Welcome to the
WRP MRHSDP&A Committee webinar on strategic airspace.

- We look forward to your input on this webinar
- Please be sure your phone is on mute (and not hold)
  - This will ensure we will not have noise distractions on the webinar (such as beeps, other conversations, etc.)
- Please let us know if you have any questions or comments by using the chat box or by "raising your hand"
- Please identify yourself each time before speaking throughout the whole meeting

Western Regional Partnership

www.wrpinfo.org

WRP Vision, Mission and Tagline

WRP Vision

WRP will be a significant resource to proactively identify and address common goals and emerging issues and to develop solutions that support WRP Partners.

WRP Mission

WRP provides a proactive and collaborative framework for **senior-policy level Federal, State and Tribal leadership** to identify common goals and emerging issues in the states of **Arizona, California, Colorado, Nevada, New Mexico and Utah** and to develop solutions that support WRP Partners and protect natural resources, while promoting sustainability, homeland security and military readiness.

WRP Tagline

Reliable Outcomes for America's Defense, Energy, Environment and Infrastructure in the West

WRP Structure

WRP Co-Chairs:

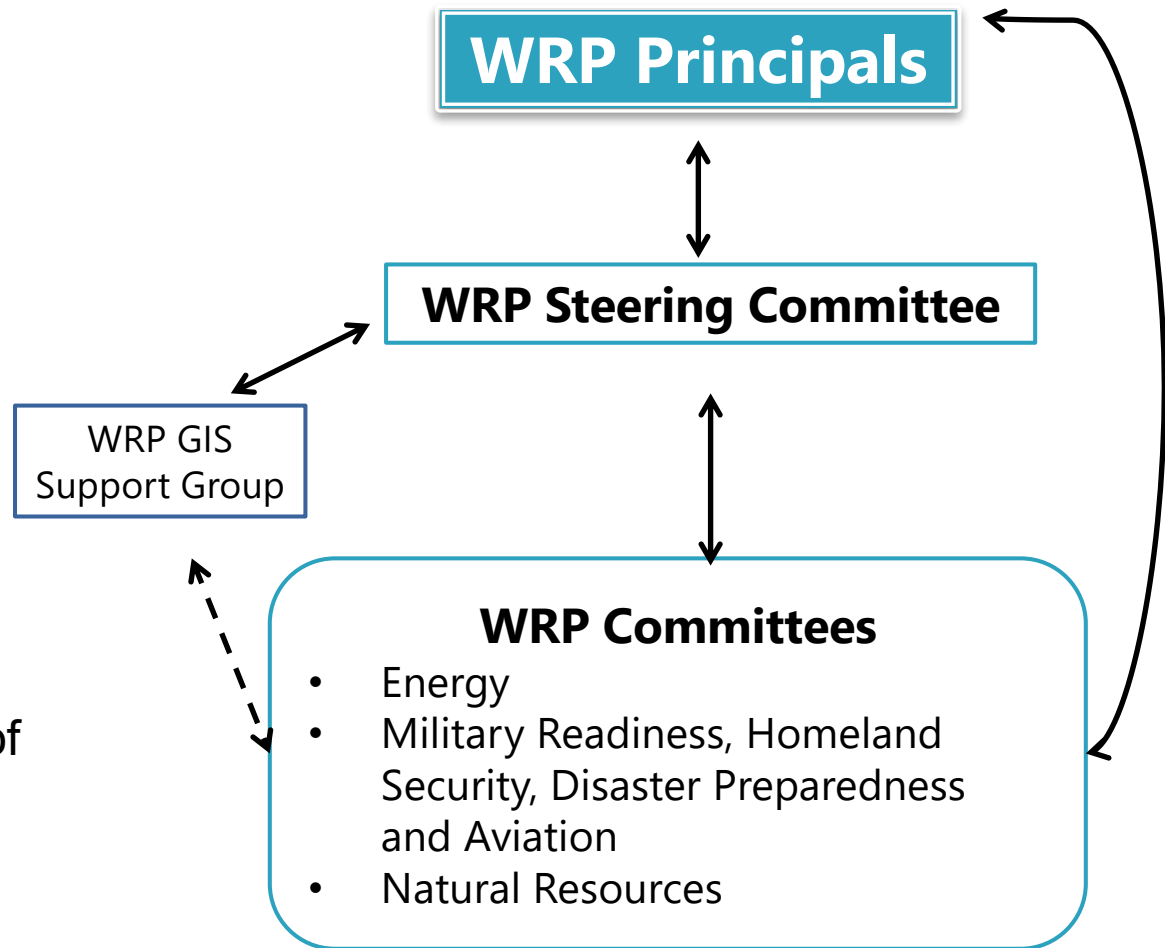**Honorable Gary Herbert**
Governor of Utah

TBD, DOI

Waiting for position to be confirmed

Mr. Pete Potochney
Principal Deputy Assistant Secretary of Defense for Energy, Installations and Environment

WRP Principals

WRP Steering Committee

WRP GIS Support Group

WRP Committees
- Energy
- Military Readiness, Homeland Security, Disaster Preparedness and Aviation
- Natural Resources

WRP Steering Committee

- Representatives of each of the six WRP States:
  - Arizona, California, Colorado, Nevada, New Mexico and Utah
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Customs and Border Protection, U.S. Border Patrol
- Federal Aviation Administration
- Federal Emergency Management Agency
- Federal Highway Administration
- National Park Service
- Natural Resources Conservation Service
- National Oceanic and Atmospheric Administration
- Office of Secretary of Defense
- U.S. Air Force Headquarters
- U.S. Army
- U.S. Army Corps of Engineers
- U.S. Department of Energy
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U. S. Geological Survey
- U.S. Marine Corps Installations West
- U.S. Navy
- Native American Leadership:
  - Navajo Nation, Inter-Tribal Council of CA, Inc.
- Western Governors Association Liaison

WRP MRHSDP&A Committee Co-Chairs

- **LtCol J. L. Meeker,** Regional Airspace Coordinator, Marine Corps Installations-West

- **Kevin Moody**, Ecologist, FHWA

- **Stephanie Poore,** NPD Analyst, FEMA Region VIII

- **Connie Reitman,** Executive Director, Inter-Tribal Council of CA, Inc.

- **Kim Stevens,** Director of Communications and Operations, NASAO

- **Julie Valentine,** Senior Advisor - SW Border, Bureau of Land Management

WRP MRHSDP&A Committee webinar on strategic airspace

Presented by:

- Ms. Elizabeth Lynn Ray, Vice President, Mission Support Services, FAA

- Mr. Mike Cirillo, Managing Director, Air Traffic Management, Airlines for America (A4A)

- Ms. Heidi Williams, Director, Air Traffic Services & Infrastructure, National Business Aviation Association (NBAA)
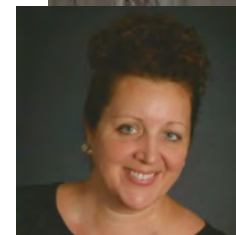
Today's Webinar:
- Highlighting latest aviation efforts by FAA, NBAA and A4A.
- Insights on current aviation capacity, airspace management and trends
- Overview of new technology such as NextGen and other technologies
- Insights on integrating UAS into the NAS including challenges and opportunities
- Thoughts and recommendations on how best to incorporate the expected increase in aviation, changes in aviation operations and types of users along with changes in land use patterns that can impact aviation missions.
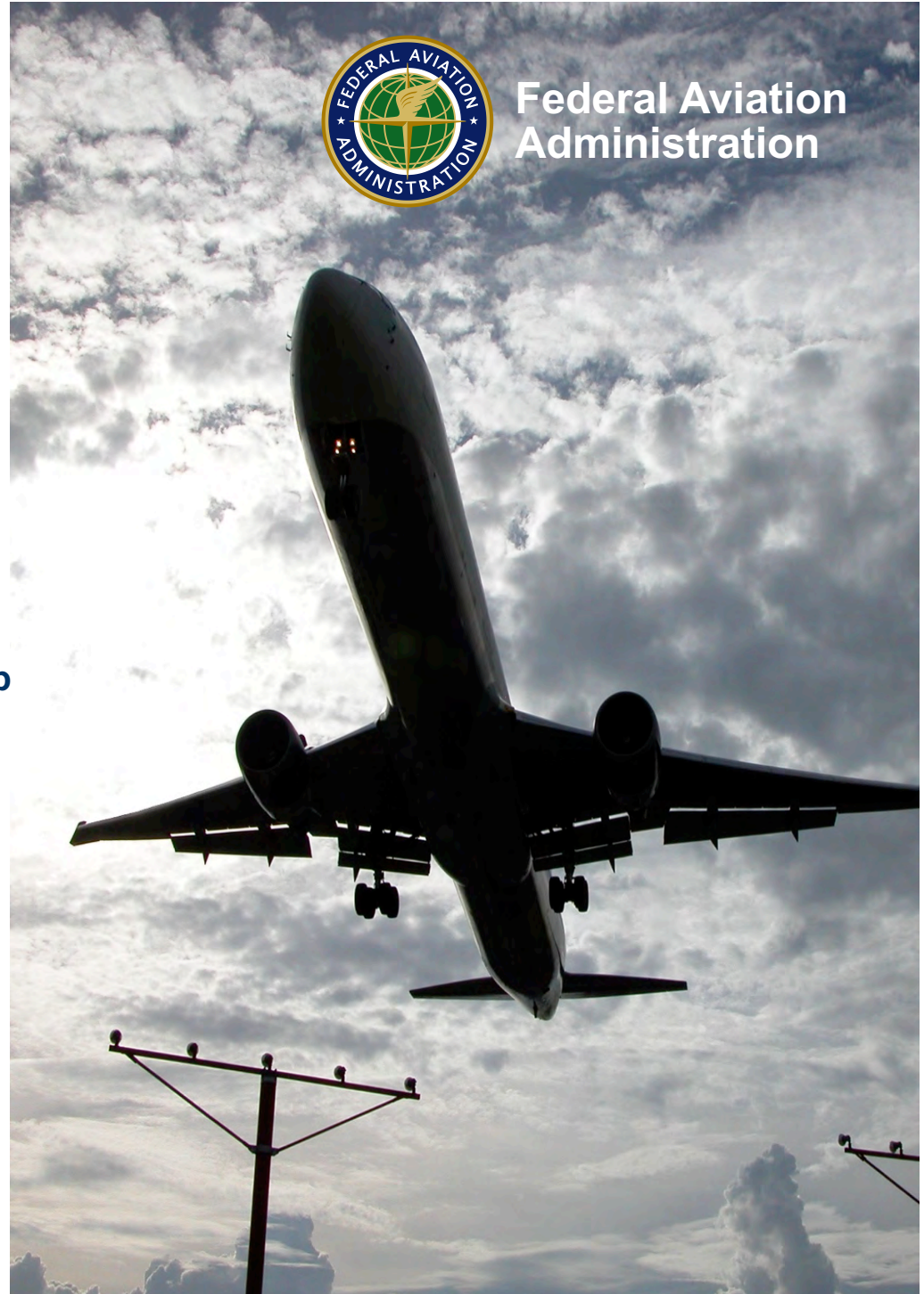
FAA Updates

Western Regional Partnership

Federal Aviation Administration

Presented to: **Western Regional Partnership**

By: **Elizabeth L. Ray, Vice President, Mission Support Services**

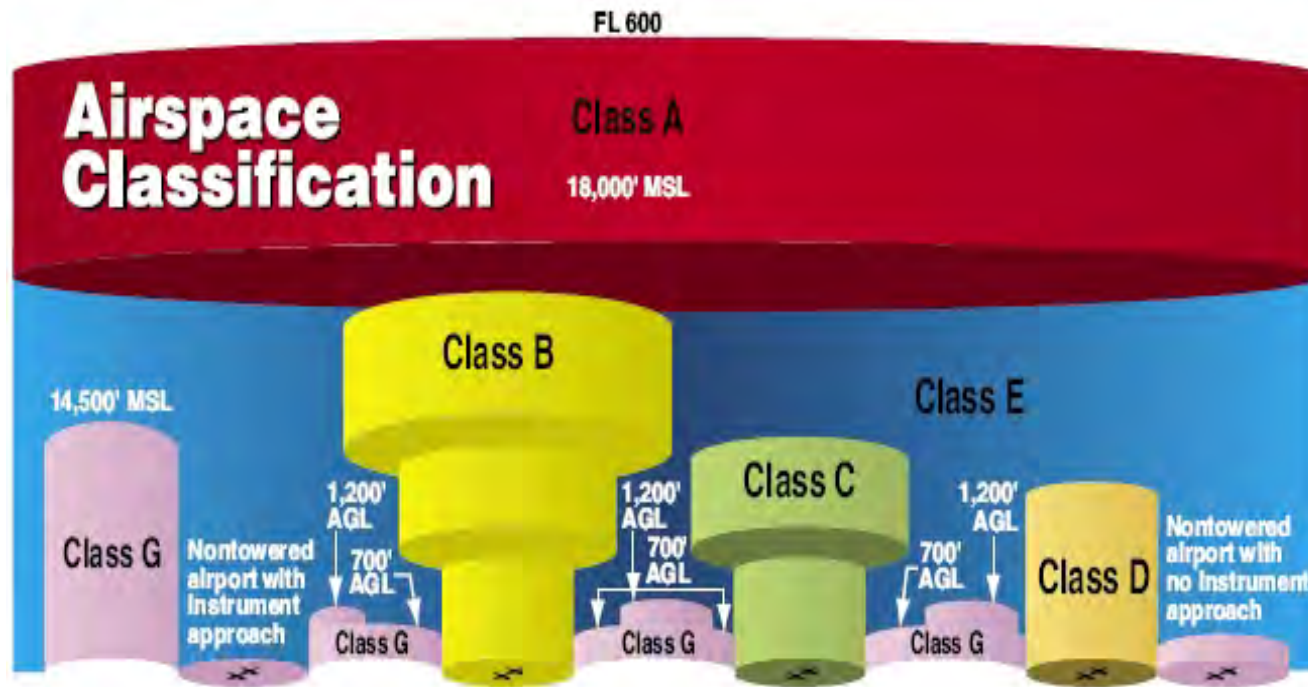Date: **August 29, 2017**

AGENDA

- **AIRSPACE**
  - METROPLEX
  - PBN SINGLE SITES
  - SPECIAL ACTIVITY AIRSPACE

- **UNMANNED AIRCRAFT SYSTEMS (UAS)**

- **COMMERCIAL SPACE**

- **AIRPORT PROJECTS**

AIRSPACE

CLASSES OF AIRSPACE

Performance-Based Navigation/Metroplex

Enhancing Community Involvement

Partnering with airports on community involvement strategy to:

- Establish timelines
- Identify relevant historical information
- Identify potentially affected communities and their concerns
- Communicate earlier and more frequently with stakeholders
- Facilitate collaboration on public engagement activities
- Incorporate feedback for more cohesive solutions

Special Activity Airspace (SAA)

Types of Special Activity Airspace (SAA)

- **Special Use Airspace**
- **Temporary Flight Restrictions (TFRs)**
- **Stationary Altitude Reservations (ALTRVs)**
- **Air Traffic Control Assigned Airspace (ATCAAs)**
- **14 CFR Part 99 Special Security Instruction Airspace**
  - Currently UAS Ops at Beale AFB, CA and Grand Forks, ND
- **Military Training Routes (MTRs)**
- **Future airspace users that *may* create a new type of airspace**
  - Commercial space operations, UAS, etc.
- **Potential Airspace Candidates**
  - Aerobatic boxes, parachute jumping activity, etc…

Note: TFRs depending on the type dictated by situation may exist in all 6 states and ALTRVs, ATCAAs and MTRs exist in all 6 states.

TFR Example – 91.137, Disaster/Hazard Wildfire/Firefighting
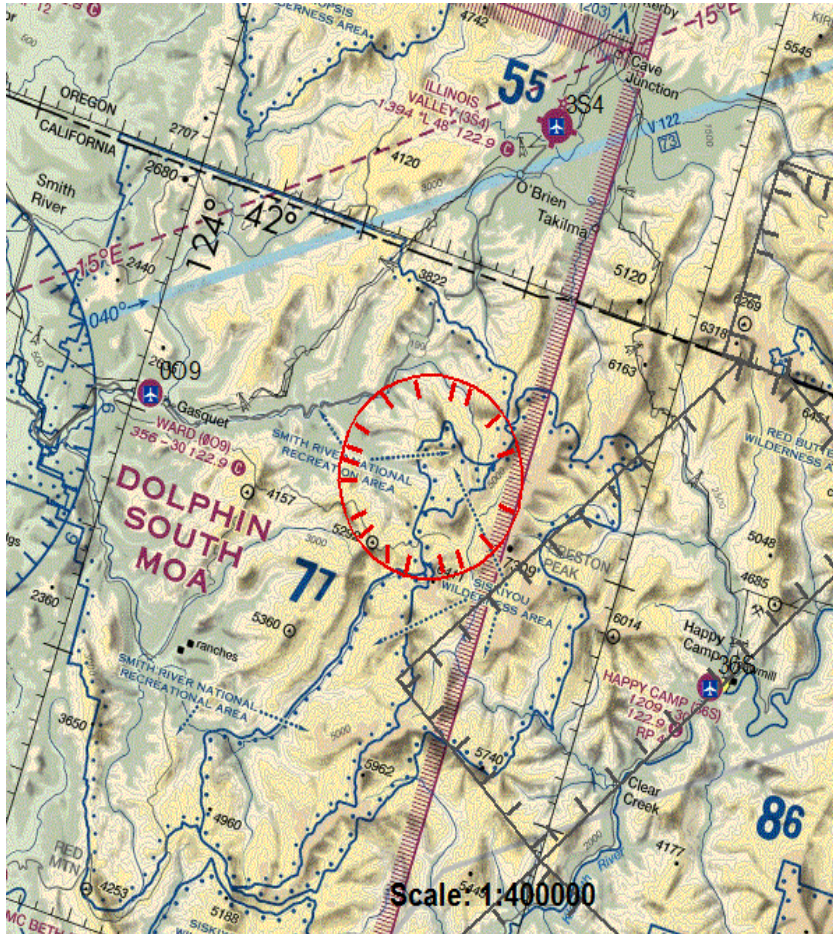
FDC 7/5343 ZSE CA..AIRSPACE 15 NM E OF GASQUET, CA..TEMPORARY FLIGHT RESTRICTIONS WI AN AREA DEFINED AS 4 NM RADIUS OF 415129N/1234216W (CRESCENT CITY VORTAC CEC065024.5) SFC-7500FT . TO PROVIDE A SAFE ENVIRONMENT FOR FIRE FIGHTING AVIATION OPERATIONS. PURSUANT TO 14 CFR SECTION 91.137(A)(2) TEMPORARY FLIGHT RESTRICTIONS ARE IN EFFECT. USFS SIX RIVERS NATIONAL FOREST TELEPHONE 707-726-1266 OR FREQ 118.0250/THE YOUNG FIRE IS IN CHARGE OF THE OPERATION. SEATTLE /ZSE/ ARTCC TELEPHONE 253-351-3698 IS THE FAA COORDINATION FACILITY. 1708181500-1711171500EST
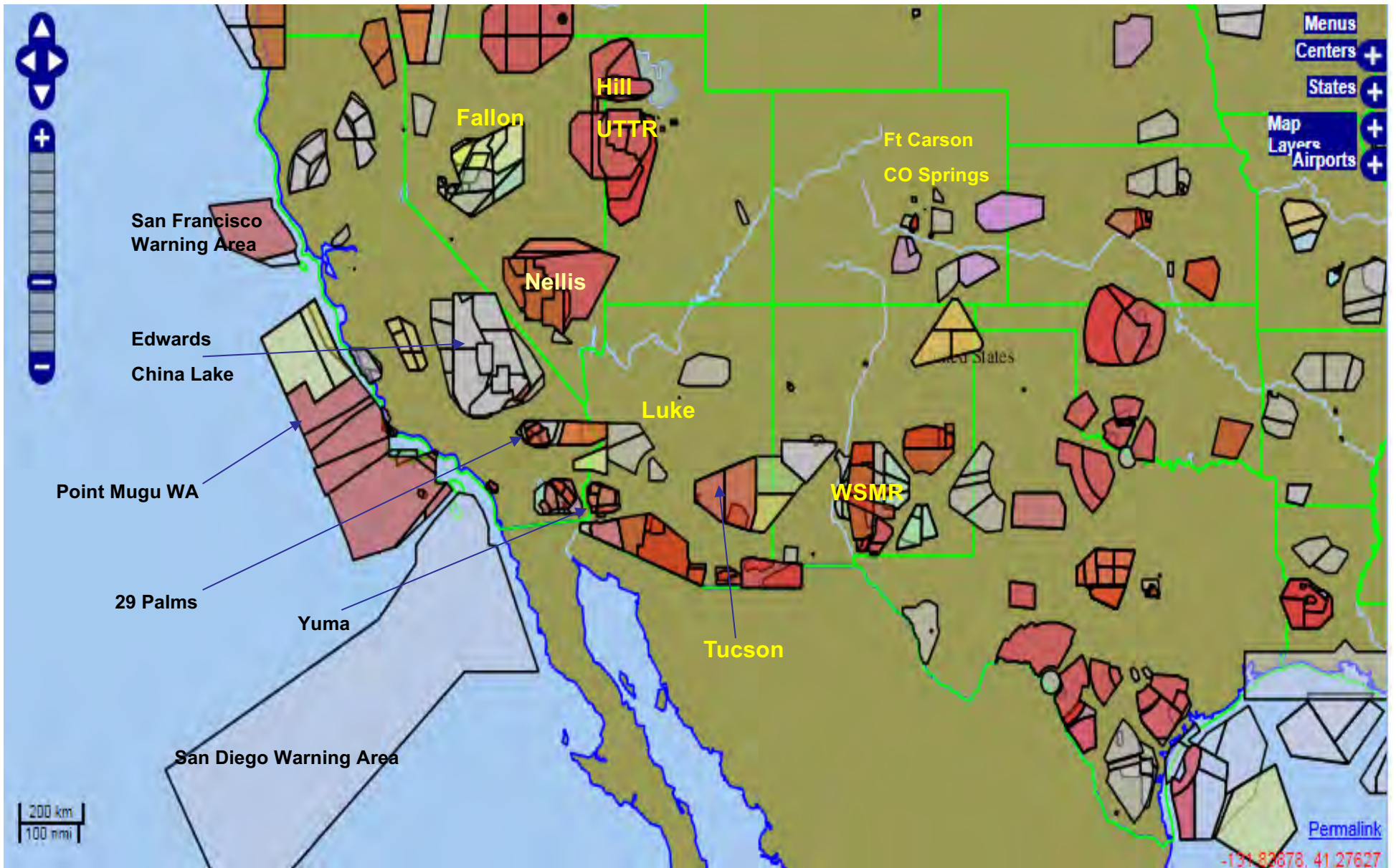
Special Use Airspace (SUA)

Types of SUA

- **Prohibited Areas**
- **Restricted Areas**
- **Military Operations Areas (MOA)**
- **Warning Areas**
- **Alert Areas**
- **Controlled Firing Areas**
- **National Security Areas**

SUAs in WRP States

- None of the six states have a Prohibited Area
- All six states have Restricted Areas
- All six states have Military Operations Areas
- CA is the only state with Warning Areas
- AZ, CA, CO and NV are the states with Alert Areas
- All states except UT have Controlled Firing Areas
- CA, CO, UT have National Security Areas

Unmanned Aircraft Systems (UAS)

Challenges of Integration

- **Pace of technological change – evolving at faster pace than traditional manned aircraft**
- **Culture of FAA – change to how we have historically managed traffic**
- **No mandated design or performance standards**
- **Current regulatory framework developed on assumption human pilot is present**
- **Detect and Avoid**
- **May require more rapid and precise control due to ops in closer proximity of people**
- **Privacy**
- **Security/Cyber-Security**
- **Environmental Concerns**
- **Public Acceptance**

Part 107

- **Effective August 29, 2016**
- **Covers a broad spectrum of commercial uses for drones weighing less than 55 pounds.**
- **Operators that have successfully passed the required knowledge test and received a remote pilot certificate may conduct operations in Class G airspace at or below 400 AGL without contacting ATC or issuing a NOTAM.**
- **Maintain visual line of sight**
- **Avoid manned aircraft**
- **No operations over people**

B4UFLY and DRONE ZONE

- **B4UFLY - Smartphone app that helps unmanned aircraft operators determine whether there are any restrictions or requirements in effect at the location where they want to fly.**

- **DRONE ZONE - a web-based portal which will enhance the existing UAS web-site to allow UAS operators visibility for tracking the processing of their Part 107 airspace access and waiver requests. This transparency will provide relief to the resources required to manually answer processing inquiries.**
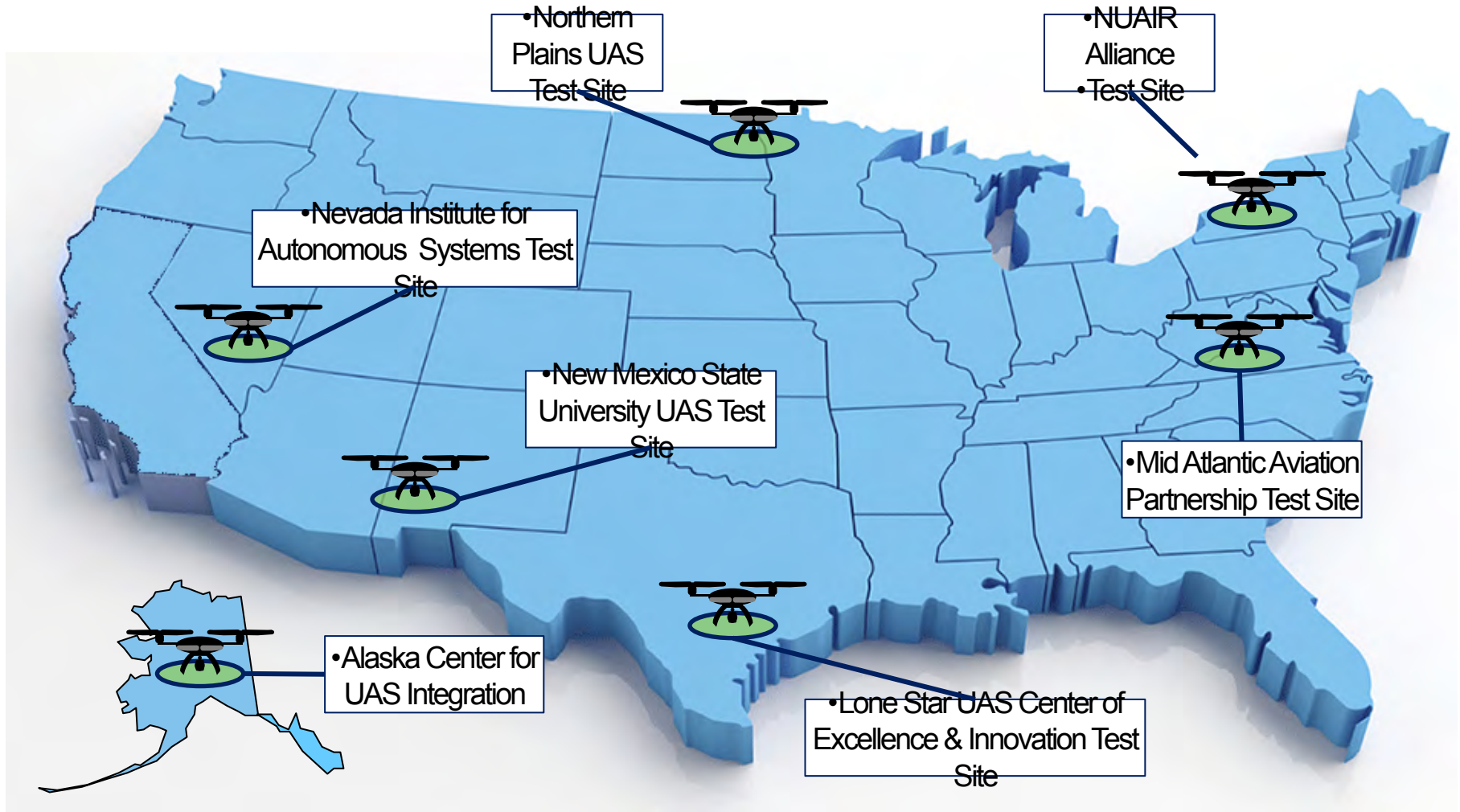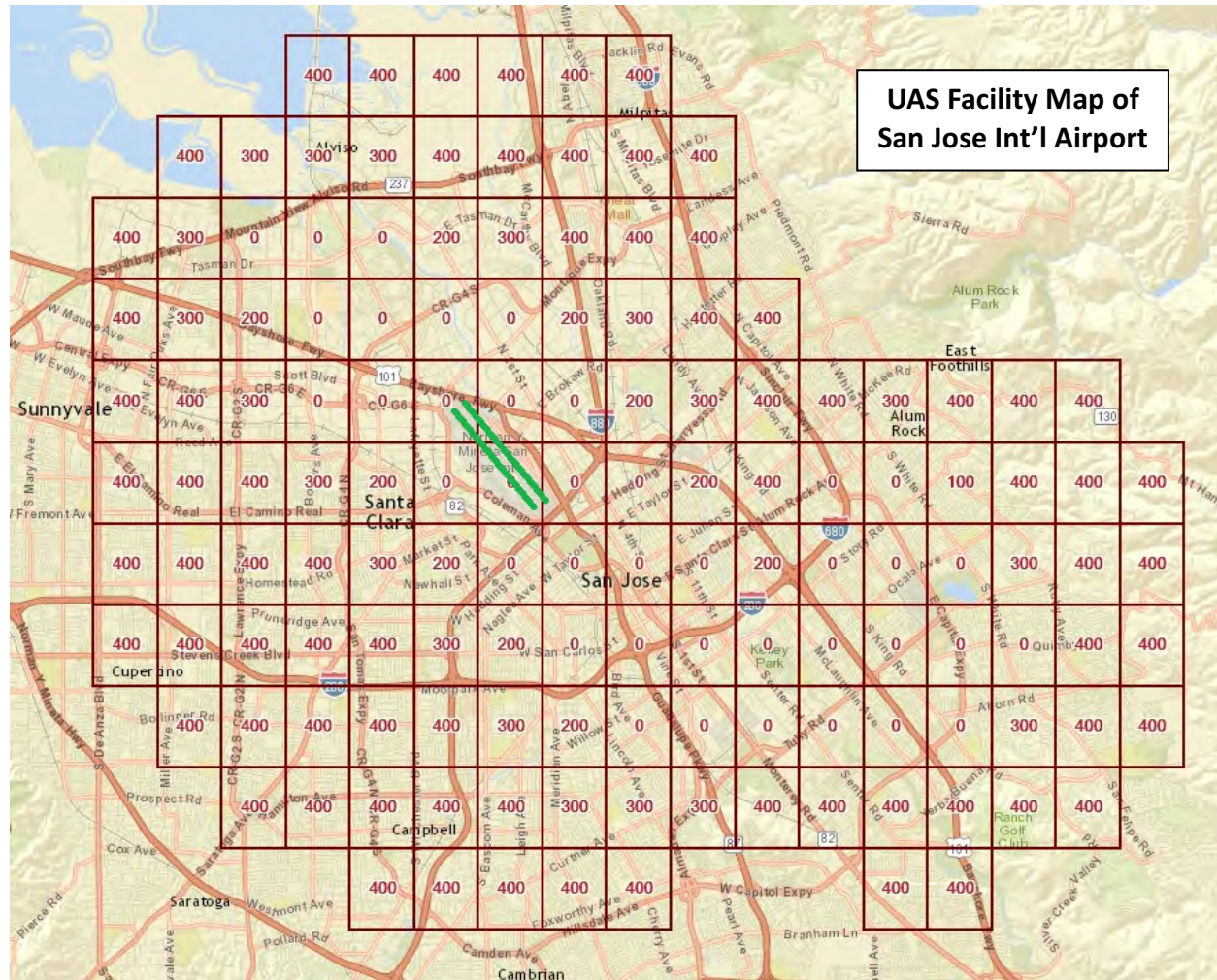
PATHFINDER

- **The exciting Pathfinder initiative involves three industry partners who are exploring incremental expansion of UAS operations in the NAS. The three focus areas are:**
  - Visual line-of-sight operations over people
    - CNN explores how UAS might be safely used for newsgathering in populated areas
  - Extended visual line-of-sight operations in rural areas
    - PrecisionHawk will explore how UAS flights outside the pilot's direct vision might allow greater UAS use for crop monitoring in precision agriculture operations.
  - Beyond visual line-of-sight operations in rural/isolated areas
    - BNSF Railway will explore command-and-control challenges of using UAS to inspect rail system infrastructure.

UAS Test Sites

- Northern Plains UAS Test Site
- NUAIR Alliance Test Site
- Nevada Institute for Autonomous Systems Test Site
- New Mexico State University UAS Test Site
- Mid Atlantic Aviation Partnership Test Site
- Alaska Center for UAS Integration
- Lone Star UAS Center of Excellence & Innovation Test Site

UAS FACILITY MAPS (USFM)

UAS Facility Map of San Jose Int'l Airport

Commercial Space
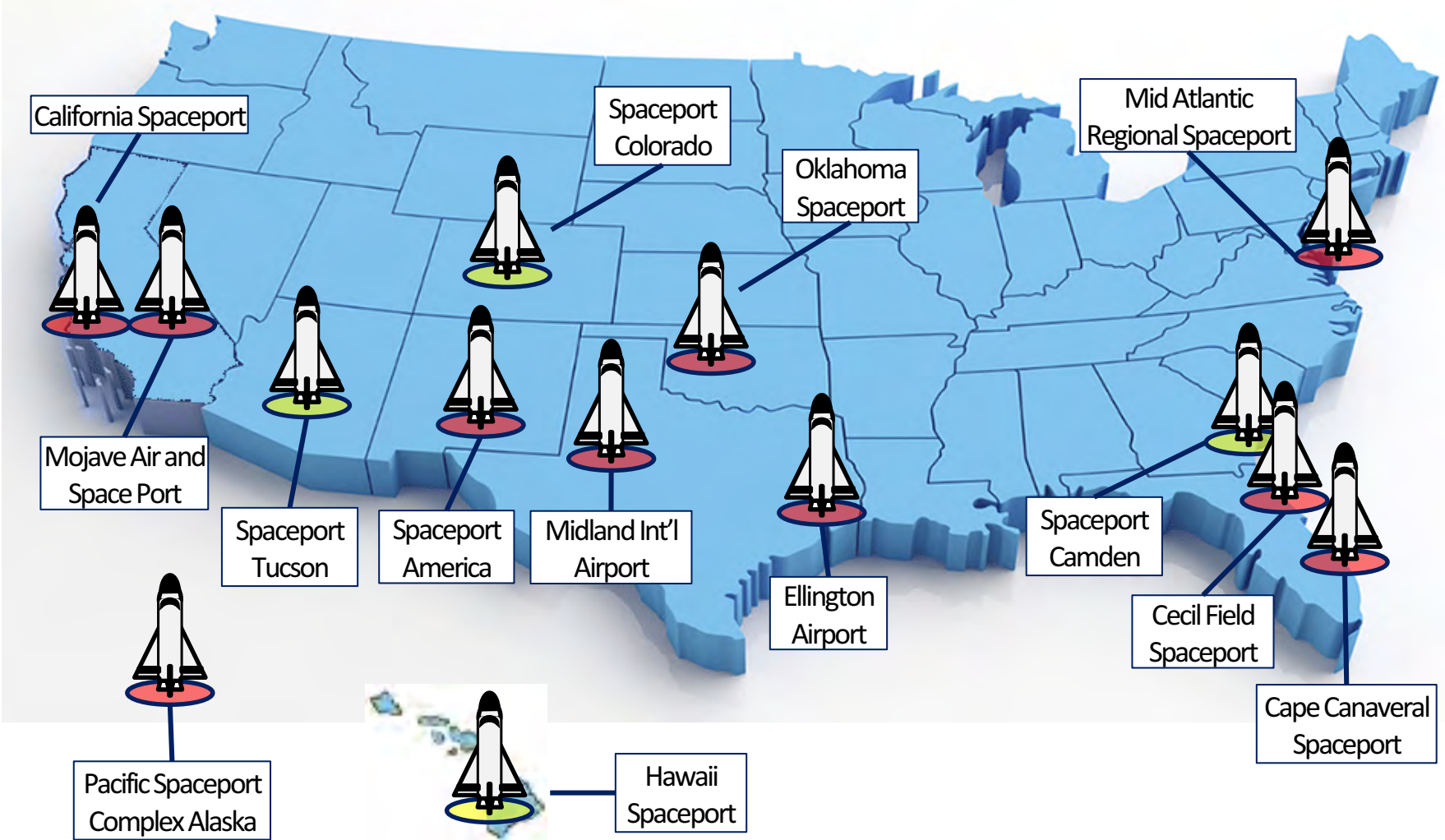
CHALLENGES OF INTEGRATION

- **Airspace**
  - Space launch and reentry operations are accommodated by blocking off, or "sterilizing," a large amount of airspace, restricting access to other NAS users
  - As launch and reentry operations increase, this may create increased lengthy delays or reroutes for other NAS users
- **Launch and Reentry Vehicles**
  - New launch and reentry vehicles have different performance characteristics than legacy vehicles
  - New technologies and missions will require additional safety analysis and may necessitate changes in operations to avoid impeding other NAS users
- **Launch Locations**
  - May impact existing airspace structure
  - Tools and automation are under development to assist airspace management during launch and reentry operations

AST-Licensed Spaceports

Existing ●
Planned ●

California Spaceport

Spaceport Colorado

Oklahoma Spaceport

Mid Atlantic Regional Spaceport

Mojave Air and Space Port

Spaceport Tucson

Spaceport America

Midland Int'l Airport

Ellington Airport

Spaceport Camden

Cecil Field Spaceport

Cape Canaveral Spaceport

Pacific Spaceport Complex Alaska

Hawaii Spaceport

New Spaceports Actively Working on Launch Site Licenses within the WRP

- **Spaceport Tucson (Tucson Intl.) – Proposing to operate tourist balloon operations.**

- **Spaceport Colorado (Front Range) – Proposing to operate spaceplanes that launch and land horizontally.**
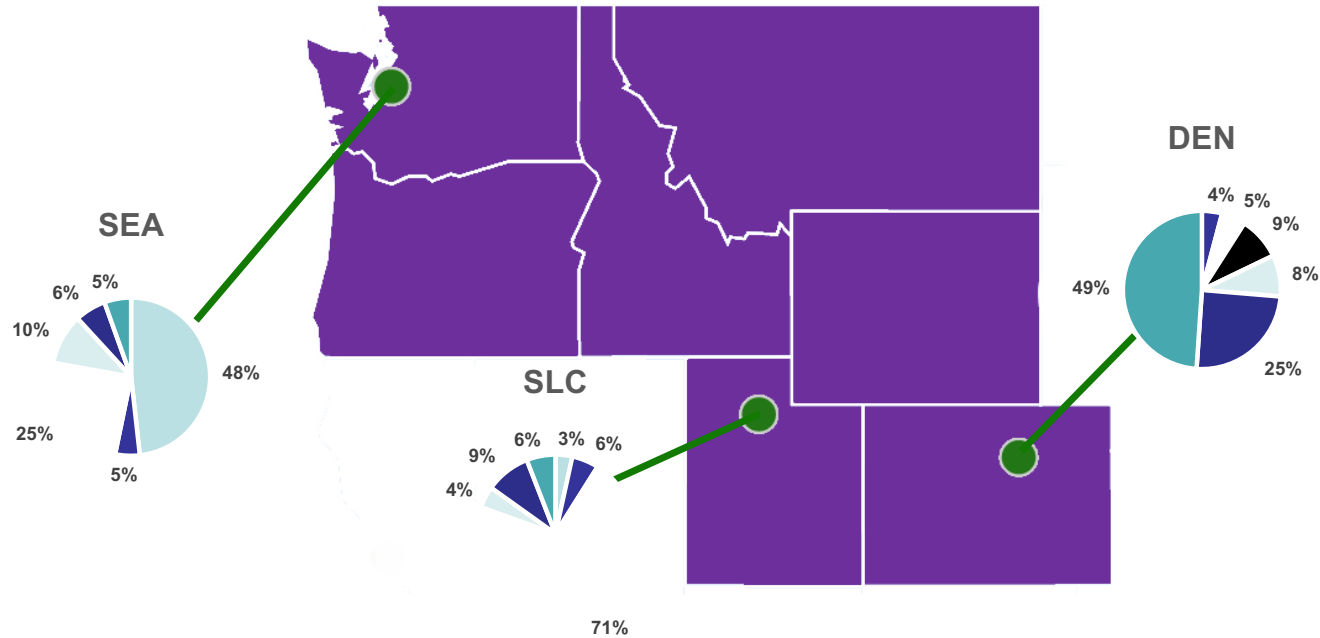
Airport Construction in WRP States

West-North Region Map, Impact Summary, Carrier Distribution, Q3 2017 Airport Construction Outlook
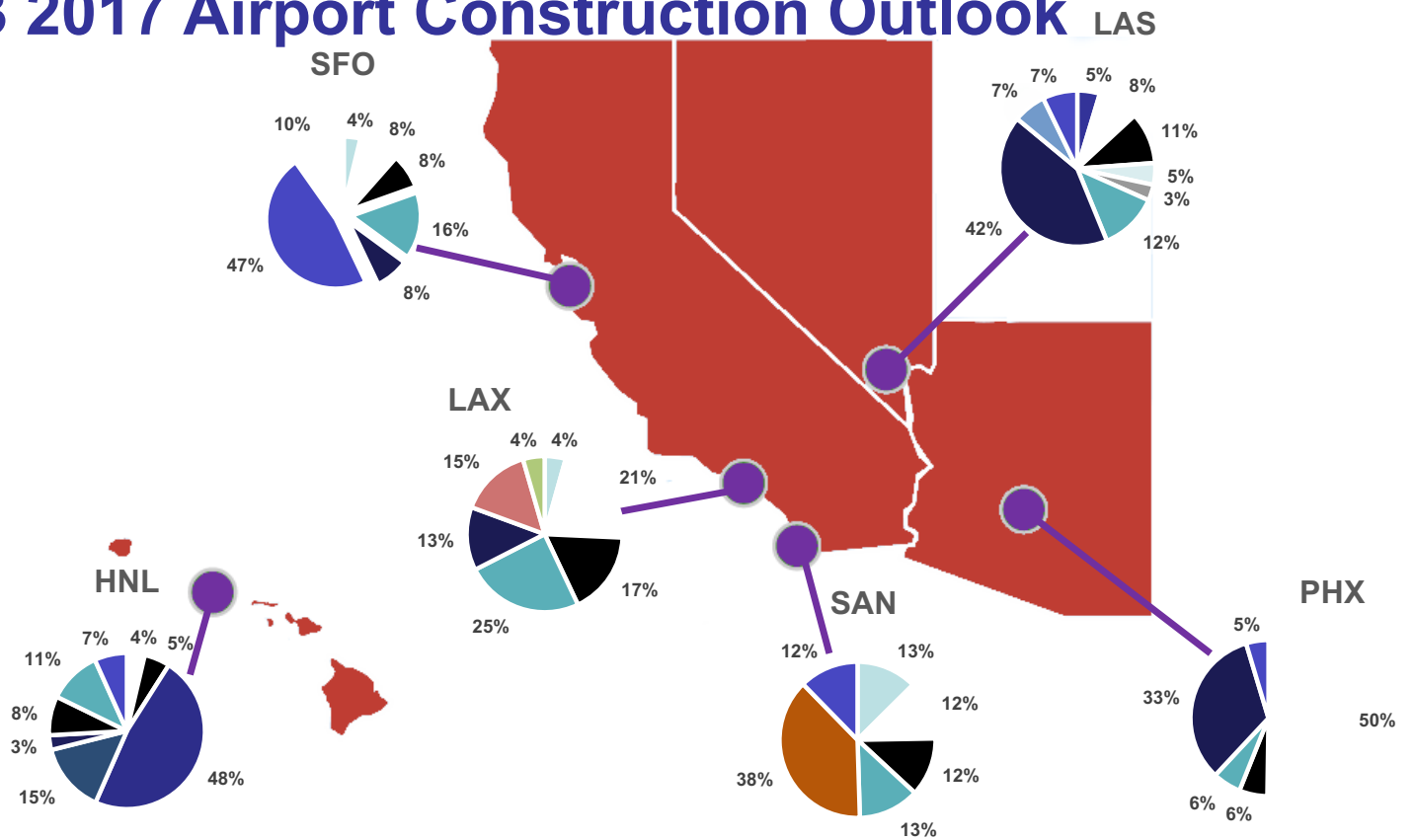
Key:
Alaska
American
Delta
Frontier
Other
Southwest
United

SEA — 5%, 6%, 10%, 25%, 5%, 48%

DEN — 4%, 5%, 9%, 8%, 25%, 49%

SLC — 9%, 6%, 3%, 6%, 4%, 71%

	2017									**2018**												**2019**												**2020**		
	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR
DEN			▇	▇	▇	▇	▇																													
SEA																																				
SLC			▇	▇	▇	▇	▇	▇																												

● ● Construction with no capacity effect   ▇ Construction with reduced capacity but no delay impact   ● Construction with reduced capacity and delay impact

Federal Aviation Administration

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West-South Region Map, Impact Summary, Carrier Distribution, Q3 2017 Airport Construction Outlook

SPECIAL INTEREST

- **LOS ANGELES RAIDERS STADIUM**
- **LAS VEGAS STADIUM**
- **OLYMPICS (2024 OR 2028)**
- **SPACEX (BORING PROJECT)**

Briefing to the Western Regional Partnership

Mike Cirillo
Managing Director
Air Traffic Management

August 29, 2017

A4A Member Airlines

A4A Support to member airlines

A4A represents the industry on major aviation issues before Congress, federal agencies, state legislatures and other governmental bodies.

Serves as a focal point for industry efforts to standardize practices and enhance the <u>safety</u> and <u>efficiency</u> of the National Airspace System (NAS).

A4A Support Desk at the FAA ATC System Command Center

Our objective is to advocate for our members through collaborative efforts with the Command Center and other FAA facilities.

In doing so we insure that solutions to operational problems are implemented equitably while maintaining the safety and integrity of the National Airspace System (NAS).

Large Hub Operations Growth: FY 2016-37*

1.0% - 1.49%	1.5% - 1.99%	> = 2.0%
DEN	LAS	SEA
	LAX	
	PDX	
	PHX	
	SAN	
	SFO	
	SLC	

*Extracted from FAA Aerospace forecast

Per the tables below, here are some highlights from what's going on fleet-wise:

- The U.S. passenger airlines we track in real time for earnings purposes took delivery of 361   aircraft last year and are slated to   take delivery of 337 in 2017
- As of 12/31/2016, those same carriers had firm orders on the books (aka "aircraft purchase commitments") for 1,409 aircraft
   valued at $80.6 billion
- They had 3,897 in-service mainline jets in the fleet, of which 70% were owned

Mainline and regional deliveries
As of 12/31/2016

Airline	2016A	2017F
Alaska/Virgin	34	35
Allegiant	4	18
American	106	88
Delta	57	44
Hawaiian	3	4
JetBlue	12	15
Southwest	61	67
Spirit	16	17
United	68	49
Total	**361**	**337**

Purchase commitments
As of 12/31/2016

Units	Mils)
87	3,460
31	579
295	18,003
245	12,460
23	1,565
135	8,100
260	9,526
76	3,615
257	23,300
1,409	**80,608**

Mainline in-service jets
As of 12/31/2016

Owned	Leased	Total	Age
148	70	218	8.2
84	0	84	21.7
519	411	930	10.3
639	193	832	17.0
31	20	51	10.2
174	53	227	8.9
589	134	723	12
36	59	95	5.2
522	215	737	13.9
2,742	**1,155**	**3,897**	**n/a**

Mainline in-service jets operated by selected U.S. cargo airlines

	Atlas[1]	FedEx	UPS
A300	-	68	52
A310	-	10	-
B747	35	2	13
B757	-	119	75
B767	5	42	59
B777	-	27	-
MD10	-	43	-
MD11	-	57	38
Total	**40**	**338**	**237**

A brief history of HARP

Thursday, November 15, 2007:President George W. Bush announced an agreement (Holiday Airspace Release Plan) between the FAA and DoD that temporarily released military airspace for Thanksgiving holiday travel.
Under the airspace agreement, the Department of the Navy released airspace, above 24,000 feet, off the east coast from Maine to Florida. FAA was allowed to use that airspace from 4 p.m. eastern standard time on Wednesday, November 21, to 6 a.m. eastern standard time on Monday, November 26. The Navy continued to control airspace off the east coast below 23,000 feet for training operations.

By 2009 HARP was expanded nationwide!
 In 2016, Christmas and New Years Day were on a Sunday.

Thanksgiving, November 19, 20, 21, 22, 23, 24, 26, 27, 28
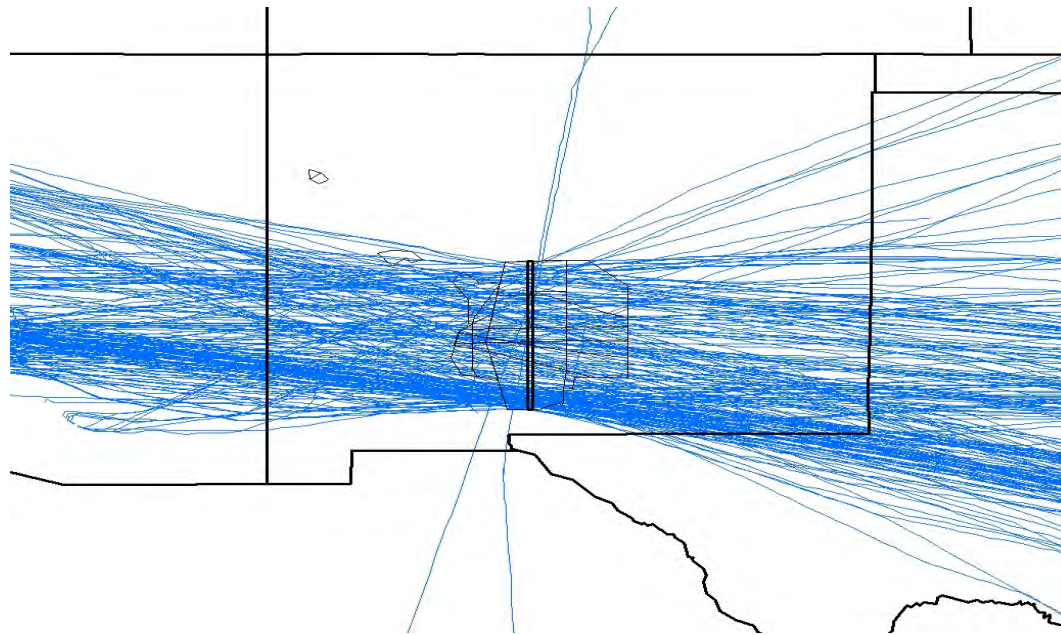Christmas, December 20, 21, 22, 23, 24, 27, 28, 29
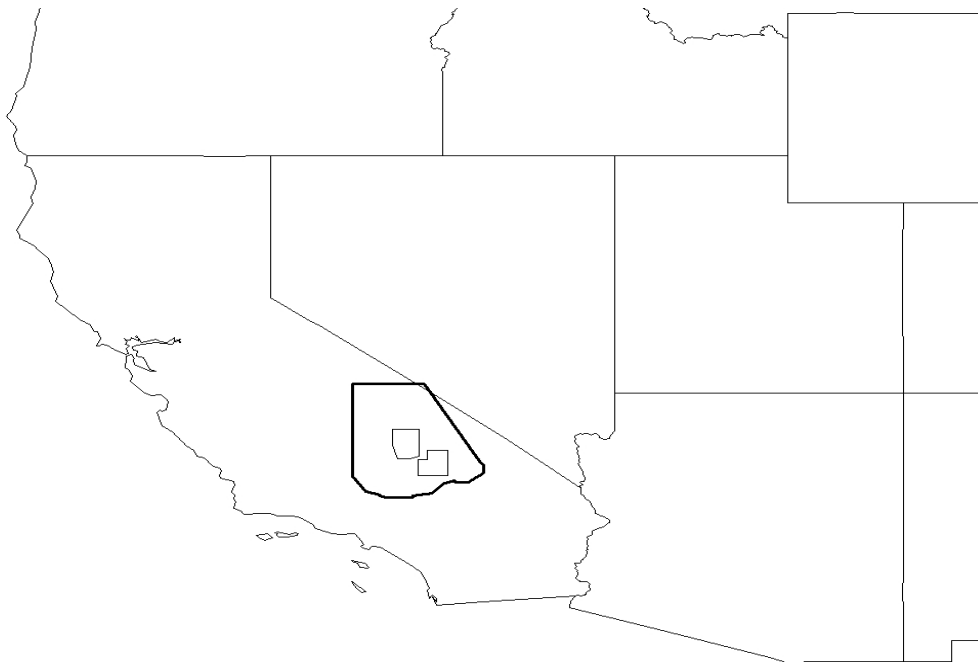New Years, January 2,3,4
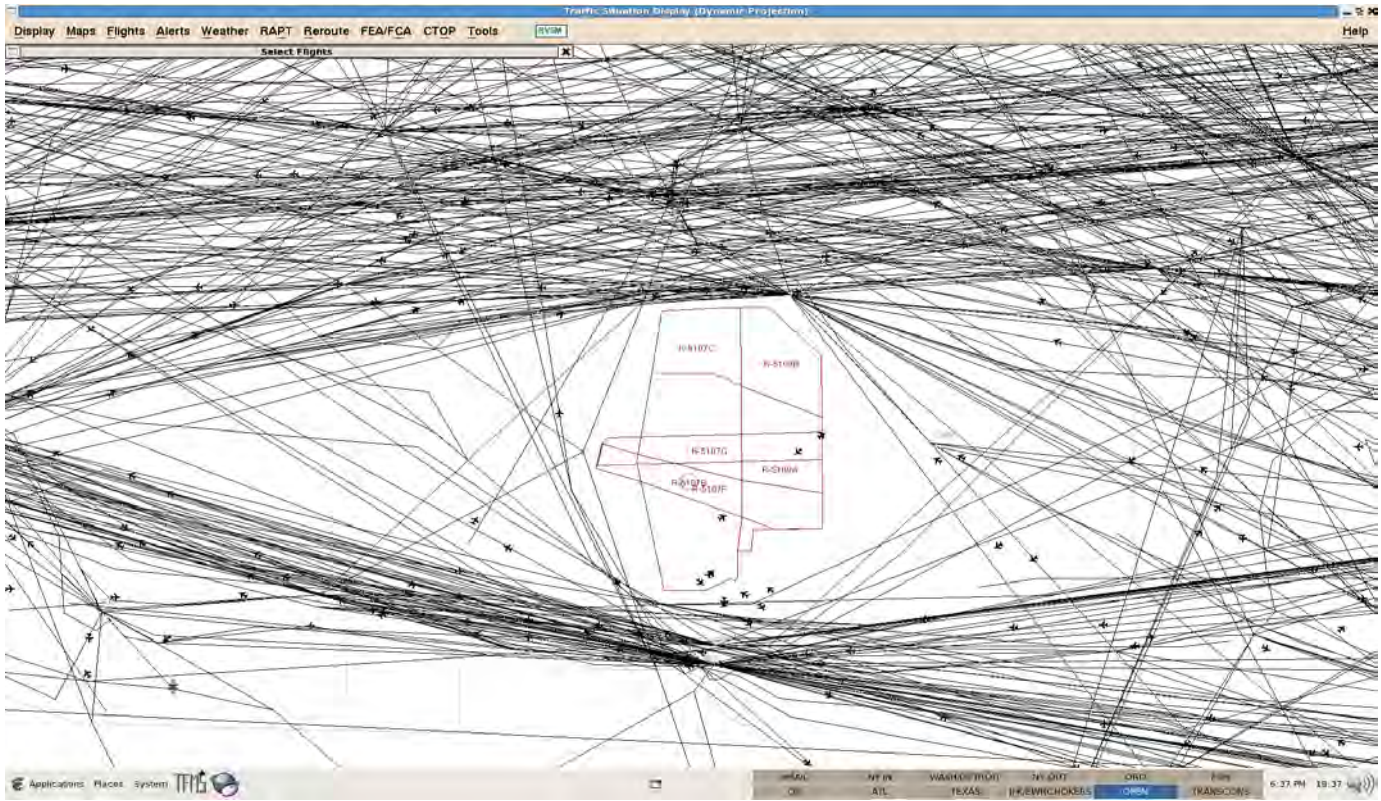
A Typical day over White Sands

In 2016 under the HARP program, a total of 7584 flights took
advantage of the airspace over White Sands.

Using the current average cost per block hour savings realized over
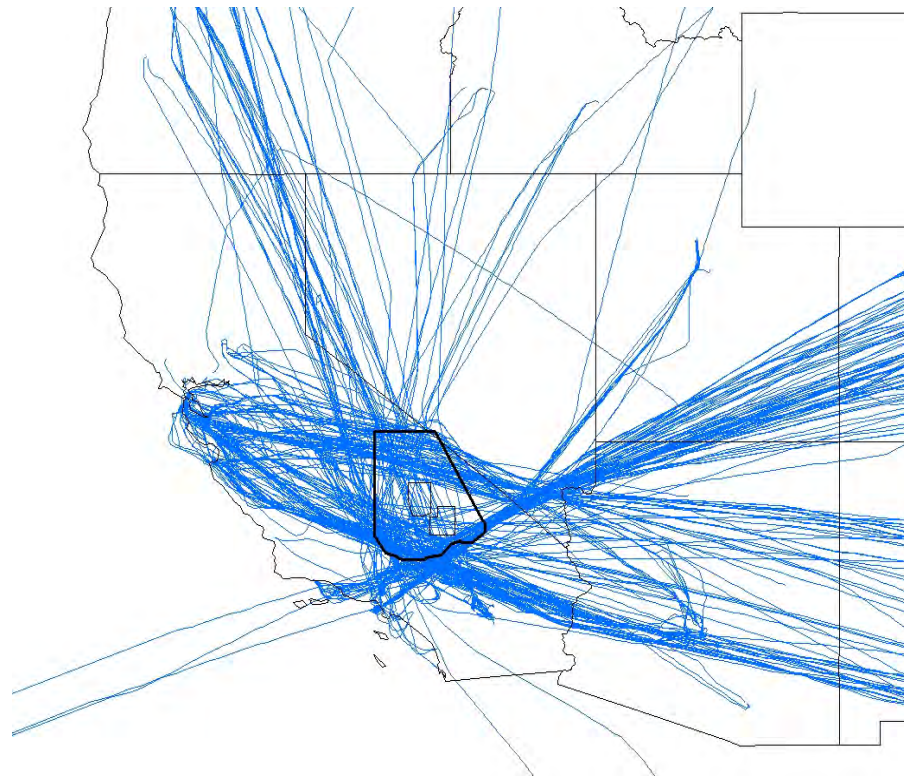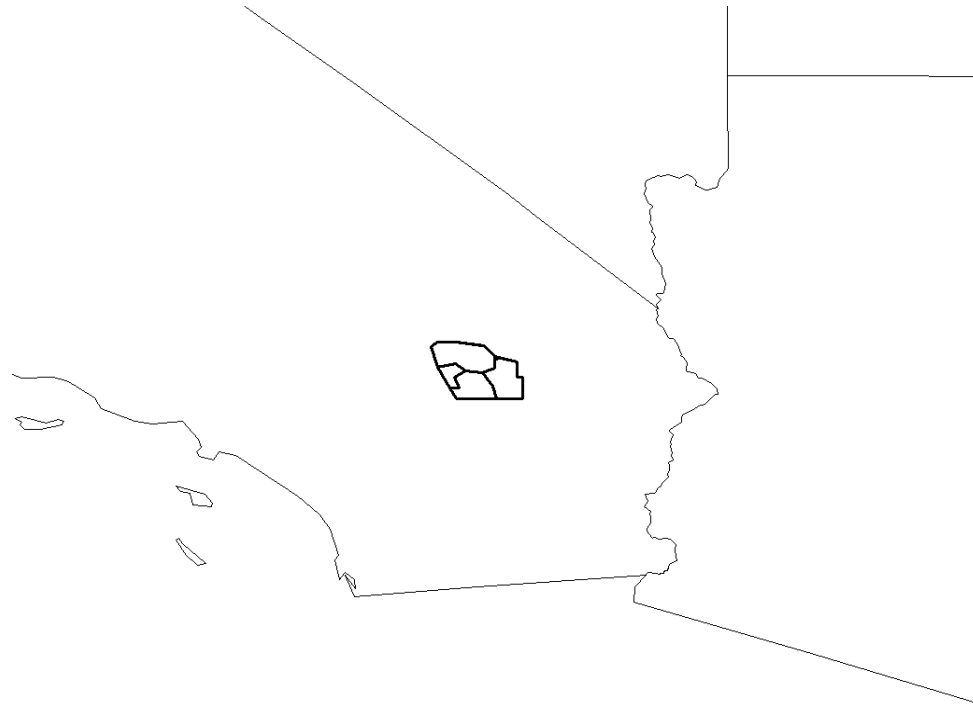White Sands alone were nearly $500,000

China Lake
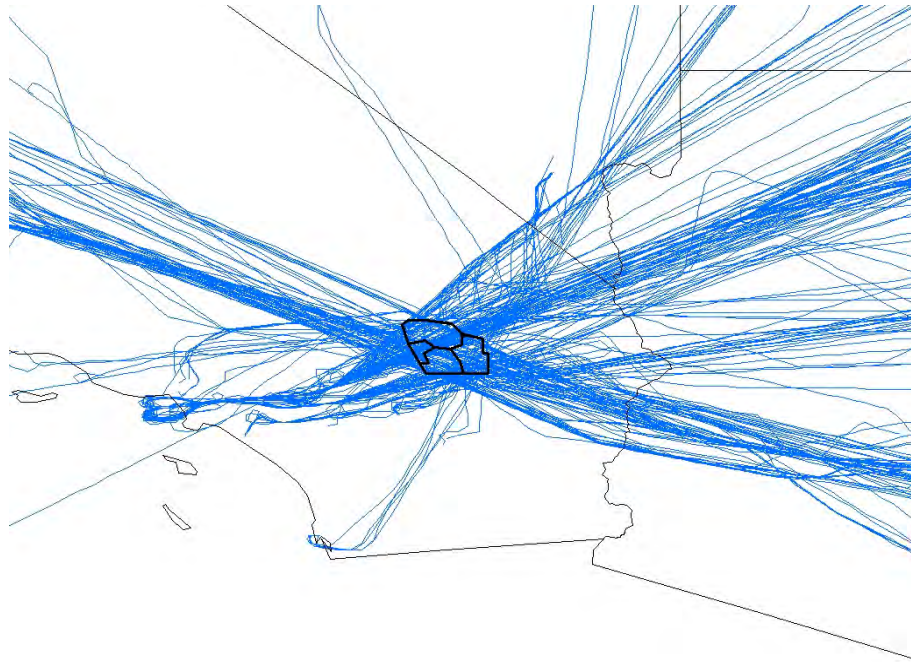2016 HARP Usage

2704 Flights

Savings
Nearly $170,000

29 Palms
2016 HARP Usage

8354 flights

Savings over $522,000

Data Sharing

Aeronautical Information Management Modernization Segment 3 (AIMM S3) information is expected to enable operators to plan and operate more efficiently, improve situational awareness and enhance collaboration around the use and management of airspace.

• Improved SAA schedules

• Near real-time Special Activity Airspace (SAA) status information

• Digitized Letters of Agreement (LOAs) and Standard Operating Procedures (SOPs).

AIMM Recommendations

The Tactical Operations Committee Task Group reviewed the FAA's Flight Efficiency benefits study for SAA information in AIMM S3 and submits the following recommendations regarding the benefits study:

- Cold status information is most valuable if it includes information on when the SAA will be Hot next.

- The FAA should work with stakeholders to determine requirements for the future SAA user application and consider integrating all data into a single website with other aeronautical information (i.e., TFRs, SUA, NOTAMs, etc.).

- Local SAA adaptations or modifications should be included in SWIM.

- As more scheduling entities connect to SAMS, the FAA should reevaluate the amount of SAA that is active without being scheduled and analyze why those operations are not being scheduled.

Big Picture Concept

- Finally, the Task Group provided perspective on LOAs and SOPs. By understanding these, stakeholders understand constraints in the air traffic system, enabling more efficient flight planning. With over 20,000 LOAs/SOPs in the NAS today, stakeholders understand digitization of these will require time to complete.

- The data and information requested will also be used to create more optimal plans for the use of airspace as highlighted in the National Special Activity Airspace Project (NSAAP) ConOps. This enables future-planning benefits in addition to the direct operational benefits of the new AIMMS2 system.

- Implementation of metrics, such as utilization efficiency of SAA, will help clarify NAS performance and provide a measure of benefits to users.

Performance Based Navigation

- The system is evolving toward a PBN-centric strategy
  - The Navigation Reference System (NRS) grid should not be removed from the NAS.
  - Structure should be retained where necessary.

- Metroplex and other PBN initiatives
  - Airlines collaborate with FAA and NBAA in the design and implementation of PBN procedures: NorCal; SoCal; DEN; LAS; PHX; SLC; TUS
  - Community engagement is critical; roles, responsibilities and philosophies are evolving.

WR challenges and Nextgen focus areas

- Airport construction
- Stadium construction in Los Angeles and Las Vegas
- Performance Based Navigation
- Trajectory-based operations
- Data communications
- Northeast corridor

Commercial Space Transportation

Examples of Licensed Operations

Air Launch

Sea Launch
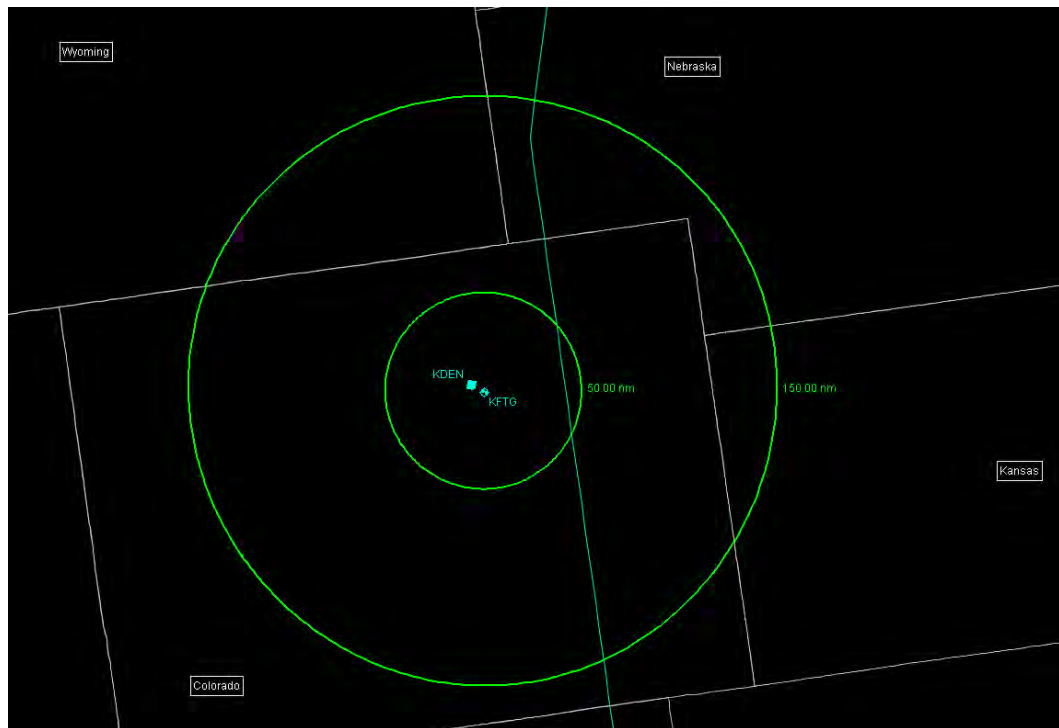
Launch Sites

Ground Launch

Reusable Launch Vehicles

Suborbital Rockets

Office of Commercial Space Transportation

Federal Aviation Administration

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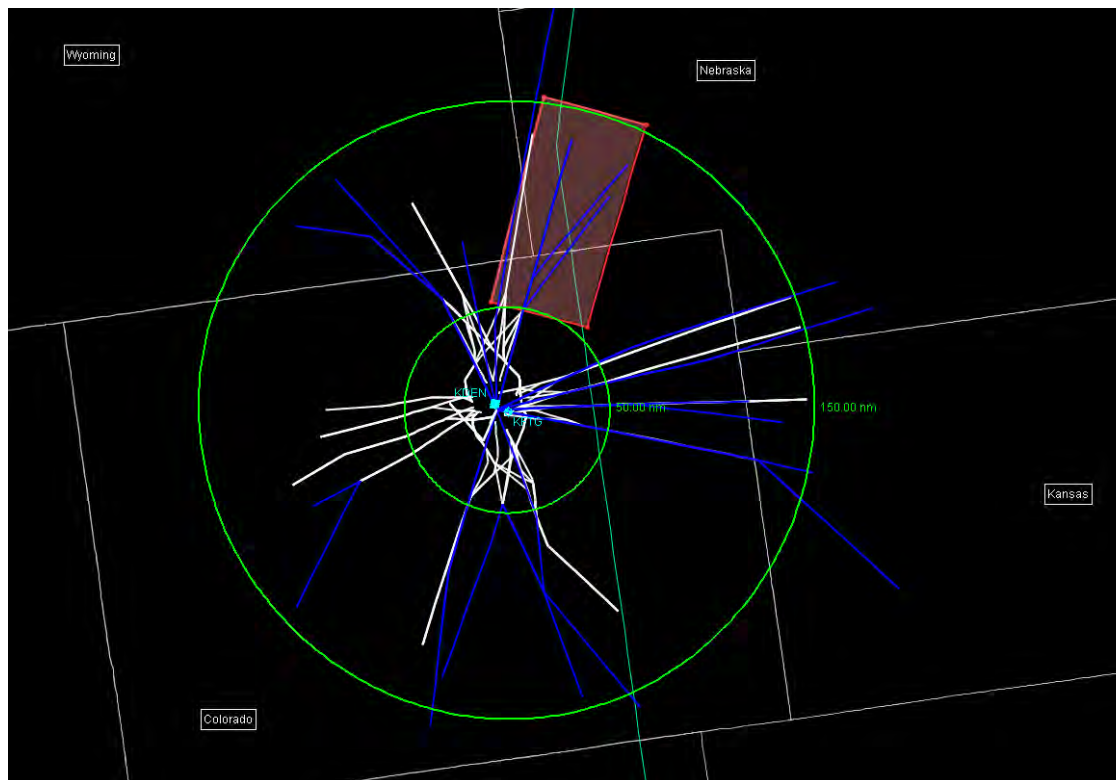
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Proposed Operations Area Locations

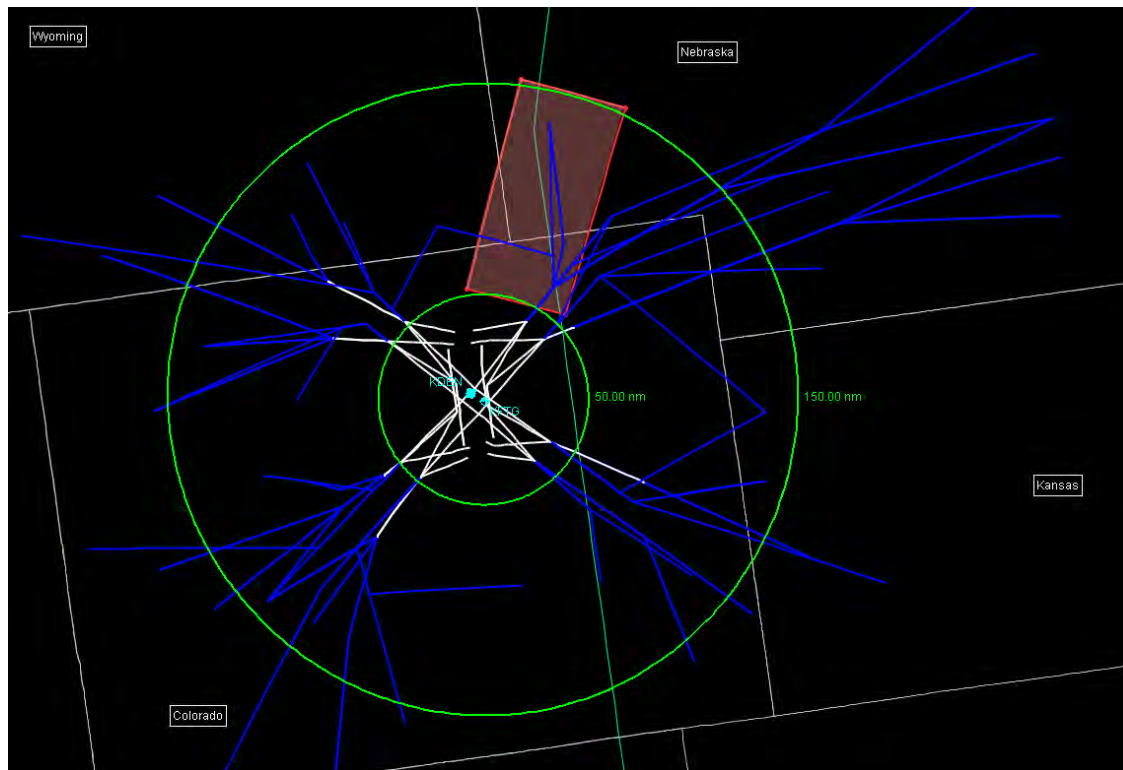At least 50 nm from FTG but no further than 150 nm from FTG

FTG Colorado

Operations Area with DEN Departures

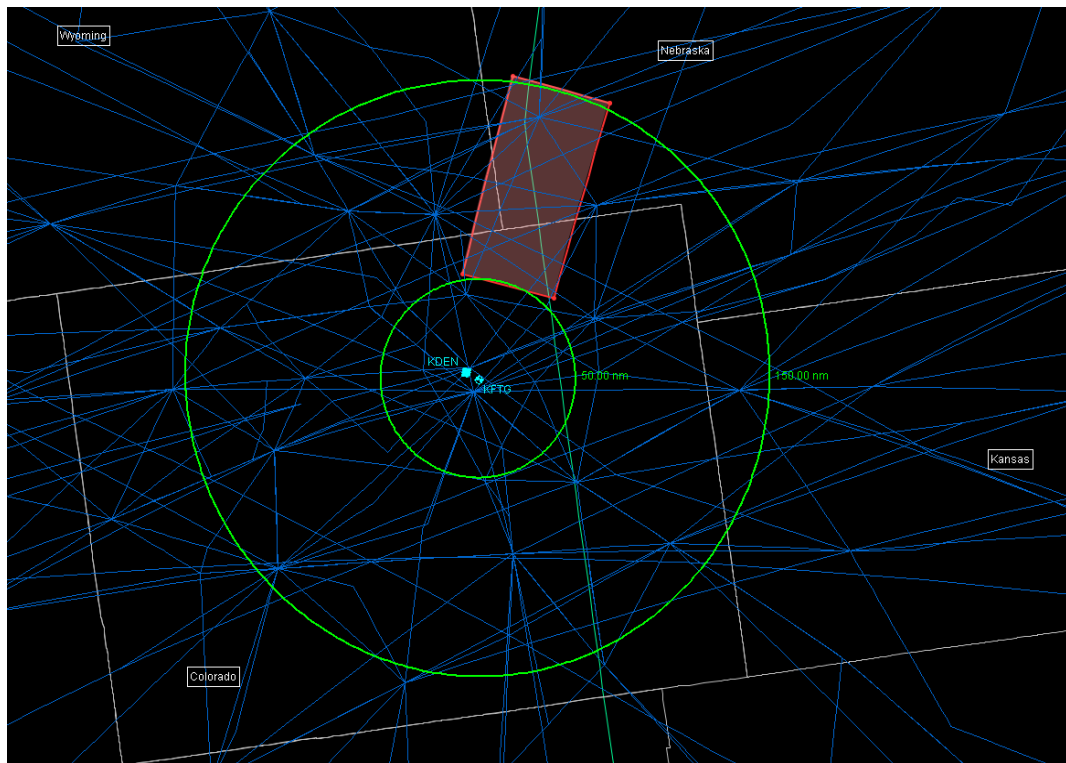Operations Area must be 100 nm long by 50 nm wide

Operations Area with DEN Arrivals

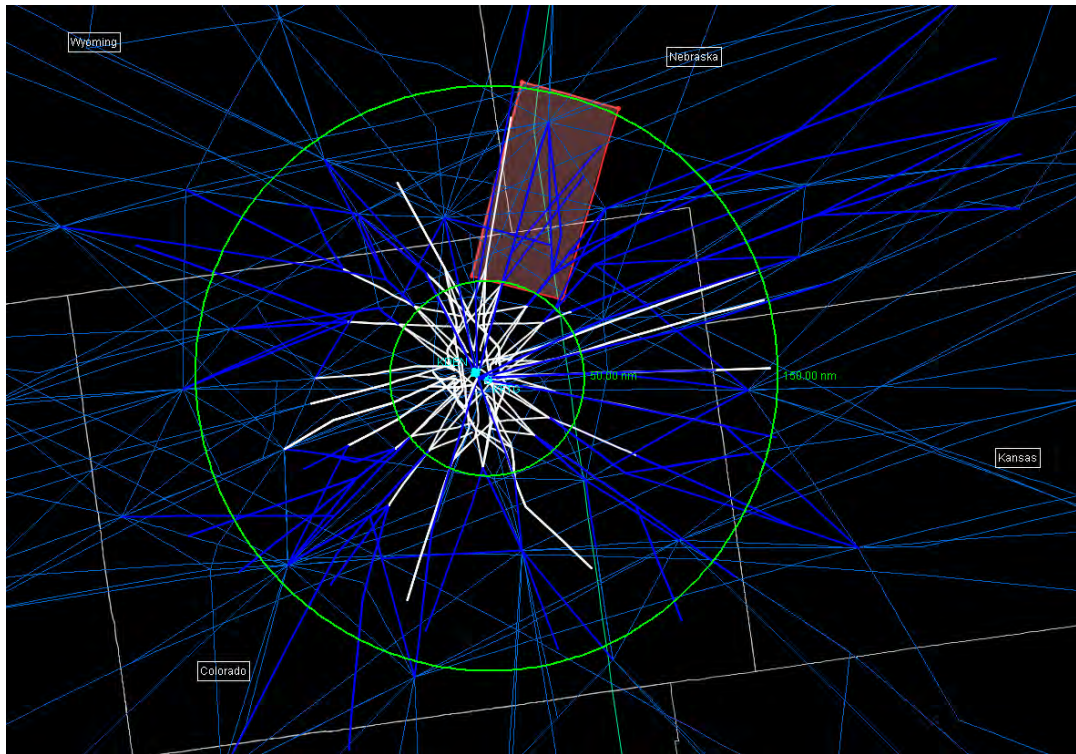Operations Area must be 100 nm long by 50 nm wide

Operations Area with Overflight Airways

Operations Area must be 100 nm long by 50 nm wide

Operations Area with All Traffic

Operations Area must be 100 nm long by 50 nm wide

We must forge a relationship

Cooperation and collaboration are essential

Balloons

Drones

Safety and efficiency

Important upcoming Aviation Rulemaking Committees

- UAS in controlled airspace

- NAS access prioritization

A4A's contribution as a resource and partner

- Multi-faceted organization working in support of our members
- More often than not—achieving consensus achieves the greatest results
- Forums such as this establish relationships and provide a platform for collaboration

Airlines for America®

We Connect the World

Business Aviation

- Business aviation is an economic lifeline for areas providing vital air transportation in times of public need

- Represents an essential transportation link for communities without scheduled airline service

- Business aviation allows for efficient, flexible, safe, secure and cost-effective access to destinations across the country and around the world

- Business aircraft can reach about 5000 airports

- Types of business aircraft vary widely – propeller-driven to jets to helicopters

- May fly below (below 20,000') or above the airlines (above 40,000')

Commercial Space/UAS/Balloons

- Integration needed vs segregation to maximize airspace utilization

- Prioritization and Access
  - Large TFRs and restrictions impacting civil and commercial operations
  - Robust discussion needed to ensure fair and balanced access/prioritization – upcoming FAA Aviation Rulemaking Committee on airspace prioritization

- Impacts to existing airports/infrastructure
  - Spaceports near existing airports
  - Balloons at altitudes impacting airways and ingress/egress into airports

- Need for situational awareness/training of operators not familiar with airspace structure/rules

Special Activity Airspace

- Growing trend for large Temporary Restricted Areas
  - Impacting from surface to flight levels – must circumnavigate
- Newer generation military aircraft requiring larger airspace areas for maneuvering
- Must strike balance to ensure military training/readiness vs NAS access
- Outreach challenges – process varies – RAs vs MOAs (circularization vs Federal Register)
- Need for migration towards dynamic airspace to increase flexibility/efficiency of overall NAS

GPS Interference

- Impacts to navigation and secondary control systems

- Number of intended jamming events continues to grow

- Event occurred April 2016:
  - Embraer Phenom 300 (EMB-505) equipped with Garmin G3000 integrated flight deck
  - Resulted from a yaw damper disconnect due to cascading failures from loss of all GPS initiated by the GPS jamming event
  - Due to the high airspeed and characteristics of the Phenom 300, the aircraft entered Dutch Roll, from which the pilots recovered and performed an emergency descent.
  - Event reported in FAA GENOT publication

- RTCA committee to provide inputs to the FAA

NextGen Technologies

- PBN procedures

- Datacomm – Business Aviation equipping faster than expected
  - Seeing benefits: reduced communication time, improved reroutes for weather/congestion, flexibility
  - Over 1300 business operators equipped
  - Over 4000 flights eligible with 80% participation in DCL

- ADS-B Equipage/Mixed equipage environment
  - Recent proposed final rule on RVSM/ADS-B a benefit for Business Aircraft

Metroplex

- Both opportunities and challenges
- Need for greater business aviation involvement from start
- Greater use of PBN procedures
- Phased approach allows for lessons learned
- Satellite airport operations remain critical

DEDICATED TO HELPING BUSINESS
ACHIEVE ITS HIGHEST GOALS.

National Business Aviation Association   1200 G Street NW, Suite 1100   Washington, DC 20005   (202) 783-9000   www.nbaa.org