The fourteenth meeting of the NextGen Advisory Committee (NAC) was held on February 26, 2015 at
the Headquarters of Delta Air Lines, 1010 Delta Blvd, NYC Room, Atlanta, GA. The meeting
discussions are summarized below.

List of attachments:

- Attachment 1 - Attendees
- Attachment 2 - Presentations for the Committee meeting - (containing much of the detail
  about the content of the material covered)
- Attachment 3 - Approved October 8, 2014 Meeting Summary
- Attachment 4 - NAC Chairman’s Report
- Attachment 5 - FAA Report from The Honorable Michael Whitaker, FAA Deputy Administrator
- Attachment 5 - FAA Metrics Point Paper, Agenda Item 8

Welcome and Introductions

RTCA President, Margaret Jenny opened the meeting by introducing the new NAC Chairman, Richard
Anderson (Chief Executive Officer, Delta Air Lines) and seven new Committee members:

- Pete Bunce, President & CEO of General Aviation Manufacturers Association
- Paul Cassel, Senior VP Flight Operations of FedEx Express, representing the Cargo Airline
  Association
- Tim Canoll, President of Air Line Pilots Association
- Chip Childs, President of SkyWest, Inc., representing the Regional Airline Association
- Carl D’Alessandro, VP & General Manager Civil Business Unit, Harris Corporation
- Ryan Hartman, President and CEO, Insitu
- Per Noren, VP Customer Solutions, Digital Aviation of The Boeing Company

All NAC members and attendees from the general public were asked to introduce themselves
(attendees are identified in Attachment 1).

Chairman Anderson welcomed the NAC members and others in attendance and provided
introductory remarks explaining that the NAC is made of individual interest, but collectively reflects
the broader interests of the aviation community. The Committee has achieved consensus on many
tough issues and the FAA is doing a good job but it is important now to focus on successfully
implementing the four priority areas – safely and in consideration of everyone’s needs and interests. He also noted the importance of achieving measurable benefits as the FAA faces pressures to advance NextGen implementation in light of the pending reauthorization legislation.

**Designated Federal Official Statement**

In his role as the DFO, The Honorable Michael Whitaker (FAA Deputy Administrator) read the Federal Advisory Committee Act notice, governing the open meeting.

**Approval of October 8, 2014 Meeting Summary**

Chairman Anderson asked for consideration of the written Summary of the October 8, 2014 meeting. By motion, the Committee approved the Summary (Attachment 3) contingent on a revision being circulated as requested by NAC member, Lilian Ryals, The MITRE Corporation. The revision related to the section describing the independent assessment of the FAA’s progress on NextGen. The summary was approved pending final review by the Committee of the revision. The report will also be posted for the NAC members.

**Approval of Revised Committee Terms of Reference**

By motion, the Committee approved a revised Terms of Reference to reflect changes in Committee leadership, the addition of UAS to the Committee membership and the revised structure of the NAC supporting entities.

**Chairman’s Remarks**

The following is a summary of the remarks made by Chairman Anderson (Attachment 4):

He stated the importance for the industry and the FAA of being on-time, and on-budget in implementing the NextGen Integration Working Group (NIWG) recommendation. Developing metrics on measuring the effects of the implementations will also provide the information necessary to help communicate success.

He stated that the NAC has made progress in the collaborative efforts between the industry and the FAA on recommendations related to implementing NextGen, and together, real results need to be delivered. He continued that we must build on the work of the NAC done under the leadership of past Chair, Bill Ayer. Chairman Anderson stated that since assuming responsibility for the Committee, he has had several meetings with Mike Whitaker, and has reached out to many of the members of the Committee. He said the success of the NAC is due to the drive of the people working to achieve the mission and goals of NextGen: improved safety, increased capacity and efficiency, and reduced environmental impact. He thanked the FAA for placing their confidence in the NAC and for working in a transparent and collaborative manner. He told the NAC members that we must always stay focused on the delivery of solutions that work for all of the aviation constituents around the table.
Chairman Anderson reviewed the goals of the NAC:

- Delivering the Next Gen Priorities Joint Implementation Plan on time, on spec, and on budget - achieving all FAA and industry milestones and commitments for the four focus areas of capabilities that Bill specified in his letter of 10/14/2014 to the FAA.
- Achieving measurable improvements in the performance of the NAS, attributable to the implementation of the NextGen capabilities in the four focus areas to which both FAA and operators will attest.
- Forging consensus among the key FAA stakeholders (all represented on the NAC) on issues of critical importance to the industry and FAA.
- Gaining more followers once the benefits and positive attributes are fully delivered and widely acknowledged. Nothing short of achieving the benefits and communicating those to stakeholders will lead to future investments and the acceleration of new benefits.
- Continuing to tackle the difficult and relevant issues facing the FAA and its stakeholders.

Chairman Anderson then discussed specific goals for the NAC in 2015:

- As requested by the FAA, identify 4-5 top-level metrics to measure benefits (air carriers and business/general aviation) attributable to the implementation of NextGen capabilities, as FAA Deputy Administrator Mike Whitaker committed in his January 28, 2015 letter;
- Establish a method of continuing the constructive collaboration on the NIWG focus areas between the FAA and industry on a rolling 3 year progression; and
- Consider additional topics for the NAC to provide constructive industry consensus recommendations, including the integration of UAS into the NAS (large and small); rationalization of NAS infrastructure both manned and unmanned; and other challenging policy issues facing the FAA as it works to modernize the air traffic management system that could be more easily solved with a single voice from industry.

FAA Report

Mr. Whitaker thanked Chairman Anderson for hosting the meeting and taking on the Chairman's role. The following are highlights from the verbal report--details are contained in the official FAA report (Attachment 5).

Recognition of Dennis Roberts – Mr. Whitaker recognized Dennis Roberts in his new role as the FAA Southern Regional Administrator, based in Atlanta, GA. He stated that Mr. Roberts played an important role by serving as Director of Airspace Services for ATO Mission Support since 2010 and worked on several PBN-related NAC Taskings.

NextGen Priorities – Mr. Whitaker explained that the NextGen Priorities Joint Implementation Plan was delivered to Congress on October 17, 2014. This incorporated the NAC’s NextGen Integration Working Group Final Report as an appendix. The FAA has delivered on 11 out of 11 commitments in the 2014 calendar year, and is on target to deliver three commitments at the end of the first quarter.
of this year. Mr. Whitaker also recognized the industry for meeting its 2014 commitment, with the Performance Based Operations Aviation Rulemaking Committee (PARC) completing their review of the data link recording rule and delivering their recommendations in November 2014. It was reported that the FAA had completed its review of the recommendations, and that on February 25, the FAA’s new policy was published in the Federal Registry.

John Hickey, FAA Deputy Assistant Administrator for Aviation Safety, explained the FAA’s action on a change that now applies the data recorder rule, in most cases, only to new aircraft manufactured after the December 6, 2010 effective date of the rule. Mr. Hickey commented that there was recognition that the recorder rule was an inhibitor on moving forward with DataComm and that this helps the industry equip older aircraft.

Mr. Whitaker commented that the work on NextGen Priorities has been very rewarding for the FAA and has set a new standard for how the FAA is working together with the NAC to move NextGen forward. He also thanked Steve Dickson for his leadership of the NAC Subcommittee and welcomed Tim Campbell as the new Co-Chair.

**ADS-B Equip 2020 Mandate** – Mr. Whitaker reviewed the FAA industry Call to Action, intended to gather together all industry stakeholders in order to assess progress on being fully equipped with ADS-B Out by January 1st, 2020. He noted that from this event, the Equip 2020 initiative, led by NextGen Institute’s General Hoot Gibson, has made progress in 3 areas:

1. General aviation--a marked uptick in equipage since October and cost reductions in equipment.
2. Airline equipage--an agreement was reached to allow air carriers with 1st and 2nd generation receivers to continue their use until 2025.
3. The production of an equipage tracking database.

A Committee member raised the need to determine how ADS-B can provide a privacy capability that is a key issue to business aviation. This allows aircraft operators to block the broadcast of specific “N” numbers at their request and is required under law to be provided by the FAA.

Chairman Anderson asked the Committee if everyone was in agreement among all operators to adhere to the 2020 ADS-B mandate. Overall, the Committee members (and operator representatives in attendance at the meeting) expressed agreement, but offered the following caveats and comments:

- It would be helpful to educate pilot members of Congress on the industry position on ADS-B implementation.
- A low cost solution is needed for light general aviation (GA) aircraft.
- The privacy function capability must be resolved.
- Similar to light GA, a low cost solution is needed for Unmanned Aircraft Systems (UAS).
- The DoD has the challenge of equipping approximately 15,000 aircraft.
Chairman Anderson then suggested the formation of an ADS-B Ad Hoc group to report back to the Committee at the June meeting, on what implementation commitments are necessary for the 2020 ADS-B implementation mandate. General Tuck, USAF, will chair the Ad Hoc. Members will include:

a. AOPA - Mark Baker (Melissa Rudinger)
b. UAS – Ryan Hartman (Insitu)
c. NBAA – Ed Bolen
d. Regional Airlines – Chip Childs (SkyWest)
e. Avionics Provider – Carl Esposito (Honeywell)
f. While not a member of the Ad Hoc, coordinate with Gen Marke Gibson, NextGen Institute, Equip 2020 initiative

Ms. Jenny volunteered RTCA to serve as secretary for the group.

**McKinsey Benefits Study** – Mr. Whitaker reported that the FAA had engaged with McKinsey & Company in order to better understand the benefits Next Gen is providing to the aviation industry. The study covered major categories of carrier benefits. Mr. Whitaker noted that the FAA had also held discussions with Delta, Alaska, United, Southwest, American, jetBlue, and UPS. A visit had also been scheduled with FedEx and Republic. These airlines expressed:

- Appreciation and the need for an open airline-specific dialogue with the FAA on NextGen;
- Challenges with previous programs;
- Commitment to equip for the ADS-B 2020 mandate; and
- Specific, near-term improvements in order to maximize benefits.

Mr. Whitaker informed the Committee that the next steps for the FAA regarding NextGen benefits and carrier alignment would be follow-up discussions with airlines and to update the FAA’s NextGen strategy.

**Houston, North Texas and DC Metroplex** – Lynn Ray, Vice President Mission Support, Air Traffic Organization, updated the Committee on the following Metroplex implementations:

Houston—the FAA launched 61 new flight routes in and out of the Houston area airports in the spring of 2014, utilizing Time Based Flow Management capabilities. Post-implementation data analysis showed an annual savings of $6 million in fuel consumption. Ms. Ray noted that in December 2014, the FAA had added Wake ReCat capability into Houston Intercontinental and Hobby airports.

North Texas—in September 2014, the FAA implemented 80 new NextGen procedures (separating departure and arrival flows), leading to increased safety in the North Texas region. The FAA continues to link North Texas to the rest of the country’s airspace. Ms. Ray also commented that the FAA is currently conducting a post-implementation analysis in the region.
DC Metroplex—Ms. Ray highlighted that the FAA’s initiative in this region would implement 50 new procedures staged over eight publication cycles to be completed by June 25th, with a projected savings of $6.8 million in fuel costs.

A Committee member asked the industry and the FAA to do a better job of communicating PBN efforts, suggesting that including community outreach as a part of PBN projects would be a way forward. Mr. Whitaker also stated that an important issue is the challenge to identify and articulate the benefits, and Chairman Anderson commented that identifying clear metrics will help. A Committee member offered that reporting on the five greatest successes would help in this effort.

Finding a better way to communicate environmental reductions in carbon dioxide emissions under PBN procedures could help counter noise concerns, according to another Committee member. An airport operator Committee member commented that communicating with individuals in the areas where aircraft fly over is crucial stating that there is a need to clearly articulate what the procedures mean to them and being aware that departures have the most impact. They also suggested that a more robust community outreach, sharing of information, converting data to identify the tradeoffs. “Fear of the unknown” and the lifestyles of the community are crucial. Echoing an earlier comment, a Committee member stressed the need for connecting the CO2 reduction and noise, along with better outreach.

The discussion concluded with the observation that change in flight patterns is a huge issue for the airports and the communities affected. This includes the need for fair and shared impact.

En Route Automation Modernization (ERAM) – Teri Bristol, Chief Operating Officer, Air Traffic Organization, provided a brief description of the importance of ERAM for the nation’s airspace system, noting that the transition represents one of the largest automation changeovers the FAA has ever undertaken. All 20 En Route centers have reached Initial Operating Capability (IOC) and 16 of the 20 centers have declared an Operational Readiness Date (ORD). Ms. Bristol highlighted that with the remaining 4 centers declaring ORD by the end March, the FAA anticipates the completion of the ERAM deployment.

Future Airport Capacity Task (FACT) 3 Report – Eddie Angeles, Associate Administrator for Airports, reported that in late January, the FAA had issued its latest FACT report. The report identified airports at risk for significant delays and congestion through 2020 and 2030. For the rest of the decade, most of the U.S. hub airports have sufficient capacity except NYC area airports, ATL, PHL, and SFO. It was also reported that new runways and NextGen improvements are needed to improve efficiency at capacity-constrained airports.

Small Unmanned Aircraft Systems (UAS) Proposed Rule – Mr. Whitaker informed the Committee that the FAA issued a UAS proposed rule earlier in the month. The FAA has continually made an effort to integrate UAS safely into the U.S. airspace, and the proposed rule outlined the framework governing the operation of UAS weighing less than 55 pounds.

CatEx 2 Decision – Mr. Whitaker reported that the FAA has decided to implement (with two modifications) the NAC’s recommended net noise reduction methodology to implement the Categorical Exclusion. The first modification was that the FAA would evaluate net changes in noise,
and not net changes in the affected population to be more consistent with the statute. The second modification was that the FAA would rule out using categorical exclusion if noise increased significantly. Mr. Whitaker pointed out that only the industry provided positive comments on this categorical exclusion and net reduction methodology. All other comments were negative and highlighted the problem the FAA is experiencing with opposition to PBN procedures that shift noise over communities. The noise issue will be discussed more in depth at the June NAC meeting.

**SESAR/NextGen collaboration** – Mr. Ed Bolton, FAA Assistant Administrator, NextGen, and Mr. David Batchelor, SESAR, provided a brief update on the areas of collaboration between the FAA and SESAR. Mr. Batchelor noted that SESAR is moving forward with the deployment manager organization that will coordinate implementation. The NAC is being examined as an example of how to resolve the various issues and balance interests in implementation air traffic control modernization in Europe. The FAA-SESAR “State of Harmonization” report has been completed and will be made available to the Committee members for additional details on the harmonization efforts between the US and Europe.

**Reauthorization and Capital Investment Plan (CIP)** – Mark House, FAA Chief Financial Officer, reported the current situation of the CIP, informing the Committee that the 2016-2020 CIP targets are significantly higher than the 2015 targets. It was noted that while these targets allow for more investment, they still do not fund looming out-year needs. Furthermore, while the NAC and the NIWG helped redefine near-term NextGen priorities, Congress historically has appropriated funds at levels that are lower than the targets. Mr. House also highlighted the elements of the CIP: Activity 5 and 6 (22%), Legacy (55%), NextGen Complete Commitments (16%) and NextGen Trade Space (7%).

**Atlanta Multiple Runway Operations Implementation Experience**

Joe Post, FAA, and Mark Hopkins, Delta Air Lines, provided a joint presentation on runway Wake Recategorization (Wake ReCat) in Atlanta.

Chairman Anderson, on a very positive note, noted that six more arrivals and departures an hour offers a huge economic and customer service benefit, adding capacity, improving the passenger experience by reduced missed connections and missed luggage. He noted further that the benefits from Wake ReCat do not require technology investments.

Committee members made the following additional comments related to Wake ReCat and described the benefits being achieved through implementation:

- Translating into what people care about
- Reducing block time and helping with maintenance
- Similar benefits are being experienced at other airports where wake ReCat is being implemented
- Illuminating other challenges that will surface as a result of implementation
- Emphasizing that NextGen is happening, “real life, and tangible stuff”
- NextGen is increasing capacity and making the most of what we have
- Wake ReCat brings huge capacity and efficiency gains – track it, implement it, build the case for continued investments
Wake ReCat is important for JFK and other airports as well.

Open Discussion: NextGen Implementation

Ed Bolton and Joe Post provided an overview of the FAA’s proposal (Attachment 5 - FAA Metrics Point Paper, Agenda Item 8) for identifying metrics that can determine the benefits of implementing NextGen capabilities in the four priority areas.

Chairman Anderson opened the discussion by observing that there is a great deal of existing data and there shouldn’t be an attempt to reinvent data, but leverage what is being collected and is available.

Mr. Bolton picked up on the comment and stated that the NAC should, (1) look at what is currently being measured and evaluate benefits using metrics that are already being tracked; (2) including those called for by Congress in Section 214 of the 2012 FAA Authorization legislation; and (3) enable evaluation the implementation for the four NIWG priority areas.

In response to a question from a Committee member about defining specific goals to achieve associated with each metric (e.g. reduce city-air average flying time by x%), Mr. Post and Mr. Bolton explained that while the FAA has recommended metrics for each capability area, there were no targets identified. Another Committee member pointed out that evaluating the implications on operations can affect how to best communicate the benefits.

Mr. Bolton’s suggestion that a small team be assembled to work out a proposal for specific metrics for the NAC to consider at the next meeting was echoed by others on the Committee.

Committee members observed that metrics should showcase economic benefits. Another Committee member stated that capacity/efficiency measurement must incorporate business aviation into the impact assessment to ensure that implementation of new capabilities does no harm to this segment of aviation. It was also stated that metrics should be outcome driven, illustrating the economic value of operational capability implementation, using data we can collect.

The Committee members agreed that the goal is not to create new metrics but leverage or substitute those congressionally required, as well as those already recommended by the NAC. An FAA Committee member also commented that the previous recommendation related to city pairs should be considered when looking at the impact of implementation at airports.

A Committee member pointed out the need for a metric that can measure the impact on General Aviation. FAA reminded the Committee that NextGen Priorities were established with a consensus of all stakeholders. It was observed that measuring the impact on NAS performance of NextGen operational capabilities is critical, and the intent of the industry is not to attempt to highlight deficiencies but to highlight successes and learn from results that are less than what was aimed for, enabling constant improvement. The Committee generally agreed that the metrics can address GA.

A DoD representative reminded the Committee that access to airspace is essential.

In response to the question of whether one metric should be identified for each of the four priority areas, Committee members commented that:

- A single metric can apply across multiple capabilities.
A metric should enable clear tracking of commitments
Metrics need to correlate to success and be simple to understand

A question was raised related to taxi time being a metric for DataComm, and a conversation between the members and an FAA SME occurred with an overall observation that it is important to the program, but that there may be additional metrics that help identify the benefits from DataComm.

The Committee provided the following guidance as the NACSC takes on the Task of providing recommendations for NAC consideration. Metrics should start with those provided by the FAA and be:

- Outcome-focused
- Leverage existing metrics
- capable of being measured against tangible goals
- applicable to all stakeholders including DoD, GA, and air carriers

It was also noted that multiple metrics may be needed to assess the impact for a single capability area, although the overall number of metrics should be 4-5.

Assumptions include: (1) maximizing use of existing metrics, (2) leveraging mandated metrics as well as earlier NAC recommendations (e.g., city-pairs), (3) finding a simple set that communicates clearly, (4) focusing scope on measuring NextGen Priorities (5) being outcome-focused, (6) being amenable to setting goals, and (7) recognizing access to airspace by the military is still of utmost importance.

**NextGen Integration Working Group**

Since the Committee approved the recommendations for implementing NextGen capabilities in the four focus areas of DataComm, Multiple Runway Operations, Performance-Based Navigation and Surface, the FAA and industry leadership of the NIWG have developed the means for oversight & monitoring, and tracking the progress in the four areas. Ed Bolton, Teri Bristol, John Hickey, Steve Dickson (Delta Air Lines) and Melissa Rudinger (AOPA) worked collaboratively to institute this process.

Overall comments from the leaders were that there was good collaboration and a tremendous amount of work done by the FAA and the industry, all with a focus on the delivery of capabilities. An industry representative observed that the on-going work will present opportunities in the future, because of the dynamic nature of the process.

**Focus Area Reports**

The Industry Leads and the FAA Subject Matter Experts (SMEs) for each of the four focus area teams presented a report on the consensus recommendations.

**Surface and Data Sharing**

- FAA SMEs: Lorne Cass (ATO), Nick Lento (NG)
- Industry Leads: Rob Goldman (Delta Air Lines), Steve Vail (Mosaic ATM, Inc.)

The SMEs and the Team Leads reviewed the recommendation that includes airport participation in Collaborative Decision Making and access to surface data; Airport Surface Departure Metering;
provides real-time traffic management updates to New York Air Traffic Control Towers, flight and aircraft operators; and utilizes Earliest Off Block Time (EBOT) for short range flights.

In response to a question about the scalability of EOBT using the test at Atlanta (ATL) where the first boarding pass scanned triggers the request, the FAA representatives explained how it works and how this could be used beyond this test program.

The FAA reported on the Advanced Electronics Flight Strips (AEFS) assessment for New York area airports and the selection of Newark Airport as an implementation site. Rebecca Guy, the Program Manager for AEFS, explained that the agency’s review indicated that the unique Departure Spacing Program (DSP) system that improves the efficiency of departure traffic and automates inter-facility coordination of schedules and clearances is a major encumbrance to moving forward at the New York airports. Current tower operations require controllers to scan flight strips to enter aircraft location into DSP. The FAA plans to incorporate an AEFS capability into the Terminal Flight Data Manager (TFDM) acquisition set for 2019-2020.

In response to a question from a Committee member, Ms. Guy commented that Newark Airport was chosen for implementation based on funding the cost of providing the capability and the sustainability for future operations. A Committee member also noted that Teterboro Airport was also an important location for surface management capabilities.

DataComm-enabled Controller-Pilot DataLink Communications (CPDLC) and pre-departure clearances

- **FAA SMEs**: Jessie Wijntjes (ATO), Paul Fontaine (NG)
- **Industry Leads**: Dan Allen (FedEx Express), John O’Sullivan (Harris Corporation)

Mr. Wijntjes discussed the FAA program for Surface DataComm pre-departure clearances and En route Controller-Pilot DataLink Communications (CPDLC).

Mr. Allen emphasized the work of the NAC in obtaining relief from the Data Recorder rule discussed earlier in the meeting. He thanked the FAA for addressing the financial impediment for airlines to equip aircraft with DataComm technology.

A Committee member asked if the FAA program is harmonized with the DataComm program that is being implemented in Europe. In response, Mr. Allen commented that in the long-term they are harmonized (Baseline 2), but the FAA (via FANs) and Europe (via Baseline 1) are taking different paths to get that point.

**Performance-Based Navigation (PBN)**

- **FAA SMEs**: Josh Gustin (ATO), Donna Creasap (NG)
- **Industry Leads**: Gary Beck (Alaska Airlines), Steve Fulton (Fulton Navigation)

Mr. Gustin and Ms. Creasap discussed the following recommendations for PBN:

Based on the assessment conducted of Las Vegas PBN initiatives, the FAA has determined to move forward utilizing a Metroplex process. The timeline will depend on funding, staffing, etc. A study team will be established to determine the scope. A NAC member commented that air traffic controllers had specific concerns about previous PBN efforts in Las Vegas, emphasizing the need for collaboration.

Related to increasing the use of PBN procedures, another Committee member expressed the need for broadcasting the availability of PBN procedures on the Automatic Terminal Information Service (ATIS) to help educate pilots and raise awareness across the aviation community. In response, an FAA official noted that the Agency has been doing this, balancing the amount of information that needs to be provided on the ATIS and also relates to the goal of moving towards a “PBN NAS”.

A discussion ensued about the need to bring the various elements of PBN together and identify benefits, institute the procedures as part of an overall need for “change management” and follow an integrated view of how the capabilities in the four areas are integrated and how PBN fits into this bigger picture. Mr. Whitaker commented that the NAC’s role is to support and advise the FAA in moving ahead on PBN.

An FAA Committee member discussed how to move ahead in the bigger, strategic view of what capabilities are delivered, according to a pre-determined timing. This may also require the issue of rationalizing the infrastructure of the NAS, to which a Committee member assessed that the NAC could be helpful in identifying the criteria to guide decisions. Chairman Anderson observed the need for a longer term integrated plan for rationalization.

**Closely Spaced Parallel Runways Multiple Runway Operations**

- FAA SMEs: Tom Skiles (ATO), Paul Strande (NG)
- Industry Leads: Glenn Morse (UAL), Jon Tree (The Boeing Company)

The leaders quickly summarized efforts related to Wake Recategorization since many of the areas were discussed during the morning committee brief on Atlanta Wake ReCat. A recommendation was made that the FAA determine locations where Wake Recategorization efforts should be accelerated (or implemented at additional sites) based on quantifying the benefits of increased throughput.

**Recap of Meeting and Anticipated Issues for NAC consideration and action at the next meeting**

The NAC Secretary summarized the following actions items from the meeting:

1.) Creation of an ADS-B Ad Hoc group to report back to the Committee at the June meeting with suggested mitigation strategies for challenges to implementation of the 2020 ADS-B implementation mandate for general aviation, UAS and DOD.
2.) General Tuck, USAF, will chair the Ad Hoc. Members will include:
a. AOPA - Mark Baker (Melissa Rudinger)
b. UAS – Ryan Hartman (Insitu)
c. NBAA – Ed Bolen
d. Regional Airlines – Chip Childs (SkyWest)
e. Avionics Provider – Carl Esposito (Honeywell)
f. Coordinate with Gen Marke Gibson, NextGen Institute, Equip 2020 initiative

3.) Performance Metrics for the 4 Focus Areas – RTCA will develop a Terms of Reference in coordination with FAA and NACSC leadership that will frame the development of a recommendation for consideration by the Committee at the June meeting. The work will identify a high level suite of existing metrics that measures the effect on NAS performance attributable to the deployment of the capabilities in the following:
   o DataComm
   o Improved Multiple Runway Operations (IMRO)
   o Performance-Based Navigation (PBN)
   o Surface

4.) Provide a copy of the FAA-SESAR “State of Harmonization” report to the Committee members.

5.) Request the FAA to determine locations where Wake Recategorization efforts should be accelerated (or implemented at additional sites) based on quantifying the benefits of increased throughput.

6.) Circulate a revised version of the October 8, 2014 Meeting Summary as requested by NAC member, Lilian Ryals, The MITRE Corporation, related to the section describing the independent assessment of FAA’s progress on NextGen. The summary was approved pending final review by the Committee of the revision. The report will also be posted for the NAC members.

7.) Examine future opportunities for community outreach as emphasized in the PBN Blueprint report, approved by the Committee at the October 2014 meeting. This also includes publicizing the availability of PBN procedures on the ATIS.

Other business

No other business was raised by the Committee members.

Adjourn

By motion, Chairman Anderson concluded the meeting of the Committee at 3 p.m.

Next Meeting

The next meeting of the NAC is June 5, 2015 in Washington, DC.
Attendees:
February 26, 2015 Meeting of the NextGen Advisory Committee
Atlanta, GA

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<td>ALPA</td>
</tr>
</tbody>
</table>

Committee members names appear in italics.
Hamiel, Jeff  
*Metropolitan Airports Commission*

Hartman, Ryan  
*Insitu Inc.*

Hickey, John  
*Federal Aviation Administration*

Hill, Fran  
*Lockheed Martin*

Hopkins, Mark  
*Delta Air Lines*

House, Mark  
*Federal Aviation Administration*

Huegel, Carol  
*Federal Aviation Administration*

Iversen, Jennifer  
*RTCA, Inc.*

Jenny, Margaret  
*RTCA, Inc.*

Johnson, Pearlis  
*Federal Aviation Administration*

Kast, Christian  
*United Parcel Service*

Lento, Nick  
*Federal Aviation Administration*

Litaj, Silvie  
*EUROCONTROL*

Martin, Jeff  
*JetBlue Airways*

Morse, Glenn  
*United Air Lines*

Narvid, Colonel Juan  
*DoD Policy Board on Federal Aviation*

Noren, Per  
*The Boeing Company*

Pekny, Ron  
*American Airlines*

Perrone, Mike  
*Professional Aviation Safety Specialists*

Pierce, Brad  
*NOISE*

Poet, Joseph  
*Federal Aviation Administration*

Ray, Elizabeth Lynn  
*Federal Aviation Administration*

Rinaldi, Paul  
*National Air Traffic Controllers Association*

Roberts, Dennis  
*Federal Aviation Administration*

Rudinger, Melissa  
*Aircraft Owners and Pilots Association*

Ryals, Lillian  
*The MITRE Corporation*

Skiles, Tom  
*Federal Aviation Administration*

Speir, Ken  
*Delta Air Lines*

Staigle, Tom  
*Delta Air Lines*

Swayze, Rich  
*Federal Aviation Administration*

Sypniewski, Jessica  
*Federal Aviation Administration*

Teel, Brandi  
*RTCA, Inc.*

Thornton, Gayle  
*Federal Aviation Administration*

Treakle, Coletta  
*Department of Transportation OIG*

Tuck, Giovanni  
*U.S. Air Force*

Van de Walker, Wayne  
*Department of Transportation OIG*

Wei, Victoria  
*Federal Aviation Administration*

Whitaker, Mike  
*Federal Aviation Administration*

White, Beth  
*Federal Aviation Administration*

Wijntjes, Jesse  
*American Airlines*

Will, Brian  
*City of College Park, GA*

Young, Gary  
Committee members names appear in italics.
Welcome to the Meeting of the NextGen Advisory Committee

February 26, 2015
Delta Air Lines, Inc.
Atlanta, GA

Welcome & Introductions

Richard Anderson, NAC Chairman
PUBLIC MEETING ANNOUNCEMENT
Read by: Designated Federal Official Michael Whitaker
NextGen Advisory Committee
February 26, 2015

In accordance with the Federal Advisory Committee Act, this Advisory Committee meeting is OPEN TO THE PUBLIC.

Notice of the meeting was published in the Federal Register on:

**January 30, 2015**

Members of the public may address the committee with PRIOR APPROVAL of the Chairman. This should be arranged in advance.

Only appointed members of the Advisory Committee may vote on any matter brought to a vote by the Chairman.

The public may present written material to the Advisory Committee at any time.

---

Review and Approval of:

October 8, 2014 Meeting Summary
Revised Committee Terms of Reference
Chairman’s Report

Richard Anderson, NAC Chair

NAC Agenda Topics

- FAA Report
- Atlanta MRO/Recat Benefits Story
- Open Discussion: What does NextGen success look like?
- NextGen Integration Working Group
  - Leaders Oversight: Monitoring and Tracking Process
  - Surface Team
  - Data Comm Team
  - PBN Team
  - Multiple Runway Ops Team
DISCUSSION

FAA Report
NextGen Advisory Committee
The Honorable Michael Whitaker
Deputy Administrator
NAC Discussion

Five Year Capital Investment Plan (CIP) 2016 - 2020

Presented to: NextGen Advisory Committee
By: Mark House, CFO FAA
Date: February 26, 2015

Current Situation

• 2016 CIP five year targets are significantly higher than the 2015 targets
  + Approximately $200M higher per year
• Higher targets allow for more investment but still do not fund looming out-year needs
  + e.g. Replacement of major air traffic control facilities
• NAC and NIWG have helped refine near term NextGen priorities
• Congress could choose to appropriate funds at levels that are different than the targets
February 2015 President’s Budget FY16 Five YR CIP
Is a Substantial Improvement Over the FY15 CIP

Note: “Fire Hose” Order of Appearance

Elements of the CIP

- Activity 5 and 6 – PCB&T, Subscription Services 22%
  - Essentially fixed
- Legacy (Sustain NAS Systems & Facilities) 55%
  - ERAM, TAMR, power systems, ARTCC and Tower Mods, ATC system SLEPs, radio replacements, N90 replacement
  - Must be maintained to preserve integrity of the NAS
- NextGen Complete Commitments 16%
  - NVS, DataComm S1P1 and S1P2 Initial Enroute, PBN, CATM WP 2-3, SWIM 1, 2a
  - Should be completed to honor commitments,
    - Programs already ongoing, mature, and under implementation
- NextGen Trade Space 7%
  - Non baselined programs and pre-implementation portfolios
  - Offers most realistic discretionary alternatives
## CIP Five Year Breakdown

<table>
<thead>
<tr>
<th>Category</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18</th>
<th>FY19</th>
<th>FY20</th>
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</thead>
<tbody>
<tr>
<td>Activity 5 and 6 (PCB&amp;T/Subscription Services)</td>
<td>636.0</td>
<td>630.0</td>
<td>634.6</td>
<td>630.0</td>
<td>647.9</td>
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<tr>
<td>Legacy (Sustain NAS Systems &amp; Facilities)</td>
<td>1,580.0</td>
<td>1,584.5</td>
<td>1,561.5</td>
<td>1,542.7</td>
<td>1,505.5</td>
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<tr>
<td>NextGen - Complete Commitments</td>
<td>445.9</td>
<td>316.7</td>
<td>262.7</td>
<td>183.7</td>
<td>237.7</td>
</tr>
<tr>
<td>NextGen - Trade Space (Portfolios and NextGen Programs pre FID approval)</td>
<td>193.1</td>
<td>380.9</td>
<td>511.3</td>
<td>643.6</td>
<td>638.9</td>
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<tr>
<td>Current CIP Totals</td>
<td>2,855.0</td>
<td>2,912.0</td>
<td>2,970.0</td>
<td>3,000.0</td>
<td>3,030.0</td>
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</table>

## NextGen Trade Space Strategy

- Invest incremental trade space funding in high priority NextGen programs that have pending FIDs
  - Allows completion of the highest value NAC Tier 1 priorities through 2020, with potential for some additional commitments
  - Allows some investments to be preserved in the five year CIP trade space, but at reduced levels until estimates can be matured
    - Many of the programs still pre-FID have not completed business cases, and funding needs are still being determined
  - Continues NextGen Pre-Implementation / Solution Set funding
- Committing to FIDs during uncertainty over Appropriations for FY16 and beyond increases the severity of impacts if funding evaporates
DISCUSSION

Atlanta Multiple Runway Operations Implementation Experience
Wake RECAT at Atlanta:

Post-Implementation Analysis

NextGen Advisory Committee Meeting
February 26, 2015

Summary

• Wake RECAT was implemented at ATL on June 1, 2014
• Analyses conducted since then by Delta Air Lines, MITRE, and FAA indicate significant operational improvements for all aircraft operators
  • Arrival throughput increased
  • Flight time in TRACON decreased
  • Taxi-out time decreased
  • Schedule reliability improved
• Approx. $13.9-18.7 million in annual OpEx savings for Delta Air Lines
Wake RECAT Background

- Wake Re-categorization (RECAT) refines the separation minima for specific airports as specified in the Air Traffic Controller Handbook (FAA Order 7110.65)
  - Both final approach and departure spacing are affected
- The five existing aircraft weight classes are being replaced by six new classes
- No aircraft equipage or pilot training is required
- We expect some airports to see a decrease in average inter-arrival and inter-departure spacing during peak periods, and thus an increase in throughput
- Wake RECAT has been implemented at MEM, SDF, CVG, ATL, and IAH

Wake RECAT at ATL

- Wake RECAT was implemented at ATL on June 1, 2014
- Runway 08L/26R closed from Sept. 15 through Oct. 14 2014
  - This period should be excluded from any empirical analysis
- About 6 months of operational data is now available for analysis
- Delta Air Lines, Program Office, MITRE, and ANG-5 have conducted a post-implementation analysis
These metrics used for financial analysis

### Metrics

- Wake Turbulence Recategorization
- Called Rate Guidance
- Average Daily Capacity
- Inter-Arrival Spacing
- Inter-Departure Spacing
- Departure Throughput
- Arrival Throughput
- Taxi-Out Time
- Flight Time in TRACON

### Called Rate Guidance

On Oct. 16, 2014 (3½ months after RECAT implementation) the guidance for setting called rates was changed.

#### Arrivals (ops/hr, old/new)

<table>
<thead>
<tr>
<th></th>
<th>Trip Arrivals</th>
<th>Dual arrivals</th>
<th>Trip Arrivals Sharing 10/28 with Departures</th>
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</thead>
<tbody>
<tr>
<td>Visuals Approaches</td>
<td>126/132</td>
<td>96/100</td>
<td>112/116</td>
</tr>
<tr>
<td>Visual &amp; ILS Approaches II/VIV</td>
<td>112/118 118/124</td>
<td>86/90</td>
<td>104/108</td>
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<tr>
<td>ILS Approaches</td>
<td>104/110</td>
<td>76/80</td>
<td>92/96</td>
</tr>
<tr>
<td>Low IFR ILS Approaches</td>
<td>92/96</td>
<td>68/72</td>
<td>80/84</td>
</tr>
</tbody>
</table>

Source: Delta Air Lines

#### Departures (ops/hr, old/new)

<table>
<thead>
<tr>
<th></th>
<th>Dual Departures</th>
<th>Trip Departures</th>
<th>Trip Departures Sharing 10/28 with Arrivals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Conditions</td>
<td>East/West</td>
<td>East/West</td>
<td>East/West</td>
</tr>
<tr>
<td>IMC</td>
<td>112/118</td>
<td>104/108</td>
<td>134/138/130/134</td>
</tr>
<tr>
<td>LIMC</td>
<td>90/94</td>
<td>86/90</td>
<td>118/122/114/118</td>
</tr>
<tr>
<td></td>
<td>80/84</td>
<td>76/80</td>
<td>110/114/106/110</td>
</tr>
</tbody>
</table>

Source: Delta Air Lines
Average Daily Capacity

• Average Daily Capacity (ADC) is the sum of Airport Acceptance Rate (AAR) and Airport Departure Rate (ADR), and indicates the number of combined operations the facility can accommodate.
• ADC increased from 220 ops/hr prior to the change in called rate guidance to 235 ops/hr after (a 6.8% increase)
• About two-thirds of this increase is in AAR, and one-third in ADR

Arrivals

Inter-Arrival Spacing

• Change in spacing varies depending on aircraft types
• The major effect at ATL is for aircraft following heavies and B757s
• Spacing behind heavies and B757s has decreased, as expected
Arrivals (cont.)

Overall peak arrival throughput has increased by 4-5%

Peak daily arrival throughput on runways 26R and 27L has increased by about 5%
Arrivals (cont.)

Flight times within the TRACON for arrivals have decreased on average 29 sec. compared with June-Dec. 2013
- 95% confidence interval is 26-32 sec.

• Source: FAA/ANG-5
• Flight times from 40 nmi to touchdown
• Runway closure period (Sept. 15 – Oct. 14 2014) observations have been excluded

Departures

Inter-Departure Spacing

- Spacing behind heavies and B757s has decreased, as expected

Distribution of Inter-Departure Times for Aircraft Following Heavies
Runway closure excluded

Distribution of Inter-Departure Times for Aircraft Following B757s
Runway closure excluded
Departures (cont.)

Overall peak daily departure throughput has decreased

- Less reliance on Runway 28 for departures
- Peak Runway 28 usage for departures has dropped from 6.4 to 2.0 per 15 minute period since the called rates were updated in October
- Trade-off between departure throughput and taxi-out time

Source: MITRE

Departures (cont.)

Peak daily departure throughput on each of the two principal departure runways has increased from 3-5%

Source: MITRE
Taxi-out times have decreased by 1.1-1.6 min. year over year

- Any increase in taxi-out time associated with decrease in departure throughput is more than compensated for by shorter taxi paths

### Taxi-Out Time, All Operators

- Source: FAA/ANG-5
- Sept. 15 - Oct. 14 observations have been excluded
- Mean difference = 1.1 min.

### Time in Departure Queue, Delta Airlines (ML and DC)

- Source: Delta, MITRE
- Sept. - Oct. observations have been excluded
- Mean difference = 1.6 min.

### Delta Schedule Reliability

- Source: Delta
Using the observed flight and taxi time reductions, we have estimated the annual OpEx savings for Delta Airlines:

- Assumes 219,000 operations per year (0600-1000 local)

<table>
<thead>
<tr>
<th></th>
<th>Low Estimate</th>
<th>High Estimate</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Time Savings (sec/op)</td>
<td>OpEx Savings (M)</td>
</tr>
<tr>
<td>Airborne Savings</td>
<td>26</td>
<td>$6.6</td>
</tr>
<tr>
<td>Taxi Savings</td>
<td>66</td>
<td>$7.2</td>
</tr>
<tr>
<td>Total OpEx Savings</td>
<td>$13.9</td>
<td></td>
</tr>
</tbody>
</table>

Summary:
- Arrival throughput at ATL has increased by 4-5%
- This has led to a decrease in avg. flight time in the TRACON for arrivals of approx. 29 seconds
- Overall departure throughput has not increased
- But less reliance on Runways 10/28 for departures has led to a decrease in avg. taxi-out time of 1.1 - 1.6 minutes
- Delta schedule reliability at ATL (D0 and A0) has markedly improved
- Approx. $13.9-18.7 million in annual OpEx savings for Delta Air Lines
Wake Categories – Old and New

Current Weight Classes

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>A380</th>
<th>B757</th>
<th>Large</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>A380 Heavy</td>
<td>6.0</td>
<td>5.0</td>
<td>4.0</td>
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<tr>
<td>B757 Heavy</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Large</td>
<td>4.0</td>
<td>4.0</td>
<td>3.5</td>
<td>4.0</td>
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<tr>
<td>Small</td>
<td>3.5</td>
<td>4.0</td>
<td>4.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

RECAT Phase I Categories

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>A380</th>
<th>B757</th>
<th>Large</th>
<th>Small</th>
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</thead>
<tbody>
<tr>
<td>Leader</td>
<td>MRS</td>
<td>MRS</td>
<td>MRS</td>
<td>MRS</td>
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<tr>
<td>Follower</td>
<td>MRS</td>
<td>MRS</td>
<td>MRS</td>
<td>MRS</td>
</tr>
</tbody>
</table>

No Change
- Separation Decrease for Entire Category
- Separation Decrease for Part of Category
- Separation Increase for Entire Category
- Separation Increase for Part of Category
18 percent of ATL’s fleet mix is affected

B757 (Cat D) Separation is Reduced with RECAT

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Heavy</th>
<th>B757</th>
<th>Large</th>
<th>Small</th>
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<tbody>
<tr>
<td>ATL</td>
<td>5%</td>
<td>13%</td>
<td>81%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: MITRE
Open Discussion:
What does NextGen success look like?
Background

• Both government and industry wish to ascertain if the implementation of NextGen capabilities specified in the Joint Implementation Plan has improved NAS performance

• The NAC and Congress have previously specified performance metrics for NextGen

• FAA routinely computes the recommended metrics (and many others) and maintains several related Web sites

• While we calculate many metrics, detailed analysis is necessary to distinguish NextGen-related performance changes from other confounding factors

Some Recent Metrics History

• Sept. 2011 - NAC recommends 37 metrics (October 2010 FAA tasking)

• Feb. 2012 - Reauthorization bill requires FAA to report 12 NextGen metrics

• March 2012 - FAA launches NextGen Performance Snapshots (NPS) Web page

• Oct. 2012 - NAC recommends six high-level metrics for capturing key NextGen impacts

• June 2013 - FAA responds, adding 12 Reauthorization metrics and City Pairs

• FAA currently tracks 17 metrics on the NPS and 26 on the Harmonized Metrics Web pages

• Scores of additional metrics are available on the FAA Aviation System Performance Metrics (ASPM) and DoT TranStats Web sites
Recommendation

- Continue Airline/FAA collaboration on post-implementation operational analysis to quantify performance impacts of NextGen improvements

- One core metric for each Joint Implementation Plan focus area:
  - IMRO – Average Daily Capacity
  - PBN – Average Flight Distance\(^1\)
  - Data Comm – Average Taxi-Out Time
  - Surface – Dispersion\(^2\) of Block Time

- Restrict the scope of these metrics to airports or airspace where capabilities are being implemented

\(^1\)From a specified distance (e.g., 200 nmi) to the airport
\(^2\)Difference between 15\(^{th}\) and 85\(^{th}\) percentiles
NextGen Integration Working Group (NIWG)
FAA and Industry Leaders Oversight, Monitoring and Tracking Process

FAA & Industry Leads:
- Ed Bolton (ANG)
- Teri Bristol (ATO)
- John Hickey (AVS)
- Steve Dickson (Delta Air Lines)
- Melissa Rudinger (AOPA)
NextGen Priorities: Recent Accomplishments

- Congressional Reporting
  - October 8, 2014: RTCA’s NextGen Integration Working Group Final Report
  - October 17, 2014: NextGen Joint Implementation Plan, outlining milestones and commitments of near-term capabilities
  - December 11, 2014: NextGen Priorities Joint Implementation Plan Oversight Process

- Monitoring Progress
  - Internal NextGen Integration Working Group meetings held twice a month
    - Status updates on four focus areas
    - Deep dives into potential risk areas as necessary
  - Program managers conduct risk assessments and identify risk mitigations

NextGen Integration Work Group (NIWG)

<table>
<thead>
<tr>
<th>Team Leads</th>
<th>SME Leads</th>
</tr>
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<tbody>
<tr>
<td>FAA</td>
<td>Josh Gusth (ATO)</td>
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<tr>
<td></td>
<td>Ed Bolton (ANG)</td>
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<td>John Hickey (AVI)</td>
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<td>Steve Dickson (Delta Air Lines)</td>
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<td>Melissa Riedinger (AAI)</td>
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<td>PDN</td>
<td>Gary Beck (Delta Air Lines)</td>
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<td>Steve Fulton (Alaska Aviation)</td>
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<td>Multiple Runway Operations</td>
<td>Glenn More (United Airlines)</td>
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<td></td>
<td>Jon Tree (Boeing/Jeppesen)</td>
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<tr>
<td>Surface</td>
<td>Rob Goldman (Delta Air Lines)</td>
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<td></td>
<td>Steve Vail (Alaska ATM)</td>
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<tr>
<td>Data Comm</td>
<td>Dan Allen (FedEx Express)</td>
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<tr>
<td></td>
<td>John O’Halleran (Harris Corporation)</td>
</tr>
</tbody>
</table>

Communications: Shirley Miller (ATO); Willy Harris (AAI); Victoria Vale (ANG); Anna Allen (ANG)
Surface Team

Industry Leads and FAA SMEs:
Rob Goldman/Steve Vail
Lorne Cass/Nick Lento

NIWG Surface Group

Background Approach

- Identify tangible solutions that yield measurable operational benefits to NAS User in the 2015-2017 timeframe
  - Focus on the traveling public
  - Deploy in locations that have an operational need (congestion and delays)
  - Deliver predictability into the NAS

- FAA Program/Tool Agnostic
  - Deliver capability in near-term
  - Leverage existing FAA capabilities, processes, procedures and programs
  - Build off of Collaborative Decision Making (CDM) organization and tie the Surface to NAS
    - Traffic Flow Management on the ground concept
    - Recognize Airports as a key participant in process

- Continuation of RTCA Task Force 5 Recommendations and other industry developments since 2009
  - ASDE-X and ASSC data available via SWIM
  - Formation of FAA Surface Operations Office
  - Collaborative development and validation of the FAA’s Surface CDM Concept of Operations (ConOps)
Information Sharing

Key to successful management surface programs is information sharing

Collaborative Decision Making (CDM)
Since the mid 1990’s
Originally didn’t involve airports due to concentration on air traffic management

Vision of the RTCA Surface Work Group
All operational parties must collaborate (share information and cooperative decision making)

RECOMMENDATIONS

• Recommendation 1: Airport Collaborative Decision Making Membership & Improved Data Availability
  • Improved data sharing through CDM Membership for Airports
  • Availability of TBFM, TFMS, and NTML data to CDM Members via SWIM
  • Simplified process and instructions for accessing SWIM data
  • Metadata

• Recommendation 2: Airport Surface Departure Metering
  • Establish an initial airport surface departure metering capability that reflects the FAA’s Surface CDM Concept of Operations (CONOPS)
  • Implement at suitable airport – “If you've seen one airport, you've seen one airport”

• Recommendation 3: Provide Real-Time Traffic Management Updates to NY ATCTs, Flight & Airport Operators
  • Provide AEFS to NYC ATCT’s
  • Provide NY ATCT controllers with real-time changes to route and other traffic management initiative (TMI) information via electronic flight strips
  • Enable NY ATCTs to better manage airport surface traffic, reduce taxi delays and increase predictability.
  • Opportunity to break the DSP choke hold on NY

• Recommendation 4: Utilize Earliest Off Block Time (EOBT) or Equivalent Data Element to Reduce TBFM Delays for Short Range Flights
  • Departure Readiness to become basis for TBFM wheels-off time assignment for short-range flights inbound to metering locations
  • Wheels-off assignment process is initiated while flight is still at the gate, as opposed to waiting until initial radio contact with ATC, which often occurs after taxiing to “the spot”
**Surface Objectives**

- Increase data sharing between FAA & Industry using *System Wide Information Management* (SWIM) data exchange capability
- Improve predictability of airport surface movements, network reliability
- Increase surface efficiency to better support FAR 117 and ‘Tarmac Rule’
- Reduce taxi time, fuel burn, and environmental impact

---

**Surface Commitments FAA is On Track to Deliver**

- Advanced Electronic Flight Strips (AEFS) for Select New FAA Towers
- Surface Visualization Tool (SVT) for associated FAA TRACONS
- Airport Surface Surveillance Data Available to Operators via SWIM
- FAA Traffic Flow and Time Based Metering Data via SWIM
- FAA to Ingest 11 new operator provided CDM Surface data elements
- Feasibility Assessment of TFDM Program Departure Management (Metering)
- Feasibility Assessment of AEFS Electronic Flight Data for NY ATC Towers
Real Time Data Exchange is the Foundation of Surface Efficiency & Benefits All Stakeholders

**Flight Operators**
- Improved Predictability
- More timely delay information to customers
- Maintain Network Reliability
- Less taxi out time / fuel burn

**ATC**
- Improved Predictability
- Fewer unnecessary Traffic Management Initiatives
- Fewer aircraft in the movement area and departure queue
- Coordinated departure restriction management
- Fewer unnecessary restrictions

**Airport Operators**
- Improved Predictability
- Reduced Engine Noise
- Improved community relations

**Traveling Public**
- Improved Predictability
- More timely delay information

AEFS data in the ATCT provides real-time updates for controllers

AEFS data in the ATCT provides real-time updates for controllers

---

**Surface – Implementation**

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<tbody>
<tr>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
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</tbody>
</table>

- Advanced Electronic Flight Strips (AEFS)
- Standard Air Traffic Management System (STAMS)
- Surface Movement and Area Navigation (SMAN)
- Surface Movement Information Distribution to Users via SAE (SMID)
- Traffic Flow Management System (TFMS) Data Sharing via ATM Data Link (ADL)
- FAA to Ingest 11 Data Elements via TFMS Update

Click [here](#) to view on NPS
Surface –
Pre-Implementation

- Feasibility Assessment for Terminal Flight Data Manager (TFDM) Program Deployment Management
- Feasibility Assessment for Electronic Flight Data for New York Advanced Electronic Flight Strip (AEFS)

All Dates Are in Calendar Years

Completed  On Track  Delayed

Surface -
Industry

- Industry to Provide 11 Data Elements
- Airport Operations as Collaborative Decision Making (CDM) Participants
- Simplicity Application for System Wide Information Management (SWIM) Data

All Dates Are in Calendar Years (CY)

Click [here](#) to view on NPS
Surface
Departure Management Feasibility Assessment

• Feasibility Assessment in progress
  + To be complete by March 2015

• Assessing ability to implement the departure management capability at a location by 2017
  + Ensures support for the Terminal Flight Data Manager (TFDM) program

Advanced Electronic Flight Strips
Feasibility Assessment for New York

• AEFS is a system built by the FAA to validate requirements for the Terminal Flight Data Manager (TFDM) system
  + Deployed to Phoenix and new towers (Cleveland - FY2015, San Francisco - FY2016, and Las Vegas – FY2016)

• Feasibility assessment examined technical and operational considerations associated with introducing AEFS software and hardware into the New York tower operation.
  + Including analysis of Departure Spacing Program (DSP) - a system that improves the efficiency of departure traffic and automates inter-facility coordination of schedules and clearances.
    + Current tower operations requires controllers to scan flight strips to enter aircraft location into DSP.
Advanced Electronic Flight Strips
Feasibility Assessment for New York

To assess feasibility, the FAA performed the following activities:

• Newark, LaGuardia and JFK operational procedure collection/data gathering
• Newark, LaGuardia and JFK site survey
• AEFS-DSP Demos and Technical Interchange Meetings
• Newark DSP operations observation

Deployment of AEFS is not feasible without integration of DSP and AEFS:
FAA explored options for integration to modify the AEFS system

1) Replicate the DSP scanner in the tower – minimal impact
2) Replace full DSP functionality in the tower – large impact

Additional Operational Feasibility Issues:

• The ability of AEFS to support the operations in the New York area, which are more operationally complex than Phoenix and Cleveland
• Impact of an integrated AEFS-DSP on the routine workload of the tower air traffic controllers is yet to be determined
• Workforce acceptance – addressing operationally suitability concerns

Conclusions of the AEFS Feasibility Assessment for New York

• FAA completed a feasibility assessment in December 2014
  - It is feasible to deploy AEFS to New York
• Current challenges are funding, staffing/resource availability, deployment of other priority NextGen activities, site readiness and mitigating integration issues
• The FAA is working to add an additional AEFS site to meet this priority in the New York Area at Newark Tower (EWR)
  - Coordinate the electronic delivery of all flight plan information in the cab (Tower flight strips and DataComm pre-departure clearances)
  - Integrating DSP by replicate the DSP scanner in the tower
• Deployment planned for 4th Quarter CY2015
DISCUSSION

Data Comm Team

Industry and FAA Leaders:
   Dan Allen/John O'Sullivan
   Paul Fontaine/Jesse Wijnjjes
Data Communications Capability

- Provides data communications services between pilots and air traffic controllers, supplementing existing voice communications capabilities.
- Provides a data link between ground automation systems and flight deck avionics for air traffic control (ATC) clearances, instructions, traffic flow management, and flight crew requests.
- Controllers will be able to deliver instructions with a push of a button and without the need to utilize voice frequencies.
- Enables the transmission of complex instructions to be quickly and correctly loaded into an aircraft’s flight management system, upon acceptance by the pilot.

Benefits of Data Comm

- Reduce communication time between controllers & pilots
- Improve re-routing around weather and congestion
- Increase flexibility and accommodation of user requests
- Enable NextGen Initiatives & Trajectory-Based Operations

Throughput/Efficiency

- Delay
- Fuel Burn

Controller Pilot/Efficiency

- Communication Time
- Controller Workload

Environmental

- Emissions (CO₂)

Safety

- Read/hear back errors
- Loss of Comm events

Enable NextGen Initiatives & Trajectory-Based Operations
Ground Delay Savings  
Revised Departure Clearance  
Airport Information Flow Initiatives  

Aircraft Fuel Savings  
Direct Reroutes  
Crossing Restrictions  
Tailored Arrivals

**Benefits of Data Comm**

- Increased Safety – Reduced Operational Errors  
  - Clearer, enduring communications  
- Aircraft Fuel Savings  
  - Direct Reroutes  
  - Crossing Restrictions  
  - Tailored Arrivals

**Seamless Uplink of Flow Initiatives / TFM**
- Reroutes – “Go” Button  
- Comm Transfer Workload Reduction

**En Route Delay Savings and Increased Controller Productivity**

- More Efficient Delivery of Clearances  
  - Allows Uplink of More Complex Clearances  
  - En Route Notifications

**Segment 1 Phase 1**
- Tower Services

**Segment 1 Phase 2**
- En Route Services

**Segment 2**
- Advanced Services

**FAA Commitments**
- FID for Initial En Route Services to all 20 CONUS Air Route Traffic Control Centers (2014) – COMPLETED OCTOBER 2014  
- Full Services FID planned for Q4 CY2015  
- Extended Departure Clearance Operations Trials at Memphis and Newark (2016)  
- Departure Clearance (DCL) Tower services to 56 airports (2015-16) – Challenge Dates

**Data Communications (Data Comm)**

Provides data comm services between pilots and air traffic controllers as well as enhanced air traffic control information to airline operations centers

**FAA Commitments**
- FID for Initial En Route Services to all 20 CONUS Air Route Traffic Control Centers (2014) – COMPLETED OCTOBER 2014  
- Full Services FID planned for Q4 CY2015  
- Extended Departure Clearance Operations Trials at Memphis and Newark (2016)  
- Departure Clearance (DCL) Tower services to 56 airports (2015-16) – Challenge Dates
Data Communications NIWG Commitments

FAA

- Trials have been extended through January 2016
- Completed FID for Initial En Route Services – October 29, 2014
- FID for Full En Route Services – Q4 CY2015

Click [here](#) to view on NPS

Data Communications – Tower Implementation

<table>
<thead>
<tr>
<th>Keysite (3 Towers)</th>
<th>Site Name</th>
<th>Site ID</th>
<th>ARTCC ID</th>
<th>IOC Date</th>
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<tbody>
<tr>
<td>1: Salt Lake City</td>
<td>SLC ZLC Q3 2015 New Orleans MSY ZHU Q1 2016 Louisville SDF ZID Q1 2016 Newark EWR ZNY Q1 2016</td>
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<td>2: Houston Int'l IAH ZHU Q3 2015 Austin AUS ZHU Q1 2016 Indianapolis IND ZID Q1 2016 JFK ZNY Q1 2016</td>
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<td>Los Angeles LAX ZLA Q1 2016 Memphis MEM ZME Q2 2016 Teterboro TEB ZNY Q1 2016</td>
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<td>Las Vegas LAS ZLA Q1 2016 Nashville BNA ZME Q2 2016 Westchester HPN ZNY Q2 2016</td>
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<td>Ontario ONT ZLA Q2 2016 Jacksonville JAX ZJX Q2 2016 Bradley BDL ZBW Q2 2016</td>
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<td>San Francisco SFO ZOA Q2 2016 Orlando MCO ZJX Q3 2016 Detroit DTW ZOB Q3 2016</td>
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<td>Phoenix PHX ZAB Q3 2016 Palm Beach PBI ZMA Q3 2016 Dulles IAD ZDC Q3 2016</td>
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<td>Albuquerque ABQ ZAB Q3 2016 St Louis STL ZKC Q4 2016 Reagan DCA ZDC Q3 2016</td>
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<td>Seattle SEA ZSE Q3 2016 Kansas City MCI ZKC Q4 2016 Raleigh/Durham RDU ZDC Q4 2016</td>
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<td>Dallas Love DAL ZFW Q4 2016 Minn-St Paul MSP ZMP Q4 2016 Chicago Midway MDW ZAU Q4 2016</td>
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<td>Dallas FTW (x2) DFW ZFW Q4 2016 Chicago O'Hare ORD ZAU Q4 2016</td>
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</tbody>
</table>

- Waterfall reflects challenge schedule dates (calendar year)
  - Baseline schedule Tower deployment dates are 2016-2019
- New York Center (ZNY) and Boston Center (ZBW) towers swapped in waterfall based on stakeholder request
- Salt Lake City Initial Operating Capability (IOC) pushed from Q2 to Q3 2015 to de-conflict with ERAM baseline waterfall completion priorities

Click [here](#) to view on NPS
**Program Services Roadmap**

<table>
<thead>
<tr>
<th>CY</th>
<th>14</th>
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<th>18</th>
<th>20</th>
<th>22</th>
<th>24</th>
<th>26</th>
<th>28</th>
<th>30</th>
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</thead>
</table>

Segment 1 Phase 1 - Tower Service

Segment 1 Phase 2 - En Route Services

- Baseline

To be Baseline Q42015

Avionics

Ground System

Segment 2 - Advanced Services

**Controller-Pilot Data Link (CPDLC) Departure Clearances (DCL)**

- Controller-Pilot Data Link (CPDLC) Departure Clearances (DCL)
- Transfer of Communications
- Initial Check-In
- Altimeter Settings
- Attitudes
- Airborne Reroutes / Go Button
- Controller Initiated Routes (Limited)
- Direct-to-Fix (Limited)
- Crossing Restrictions (Limited)

**Initial En Route Services**

- Tailored Arrivals
- Holding Instructions
- Advisory Messages
- Speed and Headings
- Beacon Codes
- Stuck Microphone
- Controller Initiated Routes (Full)
- Direct-to-Fix (Full)
- Crossing Restrictions (Full)

**Full En Route Services**

- FANS 1/A+ over VDL-2 transitioning to ATN
- Future Air Navigation System (FANS)
- Aeronautical Telecommunications Network (ATN)
- 4D Trajectories
- Dynamic RNP
- Adv Flt Int Mgt with ATC winds
- D-TAXI

**Data Comm Status – TDLS/Towers**

- Completed Tower Data Link Services (TDLS) V11 Tech Refresh – all TDLS locations

- TDLS V12 developmental releases being delivered to support integration and test activities at the Tech Center
  - Supports Formal Integration Test (IT) from December 2014-April 2015
  - Supports Formal Operational Test and Evaluation (OT&E) scheduled for February-March 2015
  - Additional releases planned to support key site operations and the implementation waterfall

- TDLS V12 with Data Comm turned off scheduled for operational use - April 2015
Data Comm Status – ERAM/ARTCCs

• Tower Service (S1P1) software development complete
  • En Route Automation Modernization (ERAM) Data Comm release went operational with Data Comm turned off – August 2014
  • Conducted initial testing of ERAM Data Comm release with Data Comm turned on at Salt Lake City Center (ZLC) – October 27-31
  • Successfully completed ERAM transition testing January 20, 2015
  • Working with ERAM Program Office to package fixes necessary to support Data Comm keysite IOCs

• Completed hardware installation, integration, and test at Salt Lake City (ZLC) and Atlanta (ZTL) – June 2014

• Working with Air Route Traffic Control Centers (ARTCC) personnel to ensure routes will load into the flight deck avionics

• Started engineering efforts on ERAM enhancements to support En Route (S1P2) Initial Services
  • Developed and coordinated ERAM future release packaging, cost, development, test, training, and deployment strategies

Data Comm Status – Network Service

• Data Comm Network Service (DCNS) provides air-ground VHF Data Link Mode 2 (VDL-2) communications
  • DCNS Functional Qualification Test (FQT) successfully completed – November 6, 2014
  • First DCNS Service Volume delivered and operationally enabled November 17, 2014 at Atlantic City (ACY) to support test activities
    • DCNS services to be activated at Salt Lake City (SLC) Key Site - March 2015
    • Ordered initial services for first 25 sites of the implementation waterfall

• FAA Telecommunications Infrastructure (FTI) will be used to provide ground-ground communications
  • Required services have been ordered
  • Service cutover at Salt Lake City (ZLC) in January 2015
    • Service cutover at Atlanta (ZTL) will be in April 2015
Data Comm Status – Integration

• Performed early risk reduction demonstrations and coordination with field personnel / subject matter experts throughout 2014
  • Included reviews of ERAM, TDLS, Training, Documentation, and Operational Test and Evaluation (OT&E) Dry-runs

• Conducting system-of-systems integration and test activities at Tech Center
  • Began Formal Integration and Test (IT) December 2, 2014
    • Formal IT scheduled through April 2015 to test system of system robustness to support deployment (i.e., failure recovery, performance, and stability)
  • Operational Test and Evaluation (OT&E) scheduled for February-March 2015

• Initiated site engagements activities with key sites
  • Conducting recurring meetings with key site personnel
  • 50% of the sites have been briefed on the program to date

Data Comm Status – Air Carrier Coordination

• Continuing the execution of the avionics incentive
  • Eight air carriers signed Memorandums of Agreement (MOA) to participate in the initiative
  • Equipped aircraft are starting to be delivered into NAS operations through the initiative

• Coordinating with air carriers to support test and deployment
  • Remote testing with select operators and designated aircraft
  • Interface testing with Airline Operation Centers (AOC) dispatch automation systems

• Working with the operators on activities necessary to support Data Comm deployment
  • Operational procedures
  • Aircrew training
  • Ops approval
• PARC CWG delivered Recorder Rule Recommendation – December 2014

Click here to view on NPS

Eight Operators + USAF are actively participating in FAA Data Comm
• Focusing activities on Key Sites Salt Lake City (SLC), Houston Hobby (HOU), and Houston Intercontinental (IAH)
  • Five Operators + USAF are supporting Key Sites in Summer 2015

### Operator Status

<table>
<thead>
<tr>
<th>Key Site Status</th>
<th>282 (6 Operators)</th>
<th>1 New + 4 Revisions</th>
<th>2 Existing + 2 Modifications + 1 New</th>
<th>3 Functioning + 2 Modifications</th>
<th>4 Participants + USAF</th>
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</thead>
<tbody>
<tr>
<td>Aircraft Equipped</td>
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<tr>
<td>Operational Approval</td>
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<tr>
<td>Training Development</td>
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<tr>
<td>Dispatch Systems Upgraded</td>
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<tr>
<td>Testing Operations with FAA</td>
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</tbody>
</table>

### Pacing Items

- Equipped Aircraft
  - Number of “Data Comm Verified” equipped aircraft to date is lower than anticipated
  - Complicated implementation details and company approval processes
  - Recorder rule uncertainty
- Operational Approval Documentation
- Operators engaged with Ops Inspectors
- Trained Flight Crews
- Training programs in development – engaged with FAA test systems to validate
- Dispatch System Preparations
- Ongoing – testing with FAA
Issues Impacting Operators

- Publication of Revised FAA Advisory Circular and Ops Spec
  - Operators are mitigating by having one-on-one discussions with their inspectors

- Boeing 737 Flight Management System (FMS)
  - Boeing B737 FMS Delivery Schedule
    - U11: May 2015
    - U12: Dec 2015
    - Airway to Airway Update: Boeing including mitigation in U12

- Feasibility Assessment of VDL Mode 0 in En Route Airspace
  - Agenda item on January 2015 PARC CWG
  - Special PARC CWG Work Group established

Datalink Recorder (DLR) Rule

- Cost to retrofit aircraft to record data communications messages on pre-2010 aircraft is reducing industry participation
  - Applicability of rule has caused confusion - allowance to “activate” data link without triggering recording rule
  - RTCA NextGen Implementation Working Group (NIWG) identified this as a significant concern for the data communications program

- Performance-Based Aviation Rulemaking Committee (PARC) developed recommendations and submitted to FAA for action in November 2014
  - Recommended FAA clarify the applicability of the rule
  - Recommended FAA revise rule so that they are not applicable to retrofit aircraft
DISCUSSION

PBN Team

Industry Leads and FAA SMEs:
Gary Beck/Steve Fulton
Donna Creasap/Joshua Gustin
Performance Based Navigation (PBN)

Provides a basis for designing and implementing automated flight paths, airspace redesign and obstacles clearance

Commitments

- Develop a National Standard for EoR Widely Spaced Operations (2017)
- Complete an EoR RNP Track-to-Fix Safety Assessment (2015)
- Complete 3 additional Metroplex sites: Northern California (2015), Charlotte (2017), and Atlanta (2017)
- Complete a Las Vegas Basin Assessment (2014)

ELSO Departures

Reduced Divergence Concept

- Equivalent Lateral Spacing Operation Standard (ELSO)
- Capitalizes on improved navigational precision of (PBN) operations
- Enables reduced-divergence departure operations
- Departure Operations*
  - Today:
    - Conventional
    - PBN
    - Lateral spacing
    - Conventional 15-degree divergence
  - ELSO:
    - Equivalent Lateral spacing
    - PBN
    - ELSO divergence
- Reduced Divergence Benefits
  - Procedure design options
  - Increased departure efficiency
ELSO Operations
Hartsfield-Atlanta International Airport

Before / After Departures

Example of EoR Curved path approach

ATC issues and pilots fly the same track every time, predictable and stabilized
STAR connects to all approaches, continues the 3 degree glideslope, no level-offs or vectors
RNP Established Widely-Spaced Operations
without NTZ - RNP/RNP

EoR Track-to-Fix of Fly-by Approaches
Safety Analysis
## Performance Based Navigation - Implementation

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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<tr>
<td></td>
<td>Q3</td>
<td>Q4</td>
<td>Q1</td>
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<tr>
<td>Metropolitan - Northern California</td>
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<td>Metropolitan - Atlanta</td>
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<td>Metropolitan - Charlotte</td>
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<tr>
<td>Established on Required Navigation Performance Authorization Required</td>
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<tr>
<td>(EnR RNP AR - Widely Spaced Operations)</td>
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</table>

- **Implementation**
- **On Track**
- **Delayed**

All dates are in calendar years.

Click [here](NPS) to view on NPS.

## Performance Based Navigation - Pre-Implementation

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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</thead>
<tbody>
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<td></td>
<td>Q3</td>
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<td>Q1</td>
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<tr>
<td>Equivalent Lateral Spacing Operations (ELSO) National Standard</td>
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<td>Established on RNP (EnR), Track-to-Fix (TF) &amp; Fly-by Approach Safety Analysis</td>
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<tr>
<td>Single Site Assessment of Las Vegas Basin</td>
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</tbody>
</table>

- **Completed**
- **On Track**
- **Delayed**

All dates are in calendar years.

Click [here](NPS) to view on NPS.
LAS Airspace Challenges

MILITARY AIRSPACE

MITRE Reports
- Review of the Preliminary Airspace Design for Ivanpah, Dec 2007
- Airspace Analysis of the SNSA Airspace Design Alternatives, Oct 2009
- Las Vegas Airspace Optimization, May 2011

FAA Airspace Agreements
- Las Vegas Airspace Optimization Design Implementation, Dec 2008
- Las Vegas Airspace Optimization Procedures, May 2010
- Las Vegas Optimization Airspace Study and Requirements Agreement Document, Feb 2011

FAA Reports
- Las Vegas Optimization EA/FONSI/ROD, Sep 2012
- Las Vegas Terminal Airspace Optimization Status Update Summary, Nov 2012
- Las Vegas Metropolitan Area Airspace Redesign Request, Feb 2013

Single Site Assessment: Las Vegas Basin Fact Finding

MITRE Reports
- Review of the Preliminary Airspace Design for Ivanpah, Dec 2007
- Airspace Analysis of the SNSA Airspace Design Alternatives, Oct 2009
- Las Vegas Airspace Optimization, May 2011

FAA Airspace Agreements
- Las Vegas Airspace Optimization Design Implementation, Dec 2008
- Las Vegas Airspace Optimization Procedures, May 2010
- Las Vegas Optimization Airspace Study and Requirements Agreement Document, Feb 2011

FAA Reports
- Las Vegas Optimization EA/FONSI/ROD, Sep 2012
- Las Vegas Terminal Airspace Optimization Status Update Summary, Nov 2012
- Las Vegas Metropolitan Area Airspace Redesign Request, Feb 2013
Airspace and procedure redesign activities in the Las Vegas Valley are a stakeholder priority. The goal was to document the status of the airspace and procedure redesign activities in Las Vegas. Design amendments need to be considered, circumstances have changed. Consensus did not exist regarding the best path forward. The FAA completed the assessment in December 2014.

Findings and Next Steps

- FAA plans to design and implement more efficient PBN procedures in the Las Vegas Valley:
  - As soon as practicable
  - Without impacting other high-priority NextGen activities
- FAA plans to utilize a Metroplex Process
- Next Steps for Las Vegas PBN implementation timeline depends on many factors:
  - Establishing funding
  - Planning staffing/resource availability
  - Deployment of other NextGen capabilities
  - Establishing study team to determine scope
DISCUSSION

Multiple Runway Operations Team

Industry and FAA Leaders:
Glenn Morse/Jon Tree
Tom Skiles/Paul Strande
Multiple Runway Operations (MRO)

Improves access to parallel runways, including those that are closely spaced, and can increase basic runway capacity and throughput by reducing separation between aircraft based on improved wake recategorization standards.

Commitments

- Wake Recategorization (2015-17)
- Apply Reduced Standards for Dependent Staggered Approaches to Runways Spaced <2500’ (FAA Order 7110.308) (2015)
- Dual Independent Parallel Operations (2014)
- Dependent Parallel Operations <3600’ (2016-17)
- Triple Independent Parallel Operations (2017)
- Dual Independent Parallel Operations with Offset (2016-17)
- Dependent Parallel Operations >4300’ (2017)
- FID for Wake Turbulence Mitigation for Departures (2015)
- Safety Analysis of FAA Order 7110.308 for additional airports (2014)

Multiple Runway Operations – Implementation

Click here to view on NPS
DISCUSSION
Summary of Meeting & Next Steps

DFO and NAC Chairman
Closing Comments

Michael Whitaker, FAA DFO
Richard Anderson, NAC Chairman
Other Business

Next Meeting
June 5, 2015
Washington, DC
Adjourn
Meeting Summary, October 8, 2014

NextGen Advisory Committee (NAC)

The thirteenth meeting of the NextGen Advisory Committee (NAC) was held on October 8, 2014 at the Headquarters of RTCA, 1150 18th Street, Suite 910, Washington, D.C. The meeting discussions are summarized below.

List of attachments:

- Attachment 1 - Attendees
- Attachment 2 - Presentations for the Committee meeting - (containing much of the detail about the content of the material covered)
- Attachment 3 - Approved June 3, 2014 Meeting Summary
- Attachment 4 - NAC Chairman’s Report
- Attachment 5 - FAA Report from The Honorable Michael Whitaker, FAA Deputy Administrator
- Attachment 6 – Recommendation “Blueprint for Success to Implementing Performance Based Navigation”
- Attachment 7 - Recommendation “NextGen Integration Working Group”

Welcome and Introductions

NAC Chairman, Bill Ayer (Airlines for America), called the meeting to order and welcomed the NAC members and others in attendance. All NAC members and attendees from the general public were asked to introduce themselves (attendees are identified in Attachment 1). Chairman Ayer recognized three new Committee members:

- Eddie Angeles, FAA Associate Administrator for Airports
- Brad Pierce, President of NOISE and member of Aurora City Council
- Brigadier General Giovanni Tuck from the United States Air Force

The Chairman also thanked the following outgoing NAC Members for their service on the Committee:

- Bob Gray, VP of Flight Operations at ABX Air - representative for the Cargo Airline Association
- Lee Moak, President of the Air Line Pilots Association
Designated Federal Official Statement

In his role as the DFO, The Honorable Michael Whitaker (FAA Deputy Administrator) read the Federal Advisory Committee Act notice governing the open meeting.

Approval of June 3, 2014 Meeting Summary

Chairman Ayer asked for consideration of the written Summary of the June 3, 2014 meeting. The Committee approved the Summary (Attachment 3) with no revisions or objections.

Chairman’s Remarks

Summary of the remarks made by Chairman Ayer (Attachment 4):

He stated that it was the thirteenth meeting of the NAC and he is enthusiastic about the tangible evidence of the planning and hard work of making recommendations on key issues, explaining that the NAC has been honest about what works and what doesn’t and reaching consensus without a lot of drama in most every area. One of the unifying themes has been the requirement for measurable benefits in order to justify investments.

Chairman Ayer emphasized that the most important contribution of the NAC is the prioritized areas for near-term implementation that provide significant benefit and will help build confidence for future investment. The joint industry/FAA teams provide tremendous potential as a model for the future.

He reflected the growing recognition from all across the industry, including Congress, of the value the NAC is creating and reviewed recommendations approved over the last two years.

Performance Metrics - NextGen is a good example of the principle, what gets measured gets managed. The NAC has addressed the performance metrics of NextGen through a series of reports from identifying data sources for fuel burn to identifying the key city pairs to measure NextGen implementation. These recommendations are being implemented by the FAA in partnership with many of the operators who took part in developing the recommendations.

Performance Based Navigation Procedures (PBN) - Beginning with Task Force 5, and throughout the life of the NAC, “NowGen”, i.e., delivering early, tangible benefits, increases the industry’s confidence in the NextGen program which will, in turn, lead to increased budgets. The NAC has focused on the increased use of PBN procedures to improve the safety and efficiency of the National Airspace System (NAS). This included work to identify barriers to implementing PBN, as well as developing mitigation strategies to overcome them. Briefings on the arrivals at Reagan and Phoenix, departures in Atlanta with the new Equivalent Lateral Spacing Operation (ELSO) procedures, new Denver procedures which required a lot of analysis to meet strict noise limits, the launch of the FAA Houston Metroplex initiative, and the greener skies procedures in Seattle. These presentations and discussions have provided real-world PBN implementation successes from aircraft operators, airports and the FAA.

Challenging Environmental Issues - a related effort that proves the value of leveraging the resources and the expertise of the aviation community, the FAA turned to the NAC for recommendations for
measuring impacts on a per flight basis—a complicated area where the expertise of the NAC was especially helpful.

Chairman Ayer commented that the unprecedented collaboration between the FAA and industry through the NAC has created momentum and we are indeed at a tipping point where we will gain more followers once the benefits and positive attributes are fully delivered and widely understood and help us overcome the barriers to success. The Committee has consistently identified the need to prioritize among the myriad NextGen operational capabilities and associated investments options. Getting a few big things done is better than a little progress on many different projects. That’s especially important with budget constraints and the need to demonstrate tangible achievements.

Chairman Ayer then reviewed the prioritization process that started in September 2013 with a set of recommendations of the top priorities for NextGen, a “landmark moment” in the life of the Committee – with the approval of a comprehensive set of Tier 1 and Tier 2 priorities for NextGen investments intended to help shape the future of NextGen and ensure its long term viability.

Outlining the action occurring at the meeting, he explained the Committee’s consideration of the NextGen Integration Working Group report covering four selected capabilities to identify what it takes to deploy them at specific sites over the next three years.

He thanked the industry leads and FAA subject matter experts for each focus area:

- Closely Spaced Parallel Runways/Multiple Runway Operations (Glenn Morse/Jon Tree and Tom Skiles/Paul Strande)
- DataComm-enabled Controller-Pilot DataLink Communications (CPDLC) and pre-departure clearances (Dan Allen/John O’Sullivan and Paul Fontaine/Jesse Wijntjes)
- Performance Based Navigation (PBN) (Gary Beck/Steve Fulton and Donna Creasap/Joshua Gustin)
- Surface and Data Sharing (Rob Goldman/Steve Vail and Lorne Cass/Nick Lento)

For the last eight months, the FAA’s Ed Bolton, (Assistant Administrator for NextGen), Teri Bristol, (Chief Operating Officer for the Air Traffic Organization), Peggy Gilligan, (Associate Administrator for Aviation Safety) and her Deputy, John Hickey, and their staffs have devoted significant resources to this effort. From the industry side, Steve Dickson (Delta Air Lines) and Melissa Rudinger (AOPA) have led the more than 100 industry volunteers that are engaged in the effort to identify the capabilities and milestones for the four focus areas.

He commented that the passion and enthusiasm from both the FAA and the aviation industry has been impressive. It demonstrates the value of the NAC and its ability to bring the aviation community together to develop consensus-based recommendations for the FAA.

He concluded that the NIWG has created a lasting legacy and model going forward for FAA-industry collaboration. We have an agreement to jointly hold ourselves accountable for the commitments being made, to track progress, and identify problems early and resolve them together.
FAA Report

Mr. Whitaker presented the FAA report (Attachment 5). He acknowledged and thanked Bill for his chairmanship in coordinating unprecedented cooperation between the FAA and industry and his influence in the success of the NextGen prioritization work.

He also welcomed, in abstention, the incoming NAC chairman Richard Anderson, CEO of Delta Air Lines, Inc.

Chicago Center – Mr. Whitaker and Teri Bristol provided a status report on efforts to restore service at the Chicago Center that was damaged by fire, September 26th. In the report, it was noted that they had done site visits along with Administrator Huerta and the fire was a criminal act and a deliberate act of sabotage at Chicago Center that required heroic amounts of work, innovation and cooperation with the contractors and operators in that airspace.

Several Committee members representing controllers and individuals responsible for repairing the ATC equipment commented that there was an extreme commitment by their members to provide the immediate ATC services and restore the Center facility. Specifically it was noted that there was a strong collaborative effort between the FAA-Controllers-Service Specialists and Harris Corporation to provide service and restore the facility.

Recognition of Ed Bolton and Teri Bristol anniversaries – Mr. Whitaker acknowledged the one year anniversary of Ed Bolton as the Assistant Administrator for NextGen and Teri Bristol as Chief Operating Officer for the Air Traffic Organization. He commented that Ed is ushering in a refreshing culture change to NextGen, moving us from focusing on delivering milestones, to delivering capabilities and that Teri has been engaged with the NextGen priorities, and the support from the entire ATO, has been key in our focus on delivering benefits. He characterized the outstanding coordination with industry is sharpening the FAA’s focus on NextGen, and also recognized the leadership of Peggy Gilligan and John Hickey of the Aviation Safety Organization in this process.

NextGen Integration Working Group – He commented that the Committee has focused on the four NextGen priorities – those key procedures and technologies that will have the biggest impact on improving the efficiency of the NAS. The Deputy Administrator noted that the most important thing to come out of the collaboration is a plan with industry for these key NextGen Priorities, reducing the risks to implementation and assuring we can deliver benefits to the traveling public. This reflects the FAA’s commitment to work together.

The FAA has been focused on deploying the technology, procedures, and standards and is now concentrating on working with operators to determine where to roll out these capabilities that are available today and ready to be deployed. The principle is to choose the most beneficial locations and generate benefits.

As an example, he noted the quick response to the June NAC input on Multiple Runway Operations by increasing the number of Wake Recategorization locations. He highlighted the benefits in Atlanta, where after 90 days; Delta Air Lines is reporting a 2.3 minute reduction in taxi out times and a 14 to 24 percent reduction in departure queue delays. On the arrival side, Delta is also benefiting from
each aircraft spending two minutes less in the TRACON airspace. These efficiencies are reducing fuel usage and emissions.

**PBN** – Mr. Whitaker commented that the Houston Metroplex site went live in May and included 61 new satellite-based procedures that are estimated to save airlines $9.2 million dollars in fuel each year.

He also pointed out the September 18th North Texas Metroplex implementation that includes more than 80 new satellite-based procedures in the Dallas/Fort Worth area.

**MITRE Report** – The Deputy Administrator explained that MITRE was asked to conduct an independent assessment of NextGen’s progress. The report confirms that the FAA remains on schedule in delivering on foundational NextGen technologies. The MITRE report confirms our path forward in many areas and provides recommendations that enable the FAA and aviation community to make necessary adjustments to be successful. The MITRE recommendations address challenges in the areas of operational transition, user adoption, and technical maturity which the FAA has agreed to address. He summarized that NextGen remains on track, and it is our job – all of us—to work together to make sure it stays on track.

**ADS-B Call to Action** – Mr. Whitaker provided an overview of the 2020 ADS-B equipage mandate that was put in place in 2010 and the need to be on schedule to meet that mandate. ADS-B equipage will allow the FAA to replace the radar-based system with a GPS-based system that is more efficient, a key component of NextGen. He commented that the FAA has done its part with the ground installation of ADS-B nationwide and the path to completing the computer system that will run ADS-B. To date, 16 en route facilities have fully modernized their automation systems. By next spring, all 20 en route centers will complete the transition with the FAA upgrading and standardizing the automation systems at more than 150 terminal facilities throughout the country.

He stated that the FAA is communicating clearly and unequivocally that the 2020 mandate will not change and the FAA is announcing an industry Call to Action, which the FAA will host on October 28 to bring together industry leaders and associations to have a day where we look at where we are with ADS-B and where we are with equipage. The idea is to identify the barriers to compliance and discuss solutions. Mr. Whitaker explained that the Executive Director of the NextGen Institute, Major General Marke “Hoot” Gibson, retired United States Air Force will lead the effort.

**Updates** – On the issue of evaluating the impact of NextGen, Mr. Whitaker commented that the FAA is beginning to receive actual fuel data from A4A on flights between more than 80 city pairs. This was the result of work done by the NAC to help determine how best to measure NextGen benefits.

He also explained that the FAA will provide the response to the previous tasking on recommendations to overcome noise challenges that hindered the agency’s ability to issue guidance for categorical exclusions at the February 2015 meeting. It is currently in a public comment period until October 20th.

**FAA Reauthorization** – Rich Swayze, Assistant Administrator for International Affairs, Policy and the Environment, provided an overview of the issues associated with the expiration in September 2015 of
the FAA’s authorizing law. This includes UAS and commercial space integration; budget instability that affects long-term plans and investments; the projection shortfall for Facilities and Equipment funding; and the need for industry consensus on how to proceed with investments.

The FAA’s Management Advisory Committee is currently conducting outreach to various aviation stakeholders.

In response to a question from a Committee member, Mr. Swayze commented that ADS-B implementation would not be adversely impacted by budget issues. Another Committee member prompted a discussion related to the need for FAA management flexibility in managing its costs and allocating spending. An FAA representative pointed out that safety management systems are important to enhance safety in a more efficient manner.

A Committee member commented that focusing on a smaller number of NextGen investments and achieving successful implementation and delivery of capabilities is important. This was endorsed by other comments about the need to identify “where we want to be and what does that cost.” A FAA official cautioned that predictable and stable investments are important to prevent changes in investment decisions. It was observed that sequestration in FY2015 is a big issue; another commented that the NAC prioritization recommendation is helpful to the FAA and another offered that tiers recommended in the October 2013 Prioritization report can inform FAA investments. A FAA member stated that we shouldn’t assume the investment of the legacy NAS.

The conversation concluded with the recognition that there is a need for a consensus on FAA reauthorization but this may be difficult to reach absent a crisis.

**SESAR/NextGen collaboration** – Mr. Ed Bolton and Mr. Florian Guillermet, Executive Director, SESAR Joint Undertaking provided a report on the areas of collaboration between the FAA and SESAR. This includes senior level meetings, committees and work groups that are functioning under the auspices of the Memorandum of Cooperation between the US and the European Union. A report on the current status of NextGen/SESAR cooperation is planned for release by the end of 2014. There is also close collaboration on cyber security.

**Blueprint for Success to Implementing Performance Based Navigation**

Task Group leaders, Mr. Jim Crites from Dallas/Fort Worth International Airport and Mr. Brian Townsend from US Airways/American provided a final report on the Blueprint for Performance-Based Navigation Procedures Implementation Tasking from the FAA. The Task Group leaders acknowledged the assistance of Dennis Roberts, Director, Airspace Services and his staff in the development of the recommendation.

The Task Group developed a report identifying and capturing the lessons learned from PBN implementations across the country and building on those lessons. This work includes a “checklist” that is an important compliment to various PBN efforts across the country.
Mr. Crites emphasized that one of the areas identified by this review was the need to have “all the right parties” involved in the PBN effort. This includes airport operators, pilots, controllers and appropriate representatives from local communities.

A Committee member stated the importance of advertising the availability of PBN procedures to pilots via the Automatic Terminal Information Services (ATIS) and the measurement of usage of the procedures. Another Committee member stressed the need for buy-in from the non-technical stakeholders and the implementation of a community outreach plan. It was also pointed out that the report recognized the role of airports in PBN initiatives.

Ms. Margaret Jenny, President of RTCA, explained that there has been a great deal of interest by the international community in the PBN Blueprint Recommendation. This includes the International Civil Aviation Organization (ICAO).

Chairman Ayer asked if Teams could be utilized to travel site-to-site and share the experiences from various PBN implementation efforts. Mr. Townsend replied that special teams are very important and have been used in some of the Metroplex locations.

The final Committee member commented that the safety case is essential for successful implementation of PBN.

**Committee Action:** The Committee agreed by consensus to approve the recommendation, *Blueprint for Success to Implementing Performance Based Navigation* (Attachment 6), for submission to the FAA.

**NextGen Integration Working Group**

Mr. Dickson initiated the discussion about the work of the NIWG by stressing the importance of recognizing that it is not a static process and the FAA and industry should continue to stay engaged. Ms. Rudinger added that it was a good process of collaboration between the FAA and the aviation industry that worked well and is a model for a process that should be used in the future.

Mr. Bolton emphasized the collaboration within the FAA and with the industry. He also noted that the process was expanded to include pre-implementation activities in addition to implementation plans. He reviewed the implementation tracking and oversight process that has been developed in collaboration with Ms. Bristol and Mr. Hickey to include scheduled bi-monthly meetings to discuss status and emerging issues; briefings of the NAC; quarterly briefings of the NAC Subcommittee, and public reporting on the FAA’s public NextGen Performance Snapshot website.

Ms. Bristol commented that there is continued work and commitment by senior executive and management level FAA leaders. Mr. Hickey added that the AVS organization is committed to ensure certification services are available.

**Focus Area Reports**

The Industry Leads and the FAA Subject Matter Experts (SMEs) for each of the four focus area teams presented a report on the consensus recommendations.

- **Performance Based Navigation (PBN)**
The presenters discussed the PBN Team’s work that has identified both implementation opportunities as well as areas that can support future implementations but require safety assessments and/or business case analysis that will then determine the next steps. The Team Leads emphasized the importance of having the flexibility for both types of recommendations to achieve industry consensus and develop a recommendation that will improve the implementation and use of PBN approaches. The Committee engaged in a discussion about the need for addressing different “flavors” of PBN to address the operating goals, as well as mixed equipage that affects the capability of aircraft to fly certain types of procedures. The areas covered are: Metroplex (Optimization of Airspace Procedures in the Metroplex); Established on RNP; Equivalent Lateral Spacing Operations; and Single Site PBN location.

Mr. Dickson noted that the recommendation included a balance between realistic and stretch goals and that it may be necessary to bring the team back upon completion of the safety analysis. Chairman Ayer asked if the FAA NIWG leaders agreed with this approach and they affirmed that it is necessary to determine next actions after completion of the safety assessment. They also observed that the safety assessments don’t presuppose an outcome.

- **DataComm-enabled Controller-Pilot DataLink Communications (CPDLC) and pre-departure clearances**
  - FAA SMEs: Jessie Wijntjes (ATO), Paul Fontaine (NG)
  - Industry Leads: Dan Allen (FedEx Express), John O’Sullivan (Harris Corporation)

  Mr. Allen discussed the Team recommendation for Surface DataComm pre-departure clearances and En route Controller-Pilot DataLink Communications (CPDLC). He also explained the importance for the FAA to address the Data Recorder rule that triples the costs for airlines to equip aircraft currently in their fleets with DataComm technology under the FAA’s incentive system. (The rule requires the installation of equipment to record DataComm information and responses by air crew.) The requirement affects approximately 2,500 aircraft. Mr. Hickey commented that the FAA is aware of the issue and assigned the Performance-based Operations Rulemaking Committee (PARC) to determine if an alternative to the rule could be developed to encourage participation in the DataComm program.

- **Closely Spaced Parallel Runways Multiple Runway Operations**
  - FAA SMEs: Tom Skiles (ATO), Paul Strande (NG)
  - Industry Leads: Glenn Morse (UAL), Jon Tree (The Boeing Company)

  The leaders summarized that Wake Recategorization replaces the existing weight-based wake turbulence separation category with approved wake turbulence categories; and MRO recommendations will improve access to parallel runways including closely spaced parallel runways in less than visual approach weather minimums.

  Chairman Ayer commented that it is important the Team be prepared to work through any issues that are identified as the FAA works through the list of sites included for the MRO focus area.
Surface and Data Sharing

- FAA SMEs: Lorne Cass (ATO), Nick Lento (NG)
- Industry Leads: Rob Goldman (Delta Air Lines), Steve Vail (Mosaic ATM, Inc.)

The Team Leads reviewed the recommendation that includes airport participation in Collaborative Decision Making and access to surface data; Airport Surface Departure Metering; provides real-time traffic management updates to New York Air Traffic Control Towers, flight and aircraft operators; and utilizes Earliest Off Block Time for short range flights.

A Committee member from Europe stated that early information sharing is key for harmonization and ultimately the implementation of the 4D trajectory operational concept. It was also noted that maximizing traffic flows at airports is critical; ICAO has recognized the importance of surface data sharing, and the US and Europe have an opportunity to share information.

Comments on NIWG Recommendations:

It was stressed by a Committee member that the FAA will need the NAC’s help as funding gets squeezed. Specifically, this includes the need to define how to value the priorities and capabilities, and how to communicate this to help make the case for funding resources to implement NextGen. It was also noted that the FAA commitment to the NIWG recommendations and endorsement of this work is critical in this effort.

Committee Action: The Committee agreed by consensus to approve the recommendation, NextGen Integration Working Group (Attachment 7) for submission to the FAA.

FAA PBN Video

Mr. Dennis Roberts introduced a video prepared by the FAA, “Metroplex: Building a Better Airspace,” featuring interviews from controllers, airline representatives and the FAA highlighting the Houston Metroplex. Reflecting back on the earlier discussion, Ms. Elizabeth “Lynn” Ray, FAA ATO Vice President, Mission Support, thanked Mr. Crites and Mr. Townsend for their leadership of the PBN Blueprint Task Group. She noted that as PBN has matured it is not technology, but cultural and adaptive issues that have been the significant challenge to successful implementation. The recommendation underscores and offers strategies for involvement by stakeholders.

A Committee member expressed appreciation for the FAA’s work in Houston pointing out that the implementation promises benefits to passengers through improved reliability, fewer delays, and increased capacity to make a “real difference.”

Interactive Discussion of Relevant Issues Facing the Aviation Community

The Committee completed its meeting with a discussion of relevant issues facing the aviation community and where the NAC could be helpful to the FAA. The discussion was augmented by the use of a prioritization evaluation tool, revolving around the following issues that were identified by the NAC and the NAC Subcommittee:
• Continue FAA-industry NIWG collaboration
• Streamline ADS-B Equipage: Process to meet 2020 mandate
• Increase PBN procedure usage
• Address ways to manage the likely FAA budget shortfall
• Implement ground-based metering and spacing capabilities
• Deliver a return on investments from ADS-B Out 2020 mandate
• Integrate commercial space and Unmanned Aircraft Systems (UAS) in the National Airspace System (NAS)

Recap of Meeting and Anticipated Issues for NAC consideration and action at the next meeting
Chairman Ayer concluded the meeting by reviewing the following actions from the meeting:

1.) Approval of the PBN Blueprint for Success to Implementing Performance Based Navigation recommendation
2.) Approval of the NextGen Integration Working Group recommendation
3.) Summary of top issues facing the aviation community

Other business
Committee member Ed Bolen, President and CEO, National Business Aviation Association, acknowledged and thanked Chairman Ayer for his leadership and work over the last two years. Mr. Ayer’s term ended with the meeting and Mr. Richard Anderson, Chief Executive Officer, Delta Air Lines, will begin as the Chair at the next meeting.

Adjourn
Chairman Ayer ended the meeting of the Committee at 3 p.m.

Next Meeting
The next meeting of the NAC is February 26, 2015 in Atlanta, GA.
Talking Points for Richard Anderson NAC Chairman Remarks
Atlanta, GA - Thursday, February 26, 2015

Opening
• Thank Mike Whitaker for his leadership and the efforts of his executive team to work in open and transparent collaboration with the industry through the NAC.
• The NAC has made progress in the collaborative effort between the industry and the FAA on recommendations related to implementing NextGen. Now, together, we need to deliver real results.
• We must build on the work of the NAC under the leadership of Bill Ayer.
• Since assuming responsibility for the Committee, I have had several meetings with Mike Whitaker, and reached out to many of my fellow members of the Committee.
• The heart of the success of the NAC is the drive that people (all of us- industry and FAA) have for the mission and the goals of NextGen: improved safety, increased capacity and efficiency, and reduced environmental impact. Thanks to the FAA for placing confidence in the NAC and for working in a transparent and collaborative manner.
• We must always stay focused on delivery of solutions which work for all of the aviation constituents around the table.

Overarching Goals of NAC
• Achieve all FAA and industry milestones and commitments for the four focus areas of capabilities that Bill specified in his letter of 10/14/2014 to the FAA.
• Achieve measurable improvements in the performance of the NAS, attributable to the implementation of the capabilities in the four focus areas to which both FAA and operators will attest.
• The Next Gen Priorities Joint Implementation Plan must be delivered on time, on spec, and on budget with the necessary amendments, to the Controllers’ Handbook. The FAA and industry agree on NextGen implementation and benefits.
• We must forge consensus among the key stakeholders represented on the NAC on issues of critical importance to the industry and FAA.
• We will gain more followers once the benefits and positive attributes are fully delivered and widely understood. Achieving the benefits and communicating them to stakeholders will lead to future investment and the acceleration of new benefits.
• Continue to tackle the difficult and relevant issues facing the FAA and its stakeholders.

2015 Activities to Achieve Goals
• Identify 4-5 top-level metrics to measure benefits (air carriers and business/general aviation) attributable to the implementation of NextGen capabilities as Mike committed in his letter of 28 Jan. 2015.
  o Congress has defined the metrics in the last reauth of FAA, we need to identify those related to the focus areas.
  o NAC is fully committed to working with the FAA on implementing NextGen agreed upon recommendations.
Establish a method of continuing the constructive collaboration on the NIWG focus areas between FAA and industry on a rolling 3-year progression.

Consider additional topics for the NAC to provide constructive industry consensus recommendations including the integration of UAS’s into the NAS (large and small), management of NAS infrastructure both manned and unmanned, and other challenging policy issues facing the FAA as it works to modernize the air traffic management system that could be more easily solved with a single voice from industry.

Agenda Review

Mike Whitaker and other representatives from the FAA will provide an update on Metroplex implementations; the status of ERAM sites; the actions of the Equip 2020 ADS-B initiative; overview of the new FAA Small Unmanned Aircraft Systems proposed rule; highlights of the Future Airport Capacity Task (FACT): Airport Capacity Needs in the National Airspace System Report; the CatEx 2 decision; a report on FAA Capital Investment Program; and a status of the McKinsey Benefits Study.

Ed Bolton, FAA Assistant Administrator for NextGen and David Batchelor of SESAR will provide an update on the harmonization effort between SESAR-FAA.

A report by the FAA and Delta Air Lines on the experiences here in Atlanta with Multiple Runway Operations Implementation – Wake Recategorization.

Background briefing followed by a discussion on identifying the benefits associated with NextGen.

After lunch, an overview of the steps taken since the Committee approved the NextGen Integration Working Group recommendations at the October meeting. This includes the process being used to track actions on implementation and pre-implementation activities.

This will be followed by reports from Industry Team Leads and FAA Subject Matter Experts from each of the four focus areas.
Introduction

• Welcome to Richard Anderson

• Thank Dennis Roberts:
  
  o It is my pleasure to announce Dennis Roberts as our new Southern Regional Administrator, based here in Atlanta.
  
  o Many of you already know Dennis from his tremendous work in the Performance Based Navigation arena.
  
  o Since December 2010, Dennis has been serving as Director, Airspace Services for ATO’s Mission Support.
  
  o He worked closely with many of you as the key FAA representative on several PBN-related NAC taskings.
  
  o He was also instrumental in developing the PBN blueprint for success and in helping industry identify both FAA and
industry barriers – and possible solutions – to successful usage of PBN procedures.

- Edie Parish will be Acting Director of Airspace Services. But I want to thank and acknowledge Dennis for his very significant contributions to our NextGen efforts.

NextGen Priorities

- A lot has happened since our last NAC meeting on Oct. 8th.

- We delivered the NextGen Priorities Joint Implementation Plan to Congress on October 17th.

- The plan incorporated the NAC’s NextGen Integration Working Group Final Report as an appendix.

- We have participated in several Congressional briefings – with the NAC by our side.

- We have also developed and implemented an oversight process for monitoring these priorities.

- I am pleased to announce that the FAA delivered on 11 out of 11 commitments in calendar year 2014. We completed wake recat in Atlanta, Cincinnati, and Houston, and completed
feasibility assessments for PBN and surface initiatives. We also completed a final investment decision for initial en-route services for Data Comm.

- We are on target to deliver on three out of three commitments at the end of the first quarter of this calendar year, making us 14 for 14.

- Industry also met their commitment in calendar year 2014.
  - The Performance Based Operations Aviation Rulemaking Committee (PARC) completed their review of the data link recording rule and delivered recommendations in November of last year.
  - I am very pleased to report that we completed our review of their recommendations, and on Wednesday, February 25, our new policy went on display in the Federal Register. The new policy applies the recorder rule only to new aircraft, manufactured after the effective date of the rule, and to those aircraft which did not have any data link solutions available before the effective date.
o This new 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.

• This work on NextGen Priorities has been very rewarding for the FAA and sets a new standard for how we are working together with the NAC to move NextGen forward.

• You will hear more details on all of these accomplishments this afternoon from the leads of the working groups and our FAA subject matter experts.

• I would also like to take this opportunity to thank Steve Dickson for his outstanding leadership of the NAC Subcommittee – Tim Campbell has a tough act to follow.

**ADS-B Equip 2020 Mandate**

• Eleven days after filing our report to Congress on the NextGen Priorities, FAA hosted an industry Call to Action.

• This was designed to bring all industry stakeholders together to assess how we’re doing toward being fully equipped with ADS-B Out by January 1, 2020.
• It was a very well attended event.
  
  o Identified a number of issues.
  
  o Created working groups to roll up our collective sleeves and problem solve.
  
  o This was led by General Hoot Gibson from the NextGen Institute, and the effort was called Equip 2020.

• I’m pleased to report that this initiative has resulted in quite a bit of progress. I’ll mention just three areas where we’ve made significant progress.
  
  o In general aviation, we are seeing a marked uptick in equipage – 3,000 aircraft have equipped since October: A 50 percent spike.

  ▪ More significantly, competition amongst avionics manufacturers has led to a dramatic cost reduction in equipage – over a 50 percent price drop since October.

  ▪ Several sources now exist for units at prices lower than $2,000.
• In support of airline equipage, the Equip 2020 team reached an agreement that allows air carriers with first and second generation receivers (SA aware) to continue to use these until 2025. This recognizes their dedication in adopting early and it provides time to upgrade to the best available receiver technology.

• It also recognizes that we want to reward – not punish – early adopters of technology. We want to ensure earlier equippers have flexibility in compliance with final standards.

• This has been an unresolved issue for three years … but after the Call to Action, we got an agreement in about 60 days. It’s a good example of what can be accomplished when experts work together as a team.

• I also want to credit Equip 2020 for producing an equipage tracking database.

• With this effort, you’ll be able to capture data from suppliers (the solutions and products they’re offering) … and you’ll be able capture data from the air carriers (what are they buying, when are they buying it, etc.).
• With this information, you’ll be able to track the equipage trends … specifically, by comparing supplier plans with air carrier plans and spot potential risks to achieving equipage compliance by the deadline.

• This way, we’ll know if we’re on track for 2020 … and if not, we can redouble our efforts accordingly.

**McKinsey Benefits Study**

Like I said, it’s been a busy few months

• In addition to the Priorities and Equip 2020, FAA engaged the consulting firm McKinsey & Company to better understand the benefits NextGen is providing to the aviation industry.

• The FAA worked with McKinsey to conduct carrier-specific NextGen benefits evaluations, including the benefits of equipping with ADS-B Out.
  
  o This McKinsey study covered major categories of carrier benefits, including:
- Savings in direct operating expenses
- Savings in crew time
- Overhead savings
- Benefits of added capacity
- Benefits of increased predictability
  - The consultants used a replicable analysis based on the FAA’s system-wide model, with added elements that can be included in future modeling.

- We presented a business case to carriers in their language based on carrier-specific details, including:
  - Flight schedules and
  - Fleet projections and
  - The Net Present Value investment case for ADS-B Out and partial DataComm equipage by 2020, which in each case has a positive NPV.

- We held discussions with the six major passenger carriers
  - Delta, Alaska, United, Southwest, American and jetBlue
- We have also met with UPS and are scheduled to visit FedEx and Republic in the coming weeks.

- Key themes we heard from the airlines:
  - Appreciation of, and need for, an open, airline-specific dialogue with FAA on NextGen.
  - Perceived challenges with previous programs.
  - Commitment to equip for the ADS-B 2020 mandate.
  - Excitement over NextGen and the promise of future benefits.
  - Specific, near-term improvements each airline would like to see to maximize benefits.

- Next steps for the FAA’s work on NextGen benefits and carrier alignment:
  - Follow-up discussions with airlines.
  - Update to the FAA’s NextGen strategy.
Houston, North Texas and DC Metroplex

- Finally, just before the last NAC meeting, we implemented the latest Metroplex in North Texas, and subsequently we implemented new procedures in DC.
  - Lynn Ray is going to provide an overview of those projects.

Lynn:

- I would like to share a few highlights from our successful Metroplex initiatives in Houston, North Texas and Washington, D.C.

- In the spring of 2014, we launched 61 new routes for flights into and out of Houston area airports. At the same time, we also used a Time Based Flow Management capability along with the Houston Metroplex enhancements to help match capacity and demand, and increase throughput and capacity. Post-implementation data analysis shows an annual savings of $6 million from reduced fuel consumption.
• Now in December, as part of NextGen priorities, we added the wake recat capability into Houston Intercontinental and Hobby airports, giving Houston a suite of fully integrated tools and capabilities.

• Last September in North Texas, we increased safety by procedurally separating departure and arrival flows to the two major airports serving Dallas with 80 new NextGen procedures. This was the North Texas Metroplex initiative. We continue linking North Texas to the rest of our nation’s airspace with the same repeatable and predictable methods of optimizing TBFM that were used in Houston. We are currently conducting post-implementation analysis of North Texas and will make sure the efficiency of the airspace compliments its increased safety.

• In Washington, D.C. our Metroplex initiative employs safer and more efficient procedures throughout the region. The D.C. Metroplex will implement 50 new procedures staged over eight publication cycles. These procedures will be completely implemented by June 25 and have projected savings of $6.8 million in fuel costs, 2.5 million gallons of fuel saved, and a reduction of 25,000 metric tons of carbon.
The D.C. area will be more efficient and more green because of Metroplex.

- With various NextGen technologies, policies, and procedures coming to fruition and our ability to deliver on our promise to implement NextGen priorities, we are climbing that “mountain of challenges” Bill Ayer so often referred to.

**ERAM**

- Looking forward, I am very pleased to report that we are on the verge of finishing all ERAM sites. Teri Bristol, ATO’s COO, will provide a few more details.

**TERI:**

- ERAM is considered the backbone of the nation’s airspace system. Replacing the 40-year-old Host system, ERAM processes flight and radar data, provides communications, and generates data for controllers' screens -- functions that enable air traffic control across the nation.
• The transition to ERAM represents one of the largest automation changeovers the FAA has ever undertaken.

• ERAM is a flexible and expandable system designed to accommodate the new technologies being implemented as part of the FAA’s NextGen initiative.

• To date all 20 En Route centers have reached Initial Operating Capability (IOC), a milestone met when the system is deemed acceptable to be introduced into the operational environment at an Air Route Traffic Control Center (ARTCC) and a local and national plan exists that can support the facility’s goal to move toward extended and continuous operations.

• 16 of the 20 centers have declared Operational Readiness Date (ORD) which is the commissioning of a new system into the National Airspace System (NAS).

• ORD is the culmination of a series of events and milestones that demonstrate confidence and operational suitability of a system. ORD occurs prior to decommissioning of a legacy system, and is a separate activity from decommissioning.
• By the end of March we anticipate marking the completion of the ERAM deployment as the four remaining centers declare Operational Readiness (ORD).

FACT 3 Report

• Also since our last meeting, the FAA has issued its latest FACT report. FACT stands for the Future Airport Capacity Task and details the long-term airport capacity needs of domestic airports. Eddie Angeles, our Associate Administrator for Airports, will share the highlights of this important work

Eddie Angeles

• As Mike stated, in late January, the FAA published the third edition of its report on long-term airport capacity needs.

• The report identifies airports that are at risk for significant delays and congestion through 2020 and 2030.

• For the rest of this decade, much of the U.S. hub airport system has sufficient capacity – except for several high-
demand airports that have consistent delays: NYC area airports, ATL, PHL, and SFO to a degree.

- New runways have helped to improve capacity at many formerly congested airports. Going forward, both new runways and NextGen improvements are needed to improve efficiency at capacity-constrained airports.

**Small UAS Proposed Rule**

- Also, as I’m sure you are aware, earlier this month, we issued a UAS proposed rule as the next step in our continuing efforts to integrate unmanned aircraft systems into our nation’s airspace.

- We’ve made a lot of progress in our task to integrate UAS. Last year, we published a comprehensive plan and road map to safely integrate unmanned aircraft; we opened six test sites across the country for research on unmanned aircraft; we approved the first ever commercial operations in the Arctic; and we have granted more than two dozen exemptions for commercial use of unmanned aircraft in domestic airspace.
• The proposed rule is a big step forward in outlining the framework that will govern the use of small unmanned aircraft weighing less than 55 pounds. This proposed rule offers a very flexible framework that provides for the safe use of small unmanned aircraft, while also accommodating future innovation in the industry.

• Safety is always our number one priority. This proposed rule makes sure that we are protecting other aircraft, as well as people and property on the ground.

• The unmanned aircraft industry is expanding greatly and this technology has the capability to dramatically change the way we use our nation’s airspace.

• We are doing everything that we can to safely integrate these aircraft while ensuring that America remains the leader in aviation safety and technology.
Catex 2 Decision

- Continuing on our theme of recent accomplishments, I am pleased to share our most recent decision on Categorical Exclusions.

- In the fall of 2012 we asked the NAC to provide technical suggestions for determining ways to measure reduction in noise on a per flight basis.

- The NAC approved their Catex task group’s recommendation to implement a system for noise analysis in the summer of 2013.

- The FAA has decided that we will use the NAC’s recommended net noise reduction methodology to implement the Categorical Exclusion that is called for in the 2012 reauthorization, with a couple of technical modifications:

  1. We’ll evaluate net changes in noise, instead of net changes in the affected population. This is more consistent with the statute, which requires a determination of measurable reductions in noise. A net day-night average sound level reduction would support this determination.
2. We’ll rule out using the categorical exclusion if noise increases are significant. Instead of the NAC’s add-on significant test, this will be embedded in FAA’s interpretation of what constitutes a measurable noise reduction. We won’t make a reduction determination in situations where there are significant noise increases.

- Our noise staff tested these modifications using the same data at two airports that the NAC Task Group used to test the NAC’s recommendation, and we got the same results.

- The FAA will provide a detailed debrief at the March 11 subcommittee meeting for those who are interested.

- I do want to call to your attention that industry provided the only positive comments on this categorical exclusion and this net reduction methodology.

- All other comments were negative, and highlight the problem we’re experiencing with opposition to PBN procedures that shift noise over communities. One of the expressions of community concern is to demand more detailed and participatory environmental reviews than occur when we
implement a procedure using a categorical exclusion. The opposition to using categorical exclusions to bypass environmental reviews is a symptom of the larger issue of noise. We’ll be discussing this in more depth at the June NAC meeting when we review the Blue Print for Success to Implementing PBN.

**SESAR**

Moving to the international scene, Ed and I made a trip to Brussels two weeks ago to meet with SESAR, Eurocontrol, the Commission, and the new Deployment Manager.

Ed, you want to provide a brief update on that?

- Since the NAC last met, the FAA and European teams have continued their harmonization work on many fronts.
- We've also had constructive discussions on how we are working together, and how we will do so going forward, especially as the new SESAR Deployment Manager section takes shape.
- This was included in our discussions during our recent visit to Brussels.
• One major accomplishment in the trans-Atlantic partnership that I would like to highlight is the recent completion of the Joint Harmonization Report that we have noted at previous meetings. This document was written by a team of representatives from SESAR, EuroControl, and the FAA's NextGen and Air Traffic Organizations.

• The report provides details of major initiatives and accomplishments made via the FAA-Europe agreement on harmonization over the last few years. The report was presented to the High-Level Committee that oversees the trans-Atlantic agreement, and this committee approved the document and its public release.

• And, I'm happy to report that the document has been printed and we've got a few copies here today. The report will also be posted on the FAA and SESAR websites, and we'll have many more copies available at World ATM Congress in a few weeks in Madrid.

• I think you'll find it a useful document that showcases the important work being done in partnership across the Atlantic.
Reauthorization and Capital Investment Plan

- The work on reauthorization progresses, we have a hearing before Congress scheduled for March 3. This hearing will cover our progress in implementing NextGen and areas where Congress can help us to create a more efficient system. With the current FAA authorization set to expire at the end of September, passing a new bill that helps lay the groundwork for the future of U.S. aviation is a top priority.

- And finally, I’ve asked Mark House, our Chief Financial Officer to be here today to provide some highlights on our current capital investment plan. In the interest of transparency, Mark is here to share our capital investment process and challenges we have in funding NextGen multi-year programs without multi-year funding.

Mark House: Presented Brief from a Slide Deck

Thank you, and that concludes the FAA remarks.
Congressional Requirement for Metrics

Congress specified that FAA report on a number of NAS-wide metrics in Section 214 of the FAA Modernization and Reform Act of 2012. Below is the Section 214 text.

SEC. 214 PERFORMANCE METRICS

(a) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Administrator of the Federal Aviation Administration shall establish and begin tracking national airspace system performance metrics, including, at a minimum, metrics with respect to—

(1) actual arrival and departure rates per hour measured against the currently published aircraft arrival rate and aircraft departure rate for the 35 operational evolution partnership airports;

(2) average gate-to-gate times;

(3) fuel burned between key city pairs;

(4) operations using the advanced navigation procedures, including performance based navigation procedures;

(5) the average distance flown between key city pairs;

(6) the time between pushing back from the gate and taking off;

(7) continuous climb or descent;

(8) average gate arrival delay for all arrivals;

(9) flown versus filed flight times for key city pairs;

(10) implementation of NextGen Implementation Plan, or any successor document, capabilities designed to reduce emissions and fuel consumption;

(11) the Administration’s unit cost of providing air traffic control services; and

(12) runway safety, including runway incursions, operational errors, and loss of standard separation events.

(b) BASELINES.—The Administrator, in consultation with aviation industry stakeholders, shall identify baselines for each of the metrics established under subsection (a) and appropriate methods to measure deviations from the baselines.

(c) PUBLICATION.—The Administrator shall make data obtained under subsection (a) available to the public in a searchable, sortable, and downloadable format through the Web site of the Administration and other appropriate media.
(d) REPORT.—Not later than 180 days after the date of enactment of this Act, the Administrator shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Transportation and Infrastructure of the House of Representatives a report that contains—

(1) a description of the metrics that will be used to measure the Administration’s progress in implementing NextGen capabilities and operational results;

(2) information on any additional metrics developed; and

(3) a process for holding the Administration accountable for meeting or exceeding the metrics baselines identified in subsection (b).