Appendix E

FAA PBN Design Team Meetings

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Background

The Federal Aviation Administration (FAA) regularly evaluates air traffic control procedures nationwide to enhance the safety and efficiency of the world's safest air transportation system. As part of this ongoing effort, the FAA determined that potential changes to routes serving airports in the Phoenix area were necessary to ensure consistency with the FAA's Next Generation of Air Transportation System (NextGen) program. NextGen, which is intended to modernize the United States National Airspace System (NAS) to enhance safety, efficiency, and capacity in air travel, includes procedures known as Performance-Based Navigation (PBN). PBN uses satellite-based navigation to enable more direct routes and efficient climbs and descents. Specifically, PBN comprises area navigation (RNAV) and required navigation performance (RNP) components.[1] The FAA has implemented PBN procedures at major airports nationwide to enhance operational efficiency, reduce delays, and provide a flexible system capable of meeting the demands and complexities of the future. As described in the FAA's PBN NAS Navigation Strategy 2016,[2] as traffic increases at the major hubs, such as Phoenix Sky Harbor International Airport (PHX), airspace in their vicinity must be highly structured to support predictable and reliable trajectories. Such structuring reduces workload for pilots and controllers during peak demand and allows for efficient flows in and out of metropolitan areas.

The intent of the Phoenix Area FAA Modernization Project (the Project) is to align the Phoenix area airspace with the FAA's 2016 PBN initiatives. More specifically, the Project has been designed to optimize arrival and departure procedures in the region, while enhancing safety, in accordance with FAA's mandate under federal law. This would be accomplished by developing procedures that take advantage of technological advances in navigation, such as RNAV, while ensuring that aircraft not equipped to use RNAV continue to have access to the NAS. This approach addresses congestion and other factors that reduce efficiency in busy airport and airspace areas. The procedures designed for the Project would be used by aircraft operating under Instrument Flight Rules (IFR) in the Phoenix area.

Developing alternatives for the Project was a multi-step process that began with the PBN Kickoff Meeting in May 2022, initiated by requests from both Albuquerque Air Route Traffic Control Center (ARTCC) (ZAB) and Phoenix Terminal Radar Approach Control Facility (TRACON) (P50) to improve efficiency, reduce sector overload, and modernize instrument flight procedures serving PHX and the Phoenix area airspace. To ensure the alternatives for the Project align with FAA mandates and the FAA's 2016 PBN strategy, FAA developed and conducted extensive coordination with a Project-specific PBN Design Team. The PBN Design Team comprised FAA specialists, National Air Traffic Controllers Association (NATCA) representatives, local airport specialists and executives, and airline stakeholders. The Team was tasked with defining operational issues and recommending conceptual designs for procedures addressing the identified inefficiencies in the

[1] RNAV enables aircraft to fly on any desired flight path within the coverage of ground- or space-based navigation aids, within the capability of the aircraft equipage or a combination of capabilities. RNP is RNAV with the addition of onboard performance monitoring and alerting capability (FAA 2016).
[2] FAA. *Performance Based Navigation PBN NAS Navigation Strategy*, Draft 1.6. Department of Transportation. June, 2016.

Phoenix area airspace. The PBN Design Team conducted routine meetings between 2022 and 2024. At key milestones, beginning in 2024, the PBN Design Team also met with potentially interested tribes, elected officials, and local airport leadership to discuss the preliminary design elements and receive input. The primary focus of the workshops was to identify more efficient routes to aid in the elimination of vector traffic within the Phoenix area airspace. Creation of the new procedures was necessary in support of more direct flow patterns for the region and getting away from reliance on vectoring tracks into and out of the Phoenix area airspace. Considerations and key discussion points included existing flow, the specific weights of aircraft that would benefit most from changes, and the desired heights needed at the waypoints. Multiple iterations of the procedural changes were developed and refined over the course of the meetings/workshops.

The following notable meetings were conducted by the PBN Design Team prior to 2025:

- Project Kick-Off – May 3-4, 2022
- Procedural Design Work Group – June 14-15, 2023
- Project Update Meetings with Interested Parties, upon request:
    - Salt River Maricopa Indian Community – May 21, 2024
    - Gila River Indian Community – May 22, 2024
    - Chandler Airport – May 22, 2024
    - Mayor of Gilbert – May 23, 2024
    - City of Tempe – June 17, 2024
    - Draft National Design Compliance Workshop – November 13-14, 2024

A key briefing in 2025 included the “PHX Airport and Satellite Airport Instrument Flight Procedures (IFP) Project Briefing” with FAA and PHX Airports leadership on March 18, 2025. Materials presented during this briefing are provided below.

PBN Design Team Meeting – March 18, 2025

PHX Airport and Satellite Airport Instrument Flight Procedures (IFP) Project Briefing

1

Background

- A PBN Workgroup Kick-off Meeting was held in May 2022 to consider requests by Albuquerque ARTCC (ZAB) and the Phoenix Sky Harbor Airport (PHX) ATCT/TRACON (P50) to develop changes to ZAB airspace to enhance Safety, Operational Efficiency and reduce Operational Delays.
- Working groups included FAA and National Air Traffic Controllers Association (NATCA) personnel, PHX airport representatives, and lead airport users (SWA & AAL).
- This is a new project not a continuation of the previous FAA project involving litigation
- ASW and AWP Regional Administrators ongoing engagement with community leaders:
  - City of Mesa, Falcon Field Airport, Phoenix Mesa Gateway Airport (ASW Oct 2022 & AWP Mar 2024)
  - Salt River Pima Maricopa (ASW Oct 2022 & ASW/AWP May 2024)
  - Gila River Indian Community (AWP May 2024)
  - Ft. McDowell Yavapai (ASW Oct 2022)
  - City of Tempe (ASW Oct 2022 & AWP Sep 2024)
  - City of Scottsdale (ASW Oct 2022)
  - City of Fountain Hills (ASW Oct 2022)
  - Paradise Valley (ASW Oct 2022)
  - Mayor of Gilbert (AWP May 2024)

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Operations Information – Project Objectives

- **Phoenix TRACON (P50)**
  - Enhance traffic flow, increase capacity, reduce delays, improve safety and efficiency
  - Redesign procedures to reduce sector overload potential
  - Take advantage of GPS technology
  - SID's and STARs are procedurally separated enhancing safety. Air Traffic may turn aircraft to waypoints further along their route to maintain or enhance efficiency.
- **Phoenix Tower (PHX)**
  - Develop a third departure track on west flow operations
  - Develop departure routes for turbo prop aircraft
  - Increase departure and arrival efficiency
- **Albuquerque ARTCC (ZAB)**
  - Redesign airspace borders and altitude strata to enhance traffic flow and increase operational efficiency
  - Transition from 5 Areas with 39 sectors to 7 Areas with 49 sectors to improve workload management
  - Create efficient traffic flows to support PHX and all the major markets
  - Support growing Commercial Space Operations
  - Develop routes that can reduce delays due to adverse weather

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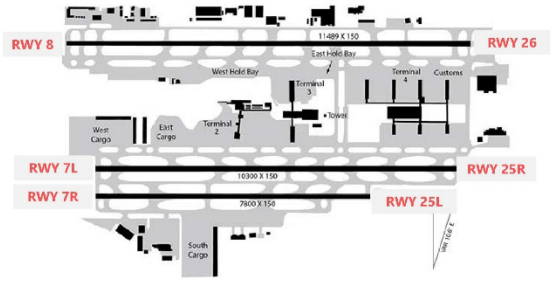
Phoenix Sky Harbor Airport (PHX) Runway Usage
Runway Usage Data: 11/01/2023 to 10/31/2024

ARRIVAL OPERATIONS:

RWY 07L	2,941	1.2 %
RWY 07R	39,686	16.8 %
RWY 08	62,159	26.3 %
RWY 25L	49, 602	21 %
RWY 25R	4,283	1.8 %
RWY 26	77,872	32.9 %

DEPARTURE OPERATIONS:

RWY 07L	96,690	40.2 %
RWY 07R	9,765	5.5 %
RWY 08	8,083	2.2 %
RWY 25L	7,475	4.5 %
RWY 25R	109,242	45.2 %
RWY 26	5,332	2.4 %



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Track Data Dates

- 01/11 - 17/2024
- 04/01 - 07/2024
- 07/21 - 27/2024
- 10/25 - 31/2024

– Note: These dates apply to any track data included in the slides
– Only IFR track data was used
– All references to altitudes are at Mean Sea Level (MSL) unless otherwise noted

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STANDARD INSTRUMENT DEPARTURES (SID)

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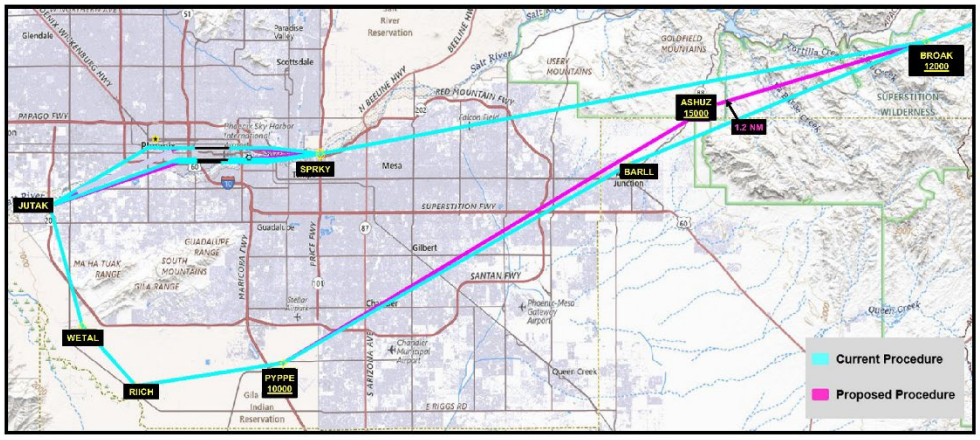
Proposed BROAK SID- Currently BROAK SID



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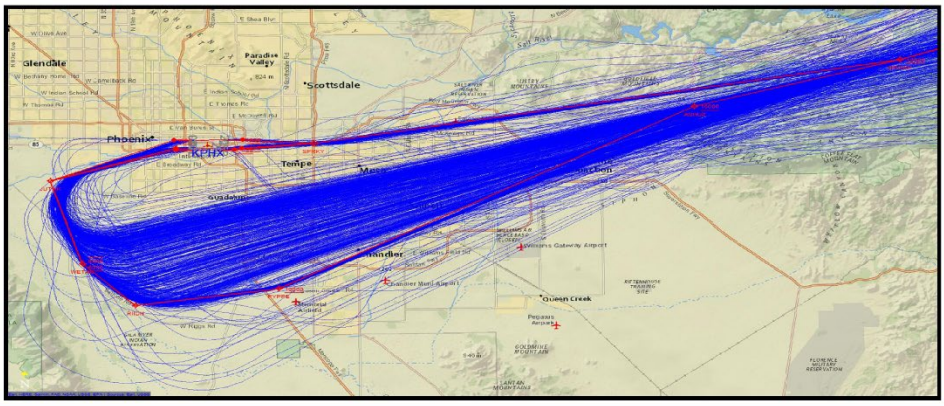
- BROAK has very minimal changes
- ASHUZ fix shifted approx. 1.2 NM north to deconflict with other STARs

7

Proposed BROAK- Currently BROAK (2402 tracks-4 weeks)



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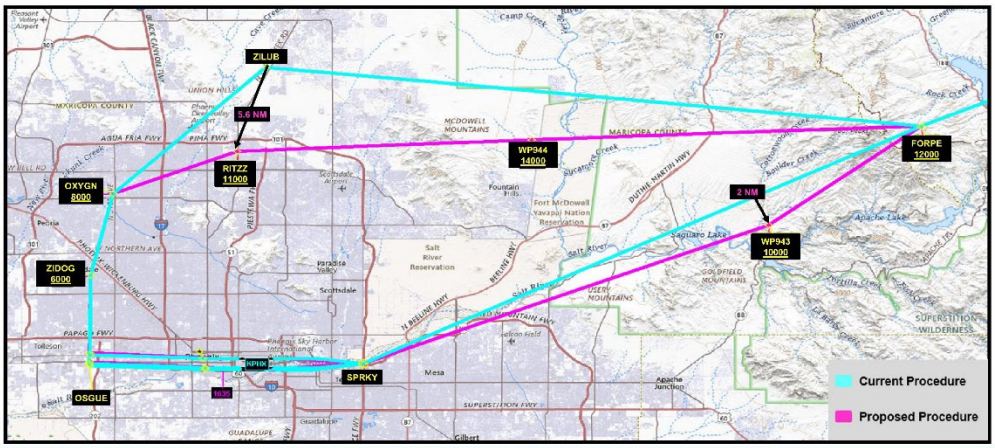
- ATC will still turn aircraft early when no conflicts exist—there should be no noticeable change to dispersion

8

Proposed DCHMN SID- Currently FORPE SID



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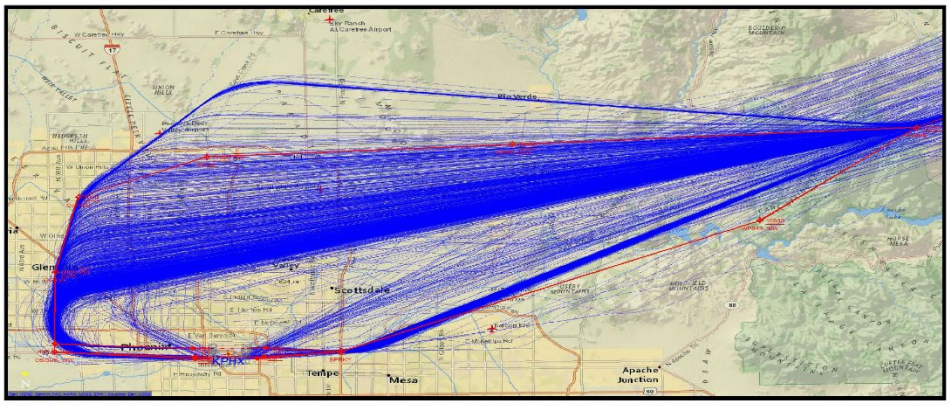
- DCHMN proposed procedure departures RWYs 26, 25R and 25L shifted South approx. 5.6 NM to improve efficiency
- WP943 shifted approx. 2 NM South to allow for more headings

9

Proposed DCHMN- Currently FORPE (2472 tracks-4 weeks)



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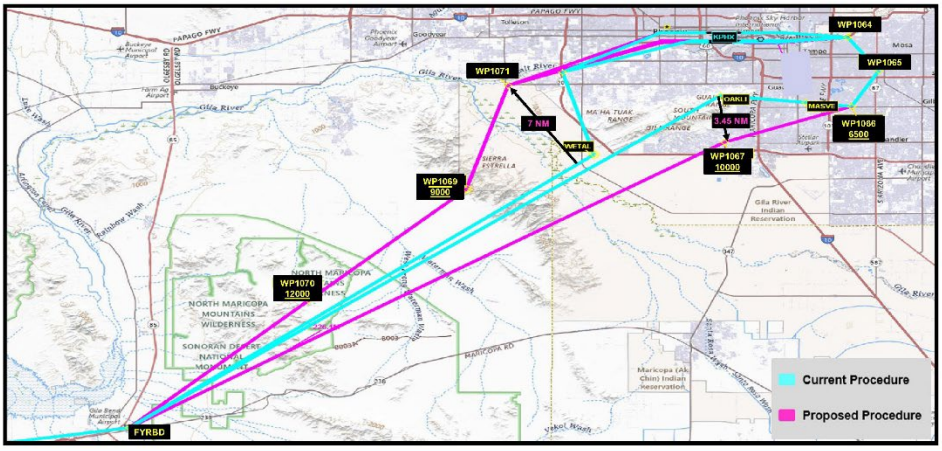
- Far North tracks will shift South to follow new proposed procedure (red line)
- ATC turns Westbound departures early 95% of time which will continue
- Eastbound departures will shift concentration South to follow proposed procedure

10

Proposed FYRBD SID- Currently FYRBD SID



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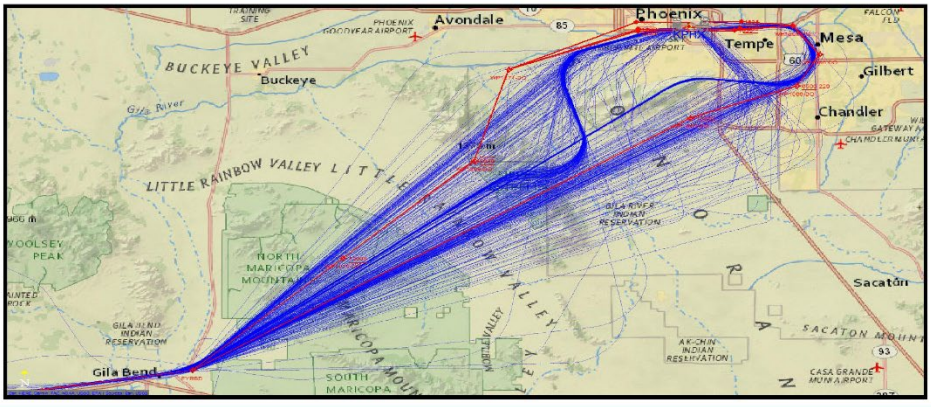
- FYRBD straightened out proposed procedure to save flying miles and increase efficiency

11

Proposed FYRBD- Currently FYRBD (524 tracks-4 weeks)



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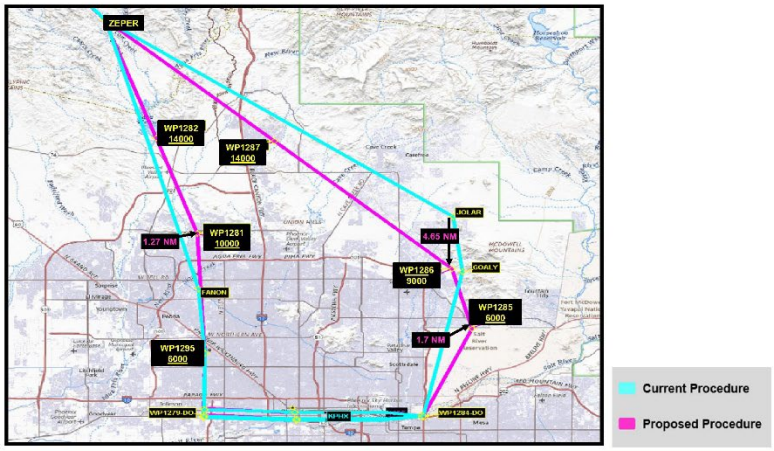
- Straightening out procedure removes “zig-zag” seen in track data
- Tracks will shift to proposed procedure (red line)

12

Proposed JKPOT SID- Currently ZEPER SID



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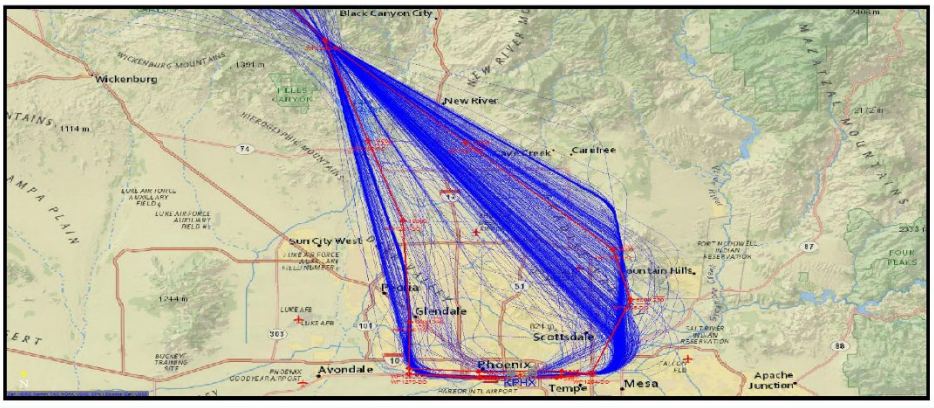
- Scottsdale requested for the proposed JKPOT to move further East (WP1285)
- Proposed procedure changes create divergence with turboprop aircraft and increase efficiency with North departures

13

Proposed JKPOT- Currently ZEPER (1514 tracks-4 weeks)



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- Eastbound departure tracks will shift North to follow proposed procedure, requested by Scottsdale

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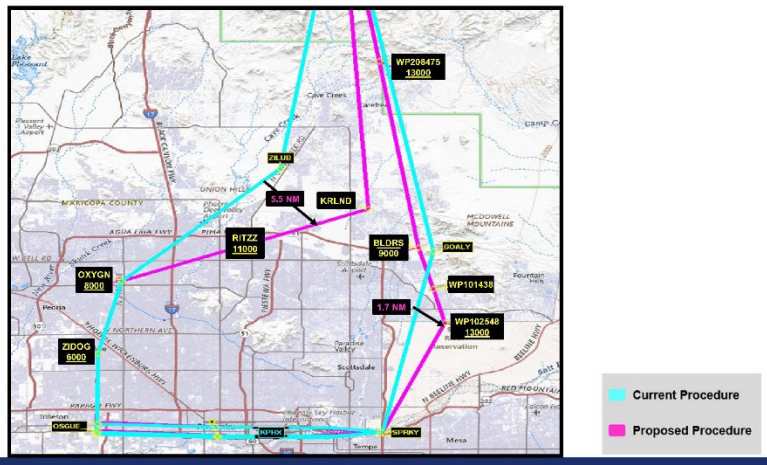
Proposed RZORT SID- Currently QUAKY SID



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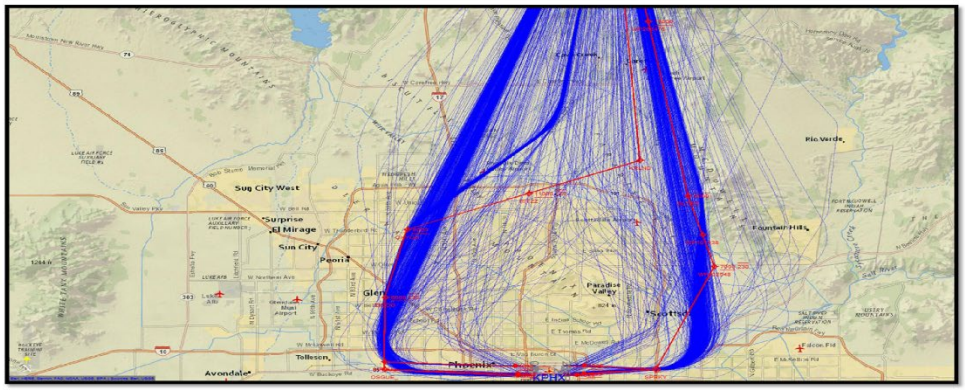
- Scottsdale requested for the proposed RZORT to move further East (WP102548)
- Proposed RZORT turn from OXYGN to KRLND is to allow under performing aircraft to climb above STARs

15

Proposed RZORT- Currently QUAKY (1852 tracks-4 weeks)



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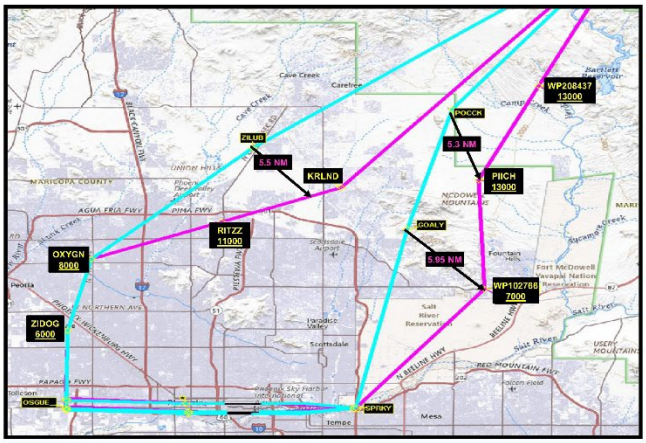
Proposed SNDVL SID- Currently MRBIL SID



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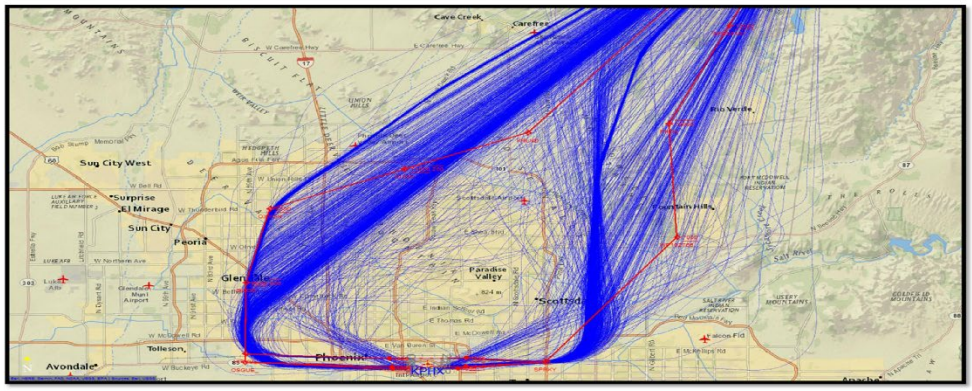
- MRBIL is most used SID
- Proposed SNDVL diverges from the Proposed JKPOT and RZORT SIDs
- Changes mitigate fountain Hills and Scottsdale complaints

17

Proposed SNDVL- Currently MRBIL (1777 tracks-4 weeks)



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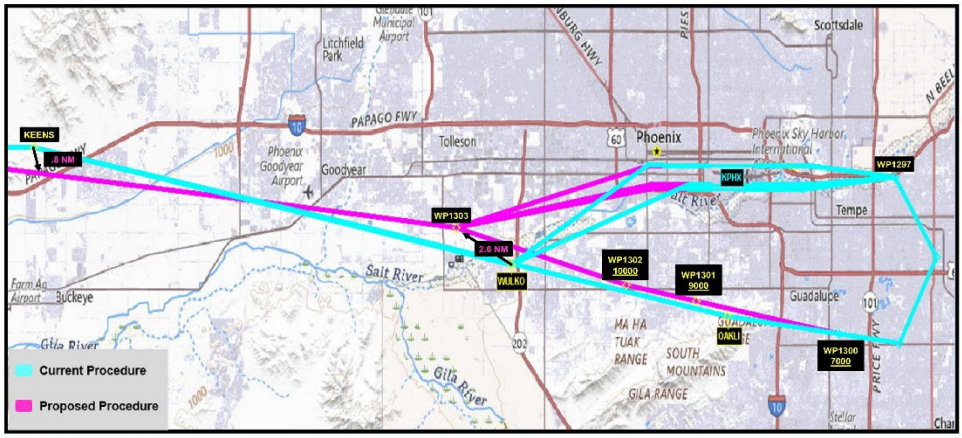
- Eastbound departures will shift east to follow proposed procedure

18

Proposed ROBBE SID- Currently KEENS SID



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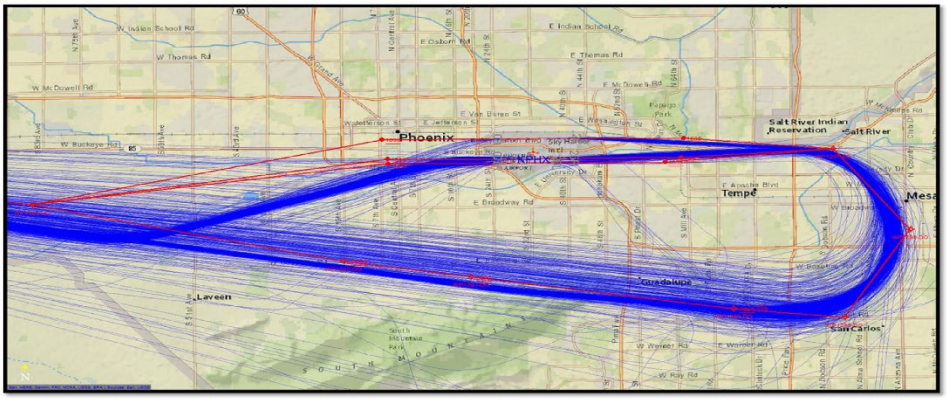
- West flow proposed changes adding increased throughput
- Added third departure track off RWY 25R, splitting West and Southwest SIDs

19

Proposed ROBBE- Currently KEENS (3226 tracks-4 weeks)

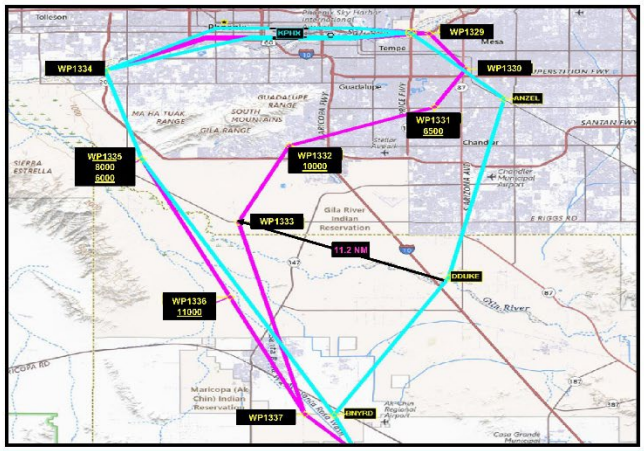


Federal Aviation Administration 20

- Westbound departures will shift North to follow proposed procedure

20

Proposed STRMM SID- Currently STRMM SID



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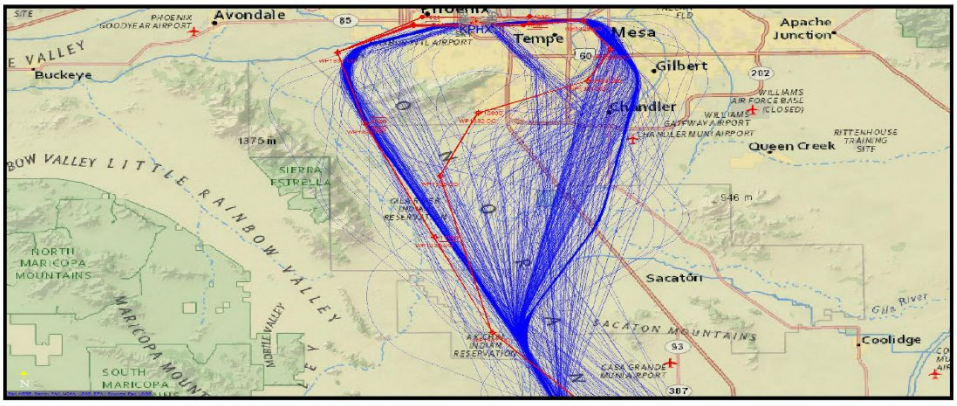
- Eastbound departures biggest conflict area and changes will procedurally separate with STARs and satellite airports

21

Proposed STRRM- Currently STRRM (826 tracks-4 weeks)



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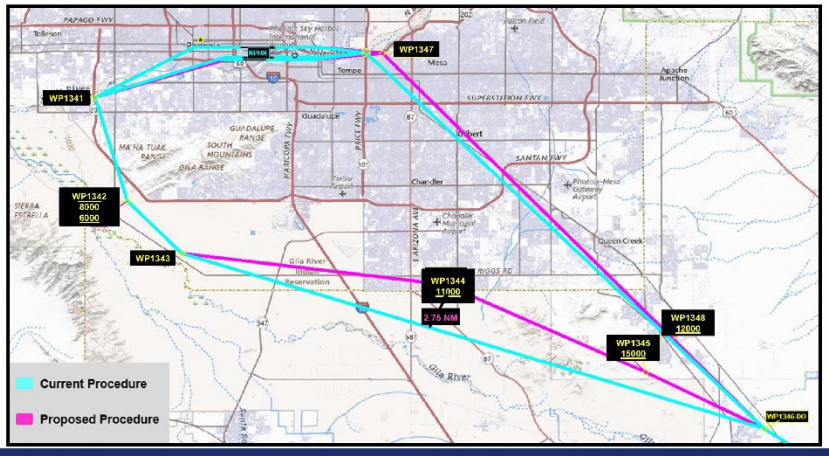
Proposed WYYLD SID- Currently ECLPS SID



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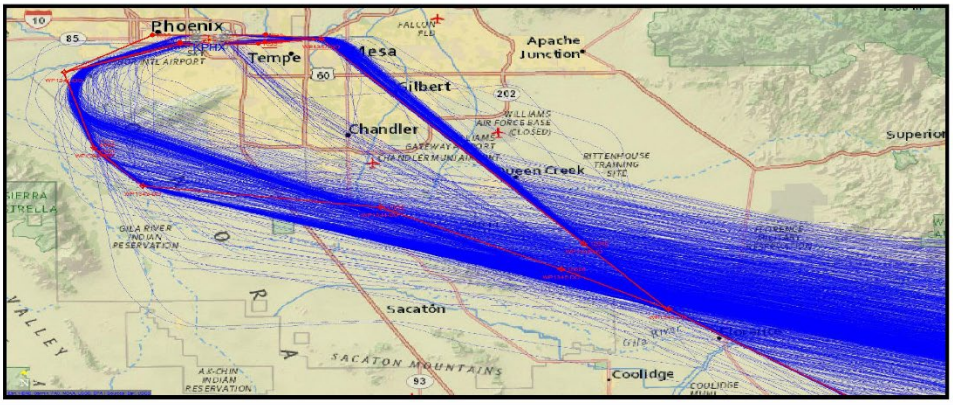
- WP1344 shifted North to deconflict with the PINNG STAR

23

Proposed WYYLD- Currently ECLPS (2108 tracks-4 weeks)



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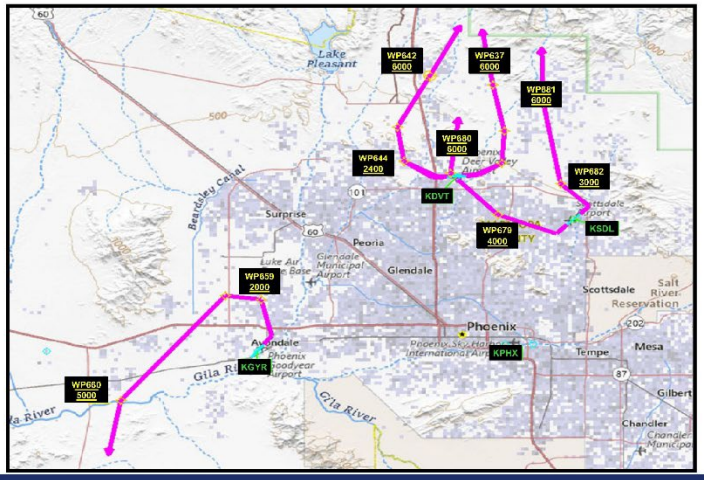
Proposed Satellite SIDs- DVT, GYR, SDL



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- SIDs will eliminate dependencies for KDVT and KSDL and traffic will be able to depart simultaneously
- SID for KGYR will primarily be used when Luke AFB is closed

25

STANDARD TERMINAL ARRIVAL ROUTES

(STAR)

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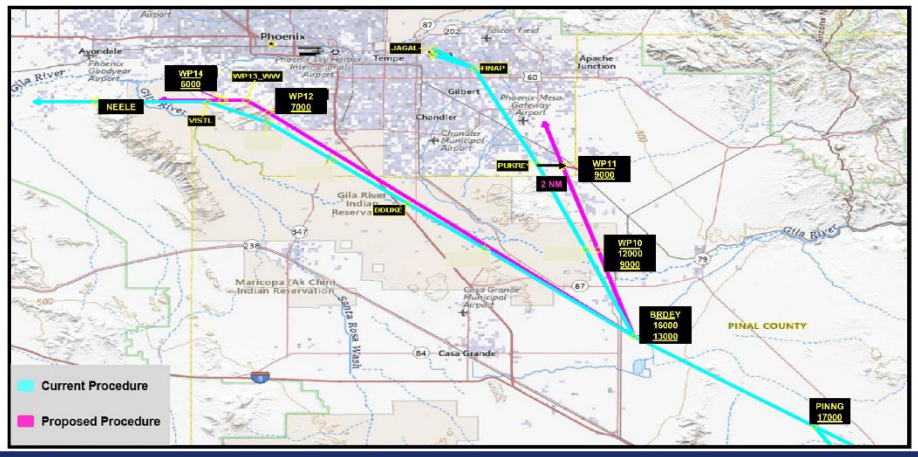
Proposed BRDEY STAR- Currently PINNG STAR



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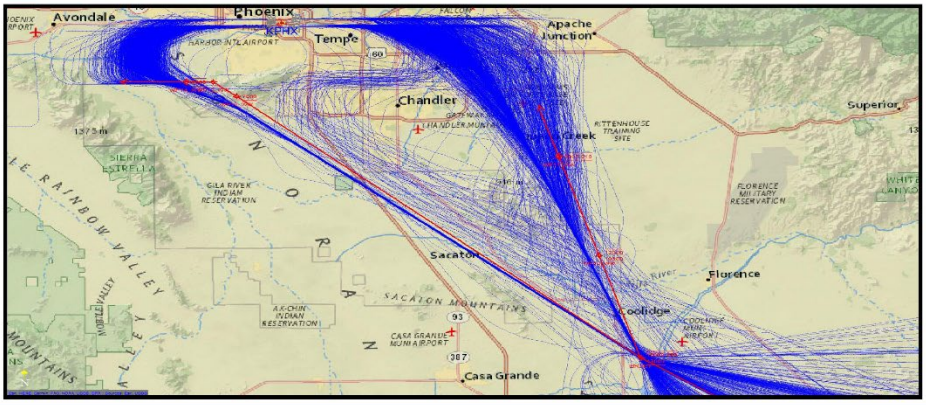
- Least used STAR
- WP11 shifted East to mitigate issues with aircraft turning to final near the same location

27

Proposed BRDEY- Currently PINNG (3080 tracks-4 weeks)



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- Tracks will shift East to follow proposed procedure

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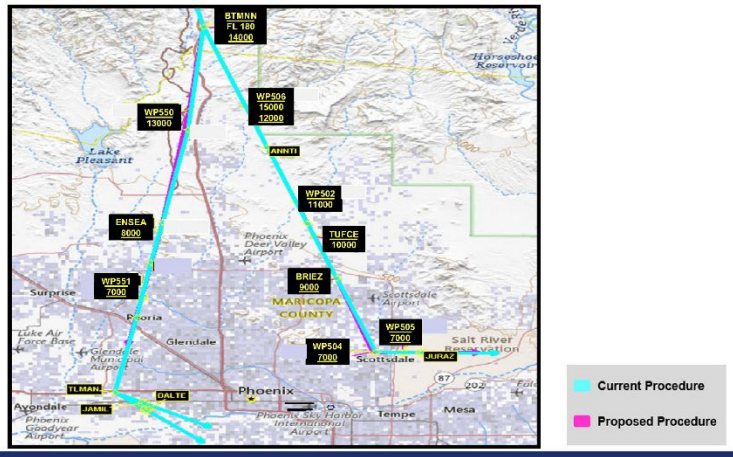
Proposed BTMNN STAR- Currently BRUSR STAR



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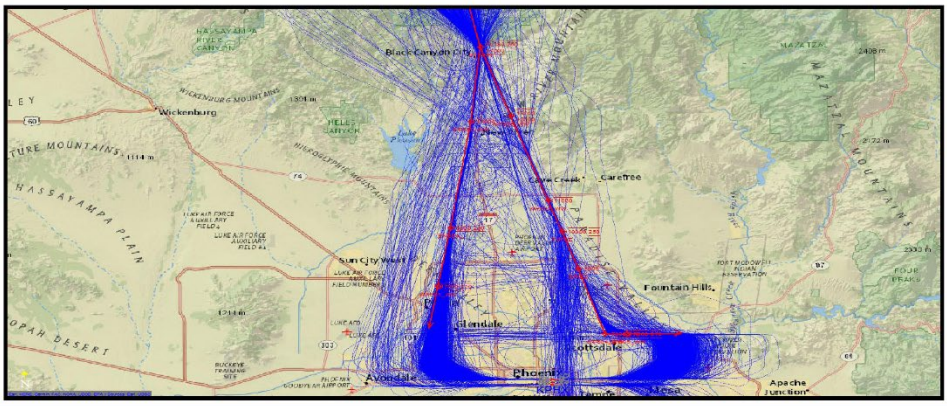
- Proposed BTMNN has no noticeable changes
- Aircraft will stay higher for longer and added optimized descent to minimize changes in thrust

29

Proposed BTMNN- Currently BRUSR (3704 tracks-4 weeks)



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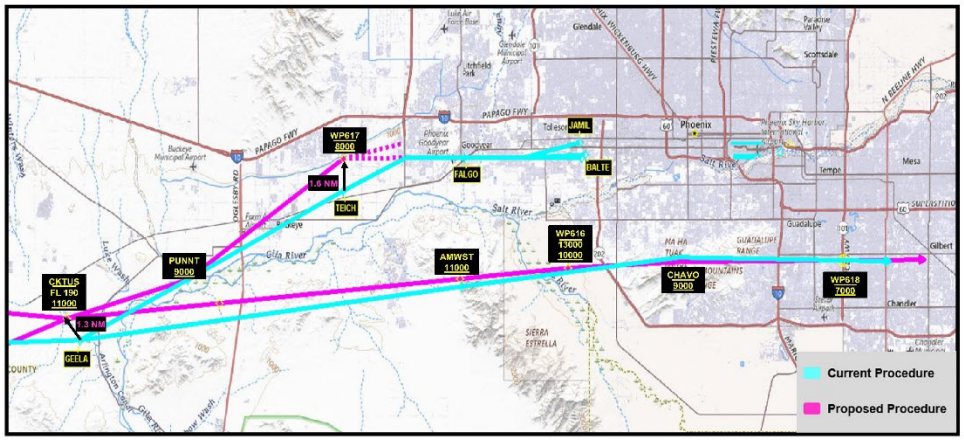
Proposed CKTUS STAR- Currently HYDRR STAR



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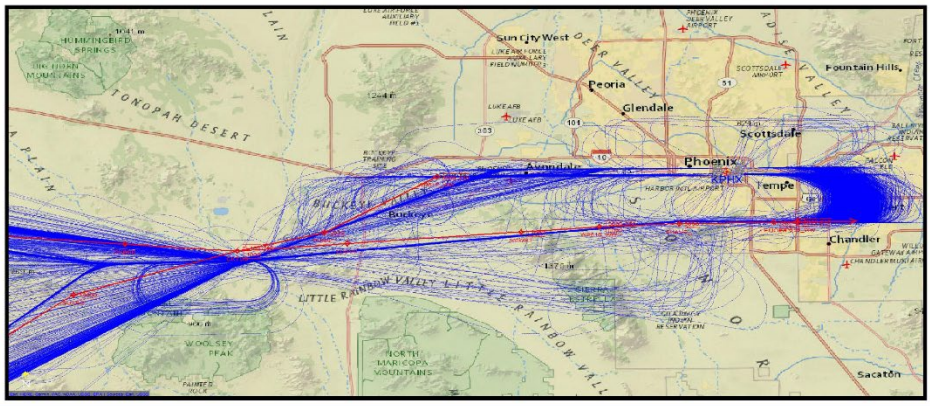
- Straightened out Proposed CKTUS for efficiency
- Procedure shifted North at WP 617 to deconflict STARs and allow multiple to be used at once

31

Proposed CKTUS- Currently HYDRR (3638 tracks-4 weeks)



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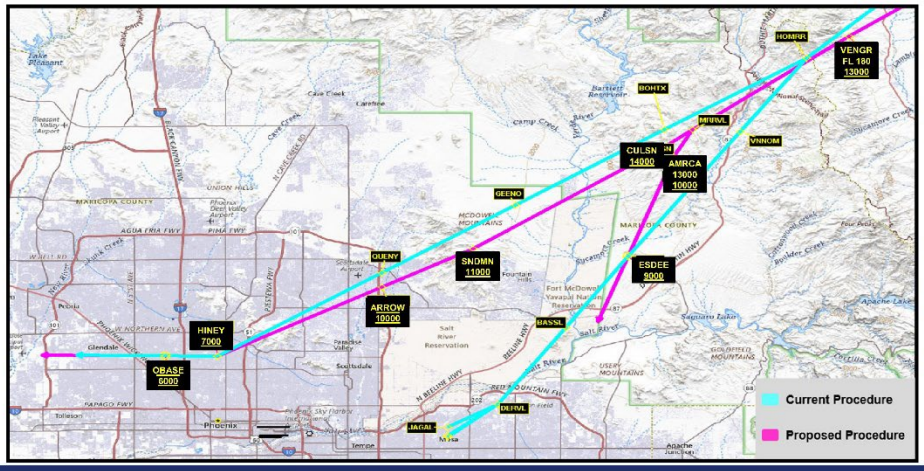
Proposed MRRVL STAR- Currently EAGUL STAR



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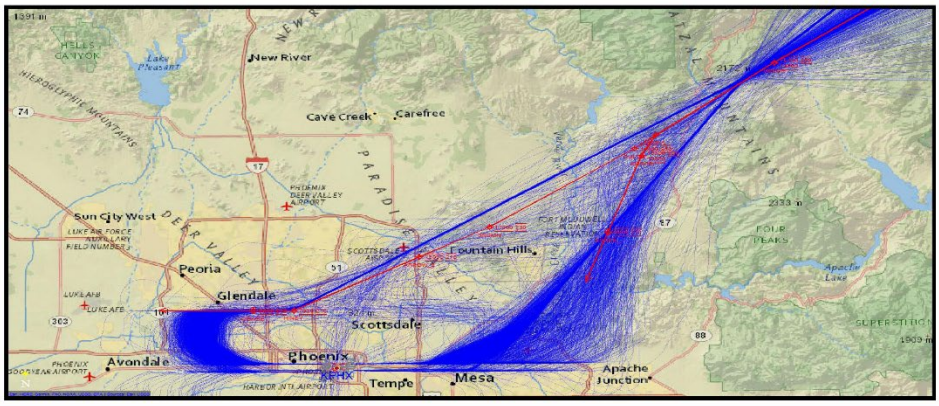
- EAGUL is most used STAR
- Changes deconflict proposed MRRVL from proposed BRDEY
- Added optimized descent to minimize changes in thrust

33

Proposed MRRVL- Currently EAGUL (6347 tracks-4 weeks)



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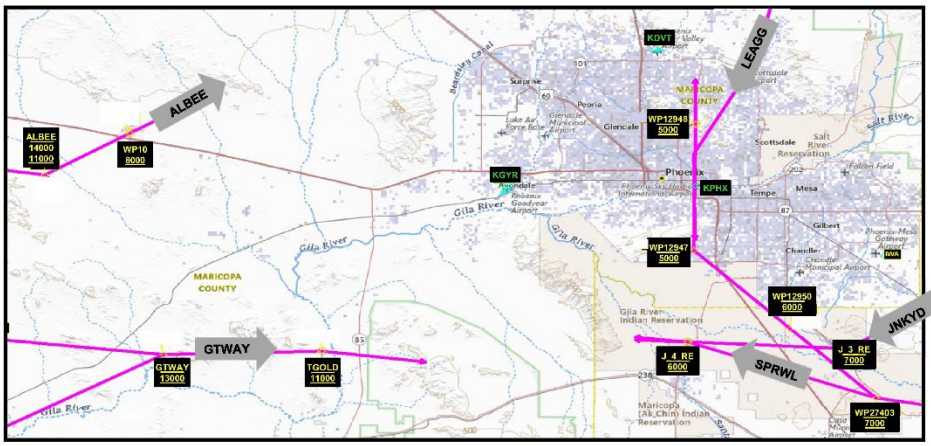
Proposed Satellite STARs- DVT and GYR



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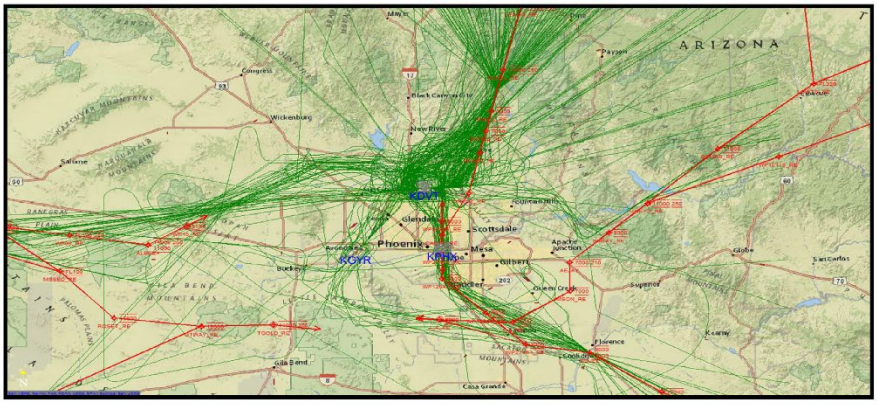
- Satellite STARs are currently all vector procedures, proposed STARs will procedurally separate aircraft
- Proposed procedures were built where controllers currently vector aircraft

35

Proposed Satellite STARs-(343 DVT and GYR IFR Arrival tracks-4 weeks)



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Instrument Approach Procedures

(IAP)

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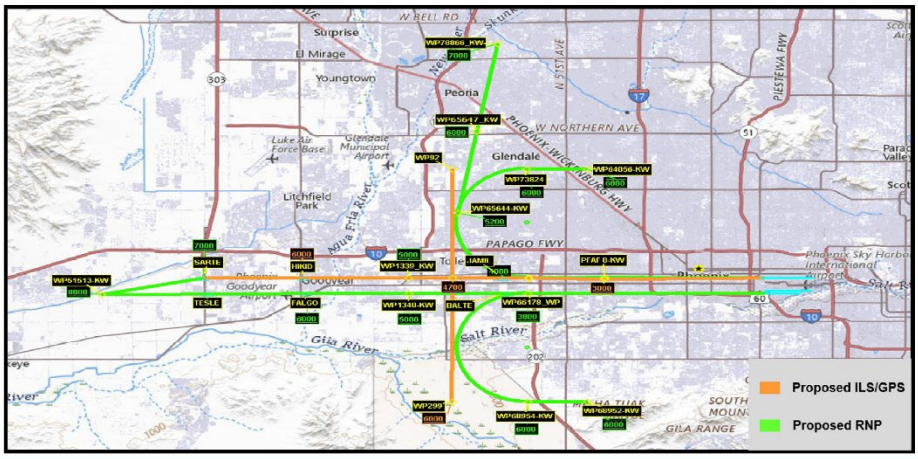
Proposed ILS, RNAV (GPS) and RNP East Flow



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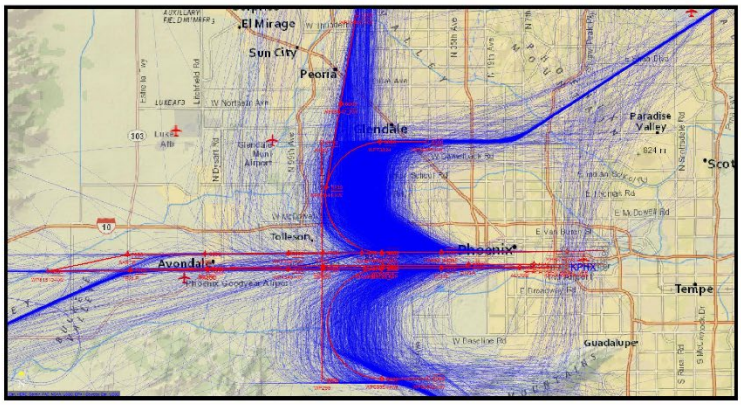
East Flow Arrivals (Proposed ILS/GPS/RNP)



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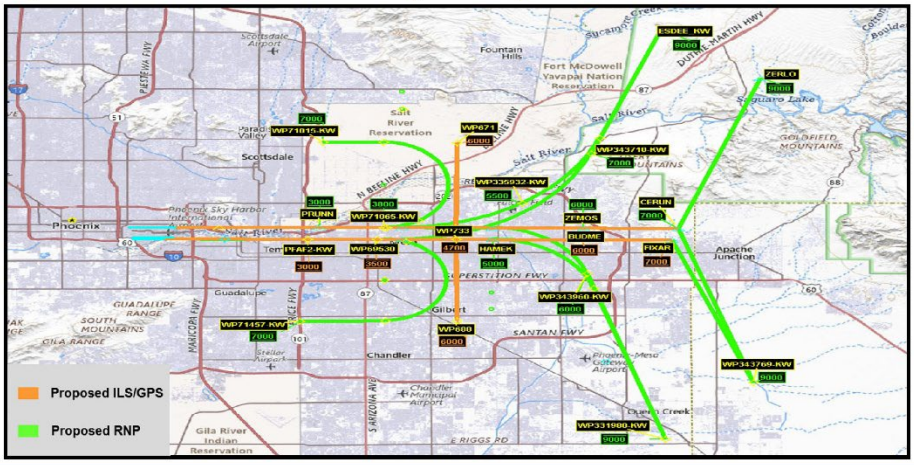
Proposed ILS, RNAV (GPS) and RNP West Flow



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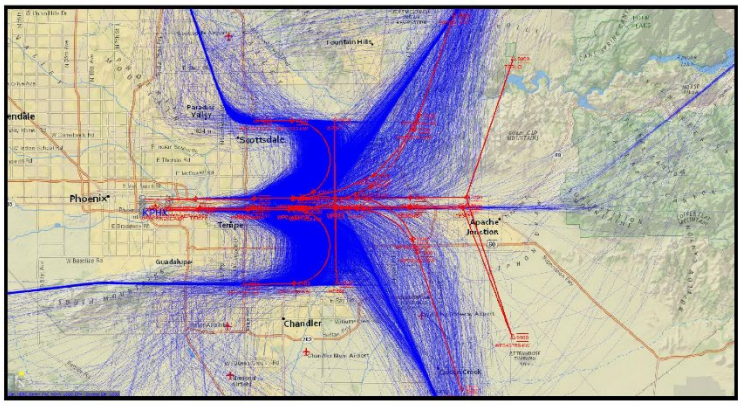
West Flow Arrivals (Proposed ILS/GPS/RNP)



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Updated Project Timeline

2025

- Airport Authority Leadership Briefing – 3/2025
- EA Start – NLT 4/2025

2026

- Workshops – 4/2026
- Review and mitigate substantive comments – 6/2026
- Procedures to OKC – 7/28/2026
- Final EA – 7/28/2026

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- Chart date – 2/18/2027 (Previous chart date 9/3/2026)

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Thank You
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