STATEMENT OF MICHAEL P. HUERTA, ADMINISTRATOR, FEDERAL AVIATION ADMINISTRATION, BEFORE THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION, ON THE FAA MODERNIZATION AND REFORM ACT OF 2012: TWO YEARS LATER, ON FEBRUARY 5, 2014.

Chairman LoBiondo, Congressman Larsen, Members of the Subcommittee:

Thank you for the opportunity to appear before you today to review the accomplishments of the Federal Aviation Administration (FAA) during the past two years since Congress passed, and the President signed into law, the FAA Modernization and Reform Act of 2012 (the Act). For those of us who were working on developing and passing the Act, and I was only in office for part of it, we remember the long and difficult road we travelled to achieve passage. In part because the bills were works in progress for so long, when the legislation passed, it was truly comprehensive in nature. It contained over 200 deliverables, nearly half of which were due within the first year after enactment. FAA takes the Congressional direction we receive very seriously and our employees work hard to achieve the goals and directives you legislate. Given the breadth and depth of the Act, it would be difficult to provide a comprehensive review of all FAA responses its provisions. I will, therefore, focus on three main areas that I know are of concern to this Subcommittee: Next Generation Air Transportation System (NextGen), unmanned aircraft systems (UAS), and the consolidation and realignment of FAA facilities, often referred to as section 804. I think my time before you would be best spent updating you on these three vital initiatives because they are critical to how the agency, the aviation industry and the safety and efficiency of the national airspace system (NAS) will evolve over the coming years.

Before I begin, I would like to note what a difference a year makes. Last year, I sat before you days before the funding restrictions of sequestration were imposed. I know everyone in

government was challenged by the effects of those restrictions. I would like to express my gratitude that Congress worked through the many serious compromises and potentially crippling funding issues and passed the Omnibus Appropriations bill. This vital legislation provides needed predictability during a very uncertain budget environment. I appreciate the effort and the achievement.

NextGen

Let me begin with NextGen. Following the Reauthorization, I named Michael G. Whitaker, who assumed the role of Deputy Administrator on June 3, 2013, Chief NextGen Officer. This is a role of great importance. Effectively leading the agency through the next phases of NextGen implementation will require working with many organizational components within the FAA, collaborating with industry and labor, and understanding the complexities of the NextGen program. Mr. Whitaker is a seasoned aviation executive with extensive business, regulatory, legal, and international experience. I knew that he was the right choice for this role and I am confident that NextGen will continue to flourish under his leadership. Mr. Whitaker made it clear that helping to build and deploy NextGen was one of the principle reasons he joined the FAA and he has great commitment to ensuring that we reap the maximum benefits from NextGen enhancements.

In September 2013, Air Force Major General Edward L. Bolton Jr. became the new Assistant Administrator for NextGen. Mr. Bolton's accomplished military career involved many leadership positions. Most recently, he served as Assistant Secretary for Budget in the Office of the Assistant Secretary for Financial Management and Comptroller, where he led a team of financial managers responsible for the Air Force's $110 billion annual budget. His leadership

and commitment to public service is apparent. I am confident that he is well-suited to lead the talented workforce responsible for transforming the NAS under NextGen. NextGen is already delivering concrete benefits to users of the national airspace. Because of NextGen improvements, we are able to guide and track aircraft more precisely on more direct routes. This allows us to cut flight miles and reduce fuel burn, making air travel more convenient, predictable, and environmentally friendly. NextGen procedures have resulted in reductions in fuel consumption, carbon dioxide emissions, and noise, as envisioned at the time of the Reauthorization. We are projecting that NextGen will reduce overall delays by 41 percent by 2020, compared with what would happen if we did not implement any additional NextGen improvements.[1] These delay reductions will provide an estimated $38 billion in cumulative benefits through 2020. We estimate 16 million metric tons in cumulative reductions of carbon dioxide emissions through 2020, and 1.6 billion gallons in cumulative reductions of fuel use.

The agency has made consistent progress in delivering NextGen in several key areas since the Reauthorization. One such area is Automatic Dependent Surveillance–Broadcast (ADS-B). This system transitions the nation's air traffic control system from one that relies on radar technology to one that uses global satellites, which can provide more precise location data. To date, the FAA has installed more than 596 ADS-B ground stations, 566 of which are operational. ADS-B ground stations provide traffic and weather information to more than 1,700 properly equipped aircraft and supporting air traffic control separation services at eight En Route and 38 Terminal facilities. Users with ADS-B capabilities are already achieving increases in efficiency and fuel

[1] In order to assess the full cost of delay, the Department of Transportation (DOT) considers the value of air travelers' time. From 2003 to 2011, this was estimated by DOT at $28.60 per hour. In the Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis, DOT increased that value for 2012 to $43.50 per hour.

burn. They can also increase flight hours by virtue of being able to operate in periods of low visibility, which is particularly important in areas like Alaska and over the Gulf of Mexico.

Over the last two years, System Wide Information Management (SWIM) infrastructure investments have enabled significant advancement in the access and distribution of airport surface movement information. The surface movement data from 27 major airports is now available through a single portal to a broad range of external consumers. Today there are 19 external consumers, including many cargo and passenger airlines, vendors, and aviation research institutions, receiving surface movement data through this single portal. This allows operators to make better-informed decisions that improve their efficiency.

We are in the final stages of the En Route Automation Modernization (ERAM) program, which will provide benefits for users and the flying public by increasing capacity and efficiency, as well as allowing us to add new capabilities into the airspace system. The optimization of airspace and procedures in the Metroplex program has seven active teams in various phases of development.

One of the most exciting new capabilities we have underway is Data Communications (Data Comm). Data Comm allows us to communicate through written instructions to pilots, which reduces the possibility of error with radio communications. More importantly, Data Comm allows us to communicate highly complex clearances that are not practical to convey over the radio – instructions that can be automatically loaded into the aircraft's flight management system. This will ultimately save operators and passengers time and money, and will vastly improve the flexibility and efficiency of our operations. The FAA has awarded the Data Communications (Data Comm) Integrated Services contract, which will provide for data

communications between airport towers and appropriately equipped aircraft in 2016. Operational Data Comm trials are underway in Memphis and Newark.

NextGen's Performance Based Navigation (PBN) facilitates more efficient design of airspace and procedures which collectively result in improved access, capacity, predictability, operational efficiency, and environmental benefits. PBN's Area Navigation and Required Navigation Performance (RNAV and RNP) procedures are providing greater operational flexibility and capabilities. Optimized Profile Descents allow aircraft to reduce engine power and virtually glide down to the runway. This leads to reduced fuel burn, which reduces the carbon footprint of large air carriers, as well as reduced noise. New departure procedures, made capable by NextGen at major airports across the country, are reducing delays and increasing capacity. The optimization of airspace and procedures in the Metroplex program has seven active teams in various phases of development.

We have expanded our public reporting of NextGen performance through success stories and performance snapshots on our website. The FAA publishes NextGen-specific metrics at the local level in order to isolate and identify NextGen improvements at site-specific locations. Core airports, key city pairs, distance/time/fuel reduction, runway safety, the implementation and use of NextGen technology and procedures will continue to be important to understanding the value and benefits of modernization. Taken together, these metrics reveal the nationwide impact of NextGen development, which has already been shown to provide tremendous benefits to efficiency and the environment.

In this month's release, we have added three new key performance indicators:

1. Effective gate-to-gate time at Core 30 airports. An efficiency indicator, it measures the duration of travel from scheduled gate-out time to the actual gate-in time. As outlined in Sec. 214 of the FAA Reform Act, gate-to-gate is an important metric of NextGen success.

2. Effective gate-to-gate predictability for city pairs. This too is an efficiency indicator, and we have chosen city pairs as recommended by the NextGen Advisory Committee, our industry-government partnership that advises the FAA on key NextGen initiatives. Based on the Bureau of Transportation Statistics, the metric measures whether flight duration is consistent over time between NAC-recommended city pairs

3. Average Daily Capacity for Core 30 airports.

The NextGen Performance Snapshots reports the average daily capacity at Core 30 airports during reportable hours. For instance, at MEM, reportable hours cover all hours of a day, while at JFK, they include the 6:00 to 23:59 time period. Another reauthorization metric, the user reference provides the data sources and definitions as well as the methodology to compute the metrics.

In the latest release, we added a metroplex section highlighting the FAA's initiatives to improve air traffic flows in busy metropolitan areas. The metroplex concept revolves around traffic flow de-confliction in a complex airspace where airports are in close proximity. There are 21 metroplexes and each metroplex is linked to an individual page that provides:

- the list of airports included in the metroplex,
- a description of operations by user class (commercial air carriers, GA, military),
- passenger volume as well as
- the expected benefits expected to accrue upon completion of the NextGen near-term procedural improvements implemented by the Optimization of Airspace and Procedures in the Metroplex (OAPM) program

Additionally, we updated our efficiency, access, city pair and environmental metrics with the latest available data. We also introduced four more success stories that highlight some of the more significant results we are seeing from NextGen implementations.

1. Localizer Performance with Vertical Guidance at a GA airport in California - NextGen procedure enables pilots of equipped aircraft to land even when the approach to the runway is covered in fog. LPV provides a great backup (to the ILS) and it is another means for pilots to get their passengers into airports they otherwise could not.

2. The use of Performance-Based Navigation at Jackson Hole - A satellite-based precision procedure that makes the landing path to Jackson Hole both safer and shorter for equipped aircraft. The new procedure, which keeps aircraft on a tightly-defined track along a smooth, curved path, provides a safety cushion between the approach path and the higher terrain to the west.

3. Area Navigation off-the-ground at DFW - The FAA has put in place a NextGen procedure that triples the number of departures the airport can accommodate, a significant increase in the airport's throughput up to 20% on an average day. The NextGen procedure makes it possible for flights to take off with less distance between each aircraft — 1 nautical mile compared to the standard 3 nautical miles. This enables an increase of 15-20 percent of departures per hour when the airport is congested compared to conventional methodology

4. Airborne Collision Avoidance System X - As NextGen technology enables aircraft to safely fly closer, the FAA is developing a new collision avoidance system. Terrain Collision Avoidance System was introduced in 1989; however, the system needs an upgrade to accommodate new capabilities that are being introduced in the National Airspace System. With satellite-based NextGen technologies, aircraft are tracked with a higher precision than with radar and safe separation distances may be reduced. This means that ATC can get aircraft through busy airspace more efficiently.

As we continue to move forward with NextGen development and deployment, I am confident that we will continue to see benefits to the operation of the national airspace.

UAS

Many new technologies have abstract benefits that are sometimes hard to succinctly describe or understand. UAS have applications that are not only readily understandable, but have the

potential for broad benefits for virtually all Americans. From homeland security, emergency management and law enforcement, to food and package delivery, the potential uses for UAS technology are limitless. Realistically, neither the technical nor operational capabilities necessary exist today to implement the opportunities described by visionaries, but their promises for 21st century conveniences are compelling.

Meeting the challenges for realizing this potential will take a concerted effort and must achieve the requisite balance of maximizing the technological benefits, while maintaining safety and efficiency of the NAS. The FAA has a history of accommodating new technology into the NAS safely and effectively. UAS is the latest technology to be developed that FAA is working to integrate. While FAA's role in this effort is critical, it is limited to NAS safety and operational efficiency. As with other manned technologies, FAA's role does not extend to directing or otherwise limiting the underlying purposes for which the aircraft is used. That is left to government agencies with the appropriate jurisdiction and Congressional mandates.

I would like to set forth a basic framework for how the FAA will integrate unmanned aircraft into the NAS. In some ways, unmanned aircraft are inherently different from manned aircraft. They possess a wider operational range than manned aircraft, with a wider number of different physical and operational characteristics. Some UAS are the size of a fist, and fly at low altitudes and slow speeds. Others have glider-like bodies with the wing span of a 737 and can fly above 60,000 feet. Many can fly longer than manned aircraft. Their common characteristic, distinguishing UAS from manned aircraft, is that their pilot is on the ground and not on board the aircraft. This is a very new and different common denominator.

FAA estimates that we can expect 7,500 small unmanned aircraft in the NAS over the next five years, provided regulations and operational guidelines/policies are in place to handle them. We recognize that, while the expanded use of UAS presents great opportunities, integrating them also presents significant challenges. Operational issues, such as pilot training, must be addressed. Additionally, we need to make sure that unmanned aircraft can detect and avoid other aircraft and that they operate safely, even if they lose the link to the pilot in command. Likewise, manned aircraft must be able to detect these aircraft as well.

Our airspace system is not static and it is important for industry to understand that unmanned operations will evolve over time, just as they have over the past decade. Today, unmanned aircraft are used to keep our borders safe. They help with scientific research and environmental monitoring. They support law enforcement agencies and help state universities conduct research.

As we move forward, the use of small unmanned aircraft is likely to grow most quickly in civil commercial operations. These UAS are extremely versatile and have relatively low initial cost and operating expenses. The FAA, in accordance with the Act, is working on a proposed rule governing the use of a wide range of smaller UAS, which, in accordance with the roadmap, we expect to issue for comment this year.

FAA's long term goal of UAS integration will rely on the test sites to answer key questions and provide solutions to the issues noted above, as well as how they will interface with the air traffic control system. This information will help the FAA to develop regulations and operational procedures for future civil commercial use of UAS in the NAS.

Last year, the FAA, often in consultation with other key government partners and industry stakeholders and in accordance with provisions of the Act, issued a number of key documents

intended to assist in defining parameters to safely integrate these very diverse systems into the world's most complex airspace. The Integration of Civil UAS in the NAS Roadmap outlines, within a broad timeline, the tasks and considerations needed to enable UAS integration into the NAS. The five year Roadmap, updated annually, provides stakeholders with proposed agency actions to assist with their planning and development. One concrete achievement facilitated by the roadmap took place in September 2013 when the first commercial flight of an unmanned aircraft took place in the skies above the Arctic Circle. A Scan-Eagle completed a 36 minute flight to view marine mammals and survey ice. There are hopes that UAS can be used to meet environmental and safety requirements in the Artic. The flight was coordinated by Insitu (the UAS manufacturer), Conoco Phillips, and other federal and international agencies. The Arctic region is the only area to date where we have authorized the use of small unmanned aircraft for commercial purposes. This flight was organized to demonstrate the feasibility of implementing the Artic provisions in the Act.

The UAS Comprehensive Plan was drafted by the Joint Planning and Development Office (JPDO) in coordination with JPDO Board participants from the Departments of Defense (DOD), Commerce (DOC), Homeland Security (DHS), the National Aeronautics and Space Administration (NASA) and the FAA. It is a document that considers UAS issues beyond 2015, including technologies necessary for safe and routine operation of civil UAS and the establishment of a process to inform FAA rulemaking projects related to certification, flight standards and air traffic requirements. The Comprehensive Plan details work that has been accomplished, along with future efforts needed to achieve safe integration of UAS into the NAS in the NextGen timeframe. It sets overarching, interagency goals, objectives, and approaches to

achieving integration. Each partner agency will work to achieve these national goals and may develop agency-specific plans that are aligned to the national goals and objectives.

With respect to another important issue for UAS development, in November 2013, FAA also released a privacy policy that applies to the UAS test sites. This policy requires operators to comply with all local, state and federal laws concerning privacy and civil liberties. FAA is requiring the test site operators to create a privacy policy that is available to the public. The test site operator must require anyone operating unmanned aircraft at the site to have a written plan for how they will use and retain any test data acquired. On a broader level, agencies across the government are coming together to work on privacy issues that may arise with the increasing use of unmanned aircraft beyond these test sites. Ensuring that UAS integration does not erode individuals' privacy is a goal supported by both government and industry.

This brings me to the announcement of the selection of the test sites, the creation of which were mandated in the Act. FAA received 25 applications from 24 states, so I was quite pleased with the depth and range of the proposals we reviewed. In selecting the sites, FAA considered many factors. We made a concerted effort to pick sites that reflected both geographic and climactic diversity. We also took into consideration the location of ground infrastructure. We looked at the type of research that would happen at each site and the aviation experience of the applicants, as well as the type and volume of aircraft that fly near the sites. Our research goals are focused on (1) gathering system safety data, (2) aircraft certification, (3) command and control link issues, (4) control station layout and certification criteria, (5) ground and airborne detect and avoid capabilities, and (6) impacts on affected populations and the environment.

The following test sites were selected by the FAA, after consultation with DOD and NASA: University of Alaska; the State of Nevada; New York's Griffiss International Airport; North Dakota Department of Commerce; Texas A&M University – Corpus Christi; and Virginia Polytechnic Institute and State University (Virginia Tech).

As required by Congress, we expect the first test site to be operational within 180 days of the December 30, 2013, announcement and that the test sites will continue to operate until at least February 2017.

FAA Facility Consolidation and Realignment – Section 804

When I testified before you last year, I noted that not all Congressional deliverables were created equal. One of the sections of the Act that holds great potential for the FAA is section 804, a provision which is intended to assist with the consolidation and realignment of FAA facilities. In order for FAA to be well positioned to meet future demands, we must have strategically placed, state of the art air traffic control facilities.

While FAA appreciates the importance of this provision, executing the intent of the provision has proven to be challenging. As originally envisioned, the Act contemplated a single plan being presented to Congress with a comprehensive recommendation encompassing all FAA facilities. After working extensively with our labor unions, we now believe the most effective workable approach to consolidation and realignment is a segmented one utilizing a repeatable process and incremental steps toward thoughtful and agreed upon recommendations. Subsequent to providing the details of this process to this Committee's leadership late last year, we kicked off the first step of this important initiative on January 22, 2014, along with our union colleagues.

We will begin this effort focusing on our terminal facilities with a goal of making an initial recommendation to Congress early next year.

We expect to evaluate approximately 25 facilities this fiscal year. The evaluation will include a review of the infrastructure of the facility, the technology the facility can support, including its readiness for NextGen, and how people working at the facility will be impacted by any decision made. Step two begins the development of business case plans that document the benefits and risks associated with different scenarios. This includes evaluating each proposed pairing of receiver and transfer candidates. It also includes an initial outreach to industry stakeholders who might be impacted by the recommendation. Step three is a more detailed quantification of the costs, benefits and risks of the potential recommendations. Step four is a ranking the recommendations of the fully developed scenarios and clearing the recommendations throughout the FAA and the Department. Agreed upon recommendations will then be presented to Congress for your consideration. After submission to Congress, FAA will publish a notice in the Federal Register to solicit public comment. We will also be using existing communication opportunities to speak to airlines and system users regarding the status of the process and recommendations.

Throughout this process, five prioritization criteria will be consistently applied and given equal weight. Factors, such as whether the facility's airspace borders the airspace of another terminal facility, whether it provides approach control for core airports, whether it operates full or part time, what its facility condition index is, and whether it is an FAA investment priority will be considered. Life cycle costs and benefits have also been identified and agreed upon.

There is always great sensitivity surrounding decisions affecting where people will work. This process took a long time to develop, but I think it was time well spent. We have worked out all

of the details so that employees and management alike can understand why the recommendations that are made got made. In turn, we can justify the recommendations to Congress at the appropriate time.

We recognize that facility consolidation and realignment are fundamental to FAA moving forward and meeting its challenges and responsibilities. With this new process in place, it will support a segmented and repeatable format for identifying and quantifying the difficult decisions that must be made in this area. I certainly believe that by this time next year, we will have made good use of the authority provided in section 804 and I look forward to being able to report on that.

Conclusion

These are only three of the important areas FAA is working on to meet the future needs of government and the aviation industry without compromising the safety or efficiency of the NAS. We have an enviable safety record, which means we must constantly look at ways to raise the bar on safety and be smarter about the use of data to keep ahead of emerging safety concerns. We must learn how to recruit and train our workforce to better adapt to innovation so that we more efficiently and effectively approach our critical mandates. These are broad priorities. As we work through completing the directives of the last reauthorization and think about what goals should be included in the next one, we must keep these priorities in mind because there are a lot of details we must work through collectively, government and industry, to support them.

FAA, government generally, is being asked to do more with less. Given the fiscal challenges we have seen in the past year and the continued difficult financial environment, we are going to have to have thoughtful conversations about how FAA should prioritize its role – what it makes sense

for FAA to continue doing, and how we should do certain things differently. We need to be strategic in how we prioritize our resources.

We in this room, the people who are watching this hearing, care about aviation. We must continue to lead take on the challenges before us. I very much look forward to working with you as we do.

Mr. Chairman, this concludes my statement. I will be happy to answer your questions at this time.