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.

Break

10 Minutes

FAA Topics

Brad Mims, FAA Deputy Administrator

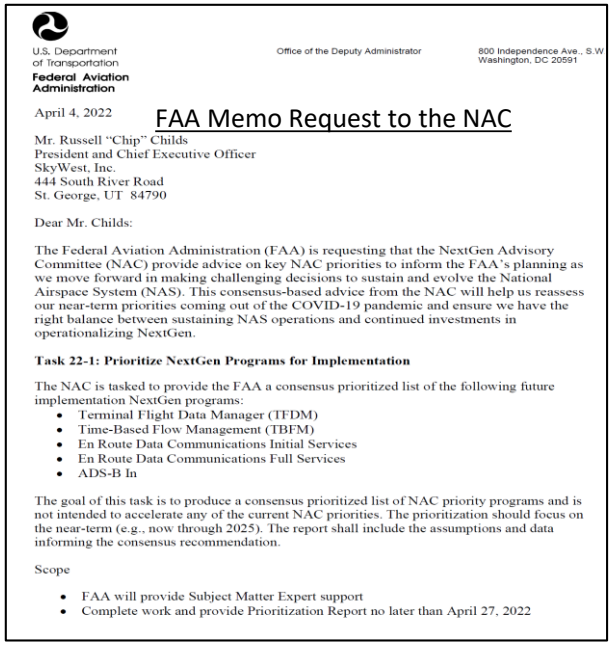
NAC Designated Federal Officer

NAC Tasking 22-1: FAA Response

August 30, 2022

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

FAA Memo Request to the NAC

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

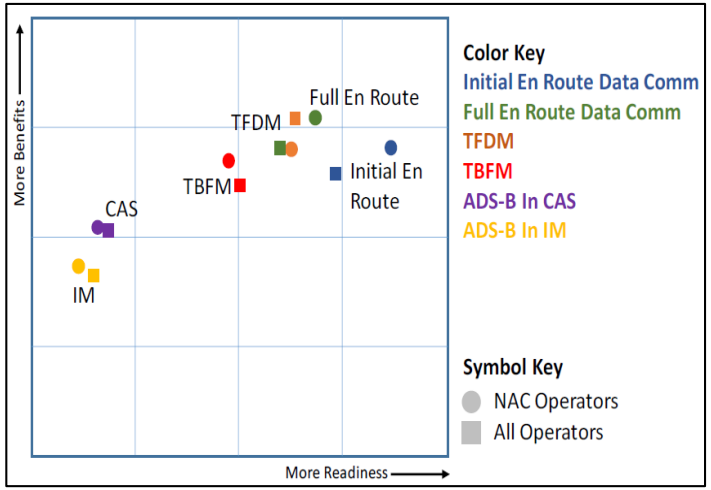
- FAA will provide Subject Matter Expert support
- Complete work and provide Prioritization Report no later than April 27, 2022

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

NAC Tasking 22-1: Program Replans Overview

- FAA used the 22-1 Report to inform corporate budget decisions and program replanning activities
  - Continuing to balance sustaining today's NAS and operationalizing NextGen
  - Replans are largely aligned with the information contained in the Report
- Program Replans in support of NAC milestones
  - DataComm: Continue to implement DataComm in en route environment
    - Continue to implement DataComm Initial En Route Services
    - Continue to implement DataComm 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

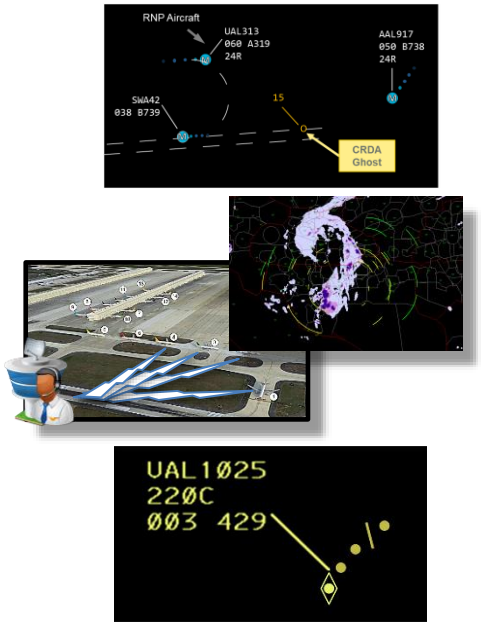
Juan Narvid (FAA)

Jesse Wijntjes (FAA)

Overview of Selected Section 547 Initiatives

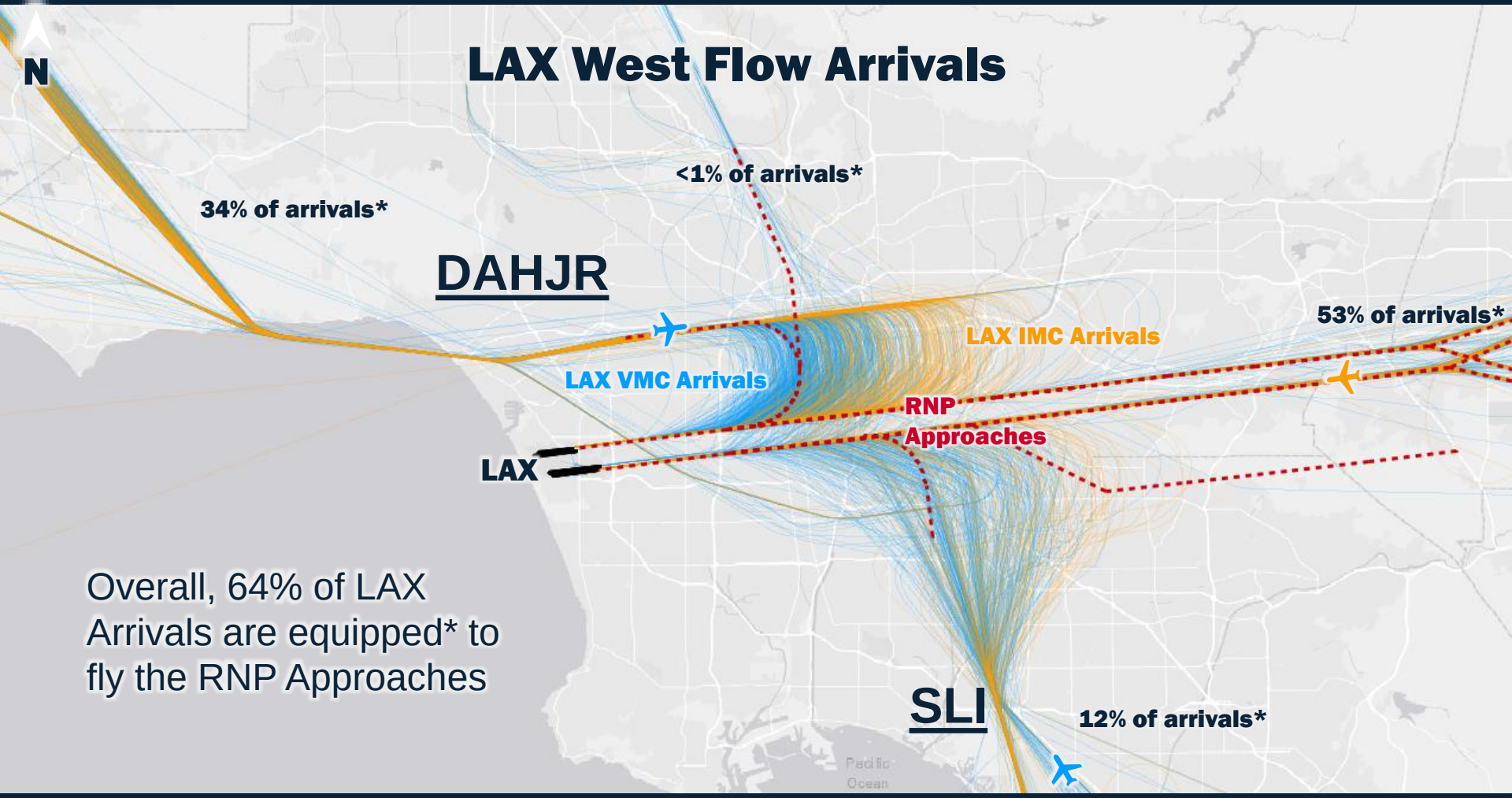
Process: Industry provided FAA a ‘short list’ of candidate recommendations based on Readiness, Return, & Relevance

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

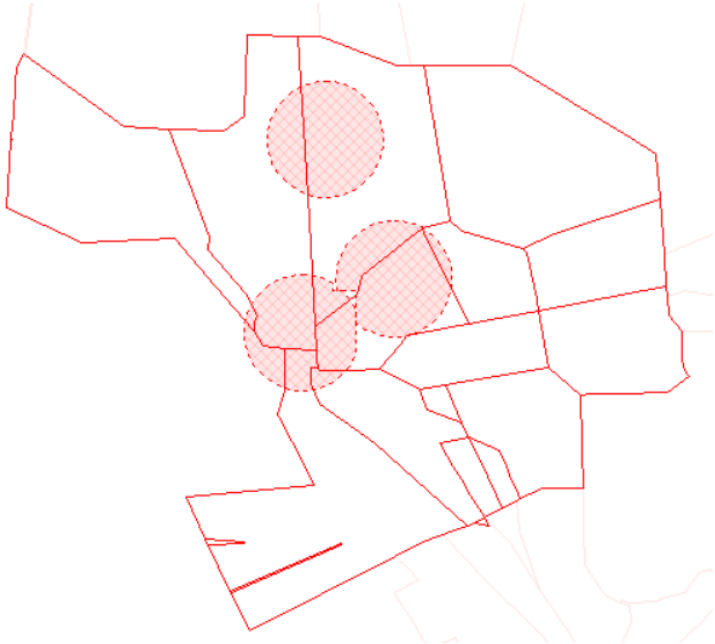
Data Source: MITRE TTFS, for October 2021 – April 2022

*Based on fuel burn for a B738

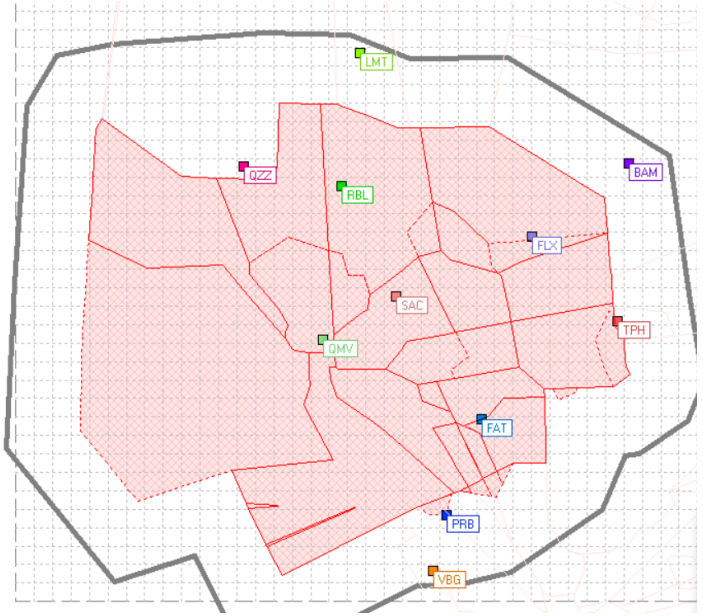
ZOA ADS-B OUT ENABLING 5 TO 3 NM SEPARATION INITIATIVE

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

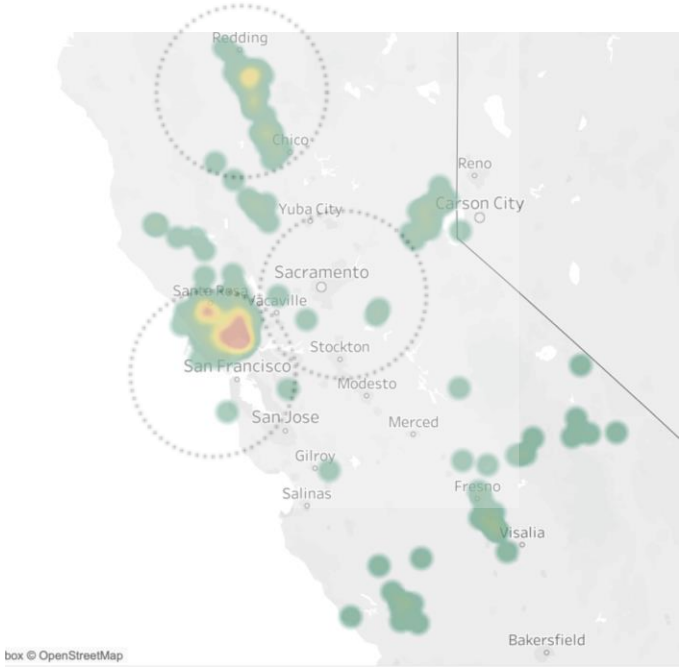
12/31/2020



10/12/2021

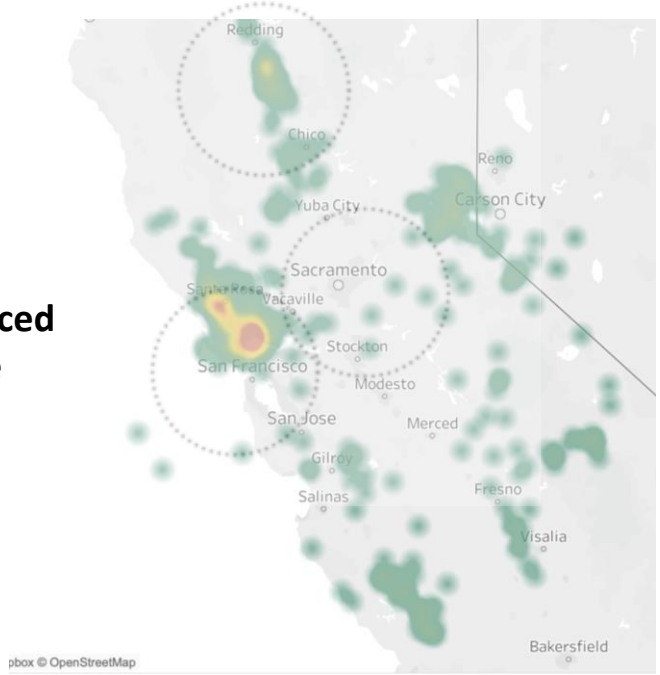


Locations of < 5 NM, < 1,000 ft Separation within ZOA at or below FL230



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

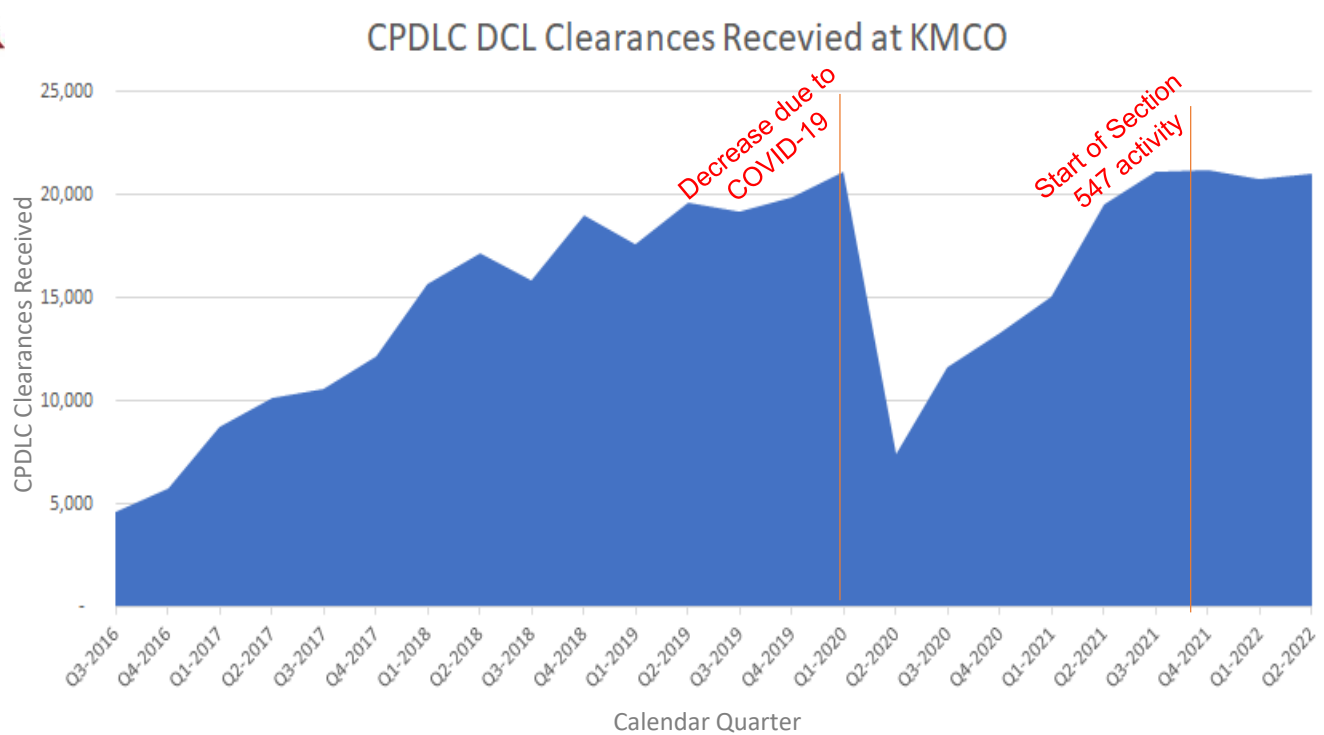
Served 1.76B+ passengers

Prevented 31.85 million kilograms of CO_2 emissions

Prevented 159,640+ readback errors

Saved 3.41M+ minutes of radio time

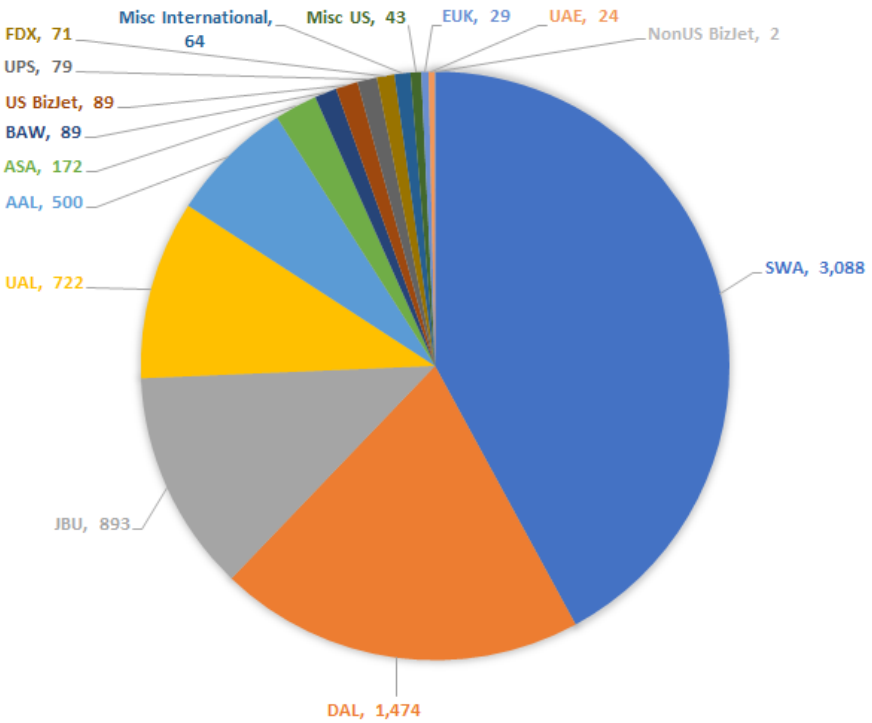
Orlando CPDLC DCL Departures



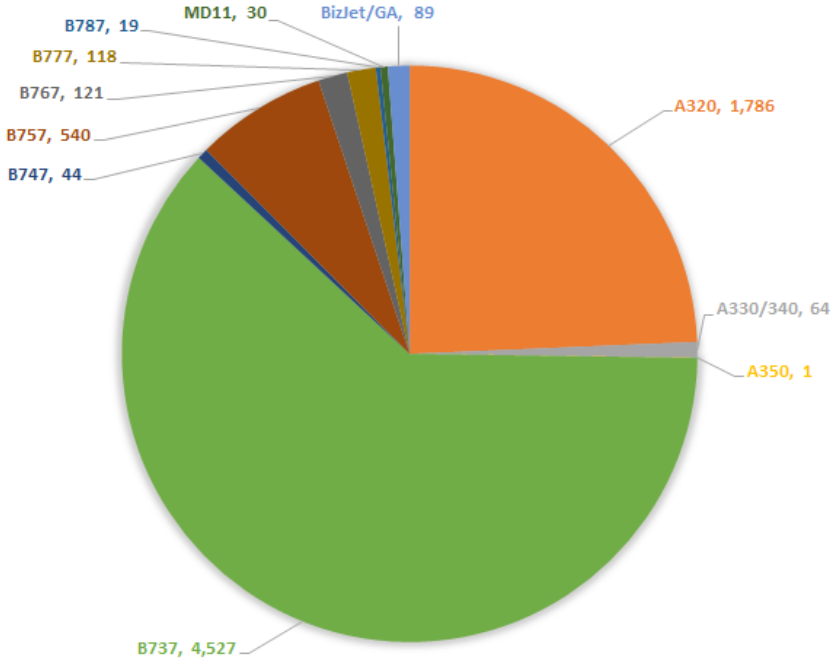
Orlando CPDLC DCL Clearances

July 2022

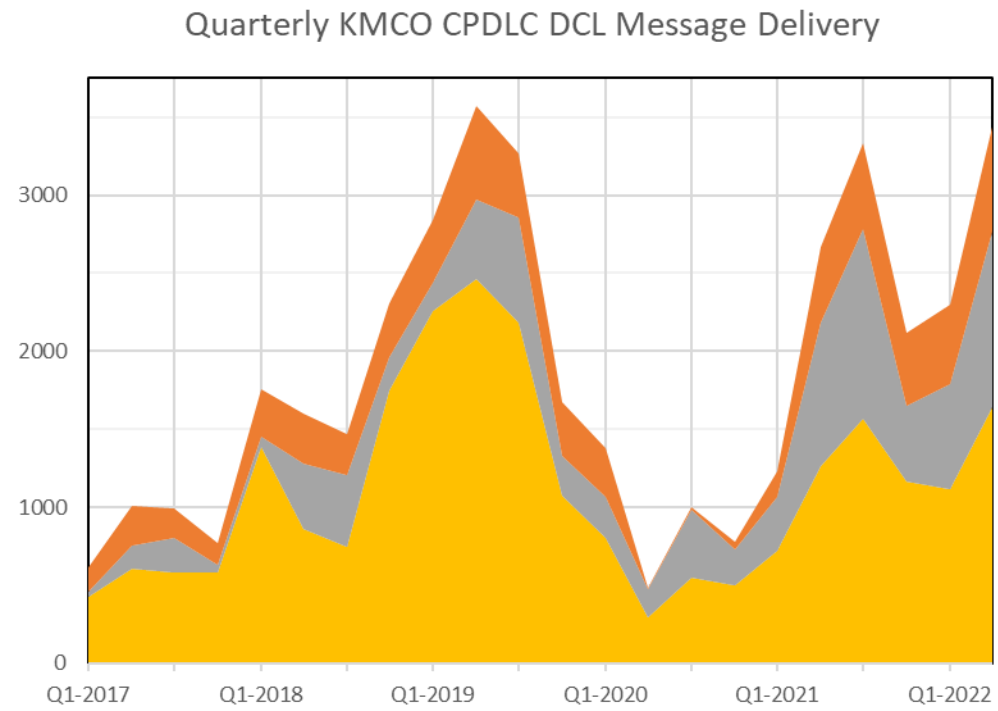
By Operator



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

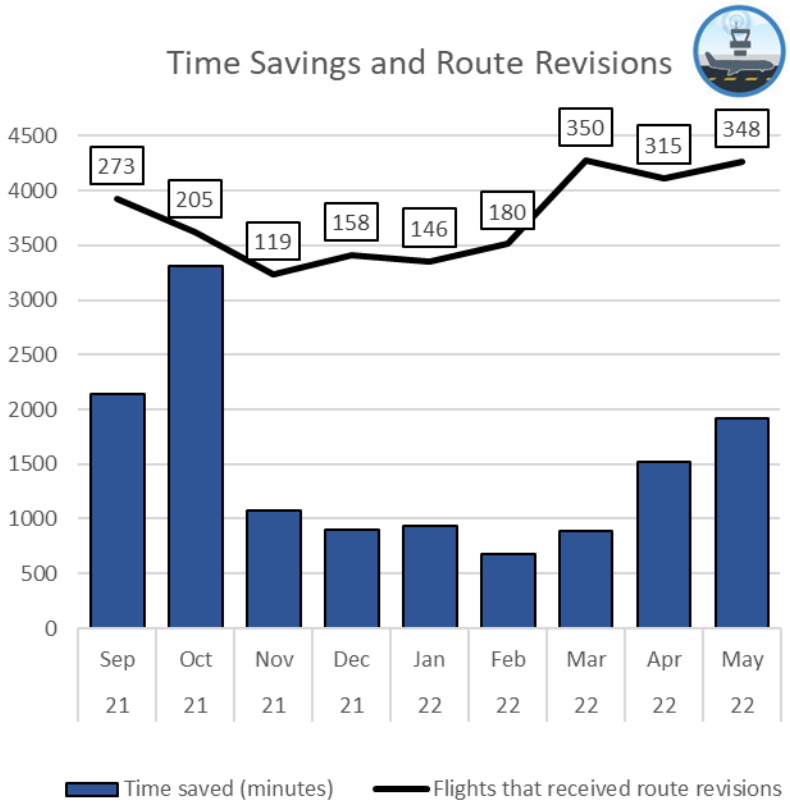
Saved 1,914 minutes of airspace user time (gate and taxi)

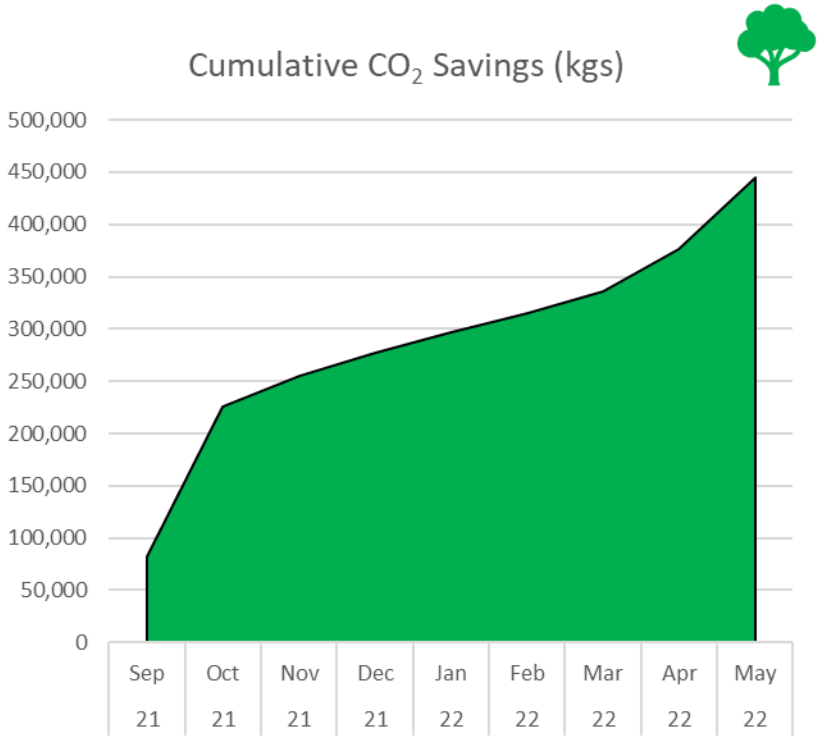
Prevented 67,843 kgs of CO_2 Emissions

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

Orlando CPDLC DCL Benefits Trend

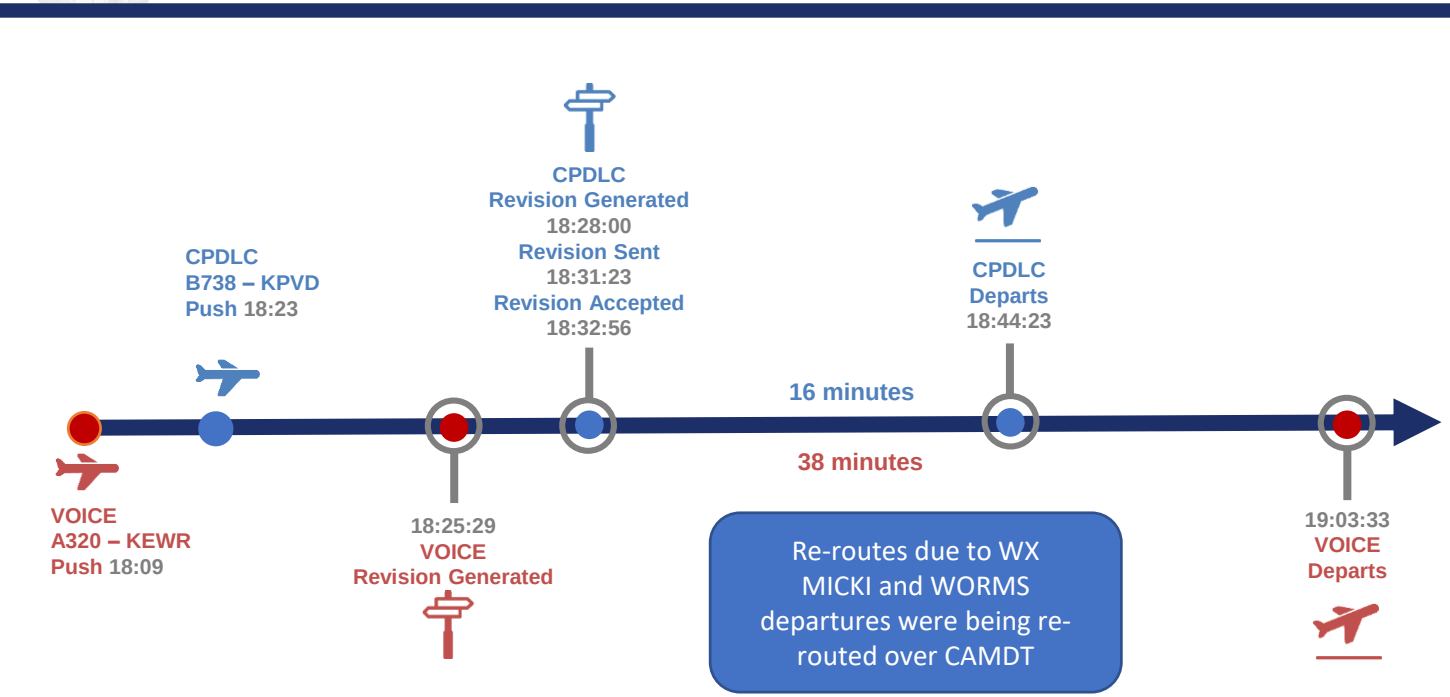
Time Savings and Emission Reductions





**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)

<ASSIGNED ALTITUDE FL340
↑ 1616Z-KUSC ACPT

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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)

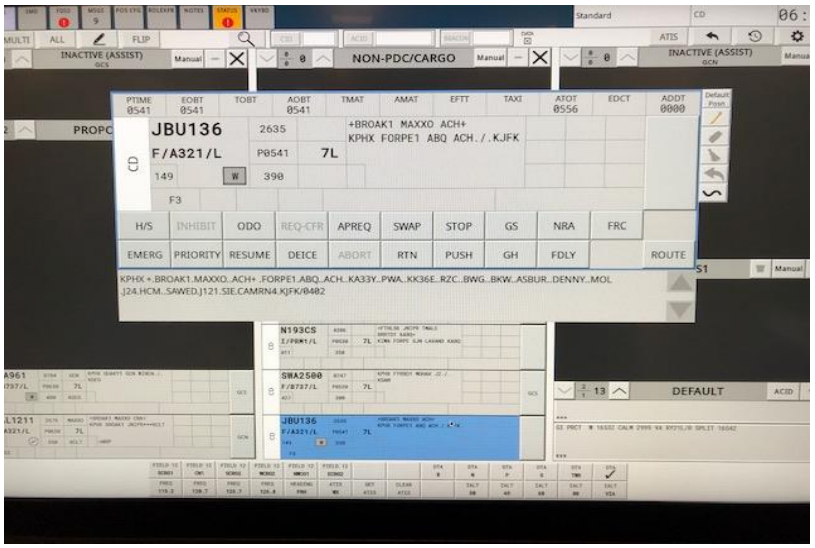
Doug Swol (FAA) & Ayaz Kagzi (FAA)

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

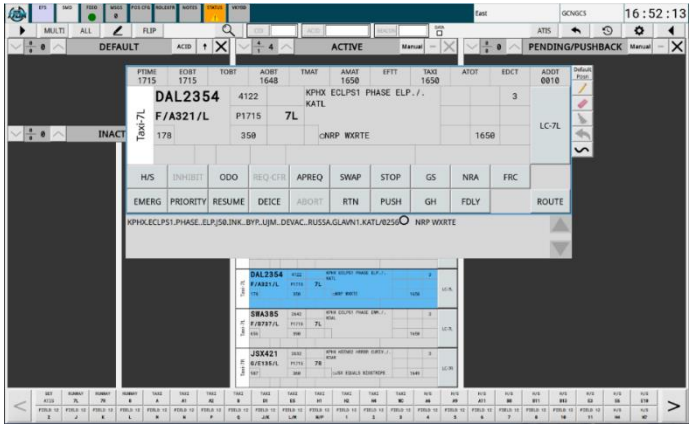
- **Key Site: Cleveland, OH (CLE)**

- **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

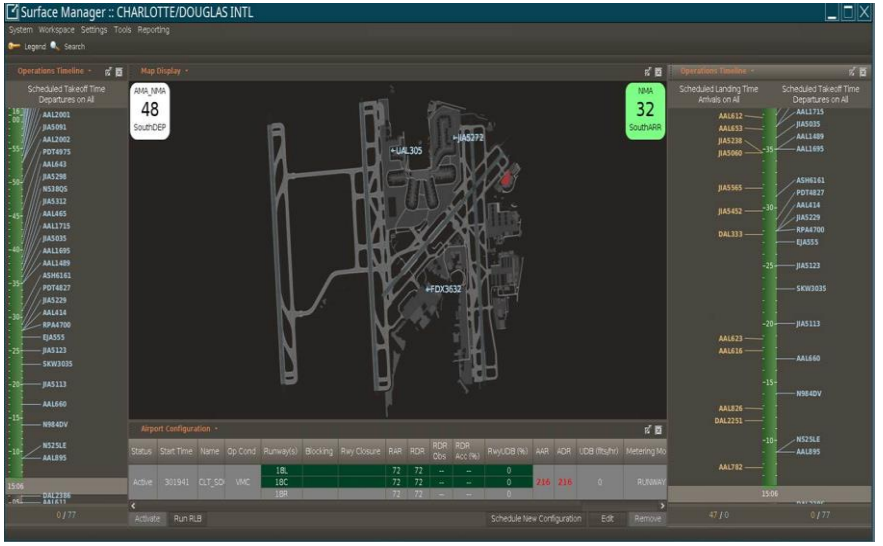
Terminal Flight Data Manager (TFDM): Build 2 Program Status

- **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**

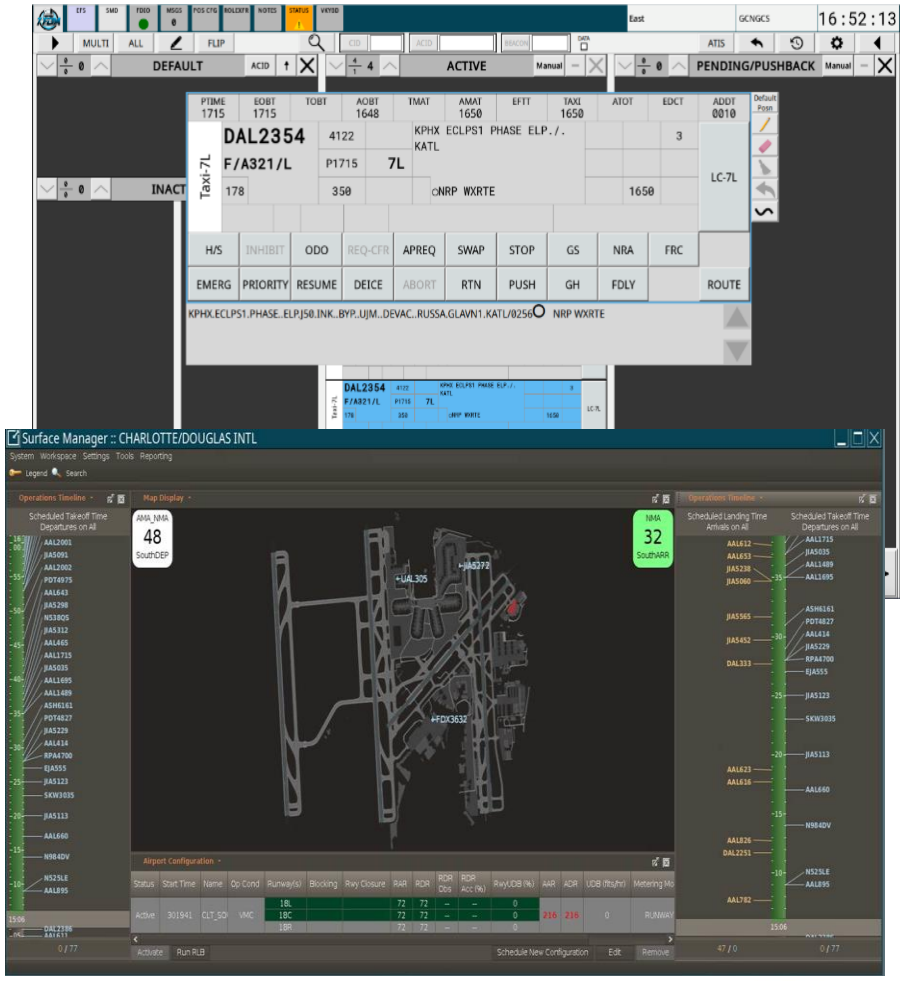
Next Steps

- **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

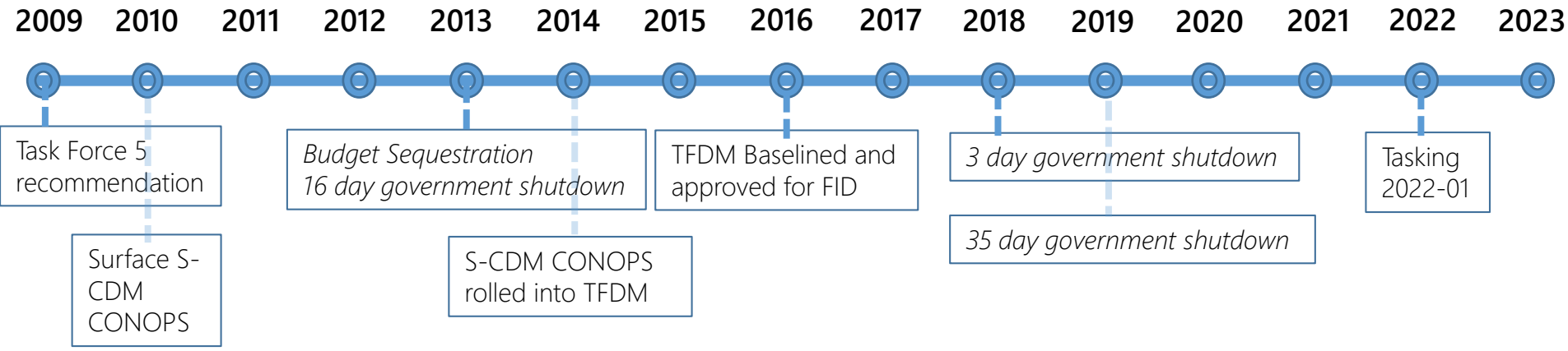
- **Continue collaboration with Industry to successfully deploy TFDM**
  - Ramp up Collaborative Site Implementation Team (CSIT) to prepare all large Configuration A sites
  - TFDM Testbed

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

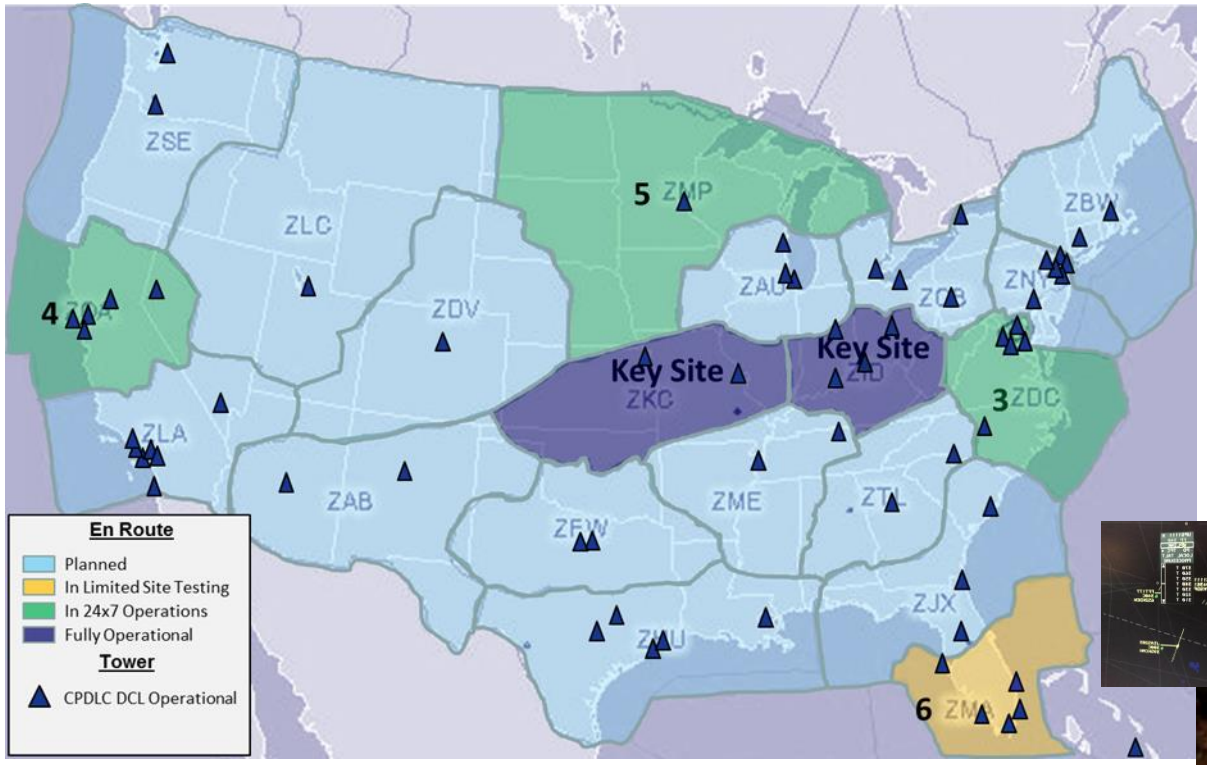
Chris Collings (L3Harris) & **Ed Evans** (Southwest Airlines)

Jesse Wijntjes (FAA)

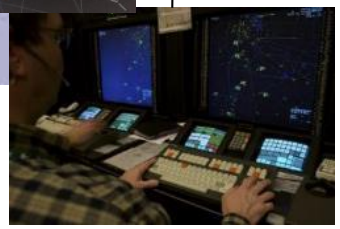
Data Comm Accomplishments

- 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**

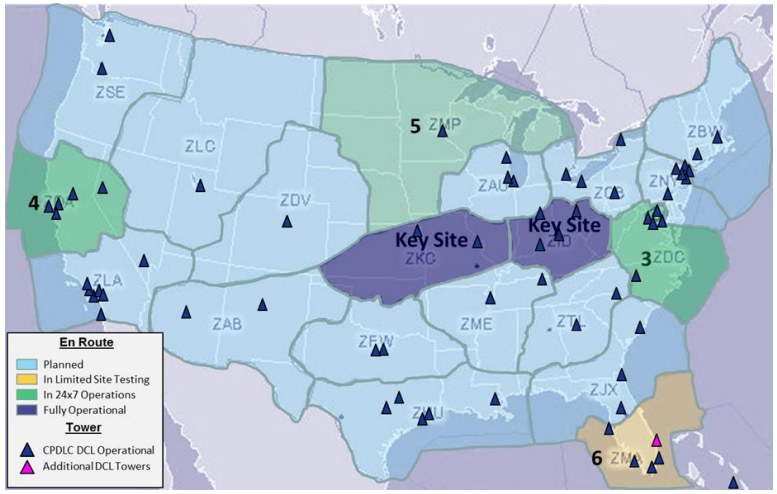
Data Comm operational 24x7 at 5 En Route Centers

- **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…

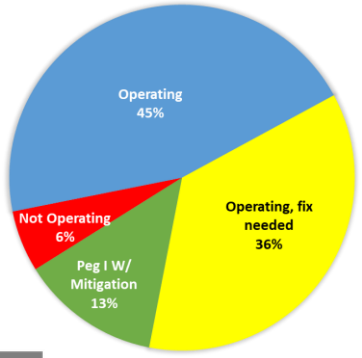
- Served 19 operators
- Cleared 2,315,844 flights
- Saved 1M+ minutes of radio time
- Prevented 266,720 readback errors

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 & Adjourn

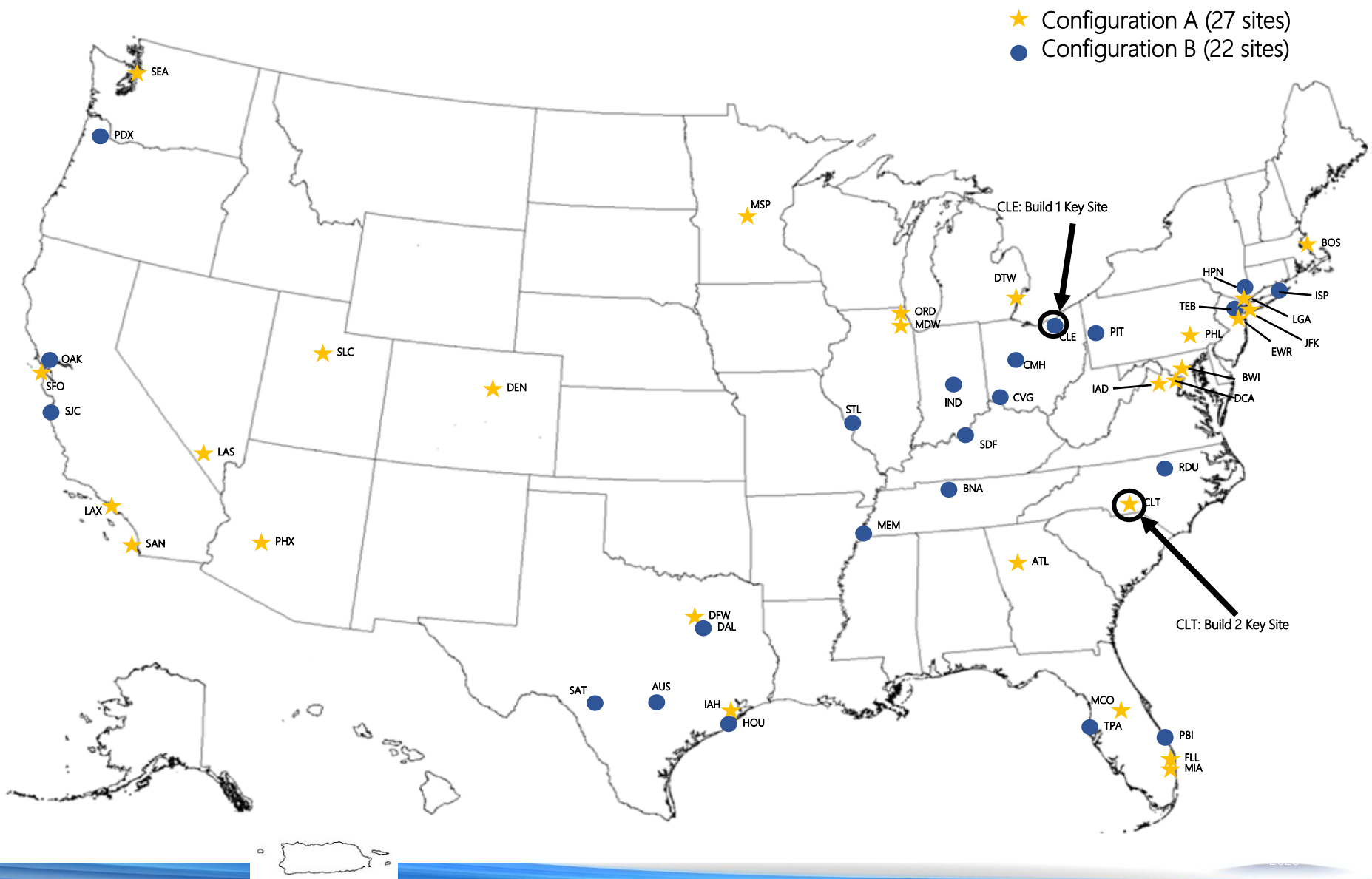
Chip Childs, NAC Chairman

President & CEO, SkyWest, Inc.

Surface & Data Sharing (FAA)

Back-up Slides

TFDM Deployment Sites: *After Strategic Reductions*



40 Sites Planned for Removal from TFDM Waterfall

ATCT 77 Wichita (ICT) - Config B - Full TFDM SW
ATCT 53 Omaha (OMA) - Config B - Full TFDM SW
ATCT 10 Dayton (DAY) - Config B - Full TFDM SW
ATCT 44 Jacksonville, FL (JAX) - Config B - Full TFDM SW
ATCT 14 Sacramento (SMF) - Config B - Full TFDM SW
ATCT 51 Providence (PVD) - Config B - Full TFDM SW
ATCT 73 Little Rock (LIT) - Config B - Full TFDM SW
ATCT 52 Charleston, SC(CHS) - Config B - Full TFDM SW
ATCT 55 Richmond (RIC) - Config B - Full TFDM SW
ATCT 75 Boise (BOI) - Config B - Full TFDM SW
ATCT 57 Hartford (BDL) - Config B - Full TFDM SW
ATCT 58 Birmingham (BHM) - Config B - Full TFDM SW
ATCT 61 Buffalo (BUF) - Config B - Full TFDM SW
ATCT 80 Honolulu (HNL) - Config B - Full TFDM SW
ATCT 69 Greensboro (GSO) - Config B - Full TFDM SW
ATCT 72 Norfolk (ORF) - Config B - Full TFDM SW
ATCT 74 Savannah (SAV) - Config B - Full TFDM SW
ATCT 71 Syracuse (SYR) - Config B - Full TFDM SW
ATCT 76 Knoxville (TYS) - Config B - Full TFDM SW
ATCT 64 Anchorage (ANC) - Config B - Full TFDM SW

ATCT XX New Orleans (MSY) - Config B - Full TFDM SW
ATCT XX San Juan (SJU) - Config B - Full TFDM SW
ATCT XX Kansas City (MCI) - Config B - Full TFDM SW
ATCT XX Burbank (BUR) - Config B - Full TFDM SW
ATCT XX Milwaukee (MKE) - Config B - Full TFDM SW
ATCT XX Ontario (ONT) - Config B - Full TFDM SW
ATCT XX Oklahoma City (OKC) - Config B - Full TFDM SW
ATCT XX Albuquerque (ABQ) - Config B - Full TFDM SW
ATCT XX Tulsa (TUL) - Config B - Full TFDM SW
ATCT XX Fort Myers (RSW) - Config B - Full TFDM SW
ATCT XX Grand Rapids (GRR) - Config B - Full TFDM SW
ATCT XX Reno (RNO) - Config B - Full TFDM SW
ATCT XX El Paso (ELP) - Config B - Full TFDM SW
ATCT XX Tucson (TUS) - Config B - Full TFDM SW
ATCT XX Spokane (GEG) - Config B - Full TFDM SW
ATCT XX Rochester (ROC) - Config B - Full TFDM SW
ATCT XX Des Moines(DSM) - Config B - Full TFDM SW
ATCT XX Albany, NY (ALB) - Config B - Full TFDM SW
ATCT XX Madison (MSN) - Config B - Full TFDM SW
ATCT XX Orange County (SNA) - Config B - Full TFDM SW

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