



**Federal Aviation
Administration**

Next**GEN**

NEXTGEN PRIORITIES

OCTOBER 2017

Joint Implementation Plan Update
Including the Northeast Corridor

NextGen Priorities October 2017 is prepared and signed by:

Michele Merkle

for
Pamela Whitley, Acting Assistant Administrator, NextGen

Teri L. Bristol

Teri L. Bristol, Chief Operating Officer, Air Traffic Organization

Ali Bahrami

Ali Bahrami, Associate Administrator, Aviation Safety

TABLE OF CONTENTS

Executive Summary	4
Background	6
Successes	7
Changes	12
Industry Consensus and Endorsement	14
Northeast Corridor (NEC)	15
Appendix A: Summary of Accomplishments to Date	33
Appendix B: NextGen Priorities Annual Plan October 2017 Incorporated Updates	37
Appendix C: Cost Estimates	39
Appendix D: <u>Goals and Priorities for Improving Operations in the Northeast Corridor, Phase One, pp. 238-253</u>	39
Appendix E: <u>NextGen Priorities Joint Implementation Commitments for Improving Operations in the Northeast Corridor, Phase Two - Interim Report</u>	39

EXECUTIVE SUMMARY

NextGen priority capabilities continue to bring positive effects to the aviation industry and the flying public across the National Airspace System (NAS). The Federal Aviation Administration (FAA) and the aviation industry work together through the NextGen Advisory Committee (NAC) to identify high-benefit, high-readiness NextGen capabilities for implementation in the near term. This work began in 2014 by identifying a set of integrated plans in four focus areas—Multiple Runway Operations (MRO), Performance Based Navigation (PBN), Surface Operations and Data Sharing, and Data Communications (Data Comm). Commitments to implement specific capabilities at certain locations identified jointly by the FAA and the aviation industry are documented in the FAA’s NextGen Priorities Joint Implementation Plan. The plan was developed by FAA/industry teams—the NextGen Integration Working Groups (NIWG)—operating within the NAC. The goal of the NIWG is to identify implementation priorities that deliver measurable benefits by certain dates and thereby increase the community’s confidence in NextGen.

Progress of NextGen Priorities is twofold:

- implementation of the commitments jointly agreed to in the work plan
- the resulting operational outcomes and benefits realized

The FAA and the NAC have successfully met the vast majority of commitments in the plan since its inception. This update codifies changes recommended and approved throughout fiscal year 2017. Of the completed milestones, 67 percent are operational, and their benefits are being realized. Some benefits are being evaluated by the Joint Analysis Team (JAT), which was formed to determine performance and benefits of priority capabilities.

The FAA has implemented Wake Recategorization (Wake RECAT) at 16 Terminal Radar Approach Control (TRACON) facilities and 30 airport locations throughout the United States under the MRO focus area. Wake RECAT allows for a safe decrease in separation and leads to fewer delays, time and fuel burn savings, and a reduction in aviation’s carbon footprint. The FAA estimates Wake RECAT saved airlines more than \$70 million, extrapolating from the methodology developed by the JAT.

For Surface Operations and Data Sharing, industry has made significant advancements in sharing data via the FAA’s System Wide Information Management. Delta Air Lines and American Airlines are providing 11 surface data elements to improve surface efficiency. Other airlines are in the testing and development phase.

PBN framework enables safer and more efficient flight paths, segregating traffic between airports, arrival and departure paths, and routes in close proximity. This results in increased safety, fuel savings, and a reduction in aircraft emissions. Over the last year, PBN saw the

implementation of two metroplexes, three Ground-based Interval Management–Spacing sites, three Integrated Departure Arrival Capability sites, and several assessments and studies. The PBN area also experienced the most changes to the plan. At the June 2017 meeting, the NAC discussed equipage for a vertical navigation capability and requested validation of airline equipage inventory to better understand equipage concerns for Established on Required Navigation Performance (EoR) initiatives. This impacted existing EoR milestones in the plan, which now depend on the outcome of the aircraft equipage inventory and subsequent analyses.

Data Comm delivered controller-pilot data link communications departure clearances to nine more sites across the country since last October, completing all planned 55 airports. The JAT determined that across two months of data and four sample locations, Data Comm on average resulted in taxi-out time savings between 0.2 and 8.5 minutes per rerouted flight.

In addition to these focus areas, the FAA, in collaboration with the NAC, agreed to make the Northeast Corridor (NEC) a NextGen priority focus area. For this purpose, the NEC stretches from Washington, D.C., to Boston and includes Philadelphia and the New York City area. This region contains the most congested airports and airspace in the United States and has a significant effect on daily operations of the NAS. Nearly 50 percent of aviation delays in the entire NAS are attributable to the NEC.

This report adds NEC commitments to NextGen Priorities and contains near-term initiatives that will enhance operations, which are focused on the NAC’s stated goal of improving the execution of today’s operation. Some improvements may appear small but are targeted to reduce dependencies among airports and improve throughput. Small changes can have meaningful results, given the complex and compact nature of NEC operations and their connection to the rest of the NAS. Single operational improvements in the NEC can achieve major savings in time and improve operations during weather events. These improvements establish a foundation and framework for longer-term effective implementation of NextGen using time-based management techniques and precise, repeatable PBN procedures for a more predictable and efficient operation.

Aircraft equipage by the aviation industry is an important area for the successful implementation of NEC initiatives. The rate at which operators equip their aircraft is critical not only to improvements in efficiencies, throughput, and deconfliction of airports in the NEC but also to the success of implementing NextGen. The combination of equipage and implementation of air traffic control management tools governs the speed at which NextGen advances can occur.

This plan is an update to the NextGen Priorities Joint Implementation Plan 2017-2019. For a full list of NextGen Priority focus areas through 2019, please visit https://www.faa.gov/nextgen/media/NG_Priorities_Joint_Implementation_Plan.pdf.

BACKGROUND

The NextGen Integration Working Groups (NIWGs) have successfully completed 52 commitments in fiscal year 2017, advancing operational improvements to the NAS in all areas. At locations with simultaneous approaches to parallel runways, the FAA has implemented Wake Recategorization (Wake RECAT) at three additional major airports, reducing separation criteria for multiple runway operations. The agency expanded the use of PBN through metroplex implementation and adoption of national standards. Industry is progressing on providing 11 surface data elements and working closely with the FAA on surface improvements and data sharing initiatives. Work is underway on en route services for advanced data communications.

In February 2017, the NAC chairman proposed that the NAC focus on implementing NextGen in the Northeast Corridor, recognizing that making continuous improvements to the system in the Northeast Corridor operationally benefits the entire US aviation system. The NAC agreed that the work should start by defining what is included in implementing NextGen in the Northeast Corridor, highlighting the need to identify and address technical, operational, and community issues and then mitigate them through the NAC collaborative process. As a result of the February announcement, the FAA tasked the NAC to analyze opportunities, identify areas for improvement, and establish milestones by establishing a Northeast Corridor NIWG.

As part of the NextGen Priorities lessons-learned process for finding ways to improve, the FAA and the NAC agreed that the NextGen Priorities plan needs to be updated to reflect current realities. The findings also revealed the need to be flexible and agile, and to adjust commitments where warranted and justified. As a result, the FAA and the NAC update the Joint Implementation Plan annually and develop a rolling plan biennially to re-examine the needs of the NAS and its users, and to add milestones. The FAA and NAC formed the Joint Analysis Team to reach agreement on performance impacts and benefits attributable to implementation of NextGen Priority capabilities. This allows industry and the FAA to speak with one voice regarding the operational performance improvements resulting from joint plan commitments.

The FAA also tracks progress on FAA and industry commitments to review risks and mitigations, determine next steps for pre-implementation activities, and assess future plans.

Changes to the work plan include commitments that were removed or revised due to operational needs or program plan changes. NextGen Integration Working Groups (NIWG) propose revisions and reach agreement to modify applicable implementation dates or milestones.

The annual update and the rolling plan process enable the work plan to remain current and offer the flexibility to address the changing needs of the NAS and the aviation community. During quarterly reviews of the plan's commitments, new milestones emerge, follow-on activities are

identified, and relevant program plans are shifted. This document serves to reflect and codify the changes that have been discussed and agreed upon within each NIWG and with industry through the NAC and reported over the last fiscal year.

NextGen Priorities are managed using the NextGen Priorities Joint Implementation Plan oversight process. The NIWGs are tasked to keep the plan current, track progress of existing milestones, and identify future milestones. NIWGs deeply explore the selected priority areas capabilities quarterly to discuss progress, implementations, challenges, and risks.

SUCCESSSES

The FAA and the NAC have worked closely together to implement specific capabilities at target locations outlined in the work plan. They focused their efforts on implementation progress and completed 52 milestones, resulting in useful and measurable benefits to industry and the NAS.

Data Communications

As of September 2017, more than 3,000 aircraft are equipped with Future Air Navigation System/VHF Digital Link (VDL) Mode 2 and Mode 0 for Data Communications (Data Comm), and the total count rises to nearly 4,000 if Department of Defense aircraft are included. More than 1,500 of those aircraft were equipped through the FAA's Data Comm equipage incentive. Data Comm is used more than 36,000 times per week. Data Comm procedures are used by 49 different aircraft types with participation from:

- 12 mainline U.S. carriers
- 39 international carriers
- 39 business jet operators
- Department of Defense

Data Comm operations have provided many benefits to sites where tower services were implemented. The Joint Analysis Team (JAT) determined that across two months of data gathered at four sample sites, Data Comm on average resulted in taxi-out time savings between 0.2 and 8.5 minutes per rerouted flight. These savings occur at critical times for airlines trying to recover from schedule delays. Individual airline analyses have shown consistency with JAT results over larger data sets.

The Data Comm program delivered tower services to nine more sites across the country since last October, completing all 55 sites by December 2016. Data Comm completed the implementation framework for non-VDL Mode 2 media, and the team is moving forward with the agreed framework.

The Data Comm team is making significant progress toward implementing calendar year (CY) 2019 milestones, including development, integration, and testing of Data Comm initial en route services. They have conducted early operational evaluations and flight deck demonstrations with stakeholders, and developed risk mitigation strategies to address challenges of En Route Automation Modernization and legacy avionics for the planned Q3 CY2019 milestone.

Multiple Runway Operations

The FAA has implemented Wake Recategorization (Wake RECAT) at 16 Terminal Radar Approach Control (TRACONs) facilities and 30 airports throughout the United States. Wake RECAT allows for a safe decrease in separation between aircraft that helps to increase efficiency and capacity. Improved efficiency leads to fewer delays, time and fuel burn savings, and a reduction in aviation's carbon footprint.

Extrapolating from the methodology developed by the JAT, the FAA estimated Wake RECAT saved airlines more than \$70 million in 2016 across 22 airports. The JAT examined five airports — Charlotte (CDT), Chicago O'Hare (ORD), Chicago Midway, Indianapolis, and Philadelphia — in detail where Wake RECAT was implemented and conducted a post-implementation analysis. Indianapolis had a 22.5 percent decrease in separation between eligible pairs of aircraft on arrivals and a 23.3 percent separation decrease on departure pairs. Post-implementation at Philadelphia saw a 7.7 percent decrease in separation on arrivals and 7.9 percent decrease on departing eligible pairs of aircraft. Fleet mix and overall demand levels are critical drivers of Wake RECAT impacts and implementation outcomes.

Post-implementation analysis of Wake RECAT at John F. Kennedy International (JFK) and Newark (EWR) airports implemented in 2015 showed positive results. JFK raised arrival throughput, including an increase of one aircraft during its maximum aircraft 15-minute throughput rate. Departure data at JFK was disrupted by runway construction. However, Runway 13R achieved an increase in its maximum 15-minute throughput rate from 10 aircraft to 12 aircraft. EWR saw arrival and departure throughput improvements runway-by-runway and overall.

In addition to Wake RECAT, operations for closely spaced runways showed large improvements. The Closely Spaced Parallel Operations (CSPO) program amended standards for many airports, including ORD. In October 2015, ORD commissioned the new Runway 10R/28L. New NextGen standards for simultaneous independent triple and offset approaches were implemented in time for the commissioning of this runway. These approaches at the new runway were acclaimed by local officials and airlines executives for their effect on operations, including benefits for arrivals in instrument meteorological conditions.

In 2017, the FAA completed its assessment of the potential benefits of transitioning Wake RECAT Phase 1.5 sites to Wake RECAT Phase 2. The assessment found that airports using Wake RECAT Phase 1.5 would benefit if they made the transition to Phase 2. More flexibility realized through the use of Wake RECAT Phase 2 results in separation decreases that would benefit some of these airports.

Surface Operations and Data Sharing

Industry has advanced significantly in sharing data via the FAA's System Wide Information Management (SWIM). Delta Air Lines was the first operator to consume and produce data via SWIM. Delta was followed by American Airlines, the FAA's partner at CLT on the Airspace Technology Demonstration 2 (ATD-2), which relies on sharing surface data. Other airlines are in the testing and development phase of sharing data.

The initial implementation of Surface Collaborative Decision Making (CDM) was deployed as part of Traffic Flow Management System (TFMS) Release 13 in April 2016. TFMS Release 13 is a Terminal Flight Data Manager (TFDM) early implementation interface that will use data before TFDM deployment to update the estimated time of departure and improve demand predictions for all TFMS calculations. The 11 data elements provided by flight operators to be exchanged were selected with stakeholders via TFMS using CDM message protocols. TFMS has made available the data to provide dynamic departure lists by airport to flight operators to increase situational awareness of projected departures.

The FAA made available surface surveillance multilateration (MLAT) Category 10 (CAT10) data to industry via SWIM at 35 airports. Strategic planning and tactical execution of NAS operations improve when all stakeholders have access to relevant data.

The FAA and the CDM Stakeholders Group (CSG) identified two forums for ongoing industry engagement throughout the stages of TFDM deployment: the Surface CDM Team and the CDM Automation Team. The Surface NIWG committed to continue outreach to current CDM data providers and others to expand participation and further foster improved data accuracy, timeliness, and comprehensiveness of the data feeding the evolving traffic flow management algorithms and systems in the NAS, specifically TFDM with airport operators. Four pilot airports were selected to help determine what data elements airports will share and to propose and execute a process for sharing the data. Pilot airports are the Port Authority of New York and New Jersey (PANYNJ), Fort Lauderdale-Hollywood International (FLL), Las Vegas McCarran International (LAS), and Dallas/Fort Worth International (DFW) airports.

Terminal Flight Data Manager (TFDM) will deliver NextGen decision support capabilities that integrate surface surveillance, flight, and traffic management information to tower air traffic control and FAA traffic managers. TFDM will provide an avenue to collect, update, and

distribute flight data in the terminal area and improve access to information for the safe and efficient management of airport surface traffic sequencing and scheduling.

A key component of the TFDM decision making system is the transition from paper flight strips to electronic flight data representation and exchange. This will facilitate enhanced flight data sharing among controllers within the tower, across other air traffic control facilities, and for those overseeing TFMS for an integrated view of the air traffic environment for improved situational awareness of airport operations. Additional benefits include facilitating data exchange with aviation partners, such as airports and airline flight operations centers to support CDM. TFDM will replace multiple costly legacy systems with a single and easily maintained state-of-the-art platform. Systems include the Electronic Flight Strip Transfer System in towers and TRACONS, Advanced Electronic Flight Strip (AEFS) prototype system in select towers, Airport Resource Management Tool, Surface Movement Advisor, and Departure Spacing Program. The success of the program depends heavily on engagement with the aviation industry.

ATD-2 at CLT integrates surface, departure and arrival concepts and technologies to demonstrate the benefits of an integrated surface, departure and arrival traffic management system for metroplexes, which geographic areas covering several airports. ATD-2 research and development will demonstrate the capabilities described in the concept of operations planned for the production TFDM system. Lessons learned and technologies developed for ATD-2 will be transferred to the FAA for use in the TFDM system development and deployment. These technologies will increase predictability in the air traffic system and enhance operational efficiency while maintaining or improving throughput, leading to reduced environmental impact, greater predictability in airport surface resource allocation, and better coordinated scheduling across the NAS. The demonstration is on track, with excellent collaboration among NASA, the FAA, and aviation industry. Phase 1 baseline integrated surface, departure and arrival began in September 2017.

Performance Based Navigation (PBN)

PBN enables the FAA to create new routes and procedures throughout the NAS that deliver improved efficiency and capacity, especially in the nation's busiest metropolitan areas. Optimization of airspace and procedures with Metroplex, Established on Required Navigation Performance (EoR), and Equivalent Lateral Spacing Operations are a few examples of how PBN contributes to these improvements.

PBN brings 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. Over the last year, PBN saw the implementation of two metroplexes, three Ground-based Interval Management–Spacing (GIM-S) sites, three Integrated Departure Arrival Capability (IDAC) sites, and several assessments and studies.

The success of Charlotte Metroplex was founded on collaboration among controllers, users, and management along with collaboration among towers, TRACONs, and air route traffic control centers (ARTCCs). Operational benefits achieved varied from streamlined departure and arrival procedures to changes to standard operating procedures. A post-implementation analysis showed fuel savings of more than \$12.1 million.

The FAA and industry are working on post-implementation operational improvements at Atlanta Metroplex after initial implementation in late 2016. These operational improvements, including redesigned satellite airport procedures to enhance efficiency, are providing wide-ranging operational benefits. New procedures were designed to more closely align with historical flight tracks. Efficiency improvements include reducing track miles flown and separating two heavy flows. Route tracks were moved to support fully independent Standard Instrument Departures. Operationally divergent waypoints were moved to enable aircraft to proceed on course more quickly while still meeting Atlanta TRACON's operational needs. Route bends were straightened to reduce track miles, and vertical profiles were designed to reduce potential level-offs, reducing time to reach cruise altitude and increasing customer efficiency.

Optimized Profile Descents (OPD) were implemented at Boston Logan International Airport, where a JAT analysis showed improved vertical profile descents that resulted in a net savings of nearly 11 gallons of fuel per flight within 200 nautical miles. The JAT methodology was also applied to OPDs at the Minneapolis–St. Paul International Airport, where the Minneapolis Airport Commission reported that since airlines started flying OPDs in March 2015, they have saved more than 5.8 million gallons of fuel and \$9.5 million, and prevented more than 57,000 metric tons of carbon dioxide from entering the atmosphere. Analysis performed on OPDs implemented at Gary/Chicago International Airport (GYG) found safety benefits resulting from reduced interaction of high-performance jets operating under instrument flight rules from visual flight rules traffic, and from reduced interaction between Chicago Midway International Airport and GYG traffic flows. The JAT was unable to quantify benefits because of the small data sample. However, operators reported fuel savings.

The FAA's Time Based Flow Management (TBFM) system, which provides scheduling and scheduling-management tools to air traffic control, is being used to support time-based metering operations. Time-based metering is used to develop an orderly and efficient flow of traffic in en route airspace to coordinate delivery to the terminal. Recent enhancements to TBFM include the introduction of GIM-S with three new functions--extended metering, coupled scheduling, and speed advisories--to improve time-based metering operations intended to increase adherence to PBN arrival procedures, allowing aircraft to fly more efficient trajectories into the terminal area without costly vectoring. Speed advisories are a key function of GIM-S, helping to achieve scheduled time of arrival (STA) and reduce vectoring.

GIM-S was implemented on arrivals at Phoenix Sky Harbor International Airport (PHX) and adjacent center metering was implemented at Denver Air Route Traffic Control Center. Analysis at PHX showed that 80.1 percent of flights that accepted a speed advisory arrived within ± 30 seconds of the STA, compared to 57.4 percent of flights that declined an available speed advisory. Denver experienced a 6 percent increase in flights arriving within ± 1.5 minutes of the STA.

GIM-S focuses on pre-conditioning the arrival flow prior to the top of descent. This appears to translate into a reduction in the rate of vectoring and variation in flight times for aircraft during the use of GIM-S. A slight increase in the rate of arrival procedure conformance was also observed when GIM-S was used in the upstream airspace.

Another tool in the TBFM portfolio is IDAC, implemented at three sites in late 2016. IDAC allows the tower to schedule departures into the arrival stream of a destination airport or into an overhead en route flow. There are three modes of operation for IDAC:

- Call for Release – Original phone procedure between tower and ARTCC Traffic Management Unit (TMU).
- Semi-Automatic – After being scheduled by the tower through the Integrated Departure Scheduling Tool (IDST), the ARTCC TMU must review the proposed release time and accept, reschedule, or cancel it.
- Automatic – Scheduled directly through the IDST without requiring review by the ARTCC TMU.

The automated modes of IDAC remove the need for time-consuming phone calls between the tower and the ARTCC TMU to manage the call-for-release procedure. Post-implementation analysis shows moderate evidence that flights departing out of compliance with IDAC have higher flight delays between departure and the meter arc in en route flow. There is strong evidence that TBFM departures using IDAC have shorter taxi-out times than departures using Timeline Graphical User Interface. Analysis shows 20 of 21 airports have shorter taxi-out times with IDAC, saving 2 to 5 minutes per departure.

Please refer to *Appendix A, Summary of Accomplishments to Date by NextGen Integrated Working Groups*.

CHANGES

The successes discussed above have been instrumental in the continued evolution of the NAS. As agreed to in 2015, the FAA and industry remain committed to responding nimbly and with flexibility to codify changes annually. Where the FAA and industry made significant progress,

the FAA and the NAC agreed to add milestones. Where challenges arose, the FAA and the NAC agreed to revise and codify those joint decisions. For example, concerns around the use of vertical navigation for CSPO resulted in changes to MRO and PBN commitments. The NAC agreed not to implement a national standard to remove vertical navigation on closely-spaced parallel runway operations. Consequently, some PBN plans were impacted and work is ongoing to identify the path forward. The sustained partnership between the NAC and the FAA has proved the collaboration concept and will continue to advance the capabilities that will transform the NAS to a NextGen system.

A summary of the content changes can be found in *Appendix B, NextGen Priorities Annual Plan October 2017 Incorporated Updates* to this document.

Data Communications

As a result of early implementation of Data Comm tower services, the Data Comm program office, in collaboration with the aviation industry, added seven site implementations: Southwest Florida International Airport, John Glenn Columbus International Airport, Charleston International Airport, Buffalo-Niagara International Airport, Reno-Tahoe International Airport, Joint Base Andrews, and Van Nuys Airport. These locations were chosen with industry's input and are scheduled to be completed by Q3 CY2019.

Multiple Runway Operations

In June 2017, the NAC discussed industry concerns about implementing standards for simultaneous independent parallel instrument approaches that do not require the use of vertical navigation (VNAV—an automated function that directs the vertical movement of an aircraft). Industry stated concerns about the potential for discouraging VNAV equipage and increasing cockpit workload. The NAC agreed not to implement a national standard to remove vertical navigation requirements for simultaneous independent parallel approaches; therefore, the MRO commitment to implement a national standard has been removed.

The implementation of Wake RECAT throughout the NAS has resulted in significant benefit to improving flight efficiencies. However, the deployment of Wake RECAT in TRACON automation impacts sites differently according their particular fleet mix. Busy airports with a high presence of B-757 aircraft and small aircraft realize great benefits. Adjacent airports with a wide-ranging fleet mix under TRACON control may see negative impacts. This is the case at Washington Dulles International Airport (IAD) and Washington National Ronald Reagan Airport (DCA). The MRO NIWG is working to evaluate safety documentation to adjust the B757 category to mitigate these operational impacts. Therefore, Wake RECAT at IAD scheduled for Q3 CY 2017 has been revised to Q3 CY 2018. Phoenix Sky Harbor International Airport and Las Vegas McCarran International Airport scheduled for Q4 CY2017 have also been revised to Q3 CY2018.

Surface Operations

Two milestones were added to the 2016 plan in error and have been removed—Data Sharing: Airports Supplement Actual In Block Time, Actual Off Block Time, Actual Take Off Time, Actual Landing Time; and Data Sharing: Airports Additional Airports Providing Data. Instead, FAA and industry Surface NIWG members committed to continue outreach to current Surface Collaborative Decision Making team data providers and others to expand participation and further foster improved data accuracy, timeliness, and comprehensiveness of the data supplying the evolving traffic flow management algorithms and systems in the NAS—specifically, TFDM with airport operators.

Four pilot airports were selected to help determine what data elements airports will share and to propose and execute a process for sharing the data. Next steps for airport data sharing will be included in future updates.

Performance Based Navigation

The Air Line Pilots Association expressed its concerns over the use of Vertical Navigation (VNAV) for Closely Spaced Parallel Operations in a letter to the FAA earlier this year. The June 2017 NAC discussion on the topic of VNAV equipage capability and request to validate airline equipage inventory led to an agreement to get a better understanding of equipage capability concerns and to identify causes and possible mitigations. The NAC SC agreed to add a new milestone to analyze the aircraft equipage inventory and VNAV causal factors, develop an equipage strategy, and identify a way forward for Established on RNP (EoR).

Existing EoR milestones in the plan impacted by VNAV capability will become dependent milestones based on the outcome of the aircraft equipage inventory and VNAV causal analysis:

- EoR RF/TF to xLS Safety Analysis
- EoR Dependent Operations Safety Assessment
- EoR Site Selection Decision
- EoR Feasibility Assessment: Concurrent use of Track to Fix and Radius to Fix

INDUSTRY CONSENSUS AND ENDORSEMENT

Consistent with the NextGen Priorities Oversight Process, the FAA and industry have completed in-depth reviews on a quarterly basis at the NAC SC level and at all three NAC meetings hosted in 2017. The monthly NAC Subcommittee meetings received briefings from the NIWGs and reached consensus on the currency of the work plan. At the October 2017 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 communicate progress.

NORTHEAST CORRIDOR

The FAA formally tasked the NAC in April 2017 to develop recommendations for the collective set of FAA, airport, operator, and community initiatives that focus on implementing NextGen in the Northeast Corridor. The FAA tasking requested:

Phase 1: By June 2017, define success in terms of benefits to include determining how benefits will be measured. Identify opportunities most likely to lead to success, and identify hurdles that could result in implementation challenges. The emphasis should be on opportunities that can be implemented in less than 18 months. Implementations of three years may also be considered. (See *Goals and Priorities for Improving Operations in the Northeast Corridor*, Appendix D.)

Phase 2: By October 2017, use the deliverables in Phase 1 to define joint implementation commitments for the Northeast Corridor, including government and industry milestones, and define how implementing those priorities would lead to measurable benefits. Subsequent to implementation, ensure benefits are measured.

Given this request, the following interim report focuses on implementations occurring in the first 18-month time frame from October 2017 through March 2019.

Given this request, the following report focuses on:

- Goals for improving the Northeast Corridor
- Metrics to evaluate these goals
- Identification of benefits capability objectives for the NEC
- Identification of initiatives relative to the potential benefit impact on goals/metrics

The FAA established the Northeast Corridor as a new NextGen Priority focus area and subsequently established a NextGen Priorities Integration Working Group as a collaboration mechanism. The NIWG recommended a set of initiatives in the near term for the NEC. (See Appendix E) and will provide final recommendations for the NEC for three-year timeframe. Subsequently, this plan will be updated to include three-year commitments.

The FAA accepted the NextGen Advisory Committee's recommendations¹ to improve the execution of operations in the Northeast Corridor, taking a continuous improvement approach and using agreed-upon metrics.

There are three tiers of operational benefit for the Northeast Corridor:

- Tier 1: Improve execution of today's operation in the NEC
The first tier is focused on getting better at running the existing, full intended operation on time.
- Tier 2: Operate today's flights more efficiently
The second tier presumes success in the first tier. Step two is about minimizing the cost of operating the intended operation.
- Tier 3: Grow the capacity and schedule
The third tier is focused on growth in the region. This step is about enhancing capacity, whether in the airspace or at the airport, and links to growing revenue for operators.

The implementations in this report require commitments from both the FAA and the Industry and identify the agreed upon set of initiatives within 18 months, that focus on the NAC's stated Tier 1 goal to improve execution of today's operations in the NEC. The Tier 2 and Tier 3 goals identified above are applicable beyond 18 months. The longer term may provide additional opportunities for aircraft equipment and air traffic control automation tools to deliver operational benefits.

WHAT THIS SECTION CONTAINS

This section summarizes the three categories of high-level Northeast Corridor commitments made by the FAA and the aviation community:

- 1. FAA milestones for operational implementation at specific locations that will be available for immediate use that are funded with Operations dollars as well as Facilities and Equipment funding.**
- 2. Major FAA pre-implementation activities.** These include training, safety analyses, environmental assessments, procedures design and testing, etc., for capabilities that the agency and the aviation community are mutually interested in pursuing. The FAA will not presuppose the outcome of these activities, 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.
- 3. Commitments by industry to complete activities required for successful implementation.**

¹ Goals and Priorities for Improving Operations in the Northeast Corridor, Phase One, Report of the NextGen Advisory Committee in Response to a Tasking from the Federal Aviation Administration

MANAGEMENT OF THE NORTHEAST CORRIDOR MILESTONES

The activities in this report require funding from two FAA accounts: Facilities and Equipment, and Operations, and can be delivered within current budget requests. They are part of the larger FAA efforts to implement NextGen and are included in the fiscal year 2018 President's Budget Request and the supporting Capital Investment Plan (CIP). The CIP is based on detailed program schedules with deliverable dates and includes the specific NAC priorities identified in the report. 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. In addition, the FAA has committed staff resources to meeting NAC priorities. 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 pre-implementation work may require more 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 its 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, enterprise risk management, 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.

The report, and the FAA's commitment to meet planned implementation schedules, assumes continued funding at the current CIP levels. Future budget constraints may cause schedule slippages but will not change the FAA's commitment to meet the planned NAS operational, procedural, and equipage improvements laid out in the plan.

METRICS

Metrics that evaluate success against the goal of improving execution of today’s operation are presented below. These metrics were developed from the NextGen Advisory Committee’s set of approved metrics.² The metrics are defined relative to the three sub-components of the goal:

Near Term Goal	Associated Metrics	Definition / Details
Operate the full intended operation	<ul style="list-style-type: none"> Completion Factor 	<ul style="list-style-type: none"> Percent flights that operate from origin to destination as intended/scheduled
Operate on time	<ul style="list-style-type: none"> Departure Delay versus schedule Arrival Delay versus schedule 	<ul style="list-style-type: none"> Percent flights that depart/arrive to gate at or before scheduled time³
Operate predictably	<ul style="list-style-type: none"> Departure/Arrival delay versus schedule 	<ul style="list-style-type: none"> Total delay minutes
	<ul style="list-style-type: none"> Actual Block Time <ul style="list-style-type: none"> Taxi Out En Route Taxi In 	<ul style="list-style-type: none"> 60th percentile and Standard Deviation Actual times for city pair, arrival or departure airports
	<ul style="list-style-type: none"> Called and Actual Throughput 	<ul style="list-style-type: none"> Mean/peak facility called rates and actual throughputs for airport/airspace

Not all metrics are applicable to all types of operators. Additionally, the metrics above are impacted by numerous operator actions, such as scheduling practices, aircraft types, and equipage rates. While performance of these measures is impacted by factors unrelated to NextGen implementations, NextGen implementations are expected to positively impact this set of metrics. To effectively evaluate success of the stated goal through these metrics, a baseline of performance today is needed.

BENEFITS MECHANISMS

Industry members of the NextGen Advisory Committee Subcommittee served as the Northeast Corridor Task Group who identified and prioritized the following objectives that are the most important to achieving the goal of improving execution of today’s operation in the NEC. The Task Group recommended that two capabilities – Deconflict Airports and Improve Individual

² Goals and Priorities for Improving Operations in the Northeast Corridor, Phase One, Report of the NextGen Advisory Committee in Response to a Tasking from the Federal Aviation Administration, June 2017, p. 12

³ For non-scheduled FAR Part 91 and 135 operators, a “Call Ready to Push” is utilized as a proxy for scheduled departure time.

Airport Throughput –be given higher priority. These results guided decision making around project-level prioritization.

CAPABILITY OBJECTIVES IN PRIORITY ORDER

Capability Objective	Description
Deconflict airports	<ul style="list-style-type: none"> ● Reduce or remove dependencies among New York airports that constrain airport throughput today
Improve individual airport throughput	<ul style="list-style-type: none"> ● Improve throughput to/from NEC airports and terminal airspace sectors
Improve and integrate existing flow management capabilities	<ul style="list-style-type: none"> ● Improve use and adaptation of existing tools ● Enhance collaborative planning process and tools ● Integrate application of existing capabilities across system
Improve airspace throughput	<ul style="list-style-type: none"> ● Improve throughput through NEC airspace and en route airspace ● Improve surface efficiency with better taxiways or gate availability
Implement new flow management decision support tools	<ul style="list-style-type: none"> ● Implement new tools to assist in future time-based flow management
Improve NAS information, common situational awareness	<ul style="list-style-type: none"> ● Enhanced information to aid in planning or decision making
Create new noise abatement procedures	<ul style="list-style-type: none"> ● Implement and operate new noise abatement procedures that maximize aircraft participation and, where feasible, reduce impact to local communities

These capability objectives were further refined into benefits themes. Please see Appendix E for further information.

MEASUREMENT PLAN

Each of the implementations includes a qualitative assessment of the benefits associated with the implementation along with the operational improvements and the risk. The FAA will collaborate with industry to establish a baseline. The JAT will work closely with the NEC NIWG to establish a measurement plan and highlight benefit improvement pools to help establish expectations and serve to inform future prioritization efforts. Both industry and FAA will furnish data and analysis resources for this effort to include tool usage, procedure usage, equipage, and progress toward data sharing.

PERFORMANCE REPORTING

The FAA has committed to transparency in monitoring progress metrics. A section of the NextGen Performance Snapshots⁴ website provides regular updates on the plan's status. These capabilities' full benefits will be realized when operators begin routinely using them. The operational impact will be reported on the Snapshots site. These metrics are envisioned to help identify areas of focus, process change and organizational change.

FOCUS AREA: NEC SUMMARY

This plan codifies months of work analyzing the components of NextGen as applied to the Northeast Corridor, discussing the merits of each capability, and deciding on concrete milestones to implement priority capabilities for specific locations and dates.

The work was divided into the following groups to facilitate the analysis and evaluation of 44 implementations.

- **Airports:** Build airport infrastructure on the airport surface, including taxiways, runway extensions, gates, airport terminal buildings, and air traffic towers that enable improved surface operations and airport throughput as well as ease implementation of NextGen tools. Infrastructure projects included in the <18 months timeframe for NEC airports are mature, active projects that have been in planning and development for some time because large-scale infrastructure projects take several years to implement. All of the projects have an operational component related to traffic flow in the NEC and provide throughput, surface efficiency, and level-of-service improvements that complement NextGen initiatives.
- **Airspace and Procedures:** Design and evaluate operational procedures that improve utilization of existing airspace and airport capacity, and explore opportunities to deconflict traffic to and from close-in airports. Deconfliction is achieved through new or modified procedures, and greater airport throughput in the New York area attained through modified procedures or better use of existing procedures. Many of the candidate procedures initiatives would require longer lead times, with implementation more likely in the 18-36 month or 36+ month timeframes. The initiatives in the current plan represent a range of proposals that can be implemented within 18 months to provide a high benefit during select conditions, ranging to longer-term projects that can provide benefit during more common operating conditions. Additionally, the feasibility of more technically challenging initiatives is included to enhance operations in ways not previously considered. For example, simultaneous operations on widely-spaced approach courses to different airports is an innovative concept that will be explored in the first 18 months.
- **Tactical Improvements:** Maximize and evolve the utilization, improvement, and application of tools, routes, and processes already deployed to improve movement of air

⁴ 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

traffic into, out of, and within the NEC. Some of these initiatives focus on simply improving the use of existing capabilities, while others are more involved and require the development of processes and agreements across multiple operational facilities to implement. There are tools currently available to the air traffic operation, including some in a prototype status, and there may be further opportunities to utilize existing capabilities in the NAS simply through improved use of what is available today.

- **Tools/Technology:** Deploy new automation capabilities, decision support tools, and processes that enhance controller information and decision making such that operational performance is improved in all operating conditions. Targeted areas of benefits include improved arrival and departure throughput and improved flow across the NEC. Groups of tools and technologies initiatives have been prioritized in the areas of time-based management, traffic flow management, and converging runway operations to deliver these benefits. They lay the groundwork for the future implementation of trajectory-based operations in the NEC.

It should be noted that some commitments may accrue benefits in more than one area, but they are displayed here where they are anticipated to provide primary benefit.

DECONFLICT AIRPORTS

Deconfliction of air traffic to and from airports is industry's first priority for the NEC. Procedures to deconflict traffic to and from New York airports and enhance throughput require significant operational resources, and implementation of these procedures is not practical in less than 18 months. The commitments for the first 18-month timeframe include concept exploration, design, and evaluation of proposed procedures for deconflicting traffic to and from New York airports and enhancing throughput.

IMPLEMENTATION COMMITMENTS

No milestones in the Time+18 months' timeframe.

PRE-IMPLEMENTATION COMMITMENTS

- **Procedures — Feasibility Study for the Modified Missed Approach for LGA Runway 22:** Complete a feasibility study for the use of EWR's Runway 29 RNAV approach that does not conflict with the missed approach for LGA Runway 22. Q4 CY 2018.
- **Procedures — Concept Exploration of Simultaneous Operations on Widely-Spaced Approaches to Different Airports:** Conduct a concept exploration of simultaneous operations on widely-spaced approach courses to different airports in the New York area. Q2 CY 2019.

INDUSTRY COMMITMENTS

- **Procedures — Participate in Feasibility Study for the Modified Missed Approach for LGA Runway 22:** Q4 CY 2018.
- **Procedures — Participate in the Concept Exploration of Simultaneous Operations on Widely-Spaced Approaches to Different Airports:** Q2 CY 2019.

AIRPORT THROUGHPUT

Improving airspace throughput in the Northeast increases system efficiency by reducing constraints the airspace places on the system. Currently the en route system has a tangled web of jet routes along the East Coast that drive controller workload and create bottlenecks. A key NEC initiative focuses on replacing the existing complex of routes with more orderly PBN routes. It addresses bottlenecks primarily in the Mid-Atlantic airspace and should improve traffic flow to all key NEC airports. A second area of concern for New York area airports is the narrow corridor of offshore airspace between two warning areas lying east of New York City. The NEC's PBN procedure design initiative for this region seeks to relieve the operational constraints imposed by this constricted airspace that today results in airborne arrival and departure delays on all New York area airports, in particular, JFK and EWR.

IMPLEMENTATION COMMITMENTS

- **Procedures — Implement Simultaneous Converging Instrument Approaches (SCIA) to PHL Runways 9R and 17:** Q4 CY 2018.
- **Tools — Converging Runway Display Aid (CRDA) Dependent Converging Instrument Approaches (DCIA) Application for PHL Runways 27R and 35 for RNAV Approaches:** Implement CRDA DCIA application for PHL 27R/35 for RNAV approaches. Q1 CY 2019.

PRE-IMPLEMENTATION COMMITMENTS

- **Procedures — Environmental Review for the Use of Dispersal Headings for LGA Runway 13 Departures:** Conduct an environmental review for the most efficient use of dispersal headings for LGA Runway 13 departures using the current GLDMN, TNNIS and NTHNS Standard Instrument Departures (SIDs) within the current limitations specified in each procedure's existing categorical exclusion (CATEX). Following completion of the environmental review, the FAA plans to use dispersal headings when operational conditions permit, using existing procedures and within the limitations and conditions of the current CATEXs. Q4 CY 2018.

- **Procedures — Feasibility Assessment of EoR⁵ Simultaneous Operations to JFK 13R RNP⁶ and 13L ILS⁷:** Complete a feasibility study of EoR simultaneous operations at JFK on existing JFK Runway 13R RNP using radius-to-fix (RF) legs and JFK 13L ILS procedures. Q2 CY 2019.
- **Procedures — Design and Testing for Vertical Climb Escape Route for TEB/HPN:** Complete design and testing for Vertical Climb Escape Route. The FAA plans to implement Vertical Climb Escape Route for TEB and HPN following validation of initiative. The FAA plans to complete the training and air traffic procedural activities prior to implementation. Dependent upon community engagement. Q1 CY 2018.
- **Procedures — Update the Minima for Existing Simultaneous Converging Instrument Approaches (SCIA) Procedure to PHL Runways 9R and 17:** Q3 CY 2018.
- **Procedures — Safety Assessment of SCIA Operations with RNAV⁸ for PHL Runways 9R and 35:** Q4 CY 2018.
- **Tactical — Feasibility Study to Create a Process to Reduce and/or Eliminate Passback Miles-in-Trail (MIT) for NY Departures:** Conduct a feasibility study to create a process to reduce and/or eliminate passback MIT for departures from NY airports. Q1 CY 2019.

INDUSTRY COMMITMENTS

- **Airports — JFK Runway 4R/22L Rehabilitation and Delay Reduction Taxiway Improvements:** Complete rehabilitation of the runway pavement and the runway lighting system and significant taxiway improvements including the realignment, widening, and relocation of two high-speed exit taxiways. The new relocated high-speed taxiways will allow aircraft to exit the runway faster, and the resulting reduced runway occupancy time can enable higher throughput by landing more aircraft during busy periods. The runway and high-speed taxiways are to be completed by Q1 CY 2018.
- **Airports — PHL Runway 9R/27L Extension:** Extend Runway 9R/27L by 1,500 feet, bringing the total length to 12,000 feet. The longer runway will improve long-haul departure capability to currently served and potential new international destinations. The project also includes the construction of multiple new access taxiways for aircraft departing on Runway 27L to reduce time spent in the departure queue by providing greater flexibility in sequencing aircraft. The runway extension and new access taxiways are to be completed by Q4 CY 2018.

⁵ Established on Required Navigation Performance (RNP)

⁶ Required Navigation Performance

⁷ Instrument Landing System

⁸ Area Navigation

- **Airports — BWI International Terminal Improvements and Additional New Gates:** The International Concourse (Concourse E) Building Extension project will provide approximately 66,000 square feet of additional new space and the renovation of an existing 22,000 square feet. The project extends Concourse E by 150 feet. The project will provide a total of six new gates, two for both arrivals and departures and four for arrivals only, and will add needed flexibility and capacity. The project is expected to be completed by Q4 CY 2018.
- **Procedures — Participate in Community Engagement for Dispersal Headings for LGA Runway 13 Departures:** Operators will participate in community engagement activities for the use of dispersal headings for LGA13 departures using TNNIS, GLDMN, and NTHNS procedures. Q4 CY 2018.
- **Procedures — Participate in Feasibility Assessment of EoR Simultaneous Operations to JFK 13R RNP and 13L ILS:** Q2 CY 2019.
- **Procedures — National Business Aviation Association (NBAA) to Participate in Design and Testing for Vertical Climb Escape Route for TEB/HPN:** Q1 CY 2018.
- **Procedures — Provide Expertise to Support the Safety Assessment of Simultaneous Converging Instrument Approaches (SCIA) Operations with RNAV for PHL Runways 9R and 35:** Q4 CY 2018.

FLOW MANAGEMENT

Traffic Flow Management is the craft of managing the flow of air traffic in the NAS based on capacity and demand. It is challenging in today's system for all stakeholders to maintain synchronized awareness on airspace availability and restrictions in the NEC. This can lead to less than optimal responses. Initiatives focus on improving the information available to NEC stakeholders and the planning process that utilizes this information to make decisions for the NEC.

IMPLEMENTATION COMMITMENTS

- **Tools — Implement TBFM pre-departure scheduling at a selected airport:** Candidate airports are PHL, EWR, BOS, and LGA. Q1 CY 2019.
- **Tools — Improve airborne metering to PHL:** Q1 CY 2019.

PRE-IMPLEMENTATION COMMITMENTS

- **Tools — Assessment for early TBFM pre-departure scheduling:** Complete assessment for early TBFM pre-departure scheduling to determine which arrival airport and associated departure airports will execute this capability. Candidate airports are PHL, EWR, BOS, and LGA. Q2 CY 2018.

- **Tools — Review/update adaptation for improving airborne metering to PHL:** Complete review/update of adaptation for improving airborne metering to PHL. Q1 CY 2019.
- **Tools — Complete TBFM⁹ refresher training for metering to PHL.** Refresher training for traffic management coordinators and air traffic controllers for metering to PHL. Q1 CY 2019.
- **Tools — Determine the sequence of additional airports to receive en route metering:** Conduct an analysis to determine the sequence of additional airports to receive en route metering. Airports to be considered include but are not limited to LGA, EWR, and JFK. Q1 CY 2019.

INDUSTRY COMMITMENTS

- **Tools — Education of airspace users to support TBFM pre-departure scheduling:** By means of appropriate communication to all stakeholders, complete education to support TBFM pre-departure scheduling. Q1 CY 2019.

AIRSPACE THROUGHPUT

Currently the En Route system has a tangled web of jet routes along the East Coast that drive controller workload and create bottlenecks. A key NEC initiative focuses on replacing the existing complex of routes with more orderly PBN routes. It will address bottlenecks primarily in the Mid-Atlantic airspace and should improve traffic flow to all key NEC airports.

IMPLEMENTATION COMMITMENTS

- **Tactical — Consistent Usage of Defined and Existing Capping and Tunneling for Departures/Arrivals to/from the NEC:** Expand consistent usage of defined and existing capping and tunneling for departures/arrivals to/from the NEC through required advisories. Q1 CY 2019.

PRE-IMPLEMENTATION COMMITMENTS

- **Procedures — Design PBN Arrival and Departure Procedures for New York Metro Airports from New York Center (ZNY) Oceanic:** Complete the design of new PBN arrival and departure procedures for JFK and EWR from the ZNY oceanic transition sectors. Q1 CY 2018.
- **Procedures — Atlantic Coast Routes: Design Validation of Eastern Seaboard High-Altitude PBN Routes, including SID/STAR connectivity:** Complete the design

⁹ Time-Based Flow Management

validation of eastern seaboard high altitude PBN routes, including SID/STAR¹⁰ connectivity. Q2 CY 2018.

INDUSTRY COMMITMENTS

- **Procedures — Participate in Design Activities Associated with the New PBN Arrival and Departure Procedures for the ZNY Oceanic Transition Sectors:** Industry will participate in design activities associated with the new PBN arrival and departure procedures for the ZNY oceanic transition sectors. Q1 CY 2018.
- **Procedures — Contribute to Associated Community Engagement Activities for the New PBN Arrival and Departure Procedures for JFK and EWR from ZNY Oceanic:** Following design completion for the new PBN arrival and departure procedures for JFK and EWR from the ZNY oceanic transition sector, industry will contribute to associated community engagement activities. Q1 CY 2019.
- **Procedures — Atlantic Coast Routes: Participate in Design Activities, Including SID/STAR Connectivity:** Q2 CY 2018.
- **Tactical — Airspace Users to Complete Training to Support Capping and Tunneling for Departures/Arrivals to/from the NEC:** Q4 CY 2018.

DECISION SUPPORT TOOLS

Traffic management initiatives include implementation of Time-Based Flow Management (TBFM) tools that have been developed but are not yet in use at some of the NEC sites. They target improved airport departure throughput and reduced delay variance. Traffic flow management initiatives also include expanded adoption and improved use of Traffic Flow Management System (TFMS) capabilities across the Northeast Corridor.

IMPLEMENTATION COMMITMENTS

- **Tools — Implement Surface Visualization Tool (SVT) at Boston Center (ZBW):** SVT will provide visibility to airport surface movements to the Center level, enhancing situational awareness, aiding in decision-making. Q2 CY 2018.
- **Tools — Implement En Route Departure Capability (EDC) at New York Center (ZNY):** Q1 CY 2018.
- **Tools — TBFM Integrated Departure/Arrival Capability (IDAC) for Metro NY Airports:** Implement IDAC at four metro NY airports. Q2 CY 2018.

PRE-IMPLEMENTATION COMMITMENTS

¹⁰ Standard Instrument Departure/Standard Terminal Arrival

- **Tools — Training and operating agreements to support En Route Departure Capability (EDC) at New York Center (ZNY):** Complete Training and establish operating agreements to support EDC at ZNY. Q1 CY 2018.
- **Tools — TBFM Integrated Departure/Arrival Capability (IDAC) for Metro NY Airports:** Deploy/relocate equipment/software to support IDAC deployment at four metro NY airport towers. Q1 CY 2018.

INDUSTRY COMMITMENTS

No milestones in the Time+18 months timeframe.

NAS INFORMATION

Expanded surface data sharing with operators through improved situational awareness informs improved traffic flow management. Use of a prototype NAS Operations Dashboard (NOD) will provide improved common situational awareness and facilitate fast problem identification and resolution in TFM decision-making.

IMPLEMENTATION COMMITMENTS

No milestones in the Time+18 months timeframe.

PRE-IMPLEMENTATION COMMITMENTS

- **Tools — NAS Operations Dashboard (NOD) trial:** Complete a 90-day trial of the use of the NOD prototype for common planning coordination and awareness between FAA and airspace users. Q1 CY 2018.
- **Tools — NAS Operations Dashboard (NOD) trial study:** Complete study report of the NOD prototype trial. Q3 CY 2018.

INDUSTRY COMMITMENTS

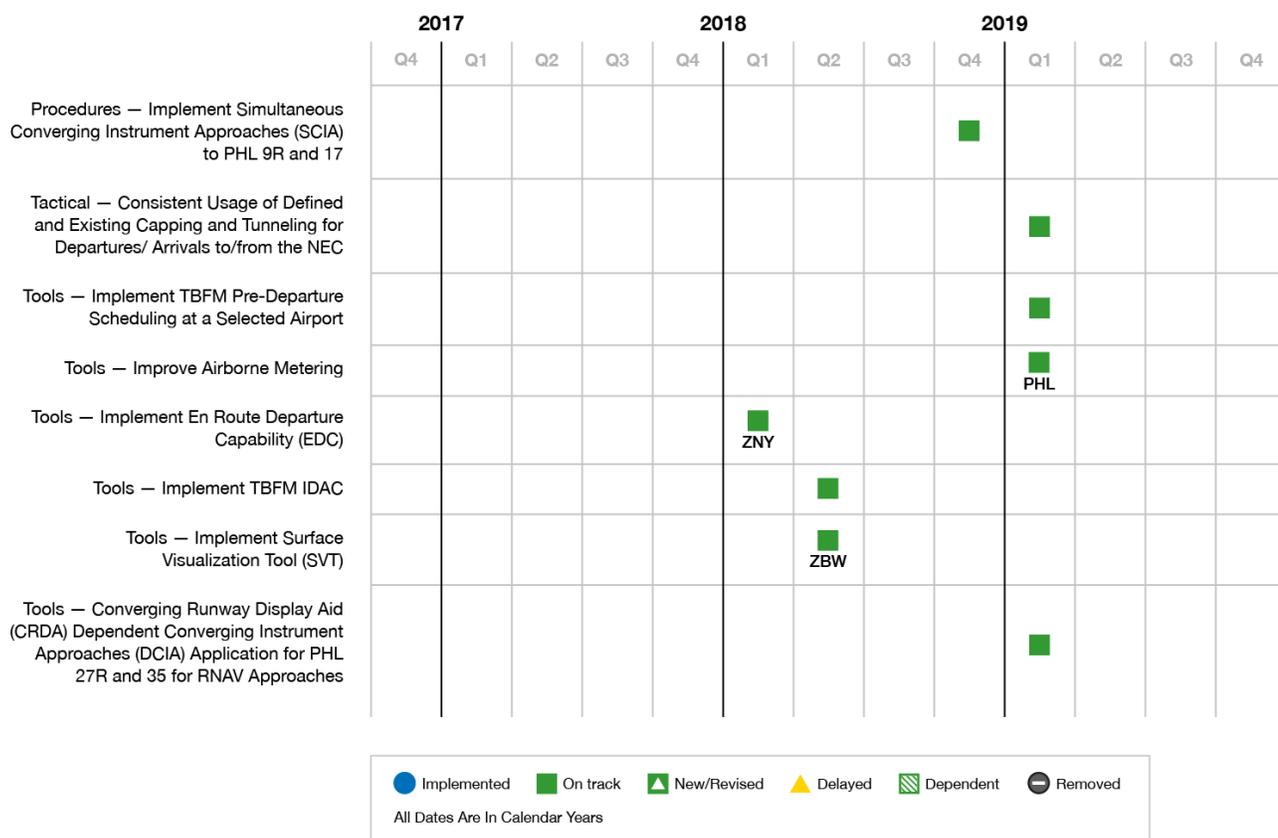
- **Airports — Port Authority of New York and New Jersey (PANYNJ) to Exchange Flight Data with FAA and Airlines:** Q1 CY 2019.
- **Tools — NAS Operations Dashboard (NOD) trial:** Provide input/feedback on use of NOD prototype. Q2 CY 2018.
- **Tools — JetBlue to Provide Improved Aircraft Intent Data via Surface Data Elements:** Surface data sharing between operators and FAA to improve flow management. Q4 CY 2017
- **Tools — United Airlines to Provide Improved Aircraft Intent Data via Surface Data Elements:** Surface data sharing between operators and FAA to improve flow management. Q4 CY 2017

NOISE ABATEMENT

Noise impacts on communities from implementations are an important consideration, and several studies are ongoing in the NEC (for example the New York and New Jersey Part 150 studies, the MIT PBN Boston Noise Mitigation Study, and community roundtables reviewing the D.C.-area metroplex procedures). Specific recommendations are not now included to avoid pre-deciding or assuming the outcome of these activities. Results and recommendations from the studies may be included in future deliberations.

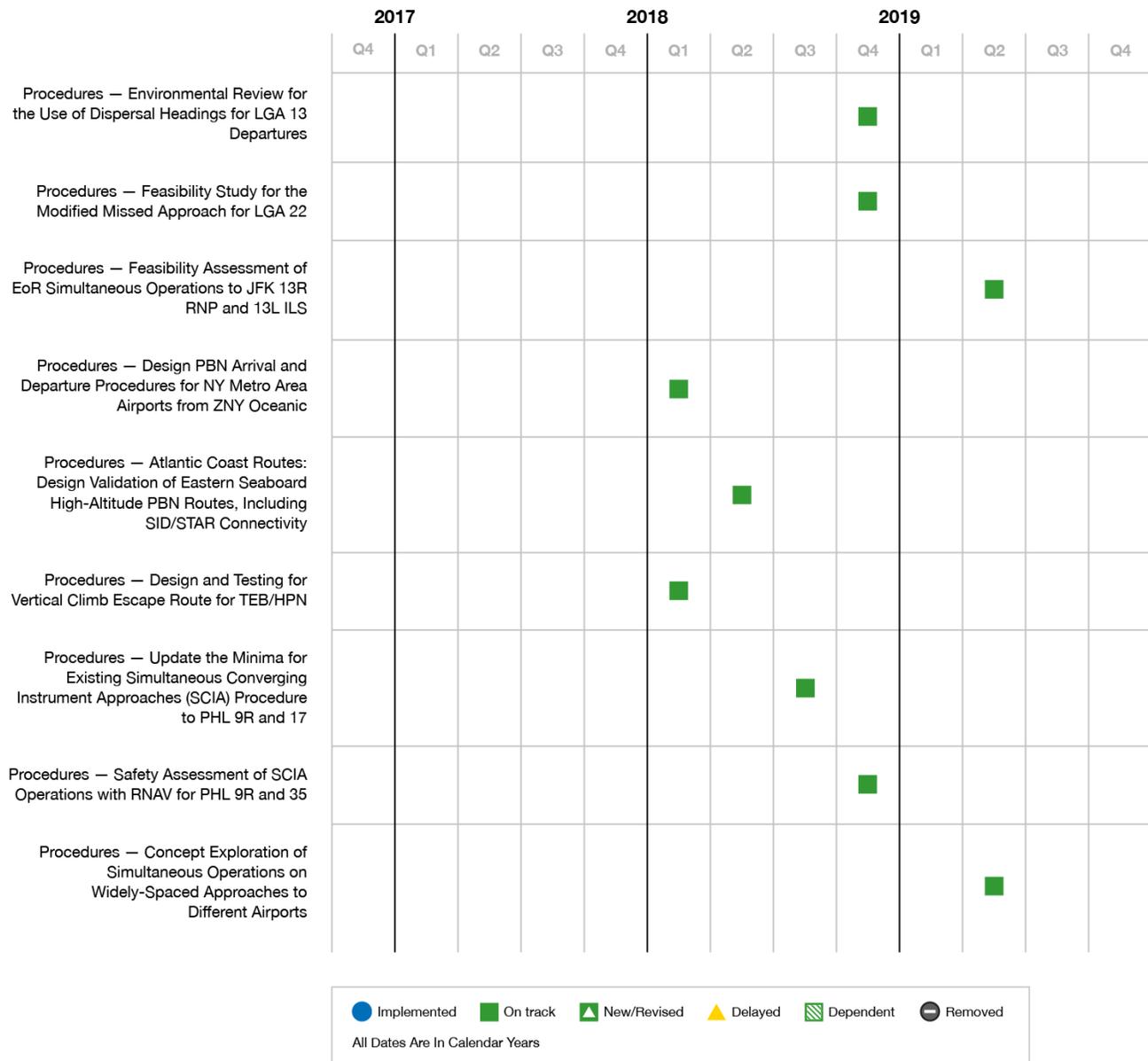
No milestones in the Time+18 months timeframe.

NEC Implementation Commitments



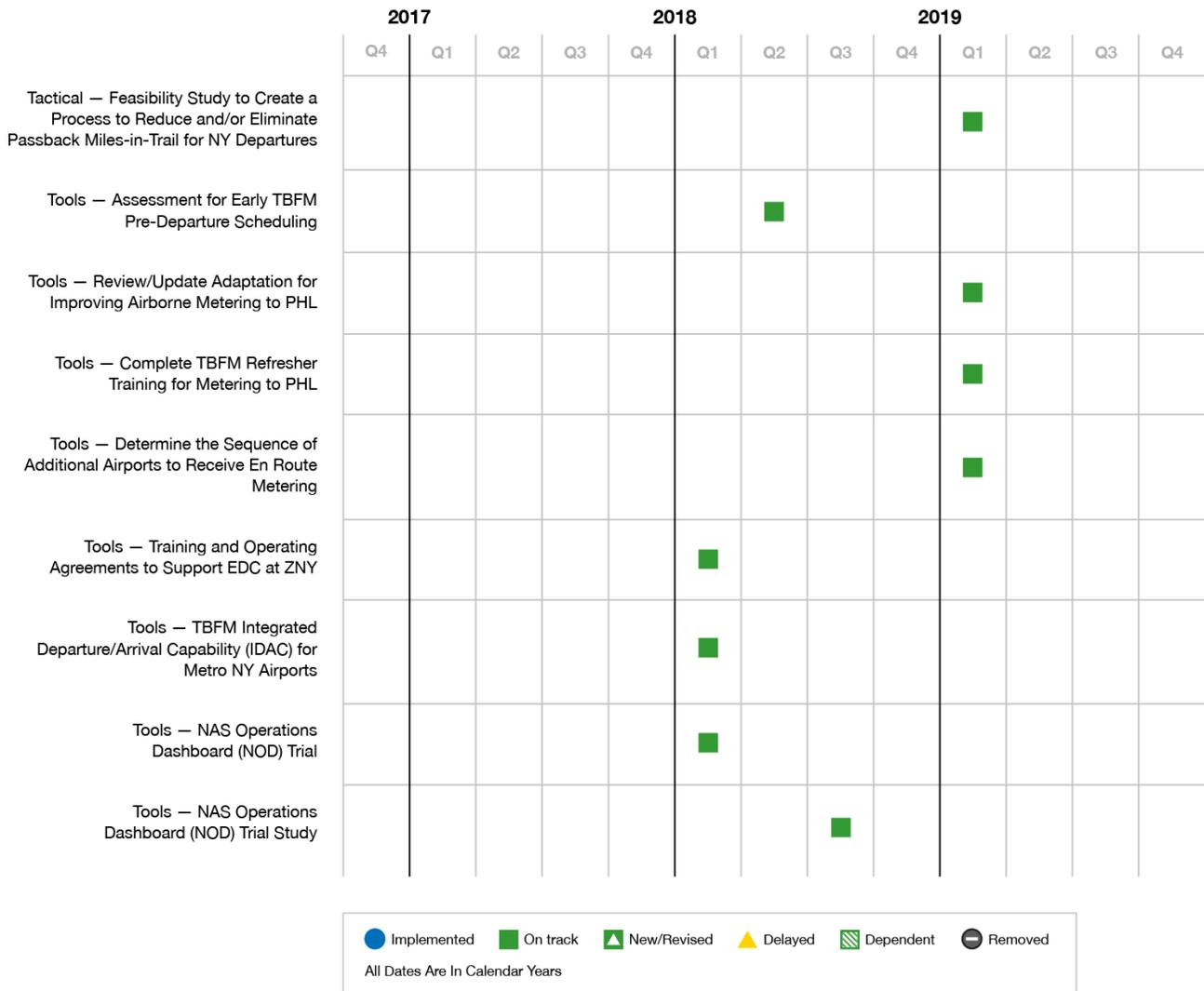
For an accessible version of the Northeast Corridor Implementation Commitments chart, please visit <http://www.faa.gov/nextgen/snapshots/priorities/?area=nec>

NEC Pre-Implementation Commitments - Part 1



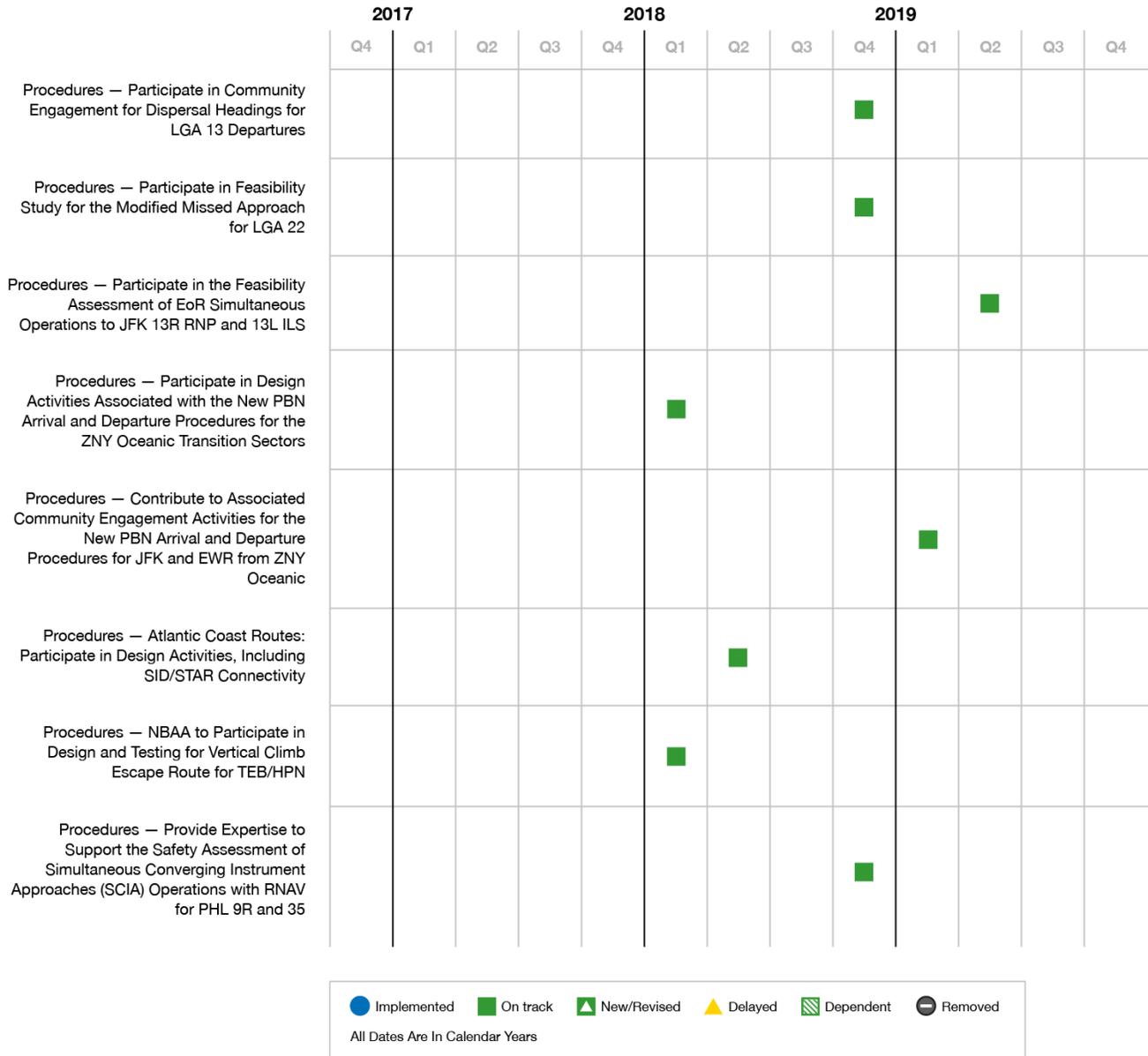
For an accessible version of the Northeast Corridor Pre-Implementation Commitments chart, please visit <http://www.faa.gov/nextgen/snapshots/priorities/?area=nec>

NEC Pre-Implementation Commitments - Part 2



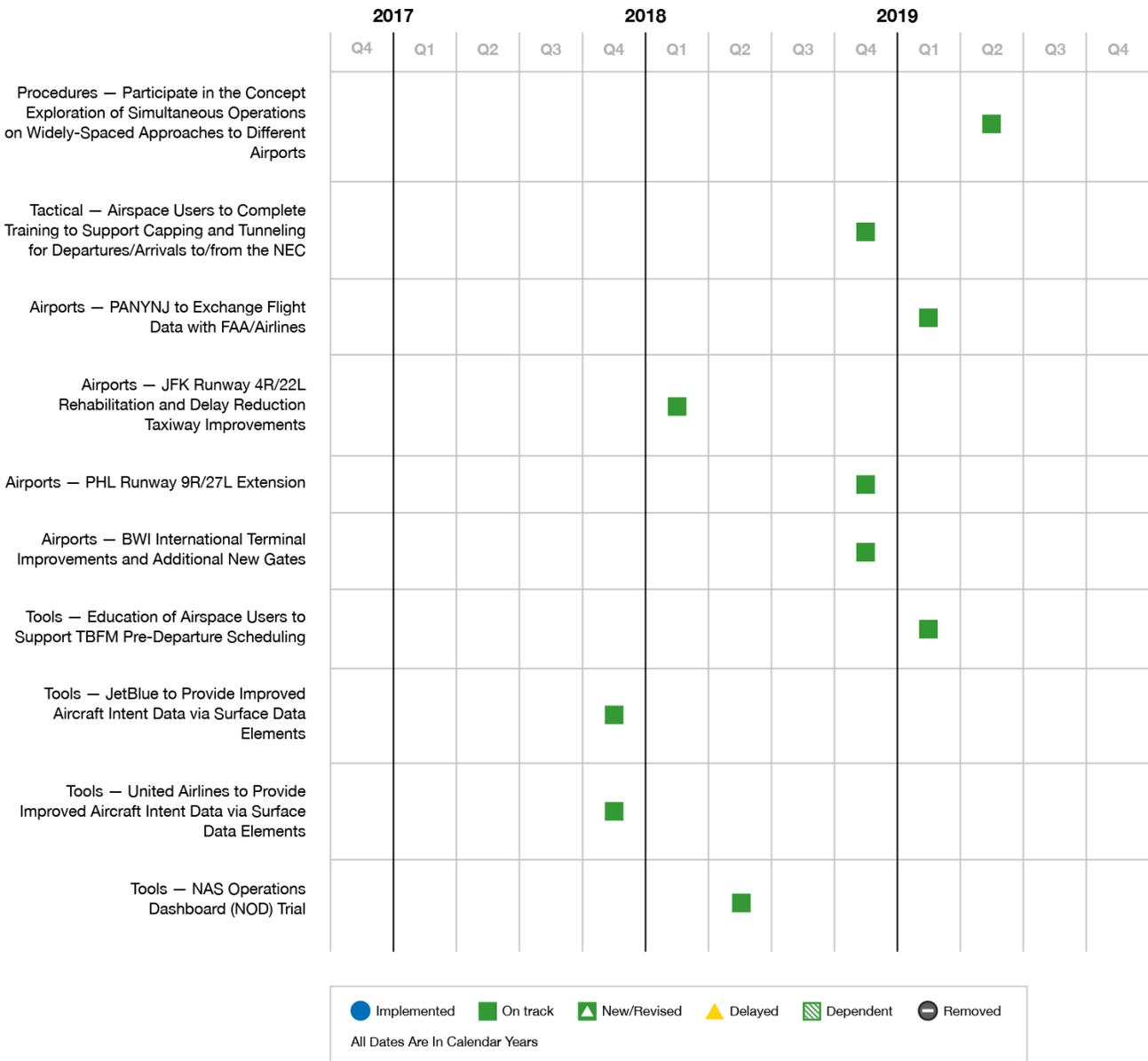
For an accessible version of the Northeast Corridor Pre-Implementation Commitments chart, please visit <http://www.faa.gov/nextgen/snapshots/priorities/?area=nec>

NEC Industry Commitments - Part 1



For an accessible version of the Northeast Corridor Industry Commitments chart, please visit <http://www.faa.gov/nextgen/snapshots/priorities/?area=nec>

NEC Industry Commitments - Part 2



For an accessible version of the Northeast Corridor Industry Commitments chart, please visit <http://www.faa.gov/nextgen/snapshots/priorities/?area=nec>

Appendix A - Summary of Accomplishments to Date by NextGen Integrated Work Groups

Note: All charts categorized by fiscal year from Oct. 1-Sept. 30.

(i) = Industry milestone

Focus Area	Completions Fiscal Year 2015
MRO	<ul style="list-style-type: none"> ▪ Wake RECAT ATL, CVG ▪ Wake RECAT IAH, HOU ▪ Wake RECAT JFK, EWR, LGA ▪ Wake RECAT CLT ▪ Dual Independent Parallel Ops -- ATL ▪ Safety Analysis WTMA-P -- PHL, DTW ▪ Safety Analysis WTMA-P ATL ▪ Safety Analysis 7110.308 -- SFO ▪ Wake RECAT ORD, MDW ▪ FID for WTMD ▪ Wake RECAT SFO (Completed in FY2016) ▪ BOS 7110.308 and Dependent Parallel Operations Assessment (Completed in FY2016)
Surface	<ul style="list-style-type: none"> ▪ Surface Surveillance Event Data -- SFO ▪ TBFM Data Sharing via SWIM ▪ TFMS Data Sharing via SWIM ▪ Feasibility Assessment AEFS -- NY ▪ Feasibility Assessment TFDM Program Departure Management ▪ AEFS -- CLE ▪ SWIM SVT Deployment -- Five TRACONS ▪ TBFM Wheels Up Procedural Change (i) ▪ Airport Operations as CDM Participants (i) ▪ Simplify Application for SWIM Data (i) ▪ ASSC -- CLE (Completed in FY2016)
Data Comm	<ul style="list-style-type: none"> ▪ FID for Initial En Route Services ▪ Recommendations for Recorder Rule for Retrofit (i) ▪ Departure Clearance Tower Services -- SLC ▪ Departure Clearance Tower Services HOU ▪ Departure Clearance Tower Services IAH
PBN	<ul style="list-style-type: none"> ▪ Metroplex Site Assessment – LAS ▪ EoR Widely Spaced Operations -- DEN ▪ Metroplex -- Northern California ▪ ELSO National Standard
Total	<p>29/32 Commitments during FY2015 Actual/Plan</p> <p style="text-align: center;"> ■ Completed Late ■ Completed ■ Delayed ■ Removed ■ Rescheduled </p>

Focus Area	Completions Fiscal Year 2016
MRO	<ul style="list-style-type: none"> ▪ Dual Independent Parallel Ops -- ORD ▪ Triple Independent Parallel Ops -- ORD ▪ Wake RECAT DEN ▪ Dependent Parallel Ops (DAL, JFK, MEM, MSP, PDX, RDU, SEA) (7 sites) ▪ Wake RECAT IND ▪ Future Wake RECAT Capabilities Assessment ▪ BOS 7110.308 and Dependent Parallel Operations Assessment ▪ Wake RECAT SFO ▪ Dual Independent Parallel Ops with Offset -- DTW ▪ Wake RECAT ANC ▪ Wake RECAT LAX
Surface	<ul style="list-style-type: none"> ▪ AEFS EWR ▪ FAA Ingest 11 Data Elements ▪ AEFS LAS ATCT ▪ AEFS SFO ATCT ▪ Data Sharing: Select Four Initial Pilot Airports ▪ Industry to Provide 11 Data Elements (i) (Industry's milestone delayed, completed in FY2017) ▪ Plan to Deliver TFDM Capabilities to Key Sites as Early as Possible ▪ Plan to Move Up the TFDM Build that Subsumes DSP Within the Overall TFDM Waterfall ▪ Restoration of Original FY18-20 Funding for the TFDM Program and Contract Award
Data Comm	<ul style="list-style-type: none"> ▪ Assessment of Boeing 737 Flight Management Computer Issue (i) ▪ Extend Departure Clearance Operational Trials EWR, MEM ▪ Departure Clearance Tower Services for: New Orleans (MSY), Austin (AUS), Louisville (SDF), Indianapolis (IND), Newark (EWR), John F Kennedy (JFK), San Antonio (SAT); Los Angeles (LAX), Las Vegas (LAS), LaGuardia (LGA), Teterboro (TEB), San Diego (SAN), John Wayne (SNA), Memphis (MEM), Nashville (BNA), Westchester (HPN), Philadelphia (PHL), Denver (DEN), Burbank (BUR), Boston (BOS), Ontario (ONT), Atlanta (ATL), Charlotte (CLT), Hartford (BDL), San Francisco (SFO), Orlando (MCO), Detroit (DTW), San Jose (SJC), Oakland (OAK), Sacramento (SMF), Cleveland (CLE), Miami (MIA), Pittsburgh (PIT), Phoenix (PHX), Fort Lauderdale (FLL), Baltimore/Washington(BWI), Dulles (IAD), Tampa (TPA), Portland (PDX), Reagan (DCA), Seattle (SEA), Albuquerque (ABQ), St. Louis (STL) (STL completed early) (43 sites) ▪ Full Services FID
PBN	<ul style="list-style-type: none"> ▪ EoR TF Safety Analysis ▪ LAS Study Team ▪ EoR AR Widely Spaced Operations National Standard ▪ Metroplex -- CLT ▪ Single Site Implementations -- BOS, GYY (2 sites)
Total	<p>76/77 Commitments during FY2016 Actual/Plan</p> <p style="text-align: center;"> ■ Completed Late ■ Completed ■ Delayed ■ Removed ■ Rescheduled </p>

Focus Area	Completions Fiscal Year 2017
MRO	<ul style="list-style-type: none"> ■ Wake RECAT PHL (Completed a fiscal year early) ■ Feasibility Assessment- Removal of Vertical Navigation Requirement for Simultaneous Independent Parallel Approaches ■ Joint Analysis Team Performance Analysis (i) ■ Amend Dependent Runway Separations (Runways > 4300') CVG, MEM, PHX, SDF (4 sites) ■ Wake RECAT MSP ■ Wake RECAT MIA ■ Amend Dependent Runway Separation Order 7110.308A SFO ■ Benefits Assessment to Upgrade RECAT Sites to Phase II ■ Amend Standards for Simultaneous Independent Approaches, Triples ATL, IAD (2 sites) ■ Amend National Standards for VNAV for Simultaneous Independent Parallel Approaches (Removed) ■ Wake RECAT IAD (Delayed to FY2018)
Surface	<ul style="list-style-type: none"> ■ Identify forum for ongoing industry engagement with FAA throughout TFDM Deployment ■ Industry to provide 11 Data Elements (i) ■ Lead Operator, American Airlines to provide data for Charlotte Surface Departure Management (i) ■ Flight Operators Conduct Outreach to Facilitate Data Sharing participation from Additional Flight Operators (i) ■ Data Sharing: Airports Supplement Actual In Block Time (AIBT), Actual Off Block Time (AOBT), Actual Take Off Time (ATOT), Actual Landing Time (ALDT) (i) (Removed)
Data Comm	<ul style="list-style-type: none"> ■ Departure Clearance Tower Services for: Dallas Love (DAL), Kansas City (MCI), Chicago Midway (MDW), Dallas FTW (DFW), Chicago O'Hare (ORD), Raleigh/Durham (RDU), Minn-St. Paul (MSP), Milwaukee (MKE), San Juan (SJU) (9 sites) ■ Implementation Framework for non-VHF Digital Link (VDL) Mode 2 media (Pre-Implementation) ■ Implementation Framework for non-VHF Digital Link (VDL) Mode 2 media (i)
PBN	<ul style="list-style-type: none"> ■ TBFM GIM-S (3 sites) ■ TBFM IDAC (3 sites) ■ Metroplex -- ATL ■ EFVS Final Rule ■ Advanced RNP ■ Metroplex -- CLT ■ Metroplex Design Start -- LAS ■ Advanced RNP Advisory Circular 90-105; Assess Potential Demo Sites; Design Guidance ■ New Vertical Guidance Criteria and Location Guidance

	<ul style="list-style-type: none"> ■ EoR SEA Review ■ Feasibility Assessment: EoR RF (DEN, IAH) and EoR TF (CLT, ATL, SDF, DFW) ■ Boeing to provide data on their utility and usability GYY (i) ■ JetBlue to provide data on their utility and usability BOS (i) ■ RNP 1 Departures BUR ■ RNP 1 Departures SNA ■ EoR RF Duals and Triples ■ PBN Lead Operator Roles Redefined (i) ■ EoR Independent/Dependent Operations Capacity Analysis ■ EDO Feasibility Assessment ■ EoR if 5.9.7 is Achieved and Applicable, Begin EoR Operations with Modified RF Procedures at DEN (Remove not applicable) ■ EoR Site Selection Decision (Rescheduled to FY2018)
Total	<p>52/52 Commitments in FY2017 Actual/Plan</p> <p> ■ Completed Late ■ Completed ■ Delayed ■ Removed ■ Rescheduled </p>

Appendix B: NextGen Priorities Annual Plan October 2017 Incorporated Updates

Note: All dates are in calendar year.

Focus Area	No.	Implementation / *Pre-implementation Commitment	Original Date	Change Date	Rationale
Data Comm	1	Tower Services Waterfall - Additional towers (RSW, CMH, CHS, BUF, RNO, ADW, and VNY) scheduled to all be operational by September 2019	N/A	Q3 2019	These additional seven sites were added due to early program implementation successes.
MRO	2	Amend National Standards for Vertical Navigation (VNAV) for Simultaneous Independent Parallel Approaches	Q3 2017	Removed	This milestone was removed per June 28, 2017, NAC decision not to proceed with a national standard.
	3	Wake RECAT	IAD Q3 2017 LAS, PHX Q4 2017	IAD, LAS, PHX Q3 2018	Operational impacts on air traffic at facilities. Examine breaking out B757 into separate category.
Surface	4	Data Sharing: Airports Supplement Actual In Block Time (AIBT), Actual Off Block Time (AOBT), Actual Take Off Time (ATOT), Actual Landing Time (ALDT)	Q3 2017	Removed	Correction to plan: Airports to Provide Data was added in error as milestone.
	5	Data Sharing: Airports Additional Airports Providing Data	Q2 2018	Removed	Airport data sharing will be part of next steps with the four pilot airports.

PBN	6	EoR - RF/TF to xLS Safety Analysis	Q2 2018	Dependent on Milestone No. 10	These milestones are now dependent on the Analysis of Aircraft Equipage Inventory and subsequent actions. (Milestone No. 10)
	7	EoR - Dependent Operations Safety Assessment	Q1 2019	Dependent on Milestone No. 10	
	8	EoR - Site Selection Decision	Q3 2017	Dependent on Milestone No. 10	
	9	EoR - Feasibility Assessment: Concurrent use of Track to Fix and Radius to Fix	Q4 2017	Dependent on Milestone No. 10	
	10	Aircraft Equipage Inventory - Analyses of aircraft equipage inventory, VNAV causal factors, equipage strategy, and identification of subsequent actions	N/A	Q2 2018	Equipage inventory and causal analyses needed to develop an understanding of VNAV implications, mitigations, and way forward.

Appendix C: Cost

Redacted

Appendix D: [Goals and Priorities for Improving Operations in the Northeast Corridor, Phase One, pp. 238-253](#)

Appendix E: [NextGen Priorities Joint Implementation Commitments for Improving Operations in the Northeast Corridor, Phase Two - Interim Report](#)