Federal Aviation
Administration

NextGEN

NEXTGEN PRIORITIES JOINT IMPLEMENTATION PLAN

EXECUTIVE REPORT TO CONGRESS

This NextGen Priorities Joint Implementation Plan Executive Report to Congress is prepared and signed by:

10/17/14

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10/16/14

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10/16/14

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EXECUTIVE SUMMARY

In response to a request from the House of Representatives Committee on Transportation and Infrastructure, Subcommittee on Aviation, the FAA has collaborated with the aviation industry through the NextGen Advisory Committee (NAC), a federal advisory committee, to develop a plan to implement a number of high-priority NextGen capabilities. The plan's foundation was earlier NAC work, which recommended the FAA focus on NextGen capabilities in four areas: Multiple Runway Operations, Performance Based Navigation, Surface Operations and Data Communications. These are capabilities that will provide significant near-term benefits to National Airspace System (NAS) users.

Throughout 2014, FAA subject matter experts met with aviation industry representatives to determine what the FAA is able to accomplish over the next one to three years and what industry commitments are necessary for those activities to be successful. These meetings have enabled the FAA and industry to reach agreement on all of the "high priority, high readiness" capabilities that the NAC has recommended, with the FAA committing to specific site implementation plans and industry ensuring operator preparedness in order to take full advantage of NextGen benefits.

The FAA's *NextGen Priorities Joint Implementation Plan* summarizes the high-level commitments to which the FAA and the aviation community have agreed, and provides a timeline of capability milestones and locations. The plan is organized into the four focus areas. It is important to note that the commitments represent a subset of the overall series of programs and activities that the FAA has planned to modernize the NAS.

In order to increase airport efficiency and reduce flight delays through the use of Multiple Runway Operations (MRO), FAA commits to the increased use of wake categorization and improvements for dual and independent parallel runway operations at 28 locations nationwide. MRO capabilities improve access to these runways and can increase basic runway capacity and throughput, which will increase efficiency and reduce flight delays.

With the commitment of three metroplex sites — Northern California, Charlotte, and Atlanta — and the deployment and development of other Performance Based Navigation (PBN) procedures that primarily use satellite-based navigation and on-board aircraft equipment, the FAA will improve air traffic flow in major metropolitan areas while providing a variety of benefits to NAS users across the country, including shorter and more direct flight paths, improved airport arrival rates, enhanced controller productivity, increased safety due to repeatable and predictable flight paths, fuel savings and a reduction in aviation's adverse environmental impact.

Surface Operations commitments are designed to increase predictability and provide actionable and measurable surface efficiency improvements. To accomplish this, the FAA commits to sharing more data with stakeholders and completing feasibility assessments of other capabilities of industry interest in order to increase predictability and efficiency.

Data Communications services will provide digital communications services between pilots and air traffic controllers, as well as enhanced air traffic control information to airline operations centers. The

capabilities will enhance safety by reducing communication errors, increase controller productivity, and increase airspace capacity and efficiency while reducing delays, fuel burn, and carbon emissions at fifty-six towers nationwide. Data Comm is critical to the success of NextGen, enabling efficiencies not possible with the current voice system.

The FAA intends to continue the same level of rigor in monitoring progress against the milestones of the plan that was the hallmark of its development. The agency will sustain momentum by conducting internal meetings at least monthly to monitor progress against the plan, while the NAC will work with industry stakeholders to ensure their commitments are funded and met. Senior FAA and industry leadership will provide quarterly updates to the NAC's subcommittee. Progress reports will be provided publicly through the NAC with advance notice available to the public in the Federal Register. The FAA will also report on progress against the milestones for each focus area on the NextGen Performance Snapshots website[1], beginning on October 17.

[1] www.faa.gov/nextgen/snapshots

BACKGROUND

In July 2013, as part of the FAA's work prioritizing investments, the agency tasked the NextGen Advisory Committee[2] (NAC) to review its current modernization plans and identify the NextGen capabilities that would provide the highest value to stakeholders. In a September 2013 report, the NAC provided the FAA with a list of high priority, high readiness[3] capabilities that fell into three areas: Multiple Runway Operations (MRO), Performance Based Navigation (PBN), and Surface and Data Sharing. The NAC recommended that these capabilities receive full FAA resources to achieve or accelerate implementation dates regardless of the budget outlook. Further, at its February 20, 2014 meeting, the NAC added FAA's Data Communications (Data Comm) program as a fourth priority area.

Subsequently, the Aviation Subcommittee of the House Transportation and Infrastructure Committee requested that the FAA work further with the aviation community to create an implementation plan for these capabilities with defined milestones, locations, timelines, costs and metrics. The FAA again turned to the NAC as a forum for this collaboration. Four working groups of industry stakeholders and agency subject matter experts worked to consensus. Senior FAA executives met with the agency's representatives on a weekly basis to guide the effort, and met with their industry counterparts at several critical junctures to resolve questions about the content of the plan and the process for overseeing its completion.

This resulting *NextGen Priorities Joint Implementation Plan* captures a set of activities that the FAA and the aviation community are collectively committed to accomplishing within the next three years (with the exception of Data Comm, which, as a program with an approved cost, schedule and performance baseline[4], has a longer timeline). This plan should be understood as a subset of the overall series of programs and activities the FAA is executing for NextGen, which are broader in scope and timeline and will create a more extensive transformation of the NAS. FAA's *NextGen Implementation Plan*[5], which was also revised this year to create better transparency on specific program objectives, impacted stakeholders, benefits, budgets, and scheduled delivery, is the underlying roadmap for all of NextGen. These capabilities will be measured against a set of operational performance metrics that were previously negotiated with industry via the NAC, which are reported on FAA's website.

WHAT THIS PLAN CONTAINS

This plan summarizes the high-level commitments to which the FAA and the aviation community have agreed. There are three categories of commitments:

[2] The NextGen Advisory Committee is a federal advisory committee made up of high-level representatives from throughout the aviation community. It is the FAA's principal source of stakeholder advice on NextGen issues and is tasked to provide recommendations that help fine-tune the agency's plans.

[3] "NextGen Prioritization: A Report of the NextGen Advisory Committee in Response to Tasking from the Federal Aviation Administration," September 2013, www.rtca.org

[4] Per FAA's Acquisition Management Policy, fast.faa.gov

[5] http://www.faa.gov/nextgen/library/media/NextGen_Implementation_Plan_2014.pdf

- The first consists of FAA milestones for operational implementation at specific locations that will be available for immediate use.
- The second consists of major FAA pre-implementation activities, such as safety analyses, engineering studies, and investment analyses, for capabilities that the agency and the aviation community are mutually interested in pursuing. The FAA will not presuppose the outcome of these analyses, which could also reveal reasons that these are not viable for implementation. The agency is committed to completing the activities, and, where possible, will seek to establish additional implementation milestones in the future.
- The third category consists of commitments by industry to complete activities required for successful implementation.

Each focus area section includes a graphical depiction of the capability milestones and locations along a timeline, accompanied by a brief description of the work. Each section also includes the overall funding from FY2007-2014 that was spent on development work to enable these commitments, as well as FY2015 funding based on current budget figures for these commitments. This cost information is shown in table form in Appendix A. Appendix B is a list of acronyms and airport codes and Appendix C is the complete report from the NAC, which further details the methodology, criteria, and considerations addressed by the working groups.

MANAGEMENT OF THIS PLAN

The activities in this report require funding from two of FAA's accounts: Facilities and Equipment, and Operations, and can be delivered within our current budget requests. Our ability to complete these commitments depends on maintaining an adequate and stable funding stream. In fiscal year 2013, when furloughs were necessary to address budget shortfalls, FAA was forced to stop and restart projects because subject matter experts were diverted to perform core functions that otherwise may have been understaffed. This caused schedules to slip and increased administrative costs on those projects. More fundamentally, in an environment of constrained resources, FAA's highest priority will always be the safe day-to-day operation of the NAS.

The FAA's current budget requests also cover the cost of the pre-implementation commitments, but pursuing any additional implementation commitments as a result of this work may require additional funding. All parties must understand that the FAA's agreement to assess a capability does not imply agreement to implement the capability, because the FAA must always make a credible business case to justify the full lifecycle costs. Implementation of future capabilities will be determined by established FAA processes that transcend the overarching lifecycle and acquisition management processes. These include: strategic planning, management and budgeting, enterprise architecture, portfolio management and ultimately program management. For example, new operational capabilities must be planned and managed through the NAS Enterprise Architecture Service Roadmaps. Those capabilities that require procurement decisions are governed by the FAA Acquisition Management System. During implementation, changes within programs are then governed by internal program management processes. Finally, the FAA must comply with its NAS

Configuration Control process to adjust the NAS baseline to reflect the equipment changes required to support any new capability. These existing FAA processes ensure that all NAS changes are operationally, technically and financially responsible and feasible, and that the required documentation is in place to adequately reflect the change to the NAS and the reasons for it.

COMMITMENT ASSURANCE WITH INDUSTRY

The FAA intends to apply the same level of rigor to the oversight of this plan that has been the hallmark of its development. The agency will sustain momentum by conducting internal meetings at least monthly to monitor progress, while the NAC will work with industry stakeholders to ensure their commitments are funded and met. Senior agency and industry leadership will also meet on a monthly basis, and have agreed to provide quarterly updates to the NAC's subcommittee. Progress reports will also be provided publicly through the NAC, which as a federal advisory committee holds an open public meeting three times each year, with advance notice available in the Federal Register. Additionally, the FAA has several established forums through which the agency will continue to engage industry on commitments in this plan. These include the Metroplex teams for each project, the Performance-based Operations Aviation Rulemaking Committee[6] (PARC), the Data Communications Integration Team[7] (DCIT), and the Collaborative Decision Making (CDM) Stakeholders Group[8] (CSG).

The FAA has committed to transparency in monitoring progress metrics. As of the date of this report, a section of our NextGen Performance Snapshots[9] website will be dedicated to updating the plan's status on a regular basis. The full benefit of these capabilities will be realized when operators begin to use them on a routine basis. The operational impact will be measured against existing FAA operational performance metrics, which are showcased on both the Snapshots page as well as the agency's Harmonized Metrics website[10].

[6] The PARC provides a forum for the aviation community to discuss, prioritize, and resolve issues, provide direction for U.S. flight operations criteria, and produce U.S. consensus positions for global harmonization, in order to help the FAA transition to a performance-based NAS.

[7] The DCIT provides a forum related to integration of ground automation, communication networks, and avionics systems design and certification as well as Data Communications procedures and enables users to have a stake in the success of the Data Comm program. It includes airframe and avionics manufacturers, FAA, NAS users, and related industry associations and business groups.

[8] The CSG provides oversight and governance of joint FAA/industry CDM initiatives and provides the FAA with input on prioritization and tasking for possible technologies, tools, and/or procedures that will increase the efficiency of the NAS. The CSG includes representatives from the Airlines for America, National Business Aviation Association (NBAA), Regional Airline Association (RAA) and the current industry lead of the CDM program, Delta Air Lines.

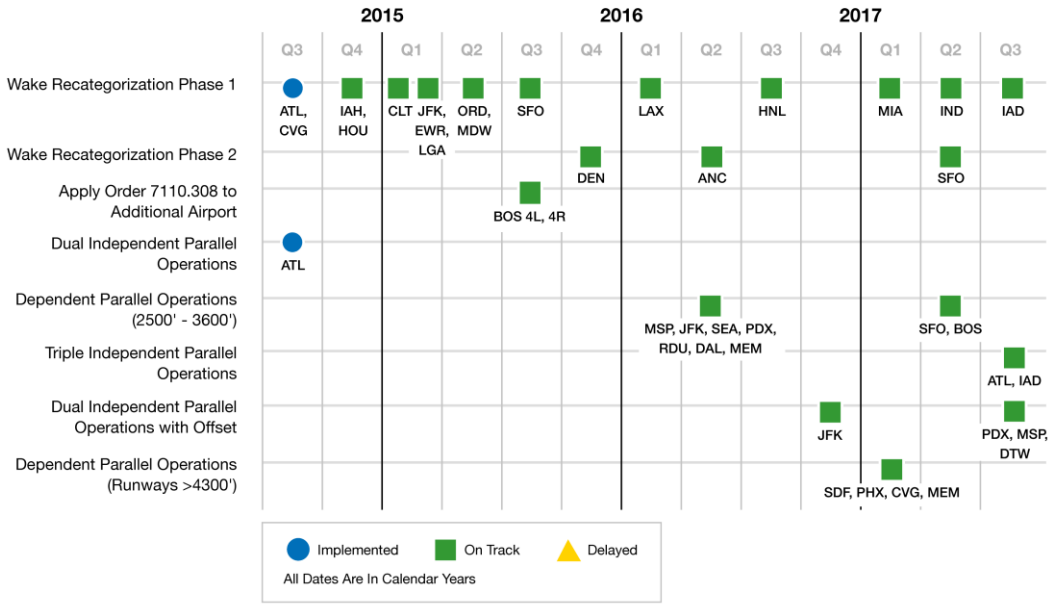
[9] The NextGen Performance Snapshots is the agency's vehicle for sharing metrics about how NextGen is improving NAS operations, and can be found at www.faa.gov/nextgen/snapshots

[10] http://www.faa.gov/about/plans_reports/operational_metrics/

FOCUS AREA: MULTIPLE RUNWAY OPERATIONS

The efficiency of parallel runways, particularly those that are closely spaced, has been limited by the interplay of wake vortices with nearby aircraft. MRO capabilities improve access to these runways and can increase basic runway capacity and throughput by reducing separation between aircraft based on improved wake categorization standards. Improved access will enable more arrivals and/or departures during less than visual meteorological conditions, which will increase efficiency and reduce flight delays. These commitments are a subset of the overall series of programs and activities the FAA has planned to address these issues.

IMPLEMENTATION COMMITMENTS



- **Wake Recategorization, Phase 1:** In the past the degree to which two aircraft needed to be separated was based on aircraft weight. This capability replaces that model with newly approved wake turbulence categories that group aircraft more optimally based on their wake turbulence characteristics and the current fleet mix for U.S. airports. The FAA introduced this change at Cincinnati/Northern Kentucky International Airport (CVG) and Hartsfield-Jackson Atlanta International Airport (ATL) earlier in Calendar Year (CY) 2014 and commits to implementation at 14 additional airports by the close of 2017: George Bush Houston Intercontinental Airport (IAH) and William P. Hobby Airport (HOU) in Q4 CY2014; Charlotte Douglas International Airport (CLT), John F. Kennedy International Airport (JFK), Newark Liberty International Airport (EWR), and LaGuardia Airport (LGA) in Q1 CY2015; Chicago O'Hare International Airport (ORD) and Chicago Midway Airport (MDW) in Q2 CY2015; San Francisco International Airport (SFO) in Q3 CY2015; Los Angeles International Airport (LAX) in Q1 CY2016; Honolulu International Airport (HNL) in Q3 CY2016; Miami International Airport (MIA) in Q1 CY2017; Indianapolis International Airport (IND) in Q2 CY2017; and Washington Dulles International Airport (IAD) in Q3 CY2017.

- **Wake Recategorization, Phase 2:** This capability defines pair-wise wake separation standards for each aircraft leader-follower pair. Implementation of these standards can then uniquely address the needs of a given airport based on the local fleet mix to increase site-specific benefits beyond Phase 1 categories. The FAA commits to implementing at three airports: Denver International Airport (DEN) in Q4 CY2015; Ted Stevens Anchorage International (ANC) in Q2 CY2016; and SFO in Q2 CY2017.

- **Apply Order 7110.308 to Additional Airport:** FAA Order 7110.308 allows a reduction in the required wake separations for dependent operations for runways spaced less than 2,500 feet apart when Small or Large category aircraft are leading in the dependent pair. The FAA commits to implementing at Boston Logan International Airport (BOS) for Runways 4 Left and 4 Right in Q3 CY2015. (Note: BOS implementation depends on approval of separation minima and environmental approval of an Area Navigation (RNAV) approach.)

- **Dual Independent Parallel Operations:** This capability allows dual simultaneous operations for runways spaced greater than 3,600 feet using either instrument landing system or GPS-based approach options with vertical guidance, e.g. lateral/vertical navigation (LNAV/VNAV), Required Navigation Performance (RNP) and RNP Authorization Required (AR). After reviewing the opportunity with industry, the FAA implemented this change at ATL in Q3 CY2014.

- **Dependent Parallel Operations Between 2,500 Feet and 3,600 Feet:** This capability reduces the dependent stagger separation from 1.5 nautical miles (NM) to 1.0NM for runways separated by more than 2,500 feet and less than 3,600 feet. The FAA commits to implementation in Q2 CY2016 at JFK, Minneapolis/St. Paul International Airport (MSP), Seattle-Tacoma International Airport (SEA), Portland International Airport (PDX), Raleigh/Durham International Airport (RDU), Dallas Love Field (DAL), and Memphis International Airport (MEM); and in Q2 CY2017 at SFO and BOS.

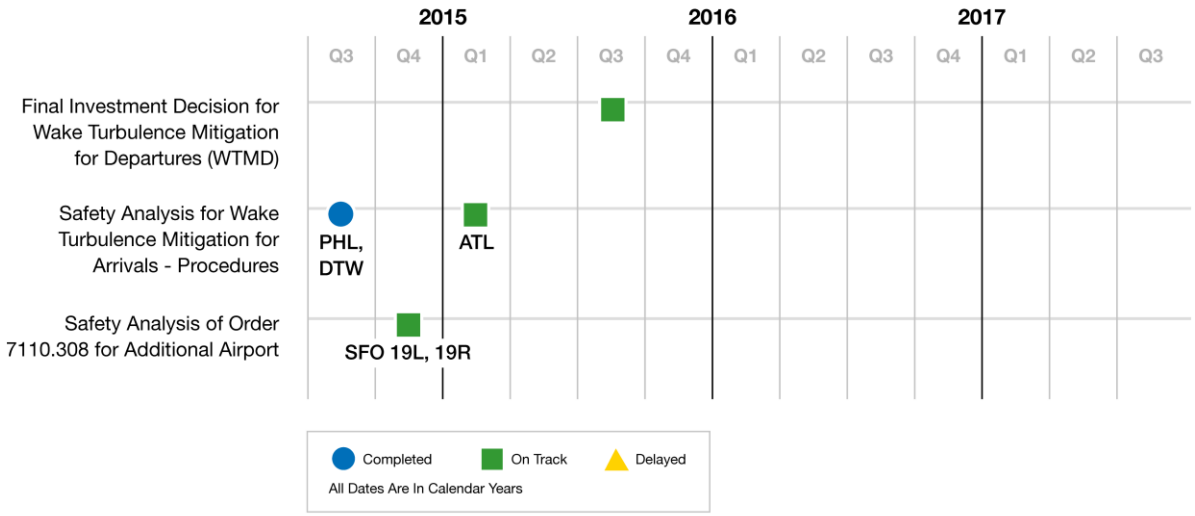
- **Triple Independent Parallel Operations:** This capability allows triple simultaneous operations for runways spaced greater than approximately 3,900 feet, with the exact value for this boundary to be determined by FAA safety analysis. The FAA commits to implementation in Q3 CY2017 at ATL and IAD.

- **Dual Independent Parallel Operations with Offset:** This capability allows dual simultaneous operations with the use of an offset for runways spaced greater than approximately 3,000 feet, with the exact value for this boundary to be determined by FAA safety analysis. The FAA commits to implementation in Q4 CY2016 at JFK, and in Q3 CY2017 at PDX, MSP, and Detroit Metropolitan Wayne County Airport (DTW).

- **Dependent Parallel Operations for Runways Greater than 4,300 Feet:** This capability reduces the dependent stagger separation from 2.0NM to 1.5NM for runways greater than 4,300 feet and less than approximately 7,300 feet, with the exact value for this boundary to be

determined by FAA safety analysis. The FAA commits to implementation in Q1 CY2017 at Louisville International Airport (SDF), Phoenix Sky Harbor Airport (PHX), CVG, and MEM.

PRE-IMPLEMENTATION COMMITMENTS



- **Wake Turbulence Mitigation for Departures (WTMD):** When wind conditions allow, WTMD permits any aircraft to depart from the 'upwind' runway without waiting two or three minutes after Heavy or B757 aircraft depart the 'downwind' runway. Changes to wake rules are implemented based on wind measurements, enabling more closely spaced departure procedures in order to maintain airport/runway capacity. During peak demand periods, these procedures enable airports to maintain airport departure throughput during favorable wind conditions. The FAA commits to completing its final investment decision for WTMD in Q3 CY2015, which if positive would lead to implementation at up to seven airports: BOS, EWR, MIA, SEA, DTW, Lambert St. Louis International (STL) and Philadelphia International Airport (PHL).

- **Wake Turbulence Mitigation for Arrivals-Procedures:** This capability allows a reduction in required wake separations for dependent operations for runways spaced less than 2,500 feet apart when Heavy or B757 aircraft are leading in the dependent pair. The FAA completed its safety analyses for DTW and PHL in Q3 CY2014, and commits to completing the work for ATL in Q1 CY2015.

- **Safety Analysis of Order 7110.308 for Additional Airport:** The FAA commits to assessing in Q4 CY2014 whether this order (described above) can be applied for SFO for Runways 19 Left and 19 Right.

INDUSTRY COMMITMENTS

- **Pilot Awareness Briefings:** MRO capabilities do not require specific pilot training, but pilots should be made aware of changes in legacy wake turbulence and parallel approach procedure separations before implementation to ensure a smooth transition and accelerate benefits.

- **Post-Implementation Feedback:** Air carriers may have access to additional metrics that should be considered during the assessment of MRO and Wake Recategorization procedures. These partners commit to providing metrics data to the FAA, which may include a comparison of pre-implementation to post-implementation data, and are not limited to: taxi times, fuel burn, and gate delays.

COST

The specific commitments in this report are part of the larger MRO program and are funded in the FY2015 President's Budget Request and the supporting Capital Investment Plan. These efforts are also supported each year by the FAA's annual operating budget. Funding for these commitments in FY2015 includes $3.5 million from the F&E account. Cost estimates are developed based on engineering analysis and known historical costs for wake and closely spaced parallel operations procedure conceptual design, data collection, analysis, and training.

These commitments leverage operational analyses and engineering studies funded and conducted in prior years. Through FY2014, the FAA has spent $71.3 million in the F&E account on these efforts. Using this funding, the FAA performed analyses that led to the authorization of Wake Recategorization Phase 1, which has been implemented at four sites to date. The agency revised blunder assumptions and performed analyses to reduce required separation standards for simultaneous and dependent approaches. The FAA also performed analyses and authorized procedural and system solutions to reduce wake separation requirements on arrival and departure for closely spaced parallel runway operations; and implemented 7110.308 and WTMD solutions at five sites to date.

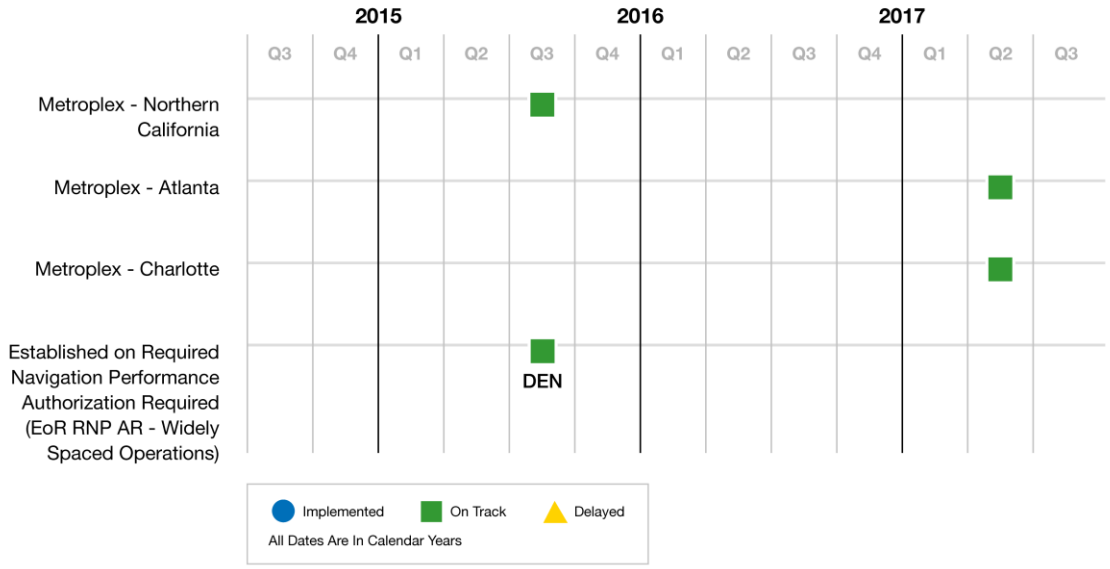
RISKS

As with any program, these commitments are subject to cost, schedule and performance risks. The FAA is committed to providing executive oversight to mitigate risks and adhere to these commitment timelines. This focus area has significant interdependencies with other FAA projects that senior leadership will closely monitor. Implementation of dual independent parallel operations with offset and triple independent parallel operations require the availability of a high-resolution final monitor aid display. The Terminal Automation Modernization Replacement (TAMR) waterfall as currently planned will support this capability, but any delays to TAMR deployment could have an impact on the timeline. The Wake Recategorization Phase 1 implementation at SFO is also dependent on the planned implementation of the Northern California Metroplex.

FOCUS AREA: PERFORMANCE BASED NAVIGATION

With PBN, the FAA delivers new routes and procedures that primarily use satellite-based navigation and on-board aircraft equipment to navigate with greater precision and accuracy. PBN provides a basis for designing and implementing automated flight paths, airspace redesign and obstacle clearance. Benefits include shorter and more direct flight paths, improved airport arrival rates, enhanced controller productivity, increased safety due to repeatable and predictable flight paths, fuel savings and a reduction in aviation's adverse environmental impact. These commitments are a subset of the overall series of PBN activities the FAA is planning to implement.

IMPLEMENTATION COMMITMENTS



- **Metroplex Projects:** In response to earlier recommendations from the aviation community under the RTCA's 2009 NextGen Mid-Term Implementation Task Force, the FAA has been introducing integrated NextGen capabilities to improve air traffic flow at 13 metroplexes11. Airspace congestion and other limiting factors, such as environmental constraints, combine to reduce efficiency in these areas. Using a consistent, repeatable approach, study teams of FAA and aviation community experts analyze the operational challenges of a given metroplex area and explore the available tools for improvement. Collaborative design and implementation teams then put in place the solutions the study teams recommend, including PBN procedures and airspace redesign. The FAA commits to implementing Metroplex projects at three locations highlighted by industry by the end of CY2017.

[11] A metroplex is a geographic area that includes several commercial and general aviation airports in close proximity, serving large metropolitan areas. The FAA refers to large-scale projects in these areas as Metroplex projects.

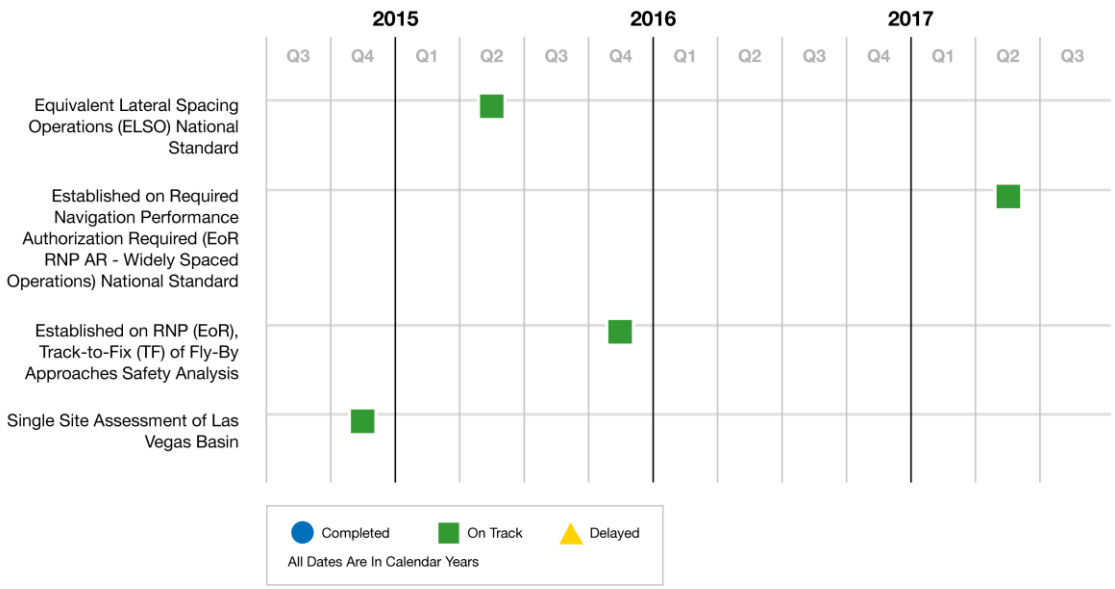
- **Northern California Metroplex:** The site has completed the study and design phases of the Metroplex process. There are 32 procedures planned for SFO, Sacramento International Airport (SMF), Oakland International Airport (OAK), and San Jose International Airport (SJC). This Metroplex site also has eight area navigation Air Traffic Service routes (Q-routes) planned. This site is now in the implementation phase of the Metroplex process, and the FAA commits to completion in Q3 CY2015.

- **Atlanta Metroplex:** The site has completed the study and design phases of the Metroplex process. There are 57 procedures planned for ATL. There are 10 procedures proposed for adjacent airports, including RDU, Greensboro Airport (GSO), Greer-Greenville Spartanburg Airport (GSP), and Charleston Air Force Base Airport (CHS). Given the proximity and interconnectivity of these airports, this Metroplex area is currently being coordinated closely with the Charlotte Metroplex site. The Atlanta Metroplex site is awaiting the start of the Implementation phase. The FAA commits to implementation in Q2 CY2017.

- **Charlotte Metroplex:** The site has completed the study and design phases of the Metroplex process. There are 46 procedures proposed for CLT, as well as the previously identified 10 procedures planned for the adjacent airports shared with the Atlanta Metroplex site. The Charlotte Metroplex site has started the evaluation phase. The FAA commits to implementation in Q2 CY2017.

- **Established on RNP (EoR):** EoR enables controllers to clear aircraft on an RNP approach while on the downwind to the airport without the need to use the standard 1,000 feet of vertical separation when the aircraft turns to align with the runway centerline. This change to separation standards allows aircraft to turn to align to the runway much closer to the field, reducing track miles, fuel burn and noise. EoR provides safety, reliability and efficiency benefits in the NAS while improving customer service and minimizing delays en route and on the ground. EoR safety assessments are still in development (see pre-implementation commitments below) but a waivered procedure has been approved for DEN and the FAA commits to its implementation by Q3 CY2015. The DEN procedure will provide data to support concept validation for a proposed national standard.

PRE-IMPLEMENTATION COMMITMENTS



- **Equivalent Lateral Spacing Operations (ELSO) National Standard:** ELSO capitalizes on the increased navigational precision of RNAV departure operations to provide a reduced divergence angle while maintaining the established minimum lateral spacing between departure paths. The FAA commits to issuing a national standard in Q2 CY2015, which will make it possible to implement ELSO at eligible locations throughout the NAS. The FAA will use the Metroplex and single-site processes to deploy the capability. Industry has identified MIA, ORD, CLT, IAH, and Fort Lauderdale-Hollywood International Airport (FLL) as candidate locations.

- **Established on RNP (EoR) Widely Spaced National Standard:** The FAA commits to publishing a national standard for this capability in Q2 CY2017, which will make it possible to implement EoR for Widely Spaced Operations at eligible locations throughout the NAS.

- **EoR Track-to-Fix Safety Analysis:** Based on industry feedback, the FAA will research the use of RNP approaches using Track-to-Fix legs/fly-by turn construction and conducted as simultaneous, independent operations. Unlike the EoR for Widely Spaced Operations, which require an aircraft and its crew to be RNP AR-capable, the Track-to-Fix procedures are envisioned to require only RNAV capability. More than 85 percent of the current commercial fleet would be able to use these, which would greatly increase the potential usage and benefits. The results of the study will inform which runway configurations are best suited to RNP approaches using Track-to-Fix. The FAA commits to complete this study in Q4 CY2015. Additional safety analyses would be required thereafter. Industry is interested in ATL as a potential future candidate location pending the results of the study and requisite safety analysis.

- **Las Vegas Basin Site Assessment:** Industry recommends the Las Vegas Basin as the Single Site PBN location. The FAA commits to reassessing current state of work in Q4 CY2014. The workgroup also identified Louisville as an alternate location.

INDUSTRY COMMITMENTS

The FAA collaborates with industry through Metroplex study and design teams to ensure that proposed procedures meet airport and flight operator needs and address concerns of underlying communities. Industry commits to provide training for pilots to prepare them to take advantage of new procedures and to remain flexible as adjustments may be necessary. As new procedures are used, industry commits to provide feedback on their utility and to provide usability data.

COSTS

The specific commitments in this section are part of the larger PBN program and are funded in the FY2015 President's Budget Request and the supporting Capital Investment Plan. Funding for these commitments in FY2015 includes $2.9 million from the F&E account and $14.8 million from the Operations account. Cost estimates for these commitments are based on analysis of completed sites, as well as on the number of procedures to be implemented and the level of effort needed to complete the work.

PBN commitments leverage operational analyses and engineering studies funded and conducted in prior years. Through FY2014, the FAA has spent $40.9 million from the F&E account on these efforts, including study, design, evaluation and implementation team work for the Metroplex sites and research on EoR concepts.

RISKS

The Metroplex program, by design, is a highly collaborative process which requires involvement of subject matter experts from air traffic control facilities and industry to work together developing solutions. Schedule deconfliction for timely access to these high-value resources is a persistent challenge.

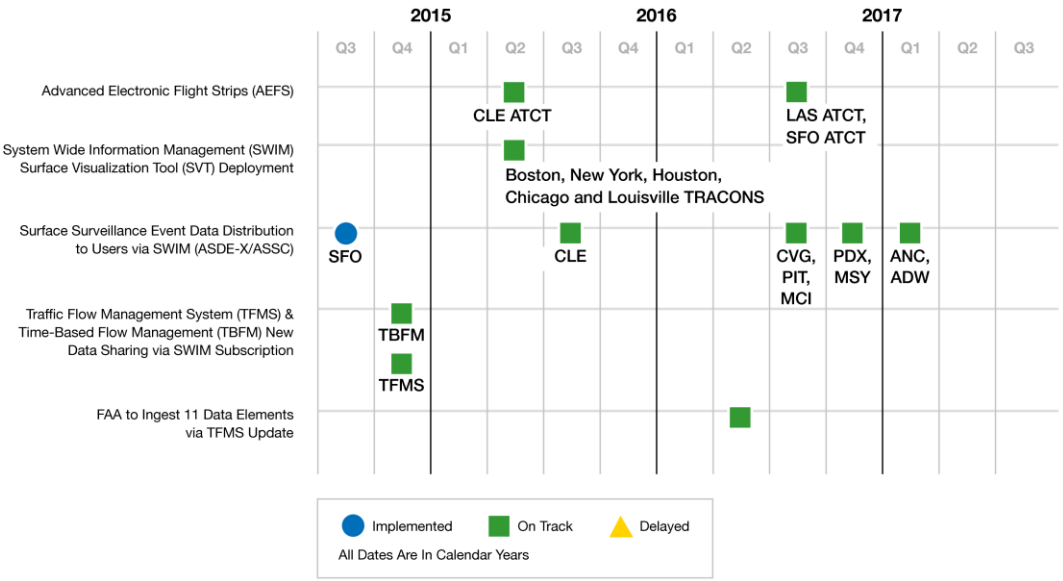
Environmental concerns from a variety of non-aviation stakeholders are requiring increasing levels of community outreach. The time required to resolve these concerns may impact planned schedules. The need to proactively address varying perceptions from community stakeholders/activists was a key finding in the recent NAC PBN Blueprint workgroup activity.

Facility resources at Metroplex locations are in high demand for several NAS initiatives. In general, facilities can only support one large initiative at a time. Schedule deconfliction must be constantly monitored and adjusted to accommodate shifts in major programs (e.g. ERAM and TAMR). Access to air traffic control experts is vital to the successful implementation of these procedures and must always be balanced against operational needs. Staffing issues during high leave periods (i.e. summer months in many places) and facility operational staffing needs can impact the ability to devote resources to implementation of new procedures.

FOCUS AREA: SURFACE OPERATIONS AND DATA SHARING

Some of the greatest efficiencies can be gained while an aircraft is still on the ground. The FAA commits to implementing near-term surface improvements, sharing more data with stakeholders, and completing feasibility assessments of other capabilities of interest. The goal of these enhancements is to measurably increase predictability and provide actionable and measurable surface efficiency improvements. These commitments are a subset of the overall series of programs and activities the FAA is planning to improve operations in these domains.

IMPLEMENTATION COMMITMENTS



- **Advanced Electronic Flight Strips (AEFS):** AEFS replaces today's paper 'flight progress strips' with modern, real-time data-sharing displays for tower controllers. AEFS improves coordination among controllers, traffic management units, and front line managers by electronically displaying updated data for flights affected by weather reroutes, traffic management initiatives, and operator flight plan changes as required. Displaying these changes to all affected personnel simultaneously increases situational awareness and enables a more efficient and orderly flow of aircraft on the airport surface. This capability is especially beneficial to controllers and operators in improving service to the traveling public during severe weather events when changes to flight plans may occur frequently, as each change results in the printout of a new paper strip per flight update and also requires the manual transfer of pertinent hand-written notations to the newly printed paper strip. In addition, with today's paper strips, tower controllers must physically pass a flight progress strip from controller to controller, whereas with AEFS, an electronic version is distributed automatically, reducing controller workload and operational complexity. The FAA commits to install AEFS at CLE in Q2 CY2015 and SFO and LAS in Q3 CY2016.

- **System Wide Information Management (SWIM) Surface Visualization Tool:** This tool improves FAA's ability to monitor aircraft departure buildups and better plan for airport reconfigurations due to changing weather. The tool has been installed at four initial sites: the FAA's Air Traffic Control System Command Center, Southern California TRACON, Northern California TRACON, and Potomac TRACON. The FAA commits to installing the tool at five additional TRACONs by Q2 CY2015: Boston, New York, Houston, Chicago, and Louisville.

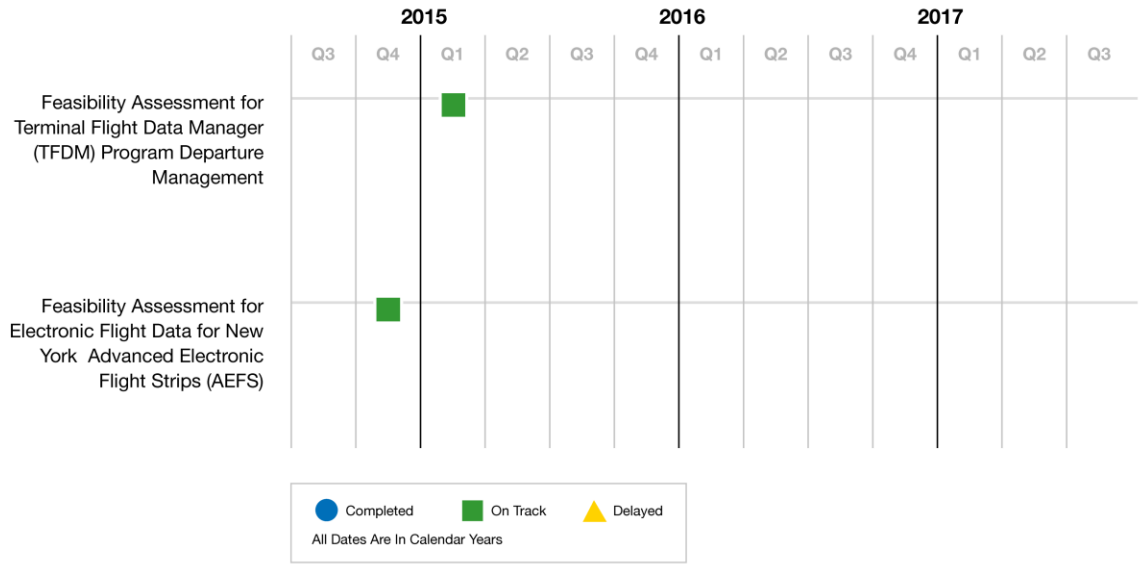
- **NAS Data Shared via SWIM:** Collectively, the FAA and industry can improve both strategic planning and tactical execution of NAS operations if all stakeholders have access to the same data.

    - **Surface Surveillance Event Data:** The FAA commits to continued expansion of the distribution of Airport Surface Detection Equipment-Model X (ASDE-X)/Airport Surface Surveillance Capability (ASSC) surface event data to external users in Q4 CY2014. ASDE-X data are now available for 35 ASDE-X airports and data for the first ASSC site, SFO, is currently available to SWIM subscribers. Pending safety risk management decisions, the FAA commits to making the data available at eight additional sites in the next three years: CLE in Q3 CY2015; CVG, Pittsburgh International Airport (PIT), Kansas City International Airport (MCI) in Q3 CY2016; PDX and MSY Q4 CY2016; and in ANC and Joint Base Andrews (ADW) in Q1 CY2017.

    - **Traffic Flow Management System (TFMS) and Time-Based Flow Management (TBFM) Data:** The FAA commits to expanding distribution of real-time NAS data including information regarding TFMS traffic management initiatives, the National Traffic Management Log airport configurations with arrival rates, and thunderstorm forecast data from FAA's Route Availability Planning Tool, all in Q4 CY2014. In addition, TBFM metering times will be available for the first time in Q4 CY2014.

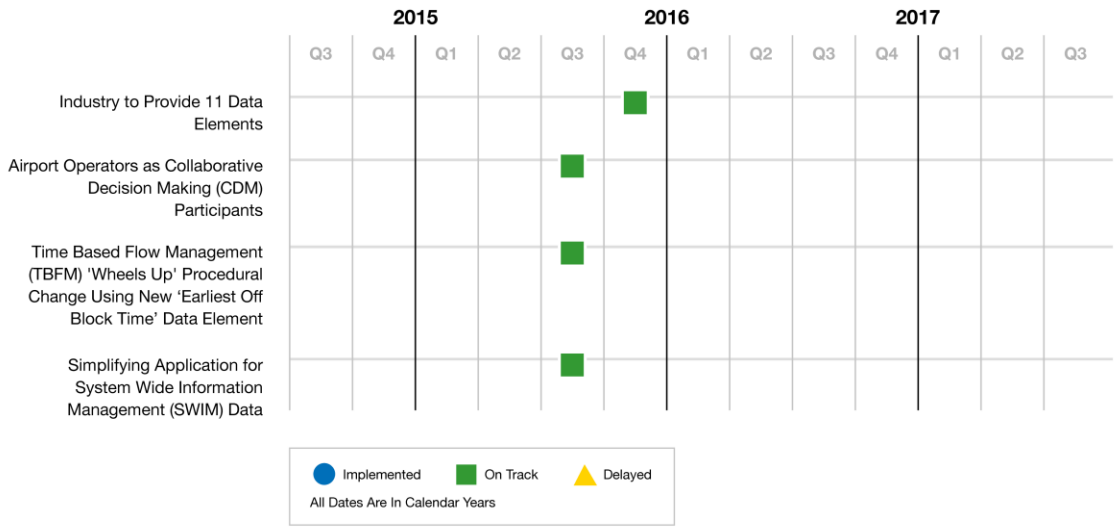
- **FAA to Ingest 11 Data Elements via TFMS Update:** As part of a two-way data-sharing agreement negotiated by the CSG, the FAA commits to ingesting the 11 data items industry has committed to provide to FAA new modeling capabilities (see the industry commitment below) via TFMS on a NAS-wide basis by Q2 CY2016.

PRE-IMPLEMENTATION COMMITMENTS



- **Feasibility Assessment for Terminal Flight Data Manager (TFDM) Program Departure Management:** The FAA commits to completing a feasibility assessment of the TFDM departure management capability, as well as a TFDM departure management capability strategy update, to coincide with the planned FAA Joint Resources Council review of the TFDM program in Q1 CY2015. This feasibility assessment and strategy update will consider the foundational work at DTW, MEM, JFK, and Orlando International Airport (MCO) related to surface departure metering. It will also examine the latest deployment timelines and site selections for the TFDM program, as well as the possibility of leveraging investments FAA has already made in surface departure management capabilities, in order to aid in the refinement of procedures to be used in the TFDM program. Some possible refinements include existing proposals for procedures to address conflicts between Department of Transportation on-time performance measures and collaborative surface management; surface-based level of service and incentives; rules for FAA use and management of non-FAA source event data; and surface operational roles and responsibilities.
- **Feasibility Assessment for Electronic Flight Data for New York AEFS:** The FAA has agreed to complete a feasibility assessment for introducing the AEFS capability to New York airport towers by Q4 CY2014. This feasibility assessment will examine technical considerations associated with introducing AEFS software and hardware into the New York tower operation, including connectivity to New York's Departure Sequencing Program.

INDUSTRY COMMITMENTS



- **Industry to Provide 11 Data Elements:** As part of a two-way data-sharing agreement, industry commits to providing the FAA with 11 new data elements by Q4 CY2015. The elements are: Initial Off-Block Time; Earliest Off-Block Time; Actual Off-Block Time; Actual Takeoff Time; Actual Landing Time; Actual In-Block Time; Target Movement Area Entry Time; Aircraft Tail/Registration Number; Flight Cancellation; Flight Intent (to leave gate early); and Gate Assignment. These elements will be ingested into TFMS automation to support TFDM 'early implementation' and will be used to improve departure demand modeling, distribute new messages via TFDM data exchange, and provide new dynamic flight lists in the TFMS Traffic Situation Display.

- **CSG Assessments and Recommendations:** The FAA and industry have agreed to forward a number of activities to the CSG for resolution.

    - **Airport Operators as CDM Participants:** Like flight operators, airports require real-time air traffic control and flight movement information to manage airside operations more effectively. This is especially true for airports that provide ramp control in the non-movement areas. Additional uses of real-time information include better gate management and utilization, forecasting of airport resource demands, and preparing for irregular operations like severe weather operations and diversions. Currently, airport operators participate in certain CDM-related processes and procedures, but not in data exchange. The CSG will determine whether to include airport operators as signatories in Q3 CY2015. If approved, a new partnership memorandum of agreement would be negotiated.

    - **TBFM 'Wheels Up' Procedural Change Using the New 'Earliest Off Block Time' (EOBT) Data Element:** The CSG will assess creating procedures for the use of industry's EOBT surface data element to improve 'wheels up' time for short-haul flights

into a TBFM-metered arrival airport. These procedures could help operators better manage delays and push-back schedules, saving fuel and reducing time on the tarmac. The FAA is one constituent of the CSG; consensus among CSG participants will be required and agreement reached on potential new procedures to support the change. It is anticipated that consensus among all stakeholders and updates to required documentation could be completed by Q3 CY2015.

- **Simplifying Application for SWIM Data:** Stakeholders must apply to the FAA for access to the SWIM data via a connection to the National Enterprise Security Gateway. The CSG will also make recommendations for simplifying the acceptance process by Q3 CY2015 so that eligible users can participate more quickly.

COST

The specific commitments in this section are part of the TFDM and TFMS programs and are funded in the FY2015 President's Budget Request and the supporting Capital Investment Plan. Funding for these commitments in FY2015 includes $1.9 million from the F&E account and $1.2 million from the Operations account. Cost estimates for these commitments are based on analysis of previously completed sites, as well as on the number of procedures to be implemented and the level of effort needed to complete the work. These commitments leverage operational analyses and engineering studies funded and conducted in prior years. Through FY2014, the FAA has spent $8.6 million on these efforts.

RISKS

Collaborative Decision Making (CDM) is an operating philosophy whereby traffic flow management decisions are based on a foundation of real-time data sharing, a common view of constraints, and a decision making process that is focused on improving the predictability and efficiency of flight operations. CDM participants include representatives from government, airlines, general aviation, business aviation, private industry and academia, all working together in developing new processes which often rely less on technology and more on stakeholder agreements that are intended to achieve mutually beneficial outcomes which support the efficiency and safety of the NAS. The success of these types of initiatives depends on all parties making a clear commitment to the new processes while realizing a return on their investment.

Additionally, the FAA commitment for providing ASSC surface surveillance event data through SWIM is dependent on a final safety assessment. Because ASSC is a new system to be implemented within the NAS, it is possible that a thorough safety review could take longer than currently anticipated.

FOCUS AREA: DATA COMMUNICATIONS

The Data Comm program will provide data communications services between pilots and air traffic controllers as well as enhanced air traffic control information to airline operations centers. Data Comm will provide a direct link between ground automation and flight deck avionics for safety-of-flight clearances, instructions, traffic flow management, flight crew requests and reports. Data Comm is critical to the success of NextGen, enabling efficiencies not possible with the current voice system. These services will enhance safety by reducing communication errors, increase controller productivity by reducing communication time between controllers and pilots, and increase airspace capacity and efficiency while reducing delays, fuel burn, and carbon emissions. As noted earlier, this focus area has an extended timeframe and program management considerations because it is a baselined program under the FAA's Acquisition Management Policy.

IMPLEMENTATION COMMITMENTS

Keysite (3 Towers)			
Site Name	Site ID	ARTCC ID	IOC (CY)
KS 1: Salt Lake City	SLC	ZLC	Q2 2015
KS 2: Houston Intcl	IAH	ZHU	Q3 2015
KS 3: Houston Hbby	HOU	ZHU	Q3 2015

Group A (19 Towers)			
Site Name	Site ID	ARTCC ID	IOC (CY)
New Orleans	MSY	ZHU	Q1 2016
Austin	AUS	ZHU	Q1 2016
San Antonio	SAT	ZHU	Q1 2016
Los Angeles	LAX	ZLA	Q1 2016
Las Vegas	LAS	ZLA	Q1 2016
San Diego	SAN	ZLA	Q2 2016
John Wayne	SNA	ZLA	Q2 2016
Bob Hope	BUR	ZLA	Q2 2016
Ontario	ONT	ZLA	Q2 2016
San Francisco	SFO	ZOA	Q2 2016
Oakland	OAK	ZOA	Q2 2016
San Jose	SJC	ZOA	Q3 2016
Sacramento	SMF	ZOA	Q3 2016
Phoenix	PHX	ZAB	Q3 2016
Albuquerque	ABQ	ZAB	Q3 2016
Seattle	SEA	ZSE	Q3 2016
Dallas Love	DAL	ZFW	Q4 2016
Dallas FTW (x2)	DFW	ZFW	Q4 2016

Group B (17 Towers)			
Site Name	Site ID	ARTCC ID	IOC (CY)
Louisville	SDF	ZID	Q1 2016
Indianapolis	IND	ZID	Q1 2016
Cincinnati	CVG	ZID	Q1 2016
Memphis	MEM	ZME	Q2 2016
Nashville	BNA	ZME	Q2 2016
Denver	DEN	ZDV	Q2 2016
Atlanta	ATL	ZTL	Q2 2016
Charlotte	CLT	ZTL	Q2 2016
Jacksonville	JAX	ZJX	Q2 2016
Orlando	MCO	ZJX	Q3 2016
Miami	MIA	ZMA	Q3 2016
Fort Lauderdale	FLL	ZMA	Q3 2016
Tampa	TPA	ZMA	Q3 2016
Palm Beach	PBI	ZMA	Q3 2016
St Louis	STL	ZKC	Q4 2016
Kansas City	MCI	ZKC	Q4 2016
Minn-St Paul	MSP	ZMP	Q4 2016

Group C (18 Towers)			
Site Name	Site ID	ARTCC ID	IOC (CY)
Newark	EWR	ZNY	Q1 2016
J F Kennedy	JFK	ZNY	Q1 2016
La Guardia	LGA	ZNY	Q1 2016
Philadelphia	PHL	ZNY	Q2 2016
Teterboro	TEB	ZNY	Q2 2016
Westchester	HPN	ZNY	Q2 2016
Boston	BOS	ZBW	Q2 2016
Providence	PVD	ZBW	Q2 2016
Bradley	BDL	ZBW	Q2 2016
Detroit	DTW	ZOB	Q3 2016
Cleveland	CLE	ZOB	Q3 2016
Pittsburgh	PIT	ZOB	Q3 2016
Balt/Wash	BWI	ZDC	Q3 2016
Dulles	IAD	ZDC	Q3 2016
Reagan	DCA	ZDC	Q3 2016
Raleigh/Durham	RDU	ZDC	Q4 2016
Chicago Midway	MDW	ZAU	Q4 2016
Chicago O'Hare	ORD	ZAU	Q4 2016

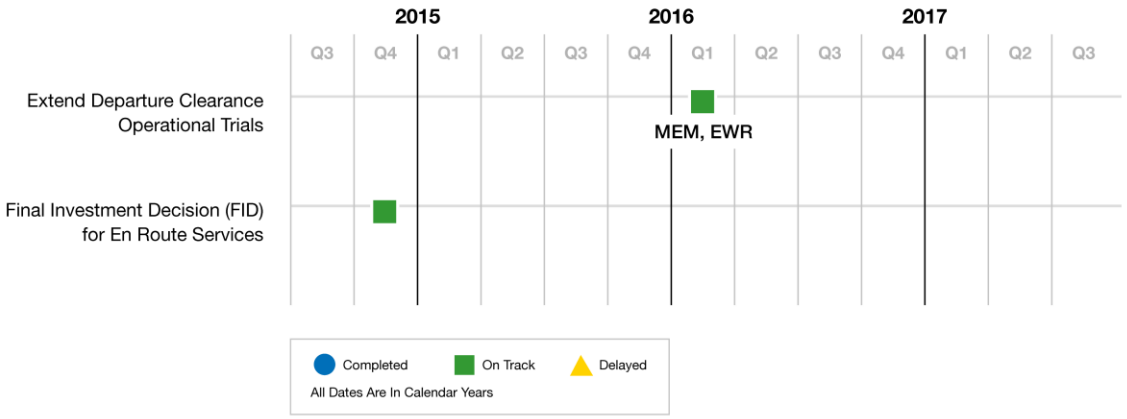
- **Departure Clearance Tower Services Baseline Waterfall:** The FAA commits to begin delivering departure clearances at 56 airports under the Data Comm program's Segment 1 Phase 1. The baseline calls for this work to be completed by the end of 2019 but the agency is working toward challenge dates that would have services at all 56 locations in place by the end of CY2016 (see chart above for specifics). The order of the towers may move within the groups based on operational requirements; however, the FAA and industry will work together to manage these changes.

  The major elements of Segment 1 Phase 1 implementation are:

  - Tower Data Link Services (TDLS) software and hardware enhancements to legacy pre-departure clearances functionality to enable departure clearance services in the towers
  - En Route Automation Modernization (ERAM) software and hardware enhancements, including logon and session establishment
  - Data Communications Network Service (DCNS), which will provide the air/ground communications network services infrastructure

- The Avionics Equipage Initiative, which will provide incentives for operators to equip aircraft with Future Air Navigation Systems (FANS) 1/A+ avionics and VHF Data Link Mode 2 (VDL-2) radios.

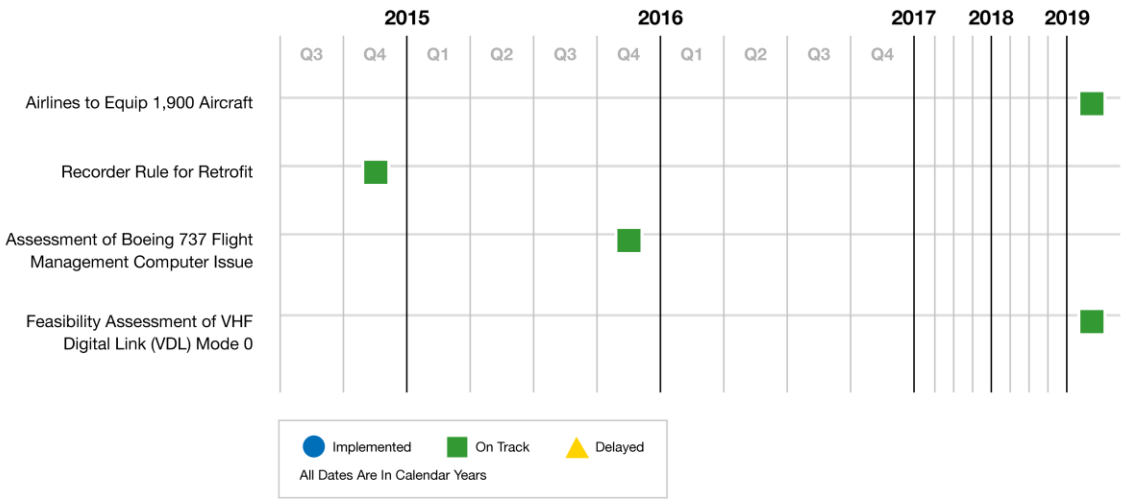
PRE-IMPLEMENTATION COMMITMENTS



- **Extend Departure Clearance Operational Trials:** In addition to the deployment of the production system, the FAA agrees to extend the Departure Clearance (DCL) Operational Trials at MEM and EWR for 15 months to run through Q1 CY2016. This will enable the FAA to continue to refine operational procedures and collect valuable operational data. Both operators and controllers have been supportive of the decision to extend the trials.

- **Final Investment Decision for En Route Services:** The FAA plans to make a final investment decision on Data Comm Segment 1 Phase 2's En Route Services in Q4 CY2014. If approved, then Phase 2 will leverage the Phase 1 infrastructure to deliver services to the en route domain, including Controller Pilot Data Link Communications (CPDLC) airborne weather and other reroute capabilities. En route services will include airborne reroutes; controller- and pilot-initiated downlinks; altitude and altimeter settings; tailored arrivals; and issuing crossing restrictions and holding restrictions. They provide automation support for routine communications such as advisory messages, beacon codes, and transfer of communications and initial check-in. The En Route services will be delivered in two stages, Initial Services and Full Services. The Data Comm En Route services will contribute to more efficient routes and a reduction in flight delays, resulting in increased operational efficiency and enhanced safety, while reducing operational costs for operators. As Data Comm becomes fully operational, the majority of pilot-controller exchanges will be handled by Data Comm for appropriately equipped operators.

INDUSTRY COMMITMENTS



- **Airlines to Equip 1,900 Aircraft:** The FAA established a Data Comm incentive program to encourage early equipage of 1,900 aircraft by 2019 to provide enough aircraft to realize operational benefits. Under the Data Comm equipage program, eight operators have signed agreements to deliver equipped aircraft into the NAS. In order for the Data Comm program to be successful, industry stakeholders will work to honor the commitments documented in the agreements. In addition, industry and the FAA will work together to promote the use of Data Comm services across as many aircraft as feasible.

- **Recommendations on Recorder Rule for Retrofit:** Recognizing that air traffic clearances would transition from voice to data, the out National Transportation Safety Board recommended in 1999 that the cockpit recorders capture data clearances to support accident and incident investigations. The FAA acted on this recommendation and adopted a final rule in 2008 defining data link recording requirements for new aircraft, and for any prior aircraft that install a data link capability. Since 2008, a number of issues have arisen concerning this rule, including the cost of retrofits for the operators and the resultant impediment to equipping with NextGen technologies, which may in turn hinder advances in operational safety. The PARC's Communications Working Group will develop recommendations and supporting rationale for revisions to other means of compliance with the recorder rule by Q4 CY2014, for FAA consideration.

- **Assessment of Boeing 737 Flight Management Computer Issue:** The flight management computers aboard the Boeing 737 cannot handle airway-to-airway route constructs when uplinked without a published waypoint at the airway intersection point, which could limit or prevent the use of some Data Comm services if not resolved. Industry and the FAA commit to accelerating a thorough examination of the operational impact of the inability to load airway-to-airway intersections without a published waypoint at the intersection available in the En-

Route phase of Data Comm. Industry has committed to providing a solution by Q4 CY2015, with deployment as soon as possible thereafter. In the interim the FAA will provide a workaround in the ground automation until the avionics issue is addressed.

- **Feasibility Assessment of VDL Mode 0:** The Data Comm Program has focused on implementation of air-ground data link in the continental US utilizing VHF Digital Link Mode 2 (VDL Mode 2). Today airline company communications are supported on both VDL Mode 0 and VDL Mode 2, but many airlines have not fully adopted VDL Mode 2 in their older aircraft. The FAA will accommodate the use of VDL Mode 0 for DCL Tower services. The FAA continues to work with industry to investigate the effect on network performance of accommodating VDL Mode 0 and media other than VDL Mode 2 in en route airspace. Additionally, the DCIT and PARC will examine the feasibility of aircraft operators being responsible for maintaining a specific Required Communications Performance (RCP) for the operation of FANS 1/A over the operator's chosen long range communications media, as is done in oceanic and remote airspace today.

COSTS

The specific commitments in this report for tower services are funded as part of Data Comm's Segment Phase 1 baseline, as reflected in the FY 2015 President's Budget Request and the current Capital Investment Plan. Through FY2014, the FAA has spent $431.8 million to enable these commitments. Funding for these commitments in FY2015 includes $96.1 million from the F&E account. Except for operational dollars to ensure the facility has adequate staffing during training, the FAA does not require funds from the Operations account for this focus area.

Cost estimates were calculated by applying negotiated contract prices for network service volumes (Tower and En Route) to an ordering schedule derived from the program's implementation schedules. ERAM modification costs are from a negotiated proposal from the vendor. TDLS and other program office support costs were estimated by evaluating the existing personnel requirements and then projecting resources necessary based on scheduled future work.

RISKS

As with any program, these commitments are subject to cost, schedule and performance risks. The FAA is committed to providing executive oversight to mitigate risks and adhere to these commitment timelines. This focus area has significant interdependencies with other FAA projects that senior leadership will closely monitor. The commitments for deployment of DCL services reflect program challenge dates and not program baseline dates. As challenge dates they assume more risk in the coordination and delivery of DCL service to the towers. Delay to the delivery and integration of any of the component subsystems (e.g., ERAM, TDLS, DCNS) could impact these commitment dates. Additionally, close coordination with FAA field personnel and air carrier aircraft is required to operationally test and evaluate the system. Delay in providing these resources could impact these commitment dates.

APPENDIX A:

NEXTGEN PRIORITIES FUNDING, FY2007-2017

The investments the FAA has made over the past seven years provided the foundation to make these commitments today. The table below details NextGen funding for work that had to be completed for us to make these commitments. It also shows the F&E funding requested for FY2015-17 to support this work, as well as the Ops costs for FY2015.

Program	Facilities and Equipment (F&E) ($ in million)					Ops ($ in million)
	FY 2007-2014 Cumulative Total	FY15 Estimate	FY16 Estimate	FY17 Estimate	Total	FY15 Total
Multiple Runway Operations (MRO)						
Wake Turbulence Mitigation for Departures (WTMD) - Improved Multiple Runway Operations Portfolio	$ 33.3	$ -	$ -	$ -	**$ 33.3**	$ -
Wake Turbulence Mitigation for Arrivals (WTMA) - Improved Multiple Runway Operations Portfolio	$ 7.5	$ 1.5	$ 1.5	$ 1.5	**$ 12.0**	$ -
Wake Turbulence Re-categorization	$ 11.1	$ -	$ 1.5	$ 1.8	**$ 14.4**	$ -
Closely Spaced Parallel Runway Operations - Improved Multiple Runway Operations Portfolio	$ 19.4	$ 2.0	$ 2.0	$ 2.0	**$ 25.4**	$ -
Annual Ops Costs						$ -
Total MRO Budget	**$ 71.3**	**$ 3.5**	**$ 5.0**	**$ 5.3**	**$ 85.1**	**$ -**
Performance Based Navigation (PBN)						
Concept Dev for Integrated NAS Design & Procedure Planning - PBN & Metroplex Portfolio	$ 26.5	$ 1.0	$ 1.0	$ 1.0	**$ 29.5**	$ -
RNP AR - Greener Skies	*$ 10.8*	$ -	$ -	$ -	***$ 10.8***	
Metroplex Area Navigation (RNAV)/Required Navigation Performance (RNP) - PBN & Metroplex Portfolio	$ 14.5	$ 1.9	$ 3.2	$ 4.0	$ 23.6	$ -
Atlanta (ATL)	*$ 3.9*	*$ -*	*$ 1.6*	*$ 2.0*	***$ 7.4***	
Charlotte (CLT)	*$ 4.4*	*$ -*	*$ 1.6*	*$ 2.0*	***$ 7.9***	
Northern California (NCT)	*$ 6.2*	*$ 1.9*	*$ -*	*$ -*	***$ 8.1***	
Annual Ops Costs						$ 14.8
Total PBN Budget	**$ 40.9**	**$ 2.9**	**$ 4.2**	**$ 5.0**	**$ 53.0**	**$ 14.8**
Surface Operations						
TFDM Portfolio						
SVT	*$ -*	*$ 0.3*	*$ 0.3*	*$ 0.3*	***$ 0.9***	
AEFS (CLE,SFO,LAS)	*$ -*	*$ -*	*$ -*	*$ -*	***$ -***	
TFMS Data Exchange	*$ -*	*$ -*	*$ -*	*$ -*	***$ -***	
TFMS						
TFMS Data via SWIM	*$ 3.3*	*$ 0.8*	*$ -*	*$ -*	***$ 4.1***	
TBFM						
TBFM Data via SWIM	*$ 3.3*	*$ 0.8*	*$ -*	*$ -*	***$ 4.1***	
ADS-B						
Surface Surveillance Data available via SWIM	$ 2.0	*$ -*	*$ -*	*$ -*	**$ 2.0**	$ -
Annual Ops Costs						$ 1.2
Total Surface Budget	**$ 8.6**	**$ 1.9**	**$ 0.3**	**$ 0.3**	**$ 11.1**	**$ 1.2**
Data Communications						
Segment 1 Phase 1	$ 431.8	$ 96.1	$ 84.6	$ 74.8	**$ 687.3**	$ -
Segment 1 Phase 2	$ 82.9	$ 50.4	$ 105.8	$ 148.2	**$ 387.3**	$ -
						$ -
Total DataComm Budget	**$ 514.7**	**$ 146.5**	**$ 190.4**	**$ 223.0**	**$ 1,074.6**	**$ -**
Total - All programs	**$ 635.5**	**$ 154.8**	**$ 199.9**	**$ 233.6**	**$ 1,223.9**	**$ 16.0**

APPENDIX B:

GLOSSARY/ACRONYM LIST

ATCT	Air Traffic Control Tower
AEFS	Advanced Electronic Flight Strips
AR	Authorization Required
ASDE-X	Airport Surface Detection Equipment-Model X
ASSC	Airport Surface Surveillance Capability
CDM	Collaborative Decision-Making
CPDLC	Controller Pilot Data Link Communications
CSG	CDM Stakeholders Group
ELSO	Equivalent Lateral Spacing Operations
EOBT	Earliest Off Block Time
EOR	Established on RNP
ERAM	En Route Automation Modernization
FANS	Future Air Navigation System
JRC	Joint Resources Council
LNAV	Lateral Navigation
MRO	Multiple Runway Operations
MOU	Memorandum of Understanding
NAC	NextGen Advisory Committee
NAS	National Airspace System
NM	Nautical Miles
PBN	Performance Based Navigation
RNAV	Area Navigation
RNP	Required Navigation Performance
SMS	Safety Management System
SWAP	Severe Weather Avoidance Plan
SWIM	System Wide Information Management
TBFM	Time Based Flow Management
TDLS	Tower Data Link Services
TFDM	Terminal Flight Data Manager
TFMS	Traffic Flow Management System
TMI	Traffic Management Initiative
VHF	Very High Frequency
VNAV	Vertical Navigation

AIRPORTS

ADW	Joint Base Andrews
ANC	Ted Stevens Anchorage International
ATL	Hartsfield-Jackson Atlanta International
ABQ	Albuquerque International Sunport
BOS	Boston Logan International
BUR	Bob Hope (Burbank, Calif.)
CHS	Charleston Air Force Base
CLE	Cleveland Hopkins International
CLT	Charlotte Douglas International
CVG	Cincinnati/Northern Kentucky International
DAL	Dallas Love Field
DEN	Denver International
DTW	Detroit Metropolitan Wayne County
EWR	Newark Liberty International
FLL	Fort Lauderdale/Hollywood International
GSO	Greensboro
GSP	Greer-Greenville Spartanburg
HOU	William P. Hobby (Houston)

HNL	Honolulu International
IAD	Washington Dulles International
IAH	George Bush Houston Intercontinental
IND	Indianapolis International
JFK	New York John F. Kennedy International
LAS	Las Vegas McCarran International
LAX	Los Angeles International
LGA	New York LaGuardia
MCI	Kansas City International
MCO	Orlando International
MDW	Chicago Midway International
MEM	Memphis International
MIA	Miami International
MSP	Minneapolis/St. Paul International
MSY	New Orleans International
OAK	Oakland International
ONT	LA/Ontario International
ORD	Chicago O'Hare International
PDX	Portland (Ore.) International
PHL	Philadelphia International
PHX	Phoenix Sky Harbor International
PIT	Pittsburgh International
RDU	Raleigh Durham International
SAN	San Diego International
SAT	San Antonio International
SDF	Louisville International
SEA	Seattle International
SFO	San Francisco International
SJC	San Jose International
SLC	Salt Lake City International
SMF	Sacramento International
SNA	John Wayne (Santa Ana, Calif.)
STL	Lambert St. Louis International

FAA FACILITIES

ARTCC	Air Route Traffic Control Center
TRACON	Terminal Radar Approach Control
ZAB	Albuquerque ARTCC
ZAU	Chicago ARTCC
ZBW	Boston ARTCC
ZDC	Washington ARTCC
ZDV	Denver ARTCC
ZFW	Fort Worth ARTCC
ZHU	Houston ARTCC
ZID	Indianapolis ARTCC
ZJX	Jacksonville ARTCC
ZKC	Kansas City ARTCC
ZLA	Los Angeles ARTCC
ZLC	Salt Lake ARTCC
ZMA	Miami ARTCC
ZMP	Minneapolis ARTCC
ZME	Memphis ARTCC
ZNY	New York ARTCC
ZOA	Oakland ARTCC
ZOB	Cleveland ARTCC
ZSE	Seattle ARTCC
ZTL	Atlanta ARTCC

APPENDIX C:

NEXTGEN INTEGRATION WORKING GROUP FINAL REPORT

The *NextGen Integration Working Group Final Report* contains the NextGen Advisory Committee's (NAC) final recommendations on commitments FAA and the Industry should take to deliver tangible benefits and increase community confidence in NextGen in the next three years. The recommendations were approved by the NAC on October 8, 2014.