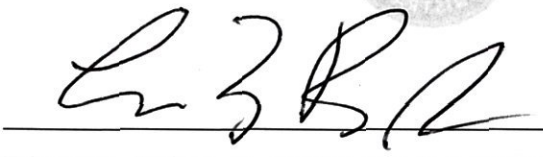
Federal Aviation Administration

NEXTGEN PRIORITIES
OCTOBER 2015
Joint Implementation Plan
Revision 1

NextGen Priorities October 2015 is prepared and signed by:



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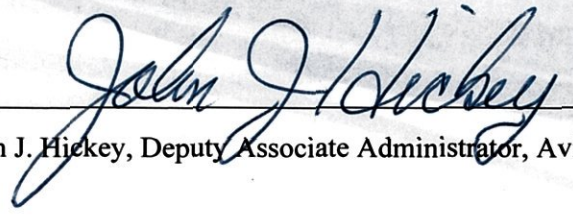

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Executive Summary

Last October, the FAA and the NextGen Advisory Committee (NAC) jointly approved a detailed plan to deploy NextGen priority capabilities in four focus areas at target locations over a three year period. The consensus of the FAA and stakeholders represented on the NAC is that successful implementation of these commitments will shape the future of NextGen and ensure its long-term viability.

The FAA and the NAC developed a monitoring and oversight process shortly thereafter to engage the four teams of the NextGen Integration Working Group (NIWG), a body developed under the NAC's joint implementation plan and tasked to track progress against the milestones in the plan, keep the plan current and identify future milestones. The NIWG conducts deep dives of the four selected capabilities on a quarterly basis — to discuss progress, implementations, challenges and risks.

The FAA is pleased to report that the NIWG has successfully implemented 29 of 31 priorities this year, advancing work in several areas. At locations with simultaneous approaches to parallel runways, the FAA has made strides in Wake Recategorization (Wake Recat) and reducing separation criteria for multiple runway operations. The agency expanded the use of Performance Based Navigation (PBN) through metroplex work and adoption of national standards. The FAA has also studied surface improvements and moved forward with data sharing initiatives and advanced data communications to get the community using pre-departure clearances in the terminal area next year.

The agency also conducted a lessons learned study over the past year. The team interviewed more than twenty senior leaders from industry and the FAA to examine what went well and what didn't go so well since the inception of the NextGen Priorities. Consistent themes emerged from the insights of stakeholders, the FAA and the National Air Traffic Controllers Association. The study showed collaborative efforts have increased trust and confidence, and there is a new appreciation for working together to advance the work of NextGen. The findings revealed 100 percent agreement on the need for a rolling plan — a plan that runs for a period of time and is updated regularly for the same period.

The rolling plan includes input on scope, timing and process improvements. The team is streamlining the NIWG process and incorporating lessons learned going forward. As part of the process improvement findings, the team agreed the plan needs to be updated to reflect current realities. The findings also revealed the need to be nimble and agile, and to make legitimate adjustments to commitments where warranted and justified. As a result, the NIWG agreed to update the plan on an annual basis and to launch the rolling plan beginning next month — actions the NAC endorsed at its October 2015 meeting.

While the annual update to the plan is significant, it is important to recognize the October 2015 update is the beginning of this process. The work of the NIWG represents a new model of collaboration between industry and the FAA and is helping accelerate the implementation of near-term NextGen capabilities.

NextGen Priorities October 2015

During quarterly reviews of the plan's commitments over the last year, new milestones emerged, follow-on activities were determined, and in a few cases program plans shifted. This document serves to reflect and codify the changes that have been reported, discussed and agreed upon within each of the teams and with industry over the last year through the NAC.

Last year's work plan contained both implementation and pre-implementation commitments. The pre-implementation activities included studies and feasibility assessments undertaken to determine the viability of future implementations. This has resulted in further actions by the FAA and stakeholders to implement capabilities within the 2015 to 2017 timeframe. These activities are intended to further increase efficiency and safety throughout the National Airspace System (NAS).

The work plan also contained a few commitments that have shifted because of operational needs or program plan changes. Those have been discussed in detail with industry, and agreement has been reached to change the implementation date or to remove milestones that are no longer applicable.

The use of an annual update process, as well as a rolling plan process, will allow the work plan to remain current and offer the flexibility needed to address the changing needs of the NAS and the aviation community.

Successes

The FAA and the NAC have worked closely together over the past year to implement specific capabilities at target locations outlined in the work plan. They focused efforts on implementation progress and completed 29 of 31 milestones, many ahead of schedule, producing useful and measurable benefits to industry and the NAS.

Multiple Runway Operations

To date, the FAA has implemented Wake Recat at multiple locations throughout the United States. Wake Recat allows for a safe decrease in separation between aircraft and provides an increase in efficiency and capacity. It was implemented in Atlanta in 2014 with great success. Arrival throughput has increased roughly five percent, resulting in a decrease in average flight time in Terminal Radar Approach Control Facility (TRACON) airspace. This amounts to approximately 29 seconds of time saved for arrivals. Average taxi-out time has decreased by 1.1 minutes. Delta Airlines reported this translated into approximately $13.9 to $18.7 million in annual operating expense savings.

In addition, early indicators from other Wake Recat sites are showing positive benefits. Wake Recat implementations in the New York area, Chicago and Charlotte are resulting in increased capacity and helping offset capacity reductions during runway construction. FedEx reported that implementation of Wake Recat in Memphis provided a 17 percent capacity gain as well as a reduction in emissions.

Early indicators from Wake Recat implementations are very positive but there are some challenges. The improvements require new air traffic control software adaptation, training controllers on new procedures, acclimating flight crews to new procedures and ensuring ramp tower controllers understand the shifts in

constraints and pushbacks from the gate. Stakeholders are engaging with the FAA to find ways to build in additional time needed for these soft skills in implementation planning.

The FAA has also implemented Dual Independent Parallel Operations in Atlanta, enabling more arrivals and departures and increasing efficiency and capacity. Several pre-implementation commitments were completed by the FAA, including safety analyses for Order 7110.308 at San Francisco and for Wake Turbulence Mitigation for Arrivals – Procedures at Atlanta, Detroit and Philadelphia. The FAA is working with industry to determine the next steps.

At the same time, the FAA concluded a cost-benefits analysis on whether to proceed with an investment in Wake Turbulence Mitigation for Departures (WTMD) following an operational demonstration. The findings indicated it is not cost beneficial to implement WTMD and confirmed that many of the benefits are already being realized with Wake Recat. The FAA decided not to pursue further investment in WTMD implementation.

Performance Based Navigation

Performance Based Navigation enables the FAA to create new routes and procedures throughout the NAS that deliver efficiencies to the nation's busiest metropolitan areas. This includes metroplex, Established on Required Navigation Performance and Equivalent Lateral Spacing Operations. These changes translate into shorter and more direct flight paths, improved airport arrival rates, enhanced air traffic controller productivity, increased safety, fuel savings and a reduction in aircraft emissions.

Established on Required Navigation Performance (EoR) for widely spaced operations was completed in Denver in March 2015. An EoR approach allows aircraft to use less than the standard 1,000 feet of vertical separation on the downwind leg to the airport when the aircraft turns to align with the runway centerline. The expected benefits include a reduction in track miles, fuel burn and noise. Early testimonials from operators are very positive. "United aircraft get to be the first to use a new waiver at DEN that allows simultaneous RNP with RF[1] legs flying from downwind to final. This was a good accomplishment for industry and the FAA, delivering a new PBN capability on schedule. This is a big deal. Naturally, since we can now have multiple RNPs running it will also double the amount of potential fuel savings RNP can bring to DEN," said Ron Renk, Chief Technical Pilot, United Airlines. The FAA plans to complete its year-long demonstration at Denver to advance development of a national standard.

The FAA has also completed procedure implementation for the Northern California Metroplex and has been introducing integrated NextGen capabilities to the included metropolitan areas. Metroplex capabilities increase efficiency and improve air traffic flow to address airspace congestion and other limiting factors such as environmental constraints. Early informal feedback from operators indicates the project has brought positive changes and that flying in this area has greatly improved with the new simplified procedures.

A pre-implementation commitment for an Equivalent Lateral Spacing Operations (ELSO) National Standard was completed earlier this year. This concept was proven at Atlanta where ELSO reduced the

[1] Required Navigation Performance with Radius-to-Fix

angle between the departure routes from 15 degrees — the minimum at other airports — to as little as 10 degrees without the aircraft flying closer together. This is possible because the majority of aircraft departing Atlanta have the ability to navigate more precisely using GPS-guided navigation. The benefits include savings in fuel and a reduction in aircraft exhaust emissions because aircraft spend less time burning fuel on taxiways and in line for takeoff. With this national standard, ELSO can now be used at any applicable site in the country. It is currently in the design phase for the Florida Metroplex.

The FAA conducted a feasibility assessment at the beginning of the year to document the status of airspace and procedure redesign efforts in the Las Vegas Basin. As a result, the team is pursuing implementation in Las Vegas using the metroplex process. The FAA decided to study more efficient PBN procedures in the Las Vegas Basin as soon as practicable, without impact to other high priority activities, and a new milestone was added to the plan (see **Changes** section below for specific follow-on commitments).

Surface Operations

The FAA and industry have worked together to streamline and expand access to data to more stakeholders ensuring that all key players have access to real-time flight data.

Going into the NIWG effort, the FAA had existing plans to improve surface efficiency through a strategy for select capabilities of the Terminal Flight Data Management (TFDM) program. The strategy called for the use of Advanced Electronic Flight Strips (AEFS) coupled with the introduction of the System Wide Information Management (SWIM) Surface Visualization Tool (SVT) for situational awareness, making surface surveillance data available via SWIM across the NAS, and allowing two-way data sharing of surface data (e.g., new surface data to FAA) for increased efficiency across the NAS.

Building on existing capabilities is enabling the FAA to advance surface improvements and bridge the gap between today and future core TFDM deployments. The surface work to date has addressed interim tactical operational needs, program risk reduction, and building a better understanding of potential updates to collaborative decision making agreements.

This year, AEFS were implemented in Cleveland. The system replaces today's paper flight progress strips with modern, real-time data sharing displays for tower controllers. This capability improves service to the traveling public by making it easier for controllers and operators to respond to severe weather events when changes to flight plans occur frequently. Stakeholders were eager to get this capability implemented in the New York area, so the surface team undertook a feasibility assessment. The team determined it was feasible to implement AEFS in Newark. (See the **Changes** section below for specific follow-on commitments).

The FAA expanded the distribution of real-time NAS data, through Traffic Flow Management System (TFMS) traffic management initiatives, the National Traffic Management Log report configurations with arrival rates and thunderstorm forecast data from FAA's Route Availability Planning Tool. The FAA also began providing access to time based flow management (TBFM) metering times via SWIM subscription.

The SWIM Surface Visualization Tool has been deployed in five TRACONs (Boston, Chicago, Houston, Louisville and New York). The technology improves the FAA's ability to monitor aircraft departure buildups and better plan for airport reconfigurations due to changing weather. Air traffic controllers call it a "game changer" during high traffic volume with metering in effect, or during inclement weather. The dialogue is shorter and more concise, and TRACONs and towers work from the same information in real time.

The FAA also agreed to conduct a feasibility assessment for a departure metering capability demonstration at a single location reflecting the FAA's collaborative decision-making in surface operations. Stakeholders felt this was important in order to improve surface predictability and efficiency, and to enable environmental benefits. They were eager to demonstrate this capability in the targeted timeframe and preferred a location east of the Mississippi where the effects of surface congestion spread throughout the system over the course of the day. As a result, the FAA decided to conduct a surface departure management demonstration at Charlotte. (See **Changes** section below for specific follow-on commitments).

Several milestones were completed relative to the two-way data-sharing agreement negotiated by the Collaborative Decision Making Stakeholders Group (CSG). First, the CSG reached agreement to allow airport operators to participate in data exchange collaborative decision-making related processes and procedures. 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. More uses of real-time information include better gate management, forecasting of airport resource demands and preparing for irregular operations such as severe weather operations.

The CSG agreed to create procedures for the use of industry's earliest off-block time surface data element to improve the "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 application process for obtaining access to SWIM data was also streamlined. Stakeholders must apply to the FAA for access to SWIM data via a connection to the National Enterprise Security Gateway. The CSG simplified the acceptance process so eligible users can participate more quickly. The FAA and industry can improve strategic planning and tactical execution of NAS operations if all stakeholders have access to the same data.

Lastly, the FAA expanded distribution of Surface Surveillance Event Data Distribution to Users (ASDE-X/ASSC) via SWIM at San Francisco to external users. (See **Changes** section below for specific changes to this commitment).

Data Communications

The FAA's industry partners completed the industry recommendation on the Recorder Rule for Retrofit milestone. The Performance Based Operations Aviation Rulemaking Committee (PARC)

Communications Working Group developed recommendations and the supporting rationale for these revisions to the Recorder Rule that were delivered to the FAA for consideration.

The FAA completed its review and in February 2015 implemented an update to the policy. This applies the previous recorder rule only to new aircraft manufactured after the effective date of the rule and to those aircraft that did not have any data link solutions available before the effective date. The policy will allow the rule to be applied in a consistent and predictable manner, and it enables thousands of older aircraft to affordably access the safety and efficiency benefits of data communications. The policy work accomplished in this area has been cited by all parties as very rewarding and sets a new standard for collaborative work going forward.

In implementation progress, the FAA committed to begin delivering departure clearances at 56 airports under the Data Comm program's Segment 1 Phase 1. The program's baseline schedule calls for this work to be completed by the end of 2019 but the agency is working toward challenge dates that would bring services to all 56 locations by the end of 2016.

In line with the accelerated schedule, Data Comm went operational at three key sites (Salt Lake City, Houston Intercontinental and Houston Hobby Towers), and work continues to meet the challenge dates at the remaining 53 sites. 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.

In addition, the FAA has completed the pre-implementation commitment for a final investment decision for En Route Services – Initial Services leveraging the Phase 1 infrastructure to deliver services to the En Route Domain including Controller Pilot Data Link Communications and airborne weather reroute capabilities.

A full summary of accomplishments to date can be found in Appendix A.

Changes

The successes discussed above have been instrumental in the continued evolution of the NAS. The FAA and industry are responding nimbly and flexibly to changes in the operating environment sparked by NextGen successes — accomplishments that sometimes impact our plans. Pre-implementation studies and assessments in all four focus areas resulted in the addition of new commitments. A summary of the content changes can be found in Appendix B.

Multiple Runway Operations

The FAA was prepared to apply Order 7110.308 in the third quarter of 2015 at Boston when it was suspended due to community concerns about environmental noise. Public comments on the environmental impact for the new RNAV (GPS) procedure to Boston runway 4L are under review, and as a result the implementation project cannot be implemented at this time. The milestone for Dependent Parallel Operations (2,500' – 3,600') at Boston was predicated on the Order 7110.308 capability being implemented. In order to maintain visibility on the projects at Boston, a pre-implementation commitment for an assessment of implementing 7110.308 and Dependent Parallel Operations (2,500' – 3,600') has been added to the plan.

The implementation of Wake Recat Phase 1 in San Francisco scheduled for the third quarter of 2015 has been revised due to resource constraints associated with finishing metroplex work, preparing for the shift to winter weather traffic flows and training for the impact of the Super Bowl on Northern California TRACON air traffic operations. The revised implementation date is now the second quarter of 2016. The Multiple Runway Operations NIWG team is also adding a pre-implementation milestone to assess future Wake Recat capabilities, scheduled for the first quarter of 2016. Finally, Phases 1 and 2 of Wake Recat commitments are being merged into one program line in order for the program to implement automation changes as they become available at the identified locations.

Two new milestones have been added for Chicago O'Hare: Dual Independent Parallel Operations with Offset and Triple Independent Parallel Operations. Both are scheduled for the fourth quarter of 2015.

Performance Based Navigation

As a result of the positive assessment of the Las Vegas Basin pre-implementation commitment, the FAA added a new pre-implementation commitment milestone to complete the Las Vegas Basin Metroplex Study Team activity by the first quarter of 2016.

Surface Operations

A significant amount of study and assessment work has been accomplished in the surface focus area over the past year, advancing collaboration and data sharing capabilities. A feasibility assessment for TFDM Departure Management resulted in adding a new implementation for surface departure management in Charlotte, scheduled for completion in the fourth quarter of 2017. The pre-implementation assessment of electronic flight data for AEFS in the New York area resulted in an additional AEFS site at Newark Tower which is scheduled for completion in the second quarter of 2016.

Part of the FAA's early implementation strategy in the terminal area included making surface surveillance data available via SWIM across the NAS where available. The plan was to make data available from the Airport Surface Detection System – Model X locations as well as locations that were deploying the Airport Surface Surveillance Capability (ASSC). The ASSC program, however, identified safety concerns with implementation and recently determined not to pursue implementations beyond San Francisco. Therefore, surveillance data will not be shared at these locations and will be removed from the plan.

The industry commitment to provide 11 data elements for FAA consideration has been revised and a new commitment date has been set for the second[2] quarter of 2016.

Data Communications

The FAA has added a pre-implementation milestone for a final investment decision (FID) for En Route Services – Full Services. Inconsistent funding and reductions in funding levels are forcing investment decisions for large programs like Data Comm into multiple investment decisions. In November 2014, the FAA split the en route services pre-implementation milestone into separate decisions. This allowed the FAA to receive a positive investment decision on initial services in 2014 and delayed the decision for full services. Recently, the FAA's Joint Resource Council supported moving the Data Comm full services FID to June 2016 to allow for a better understanding of budget constraints. Full 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.

Industry Consensus and Endorsements

Over the course of last year, consistent with the NextGen Priorities Oversight Process, the FAA and industry have completed in-depth reviews on a quarterly basis at the NAC Subcommittee level and at all three 2015 NAC meetings. During the September 2015 subcommittee meeting, the NIWG team briefed industry and consensus was reached on the changes required to keep the work plan current. During the October 2015 meeting, the NAC endorsed this progress update as accurately reflecting the work at hand. These updates are codified in this document and on the FAA's NextGen Performance Snapshots (http://www.faa.gov/nextgen/snapshots/priorities/), a public website used to track progress.

[2] The original version of this document misstated the commitment date; it is the second quarter of 2016. Corrected on November 19, 2015.

Appendix A - Summary of Accomplishments to Date

Focus Area	Completions to Date
Multiple Runway Operations	▪ Wake Recategorization at Atlanta, Charlotte, Chicago Midway, Chicago O'Hare, Cincinnati, Houston Hobby, Houston Intercontinental, Newark, New York JFK, New York LaGuardia ▪ Dual Independent Parallel Operations at Atlanta ▪ Safety Analysis of Wake Turbulence Mitigation for Arrivals – Procedures at Philadelphia, Detroit, Atlanta ▪ Safety Analysis of FAA Order 7110.308 at San Francisco ▪ Final Investment Decision for Wake Turbulence Mitigation for Departures
Performance Based Navigation	▪ Site Assessment–Las Vegas Basin ▪ Established on Required Navigation Performance for Widely Spaced Operations at Denver ▪ Northern California Metroplex ▪ Equivalent Lateral Spacing Operations National Standard
Surface Operations	▪ Surface Surveillance Event Data at San Francisco ▪ Time Based Flow Management Data Sharing via System Wide Information Management ▪ Traffic Flow Management System Data Sharing via System Wide Information Management ▪ Feasibility Assessment of Advanced Electronic Flight Strips in New York Area ▪ Feasibility Assessment of Terminal Flight Data Management Program Departure Management ▪ Advanced Electronic Flight Strips at Cleveland Air Traffic Control Tower ▪ System Wide Information Management Surface Visualization Tool Deployment at 5 Terminal Radar Approach Control Facilities ▪ Time Based Flow Management Data Wheels Up Procedural Change (i) ▪ Airport Operations as Collaborative Decision Making Participants (i) ▪ Simplified Application for System Wide Information Management Data (i)
Data Communications	▪ Final Investment Decision for "Initial" En Route Services ▪ Recommendations for Recorder Rule for Retrofit (i) ▪ Departure Clearance Tower Services at Houston Hobby, Houston Intercontinental, Salt Lake City
FAA TOTALS (Score Card)	29 commitments (i) = Industry ▪ Complete ▪ On track ▪ Delayed

Appendix B

NextGen Priorities Joint Implementation Plan October 2015 Incorporated Updates

Focus Area	#	Implementation /*Pre-implementation Commitment	Original Date	Change	Rationale
Data Comm	1	FID for En Route Services*	**Q4 CY14 originally for 1 FID**	Added – Q2 2016 (Feb. 2015 NAC)	Split final investment decisions for initial and final en route services due to budget constraints.
Surface	2	AEFS – Newark	*Assessment Complete Q4 CY14*	Added - Q2 2016 (June 2015 NAC)	Feasibility assessment of electronic flight data for New York AEFS resulted in new implementation milestone for an additional AEFS site at Newark Tower.
	3	Departure Management – Charlotte	*Assessment Complete Q1 CY15*	Add - Q4 2017 (June 2015 NAC)	Feasibility assessment for Terminal Flight Data Manager (TFDM) Departure Management resulted in new milestone for Surface Departure Clearance in Charlotte.
	4	Surface Data via ASSC	**CLE = Q3 CY15** *CVG, PIT, MCI = Q3 CY16* *PDX, MSY = Q4 CY16* *ANC, ADW = Q1 CY17*	Remove (except SFO complete Q3 2014) (June 2015 NAC)	Data will not be available. At ASSC locations, safety analysis identified the need for changes to ensure controllers have a complete picture of the surface, program changes underway.
	5	Industry to provide 11 Data Elements	**Q4 CY15**	Revise – Q2[i] CY2016	Industry re-plan to align with data availability and program plans.
MRO	6	BOS - 7110.308 and Dependent Parallel Operations (DPO)	**.308 = Q3 CY15** **DPO = Q2 CY17**	Add Pre-implementation Commitment Q1 CY2016	Commitment is dependent on RNAV/GPS approach to RWY 4L implementation. Change milestone to pre-implementation commitment: Assessment to implement 7110.308 and Dependent Parallel Operations (2500' –

Focus Area	#	Implementation /*Pre-implementation Commitment	Original Date	Change	Rationale
MRO					3600').
	7	ORD - Independent Parallel Operations (Dual w/Offset & Triple)	N/A	Add - Q4 CY2015	New procedures being implemented on new runway (10R/28L opened 15 October 2015).
	8	Wake Recategorization	SFO - Q3 CY15	Merge Wake ReCat Implementation Commitments Revise SFO – Q2 CY16 Add Pre-implementation Commitment Q1 CY2016	Simplified tracking of Wake Recat commitments. Added pre-implementation commitment: assessment of future Wake Recat capabilities.
PBN	9	Metroplex – LAS Study Team Completion*	*Assessment Complete Q4 CY14*	Add - Q1 2016 (Feb 2015 NAC)	As a result of positive assessment of Las Vegas Basin pre-implementation commitment, the FAA added new pre-implementation milestone to complete the study team activity.

* Pre-implementation Milestone

[i] The original version of this document misstated the commitment date; it is the second quarter of 2016. Corrected on November 19, 2015.