



**Committee on Transportation and Infrastructure**  
**U.S. House of Representatives**

**Bill Shuster**  
**Chairman**

**Washington, DC 20515**

**Nick J. Rahall, III**  
**Ranking Member**

Christopher P. Bertram, Staff Director

November 14, 2014

James H. Zoia, Democrat Staff Director

**SUMMARY OF SUBJECT MATTER**

**TO:** Members, Committee on Transportation and Infrastructure  
**FROM:** Staff, Committee on Transportation and Infrastructure  
**RE:** Full Committee Hearing on “FAA Reauthorization: Issues in Modernizing and Operating the Nation’s Airspace”

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**PURPOSE**

The Committee on Transportation and Infrastructure will meet on Tuesday, November 18, 2014, at 10:00 a.m. in 2167 Rayburn House Office Building to explore issues related to the Federal Aviation Administration’s (FAA) modernization and operation of the Nation’s complex airspace system. The Committee will receive testimony from the Department of Transportation Inspector General (IG) and representatives of the Aircraft Owners and Pilots Association (AOPA), Air Line Pilots Association (ALPA), Airlines for America (A4A), Business Roundtable (BRT), and National Air Traffic Controllers Association (NATCA).

**BACKGROUND**

The United States aviation system is an economic driver, contributing roughly five percent to the Nation’s gross domestic product and supporting 11.8 million American jobs.<sup>1</sup> This vital economic sector depends upon a safe, efficient and modern air traffic control system. The United States air transportation system transports millions of passengers and moves billions in revenue ton-miles of freight using a network of airways, interconnected by a ground-based network which provides necessary air traffic control.<sup>2</sup>

The FAA’s Air Traffic Organization (ATO) provides air traffic control (ATC) services within U.S. and certain international airspace. U.S. airspace is the most expansive in the world, covering roughly 30.2 million square miles that make up more than more than 17 percent of the

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<sup>1</sup> Fed. Aviation Admin., *The Economic Impact of Civil Aviation on the U.S. Economy* 9, 12 (June 2014), available at [http://www.faa.gov/air\\_traffic/publications/media/2014-economic-impact-report.pdf](http://www.faa.gov/air_traffic/publications/media/2014-economic-impact-report.pdf).

<sup>2</sup> “Economic Impact of Civil Aviation on the US economy”, FAA Air Traffic Organization, August 2011.

world's airspace.<sup>3</sup> Within that airspace, FAA air traffic controllers handle roughly 50,000 operations daily.<sup>4</sup> As the demands on the air traffic system have changed over time, Congress and several presidential administrations have sought reforms to improve safety and efficiency and to accelerate modernization projects.

## HISTORY OF FAA AND AIR TRAFFIC CONTROL

Modern aviation in the United States first began in the dawn of the twentieth century. In recognition of the need for federal oversight and promotion of the aviation industry, Congress passed into law the *Air Commerce Act of 1926* which created the Aeronautics Branch (renamed the Bureau of Air Commerce in 1934) within the Department of Commerce. This Act tasked the federal government with fostering air commerce, as well as directing the promulgation of regulations in the issuance and enforcement of air traffic rules, certification of pilots and aircraft, and operation and maintenance of air navigation aids.<sup>5</sup> By the mid-1930s the growth of air transportation demanded the beginning of air traffic control, with some airports providing basic visual signals for pilots.<sup>6</sup>

In 1934, a group of airlines created the first air traffic control centers.<sup>7</sup> Throughout the following decades, the responsibility for aviation safety and air traffic control transitioned to the federal government and through a variety of different federal agencies. Many of these transitions were prompted by high profile accidents, which caused Congress to reassess the role of the federal government in ensuring the safe operation of the national airspace system. In 1956, a midair collision between two commercial aircraft over the Grand Canyon resulted in the deaths of 128 passengers. In 1958, two separate midair collisions further spurred the need to reexamine the federal government's role in overseeing aviation safety.<sup>8</sup> In response, the Federal Aviation Agency was created as an independent agency with the responsibility of aviation safety, air traffic control and modernization.<sup>9</sup> In 1966, Congress moved the Federal Aviation Agency into the newly created Department of Transportation and renamed the agency the Federal Aviation Administration (FAA).<sup>10</sup>

Since the initial creation of a rudimentary air traffic control system in the 1930s, air traffic control has evolved to try to keep pace with the demands of air transportation. The ATO today operates several types of air traffic control facilities, largely within delineations created in 1958, with radar as the primary means of tracking aircraft in flight. Airport traffic control towers control aircraft movements on the ground and within the vicinity of airports; terminal radar approach control (TRACON) facilities provide ATC services to aircraft up to about 40 nautical

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<sup>3</sup> Federal Aviation Administration. "Air Traffic Organization." [https://www.faa.gov/about/office\\_org/headquarters\\_offices/ato/](https://www.faa.gov/about/office_org/headquarters_offices/ato/)

<sup>4</sup> Speech of FAA Administrator Michael Huerta before the Aeroclub of Washington, "All for One, and One for All," Oct. 16, 2014, Washington, D.C., available at

[http://www.faa.gov/news/speeches/news\\_story.cfm?newsId=17554&omniRss=speechesAoc&cid=104](http://www.faa.gov/news/speeches/news_story.cfm?newsId=17554&omniRss=speechesAoc&cid=104) Speeches.

<sup>5</sup> "FAA's History Chronological 1926-1996." May 20, 1926. <https://www.faa.gov/about/media/b-chron.pdf>

<sup>6</sup> Federal Aviation Administration. "A Brief History of the FAA." [https://www.faa.gov/about/history/brief\\_history/](https://www.faa.gov/about/history/brief_history/)

<sup>7</sup> Id.

<sup>8</sup> "FAA's History Chronological 1926-1996." June 10, 1956 and April 21, 1958.

<https://www.faa.gov/about/media/b-chron.pdf>

<sup>9</sup> "FAA's History Chronological 1926-1996." April 21, 1958. <https://www.faa.gov/about/media/b-chron.pdf>

<sup>10</sup> *Department of Transportation Act*. (P.L. 89-670). (1966)

miles from airports and at varying altitudes; and air route traffic control centers (ARTCC) provide ATC services to aircraft at high altitudes and other airspace outside terminal areas.<sup>11</sup> While technology modifications have been made over the decades, these facilities are still dependent upon controlling their airspace using radar technology from the 1950s.

## **AIR TRAFFIC CONTROL MODERNIZATION**

In 1981, the FAA began an effort to modernize the air traffic control system by updating facilities and equipment to meet the anticipated demands of a growing volume of post-Deregulation air traffic.<sup>12</sup> At the time, the modernization was estimated to cost roughly \$12 billion<sup>13</sup> and take more than 10 years to complete.<sup>14</sup> However, in the ensuing years the effort encountered cost overruns, schedule delays, and performance shortfalls, which resulted in calls to reform the FAA. Throughout the 1990s the Clinton Administration developed several different proposals to reform the FAA's organization.

In addition to these organizational reforms, ongoing attempts to modernize the air traffic control system were initiated by the FAA. In 1988, the FAA awarded a contract to IBM Corp. to develop the Advanced Automation System (AAS), which was intended to replace computer hardware and software in ATC facilities.<sup>15</sup> The AAS contract was valued at \$3.5 billion initially; however, due to cost overruns and program delays, the contract was restructured in 1994 with an estimated \$7 billion cost.<sup>16</sup> Eventually, parts of the AAS project were terminated, with the en-route and tower segments of the original contract moving forward after being renamed and redefined. The segment of the contract for AAS in terminal facilities was spun off into a new contract known as the Standard Terminal Automation Replacement System (STARS). In a 1998 report on the topic, the then-DOT IG stated that the project "did not suffer from lack of funding" but that the AAS "failed because of overambitious plans" and "poor FAA oversight of contractor performance." The AAS program resulted in roughly one billion dollars that "was wasted."<sup>17</sup> In light of the problems facing the FAA's modernization efforts in the mid-1990's, a new series of reforms were enacted to address possible causes of delays in modernization. In a 1995 Appropriations bill (P.L. 104-50), the FAA was directed to implement new acquisitions and

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<sup>11</sup> FAA. "Roles and Responsibilities of Air Traffic Control Facilities."

[http://www.faa.gov/jobs/career\\_fields/aviation\\_careers/atc\\_roles/](http://www.faa.gov/jobs/career_fields/aviation_careers/atc_roles/)

<sup>12</sup> This included plans to replace the computers at air route traffic control centers with new software, consoles and displays, facility consolidation, new secondary radars, upgraded weather services and a new landing system. Government Accountability Office. "FAA's Plan To Improve the Air Traffic Control System." AFMD-83-34: 1983. <http://www.gao.gov/assets/140/139683.pdf>

<sup>13</sup> Government Accountability Office. "Transportation: Examination of the Federal Aviation Administration's Plan for the National Airspace System--Interim Report." AFMD-82-66: 1982. Pg. 2- This report claims initial estimates to be roughly \$10 billion, however a later GAO report states the \$12 billion figure.

<sup>14</sup> Dillingham, Gerald L. Government Accountability Office. Testimony before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives. "FAA's Modernization Efforts- Past, Present and Future." October 30, 2003. Pg. 1

<sup>15</sup> Department of Transportation Inspector General. "Advance Automation System: Federal Aviation Administration" Report Number: AV-1998-113 April 15, 1998. Pg. 5

<sup>16</sup> Department of Transportation Inspector General. "Advance Automation System: Federal Aviation Administration" Report Number: AV-1998-113 April 15, 1998. Pg. 5.

<sup>17</sup> Id. Pg. 2 and 3.

personnel systems.<sup>18</sup> The acquisitions system was to be implemented in conjunction with guidance from non-governmental experts, to address the “unique needs” of the FAA.<sup>19</sup> The following year, Congress passed the *FAA Reauthorization Act of 1996 (FAA Act of 1996)* (P.L. 104-264). Recognizing that the “[FAA] must become a more efficient, effective and different organization to meet future challenges,” the *FAA Act of 1996* also established a Management Advisory Council (MAC) to “submit comments, recommended modifications, and dissenting views” to the Administrator on issues such as “management, policy, spending, funding or regulatory matters affecting the aviation industry.”<sup>20</sup> The MAC was comprised of 15 members; two members were designees of the Secretary of Transportation and Secretary of Defense. The remaining 13 members were presidential appointees who were experts in “disciplines relevant to the aviation community and who [were] collectively able to represent a balanced view of the issues before the FAA.”<sup>21</sup> The *FAA Act of 1996* also included reforms regarding the new personnel management system and required the FAA to terminate any acquisition program that was fifty percent over cost, or failed to achieve half of the performance goals or was more than fifty percent behind schedule.<sup>22</sup> (For a table summarizing major FAA reform legislation since 1995 see Appendix A.)

As part of the continuing effort to reform the FAA, Congress passed the *Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR 21)* (P.L. 106-181). *AIR 21* tasked the MAC, through the Air Traffic Services Subcommittee, to oversee air traffic control modernization. In addition, *AIR 21* created the Chief Operating Officer for the air traffic system.<sup>23</sup> The Chief Operating Officer (COO) was answerable to the FAA Administrator, and was to have “demonstrated ability in management and knowledge of or experience in aviation.”<sup>24</sup>

Shortly after enactment of *AIR 21*, President Bill Clinton issued an executive order on December 7, 2000, establishing the Air Traffic Organization (ATO) within the FAA to run the ATC system under the direction of the Chief Operating Officer. The order created the ATO as

“...a performance-based, results-oriented, organization. The ATO will be better able to make use of the unique procurement and personnel authorities that the FAA currently has and to better use the additional management reforms enacted by the Congress this year . . . .”<sup>25</sup>

Despite the FAA having put in place the required reforms, in the beginning of the 2000’s concern again arose regarding the FAA’s ability to modernize the airspace system. In response the Bush administration and Congress moved forward with additional reforms. In 2003, the Government Accountability Office testified before the Subcommittee on Aviation that, since

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<sup>18</sup> *Department of Transportation and Related Agencies Appropriations Act, 1996*. P.L. 104-50. § 347 and §348. (1995).

<sup>19</sup> *Id.*

<sup>20</sup> *FAA Reauthorization Act of 1996 (FAA Act of 1996)*(P.L. 104-264)§230 (1996).

<sup>21</sup> *Id.*

<sup>22</sup> *FAA Reauthorization Act of 1996 (FAA Act of 1996)*(P.L. 104-264) §225,§252, §253(1996).

<sup>23</sup> It was not until 2003 that the FAA hired a Chief Operating Officer.

[http://www.faa.gov/news/press\\_releases/news\\_story.cfm?newsId=5649](http://www.faa.gov/news/press_releases/news_story.cfm?newsId=5649)

<sup>24</sup> *Wendell H. Ford Aviation Investment and Reform Act for the 21st Century*. (P.L. 104-264) §303 (2003)

<sup>25</sup> *Air Traffic Performance-Based Organization*, Executive Order 13180 (Dec. 7, 2000).

1981, the FAA’s modernization project “consistently experienced cost, schedule and performance problems,” and that while initial cost of the effort was estimated at \$12 billion in 10 years, by 2003 the program was two decades old and \$35 billion dollars had been spent with an additional \$16 billion needed to complete “key projects.”<sup>26</sup> In 2003, in *Vision 100—Century of Aviation Reauthorization Act (Vision 100)*, Congress clarified that the Chief Operating Officer would be responsible for overseeing “the day-to-day operational functions of the Administration for air traffic control”;<sup>27</sup> and made changes to the size and membership of the MAC and the Air Traffic Services Subcommittee. *Vision 100* contained additional personnel reforms and established the Joint Planning and Development Office (JPDO).<sup>28</sup> The JPDO was responsible for creating an integrated plan for the Next Generation Air Transportation System (NextGen), overseeing research and development of the system, creating a transition plan, coordinating aviation and aerospace research within the Federal government with U.S. aviation and aerospace firms, and facilitating technology transfer from research programs in other agencies.<sup>29</sup> The goal of the JPDO was not only to develop an integrated plan for NextGen, but to improve the “level of safety, security, efficiency, quality, and affordability of the National Airspace System and aviation services.”<sup>30</sup> However, roughly a decade later, the *Consolidated Appropriations Act, 2014* eliminated the JPDO’s funding because “FAA [had] failed to establish a clearly defined role for the JPDO and set expectations for how it will leverage research conducted by other Federal agencies.”<sup>31</sup>

### **Next Generation Air Transportation System (NextGen)**

In 2003, *Vision 100* was the first legislation which addressed the FAA’s air traffic modernization efforts under its new name “NextGen”. NextGen is a \$40 billion program that was initially slated to be completed by 2025 to transition the nation’s airspace from a 1950’s radar based system to advanced technology air-traffic management.<sup>32</sup> In 2003, NextGen was envisioned as a fundamental reengineering of our nation’s airspace to reduce congestion and delays, increase capacity, while further improving safety and reducing aviation’s environmental impact. NextGen is currently comprised of several different technologies; these include En-Route Automation Modernization (ERAM), Data Communications (DataCom), Automatic Dependent Surveillance Broadcast (ADS-B), and Terminal Automation Modernization and Replacement (TAMR).<sup>33</sup>

One foundational program needed for NextGen, ADS-B, is anticipated to utilize technologies (both new and old) to provide information to pilots and air traffic controllers throughout flights. ADS-B requires a network of both ground-based radio stations and aircraft

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<sup>26</sup> Government Accountability Office, “*FAA’s Modernization Efforts—Past, Present, and Future*,” Rpt. No. GAO-04-227T (2003).

<sup>27</sup> *Vision 100—Century of Aviation Reauthorization Act*, P.L. 108-176, § 203 (2003).

<sup>28</sup> *Id.* § 709.

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* §709(c).

<sup>31</sup> *The Consolidated Appropriations Act, 2014*, P.L. 113-76 (2013).

<sup>32</sup> Statement of Matthew E. Hampton, U.S. Department of Transportation Inspector General before the Committee on Commerce, Science, and Transportation, Subcommittee on Aviation Operations, Safety, and Security United States. “Progress and Challenges in Meeting Expectations for NextGen.” June 25, 2014. Pg. 3

<sup>33</sup> Federal Aviation Administration. “NextGen Implementation Plan,” August 2014.

with avionics that are ADS-B rule compliant. This technology would provide controllers with more accurate aircraft tracking, and enable aircraft to “see” other aircraft.<sup>34</sup> The *Federal Aviation Administration Modernization and Reform Act of 2012* (P.L. 112-95) mandated a rulemaking on ADS-B In equipage and required equipage with ADS-B In by 2020 for all aircraft operating in capacity-constrained airspace and airports. So far the federal government has invested roughly \$1.5 billion dollars in ADS-B. However, a recent DOT IG report found that in the FAA’s initial cost- benefit case for ADS-B the costs outweigh the benefits by roughly \$588 million.<sup>35</sup>

The FAA’s efforts to modernize air traffic control have been informed by and benefitted from the observations and recommendations of governmental bodies such as the Government Accountability Office, the DOT OIG, and also Federal advisory committees such as the Radio Technical Commission for Aeronautics (RTCA). RTCA, which was founded in 1935 and functions primarily as a technical standards-setting body, convened a task force that provided the FAA with recommendations on its implementation of NextGen in 2009.<sup>36</sup> Those recommendations led to the creation of what is known as the NextGen Advisory Committee (NAC) which is comprised of 28 members representing government and private sector organizations. The NAC was created to foster collaboration between industry and the federal government and also provide guidance to the FAA regarding NextGen implementation. The NAC has been, to date, chaired by individuals with airline chief executive experience.<sup>37</sup>

As in previous decades, in 2012, Congress again attempted to address issues facing FAA’s NextGen programs. One of the main reforms established in the *FAA Modernization and Reform Act of 2012* was the creation of Chief NextGen Officer (CNO). The law directed that the CNO, who would be responsible for coordinating the implementation of NextGen, would “review and provide advice on the Administration’s modernization programs, budget and cost accounting system” for NextGen.<sup>38</sup> This reform established an Officer within the FAA who is accountable for the progress and implementation of NextGen.

As with previous air traffic control modernization efforts, concerns have been raised regarding FAA’s implementation of NextGen technology and procedures.<sup>39</sup> In 2013, the DOT IG found that “longstanding programmatic and organization challenges.... further undermine NextGen’s progress.” In addition, the IG stated that the FAA’s NextGen plans were “overly ambitious” and that the FAA has “yet to develop an executable implementation plan that addresses costs and technology development and integration.”<sup>40</sup> To address concerns regarding implementation of NextGen, the FAA has reorganized three times in the past ten years. However

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<sup>34</sup> Inspector General of the Department of Transportation. “FAA Faces Significant Risks in Implementing the Automatic Dependent Surveillance–Broadcast Program and Realizing Benefits.” AV-2011-002, October 12, 2010.

<sup>35</sup> Inspector General of the Department of Transportation. “ADS-B Benefits Are Limited Due to a Lack of Advanced Capabilities and Delays in User Equipage” AV-2014-105 Date Issued: September 11, 2014.

<sup>36</sup> RTCA. “About Us.” <http://www.rtca.org/content.asp?pl=49&contentid=49>

<sup>37</sup> RTCA. “NextGen Advisory Committee.” <http://www.rtca.org/content.asp?pl=61&contentid=61>

<sup>38</sup> *FAA Modernization and Reform Act of 2012*. P.L. 112-95 (2012) § 204.

<sup>39</sup> Department of Transportation Inspector General. “Addressing Underlying Causes for NextGen Delays Will Require Sustained FAA Leadership and Action” AV-2014-031. February 25, 2014. Pg. 1

<sup>40</sup> Inspector General of the Department of Transportation. “Addressing Underlying Causes for NextGen Delays Will Require Sustained FAA Leadership and Action” AV-2014-031. February 25, 2014. Pg. 2.

it is unclear whether the reorganizations have had the desired impact.<sup>41</sup> Throughout the past three decades, both the GAO and the DOT IG have frequently raised the same concerns with FAA’s modernization programs. These concerns include, but are not limited to, FAA’s committing to acquisitions before requirements are fully understood; poor contract oversight; programs that are over budget and behind schedule; and lack of executable plans that address cost and technology development.<sup>42</sup> In the most recent modernization program, NextGen, the FAA has raised concerns with the funding levels it has received.<sup>43</sup> While the DOT IG has stated that funding of NextGen programs have not been a cause of delay,<sup>44</sup> the FAA and industry did experience a five year period in which there were 23 short-term extensions for the FAA.<sup>45</sup> Recent progress has been made through the “NextGen Priorities” in which the FAA and industry took priorities established by the NAC, and collaborated to develop an implementation plan with milestones, timelines and cost estimates to deliver long awaited, near-term benefits, to the aviation system.

It has been roughly eighty years since air traffic control was first utilized in the United States. Since the first efforts to control air traffic through visual signals by airports, the United States air traffic control system has evolved into a complex, interconnected system of airways that safely handles roughly 60 million aircraft annually.<sup>46</sup> While aircraft, aircraft engines, avionics and other aviation technology has modernized and evolved over the years, since 1981 the effort to modernize our air traffic control system has been riddled, with numerous delays and revisions. Given the importance of the aviation sector to the Nation’s economy, and the role it plays in safely transporting millions of passengers and tons of cargo annually, not to mention supporting general aviation activities, it is crucial that the air traffic control system be efficiently and effectively modernized to keep up with the future needs of the country.

### **WITNESS LIST**

The Honorable Calvin Scovel, III  
Inspector General  
Department of Transportation

Captain Lee Moak  
President  
Air Line Pilots Association

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<sup>41</sup> Id. .

<sup>42</sup> Inspector General of the Department of Transportation. “Addressing Underlying Causes for NextGen Delays Will Require Sustained FAA Leadership and Action” AV-2014-031. February 25, 2014. and Government Accountability Office. “Selected Stakeholders' Perspectives on Operations, Modernization, and Structure” GAO-14-770: Published: Sep 12, 2014. Publicly Released: Sep 12, 2014.

<sup>43</sup> Committee on Transportation and Infrastructure. Subcommittee on Aviation hearing on “Causes of Delays to the FAA’s NextGen Program.” July 17, 2013. 2167 Rayburn House Office Building, Washington D.C.

<sup>44</sup> Id.

<sup>45</sup> Federal Aviation Administrator Michael Huerta. Speech before the Aeroclub of Washington “All for One, and One for All”. October 16, 2014. Washington DC.

<sup>46</sup> FAA. “Roles and Responsibilities of Air Traffic Control Facilities.”  
[http://www.faa.gov/jobs/career\\_fields/aviation\\_careers/atc\\_roles/](http://www.faa.gov/jobs/career_fields/aviation_careers/atc_roles/)

Mr. Mark Baker  
President and CEO  
Aircraft Owners and Pilots Association

Mr. Nicholas Calio  
President and CEO  
Airlines for America

The Honorable John Engler  
President  
Business Roundtable

Mr. Paul Rinaldi  
President  
National Air Traffic Controllers Association



**Appendix A.**

**Major FAA reforms since 1995**

<b>Reform</b>	<b>Mandated by . . .</b>	<b>Implemented in response to . . .</b> <sup>47</sup>
FAA required to implement personnel management system	Congress (1995 appropriations law)	FAA’s stated need for greater flexibility in hiring, training, and locating employees
FAA required to implement acquisition management system	Congress (1995 appropriations law)	Cost overruns and schedule slippages in modernization programs of the 1980s and 1990s, particularly the Advanced Automation System
FAA’s “dual mandate” of safety regulation and industry promotion eliminated	Congress (1996 FAA reauthorization)	Deficiencies in FAA’s oversight of air carriers, revealed following ValuJet flight 592 accident in 1996
Overcost, overdue acquisition programs terminated	Congress (1996 reauthorization)	Cost overruns and schedule slippages in modernization programs of the 1980s and 1990s
FAA required to appoint Chief Operating Officer responsible for running ATC system	Congress (2000 reauthorization)	Management challenges associated with ATC system modernization
FAA directed to create Air Traffic Organization to run ATC system with accountability and performance management	President Bill Clinton (2000 executive order)	Congress’s direction in 2000 reauthorization for appointment of a Chief Operating Officer
FAA required to appoint Chief NextGen Officer to manage intra-agency NextGen work	Congress (2012 reauthorization)	Continued delays in NextGen implementation

<sup>47</sup> For specific information on the basis for these reforms, see notes 18 through 45 , *infra*, and associated text.