NextGen Advisory Committee (NAC)
August 30, 2022 Meeting Summary

The NextGen Advisory Committee (NAC) convened in a hybrid format August 30, 2022 with in-person attendees convening at MITRE in McLean, VA. The meeting discussions are summarized below. Reference the attachments for additional contextual information.

List of attachments:

- Attachment 1: NAC Presentation Deck
- Attachment 2: Attendance List
- Attachment 3: Public Statements

Opening of Meeting

NAC Chair, Mr. Chip Childs (SkyWest, Inc.), opened the meeting and welcomed in-person and virtual attendees. He began by handing off to MITRE's Center for Advanced Aviation System Development Vice President, Dr. Kerry Buckley, for opening comments and housekeeping notes.

Dr. Buckley introduced herself and indicated that MITRE looks forward to collaborating with the NAC on some of the complex challenges ahead. She then provided housekeeping notes and handed off to Mr. Childs.

Mr. Childs thanked Dr. Buckley and MITRE for hosting. He then handed off to NAC Committee Manager, Ms. Kimberly Noonan, for administrative announcements.

After reading the public meeting announcement and providing administrative housekeeping notes, Ms. Kimberly Noonan (FAA) invited the three pre-approved public speakers to make their respective public statements. Before handing off to the speakers, she explained that the NAC Committee Management Team received two additional requests from the public to speak, however they were submitted past the deadline of August 22, posted in the Federal Register Notice for this meeting. She clarified that the NAC Chair reviewed these requests, but determined that this was more speakers than could be reasonably accommodated and did not want to impact the three speakers that submitted their requests on time by performing a randomized lottery. The requestors not permitted to speak were offered the opportunity to submit their comments as written statements.

Reference Attachment 3 for the full text of the following public statements:

- Ms. Darlene Yaplee – Aviation-Impacted Communities Alliance (AICA) and Concerned Citizens of Palo Alto
- Ms. Cindy Christiansen – no affiliation provided
- Ms. Deb Jung – District 4 Councilmember for the Howard County Council in Maryland and Howard County Council's representative on the BWI Roundtable
    - NOTE: Ms. Jung was initially unavailable and provided her public statement following the break

Chair's Report

Mr. Childs said that it is great to be with many attendees in person at MITRE. He said it is hard to believe that it has been seven meetings and over two years since the last in-person NAC Meeting back in December 2019. He thanked those that made the trip to MITRE. He said that while he understands there may be extenuating circumstances or traveling limitations otherwise, he is a believer in the power of face-to-face communication that cannot be replaced in a virtual environment. He said that moving forward, he encourages NAC Members to strongly consider making a point to attend future meetings in person to the extent possible. He said that there are several important issues that the industry faces and a strong in-person presence shows the NAC's continued commitment to tackling them.

He then called for motions to approve the March 28, 2022 and April 29, 2022 NAC Meeting Summary Packages, respectively.

Outcome: The NAC passed motions to approve the March 28, 2022 and April 29, 2022 NAC Meeting Summary Packages, respectively

Mr. Childs then provided a state of the industry update. He said that while there is certainly reason for optimism as COVID continues its transition to being an endemic and demand for leisure travel remains high, many of the industry-wide challenges he discussed in March have persisted throughout the summer. He said that across the aviation industry, they continue to navigate challenges that have been exacerbated by the particularly severe summer weather season and travel demand above and beyond what the system can currently support. He said that these challenges serve as a key reminder of the importance of industry and FAA working together for solutions, just as they do at the NAC. As the overall system continues to be taxed, he said they are confident that collaboratively and collectively they will navigate this environment to deliver safe, reliable skies.

Mr. Childs said that while he would certainly argue that they are in a better place than earlier this summer, he cannot emphasize enough the need for sustainable long-term solutions to resolving the crew availability issues affecting the industry. Mr. Childs said it is absolutely critical that a solution includes not only perspectives from industry, but also training and government perspectives. He said part of the solution must also include continuing to do everything they can as an aviation community to eliminate barriers to entry for aviation careers, especially among minorities, women, and people of color. He said he is confident that if they commit to taking the right steps and learning from the current challenges, they will emerge in a much stronger position for the future. To better understand the government perspective on these challenges in the system, he said he asked FAA Acting Air Traffic Organization Chief Operating Officer, Mr. Tim Arel, to provide an operational update during the Chair's Roundtable agenda item.

He concluded by thanking everyone for being at the meeting both in person and virtually. Mr. Childs then handed off to FAA Deputy Administrator and NAC Designated Federal Officer (DFO), Mr. Brad Mims, for the FAA Report.

FAA Report

Mr. Mims began by thanking the NAC and its representatives on the NAC Subcommittee for quickly responding to NAC Task 22-1 that the FAA issued in April to help reassess near-term NextGen priorities. He said the FAA Air Traffic Organization team has assessed the inputs and will be providing a response

later in the meeting. He said advice from the NAC is critical as the FAA makes important decisions about the future of the air transportation system. While there are certainly challenges ahead, he said they are committed to ensuring aviation safety without inhibiting innovation. This is part of a much broader push from the White House Down to future-proof infrastructure, while enabling adaptability and resilience. At the FAA they continue to keep an eye on the future when it comes to safety and efficiency technologies.

Mr. Mims said that he recently provided a message to the Annual Virginia Aviation Conference, where he shared how experts in Atlantic City and across the agency are helping to create the infrastructure that will bring Advanced Air Mobility air taxis to vertiports. He said they are researching landing areas, approach and departure paths, lighting, parking, charging stations, and noise requirements. Their work will support the investments being made across the industry. He said they are doing this work with urgency because the FAA is likely to certify several air taxis in 2024.

He said the FAA is also looking holistically at smart airports, explaining that the idea is to use technology to help manage and plan operations in a centralized digital environment. He said under the Bipartisan Infrastructure Law, the FAA has access to $25 billion in funding over five years. That includes $15 billion for airport infrastructure, $5 billion for airport terminals, and $5 billion for air traffic facilities. When you combine the FAA's commitment to airports with the Biden Administration's focus on infrastructure, they have a once-in-a-generation opportunity to make American airports the best they can be.

In addition to this focus on modernizing the infrastructure, Mr. Mims said they also continue efforts to modernize their approach to equity. He said they are doing this through a variety of Diversity, Equity, Inclusion, and Accessibility (DEIA) initiatives at the FAA and in partnership with the entire aviation and aerospace industry. He said that for the first time, the Department of Transportation has a DEIA Strategic Plan that makes equity a Department-wide strategic goal. He said they have a profound responsibility to ensure that every American—regardless of their race, ethnicity, gender, gender identity, sexual orientation, age, income, faith, geography, or ability—has equitable access to the transportation system. Mr. Mims said the same thing applies to their workforce and that it is better and stronger when the workforce reflects the full breadth of the country's diversity. This plan is a roadmap and touches on everything from recruitment and retention efforts to professional development to the workforce culture.

Mr. Mims said he is also proud of the steps the FAA has taken to promote equity and the work they are doing to make sure that small, disadvantaged businesses will benefit from contracts and grants under the Bipartisan Infrastructure Law. He said they hosted their first Tribal Aviation Symposium in March to ensure that Tribal and Community Leaders are aware of FAA contracting and grant opportunities and how to navigate the application process. He said they provided students with equal access to job opportunities within aviation through the FAA's Minority Serving Institution Internship Program. He said this year's program has about 200 students from across the nation. Mr. Mims said outreach to minority-serving institutions help prepare a more inclusive talent pool of aerospace professionals, including pilots and aviation maintenance technicians. He said they are also working more closely with historically black colleges and universities, Hispanic-serving institutions, and tribal colleges and universities. He said they are investing in the next generation of aviation professionals through the FAA Aviation Workforce Development Grants program.

Mr. Mims said that overall as an aviation community, they are moving in the right direction and he applauds the progress, but, just like with safety and aerospace modernization, there is always more to do. He said they need to keep at it.

Next, he said that the FAA Report will include updates from the offices of NextGen, Air Traffic, and Aviation Safety. The reports will provide insight to into what they have been working on since the last NAC Meeting. Mr. Mims then handed off to Acting Assistant Administrator for NextGen, Mr. Paul Fontaine.

Mr. Fontaine began with a status update on the ongoing NAC membership application process. He said the FAA recently published a Federal Register notice to solicit applications from all qualified candidates for the next two-year NAC membership terms. This solicitation requires that applicants, including any current NAC members, apply for the 30 membership slots. He said this is a pivot from the prior process of renewing the existing NAC member organizations. He said they feel that this will bring the NAC in line with the standard FACA and DOT-sanctioned membership process that other FAA Federal Advisory Committees follow. He said they believe the selection process may extend beyond many of the current term expiration dates. He said that if this is the case, current membership terms will automatically extend until new member terms begin. This notice outlines the candidate requirements and specific materials to be submitted as part of the applications, which are due by September 19. He said they value the NAC's engagement and certainly encourage all current and interested members to reapply.

Mr. Fontaine also shared that he and ATO Acting Deputy Chief Operating Officer, Ms. Angela McCullough, provided a NextGen update to the House and Senate subcommittee on aviation staff last month. He said they reported that they are operationalizing NextGen to move closer to transitioning air traffic management to Trajectory Based Operations, and that NextGen has continued to deliver benefits throughout the COVID-19 pandemic, despite challenges to engineering, controller training, program management, and the aviation community. He said they also provided an updated benefits statement showing $8.5 billion of benefits between 2010 and 2021. Of that $8.5 billion, they calculated $0.4 billion in safety benefits, $1.5 billion in fuel savings, $1.7 billion in aircraft operating cost savings, and $4.9 billion in passenger travel time savings. He said communication, navigation, and surveillance are the sources for nearly $4.7 billion in benefits; automation accounts for about $2.1 billion; and separation takes credit for an estimated $1.7 billion. He said benefits are directly dependent on traffic. He said they discussed the impacts of reduced traffic due to COVID and how that pushes the benefits curve further to the right.

Regarding future planning, he said they reported that they are conceptualizing and developing an information-centric air traffic management vision that will be more flexible, agile, and resilient. In addition to the current NextGen foundation, the FAA plans to enhance the existing information infrastructure and enable all NAS systems and services will use shared data. He said they are still working with the Office of the Secretary to finalize some of the details on these plans and, once complete, they will provide a full briefing to the NAC. Mr. Fontaine then handed off to Mr. Mims.

Next, Mr. Mims handed off to Acting Air Traffic Organization Chief Operating Officer, Mr. Tim Arel.

Mr. Arel said that back in March he shared insights with the NAC on several challenges, including increasing costs, budget formulation, and increasing operations in the Florida market. He said he wants

to continue with those themes today by providing insight on the budget and the associated impacts that ATO is working through. He said he will also discuss this further during the operational update he is providing during the Chair's Roundtable agenda item.

He said that ATO's mission is to ensure safety and efficiency in the National Airspace System. Mr. Arel said everybody in the ATO works towards that goal. He said that they have been impacted by many of the same things that the Mr. Childs highlighted previously. To protect their workforce, he said they had to slow training and socially distance, and for two years they have been working steadily to emerge from this pandemic. He said as they work through these current challenges, their top priority has quickly become the hiring, training, and certification of a more diverse workforce of controllers and technicians, which was severely hampered throughout the pandemic.

Mr. Arel said they are throwing a lot of resources at this challenge. That includes a significant increase in the number of contract instructors that they are bringing on board, the classrooms that will accommodate the instruction, and refreshing simulators, particularly for tower simulators. The one thing that they cannot make up for, just as operators are working to build pilot time, their controllers need on-the-job training. He said during this training they are oftentimes 18 inches apart, facing the same scope, and that they had not been able to do that for a long time. So that is their priority. They are putting a lot of resources around that. He said that to some degree, it is a higher priority, even above modernization efforts, because it does no good to have all this technology and no one is certified—there are not enough people to open enough sectors and do that. So they are being very transparent in that manner. They are sharing current staffing situations with industry and major facilities and making sure that they can plan for it while also prioritizing training. He added that when they approach certain holiday weekends, in some areas, they are prioritizing staffing of positions over training, which then further delays that training. He said they are accommodating as many conditions as they can. He said they are trying to make sure that they are transparent and collaborative as they work through these challenges.

He said their budgets over the years have been planned out to work a lot of these systems but, again, the pandemic introduced a lot of unexpected factors. He said that increase in fuel costs and insurance for aircraft are not a surprise to anyone on the NAC. However, things like COVID cleaning are impacting their operational budget to the tune of $60 million a year across facilities. He added that their supply chain cost and increase in labor, and the amount of labor that it takes to staff a normal shift or the amount of folks or resources needed to line up for what used to be normal operations have all increased.

Mr. Arel then said they previously asked the NAC to give feedback on program priorities. He said that as they were making decisions or recommendations around their budget, they needed to make sure that they had the NAC's input and wanted to know what they need the FAA to be ready to accommodate. He said they really appreciate the NAC's work in turning that around rapidly. He indicated that Mr. Rob Hunt (FAA) will provide a rundown of the FAA response. He said the results were not surprising and in line with what they thought they might be. He described this as evidence of good collaboration occurring in the NAC. However, he said that they can only do so much in a year.

Mr. Arel said he really does view that work as a model to go forward as they are continuing to face these challenges. He said there is more being asked of them than they can do in a certain amount of time or with a certain budget. They want to make sure that priorities align with NAC demands, the

demands of their customers, and the flying public. He said they view this as a collaborative success and look forward to having future discussions.

Before he closed out, Mr. Arel said he wants to thank Mr. Warren Christie (JetBlue) for reaching out and sharing his thoughts on challenging the NAC Subcommittee in the area of Performance Based Navigation (PBN). He mentioned that he had discussed with Mr. Christie that they really want to make sure that they are balancing the delivery of PBN, when and where industry needs it, but also, at the same time, looking at divesting legacy procedures and equipment because there is no budget situation that exists where they continue to take on additional requirements and not shed some legacy expenses. Mr. Arel then handed off to Mr. Mims.

Next, Mr. Mims handed off to Deputy Associate Administrator for Aviation Safety, Ms. Jodi Baker.

Ms. Baker said that for AVS this has been the summer of 5G and that the summer of 5G is turning into the fall of 5G. She said they certainly have gotten through the crisis. She mentioned that, fortunately, July 5 was just another day for them and they are very grateful for all of the work and collaboration that got them to that point. She said they are continuing to work forward with the deployment of 5G C-band and maintaining safe operations. At the same time, the telecommunications and wireless companies have been able to activate 97% of their 41,000 transmitters. She said that is a huge success, and it was without causing disruption to the ability of the operators to use key airports.

She said now that they are past the crisis, they are working towards the long-term solution. She said they are focusing on the retrofitting of existing radio altimeters to make sure that they can have continued safe operations once the telecommunications and wireless providers increase power to the maximum authorized limits. She said they recognize that the schedule for retrofits is aggressive, but they believe it is doable. She added that they continue to maintain touch points with all of the involved stakeholders, whether it is the wireless companies, the altimeter manufacturers, airframe manufacturers, and air carriers. She said they are trying to be aware and move swiftly to address any challenges that industry may have. She requested that industry please continue to share when they see things coming, so the FAA can address it. It is the shared objective of the FAA, the original equipment manufacturers (OEMs), and the radio altimeter manufacturers in the wireless industry to have one retrofit.

Ms. Baker said they continue to work that issue from all angles and are committed to sharing developments. She said that in continuing the theme of aircraft avionics, she wants to thank the team working the Minimum Capabilities List (MCL) for their ongoing efforts. She said their commitment to equipping the fleets of aircraft will enable them to achieve all of the benefits of NextGen, as well as maintain the safest aerospace system in the world. Ms. Baker then handed off to Mr. Mims.

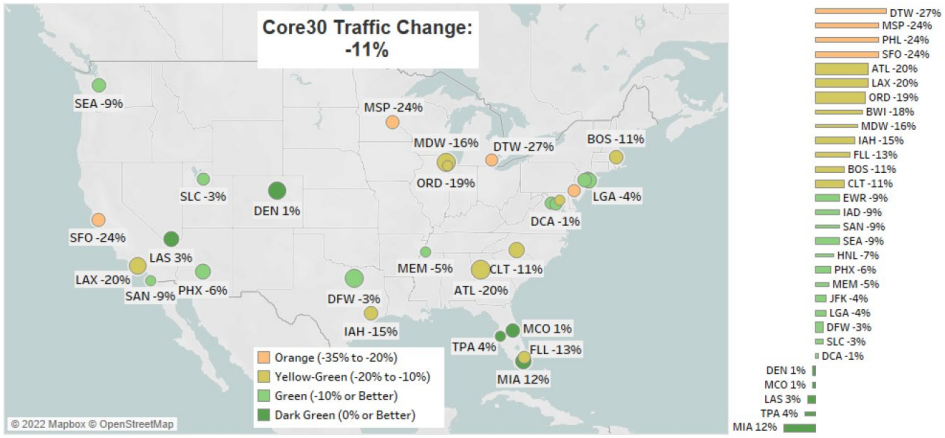
Mr. Mims concluded the FAA Report and handed off to Mr. Childs.

Chair's Roundtable

Mr. Childs thanked Mr. Mims, then introduced the Chair's Roundtable agenda item. He reminded the NAC that this is time for members to explore ideas and issues benefitting from the expertise of fellow NAC members. He said that for today's topic, the NAC will hear an FAA operational update from Mr. Arel. Mr. Childs clarified that this is a break from the tradition of having a NAC Member present. However, he felt it was an important topic for the NAC to hear the FAA's perspective of what is happening in the National Airspace System and how that is contributing to the shared challenges they

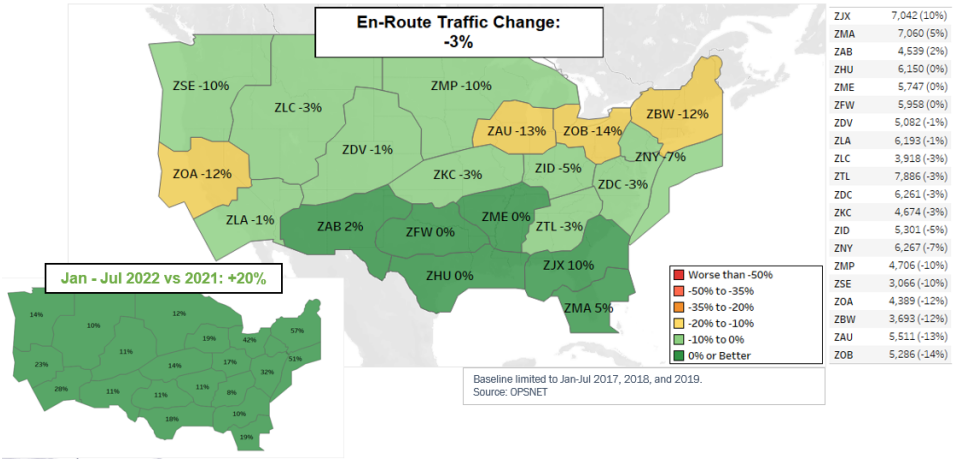
are facing recently. He reiterated that understanding the government perspective will be a crucial component to solving these challenges as an aviation community. He thanked Mr. Arel for his willingness to provide a briefing and said he looks forward to a follow-on conversation among the NAC members. Mr. Childs then handed off to Mr. Arel.

Mr. Arel began by saying that traffic is steadily increasing, specifically mentioning that the peak post-COVID operational day was May 19, 2022 with 50,739 operations. He said that for many reasons everyone in the room is well aware of (e.g., weather, resources, and other impacts), they are still seeing operations up, but overall, just below where they were pre-pandemic. He reviewed the following graphic that shows traffic change percentages compared to pre-COVID traffic numbers at some Core 30 airports:



Baseline limited to 2017, 2018, and 2019.
Circle size relative to latest traffic counts. Honolulu, HI (HNL) depicted on bar graph only. Source: ASPM

He pointed out that Florida remains well above pre-COVID operations. He mentioned this data is current as of July 2022 and that locations in green are trending in a positive direction, pointing out a couple of specific examples (e.g., Rocky Mountains, Vegas, Phoenix). He said the rest of the country has normalized from an airport perspective. He then explained you can also see this through traffic center counts, as depicted in the following graphic:



Baseline limited to Jan-Jul 2017, 2018, and 2019.
Source: OPSNET

Mr. Arel pointed out that Jacksonville Center traffic is up 10% of pre-pandemic levels, which he said is impacted by airport traffic increases in other parts of the state that flow through this center. He mentioned that all the other green centers are operating basically near normal. He said that the Northeast and Oakland are still operating below pre-pandemic levels, which is mostly attributable to international traffic. However, he said that traffic is generally coming back.

He then discussed NAS departure cancellations. He said that he knows much has been made of flight cancellations. He said he wants to commend everyone. He said he had the pleasure of reporting to Mr. Mims and the FAA Administrator that they have been trending in the right direction when it comes to cancellations on normal days. He said that in July they got down to an average of 682 flights. He said more recently they are seeing that on non-weather days, cancellation rates are less than 1% of traffic. He said in the last week they saw 250 to 300 cancellations a day, which was in line with normal maintenance and other issues that they used to see pre-pandemic.

He then reviewed flights into, out of, and within Florida, specifically comparing fall 2019 to fall 2022. He said one of the things that they are recognizing is that individual operators are continuing to adjust their schedules. He said they saw there were a lot of flights occurring but there was a correction and it has gone down. However, he said that if you look at the fall schedule in totality with the various carriers going into Florida, the schedule shows levels to be 191% above 2019 traffic levels. He said they are not sure that is a reality that can be achieved. He said that they are all moving in the right direction between FAA resources and industry resources in trying to optimize that as much as possible. He said while there are still other challenges, he wants to make sure industry is collectively aware that they still see a published great demand in Florida.

He then reviewed key airport schedules comparing fall 2019 to fall 2022. He said in reviewing the schedules, there are a lot of the markets he mentioned, such as Miami and Orlando. He also mentioned New York starts to make a comeback again, at least as published, along with Denver reaching normal operations. He also mentioned that the Salt Lake, Denver, Phoenix, and Las Vegas area in the West is really starting to grow.

Mr. Arel said that FAA analysts see the demand at leisure destinations like Las Vegas, Miami, and Orlando as continuing to grow. He said that meeting with industry individually, he knows that sometimes in a collaborative forum it is difficult to share what individual market results are seeing and business plans. However, he said that what they are learning is this is really not just leisure travel. He said they are seeing a shift in where people have moved to flexible work hours, etc. He said they are really seeing a commuter market emerge. He said from a traffic perspective, it is new to them because they are not seeing that holiday period, peaks and valley kind of thing. He said they are seeing constant pressure, certain days of the week where travel is occurring and people are going to make their presence for two or three days in Boston, New York, Chicago, or wherever they may be working.

He said that while they value these collaborative forums, it also has been tremendously beneficial to meet with operators individually to get insight on where they may be planning to go. As they are working on managing resources and training plans going forward, he said he thinks they all can acknowledge that Florida sort of caught them by surprise, as new travel patterns emerged. He said they do not want to be surprised again. He said that they will have another operational summit in early October, just like they did for Florida. He said that in Florida, they were focused on that very acute problem that they all became aware of probably a little bit too late and they were reacting. He said that

as they emerge from that, they want to look at the lessons learned from the summer work. Specifically focusing on not just the future and trends, but really getting into a discussion of how they will navigate the upcoming holiday travel period. He said October gives them a chance to catch their breath and really get another status check on how are they looking going into the major holidays.

With regard to what has changed, he said they are moving resources in the right direction and that the FAA will be growing incrementally with industry (with regard to hiring and training). He said the FAA is looking forward to the October summit to share as much as they can in that forum with industry and get a lot of feedback. He said they also truly do appreciate those one-on-ones where there may be some sensitive subjects. He said that as the operators of the system, the FAA appreciates the insight of where to expect emerging demand. Mr. Arel then handed off to Mr. Childs.

Mr. Childs thanked Mr. Arel and said it is fascinating. He said that he and Mr. Arel spent a little bit of time together yesterday talking more about this topic. He said he will add his perspective as a regional operator. Mr. Childs said they kind of weathered the storm a little better than everybody else, because he thinks they got shocked with staffing challenges in January, as opposed to the spring when everybody else did. He said they just started to drastically manage their expectations of what they could do during the summer months. He said he thinks this is not necessarily a topic isolated to the airline industry, but operators need to continue staffing models relative to captains and mechanics and making sure that they have ways they can have the adequate staffing and training necessary to keep this going, which he said will very taxing compared to what the post-pandemic demand is.

Mr. Childs said they live in a small town—St. George, Utah. He said through the pandemic, everybody is moving to St. George from everywhere. He said the urbanization of society is creating commuters that want to commute all the time. He said that going forward, the staffing models have to enable industry to do what they need to do well to meet the demand and to make the return on investment of all of the capitalist things that they are evaluating in the NextGen community worthwhile. He said his company's ROI has gone up dramatically. If it has staffing models that are more efficient, you know, what the cost that they are facing, and that those relative to NextGen are outstanding, anything with Data Comm and that type of stuff where they can be efficient is great. But he said he thinks this has to be a topic of conversation that's blended with some of the challenges they have. He then opened the floor to questions or comments.

Mr. Patrick Burns (Delta) thanked Mr. Arel for the insight. He said Mr. Arel mentioned the challenges faced in COVID. He said they have all lived through that—pilots sitting next to each other, dispatchers, and the operations control center—and figured out a way to do it do it safely. He said customers are expecting that. He said they have to get there—they have to figure it out. He said the staffing piece is going to support everything and everybody. However, he said he thinks the other thing to consider is when they measure the success, as they are getting better in the system from the right perspective, it cannot just be cancellation rates—it is the delayed minutes that are in the system as well. From an operating perspective, those delay minutes certainly affect staffing models, as well as their days are limited. So on a particular day that has a relatively low cancellation rate, he said they may be burning through resources, at an incredible rate, at the same time as resources are affected by the same challenges in COVID that the FAA is facing. So those are all interdependent. He said they should open the aperture to kind of look at that whole system. He added that he appreciates the work that the FAA is doing with each of the operators specifically and the productive meeting in Florida.

Mr. Arel said that he could not agree more. He said one of the things they are proud of is they have seen nationally a reduction in delays, adding they are down 57% in delay minutes in July compared to 2019. So while there are certain pain points in certain areas where that that number is off the charts, it is in direct correlation with really an unanticipated direct increase in a significant amount of operations. That is where they have a significant increase in delays, but delays across the system are down significantly. He said that he does not know that they have done the best job that they could in communicating that the system is running better overall. However, there are just certain areas that were incredibly challenging. He said it is a new thing for them operating at this level in places like Florida, but they are working through it. He said that is why as they look at those other destinations to the west, he thinks it is really important, particularly in this forum and others, that they get in front of that curve and address those delays up front.

Mr. Arel said that when it comes to the addressing COVID, they have had the CDC shift its guidance for the federal workforce. He said the administration is working through those now and they are making some changes and working through negotiations with the workforce right now. He said he thinks they are at the point where they have this figured out, and they will see less impacts than seen historically. He said he understands everything Mr. Burns said and agrees with it. He said that is why they will continue to bring data forward and have those conversations.

Mr. Burns said shared key performance indicators are important, adding that they are graded by the traveling public on more than just cancellations.

Mr. Ed Bolen (NBAA) said he thinks the FAA did recognize a shift that was unexpected going from New York to Florida. He said he appreciated the meeting that the FAA had on Florida and that he is really looking forward to the October summit, because he thinks there are lessons learned that they can bring forward. He said the changing patterns, the leisure travel turning into business travel in places like St. George, he thinks that is key to the people that he represents and trying to reach small towns, rural communities that that are often overlooked, have suddenly become places where people live. He said he is excited about the opportunity to work together, but also continually grow. He said he thinks they have recognized what the challenges are and this group is about is focusing on the solutions. He said he thinks there is a lot of room for them to grow. He said they need to attack the next peak better than before.

Mr. Brian Quigley (United) said he appreciates Mr. Arel's collaboration with carriers. He said he knows that they have been meeting with COOs and he thinks the meeting in Florida was particularly meaningful. He said as aircraft arriving in Florida get delayed, it affects the whole system throughout the NAS. He added that it is particularly challenging because of the space activity, military activity, weather, and then the staffing challenges, such as at Jacksonville Center recently. He asked Mr. Arel if he had thoughts on doing things differently in Florida yet.

Mr. Arel said they are working through Florida in a very transparent manner. Mr. Arel said that when it comes to doing things differently, he is not yet sure of the specifics and they will probably have to discuss at the October summit. He said they are in conversations with the military on how to do more dynamic airspace modeling. He said that as more space launches occur, they will have additional data that may help shrink aircraft hazard areas. He said that this summer they stood up a collaborative decision making forum for commercial space so they can have those types of conversations. He said they have shifted some launch times and some launch dates based on those collaborative efforts. He

said there is still that funnel, physics of thunderstorms, over-water routes, etc., that are unique to Florida. He said they are always open to suggestions and certainly want to continue to be as safe as possible. He said it really comes down to a bottleneck of congested airspace, which is not new to them. He said they know what that looks look like historically for the Northeast Corridor. He said that continues to be an effort that they have been working their way through. He said he does not think they found the perfect solution there yet, adding that what is old is new, in a way, but they are always willing to collaborate and try new something new and talk about it.

Mr. Warren Christie (JetBlue) asked when Mr. Arel thinks the staffing levels are going to catch up.

Mr. Arel said that when they look back at the data, as far as the number of certified controllers, they are back where they were in 2017 / 2018. He said that is when they realized that they did not have enough certified controllers. He said they have met their hiring target every year for the last seven years. He said this has not been a hiring challenge, citing 58,000 people applying for their most recent vacancy announcement. He said they have never historically missed their hiring target, but what has eluded them is the ability to train and reach a momentum to keep everybody at that certified level. He said they were reaching great strides in 2019 and had hit the highest number in a long time of controllers, supervisors, technicians, etc. He said as they look forward, and they really put a lot of resources behind this, they are recognizing that you cannot make up the hours needed for training, you need to experience those hours. They are pushing as many through as they can and they are going to be able to get through classroom labs, and then get people lined up ready to train on the floor. He said they think it will gradually increase in the fall, winter, and into next summer, where he said they will be in a much better position. He said their goal is to be where they want to be by the end of 2023 and ready for 2024. As far as meeting individually with airlines, he said he thinks almost all have said that is when they will hit their stride again or be ready to leap forward to 2019 levels. He said all of their efforts are on moving that number as fast as they can now. But their real goal as they up hiring numbers for this year and next, is to create throughput or increase throughput capability and have folks lined up to experience those hours on position.

Ms. Shanetta Griffin (FAA) said that when they are having these types of conversations, do not forget about the airports because they are the facilities that are taking on that stress and strain of delays or cancellations when they have additional passengers in the terminals and in different locations. She said in conversations, simply think about that partnership and what that means to the airports and the impact of them because they are taking on things that they are not ready for as well, especially in the small communities. She said what they hear all the time in the small communities is they welcome the revenue side, but they are not prepared for it. She added that they do not have the resources that the larger airports do.

Mr. Childs said that he appreciates Mr. Arel for having the dialogue. He emphasized that as this whole market evolves, collaboration with industry and the FAA is the absolute most important part. He said he does not think they can collaborate enough in some of the challenges he thinks they are still facing.

Mr. Burns requested to comment on 5G, which the NAC Chair allowed. Mr. Burns said that they have all lived through 5G for some time. He said that Ms. Baker previously expressed some confidence in the timeline of a retrofit. He said the level of confidence the FAA has is not reflected, in their experience, with the OEMs. He asked Ms. Baker where she thinks the difference is.

Ms. Baker said she thinks it is based on conversations that they continue to have. She said they recognize they have to manufacture filters, they have to be delivered, and they have to be installed. She said they are having conversations with all people involved in that process. She said that is where their confidence is coming from. However, they are continuing those conversations, three, four times a week to make sure that they can continue to calibrate what their beliefs are and the conclusions they have come to. She said they are also monitoring retrofit. She added that if anyone has not already been reached out to at the CFO level, to please anticipate it because the FAA is going to be asking for support in making sure they can track those retrofits.

Mr. Burns said that he is not getting that same level of confidence, which he said is shared among operators.

Ms. Baker emphasized keeping the conversations going.

FAA Topics

Next, Mr. Childs handed off to Mr. Mims to introduce the speakers for the FAA Topics agenda item.

FAA Response to NAC Task 22-1

Mr. Mims first handed off to Mr. Rob Hunt (FAA) for more information on the FAA's response to the NAC's advice on NAC Task 22-1.

Mr. Hunt began by thanking the NAC for executing this task in the compressed timeline. He said the FAA recognizes how challenging it was to pull the response together and deliver the report at the end of April. Mr. Hunt then reviewed that in early April, as the programs were starting their re-planning activities, the FAA asked the NAC for consensus-based priorities with respect to those programs that support the milestones in the NextGen Joint Implementation Plan (NJIP), including Data Comm Initial En Route Services, Data Comm Full En Route Services, Terminal Flight Data Manager (TFDM), and Time-Based Flow Management (TBFM). Mr. Hunt explained that they also included ADS-B In capabilities because, although they are not supporting milestones right now, there has been quite a bit of interest over the past couple of years. He said that the NAC delivered its report at the end of April. He noted that the report focused the priorities in the context of benefit projections and readiness assessment.

He then transitioned in to providing the FAA's response. He said the first key takeaway is that the information in the NAC's report was used to inform corporate budget planning and allocation decisions, as well as the re-plans themselves. He said that it is worth reiterating right at the outset that these re-plans are a product of striking the balance between investing in today's operation and today's NAS, as well as continuing to invest in new capabilities and operationalize NextGen. He said these re-plans are largely aligned with the information contained in the NAC's report.

Before explaining the re-plans, Mr. Hunt clarified that this response is meant to be an overview at this point and that they do expect much more detailed discussions at future meetings. Additionally, they are going to first focus on the re-plans and then talk about their approach to updating milestones in the NJIP. He then reviewed the following information:

Program Re-plans in support of NAC milestones

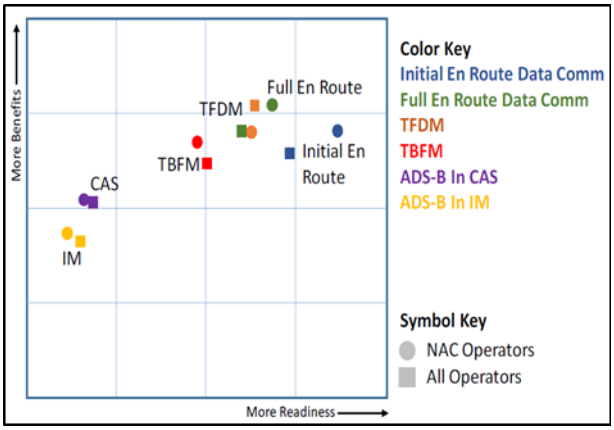
- Data Comm: Continue to implement Data Comm in en route environment
    - Continue to implement Data Comm Initial En Route Services

    - Continue to implement Data Comm Full En Route Services (deferring activation of a small subset of messages until avionics issues are addressed)
- TFDM: Continue to implement TFDM core capabilities (surface metering/electronic flight strips) at select locations
    - Deploy Config A (surface metering/electronic flight strips) to all 27 Towers
    - Reduce Config B (electronic flight strips) Towers from 89 to 49 sites (the 49 includes the 27 Config A sites)
    - Reduce the pace of site deployment
- TBFM: Continue to implement time-based metering capabilities at select locations in support of iTBO
    - Implement en route metering and departure scheduling (IDAC)
    - Defer Terminal Sequencing and Spacing – new implementation timeline is TBD
- ADS-B In capabilities
    - Continue to support the ADS-B In Retrofit Spacing Evaluation
    - Defer CDTI-assisted Separation and Flight Interval Management--new implementation timeline is TBD

The following is a summary of follow-on discussion resulting from Mr. Hunt's review of the program re-plans.

- United:
    - Questioned the FAA on when they project to get back to working on Cockpit Display of Traffic Information (CDTI) Assisted Separation (CAS).
    - Stated that air carriers are making substantial investments right now for aircraft and avionics that will be in service for the next 30 years—airlines are interested in CAS and would like it to be more of a priority so they can equip.
    - Mr. Hunt responded that over the past few years, the FAA has been planning to make a future investment to make changes to the ground automation systems to enable CAS and FIM. He said that at this point, given what they talked about earlier in terms of striking that balance between allocating resources to today's NAS, while at the same time continuing to invest significantly in NextGen capabilities, what they are saying is that the future investment for those ground automation changes are TBD right now. He said within a few months, they hope to have an update to let the NAC know what their thinking, strategy, and timeline is for those items.
- American:
    - Indicated carriers have already made large investments in ADS-B In. Asked whether they are going to be involved in the future strategy. Asked if in a couple of months the FAA will come back with more of an isolated view of what that should be from their standpoint.
    - Mr. Hunt responded that their approach for a number of the items here, including the ADS-B In capabilities, is to come back in a few months with an update in terms of where they are in analysis, planning, etc. At that time, they certainly welcome feedback from the community on those plans. He added that they recognize the investment that many in industry have made with respect to ADS-B In flight deck changes. He said that is included in their ongoing review.

- Delta:
    - Indicated that the relatively limited scope of the tasking challenged the NAC, adding that there are interdependencies on all these programs. He said all these T programs being delayed for some time affects the ultimate benefit to all the digital communication they are working on. He added that the tasking handcuffed having a broader conversation.
- FAA Air Traffic Organization:
    - Appreciates the comments but the FAA cannot do it all and will not spread incremental cuts across programs that would result in an unacceptable pace—they are focusing on prioritizing what they can get done.
    - Balancing increased cost of operating, maintaining, and keeping facilities running against what will have the most bang for the buck or address most of industry's concerns, laying the foundation for the things that industry is investing in to achieve those optimal efficiencies.
    - Committed to gathering input from industry as they reach incremental decision points and put that against the budget.
    - Committed to continuing to be transparent and collaborative; however the FAA cannot do it all, at least not right now. With current funding structure, and funding levels, they are trying to make the best decisions possible.
- Delta:
    - Indicated that the strength of the NAC is helping to find that path—said the NAC can do better at helping to identify what are the right priorities for the NAS.
    - Looking forward to continued cooperation and broader collaboration.
- American:
    - Questioned the qualitative nature of the benefits mentioned in the following graphic:



    - Mr. Hunt pointed out the graphic came from the NAC's report. He added that as part of FAA deliberations in terms of re-plans and whenever they have to prioritize capital budget or any resources, they look at quantitative benefits of programs as one of the many factors in terms of moving forward.
- FAA NextGen:
    - Said the FAA is ready and prepared to have further ongoing dialogue when it comes to the avionics portion, which he described as a value proposition on both sides.

    - The FAA is looking at it from the investments they have to make into automation platforms to make the changes that would be necessary to enable a given application.
    - It is important to understand where the state of the industry is in terms of equipage—FAA knows that certain carriers are out there in front.
    - To better inform a conversation, it is a holistic view of where is the state of all of industry relative to trying to move to get the equipage on board for ADS-B In; described this as a two-way street as part of an ongoing dialogue that needs to occur.
- United:
    - Emphasized that they are making investments for equipage, that are going to last 30 years on these aircraft—there is a long lead time to install equipment with CFOs and CEOs expecting benefit, adding that it is painful seeing the outcome of the tasking.
    - Mr. Fontaine responded that he thinks it's an ongoing conversation on how do they align industry and FAA lead times.
    - Mr. Hunt, in reiterating what Mr. Arel said earlier, said they are moving forward with quite a bit here and will continue to do so in 2023, 2024, and 2025. At that point, he said their expectation is they will have another set of capabilities that they should be able to invest in appropriately. He added that they have to understand what the top line resource allocation is, and make the best decisions within that context—balancing today's NAS, with continuing to invest in the re-plans.
- NAC Chair:
    - Described the situation as frustrating for the FAA and industry.
    - Asked if there a different format, with more consistent dialogue—need for more engagement for committee members focused on industry investments.
    - ROI keeps getting stretched out longer and longer—need to find a different and better way to communicate, collaborate, and execute on that.

Mr. Hunt then reviewed next steps, including the following:

- Closing NAC Task 22-1
- Continuing to socialize latest re-plans and obtain feedback from the NAC
- Review proposed updates to the NJIP FAA milestones via NAC SC and NIWG engagement
- Present updated NJIP FAA milestones at November 2022 NAC meeting

Mr. Hunt then handed off to Mr. Mims.

Mr. Mims said that as they go forward, he wants to make sure that everybody is very clear on the fiscal and the budgetary issues that the FAA is challenged with. As they move forward, the FAA will try to find a balance of communications.

Action: The NAC Chair and NAC Designated Federal Officer (DFO) committed to exploring options to provide increased transparency on FAA fiscal and budgetary issues related to modernization efforts

Before moving to the next topic, Mr. Arel provided a clarification on the October summit he mentioned previously. He said the next operational summit will include a quick look at what they learned from Florida, but will be primarily focused on the entire country—what they are seeing for travel patterns, as well as what the collective plans are going into the holiday season.

Airspace Modernization Roadmap

Next, Mr. Mims handed off to Mr. Jim Arrighi (FAA) for an update on the Airspace Modernization Roadmap (AMR).

Mr. Arrighi said he is providing an overview and update on the AMR strategy. He said it is a strategy developed with a focus on FAA flight planning, mission, and strategic goals. In particular, he said they are focused on safety and operational efficiencies, operational excellence, and efficiency goals. He said their intention is that this is a holistic, sustainable, and agile strategy that uses data analytics and metrics in order to make decisions. He clarified that it is holistic in that that they are looking at the airspace, from the en route, down to the runway, and everything that happens in between there. So approach procedures, arrival procedures, departure procedures. He said it is sustainable in that they expect that this is going to be their way of doing business for the future. It is intended to be an agile strategy because they know that the one thing that is constant is change and that they have to be responsive to those emerging technologies, new entrants, and any variety of pressures on modernization efforts.

He said this is a follow-on to the Metroplex work. He said it is intended to be focused on larger airspace modernization efforts, not a single, simple tactical procedure approach to things. Single site procedure work is still going to be ongoing through the 7100.41 Implementation Process and 8260.43 Flight Procedures Management Program, where they will continue to accept procedures through the Instrument Flight Procedures Information Gateway and validate, prioritize, and execute on them. Although this is a larger strategy, their single site work is not going to evaporate as a result of it. He said one of the key things that they are doing with the AMR strategy is integrating those metrics into their decision making process. They are developing quantitative data for the 74 NSG 1 and 2 airports based on safety, first and foremost, using data from the aviation risk identification and assessment tool.

They are also looking at various data and procedure efficiency metrics, including level-offs, distance flown, design usage, and conformance and operations data. He said some of that might sound familiar to people who have been around for a while, because the basis of those metrics is in the seven criteria that were delivered to the FAA through the RTCA process some years ago. He said they find that those are still valid metrics, although they do learn lessons from them. He said that one of the things that they have learned today is that internal to the agency, they have different views of efficiency that they need to incorporate. He said they also have efficiency metrics that speak to the readiness of a particular airspace for TBO. They are also looking at that en route airspace now. He said they initially looked at the 74 NSG 1 and 2 airports, but they have learned through initial efforts that they have to consider that en route airspace and their intention is to update their metrics to improve those areas. They are also not looking just at the NSG 1 and 2 airports, they know that those airports group into TRACON areas, so they are looking at them a little more holistically for that TRACON airspace perspective with the focus on those NSG 1 and 2 airports.

He said they are using quantitative data that gives them the foundation for a qualitative assessment of the needs in a particular area. The qualitative assessment is focused on a couple of things. One is the opportunity assessment, so that they can understand how those operational factors are causing those quantitative results. And what the potential is for an airspace modernization project or effort in a particular airspace to address those needs. It also includes ongoing commitments, plans, and other programs that they address within the agency. They also conduct a feasibility assessment to capture other factors that might impact their ability to make changes in the airspace for instance, air traffic

readiness, resource constraints, ongoing work, training requirements, and staffing issues. They take into consideration those industry factors too and they have already talked about MCL, the clarification task, the complexity of a particular airspace. They want to look at the environmental factors and appreciate the community engagement elements of the work that they do. They also want to take into consideration litigation, ongoing litigation, or potential for litigation.

So those quantitative and qualitative factors are rolled up into Airspace Portfolios that they have created on an internal SharePoint site, which is a series of dashboards used by their Service Area Leadership Teams (SALT) for deliberations. He clarified that as they have expanded their look at the airspace and the integrated needs, they realized that there are really airspace portfolios and not just focusing on the terminal airspace. He said SALT teams are part of the governance structure that they established. Headquarters will always maintain that AMR strategy oversight, including oversight of the communication strategy, messaging, interactions with Congress, integration commitments across those 11 NextGen portfolios, and approval of resources or expenditures on any of those modernization activities.

One of the key differences in the way they are doing business in the AMR strategy is that those service areas are key to the identification and the ranking of priorities within those service areas. In addition to executing the strategy, which has always been one of their focuses. He said the SALT teams are there meeting now, adding that there are three service area leadership teams, East, West and Central. They are made up of key FAA and executives or directors, the directors from Air Traffic Operations, System Operations, and Technical Operations. Outside of the ATO line of business, they have directors of the Airports divisions, and regional administrators from those nine FAA regions that overlay those three FAA service areas. Through the SALTs and their knowledge of those priorities from airport sponsors, bargaining units, local officials, interaction with industry at various levels, military operations, and other factors they assess, they make determinations of the priorities for airspace modernization within their service areas, and then make those recommendations to the ATO Officers Group (OG) which is composed of vice presidents and the different service units and led by the ATO COO. He said industry innovation is a key to the AMR. They look to the NAC for consensus advice as they have in the past for the clarification task, MCL, NAS Navigation Strategy, and he refers to some of the past RTCA Task Force Five work because they did get recommendations for Metroplex locations, criteria for ranking locations, how they assess airspaces, some of those things still remain valid today.

He said they intend to continue with collaboration on a tactical level once site recommendations are approved by the OG. They also continue to use the gateway for the single site, non-airspace modernization project work. Their intention for the future is that once they get through the initial site recommendations and approvals of the airspace modernization sites, they will do a post-recommendation assessment of the positive and negatives, and then retool and update methodology as needed.

He then reviewed next steps. He said SALTs are completing their initial rounds of airspace modernization needs assessments, which will be completed by the end of this fiscal year. Those will be recommendations that are forwarded to the OG for review and decisions. He said once those modernization decisions are approved, they anticipate that they will begin that actual work on scoping the specific projects sometime in calendar year 2023. He said it is not happening right away, but they are pretty far down the road in developing the AMR strategy and their vision for the future.

Mr. Arrighi then handed off to Mr. Mims.

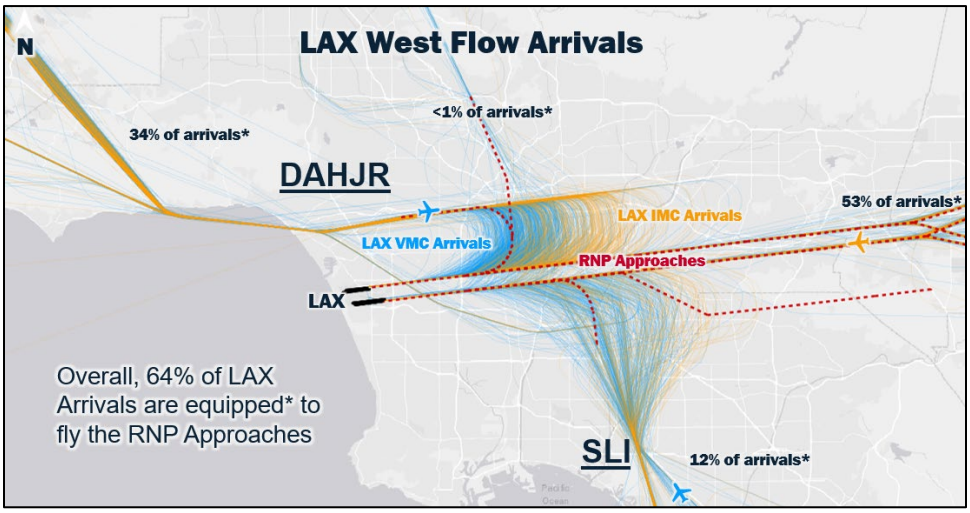
Section 547

Next Mr. Mims handed off to Mr. Juan Narvid (FAA) and Mr. Jesse Wijntjes (FAA) for a status update on the Section 547 activity.

Mr. Narvid provided the refresher that Section 547 comes from the 2018 Reauthorization Bill to establish pilot programs at three different locations. He said the NAC formed an ad hoc group to work with industry to come up with a shortlist of candidates and recommendations. Then the FAA made the following selections:

- Simultaneous Independent Established on RNP (EoR) at LAX
- ADS-B Out enabling 3 nautical mile in en route airspace (below FL230) for Oakland Air Route Traffic Control Center (ZOA)
- CPDLC Departure Clearance (DCL) capabilities at MCO

He said his job was to go on after the selection was made and to measure the benefits and opportunities to apply some of the pilot program equipage. He first reviewed establish on RNP, which he said is using the RNP AR RF capability on the aircraft to apply the EoR separation standards. He reviewed the following graphic:



He then reviewed the following benefits information:

RNP RF Benefits – West Flow

Flight Efficiency Improvements for RNP RF vs Non-RNP Approach Operations

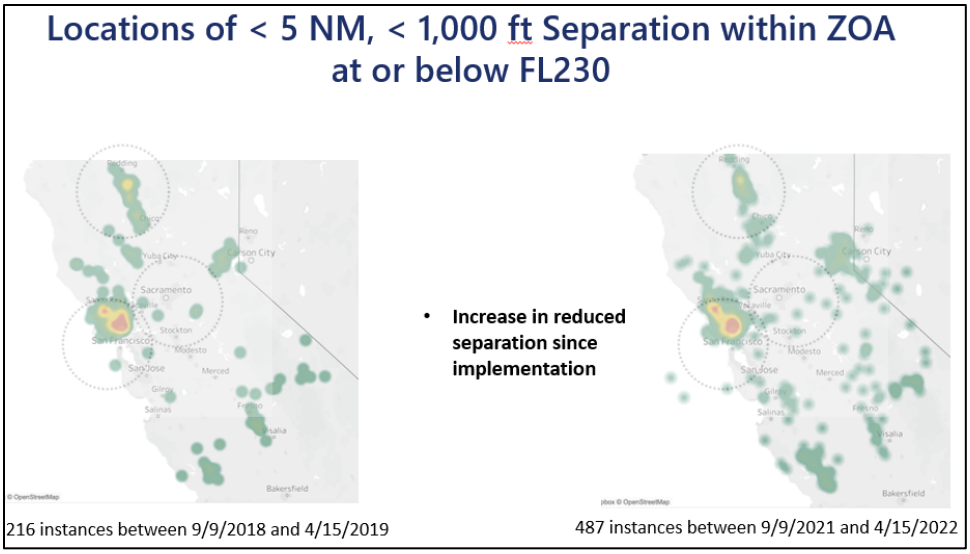
VMC/IMC	Distance Flown (NM)	Time Flown (Minutes)	Estimated Fuel Burn (Gallons)*
VMC	2.2	0.8	9.7
IMC	7.4	2.3	24.6

- RNP RF usage has increased from under 50 a month to an average of 540 a month since implementation of EoR

He then reviewed ZOA, which he said involved using ADS-B out and trying to measure what is the benefit for air traffic to go from 5 to 3 nautical mile separation. He reviewed the following graphic:

Operational Context ZOA – Adapted for 3NM Separation (FL230 and below)

He said the left depicts before they apply the 5 to 3 nautical mile separation using ABS-B. He said it shows some areas that they were using three nautical miles previously, which he explained was due to using enhanced radar by fusing different radars to be able to get a better picture. The right shows after using the accuracy of ADS-B to be able to reduce the separation standards from 5 to 3 nautical miles. He said that he had talked to air traffic control and they had very positive feedback on being able to use and have his capability to go down to 3 nautical miles. In their perspective, it allows them to avoid excess vectoring that they normally would have by having the 5 mile standard. He then reviewed the following graphic:



Mr. Narvid said they looked at the opportunities to use a 3 mile separation based on being within 5 nautical miles or 1000 feet. Previous to them using ADS-B, there were about 216 instances of applying the same standard. He said after having the separation standard go from 5 to 3 nautical miles, there were 487 instances.

Mr. Christie said that as they think about 547 and the Enhanced Air Traffic Services—how do they see this improving? Back to the LAX example, how do they translate that into a benefit in arrival rates? Or how do they see the improvements that will encourage operators to equip so that you see these benefits? He said he understands these benefits and he is not downplaying fuel savings and such. But the underlying goal here is to encourage equipage and generate enhanced air traffic services. He asked how this translates to that.

Mr. Narvid said that they know that there is a benefit from being able to fly the RNP AR, but there is also a training requirement and capability requirement for airlines to have pilots in an aircraft equipped to do that. Mr. Narvid requested that Mr. Christie clarify his question.

Mr. Christie said if you think about the genesis of this, it was Enhanced Air Traffic Services, which was to encourage equipage so that they would see Enhanced Air Traffic Services. He said he is trying to figure out how this shows that those that have equipped have benefited? He said he sees the fuel savings. If he is a carrier that has chosen not to equip an RNP, how does this encourage him to do that? Is he going to receive improved throughput?

Mr. Narvid said the benefit they were asked to measure was the benefit of having the equipage—they did not look at throughput, specifically. They try to measure the individual advantage that aircraft have for having it compared to not having it. He said that their perspective on it was to look at comparing those who had the equipage versus those who did not. He said if you are able to fly it you would have an advantage on both distance and fuel burn. They did not look at it from a throughput perspective, but said it is something they can look at but cautioned that COVID-related traffic reduction may impact the ability to do this.

Ms. Wendy O'Connor (FAA) said they are seeing the benefits in the Denver area right now with the RNP usage along with their total usage. She said they have seen efficiencies and more throughput in that

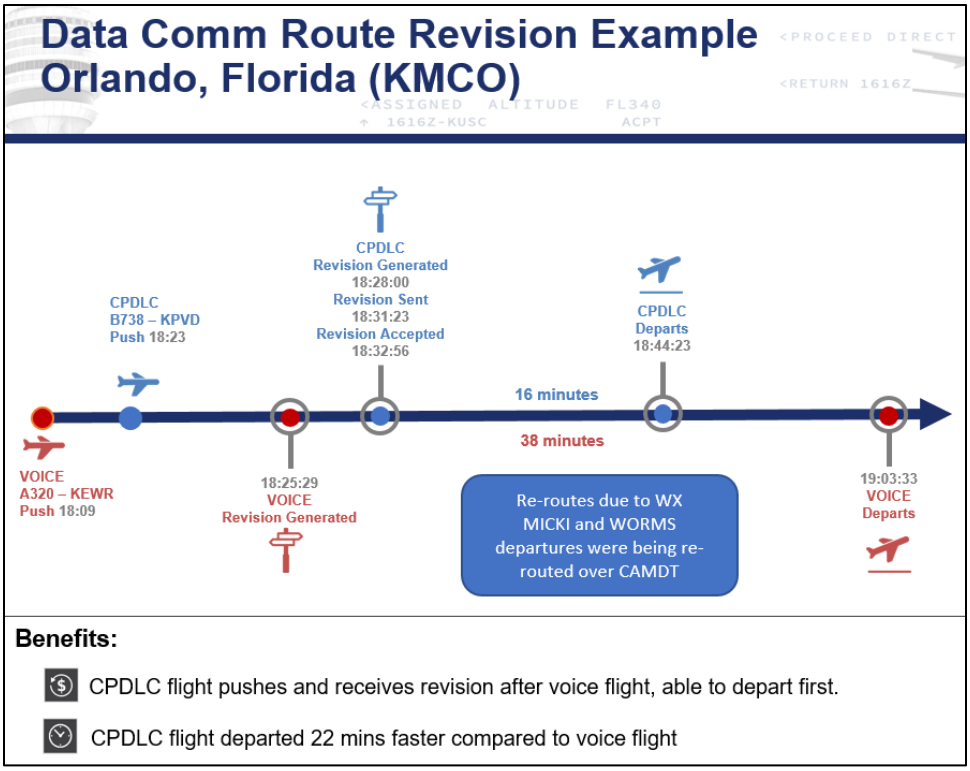
particular area, adding that they have done the PBN work plus the TBO work, which gives them more efficiency. In this particular case, they did the RNP, but they do not have necessarily the TBO aspect there, which they are working on.

Mr. Christie said if you go back to the genesis of this, which was if you equip, you're going to receive benefit. And he said he guesses that the benefit is, if you are RNP capable, you fly from point A to B in less nautical miles. He said he thinks we need to figure how to translate this into business cases because they are all anxious for everyone to equip. He said it is a financial decision, ultimately and they have to figure out a way to tell this story such that it brings those financial benefits to try further equipage.

Mr. Childs said the real genesis of Section 547 is to respond back to the government that the investments they are making are yielding this. He said this goes back to a conversation about budgets. He said they all want yield on both the business side and the government side. He added to remember that this is a report is on only six months of a two-year analysis. He said this is to show the government that these are outstanding investments and you need to spend more money quicker for us on this. Mr. Childs said that is the real nexus of this and it is also for the industry as well.

Mr. Mims then handed off to Mr. Wijntjes to discuss CPDLC Departure Clearance (DCL) capabilities at MCO.

Mr. Wijntjes said this is a huge success story. He said that in Orlando the two measures that they were told to calculate were gate and taxi out time savings and emissions. So they have been calculating those numbers all the way back since 2016, when Orlando went operational, and as part of the Section 547 activity too. Mr. Wijntjes reviewed cumulative CPDLC DCL data across all 65 airports, Orlando CPDLC DCL participants and growth in operations, Orlando departures by operator and aircraft type, Orlando CPDLC DCL messages delivered, and Orlando CPDLC DCL time savings and emission reductions. He reviewed the following graphic that shows the time savings of an equipped jet, versus one that had to coordinate with ATC over voice, which he said translates to 22 minutes of savings when comparing two airplanes that were leaving at roughly the same time going to the Northeast.



He said this happens hundreds of times in the operation across 65 airports every day. So it is a great story in Data Comm and they will continue to collect the information and report out moving forward. He then handed off to Mr. Mims.

Mr. Mims concluded the FAA Topics agenda item and handed off to Mr. Childs.

NAC Subcommittee (SC) Chair's Report - NAC Taskings Status

Mr. Childs then introduced Mr. Warren Christie as the new NAC SC Chair. Mr. Childs said Mr. Christie has done a fantastic job with Section 547. In making an additional point on the Section 547 discussion, he said he thinks they can continue to look at data not just from the three selected 547 cities, but others to demonstrate the yield that they can get relative to some of these investments. He then handed off to Mr. Christie for the NAC SC Chair's Report.

Mr. Christie handed off to Ms. Lee Brown (JetBlue) and Mr. Ralph Tamburro (PANYNJ) for the Northeast Corridor (NEC) briefing.

Northeast Corridor (NEC)

The team reviewed an outlook overview of NEC commitments detailed in the following graphic:

Type	Commitment/Milestone	Jun 2021 NAC	Mar 2022 NAC	Current Dates
Implementation	Complete Atlantic Coast Routes project	TBD	Q4 CY2022	Q3 CY2023
Implementation	Implement arrival time-based metering for PHL and EWR	Q4 CY2023	Q4 CY2023	Q4 CY2024
Industry	Start GBAS installation at LGA	Q1 CY2023	Q1 CY2023	Q1 CY2023
Industry	Start GBAS installation at JFK	Q1 CY2023	Q1 CY2023	Q1 CY2023
Industry	Conduct Fly Quiet Program for EWR, TEB, JFK and LGA			Q4 CY2024
Industry	Identify tower space for TFDM installation at BOS	TBD	TBD	Q4 CY2024

Mr. Tamburro indicated that they are looking for a motion for NAC approval. Mr. Christie recommended that the NAC approve the NEC NIWG's recommended industry milestone updates. Mr. Childs called for a motion to approve the updates as advice to the FAA, which the NAC passed.

Outcome: The NAC passed a motion to approve the NEC NextGen Integration Working Group's (NIWG) recommended NJIP industry milestone updates:

- Conduct Fly Quiet Program for EWR, TEB, JFK and LGA – Q4 CY2024
- Identify tower space for TFDM installation at BOS – Q4 CY2024

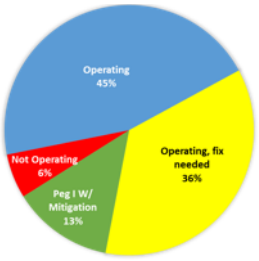
Data Communications (Data Comm)

Next, Mr. Christie handed off to Mr. Chris Collings (L3Harris), Mr. Ed Evans (SWA), and Mr. Wijntjes, specifically requesting that they focus on the industry milestones updates.

Mr. Wijntjes said they have 65 centers running and, now, six centers running 24/7. He specifically mentioned that Miami Center is now running 24/7 and that Atlanta, Chicago, and Seattle Centers are the next facilities that they are working with.

Mr. Evans said they are looking to promote partnerships and encourage execution throughout the industry, with the FAA taking the lead, along with airlines, NATCA, airframers and OEMs. He said it does not happen unless that partnership is actionable and they get after executing their action items. He reviewed that have been focused on restarting en route deployment for Data Comm. He said that has happened and thanked the FAA for getting that going. He said that next they are trying to finish that across the board. He said there has been a silver lining in this pandemic, in that they have identified what is required from an avionics software standpoint to get things done. He said that completing installation of Data Comm avionics updates for retrofit and newly delivered aircraft and establishing plans for updated avionics to be installed on all new delivery Data Comm capable aircraft is their focus. He said that ties to their NJIP milestones. He then reviewed the Data Comm avionics updates fleet status depicted in the following graphic:

Data Comm Avionics Updates Fleet Status



Aircraft operating in Data Comm En Route – No Pending Actions (45%)	
Alaska Airlines: B737	**JetBlue:** A321LR
American Airlines: B777, B787	**Southwest Airlines:** B737
Delta: A330neo	**United:** B777, B787
FedEx: B777, MD11	**UPS:** B744, MD11

Avionics Action	Operator/Fleet	Status
Aircraft operating in Data Comm En Route with Crew Procedure Mitigation (13%)		
Boeing 757/767 Pegasus 1	FedEx, UPS	Aircraft operating under procedure mitigation; Avionics Update: Peg 1 BP11 (Q1 2023)
Aircraft operating in Data Comm En Route with Open Avionics Actions (36%)		
Collins CMU 900 Core 16	American, Delta, United	Delta & United planning installs; American delayed
Boeing 767 ATN 505+ (Core 16)	FedEx, UPS	Newly delivered B767s starting in mid-2022 do not have "Core 16" equivalent avionics. Update planned Q2 2023.
Boeing 747-8 ATN-203 (Core 16)	UPS	"Core 16" equivalent. Update planned Q4 2022.
Airbus A320 ATSU CSB 7.5	Alaska (100%), American (100%), Delta (17%), JetBlue (99%)	CSB 7.5 released in late 2020, technical issues increased, root caused; **Fix planned for CSB 7.6 Q2 2024 (or CSB 9 available now)**
Airbus A320 ATSU CSB 7.6	Alaska, American, Delta, JetBlue	CSB 7.6 planned for Q2 2024 (or CSB 9 available now)
Aircraft removed from Data Comm En Route due to Open Avionics Actions (6%)		
Collins VDR Update	United	Install delayed
Boeing 757/767 Pegasus 1	United	Pending Peg 1 BP11: Q1 2023
Airbus A220	Delta, JetBlue	Pending avionics fixes, FMS update Q4 2023; RIU update TBD
Airbus A350	Delta	Pending avionics fix, planned Q4 2022

Operating, no action required | Operating fix needed | Peg 1 operating with mitigation | Not operating

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Mr. Collings said he wants to point out a couple of accomplishments since the last NAC. He said that since the last NAC, Alaska Airlines started and finished their core 16 updates across the fleet, which he thanked them for. He said they recently got news from Delta and United that they are working their CMU 900 core 16 updates. He said that is probably the biggest chunk of the yellow and the most important item on the list for improving performance as they roll this out through additional sites.

He then reviewed the following open avionics actions:

1. Airbus fix for A320 ATSU HX reject: Q2 2024
    - CSB 7.5 (and CSB 7.4) technical issue fault isolated
    - CSB 7.6 to correct issue, planned Q2 2024
    - Alternatively, CSB 9 available today also corrects the issue
    - Open issue affecting JBU A320 fleet causing message failures using SATCOM under investigation
2. Airbus A320 ATSU CSB 7.5 for older hardware: Available Now
    - ATSU CSB 7.5.1 available March 2022
3. Airbus A220 FMC and RIU Updates: TBD
    - FMC: IMA Build 8.0A3 expected Q4 2023

- Radio Interface Unit (RIU) "Core 16" update: TBD

4. Airbus A350 VDL Mode 2 avionics fix: End of 2022
    - Updated ACR standard to be available for new and retrofit aircraft by end of 2022
5. Boeing B737MAX CMU900 Core 16 production cut-in: December 2022
    - B737MAX customers may begin configuring aircraft deliveries with CMU900 Core 16
    - First Boeing 737MAX with Core 16 planned for production in December 2022
6. Boeing 767 ATN 505+ "Core 16" Update: Q2 2023
    - Newly delivered B767s with ATN starting in mid-2022 do not have "Core 16" equivalent avionics. Update expected Q2 2023
7. Awaiting Boeing milestones for Nav Database revisions to mitigate en route STAR in free text for Pegasus II, B787, and B747 NG FMC
    - B787 and B747 NG FMC will require an FMC update in addition to NDB changes
    - Boeing does not have firm milestones for completion

He then reviewed the milestones depicted in the following graphic:

Milestone	FAA / Industry	Milestone Date Q/CY	Status	Notes from July 28, 2022 NIWG Meeting
IOC for Initial En Route Services atall CONUS ARTCCs	FAA	~~4Q2019~~ ~~4Q2021~~ ~~4Q2022~~ ~~4Q2023~~ 1Q2024	Milestone impacted by COVID-19 and latent avionics and air-ground interop issues; deployment restarted in March 2022	Complete nationwide en route center Data Comm deployment – Initial and Full Services Provide national waterfall plan for Initial and Full Services
Baseline additional Data Comm capabilities for En Route utilizing the existing FANS message set	FAA Industry	~~3Q2021~~ ~~3Q2024~~ 3Q2026	Due to budget impacts from COVID-19, baselining of follow-on Data Comm capabilities delayed	Data Comm initial and full services provide the foundational CPDLC features. Planning for capabilities beyond en route initial and full services continue to slip to the right. In order to realize all potential benefits of Data Comm a continued evolution of capability is required to realize benefits of TBO.
Loadability Solution for Runway SID	FAA	3Q2019	Agreed on solution using future TFDM implementation in 2019. TFDM deployment milestones and Loadable SID solution release are TBD.	Current TDLS system limitations prevent ATC from sending loadable Runway/SID. Today's implementation requires manual Runway/SID entry – creating opportunity for errors. Loadable SIDs continues to be a high priority request from Data Comm users – improving efficiency and resolving human factors issues on flight deck with current implementation.

Mr. Collings then said they are asking the NAC for approval to update the industry portion of the joint milestone date.

Mr. Christie recommended that the NAC approve the Data Comm NIWG's recommended industry milestone update. Mr. Childs called for a motion to approve the update as advice to the FAA, which the NAC passed.

Outcome: The NAC passed a motion to approve the Data Comm NIWG's recommended NJIP industry milestone update

- Baseline additional Data Comm capabilities for En Route utilizing the existing FANS message set – Q3 CY2026

NAC Task 21-1: Minimum Capabilities List (MCL) Annual Review

Mr. Christie then handed off to Mr. Ron Renk for a status update on the MCL Annual Review progress.

He said the team looked at refreshing the matrix. He said they had a little bit of debate and discussion. He said earlier in the year before NAC Task 22-1, they had said they would add ADS-B In CDTI Assisted Separation/CDTI Assisted Visual Separation (CAS/CAVS) as a baseline item likely this year in a possible matrix refresh. However, the results of 22-1 threw them a curveball. He reviewed two options on moving forward with the matrix:

- Option One: CAS/CAVS as Baseline
    - With note: NAC task 22-1 – ADS-B In prioritized lowest for implementation readiness when compared to five other NextGen technologies
- Option Two: CAS/CAVS as supplemental
    - With note: NAC task 20-1/21-2 ranked CAS/CAVS application of high interest and likely to equip

He said the reason he brings this up is there is a long lead time for equipment. He said if they choose not to do option one, there is a risk that when the FAA can fund this, nobody is equipped to use it (with a similar risk for option two). He requested feedback from the NAC members.

Mr. Quigley said I think that this is something worthy to consider because they have an order book of a lot of aircraft coming. He thinks they will make decisions based on whether or not they will equip depending on what they think they will receive benefit from.

Mr. Burns said that if they can get some more insight into the program from the FAA from a budgetary standpoint, it might help them make a better decision. He said he is not sure they can make a decision fully today.

Mr. Christie recommended to the NAC Chair that they continue to work this in the NAC SC and collaborating with FAA counterparts, which he added would help the industry with decisions on further investments and equipage.

Mr. Childs said he agrees with that. He said he and Mr. Mims took some of this offline about the budgetary aspects. He said he acknowledges when you have the order books that they have with new aircraft and retrofits and those types of things, he thinks that they need to have some good visibility now. He said that he and Mr. Mims will continue to have this conversation about how they can get some more transparency, so the NAC can see tangible ROI on these things, as well.

Mr. Quigley said he has very little understanding of what is holding back the FAA from continuing with this technology. He requested a brief to the NAC or NAC SC on what is holding back the FAA from this.

He said he knows there is a budgetary consideration, but he does not know clearly what all the technology implications are—what are all the other complexities that are keeping the FAA from implementation.

Mr. Fontaine said he thinks this is going to have to be a separate conversation later. He said on the FAA end, it is definitely investments into the automation platform. He said that is always an issue of scheduling and which software bills and all of those things. He thinks the investments have to line up on both ends.

Mr. Mims said that he and Mr. Childs will confer to make sure that they get greater transparency for everyone here.

Multiple Runway Operations (MRO)

Mr. Christie then handed off to the MRO NIWG.

Mr. Phil Santos (FedEx) said that all MRO milestones are completed. He pointed out that the MRO NIWG team has been able to demonstrate the ability to improve throughput and capacity at certain locations. He reviewed the following information about the completed MRO milestones:

- Four Industry Milestones – Wake encounter reporting, CWT Benefits analysis, and provide inputs to various CSPO concepts.
- Five FAA Implementation Milestones – Consolidated Wake Turbulence (CWT) implementation
    - Deployed CWT standards at 93 TRACONs and approximately 330 Tower facilities.
- Nine FAA Pre-Implementation Milestones – Studies/Analyses on Wake and Closely Spaced Parallel Operations (CSPO) separation standard

In discussing what comes next, he emphasized that they want to continue to seek those potential improvements and capacity improvements in throughput. He said the work has to continue and they want to see the pre-implementation milestones come to fruition, as well as continued exploration of other possible efficiency gain considerations.

He reviewed the team's mission statement, which was to improve on arrival departure efficiencies with new procedures and changes to separation standards. He added that separation standards are key to improving some of the capacity issues that they have today. He said the team looks at concepts, benefits, safety analyses, and then implement changes to FAA orders, specifically highlighting DCP FAA 7110.65 5-8-4 Arrival Departure and FAA 7210.3 10-4-6 Simo Independent Approaches – HUR, respectively.

Mr. Santos reviewed the following MRO items that will continue outside the NJIP milestone activity:

- NextGen CSPO and Wake Research Programs continues to explore and mature various separation reduction concepts
- Leverage works from prior NJIP pre-implementation milestones
- Engage industry through stakeholders meetings, SME panels, CDM communities, etc.

He reviewed some of the pre-implementation milestones that were completed that have the potential to increase throughput. He said that industry is asking that the FAA continue to support the FAA MRO program.

Mr. Christie thanked the team for the hard work in leading the working group and closing out all their milestones. In the interests of time, Mr. Christie decided to push the Surface and Data Sharing and PBN briefings, respectively, to the next NAC Meeting. Mr. Christie then handed off to Mr. Childs.

Closing Comments and Adjourn

Mr. Childs had an additional question on Section 547. He said that they have the three cities selected in 547—they are evaluating the data and moving forward with those, adding that the data out of Oakland is impressive. However, he said there are probably other locations that can provide more impressive returns than some of these cities. He asked if they have the ability to pivot. He said he is assuming they probably have similar data from other cities that are doing the same thing. He asked if they can pivot and report on different cities. He said it would be interesting to see because this is a two-year exercise. He said there had been a massive evolution out of cities and into cities throughout this process. He said he thinks Oakland was good, but he thinks Denver, and some others, maybe Seattle, may be able to provide some better data and better benefits.

Mr. Narvid said that when they looked at the opportunities, they thought it was rather low for Oakland. He said they went ahead and looked at the other areas that show a potential data signal. They saw that locations like Miami were 10 times the amount of opportunities than at Oakland. He said to answer Mr. Childs' question, yes, and they are already doing that at MITRE—trying to figure out now how to get that data and then interpret the data.

Mr. Childs said that is awesome because in the two-year period, they probably will get so much data that they can look at, compared to when Congress asked for this, adding that it will be interesting to see what that looks like.

Mr. Childs then handed off to Mr. Mims for any closing comments.

Mr. Mims said they will address the Section 547 request. He reminded the NAC that member applications for the next terms are due no later than September 19. He said this is a great chance to make sure that the NAC membership is as broad and diverse as this great industry. Mr. Mims thanked the NAC for the engagement, then handed off to Mr. Childs.

Mr. Childs said he thinks that it has been a good meeting, adding that he thinks it is good to meet face to face because he thinks you get to issues quicker compared to virtually. He mentioned that he and Mr. Mims will get together and have a conversation about transparency. Mr. Childs then adjourned the meeting.

Attachment 1

NAC Meeting

August 30, 2022

Opening of Meeting

Chip Childs, NAC Chairman

President & CEO, SkyWest, Inc.

Public Meeting Announcement

NextGen Advisory Committee (NAC)

August 30, 2022

Public Statements

Members of the Public

Chairman's Report

Chip Childs, NAC Chairman

President & CEO, SkyWest, Inc.

Motion for NAC Approval

- March 28, 2022 – NAC Meeting Summary Package Draft
- April 29, 2022 – NAC Meeting Summary Package Draft

State of Industry Update

Chip Childs, NAC Chairman

President & CEO, SkyWest, Inc.

FAA Report

Brad Mims, FAA Deputy Administrator

NAC Designated Federal Officer

Chairman's Roundtable

Chip Childs, NAC Chairman

President & CEO, SkyWest, Inc.

NAC Operational Update

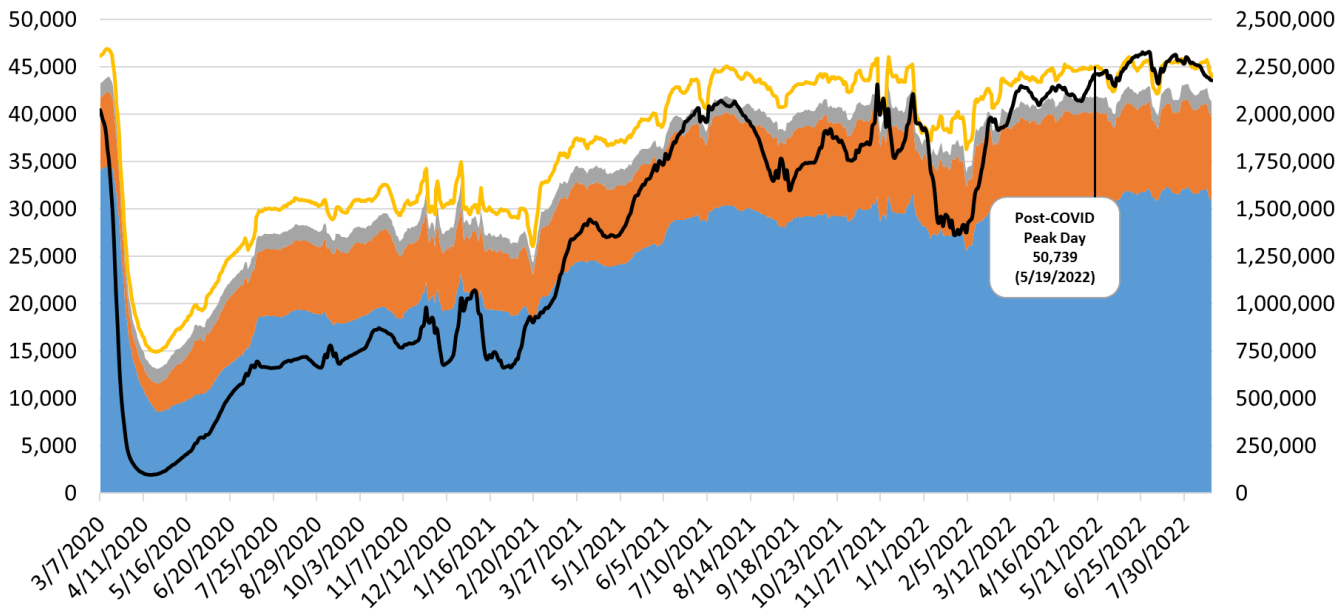
Presenter: Tim Arel, COO, ATO

Presented To: NextGen Advisory Committee

Date: August 30, 2022

IFR Flights vs. TSA Traveler Throughput Mar 2020 to Jul 2022

PerformanceAnalysis
ATOSysOps



Category	Percent Change	July 2022 Daily Avg.
AC + AT	-9%	31,712
GA	-2%	8,627
Freight	-3%	1,450
Total IFR	-7%	44,623
TSA	-12%	2.27M

Baseline is a seasonal average of 2017, 2018, and 2019.

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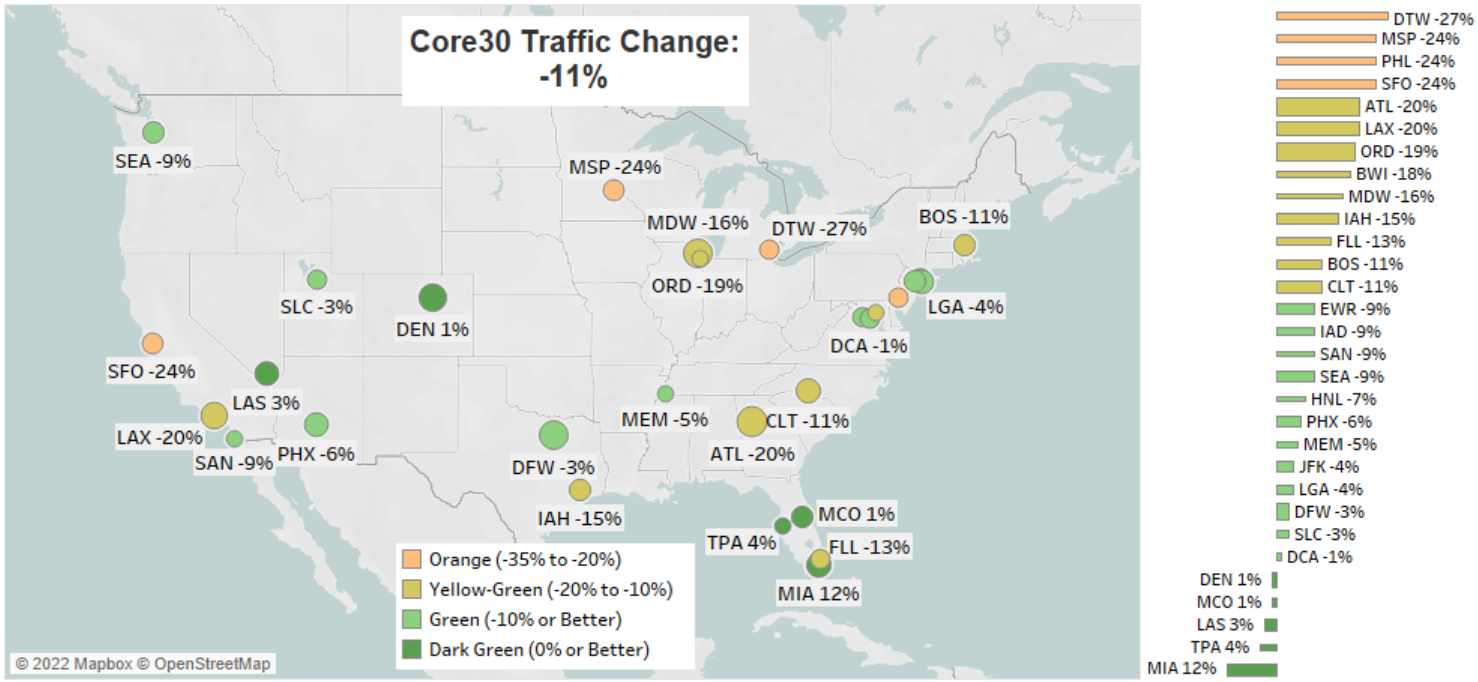
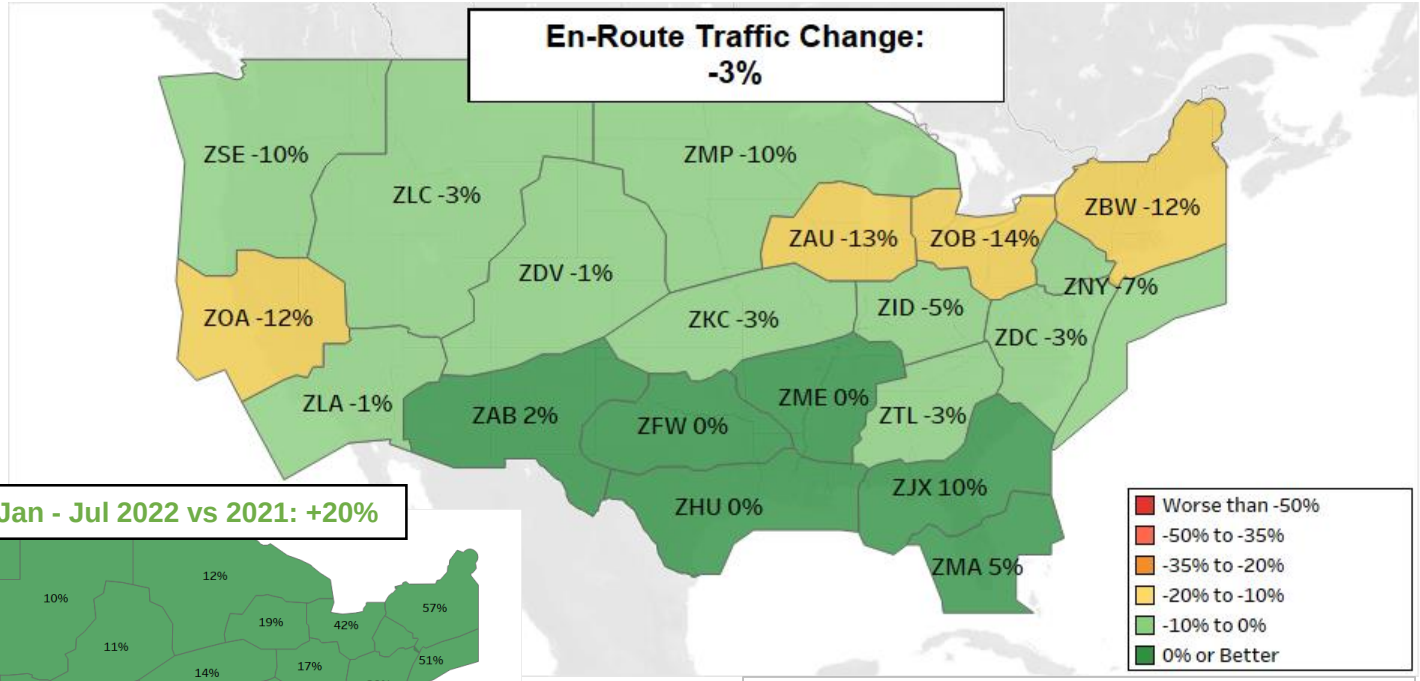
ASPM Core30 Flight Activity
Jan - Jul 2022



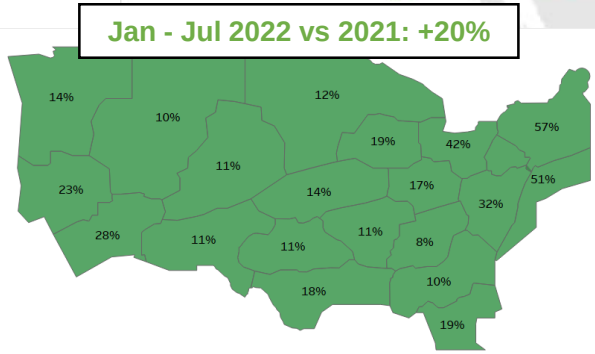
Baseline limited to 2017, 2018, and 2019.
Circle size relative to latest traffic counts. Honolulu, HI (HNL) depicted on bar graph only. Source: ASPM

En Route Flight Activity
Jan - Jul 2022

PerformanceAnalysis
ATOSysOps



ZJX	7,042 (10%)
ZMA	7,060 (5%)
ZAB	4,539 (2%)
ZHU	6,150 (0%)
ZME	5,747 (0%)
ZFW	5,958 (0%)
ZDV	5,082 (-1%)
ZLA	6,193 (-1%)
ZLC	3,918 (-3%)
ZTL	7,886 (-3%)
ZDC	6,261 (-3%)
ZKC	4,674 (-3%)
ZID	5,301 (-5%)
ZNY	6,267 (-7%)
ZMP	4,706 (-10%)
ZSE	3,066 (-10%)
ZOA	4,389 (-12%)
ZBW	3,693 (-12%)
ZAU	5,511 (-13%)
ZOB	5,286 (-14%)



Baseline limited to Jan-Jul 2017, 2018, and 2019.
Source: OPSNET

Federal Aviation Administration

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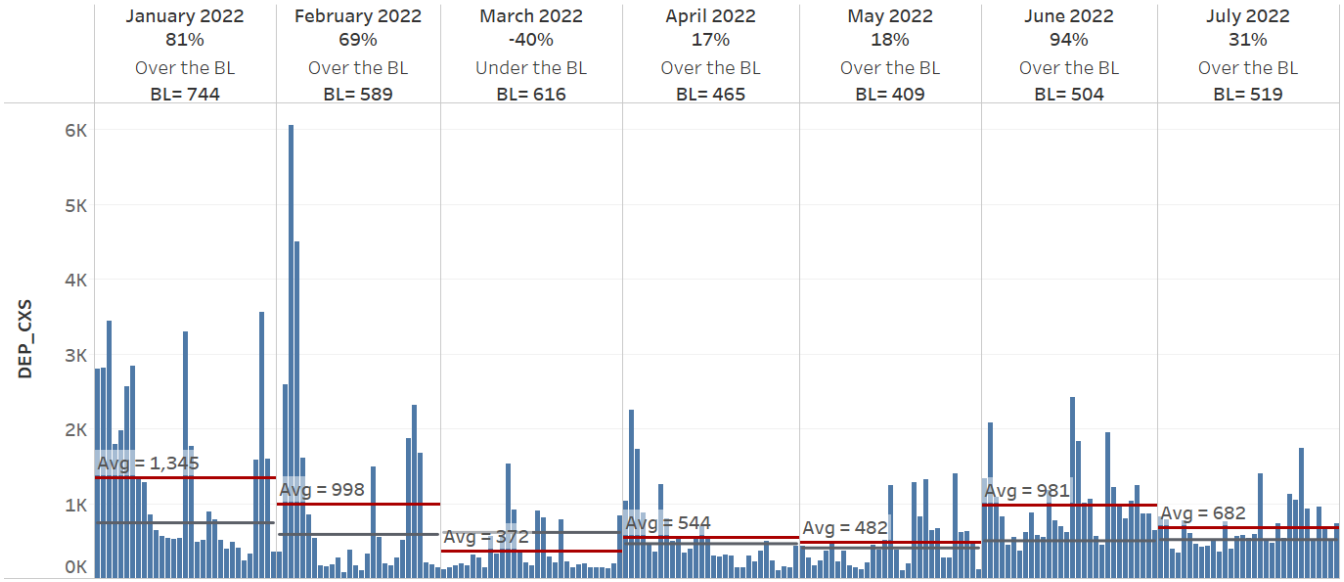
NAS Departure Cancellations
Jan - Jul 2022

PerformanceAnalysis
ATOSysOps

ALL NAS Departure Cancellations Trend 1/1/2022 to 7/31/2022

Red Line is Monthly Average

Grey Line is 3yr Baseline Average



NAS Wide Cancellations		
Month	**BL Diff**	**Monthly Average**
Jan	**+81%**	**1345**
Feb	**+69%**	**998**
Mar	**-40%**	**372**
Apr	**+17%**	**544**
May	**+18%**	**482**
Jun	**+94%**	**981**
Jul	**+31%**	**682**

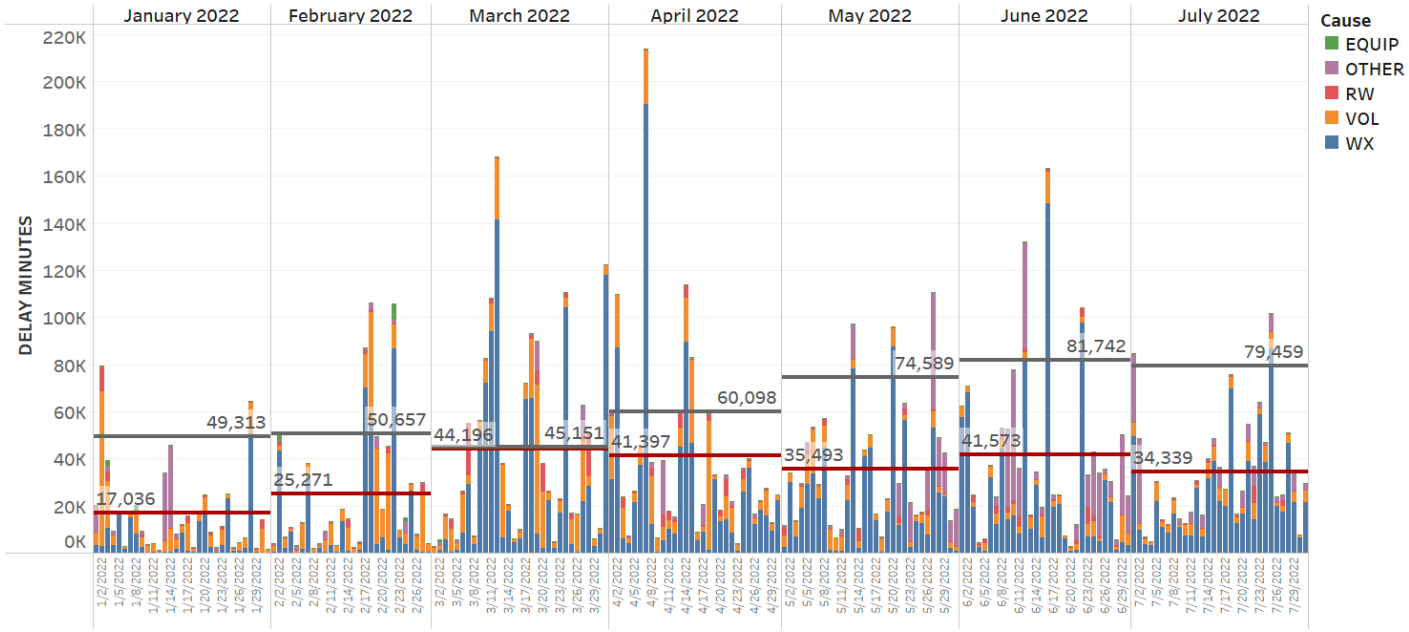
Red line is current monthly average.
Gray line is baseline average of same month in 2017/2018/2019.
Source: ASPM

Federal Aviation Administration

Delay Minute Trend
Jan - Jul 2022

PerformanceAnalysis
ATOSysOps

ALL NAS OPSNET Delay Minutes Trend with Monthly Average (Line) and 3Yr Baseline (Line)



Red line is current monthly average.
Gray line is baseline average of same month in 2017/2018/2019.
Source: ASPM

Flights and Delay Compared to Baseline		
Month	**IFR Flights**	**Delay Minutes**
Jan	**-9.8%**	**-65%**
Feb	**-7.3%**	**-50%**
Mar	**-3.9%**	**-2%**
Apr	**-3.4%**	**-31%**
May	**-5.4%**	**-52%**
Jun	**-4.7%**	**-49%**
Jul	**-6.4%**	**-57%**

Federal Aviation Administration

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Scheduled flights into, out of, and within Florida for Fall 2022 vs. Fall 2019

Based on the scheduled departures between Sep – Nov 2022 compared to the same months in 2019

Air Carrier Code	Fall 2019	Fall 2022	Fall 2022 vs. 2019
AAL	47,298	84,365	178%
SWA	25,974	50,389	194%
DAL	21,535	40,328	187%
NKS	13,869	36,697	265%
JBU	19,701	31,361	159%
UAL	11,604	23,014	198%
FFT	5,929	14,837	250%
AAY	6,310	12,808	203%
ACA	1,331	3,239	243%
SIL	4,305	2,996	70%
All Others	14,179	29,254	206%
Total	172,035	329,288	191%

SOURCE: Cirium schedules as of August 23, 2022

Key Airport Schedules for Fall 2022 vs. Fall 2019

- Based on the scheduled departures between Sep – Nov 2022 compared to the same months in 2019
- Scheduled flights into, out of, and within Florida are at 191% of the same period in 2019
- Fall Ops Summit

Airport	Scheduled Weekly Departures in Fall 2022 As a Percentage of Fall 2019*
ATL	82%
BOS	91%
DEN	99%
DFW	89%
EWR	87%
JFK	105%
LAX	79%
LGA	98%
ORD	75%
PHL	67%
SEA	93%
SFO	80%
MCO	105%
MIA	105%

SOURCE: Cirium schedules as of August 23, 2022

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Top 20 U.S. Airports Based on Scheduled Departures

Fall (Sept – Nov) 2022 vs. Fall 2019

- Red indicates rank changed by 5 or more, or % change by 20 pts or more from 2019
- Demand at leisure destinations like LAS, MIA, MCO
- FL changes in part driven by increased number of people moving there

Year	Airport	2019 Average Weekly Depts	Rank in 2019	Rank in 2022
2019	ORD	9096	1	2
2019	ATL	8441	2	1
2019	DFW	6803	3	3
2019	LAX	6097	4	5
2019	DEN	6026	5	4
2019	CLT	5282	6	6
2019	IAH	4344	7	10
2019	SEA	4168	8	9
2019	JFK	4083	9	7
2019	EWR	4050	10	13
2019	SFO	4024	11	16
2019	BOS	3908	12	12
2019	DTW	3781	13	20
2019	LAS	3652	14	8
2019	LGA	3646	15	11
2019	MSP	3611	16	19
2019	PHX	3595	17	14
2019	PHL	3371	18	21
2019	MCO	3050	19	17
2019	MIA	2992	20	15

Year	Airport	2022 Average Weekly Depts	Rank in 2022	Rank in 2019	% Change vs 2019
2022	ATL	6910	1	2	-18%
2022	ORD	6794	2	1	-25%
2022	DFW	6068	3	3	-11%
2022	DEN	5939	4	5	-1%
2022	LAX	4818	5	4	-21%
2022	CLT	4364	6	6	-17%
2022	JFK	4271	7	9	5%
2022	LAS	3893	8	14	7%
2022	SEA	3881	9	8	-7%
2022	IAH	3666	10	7	-16%
2022	LGA	3582	11	15	-2%
2022	BOS	3542	12	12	-9%
2022	EWR	3515	13	10	-13%
2022	PHX	3428	14	17	-5%
2022	MIA	3301	15	20	10%
2022	SFO	3209	16	11	-20%
2022	MCO	3197	17	19	5%
2022	DCA	2940	18	21	2%
2022	MSP	2608	19	16	-28%
2022	DTW	2572	20	13	-32%

SOURCE: Cirium schedules as of August 23, 2022

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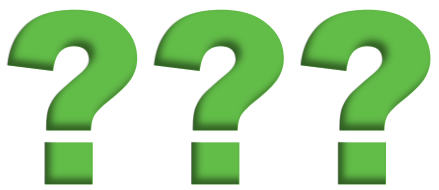
Questions?



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FAA Topics

Brad Mims, FAA Deputy Administrator

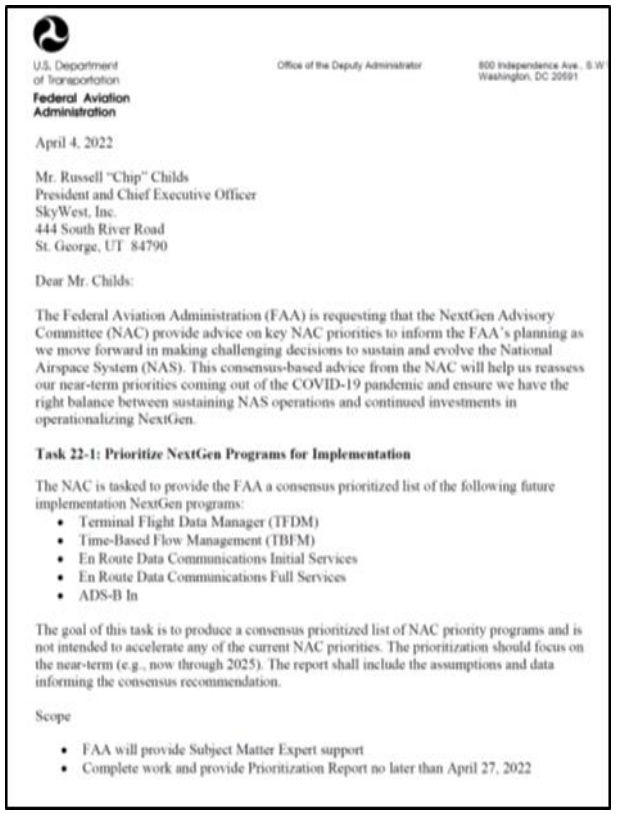
NAC Designated Federal Officer

NAC Task 22-1: FAA Response

Rob Hunt (FAA)

NAC Tasking 22-1: Background

- FAA requested the NAC provide consensus-based priorities for a select number of programs which support the NextGen Joint Implementation Plan (JIP) milestones
  - DataComm Initial En Route Services
  - DataComm Full En Route Services
  - Terminal Flight Data Manager (TFDM)
  - Time-Based Flow Management (TBFM)
  - ADS-B In capabilities*
- NAC delivered the Tasking Report on April 27, 2022
  - Focused on a benefits and readiness assessment



U.S. Department of Transportation
Federal Aviation Administration

Office of the Deputy Administrator

800 Independence Ave., S.W.
Washington, DC 20591

April 4, 2022

Mr. Russell "Chip" Childs
President and Chief Executive Officer
SkyWest, Inc.
444 South River Road
St. George, UT 84790

Dear Mr. Childs:

The Federal Aviation Administration (FAA) is requesting that the NextGen Advisory Committee (NAC) provide advice on key NAC priorities to inform the FAA's planning as we move forward in making challenging decisions to sustain and evolve the National Airspace System (NAS). This consensus-based advice from the NAC will help us reassess our near-term priorities coming out of the COVID-19 pandemic and ensure we have the right balance between sustaining NAS operations and continued investments in operationalizing NextGen.

Task 22-1: Prioritize NextGen Programs for Implementation

The NAC is tasked to provide the FAA a consensus prioritized list of the following future implementation NextGen programs:

- Terminal Flight Data Manager (TFDM)
- Time-Based Flow Management (TBFM)
- En Route Data Communications Initial Services
- En Route Data Communications Full Services
- ADS-B In

The goal of this task is to produce a consensus prioritized list of NAC priority programs and is not intended to accelerate any of the current NAC priorities. The prioritization should focus on the near-term (e.g., now through 2025). The report shall include the assumptions and data informing the consensus recommendation.

Scope

- FAA will provide Subject Matter Expert support
- Complete work and provide Prioritization Report no later than April 27, 2022

**Does not support the NAC milestones but included to understand relative priorities across NextGen capabilities*

NAC Tasking 22-1: Program Re-planning Overview

FAA used the 22-1 Report to inform corporate budget decisions and program re-planning activities

- Continuing to balance sustaining today's NAS and operationalizing NextGen
- Re-plans are largely aligned with the information contained in the Report

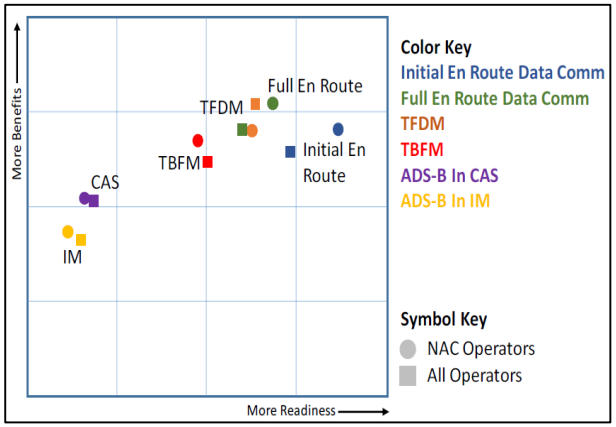
Program Re-plans in support of NAC milestones

- Data Comm: Continue to implement Data Comm in en route environment
  - > Continue to implement Data Comm Initial En Route Services
  - > Continue to implement Data Comm Full En Route Services (deferring activation of a small subset of messages until avionics issues are addressed)

- TFDM: Continue to implement TFDM core capabilities (surface metering/electronic flight strips) at select locations
  - Deploy Config A (surface metering/electronic flight strips) to all 27 Towers
  - Reduce Config B (electronic flight strips) Towers from 89 to 49 sites (the 49 includes the 27 Config A sites)
  - Reduce the pace of site deployment

- TBFM: Continue to implement time-based metering capabilities at select locations in support of iTBO
  - > Implement en route metering and departure scheduling (IDAC)
  - > Defer Terminal Sequencing and Spacing – new implementation timeline is TBD

NAC Tasking 22-1 Report
Figure 2



ADS-B In capabilities

- Continue to support the ADS-B In Retrofit Spacing Evaluation
- Defer CDTI-assisted Separation and Flight Interval Management--new implementation timeline is TBD

Next Steps

- Close out Tasking 22-1
- Continue to socialize latest replans and obtain feedback
- Review proposed updates to the NJIP FAA milestones
- Present updated NJIP FAA milestones at November 2022 NAC meeting

Airspace Modernization Roadmap (AMR) Update

Jim Arrighi (FAA)

Airspace Modernization Roadmap Update

- AMR Overview
- Integrates Metrics into the Decision Making Process
- Governance Structure Established
- Industry Integration
- Next Steps

Section 547: Preliminary Analysis Results

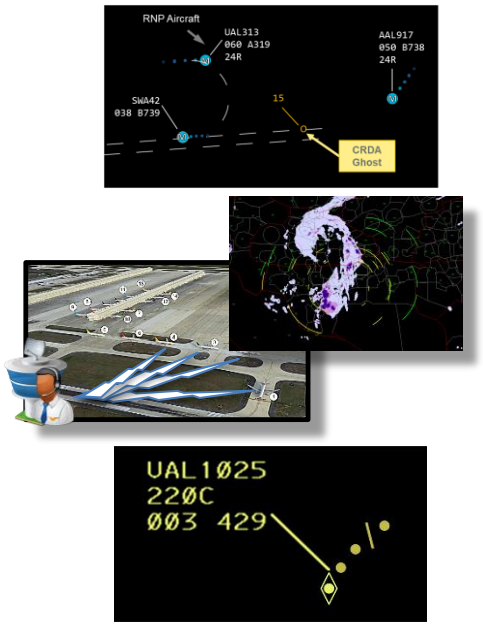
Juan Narvid (FAA)

Jesse Wijntjes (FAA)

Overview of Selected Section 547 Initiatives

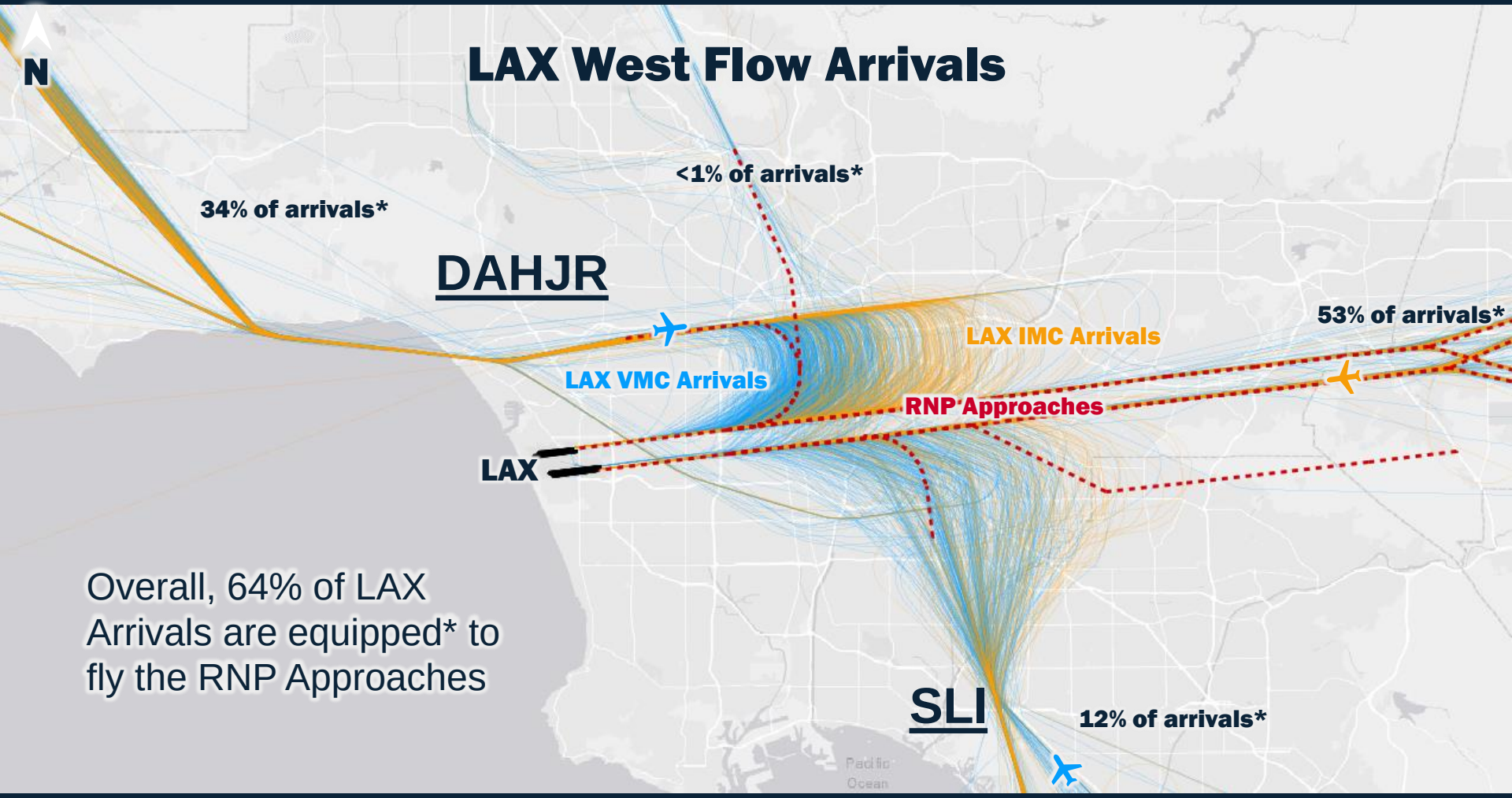
Process: Industry provided FAA a ‘short list’ of candidate recommendations based on Readiness, Return, & Relevance

Initiative
Simultaneous Independent Established on RNP (EoR) at Los Angeles International Airport (LAX) *(start date: September 12, 2021)*
CPDLC Departure Clearance (DCL) capabilities at Orlando International Airport (MCO) *(Focused metric tracking September 1, 2021)*
Automatic Dependent Surveillance-Broadcast (ADS-B) Out enabling 3 nautical mile (NM) in en route airspace (below FL230) for Oakland Air Route Traffic Control Center (ZOA) *(start date: September 9, 2021)*



LAX EOR INITIATIVE

LAX West Flow Arrivals



Overall, 64% of LAX Arrivals are equipped* to fly the RNP Approaches

MITRE

RNP RF Benefits – West Flow

Flight Efficiency Improvements for RNP RF vs Non-RNP Approach Operations

VMC/IMC	Distance Flown (NM)	Time Flown (Minutes)	Estimated Fuel Burn (Gallons)*
VMC	2.2	0.8	9.7
IMC	7.4	2.3	24.6

- RNP RF usage has increased from under 50 a month to an average of 540 a month since implementation of EoR

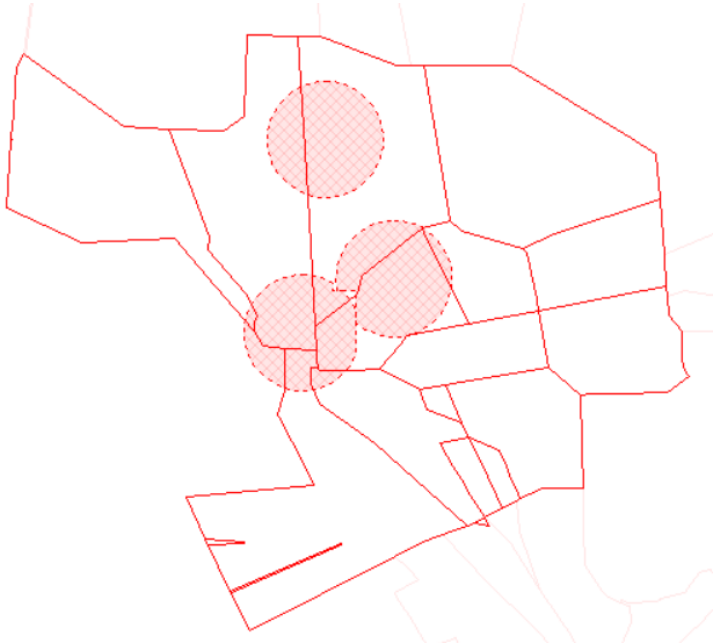
Data Source: MITRE TTFS, for October 2021 – April 2022

*Based on fuel burn for a B738

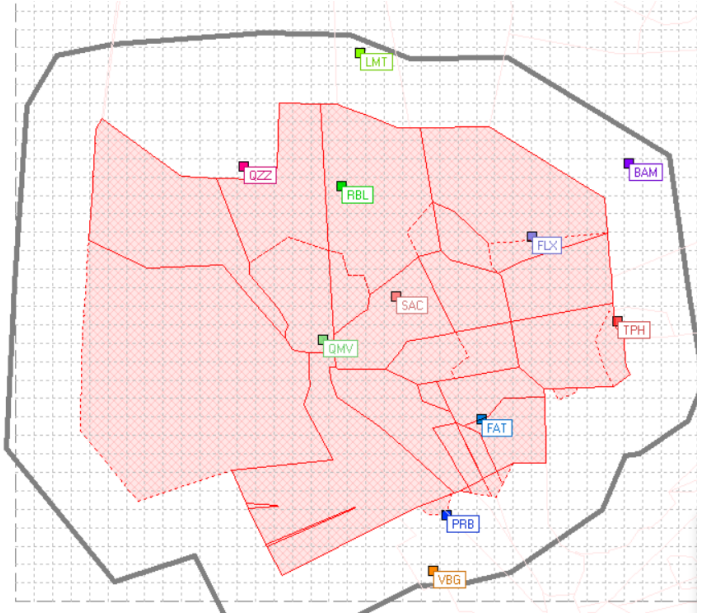
ZOA ADS-B OUT ENABLING 5 TO 3 NM SEPARATION INITIATIVE

Operational Context ZOA – Adapted for 3NM Separation (FL230 and below)

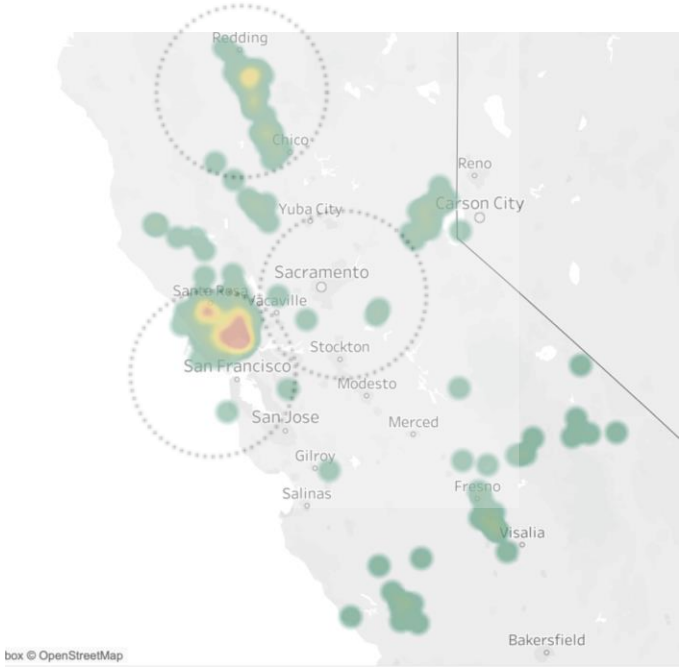
12/31/2020



10/12/2021

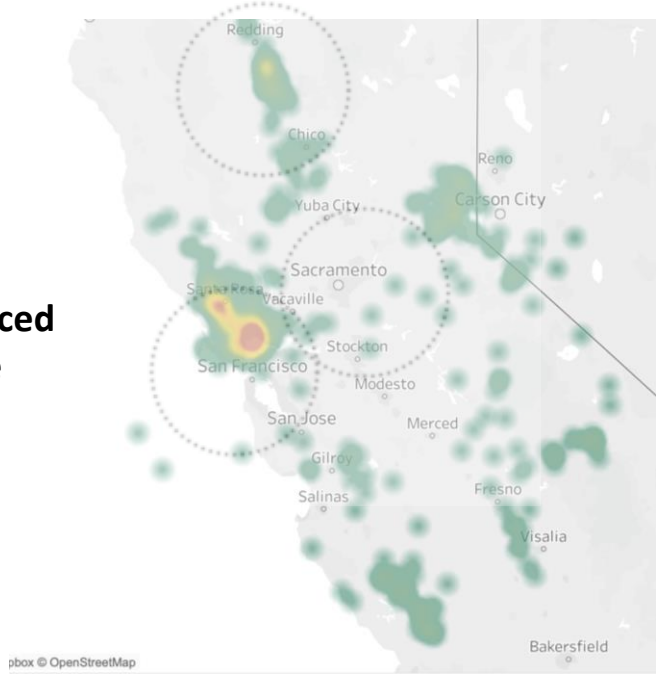


Locations of < 5 NM, < 1,000 ft Separation within ZOA at or below FL230



216 instances between 9/9/2018 and 4/15/2019

- **Increase in reduced separation since implementation**



487 instances between 9/9/2021 and 4/15/2022

Section 547 Data Comm: Orlando Metrics

NAC August 2022

Federal Aviation Administration

L3HARRIS

Initiative Description

CPDLC Departure Clearance (DCL) capabilities at Orlando International Airport (MCO)

Overview

- Use of DCL provides CPDLC equipped operators revised departure clearances in a more time-efficient manner compared to unequipped flights. This is especially beneficial when re-routes are necessary due to weather or other air traffic disruptions.

Benefits

- Minutes of Airspace User Time Saved and kilograms of CO_2 Emissions Prevented

Start Date

- Section 547 data collection and metric tracking beginning 9/1/2021
- Data Comm program metrics collection at MCO since the site went operational in 2016

Nationwide CPDLC DCL Metrics

2000+ Air Carrier & Business Operators

65 Airports

Over 5,900 Aircraft Equipped

67 Aircraft Types

Since 2016, CPDLC DCL . . .

Cleared more than 13 million flights

Saved 2.46M+ minutes of gate and taxi delay

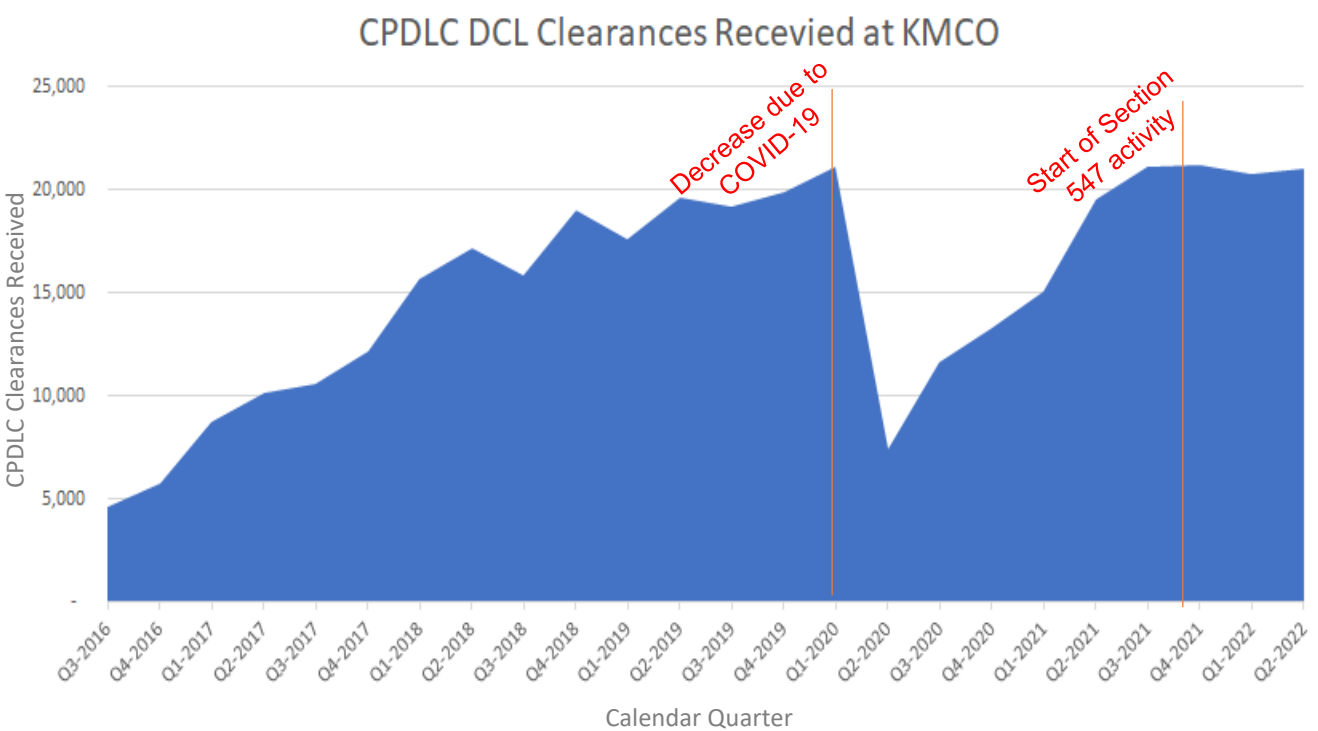
Served 1.76B+ passengers

Prevented 31.85 million kilograms of CO_2 emissions

Prevented 159,640+ readback errors

Saved 3.41M+ minutes of radio time

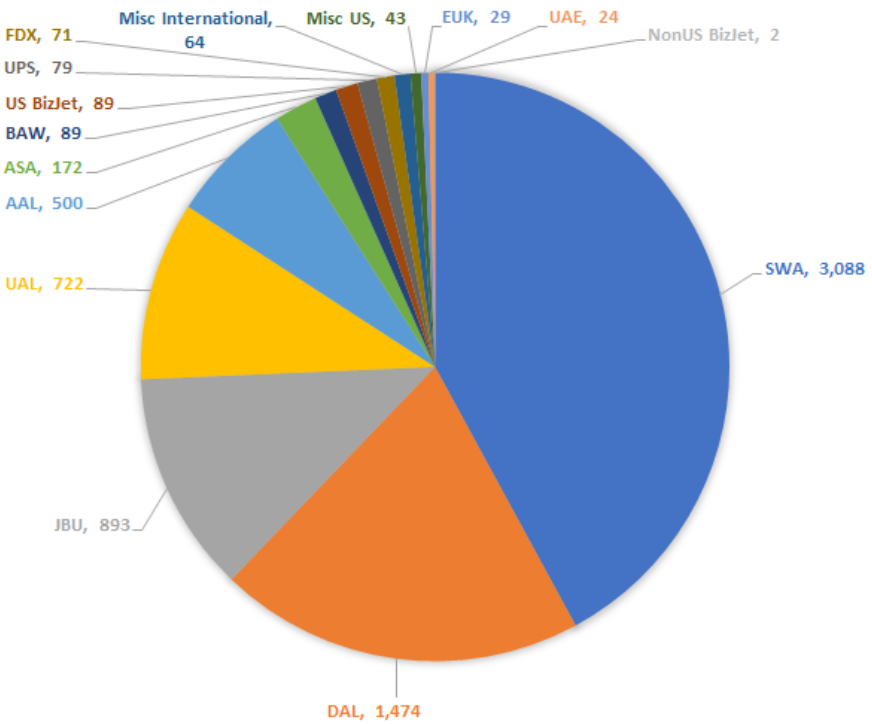
Orlando CPDLC DCL Departures



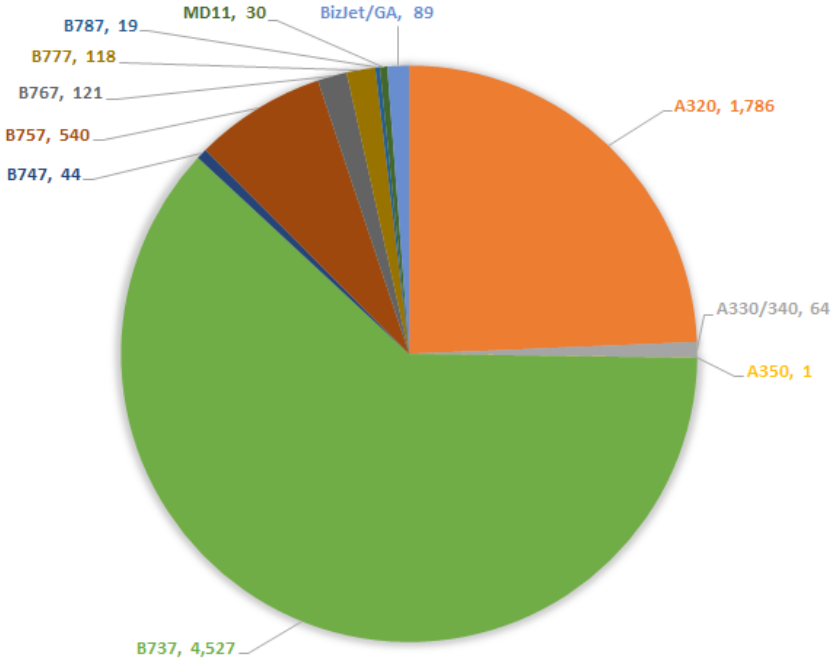
Orlando CPDLC DCL Clearances

July 2022

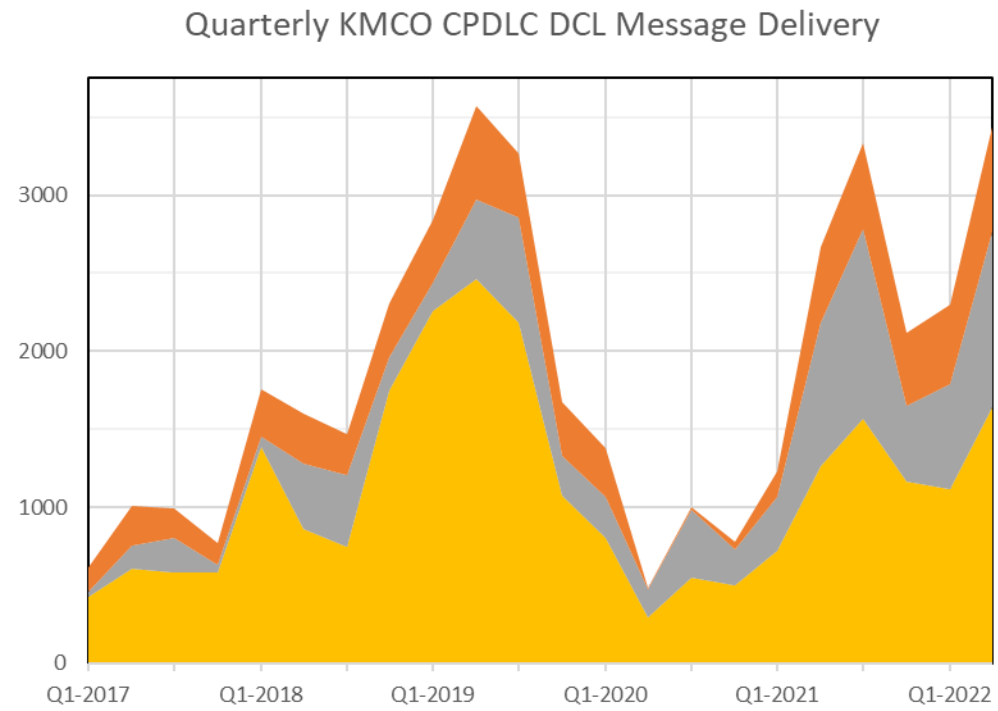
By Operator



By Aircraft Type



Orlando CPDLC DCL Messages Delivered



Types of CPDLC DCL Clearances	
Cleared as Filed	Flight receives no changes to the original route of flight filed in the flight plan.
Initial Modified	Flight receives a change to the original filed route, 30 mins before departure time.
Revised Route DCL	Flight receives a route modification to the initial clearance. Route revisions via CPDLC generate the most operational benefits.
Revised Non-Route DCL	Flight receives a modification to the initial clearance non-route information such as revised Expected Departure Clearance Time (EDCT), expected altitude, squawk code, departure frequency, etc.

Orlando CPDLC DCL Benefits

January 2021 - May 2022

Cleared 104,036 flights

Saved 21,355 minutes of airspace user time (gate and taxi)

Prevented 650,185 kgs of CO_2 Emissions

May 2022

Cleared 7,411 flights

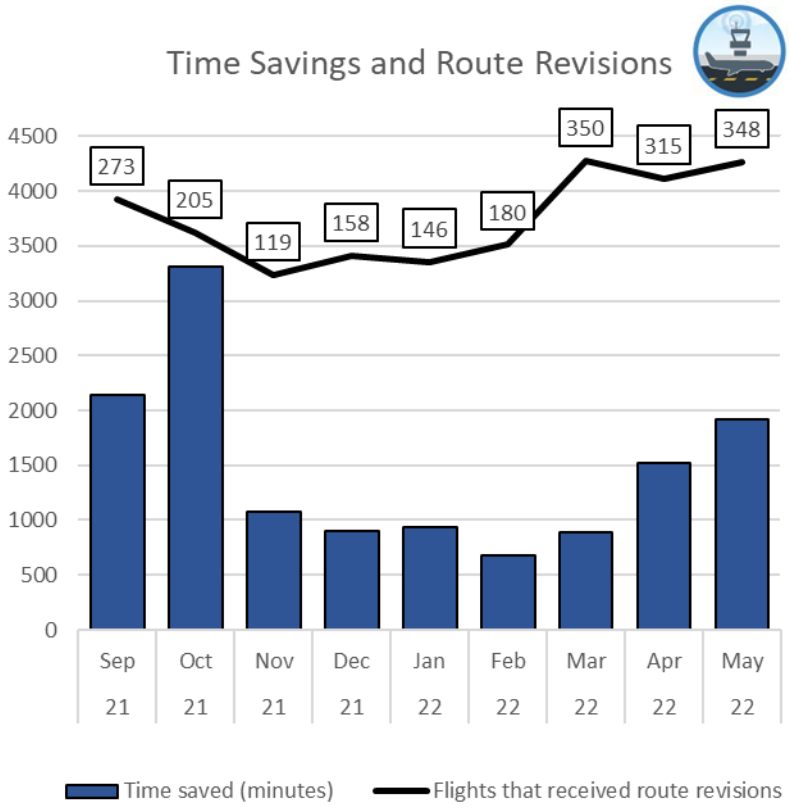
Saved 1,914 minutes of airspace user time (gate and taxi)

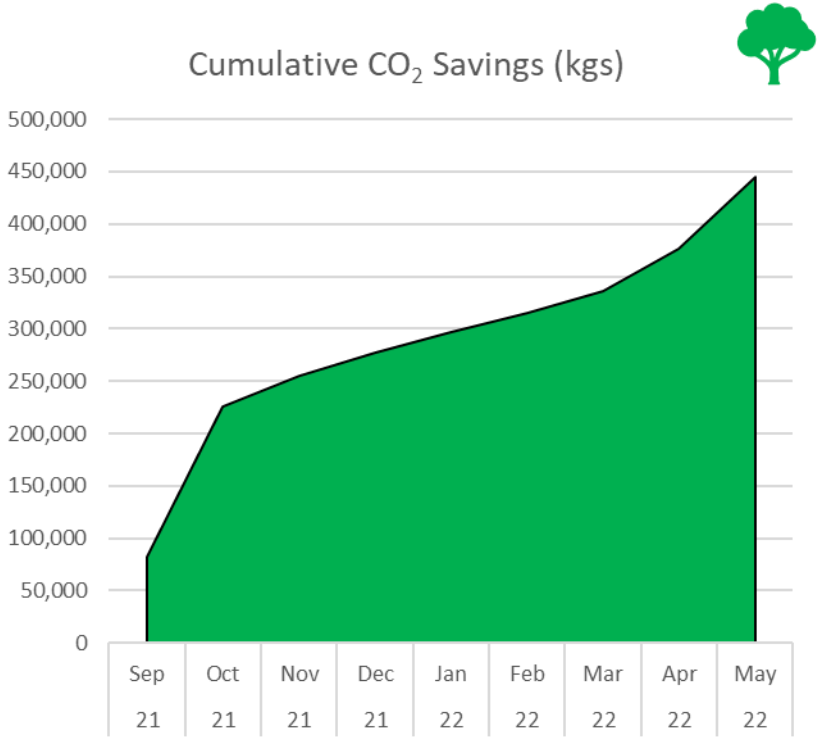
Prevented 67,843 kgs of CO_2 Emissions

**Benefits are derived using ASPM data which is verified 3 months after the month closes*

Orlando CPDLC DCL Benefits Trend

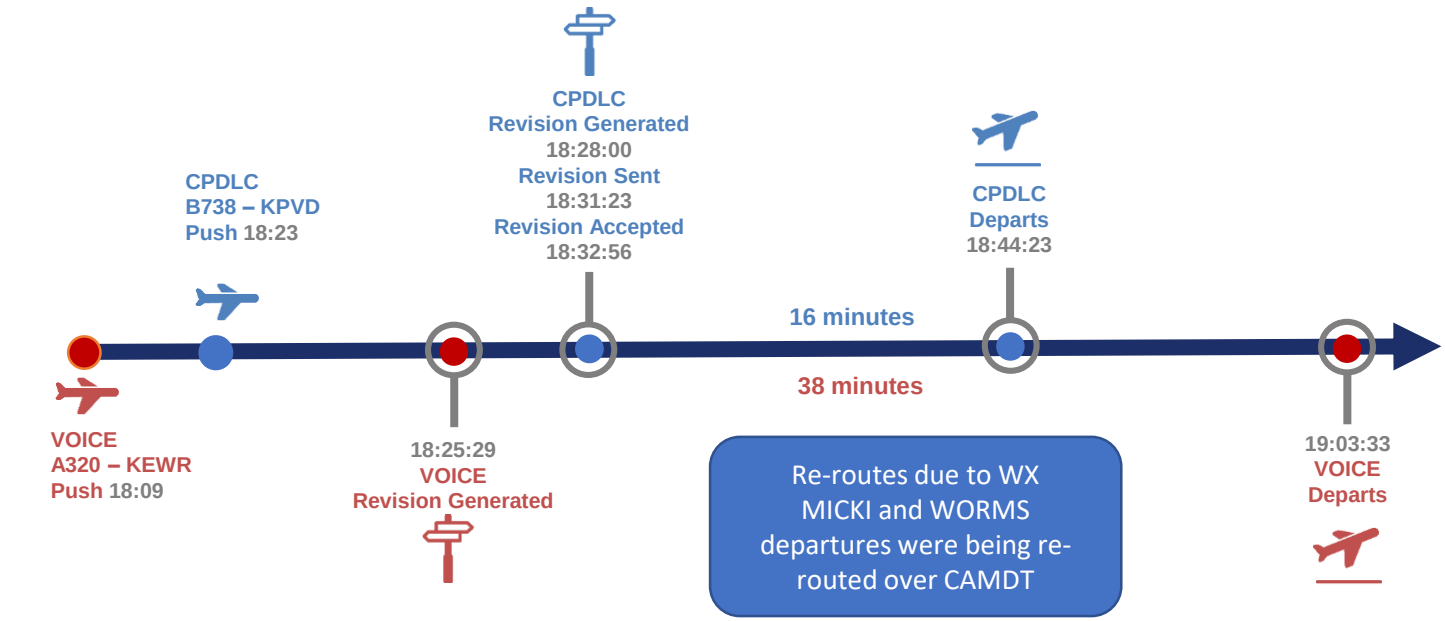
Time Savings and Emission Reductions





**Benefits are derived using ASPM data which is verified 3 months after the month closes*

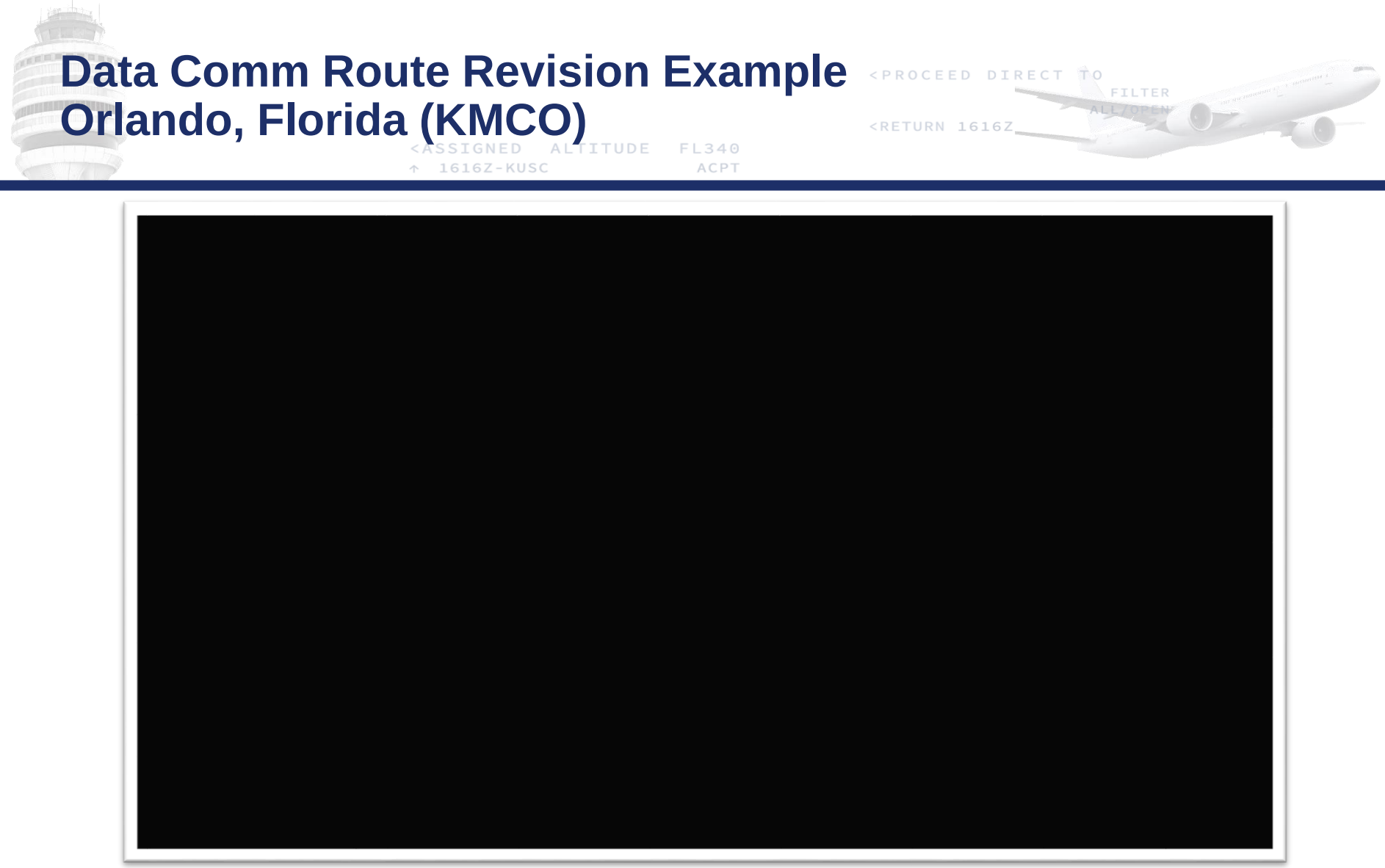
Data Comm Route Revision Example
Orlando, Florida (KMCO)



Benefits:

- CPDLC flight pushes and receives revision after voice flight, able to depart first.
- CPDLC flight departed 22 mins faster compared to voice flight

Data Comm Route Revision Example
Orlando, Florida (KMCO)



NAC Subcommittee (SC) Chairman's Report

Warren Christie, NAC SC Chairman (JetBlue Airways)

Minimum Capabilities List (MCL) Update

Ron Renk (United Airlines)

Eric Morse (Delta Air Lines)

Assumptions Review

Industry Goals

How does MCL support over-arching industry goals like:

1. Safety
2. Schedule reliability/delay reduction
3. Improved capacity
4. Access

Assumptions Review (cont.)

New Entrants

How do new entrants into the NAS like supersonic jets, electric aircraft and UAS fit into MCL?

- No changes needed to previous MCL scope, if new entrants want to fly to airports in Scope, then they should equip

Benefits Update

- Group completed request for MITRE to look at creation of formulas and sample dataset
  - Using Industry Goals as the lens
  - PBN benefits can mostly be done with existing projects but need ways to project benefits to other operators/locations

- Begun working with FAA/MITRE to shape the data available for PBN.
  - DATACOMM benefits work complete

- There are risks to original “specific formulas” concept, but report will have a bolstered benefits case for operators to use.

Matrix Refresh

- ADSB-In CDTI Assisted Separation/CDTI Assisted Visual Separation (CAS/CAVS) being discussed:
  - Option 1: CAS/CAVS as Baseline
    - With note: NAC task 22-01 - ADBS-In prioritized lowest for implementation readiness when compared to five other NextGen technologies
  - Option 2: CAS/CAVS as supplemental
    - With note: NAC task 20-1/21-02 ranked CAS/CAVS application of high interest and likely to equip
- SATCOM being added to supplemental matrix
- Group exploring DME navigation now that Minimum Operational Performance Standards published

Final Discussions Before Completion

- Complete the Matrix
- Recommendations on steps to further drive MCL adoption and commitments to equip aircraft with the associated capabilities
- Compose report

Northeast Corridor (NEC)

Ralph Tamburro (PANYNJ) & Lee Brown (JetBlue)

Aaron Wilkins (FAA), Juan Narvid (FAA), & Patrick Blaser (FAA)

Northeast Corridor – Key Issues & Status

Workgroup status

- New FAA SME from ATO Operations
- Two virtual leadership meetings conducted to update and refine commitments

Focus areas

- Atlantic Coast Routes are impacted by staffing and training constraints
- Industry milestones updated to reflect the breadth of the NEC capability objectives

Looking ahead

- More frequent meetings to strengthen communication and collaboration - full workgroup meeting planned for Fall 2022
- More cognizance of the status of interim deliverables - FAA has committed to regular updates
- Continued awareness of related efforts within NEC

Outlook for Commitments

- **Atlantic Coast Routes**
  - Completion date has slipped due to training requirements to Q3 CY2023
  - Final Q-Routes will still be published by Q4 CY2022, but cannot be operationally implemented until training is completed in Q2 CY2023

- **Arrival time-based metering for PHL and EWR**
  - Operational implementation will be phased, starting with departure scheduling for PHL
  - EWR capability is interconnected with EWR Airspace Initiative (scheduled for Q2 CY2023)
  - Training and traffic management unit staffing are key considerations

Outlook for Commitments (cont.)

Type	Commitment/Milestone	Jun 2021 NAC	Mar 2022 NAC	Current Dates
Implementation	Complete Atlantic Coast Routes project	TBD	Q4 CY2022	Q3 CY2023
Implementation	Implement arrival time-based metering for PHL and EWR	Q4 CY2023	Q4 CY2023	Q4 CY2024
Industry	Start GBAS installation at LGA	Q1 CY2023	Q1 CY2023	Q1 CY2023
Industry	Start GBAS installation at JFK	Q1 CY2023	Q1 CY2023	Q1 CY2023
Industry	Conduct Fly Quiet Program for EWR, TEB, JFK and LGA			Q4 CY2024
Industry	Identify tower space for TFDM installation at BOS	TBD	TBD	Q4 CY2024

Implementation milestones are jointly shared by FAA and Industry for the NEC efforts

Motion for NAC Approval

- Approve the NEC NIWG's recommended industry milestone updates

Multiple Runway Operations (MRO)

Phil Santos (FedEx) & **Scott Dehart** (Southwest Airlines)

Natee Wongsangpaiboon (FAA) & **Raul Zamora, Jr.** (FAA)

Multiple Runway Operations (MRO)

- **All milestones completed**
  - 4 Industry Milestones – Wake encounter reporting, CWT Benefits analysis, and provide inputs to various CSPO concepts.
  - 5 FAA Implementation Milestones – Consolidated Wake Turbulence (CWT) implementation
    - Deployed CWT standards at 93 TRACONs and approximately 330 Tower facilities.
  - 9 FAA Pre-Implementation Milestones – Studies/Analyses on Wake and Closely Spaced Parallel Operations (CSPO) separation standards

2019-2022 NJIP - Industry MRO Milestones

	2019				2020				2021			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Provide input and review feasibility and initial safety analysis for CSPO departure concepts				■								
Wake turbulence encounter reporting					■							
Provide input and review feasibility study of reduced minimum radar separation						■						
CWT benefits analysis								■				

2019-2022 NJIP - FAA MRO Milestones

Implementation Milestones	2019				2020				2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
BOS an DWF CWT separation standards		BOS DFW														
CWT separation standards				5 sites					7 sites					5 sites		

Pre-Implementation Milestones	2019				2020				2021				2022			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
CSPO collision risk safety study for high update rate surveillance																
Operator guidance material on wake turbulence encounter reporting																
CSPO feasibility and initial safety analysis for departures																
Dynamic wake separation research																
ORD wake encounter and mitigation analysis																
Analysis of use of RNAV (VNAV) approaches for 7110.308 at SFO																
Reduced minimum radar separation feasibility study																
CSPO feasibility and initial safety analysis for arrival and departures																
CSPO high update radar surveillance separation standards																

Multiple Runway Operations (MRO)

Now what?

- See Pre-implementation milestones to completion post 2019-2022 NJIIP in addition to continued exploration of other possible efficiency gain considerations

- End goal
  - Improving arrival/departure efficiency with new procedures and changes to separation standards
    - "Operationalizing" MRO concepts
  - Concepts -> Benefits and Safety Analysis -> Changes to FAA Orders
    - i.e. DCP FAA 7110.65 5-8-4 Arrival Departure; FAA 7210.3 10-4-6 Simo Independent Approaches – HUR

Work programs continue outside of NAC NJIIP Milestones

- NextGen CSPO and Wake Research Programs continues to explore and mature various separation reduction concepts
- Leverage works from prior NJIP pre-implementation milestones.
- Engage industry through stakeholders meetings, SME panels, CDM communities, etc.

Example of current activities include;

- CSPO Departure Concept
  - Progressing toward updating 7110.65 with the reduced inter-departure spacing requirements
- Dynamic Wake Separation Concept
  - Developing test scenarios for the evaluation of potential wake separation reduction during high wind
- Reduced Minimum Radar Separation (MRS) Concept
  - Performing safety analysis to determine feasibility of the reduced MRS concept
- CSPO Integrated Arrival and Departure (IA/D) Concept
  - Analyzing wake safety hazards in preparation for the Safety Risk Management (SRM) Panel
- CSPO with High Update Rate (HUR) Surveillance
  - Current approved application approved to 3200', engaging applicable facilities on meeting requirements (e.g. FMA, PRM IAPs, staffing, etc.)
  - Progressing toward updating 7110.65 to further reduce runway separation requirements, SRM Panel is scheduled for August 9th, 2022

Surface & Data Sharing

Rob Goldman (Delta Air Lines)

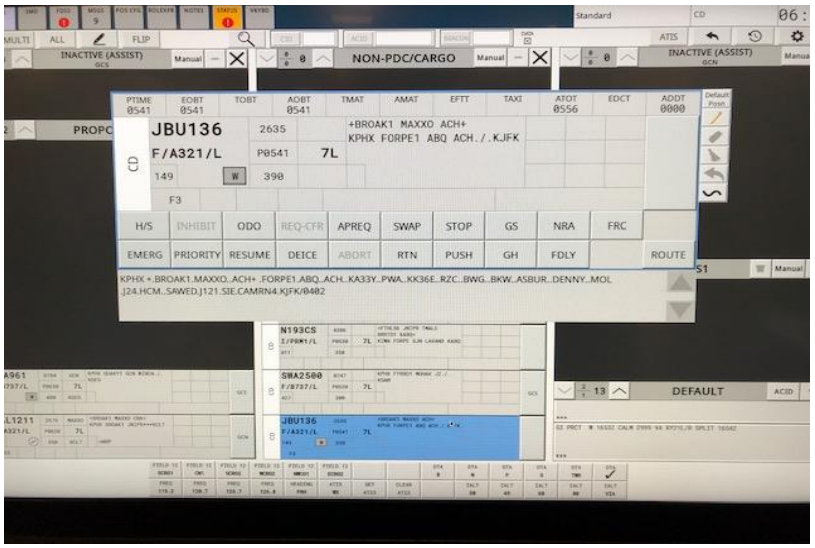
Doug Swol (FAA) & **Ayaz Kagzi** (FAA)

Terminal Flight Data Manager (TFDM): Build 1 Program Status

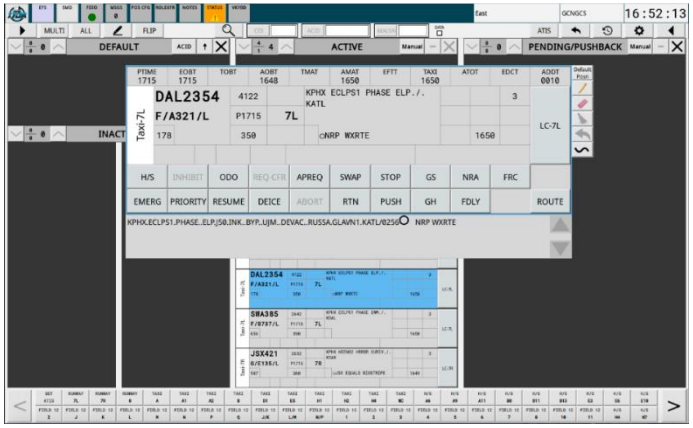
- **Key Site: Cleveland, OH (CLE)**

- **Accomplishments**
  - Completed 1.4 Operational Testing at WJHTC (4/2022)
  - Completed initial Operational Testing at CLE (6/2022)
    - Small number of software fixes and changes found and to be incorporate in final IOC build
  - Started Tech Ops training classes in June

- **Planned Activities**
  - Complete 1.4 operational testing at CLE and obtain Ops Suitability Decision - September 2022 (NAC milestone)
  - ATC Controller Training Starts – September 2022
  - CLE Build 1.4 IOC – Fall 2022 (NAC milestone)
  - CLE In Service Decision – Spring 2023 (NAC milestone)



EFS during Testing @ PHX



TFDM Build 1 Electronic Flight Strips Display

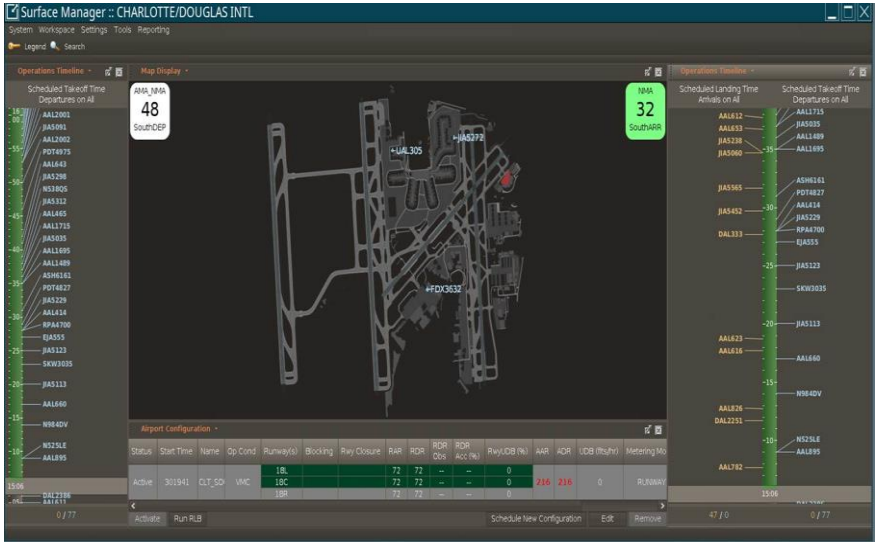
Terminal Flight Data Manager (TFDM): Build 2 Program Status

- **Key Site: Charlotte, NC (CLT)**

- **Accomplishments**
  - Build 2.1 Software Testing started July 18th
  - Continued vendor testing with TFDM testbed

- **Planned Activities**
  - Formal IOC Build 2.2 software delivered to the FAA January 2023
  - Continue onramping and test activities with vendors for the TFDM testbed

- **Early TFDM deployments (initial ten sites including CLT B2 IOC) through early CY2024 are on track**



TFDM Build 2 Surface Management Display

TFDM Test Systems with EFS and SM Displays

Changes in TFDM Program Scope

- **FAA Joint Resources Council (JRC) approved the following changes:**
  - Retain all 27 large Configuration A hub airports and 22 mid-sized configuration B sites
    - Defer 40 smaller sites from TFDM's current waterfall
  - Slow down TFDM deployment rate starting in FY24
  - Defer 2-way interface with Tower Data Link Services
    - Impacts Runway SID DataComm NAC commitment
- **Most TFDM benefits for both FAA and industry will be maintained, but delayed**
- **FAA will complete all Surface and Data Sharing NAC commitments**

Proposed NAC Milestone Impact

SURFACE AND DATA SHARING		
PRE-IMPLEMENTATION COMMITMENTS	**Old Date**	**New Date**
TFDM program will complete the operational testing for Build 1	Q2 CY2020	**Q3 CY2022**
NASA ATD-2 interim technology transfer from Phase 2: Fused IADS at CLT	Q4 CY2019	Complete
NASA ATD-2 final technology transfer from Phase 3: Terminal departure IADS at DFW/DAL	Q3 CY2020	Complete
Industry Alignment with TFDM Waterfall	Q1 CY2022 Q4 CY2022	Complete On Track
IMPLEMENTATION COMMITMENTS	**Old Date**	**New Date**
TFDM program will achieve key site IOC for Build 1 at CLE	Q2 CY2020	**Q4 CY2022**
TFDM program will achieve the in-service decision (ISD) for Build 1 to allow additional TFDM system deployments into the NAS	Q4 CY2020	**Q3 CY2023**
TFDM program will achieve IOC at 3 additional sites	Q1 CY2021	**Q4 CY2023**
TFDM program will achieve the key site IOC for Build 2 at CLT	Q4 CY2021	**Q2 CY2024**
TFDM program will achieve ISD for Build 2 to allow additional deployments of the full TFDM capabilities into the NAS	Q1 CY2022	**Q4 CY2024**
TFDM program will achieve IOC at 5 additional sites	Q1 CY2022	**Q4 CY2025**

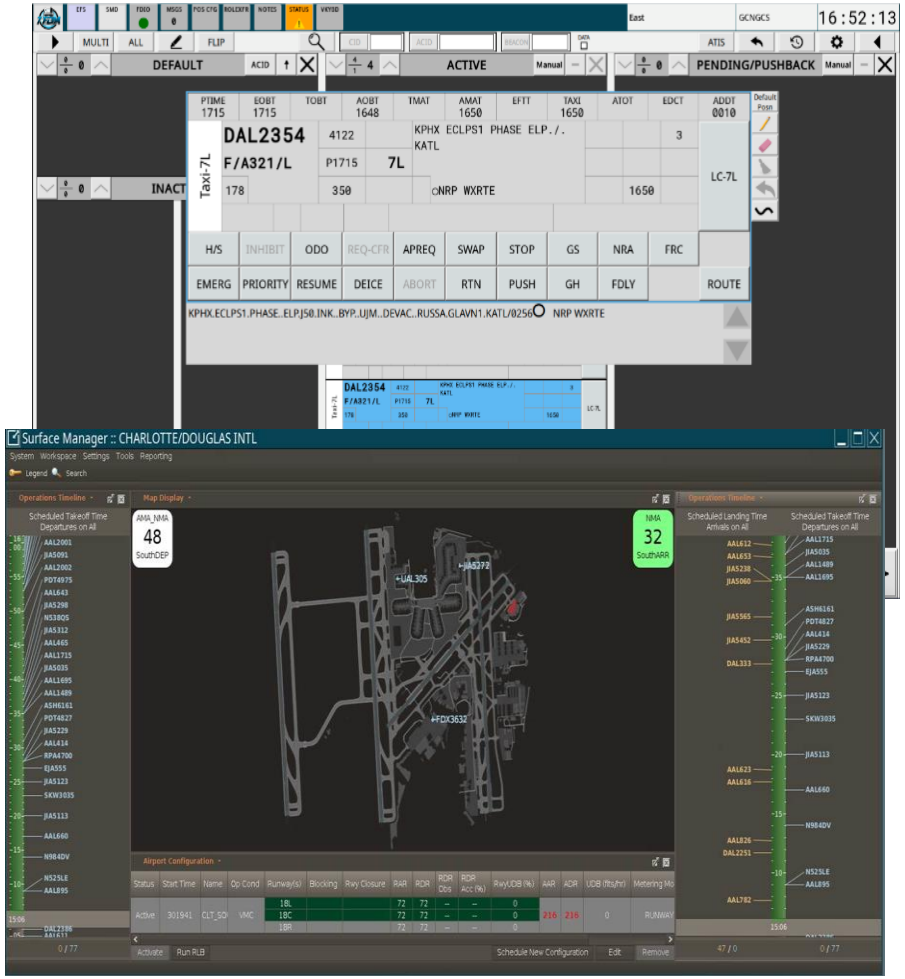
Next Steps

- **TFDM Program will provide detailed briefing to Surface NIWG**
  - Review new TFDM waterfall in September 2022
  - Collect industry feedback on waterfall and adjust as needed

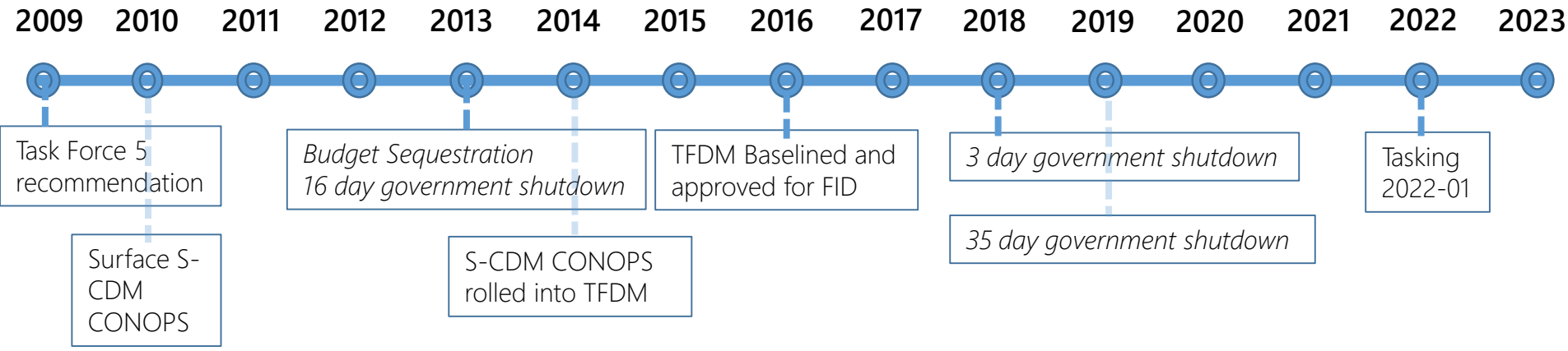
- **Continue collaboration with Industry to successfully deploy TFDM**
  - Ramp up Collaborative Site Implementation Team (CSIT) to prepare all large Configuration A sites
  - TFDM Testbed

Benefits of TFDM Operationalization to Industry

- **TFDM is a key component and enabler in an integrated suite of tools and capabilities that support the vision for trajectory-based operations (TBO) and an info-centric NAS**
  - Shifts the 'call for service' and departure queue from airport surface to the gate
  - Reconciles en route delay to a more predictable and manageable time based TFM initiative
  - Leverages data exchange to better manage capacity/demand and throughput
- Benefits:
  - Improved throughput and delay reduction
  - Reduced fuel burn and C02 emissions
  - Improved safety through better situational awareness



Concept to Capability



- A recommendation was made in 2009, A CONOPS developed in 2010 and we have yet to implement capability
  - The FAA needs stable funding
  - The acquisition process from concept to implementation needs to be quicker
- How do we improve this paradigm?

Data Comm

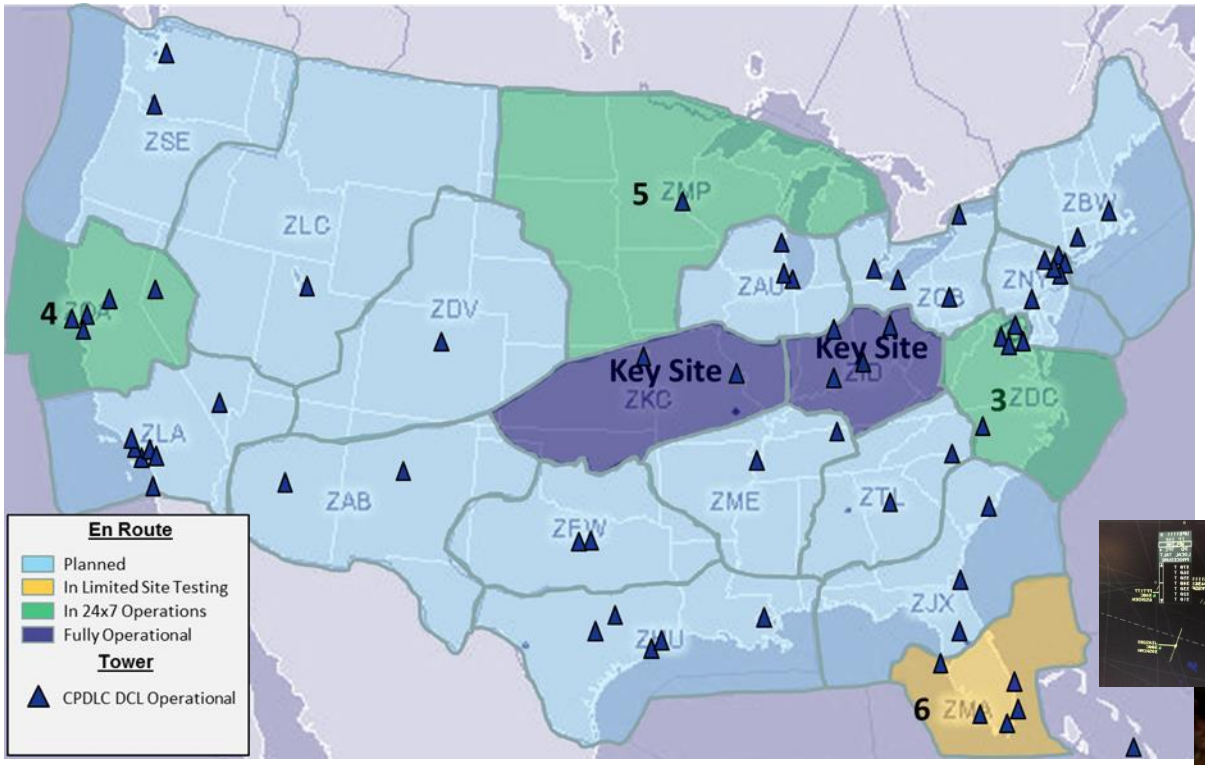
Chris Collings (L3Harris) & **Ed Evans** (Southwest Airlines)

Jesse Wijntjes (FAA)

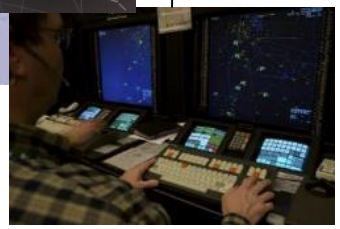
Data Comm Accomplishments

- Data Comm services are operational at 65 airports and 5 En Route Centers
- Data Comm user participation continues to grow – tower and en route operations reached an all time high in June 2022
- Localized air-to-ground interop issues are being fault isolated and analyzed for needed corrective actions in the avionics and air-to-ground networks
- Planning incremental roll out of En Route Full services starting in late summer 2022

Data Comm Operational Status



Air-to-Ground Network



En Route

Tower

Data Comm operational at 65 Towers

- **CVG Tower services operational, November 16, 2021**
- **JAX Tower services operational, February 17, 2022**
- **PBI Tower services operational July 18, 2022**

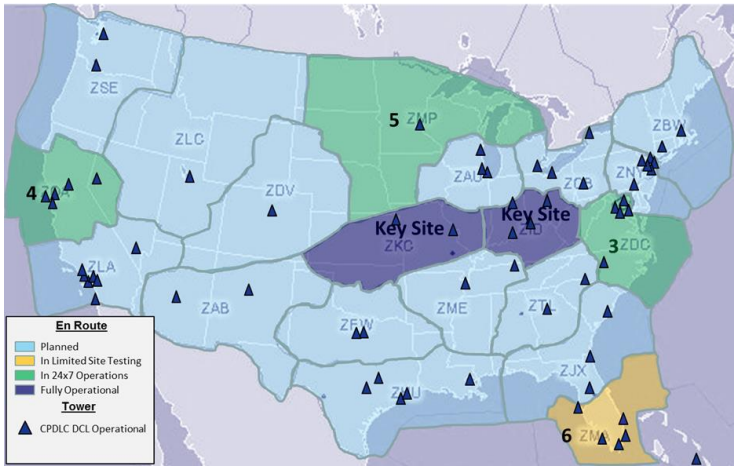
Data Comm operational 24x7 at 5 En Route Centers

- **ZMA started Limited DFV June 19, 2022**

Data Comm Benefits

Since 2016, CPDLC DCL…

- Served 19 US Air Carriers and 79 Non-US commercial and cargo operators
- Cleared 13.09M+ flights
- Saved 2.46M+ minutes of air space user time
- Saved 3.41M+ minutes of radio time
- Prevented 31.85M Kgs of CO2 Emissions
- Prevented 159,640+ readback errors



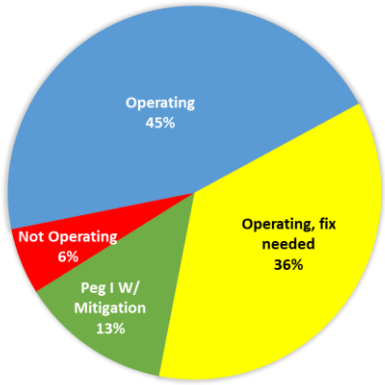
Since 2019, En Route Data Comm…

- Served 19 operators
- Cleared 2,315,844 flights
- Saved 1M+ minutes of radio time
- Prevented 266,720 readback errors

2022 Data Comm NIWG/Avionics Ad Hoc Focus Items

1. Complete nationwide en route center Data Comm deployment – Initial and Full Services
    - Provide national waterfall plan for Initial and Full Services
2. Complete installation of Data Comm avionics updates for retrofit and newly delivered aircraft
3. Establish plans for updated avionics to be installed on all new delivery Data Comm capable aircraft
4. Continue to track progress against NextGen Joint Implementation Plan (NJIP) milestones

Data Comm Avionics Updates Fleet Status



Aircraft operating in Data Comm En Route – No Pending Actions (45%)	
Alaska Airlines: B737	**JetBlue:** A321LR
American Airlines: B777, B787	**Southwest Airlines:** B737
Delta: A330neo	**United:** B777, B787
FedEx: B777, MD11	**UPS:** B744, MD11

Avionics Action	Operator/Fleet	Status
Aircraft operating in Data Comm En Route with Crew Procedure Mitigation (13%)		
Boeing 757/767 Pegasus 1	FedEx, UPS	Aircraft operating under procedure mitigation; Avionics Update: Peg 1 BP11 (Q1 2023)
Aircraft operating in Data Comm En Route with Open Avionics Actions (36%)		
Collins CMU 900 Core 16	American, Delta, United	Delta & United planning installs; American delayed
Boeing 767 ATN 505+ (Core 16)	FedEx, UPS	Newly delivered B767s starting in mid-2022 do not have "Core 16" equivalent avionics. Update planned Q2 2023.
Boeing 747-8 ATN-203 (Core 16)	UPS	"Core 16" equivalent. Update planned Q4 2022.
Airbus A320 ATSU CSB 7.5	Alaska (100%), American (100%), Delta (17%), JetBlue (99%)	CSB 7.5 released in late 2020, technical issues increased, root caused; **Fix planned for CSB 7.6 Q2 2024 (or CSB 9 available now)**
Airbus A320 ATSU CSB 7.6	Alaska, American, Delta, JetBlue	CSB 7.6 planned for Q2 2024 (or CSB 9 available now)
Aircraft removed from Data Comm En Route due to Open Avionics Actions (6%)		
Collins VDR Update	United	Install delayed
Boeing 757/767 Pegasus 1	United	Pending Peg 1 BP11: Q1 2023
Airbus A220	Delta, JetBlue	Pending avionics fixes, FMS update Q4 2023; RIU update TBD
Airbus A350	Delta	Pending avionics fix, planned Q4 2022

Operating, no action required	Operating fix needed	Peg 1 operating with mitigation	Not operating

Data Comm NAC Open Avionics Actions

1. **Airbus fix for A320 ATSU HX reject: Q2 2024**
   - ✓ CSB 7.5 (and CSB 7.4) technical issue fault isolated
   - > CSB 7.6 to correct issue, planned Q2 2024
   - > Alternatively, CSB 9 available today also corrects the issue
   - > Open issue affecting JBU A320 fleet causing message failures using SATCOM under investigation

2. **Airbus A320 ATSU CSB 7.5 for older hardware: Available Now**
   - ✓ ATSU CSB 7.5.1 available March 2022

3. **Airbus A220 FMC and RIU Updates: TBD**
   - > FMC: IMA Build 8.0A3 expected Q4 2023
   - > Radio Interface Unit (RIU) "Core 16" update: TBD

4. **Airbus A350 VDL Mode 2 avionics fix: End of 2022**
   - > Updated ACR standard to be available for new and retrofit aircraft by end of 2022

5. **Boeing B737MAX CMU900 Core 16 production cut-in: December 2022**
   - ✓ B737MAX customers may begin configuring aircraft deliveries with CMU900 Core 16
   - > First Boeing 737MAX with Core 16 planned for production in December 2022

6. **Boeing 767 ATN 505+ "Core 16" Update: Q2 2023**
   - > Newly delivered B767s with ATN starting in mid-2022 do not have "Core 16" equivalent avionics. Update expected Q2 2023

7. **Awaiting Boeing milestones for Nav Database revisions to mitigate en route STAR in free text for Pegasus II, B787, and B747 NG FMC**
   - > B787 and B747 NG FMC will require an FMC update in addition to NDB changes
   - > Boeing does not have firm milestones for completion

Data Comm – NJIP CY19-21 Open Milestones

Milestone	FAA / Industry	Milestone Date Q/CY	Status	Notes from July 28, 2022 NIWG Meeting
IOC for Initial En Route Services at all CONUS ARTCCs	FAA	~~4Q2019~~ ~~4Q2021~~ ~~4Q2022~~ ~~4Q2023~~ 1Q2024	Milestone impacted by COVID-19 and latent avionics and air-ground interop issues; deployment restarted in March 2022	Complete nationwide en route center Data Comm deployment – Initial and Full Services Provide national waterfall plan for Initial and Full Services
Baseline additional Data Comm capabilities for En Route utilizing the existing FANS message set	FAA Industry	~~3Q2021~~ ~~3Q2024~~ 3Q2026	Due to budget impacts from COVID-19, baselining of follow-on Data Comm capabilities delayed	Data Comm initial and full services provide the foundational CPDLC features. Planning for capabilities beyond en route initial and full services continue to slip to the right. In order to realize all potential benefits of Data Comm a continued evolution of capability is required to realize benefits of TBO.
Loadability Solution for Runway SID	FAA	3Q2019	Agreed on solution using future TFDM implementation in 2019. TFDM deployment milestones and Loadable SID solution release are TBD.	Current TDLS system limitations prevent ATC from sending loadable Runway/SID. Today's implementation requires manual Runway/SID entry – creating opportunity for errors. Loadable SIDs continues to be a high priority request from Data Comm users – improving efficiency and resolving human factors issues on flight deck with current implementation.

Motion for NAC Approval

- Approve the Data Comm NIWG's recommended industry milestone update

Performance Based Navigation (PBN)

Eric Morse (Delta Air Lines) & **Bill Whyte** (RAA)

Aaron Wilkins (FAA), **Juan Narvid** (FAA), & **Patrick Blaser** (FAA)

Status & Outlook for Commitments

- **Workgroup status**
  - New FAA SME from ATO Operations – Patrick Blaser
- **Commitment/milestone status**
  - With close-out of Metroplex, one implementation milestone remains

Type	Commitment/Milestone	Mar 2022 NAC	Current Dates
Implementation	Implement select iTBO capabilities in NEC and DEN	Q4 CY2024	Q4 CY2024

- **Note**
  - NEC capability is aligned with NEC NIWG implementation milestone
  - DEN capabilities needs clarification

Review of Action Items & Other Business

Kimberly Noonan, NAC Committee Manager (FAA)

Upcoming Meetings

- **NAC SC**
  - September 7, 2022 (3:30pm - 4:30pm ET) – Virtual
  - October 5, 2022 (10:30am - 1:00pm ET) – Hybrid

- **NAC**
  - November 30, 2022 (9:00am - 3:00pm ET)

Closing Comments

Brad Mims, FAA Deputy Administrator

NAC Designated Federal Officer

Closing Comments & Adjourn

Chip Childs, NAC Chairman

President & CEO, SkyWest, Inc.

Attachment 2

NextGen Advisory Committee (NAC)
August 30, 2022 Attendance List

Last Name	First Name	Affiliation
Adcock	Tom	National Air Traffic Controller Association
Aguirre	Carlos	Professional Aviation Safety Specialists
Allen	Dan	FedEx Express
Arel	Timothy	Federal Aviation Administration
Armstrong	Merrill	Federal Aviation Administration
Aron	Ludovic	European Union Aviation Safety Agency
Arrighi	James	Federal Aviation Administration
Asplen	Layla	Federal Aviation Administration
Ayelomi	Precious	Federal Aviation Administration
Baker	Mark	Aircraft Owners and Pilots Association
Baker	Jodi	Federal Aviation Administration
Batchelor	David	SESAR Joint Undertaking
Bee	Lisa	Inmarsat
Berlucchi	Robert	American Airlines
Blaser	Patrick	Federal Aviation Administration
Bolen	Edward	National Business Aviation Association
Braxton	Keisha	Federal Aviation Administration
Brown	Steve	National Business Aviation Association
Brown	Lee	JetBlue Airways
Brown	Steve	National Business Aviation Association
Bruckbauer	Brian	Air Traffic Control Association
Bunce	Peter	General Aviation Manufacturers Association

Last Name	First Name	Affiliation
Burkett	Alexander	General Aviation Manufacturers Association
Burkett	Gregory	Federal Aviation Administration
Burns	Patrick	Delta Air Lines
Butler	Steven	Federal Aviation Administration
Cebula	Andrew	Airlines for America
Challan	Peter	L3Harris
Childs	Russell	SkyWest Airlines
Chow	Martha	Government Accountability Office
Christiansen	Cindy	Public
Christie	Warren	JetBlue Airways
Cochran	Walt	Leidos
Cohen	Raymond	Department of Defense
Collings	Chris	L3Harris Technologies
Coppini	Dane	Public
Crandall	Kathy	L3Harris Technologies
Crutchfield	Allison	SpaceX
Cunha	Jason	Concept Solutions
Dalton	Rick	Southwest Airlines
DeHart	Scott	Southwest Airlines
Delibes	Didier	Airbus
Denicuolo	Mark	Federal Aviation Administration
Denning	Jana	Professional Aviation Safety Specialists
DePete	Joe	Air Line Pilot Association
Dillman	Don	FedEx Express
Dodgen	Joey	Delta Air Lines
Donnelly	Kurt	Federal Aviation Administration

Last Name	First Name	Affiliation
Donohue	Denis	Raytheon Technologies
Dowd	Jody	Federal Aviation Administration
Dress	Karina	Commercial Spaceflight Federation
Drew	Craig	Public
Duffy	Kent	Federal Aviation Administration
Durkins	Tash	Federal Aviation Administration
Egentowich	John	Federal Aviation Administration
Evans	Ed	Southwest Airlines
Fabiani	Marco	The MITRE Corporation
Flynn	Morgan	Public
Fontaine	Paul	Federal Aviation Administration
Frame	David	HUGHES Aerospace Corporation
Galeote	Joseph	Department of Defense
Goldman	Robert	Delta Air Lines
Goldman	Robert	Delta Air Lines
Griffin	Shannetta	Federal Aviation Administration
Gupta	Vipul	Honeywell International, Inc.
Gusky	Amy	Federal Aviation Administration
Gustin	Joshua	Federal Aviation Administration
Guy	Rebecca	Federal Aviation Administration
Hahn	Ed	Air Line Pilot Association
Hauser	Greg	Public
Heintz	Hillary	Federal Aviation Administration
Hennig	Jens	General Aviation Manufacturers Association
Hicok	Dan	Federal Aviation Administration
Hope	Chris	Federal Aviation Administration

Last Name	First Name	Affiliation
Hoskins	Craig	Airbus
Hunt	Robert	Federal Aviation Administration
Ivers	Benjamin	The Boeing Company
Jackson	Rachel	Raytheon Technologies
Johnson	Antionette	Federal Aviation Administration
Jung	Deb	County Councilmember, Howard County Maryland County Council Representative to the BWI Roundtable
Kagzi	Ayaz	Federal Aviation Administration
Kamyab	Ahmad	Federal Aviation Administration
Kamyab	Ahmad	Federal Aviation Administration
Kasher	Alan	Southwest Airlines
Kauffman	Don	Honeywell International, Inc.
Kearns	Kathleen	AlternaSource, Inc.
Kenagy	Randy	Air Line Pilots Association
Knorr	Dave	Federal Aviation Administration
Kohut	Anne	Airport Noise Report
Kovalcik	Luanne	Leidos
Lawrence	Huntley	Port Authority of New York and New Jersey
Loring	Christopher	Federal Aviation Administration
MacInnis	Dillon	SpaceX
Madera	Norbert	Federal Aviation Administration
Maffei	John	Federal Aviation Administration
McCarthy	Kieran	Government Accountability Office
McClay	Jim	Aircraft Owners and Pilots Association
McCullough	Angela	Federal Aviation Administration
McDowell	Mike	Collins Aerospace

Last Name	First Name	Affiliation
McGraw	Candace	Cincinnati/Northern Kentucky International Airport
Mims	Bradley	Federal Aviation Administration
Morse	Eric	Delta Air Lines
Morse	Glenn	Public
Mulligan	Jessica	SkyWest Airlines
Murphy	Dan	Federal Aviation Administration
Narvid	Juan	Federal Aviation Administration
Newman	Phillip	American Airlines
Noonan	Kimberly	Federal Aviation Administration
O'Connor	Wendy	Federal Aviation Administration
O'Kelly	Caitlin	Federal Aviation Administration
Oliver	Natasha	Government Accountability Office
Olson	Lee	NASA
Olson	Loren	City of Minneapolis
Oswald	Chris	Airport Council International - North America
Parker	Eric	Federal Aviation Administration
Pennington	Darrell	Air Line Pilot Association
Perez	Karina	Aerospace Industries Association
Peyton	Bret	Alaska Airlines
Pfingstler	Susan	United Airlines
Pierce	Brad	NOISE
Pinkerton	Sharon	Airlines for America
Quinn	Cheryl	NASA
Renk	Ron	United Airlines
Rogers	Christopher	Raytheon Technologies
Ruehl, Sr.	Steven	Department of Defense

Last Name	First Name	Affiliation
Santa	Rich	National Air Traffic Controller Association
Santos	Phil	FedEx Express
Schwab	Greg	Federal Aviation Administration
Shields	Tom	Department of Defense
Shull	Mark	Public
Silverman	Eric	American Airlines
Smith	Elly	MITRE
Snow	Marissa	SkyWest Airlines
Stevenson	Dawn	Federal Aviation Administration
Sultan	Akbar	NASA
Surridge	David	American Airlines
Swol	Christopher	Federal Aviation Administration
Sypniewski	Jessica	Federal Aviation Administration
Tamburro	Ralph	Port Authority of New York and New Jersey
Toffler	Aaron	Massport Community Advisory Committee
Tranter	Emily	NOISE
Turner	Trey	Southwest Airlines
Tyler	Jessica	American Airlines
Valcich	Jeremy	American Association of Airport Executives
Vincent	Jeffrey	Federal Aviation Administration
Whyte	Bill	Regional Airline Association
Wijntjes	Jesse	Federal Aviation Administration
Wilkins	Aaron	Federal Aviation Administration
Williams	Heidi	National Business Aviation Association
Witt	Samantha	Federal Aviation Administration
Wongsangpaiboon	Natee	Federal Aviation Administration

Last Name	First Name	Affiliation
Wonnenberg	Isaiah	Commercial Spaceflight Federation
Wu	Chia-Jung	The MITRE Corporation
Yaplee	Darlene	Aviation-Impacted Communities Alliance

Attachment 3

Darlene Yaplee
Aviation-Impacted Communities Alliance (AICA) and Concerned Citizens of Palo Alto

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NextGen and the FAA's Noise Policy Review

To date the FAA and NAC have failed to address the new NextGen created noise problem of frequent, high concentration of flights over narrow areas.

- FAA Administrator Dickson's response to a March 2021 letter from the Quiet Skies Caucus stated: "We are bringing on board the Federal Mediation and Conciliation Service (FMCS) to assist with designing an inclusive and participatory policy review framework and process that prioritizes input from substantially affected stakeholders, including local communities" also, "We can provide update[d] briefings as the review gets underway."
    - Sept 10th will be one year after the FMCS agreement was signed
    - It is over 18 months since the FAA announced the noise policy review
    - To date, we have received zero update briefings and no inclusion

The community "must-haves" for the FAA's noise policy review:

- A timely, transparent roadmap:
    - Milestones, desired outcomes and who, when and how stakeholder groups, including local communities, will participate
- Policies to address the NextGen created noise problems based on:
    - Analysis of N-Above at 45 to 65 dB-A noise levels for the airports in the NES, and comparing the correlation between N-Above and annoyance, versus the correlation between DNL 65 and annoyance
    - Analysis of separate thresholds for sound proofing (near airport) versus procedure design (away from airport)
    - Compliance with ANCA which requires a system of metrics, not today's use of a single metric. This should be based on multi-disciplinary, independent experts and peer reviewed results
- Consideration of the scientific research that has shown negative health effects from excessive noise.
- Demonstrated balanced points of view – not underweighting community, objectivity, and robustness for analyses and recommendations.
    - The Quiet Skies Caucus rejected the FAA's Metrics Report (2020). This quality of work product is unacceptable.

- FAA to meet its ethical obligation to change regulations that are detrimental to the public, that are under its authority, and that do not require new legislation.

Cindy Christiansen
Aviation-Impacted Communities Alliance (AICA)

In an April 20, 2022 letter (link) regarding NextGen Advisory Committee (NAC) membership, the Congressional Quiet Skies Caucus (QSC) stated to the Department of Transportation (DOT) that "None of the [NAC] members represent communities that live under NextGen corridors and that are directly impacted by the recommendations of the NAC." Now, based on the FAA's qualifications for NAC membership published in the August 17, 2022 Federal Register Notice (FRN) (link), the FAA has crafted membership requirements that are even more exclusionary; candidates must serve as a senior executive and corporate officer in an aviation organization with equities in air traffic management and aircraft equipment modernization. This means communities that are negatively affected by NextGen and this committee's recommendations will continue to have no seat at this FAA-created NextGen table.

The FAA's Federal Register Notice includes that NAC membership "must be equitably balanced in terms of points of view represented and functions performed", but there is no balance when one of the primary stakeholders is omitted and ignored. Without all of the legitimate stakeholder's voices, especially those who have been negatively affected by this committee's work, NAC deliberations cannot and will not achieve a balance of points of view.

The Federal Register Notice goes on to say that "To the extent practicable and in accordance with the Executive Order on Advancing Racial Equity and Support for Underserved Communities through the Federal Government and the Executive Order on Diversity, Equity, Inclusion, and Accessibility, the membership of the NAC shall include persons of diverse backgrounds in race, ethnicity, religion, sexual orientation, and gender." I encourage the FAA to look at its current NAC membership list to see how well it is doing on this practicality.

Deb Jung
Howard County Maryland Councilmember
County Council Representative to the BWI Roundtable

Dear Members of the NextGen Advisory Committee:

My name is Deb Jung, and I am the District 4 Councilmember for the Howard County Council in Maryland and the County Council's representative on the BWI Roundtable.

I joined the BWI Roundtable almost four years ago because I am acutely aware of the impact that the noise generated at all hours of the day and night by the "NextGen superhighway in the sky" can have on a person's well-being. Being awakened by planes throughout the night interrupts sleep and has a deleterious cumulative effect over the years. It's like having a newborn baby who never sleeps through the night forever. Eventually babies grow up and sleep through the night and so do their parents. But there is no respite for the thousands of people who are unfortunate enough to live within the airport noise zone.

I would like to ask you to take all steps possible to speed up the Performance Based Navigation (PBN) process that the BWI Roundtable has been engaged in for five years. Per our Charter, the BWI Roundtable sent our technical changes to the Federal Aviation Administration (FAA) in December 2019. It took until August 16th, 2022, approximately two years and nine months after our submission, to have our first meeting with the FAA regarding our technical change requests to the PBN process.

I respectfully ask this body to take two actions:

1) Ensure that there are no further delays to making the technical changes requested by the BWI Roundtable; and,

2) Return to the DC Metroplex airspace to identify and develop additional and necessary changes to NextGen, that are appropriately scoped to deconflict the airspace between National and BWI.

Hundreds of thousands of noise complaints have been filed with the Maryland Aviation Administration (MAA) by residents impacted by the changes. State and county lawsuits to compel the FAA to revisit the harmful effects of NextGen implementation at the BWI Airport have failed and Congressional attention to the matter has not resulted in any change to the FAA's position of no reversion to pre-NextGen flight. Adding to the urgency of restoring balance is the announcement that over $158 million in Federal infrastructure funds have been secured by the Maryland Congressional Delegation to immediately support airport growth and enhancements over the next five years.

Yet the noise continues unabated and has worsened over time. We need relief.

Thank you for your consideration.

Sincerely,
Deb Jung
Councilmember, District 4