be mandated by FAA in a final rule due to be issued this year. Aircraft operators will have until 2020 to comply.

Nearly 800 ADS-B ground stations should be installed and operational by 2013 under the contract that the ADS-B service provider, ITT, has with FAA. Beyond the baseline ADS-B program, there is the opportunity for airports not currently served by radar to partner with FAA to obtain surveillance services when an appropriate safety or benefits case can be made.

Where ADS-B is not practical, such as in challenging mountainous terrain, Wide Area Multilateration (WAM) can be used for air traffic control surveillance. The Colorado DOT began using a new WAM system in 2009 to provide ATC surveillance for four airports where the use of ground-based radars is impractical and too expensive. The lack of surveillance required these airports to operate on the “one in-one out” rule, and about 75 aircraft were

delayed each day during the winter when trying to reach these remote airports near popular ski areas. Now traffic can flow more freely without these delays.

New airport infrastructure will continue to play an important role in increasing capacity. However, the greatest benefits will come from integrated airport planning and terminal airspace redesign projects that deliver new airport infrastructure served by NextGen PBN capabilities. Airport technology systems will need to be optimized to integrate NextGen tools into everyday operations, supporting active airport participation in surface management via collaborative decision-making with air traffic control and airlines. Airports will need to balance surface, gate and terminal capacity with the improved runway capacity enabled by NextGen.

In addition to NextGen ATC improvements, airport managers need also to think about the impact of NextGen upgrades on landside facilities and related operations. It’s time to think about NextGen as a whole, including the terminal building and the apron. Both sides need to be in sync. We are talking curb-to-curb, and airport managers should begin to think in terms of multi-modal transportation, including connections by rail or mass transit.

In the end, NextGen is all about letting U.S. airports accommodate future growth. 

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## ALLIANCE SUPPORTS NEXTGEN

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and decisively to implement NextGen.

The alliance has had some early success, and it’s a credit to the collective efforts of so many people. Through April, nearly 650 organizations have joined us, and if yours hasn’t, we urge you to do so by visiting [www.panynj.gov/NextGenNow](http://www.panynj.gov/NextGenNow). It costs nothing in time and money, but there is a major cost if we don’t join in bigger numbers to demand action.

Our voices are being heard. We asked for funding to be increased, and we got it. The President’s budget includes a request for \$1.1 billion in NextGen funding for 2011 — a 30 percent increase. We also asked for the implementation to be accelerated, because our customers can’t wait until 2018 for relief. FAA has responded, and in March issued the NextGen Implementation Plan, a thoughtful roadmap including a short- and long-term plan for NextGen.

We also argued that the technology should be deployed where it can have the greatest impact. Juneau, which suffers from inadequate radar coverage, soon will be welcoming an en-route tracking system. Moreover, at a recent meeting with FAA Administrator Randy Babbitt and representatives from several major airlines that oper-

ate in our region, Randy told the group that plans continue to advance, and that he is committed to deploying NextGen technology and procedures in the New York region “where you get the biggest bang for your buck.”

We need to remain diligent, because there’s a lot of competition for federal dollars. We need to let Congress and the administration know at every opportunity that the “invisible highway” on which aircraft navigate no longer can be ignored. We need collectively to keep the pressure on to deliver real benefits within the next five years and ensure that as existing technology and equipment are fully leveraged, FAA also takes the lead in complementing this progress with the appropriate policies, procedures and training and initially deploys them to regions that produce the greatest amount of benefit.

Less than a year ago, Bill DeCota wrote in these pages, “We need NextGen now, not two decades from now.”

The message becomes more urgent every day. 

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