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New Jersey 08405

Runway Incursion Mitigation Fiscal Year 2024 Annual Summary Report

March 2026

Final Report

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16. Abstract In fiscal year (FY) 2012, the Federal Aviation Administration (FAA) Office of Airports (ARP) initiated a research study to identify and geographically locate areas at airports with nonstandard taxiway geometry. This research was advanced because an earlier study had shown nonstandard taxiway geometries to be associated with a higher prevalence of runway incursions. The FAA defines a runway incursion (RI) as "any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft." These occurrences include wrong runway landings and takeoffs. This research effort developed a geographic information system (GIS) database of approximately 520 airports with civilian air traffic control towers. For each airport, the location of nonstandard geometries, runway incursions, airfield hot spot areas, airport diagrams, and other airport-related information is identified. This research study identified 140 airfield locations with a high incidence of RIs using data from October 1, 2007, to September 30, 2013. As a result, a long-term improvement program, known as the Runway Incursion Mitigation (RIM) program, launched in FY2015. The goal of the program was to mitigate airfield locations with high incidences of RIs. A subset of the 140 locations identified was then validated for inclusion in the RIM program and prioritized for mitigation. The RIM program is updated annually using the GIS airport database to identify construction-related changes to airfield layout and their impacts on taxiway geometries, the airfield location of new RIs, and the status of airfield locations prioritized for mitigation. This report summarizes the status of the RIM program through FY2024. In FY2024, the program georeferenced 1,417 RIs, removed 122 nonstandard geometry locations, prioritized 27 locations for mitigation, and identified 8 locations as mitigated. Since program initiation, 17,939 RIs have been georeferenced at airports along with 6,573 nonstandard geometry locations. In addition, 238 airfield locations were prioritized for mitigation and 100 of these locations have been mitigated. As of Calendar Year (CY) 2023, the 87 locations that have contributed to the short-term and long-term reduction in RIM Inventory experience, on average, 78% fewer incursions per year after mitigation activity.					
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LIST OF ACRONYMS

AC	Advisory Circular
ADIP	Airport Data and Information Portal
ADO	Airports District Office
AIR	Average incursion rate
ARP	Office of Airports
ATIS	Automated Traffic Information System
CY	Calendar year
EB	Engineering Brief
FAA	Federal Aviation Administration
FRT	FAA RIM Team
FY	Fiscal year
GIS	Geographic information system
HS	Hot spot
HSR	Hot spot reassignment
ILS	Instrument Landing System
NOTAM	Notice to Airmen
NPIAS	National Plan of Integrated Airport Systems
PD	Pilot deviation
PTG	Problematic taxiway geometry
RDM	RIM Data Management
RI	Runway incursion
RIM	Runway incursion mitigation
V/PD	Vehicle/pedestrian deviation

LIST OF FEDERAL AVIATION ADMINISTRATION LOCATION IDENTIFIER AIRPORT
CODES USED IN THIS REPORT

ABQ	Albuquerque International Sunport, Albuquerque, New Mexico
ACT	Waco Regional Airport, Waco, Texas
ADS	Addison Airport, Dallas, Texas
APA	Centennial Airport, Denver, Colorado
APC	Napa County Airport, Napa, California
ARR	Aurora Municipal Airport, Chicago/Aurora, Illinois
ASE	Aspen-Pitkin County Airport/Sardy Field Airport, Aspen, Colorado
ATL	Hartsfield-Jackson Atlanta International Airport, Atlanta, Georgia
AZO	Kalamazoo/Battle Creek International, Kalamazoo, Michigan
BET	Bethel Airport, Bethel, Alaska
BFI	Boeing Field/King County International Airport, Seattle, Washington
BJC	Rocky Mountain Metropolitan Airport, Denver, Colorado
BOI	Boise Air Terminal/Gowen Field Airport, Boise, Idaho
BOS	General Edward Lawrence Logan International Airport, Boston, Massachusetts
BTV	Burlington International Airport, Burlington, Vermont
BUR	Bob Hope Airport, Burbank, California
CAK	Akron-Canton Regional Airport, Akron, Ohio
CCR	Buchanan Field Airport, Concord, California
CHD	Chandler Municipal Airport, Chandler, Arizona
CLE	Cleveland Hopkins International Airport, Cleveland, Ohio
CLL	Easterwood Field Airport, College Station, Texas
CLT	Charlotte/Douglas International Airport, Charlotte, North Carolina
CMA	Camarillo Airport, Camarillo, California
CMI	University of Illinois-Willard Airport, Champaign-Urbana, Illinois
CNO	Chino Airport, Chino, California
CRG	Jacksonville Executive at Craig Airport, Jacksonville, Florida
CRP	Corpus Christi International Airport, Corpus Christi, Texas
CRQ	McClellan-Palomar Airport, Carlsbad, California
CSG	Columbus Airport, Columbus, Georgia
CXO	Conroe-North Houston Regional Airport, Houston, Texas
DAB	Daytona Beach International Airport, Daytona Beach, Florida
DAL	Dallas Love Field Airport, Dallas, Texas
DCA	Ronald Reagan Washington National Airport, Washington, DC
DEN	Denver International Airport, Denver, Colorado
DSM	Des Moines International Airport, Des Moines, Iowa
DVT	Phoenix Deer Valley Airport, Phoenix, Arizona
DWH	David Wayne Hooks Memorial Airport, Houston, Texas
EWR	Newark Liberty International Airport, Newark, New Jersey
FAI	Fairbanks International Airport, Fairbanks, Alaska
FAT	Fresno Yosemite International Airport, Fresno, California
FCM	Flying Cloud Airport, Minneapolis, Minnesota
FDK	Frederick Municipal Airport, Frederick, Maryland
FFZ	Falcon Field Airport, Mesa, Arizona
FRG	Republic Airport, Farmingdale, New York

FTY	Fulton County Airport-Brown Field, Atlanta, Georgia
FWA	Fort Wayne International Airport, Fort Wayne, Indiana
FXE	Fort Lauderdale Executive Airport, Fort Lauderdale, Florida
GCN	Grand Canyon National Park Airport, Grand Canyon, Arizona
GLS	Scholes International Airport, Galveston, Texas
HIO	Portland-Hillsboro Airport, Portland, Oregon
HLN	Helena Regional Airport, Helena, Montana
HND	Henderson Executive Airport, Las Vegas, Nevada
HNL	Daniel K. Inouye International Airport, Honolulu, Hawaii
HOU	William P. Hobby Airport, Houston, Texas
HUF	Terre Haute Regional Airport, Terre Haute, Indiana
HWD	Hayward Executive Airport, Hayward, California
IAG	Niagara Falls International Airport, Niagara Falls, New York
IDA	Idaho Falls Regional Airport, Idaho Falls, Idaho
ISM	Kissimmee Gateway Airport, Orlando, Florida
IWA	Phoenix-Mesa Gateway Airport, Phoenix, Arizona
JLN	Joplin Regional Airport, Joplin, Missouri
JNU	Juneau International Airport, Juneau, Alaska
LAF	Purdue University Airport, Lafayette, Indiana
LAS	Harry Reid International Airport, Las Vegas, Nevada
LAX	Los Angeles International Airport, Los Angeles, California
LGB	Long Beach Airport/Daugherty Field, Long Beach, California
LIT	Adams Field Airport, Little Rock, Arizona
LOU	Bowman Field Airport, Louisville, Kentucky
LVK	Livermore Municipal Airport, Livermore, California
MAF	Midland International Air and Space Port, Midland, Texas
MDW	Chicago Midway International Airport, Chicago, Illinois
MEM	Memphis International Airport, Memphis, Tennessee
MFE	McAllen Miller International Airport, McAllen, Texas
MHT	Manchester-Boston Regional Airport, Manchester, New Hampshire
MIA	Miami International Airport, Miami, Florida
MIC	Crystal Airport, Minneapolis, Minnesota
MKC	Charles B. Wheeler Downtown Airport, Kansas City, Missouri
MLI	Quad City Airport, Moline, Illinois
MLU	Monroe Regional Airport, Monroe, Louisiana
MQY	Smyrna Airport, Smyrna, Tennessee
MRI	Merrill Field Airport, Anchorage, Alaska
MRY	Monterey Regional Airport, Monterey, California
MYF	Montgomery-Gibbs Executive Airport, San Diego, California
NEW	Lakefront Airport, New Orleans, Louisiana
OAK	Albert J. Ellis Airport, Jacksonville, North Carolina
OPF	Miami-Opa Locka Executive Airport, Miami, Florida
ORD	Chicago O'Hare International Airport, Chicago, Illinois
ORL	Orlando Executive Airport, Orlando, Florida
PAO	Palo Alto Airport, Palo Alto, California
PBI	Palm Beach International Airport, West Palm Beach, Florida

PDK	DeKalb-Peachtree Airport, Atlanta, Georgia
PHL	Philadelphia International Airport, Philadelphia, Pennsylvania
PHX	Phoenix Sky Harbor International Airport, Phoenix, Arizona
PIE	St. Pete-Clearwater International Airport, St. Petersburg-Clearwater, Florida
PNS	Pensacola International Airport, Pensacola, Florida
POC	Brackett Field, LaVerne, California
PRC	Ernest A. Love Field Airport, Prescott, Arizona
PSP	Palm Springs International Airport, Palm Springs, California
PWM	Portland International Jetport, Portland, Maine
RHV	Reid-Hillview Airport of Santa Clara County, San Jose, California
RNO	Reno/Tahoe International Airport, Reno, Nevada
SAT	San Antonio International Airport, San Antonio, Texas
SBA	Santa Barbara Municipal Airport, Santa Barbara, California
SDL	Scottsdale Airport, Scottsdale, Arizona
SDM	Brown Field Municipal Airport, San Diego, California
SEA	Seattle-Tacoma International Airport, Seattle, Washington
SFB	Orlando Sanford International Airport, Orlando, Florida
SFO	San Francisco International Airport, San Francisco, California
SJC	Norman Y. Mineta San Jose International Airport, San Jose, California
SLC	Salt Lake City International Airport, Salt Lake City, Utah
SMO	Santa Monica Municipal Airport, Santa Monica, California
SNA	John Wayne-Orange County Airport, Santa Ana, California
SPI	Abraham Lincoln Capital Airport, Springfield, Illinois
SRQ	Sarasota/Bradenton International Airport, Sarasota/Bradenton, Florida
STS	Charles M. Schulz-Sonoma County Airport, Santa Rosa, California
TEB	Teterboro Airport, Teterboro, New Jersey
TIW	Tacoma Narrows Airport, Tacoma, Washington
TMB	Miami Executive Airport, Miami, Florida
TOA	Zamperini Field, Torrance, California
TUL	Tulsa International Airport, Tulsa, Oklahoma
TUS	Tucson International Airport, Tucson, Arizona
TYR	Tyler Pounds Regional Airport, Tyler, Texas
UAO	Aurora State Airport, Aurora, Oregon
UES	Waukesha County Airport, Waukesha, Wisconsin
VGT	North Las Vegas Airport, Las Vegas, Nevada
VNY	Van Nuys Airport, Van Nuys, California

EXECUTIVE SUMMARY

In fiscal year (FY) 2012, the Federal Aviation Administration (FAA) Office of Airports (ARP) initiated a research study to identify and geographically locate areas at airports with nonstandard taxiway geometry. This research was advanced because an earlier study had shown nonstandard taxiway geometries to be associated with a higher prevalence of runway incursions. The FAA defines a runway incursion (RI) as “any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft.” These occurrences include wrong runway landings and takeoffs. This research effort developed a geographic information system (GIS) database of approximately 520 airports with civilian air traffic control towers. For each airport, the location of nonstandard geometries, RIs, airfield hot spot areas, airport diagrams, and other airport-related information is identified. This research study identified 140 airfield locations with a high incidence of RIs using data from October 1, 2007, to September 30, 2013. As a result, a long-term improvement program, known as the Runway Incursion Mitigation (RIM) program, launched in FY2015. The goal of the program is to mitigate airfield locations with high incidences of runway incursions. A subset of the 140 locations identified was then validated for inclusion in the RIM program and prioritized for mitigation.

The RIM program, led by the FAA RIM Team (FRT) that includes representatives from AAS-100, AAS-300, APP-400, the FAA William J. Hughes Technical Center for Advanced Aerospace and its contractors, is updated annually using the GIS airport database to identify construction-related changes to airfield layout and their impacts on taxiway geometries, the airfield location of new RIs, and the status of airfield locations prioritized for mitigation.

This report summarizes the status of the RIM program through FY2024. In 2024, the program:

- Georeferenced 1,417 runway incursions
- Removed 122 nonstandard geometry locations
- Prioritized 27 locations for mitigation
- Identified 8 locations as mitigated

Since program initiation, the FRT georeferenced 17,939 RIs at airports along with more than 6,688 nonstandard geometry locations. In addition, the FRT prioritized 238 airfield locations for mitigation and 100 of these locations implemented mitigations. **As of Calendar Year (CY) 2023, the 87 locations that have contributed to the short-term and long-term reduction in RIM Inventory experience, on average, 78% fewer incursions per year after mitigation activity.**

1. INTRODUCTION

The Federal Aviation Administration (FAA) defines a runway incursion (RI) as “any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft” (FAA, 2015). These occurrences, including wrong runway landings and takeoffs, are a top airport safety concern for the FAA.

The FAA conducted an initial study of RIs from 1997 to 2003 resulting from a pilot deviation (PD) or vehicle/pedestrian deviation (V/PD). These incursions were then plotted on airport diagrams (Legarreta, 2012). Analyses of these incursions found that certain taxiway locations experienced far more RIs than other locations (Legarreta, 2012). Through additional research, the FAA identified taxiway geometry configurations associated with a higher incidence of RIs (Legarreta, 2012). This led the FAA Airport Engineering Division to publish Engineering Brief (EB) 75, *Incorporation of Runway Incursion Prevention into Taxiway and Apron Design*, in November 2007 (FAA, 2007). Subsequently, the updated Advisory Circular (AC) 150/5300-13, *Airport Design*, incorporated many of the airport layout recommendations from EB 75 (FAA, 2024). Both documents provide guidance for airports to design taxiways in a manner to reduce confusion and increase situational awareness. Airport layouts not conforming to these recommendations may lead to confusion and, ultimately, RIs.

In fiscal year (FY) 2012, the FAA Office of Airports (ARP) initiated a research study to identify and geographically locate areas at airports with nonstandard geometry and a high incidence of RIs. This effort, detailed in the FAA report, *Problematic Taxiway Geometry Study Overview*, or PTG Report, (Vitagliano, Canter, & Aland, 2018), developed a geographic information system (GIS) database including

- 6,101 airport locations with nonstandard geometry, also known as problematic taxiway geometry (PTG) locations
- 603 airport locations that are related to FAA’s hot spot (HS) polygons that are depicted in the airport diagrams
- All PD and V/PD RIs, including wrong runway events and surface incidents
- Airport diagrams and information
- HS polygons

The initial study and field validation process identified 140 locations with a high incidence of RIs using data from October 1, 2007, to September 30, 2013, after reviewing 5,099 RI reports. As a result, a long-term improvement program, known as the Runway Incursion Mitigation (RIM) program, launched in FY2015. The goal of the program is to mitigate airfield locations with high incidents of RIs. A subset of the 140 locations identified was then validated for inclusion in the RIM program and prioritized for mitigation. The FAA maintains a RIM program website at https://www.faa.gov/airports/special_programs/rim/.

2. ANNUAL DATABASE UPDATES

2.1 OVERVIEW

The FAA RIM Team (FRT) maintains the RIM database including all data relevant to the program from airports with civilian air traffic control towers (towered airports) and provides a history of database updates. The following data are maintained for each airport:

- Hub category
- General aviation asset category
- Annual operations
- Enplanements
- Title 14 Code of Federal Regulations Part 139 status (Airport Certification, 2004), herein referred to as Part 139

The current FAA airport diagram can be displayed within the database along with Form 5010 Airport Master Record data. Additionally, HS polygons and their descriptions are updated every 28 days, when applicable.

The database includes all RIs and surface incidents categorized as V/PDs or PDs by the FAA Safety Services Group for each airport. This includes wrong runway landings and takeoffs. On a quarterly basis, the database incorporates new data. This update involves analysis of RIs from the previous quarter. Reviewing the narrative in the incursion report determines the RI location. Each incursion is then georeferenced in the database.

In addition to analyzing RIs, an annual review of the layout of each airport determines if locations with previously identified nonstandard geometry characteristics have changes and/or mitigations. Locations with new nonstandard geometry characteristics are identified as well. This update typically occurs during the second quarter of the FY. In the PTG Report, the FAA identified 19 nonstandard taxiway geometry characteristics that lead to pilot confusion. Locations having at least 1 of the following 19 nonstandard geometry characteristics are categorized as PTG locations, or HS locations if they are also considered related to HS polygons (FAA, 2013):

- Y-shaped taxiways crossing a runway
- Wrong runway events
- Wide expanses of taxi pavements entering or along a runway
- Convergence of numerous taxiway types entering a runway
- High-speed exit crossing a taxiway
- Two runway thresholds in close proximity
- Short taxiways (stubs) between runways
- Direct taxiing access to runways from ramp areas
- An aligned taxiway entering runway ends
- Nonstandard markings and/or signage placement
- Greater than three-path taxiway intersection
- Taxiway connection to V-shaped runways

- Taxiway intersects runway at other than a right angle
- Short taxi distance from ramp/apron area to a runway
- High-speed exits leading directly onto another runway
- Taxiway coinciding with the intersection of two runways
- Use of a runway as a taxiway
- Unexpected holding position marking on parallel/entrance taxiway
- Miscellaneous (e.g., nonsequential taxiway designation schemes, absence of full-length parallel taxiway, taxiway intersection along the middle third of a runway)

Once all RIs from the previous CY are georeferenced, a review of annual and cumulative RI counts for each PTG/HS location determines which locations meet RIM program criteria. The criteria are

- (1) three or more RIs in a single CY, or
- (2) an average of one or more RIs per year during the most recent 10 years.

The analysis is limited to the most recent 10-year period to consider changes in an airport operating environment over long periods of time (e.g., operational procedures, activity profiles, fleet mix, airfield redesign).

A review of the unique characteristics of each location further narrows the locations considered for field validation. For certain locations, interpretation of incursion narratives by the FRT is necessary to confirm RIM status. The FRT georeferences all RIs regardless of narrative description, but not all narratives provide evidence of a potential issue with taxiway geometry. For example, a lost airport vehicle may cross the same runway hold bar multiple times, generating multiple RIs for one incident. Such a location, which may technically meet RIM criteria, is not a RIM location based on the serial nature of the specific incursion incident. Short-term construction projects may cause temporary airfield HSs that no longer apply after construction is finished. Aircraft and vehicles operating on an airfield without tower clearance provide another example of an event not related to taxiway geometry. The FRT continues to monitor these locations.

The purpose of field validation, which occurs after each annual database update, is to obtain feedback from FAA regional and Airports District Office (ADO) personnel regarding locations considered for classification as RIM locations. The FRT then evaluates the information obtained from the field, such as extenuating circumstances surrounding RIs (e.g., construction activity, air shows, other special events) and whether mitigations are underway. The FRT personnel use this information to make a final determination regarding which locations to add to the RIM inventory. After final determinations, the FRT publishes the updated RIM inventory on the FAA website. Figure 1 provides a summary of the annual database update process, which typically begins in January and ends in September.

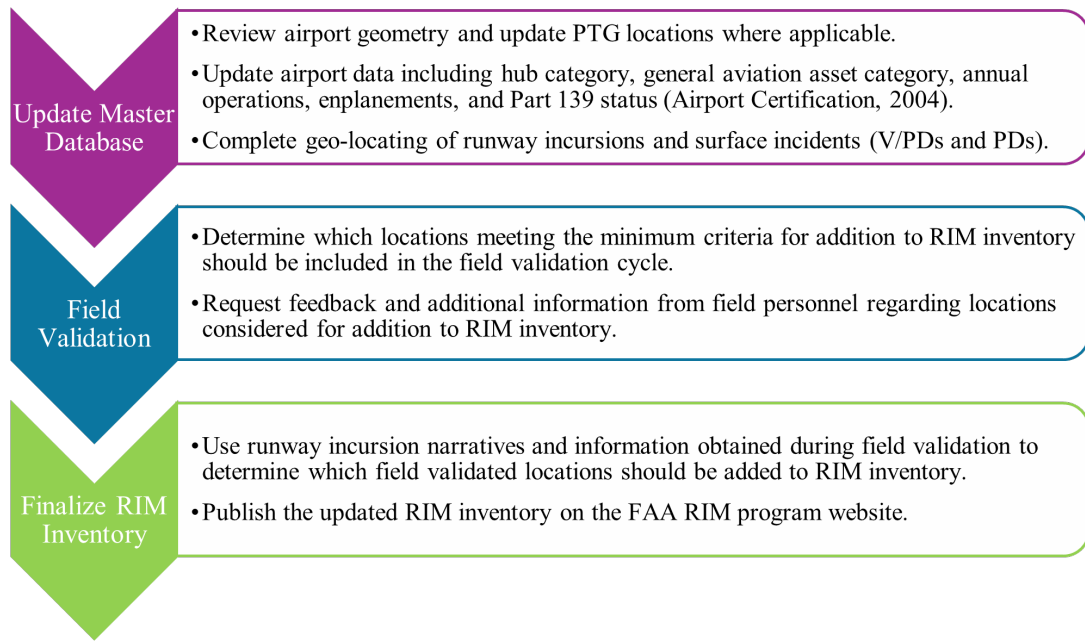


Figure 1. The RIM Database Update Process

The FRT maintains a GIS-based module, referred to as the RIM Data Management (RDM) tool; accessed through the FAA’s Airport Data and Information Portal (ADIP) (FAA, 2022). This tool facilitates sharing of information related to potential or active RIM locations between ADO and regional personnel and the FRT, monitoring the progress of mitigation for RIM locations, and tracking the success metrics of the program. Additionally, non-FAA users, such as state aviation officials, airport sponsors, and industry consultants, have limited, read-only access to the RDM tool. The RDM tool undergoes a major update annually reflecting the previous year’s data and updates RIM location details. HS polygons and related HS locations and RI/Surface Incident data are updated on an intermittent basis throughout the year.

2.2 New Methodologies for Measuring Program Success

Through a series of workshops, the FRT assessed new options for measuring program success. The FRT determined that a reduction in risk is a key aspect of program success and that reduction in risk is achieved through a decrease in RIM Inventory locations. As a result, a new metric has been defined to better measure the reduction of runway incursion risk due to the RIM Program. This will now be utilized as the primary metric to track the success of the RIM Program and will be reported as “Percent Change in RIM Inventory.” The existing metric “Percent Change in Average Incursion Rate (AIR),” will also continue to be utilized to track Program success but with one modification.

Previously all mitigated locations were assessed equally when calculating the Percent Change in AIR. For the 2023 mitigation analysis year, short-term and long-term program successes are now identified using two defined stages: Safety Enhancement and Mitigation Complete. For a given RIM location, the relationship and flow between the different stages is shown in Figure 2. As locations move from the RIM Inventory stage to the Mitigation Complete stage throughout the RIM Program, the reduction in RIM Inventory is achieved.

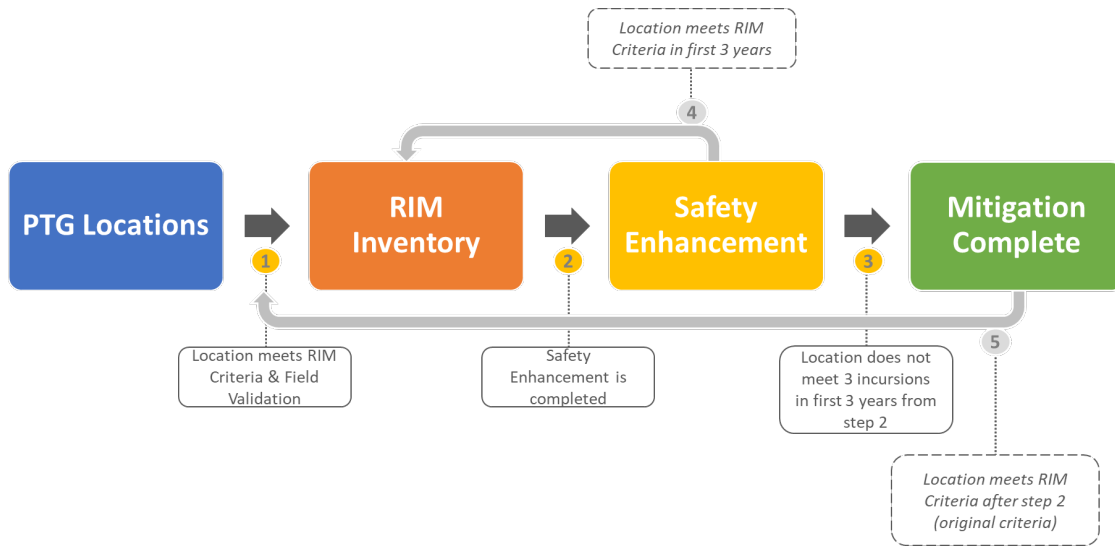


Figure 2. Process for RIM Locations

Note 1: RIM Criteria (Includes locations determined to be Problematic Taxiway Geometries):

1. Three or more RIs in a single CY, or
2. An average of one or more RIs per year during the latest 10 years

Note 2: Locations that have a Safety Enhancement project complete that results in the elimination of a Runway/Taxiway intersection will automatically move to the “Mitigation Complete” stage, bypassing the “Safety Enhancement” stage.

Once a location in the RIM Inventory has safety enhancement projects completed, it is moved into the Safety Enhancement stage where it is considered a short-term success for the program. The location remains in this stage for up to three years. If it meets the RIM Criteria during this appraisal period, the location is returned to the RIM Inventory. If the location does not meet RIM Criteria during the appraisal period, it is moved forward to the Mitigation Complete stage and then considered a long-term success for the program. Mitigation Complete locations are still monitored to ensure long-term success.

The measurements of program success for CY2023 are as follows:

- There was a 41% reduction in RIM Inventory because of program activity. This includes the locations in the Safety Enhancement and Mitigation Complete stages. The expected trend for the Mitigation Complete group is that the reduction should continue to increase year-over-year by a few percentage points. Together with the constant reduction due to the added Safety Enhancement locations, the combined reduction in RIM Inventory is expected to continue to increase year-over-year.

- For the Percent Change in AIR metric, the 87 locations that have gone through some stage of mitigation through 2023 have a lower Post-Mitigation AIR of 0.15 compared to its Pre-Mitigation AIR of 0.78, resulting in a 78% reduction in incursions for combined Safety Enhancement and Mitigation Complete locations.

2.3 New Methodology for Assessing and Identifying HS Locations

In FY2024, the FRT created a new approach for assessing and identifying HS locations as part of the field validation cycle. Previously, all incursions that occurred within an HS polygon were assessed to determine whether a location met RIM Program criteria. The FRT modified the process to focus on incursion history at individual runway/taxiway hold line locations as opposed to the entire HS polygon limits. This allows mitigation efforts to focus more directly on the runway/taxiway intersection of the greatest concern. This approach is referred to as Hot Spot Reassignment (HSR).

Some RIM locations changed because of these modifications. For example, an HS polygon meeting RIM criteria when all incursions within the HS polygon were associated collectively may no longer meet RIM criteria when assessed on an individual runway/taxiway hold line basis. Alternatively, some HS location points previously designated as single RIM locations resulted in multiple RIM locations based on the runway/taxiway hold line analysis.

This change revised total PTG/HS location and RIM location counts. Eight RIM locations were removed from the inventory as they no longer met the criteria for RIM. As incursions were re-associated with individual taxiway/runway intersections, five locations that were previously covered by other HS location points now met the RIM criteria individually and were designated as new RIM locations. Table 1 summarizes the changes at RIM locations affected by this approach.

Table 1. Runway Incursion Mitigation Changes Due to 2024 HSR

Airport Code	Location Description	Location Status
CAK	Eastbound holding position on Taxiway H for Runway 1/19	Removed as RIM
DCA	Holding position on Taxiway M for Runway 1/19	Removed as RIM
HNL	Approach ends of Runways 4L and 4R	Removed as RIM
HNL	Northbound holding position on Taxiway E for Runway 8L/26R	Removed as RIM
LVK	Northbound holding position on Taxiway C for Runway 7R/25L	Removed as RIM
MIA	Holding position at intersection of Taxiways N, M, P, and Q for Runways 8R/26L and 12/30	Removed as RIM
OAK	Westbound holding position on Taxiway C for approach area of Runway 33	Removed as RIM

Airport Code	Location Description	Location Status
PNS	Intersections of Runway 8/26 and 17/35	Removed as RIM
ATL	Southbound holding position on Taxiway C for Runway 8R/26L	Validated in FY2024 and became a new RIM
CNO	Northbound holding position on Taxiway D for Runway 8L/26R	Validated in FY2024 and became a new RIM
IAG	Holding position on Taxiway D1 for Runway 10L/28R	Validated in FY2024 and became a new RIM
SRQ	Intersection of Runway 4/22 and Runway 14/32	Validated in FY2024 and became a new RIM
SRQ	Southbound holding position on Taxiway A for Runway 4/22	Validated in FY2024 and became a new RIM

ATL = Hartsfield-Jackson Atlanta International Airport
 CAK = Akron-Canton Airport
 CNO = Chino Airport
 DCA = Ronald Reagan Washington International Airport
 HNL = Daniel K. Inouye International Airport
 IAG = Niagara Falls International Airport

LVK = Livermore Municipal Airport
 MIA = Miami International Airport
 OAK = Oakland San Francisco Bay Airport
 PNS = Pensacola International Airport
 SRQ = Sarasota Bradenton International Airport

2.4 The FY2015–FY2024 Program Summary

The RIM database has undergone nine annual updates since the completion of the PTG study. These updates added a total of 12,840 RIs and 472 PTG locations to the database. Ten field validation cycles coincided with these annual database updates. The FRT and FAA field personnel completed these cycles in July 2015, December 2016, and every year in July from 2017 through 2024.

Figure 3 provides a breakdown of RIs added with each update.

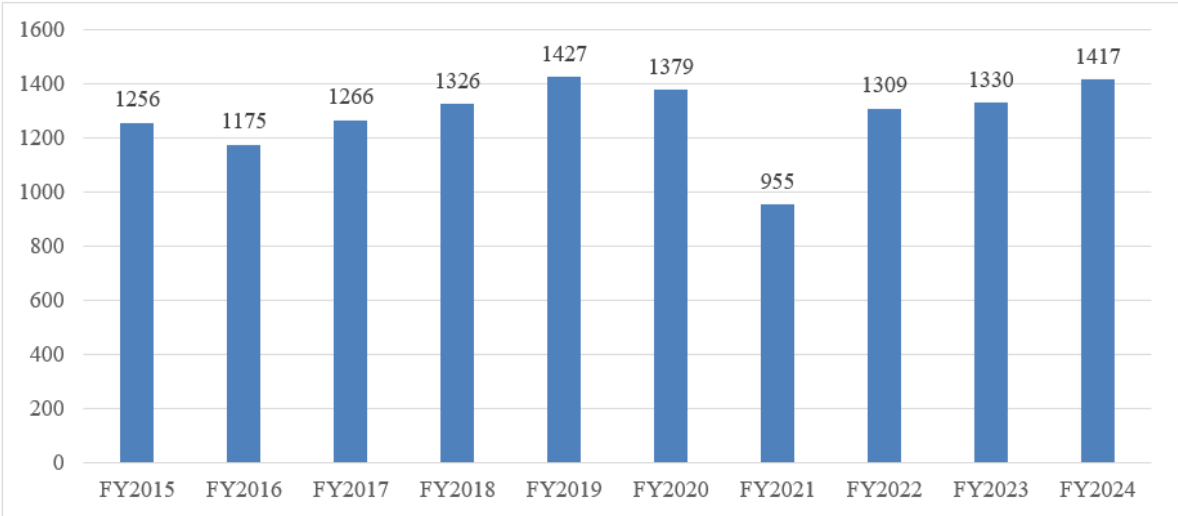


Figure 3. The RIs Added to RIM Database With Each Update

Figure 4 shows the number of PTG locations (not including HS locations) added with each update.

- As shown, the number of PTG locations decreased by 54 in FY2019 due to the mitigation of nonstandard geometry characteristics, through other projects.
- The number of PTG locations increased by 263 in FY2021 due to the establishment of new numerical criteria for identifying Geocode 14 “Short taxi distance from ramp/apron area to a runway.” Analysis of data from Section 7.4 of the report *Data Gap Assessment and Exploratory Data Analysis for Runway Incursion Mitigation Program* (Baldwin & Harris, 2020) established this criterion (800 feet from non-movement area marking to runway hold line). This identified new PTG locations added to the RIM database.
- The number of PTG locations decreased by 7 in the FY2024 update due to many PTGs being mitigated by the closure of runways.
- The number of PTG locations decreased by 115 after the HSR implemented in 2024 because many PTGs were upgraded to HS points. Previously, only one HS location point represented an HS polygon, while the other points within the area remained as PTGs. After the HSR and relabeling, any PTGs within the polygon that matched the HS description were upgraded to HS points. This has resulted in a significant drop in PTG locations.

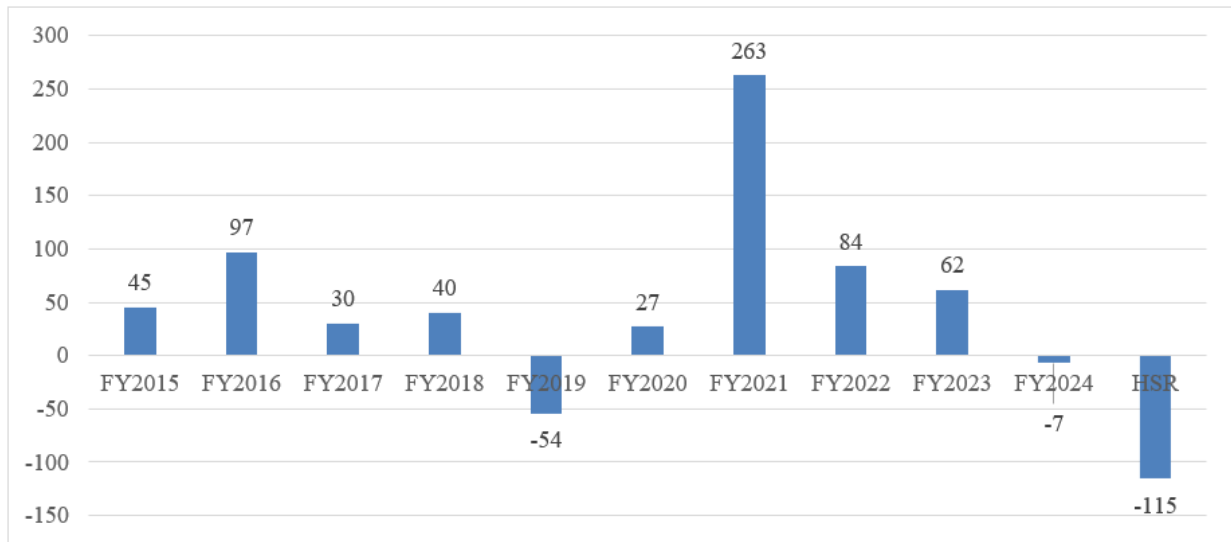


Figure 4. The PTG Locations Added to RIM Database With Each Update

Figure 5 shows the counts of locations that entered the RIM inventory after each validation cycle, and the counts of RIM locations mitigated per fiscal year. This figure represents additions since the initial FY2012 study and does not take into consideration differences in yearly values that result from adjustments made to individual RIM locations (because of reevaluation of runway incursion reports) to account for changes in RIM location status. Section 2.4 provides an

in-depth discussion of the most recent database update and validation cycle, which took place in 2024.

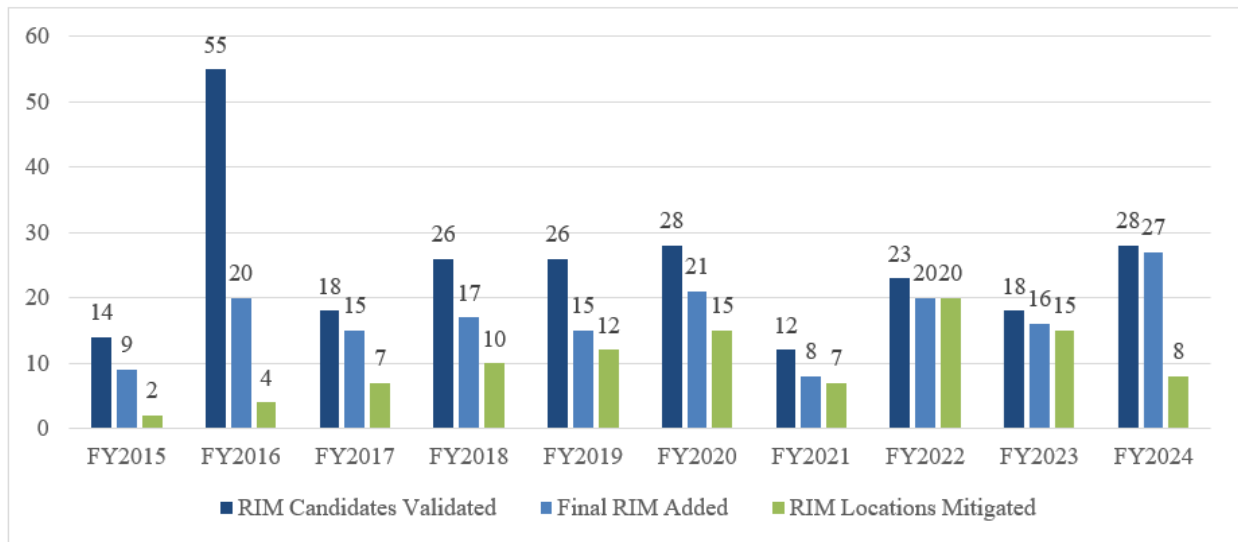


Figure 5. The RIM Locations Validated/Added/Mitigated Per FY

2.5 The FY2024 Program Update

The FY2024 RIM database update was completed in September 2024. This update analyzed and georeferenced 1,417 RIs from CY2023. This increased the overall number of RIs in the database to 17,939. These incursions occurred at 527 towered airports between FY2008 and the end of CY2023.

Analysis of RI counts identified 49 locations meeting the minimum criteria for entry into the RIM inventory. This number is higher than usual largely due to the HSR task mentioned in Section 2.3. In some cases, HS points previously designated as a single RIM location resulted in multiple potential RIM locations that required further assessment. Of these 49 locations, 28 were ultimately included in the field validation/review cycle based on assessment of individual location characteristics and history. Based on information obtained during field validation, 27 locations were added to the RIM inventory in FY2024. Table 2 lists these 27 locations and provides relevant details such as location, peak year RI counts, and cumulative RI counts during the past 10 years. Among these locations, ten were mitigated locations (indicated by an asterisk in Table 2) that returned to the RIM inventory in FY2024 for additional mitigation action.

Table 2. The FY2024 New RIM Locations: Summary Data

Airport Name	Airport Identifier	Location Description	Peak CY/ Annual RI	Cumulative¹ RI Count
Hartsfield-Jackson Atlanta International Airport, GA	ATL*	Southbound holding position on Taxiway D for Runway 8R/26L	2016/3	13
Hartsfield-Jackson Atlanta International Airport, GA	ATL	Southbound holding position on Taxiway C for Runway 8R/26L	2017/3	9
Boeing Field/King County International Airport, WA	BFI	Landing threshold of Runway 14L	2023/4	9
Boeing Field/King County International Airport, WA	BFI	Holding position on Taxiway A9 for Runway 14R/32L	2023/2	13
General Edward Lawrence Logan International Airport, MA	BOS	Westbound holding position on Taxiway N at approach end of Runway 22R	2019/3	11
Chino Airport, CA	CNO	Northbound holding position on Taxiway D for Runway 8L/26R	2016/3	10
Des Moines International Airport, IA	DSM*	Westbound holding position on Taxiway P for Runway 13/31	2016/3	10
Flying Cloud Airport, MN	FCM*	Southbound holding position on Taxiway C at approach end of Runway 28R	2017/6	11
Daniel K Inouye International Airport, HI	HNL*	Holding positions on Taxiway E between Runways 4L/22R and 4R/22L	2023/4	15
Daniel K Inouye International Airport, HI	HNL*	Holding positions on Taxiway D between Runways 4L/22R and 4R/22L	2012/4	13
Daniel K Inouye International Airport, HI	HNL*	Holding positions on Taxiway F between Runways 4L/22R and 4R/22L	2014/4	15
Daniel K Inouye International Airport, HI	HNL	Approach ends of Runway 4R and Runway 4L	2015/4	19
Daniel K Inouye International Airport, HI	HNL	Northbound holding position on Taxiway K for Runway 8L/26R and Runway 4L/22R	2023/3	7
Niagara Falls International Airport, NY	IAG	Holding position on Taxiway D1 for Runway 10L/28R	2022/5	10

Airport Name	Airport Identifier	Location Description	Peak CY/Annual RI	Cumulative¹ RI Count
Los Angeles International Airport, CA	LAX*	Northbound holding position on Taxiway F at approach end of Runway 25L	2023/5	23
Smyrna Airport, TN	MQY	Intersection of Runway 1/19 and Runway 14/32	2024 - 3	11
Monterey Regional Airport, CA	MRY	Approach end of Runway 28R	2023/4	8
Lakefront Airport, LA	NEW*	Holding position on Taxiway F at approach end of Runway 36L	2012/11	18
Chicago O'Hare International Airport, IL	ORD	Holding position on Taxiway U2 for Runway 4L/22R	2023/5	6
Dekalb-Peachtree Airport, GA	PDK	Southbound holding position on Taxiway A for Runway 16/34	2023/3	5
Dekalb-Peachtree Airport, GA	PDK*	Eastbound holding position on Taxiway G at approach end of Runway 21R	2009/4	12
John Wayne/Orange County Airport, CA	SNA*	Holding positions on Taxiway H between Runways 2L/20R and 2R/20L	2016/6	14
Sarasota/Bradenton International Airport, FL	SRQ	Intersection of Runway 4/22 and Runway 14/32	2017/4	10
Sarasota/Bradenton International Airport, FL	SRQ	Southbound holding position on Taxiway A for Runway 4/22	2016/4	13
Tucson International Airport, AZ	TUS	Southbound holding position on Taxiway D for Runway 12/30	2009/4	17
North Las Vegas Airport, NV	VGT	Northbound holding position on Taxiway K at approach end of 30L	2023/4	8
North Las Vegas Airport, NV	VGT	Approach ends of Runway 12R and Runway 12L	2019/3	12

* RIM locations mitigated previously but then returned to RIM inventory in FY2024 for additional mitigation.

¹ Incursion count to date from the previous 10 calendar years of available RI data (CY2014–CY2023).

2.6 The RIM Inventory

At the end of FY2024, the RIM inventory consisted of 138 active RIM locations at 81 airports across all FAA Regions. Several airports have more than one active RIM location. Airports with the most RIM locations are

- Daniel K Inouye International Airport (HNL), Honolulu, Hawaii—6 RIM locations
- Chino Airport (CNO), Chino, California—6 RIM locations
- Montgomery-Gibbs Executive Airport (MYF), San Diego, California—5 RIM locations

The FAA categorizes airports with the greatest impact on system performance (having 1 percent of passenger enplanements or 0.75 percent or more of the total nonmilitary itinerant operations) as core airports. Table 3 lists the Core 30 airports with current RIM locations.

Table 3. Core 30 Airports With RIM Locations

Airport Name	Airport Identifier	Number of RIM Locations
Daniel K. Inouye International Airport, Honolulu, Hawaii	HNL	5
General Edward Lawrence Logan International Airport, Boston, Massachusetts	BOS	4
Hartsfield-Jackson Atlanta International Airport, Atlanta, Georgia	ATL	3
Ronald Reagan Washington National Airport, Washington, DC	DCA	2
Salt Lake City International Airport, Salt Lake City, Utah	SLC	2
Denver International Airport, Denver, Colorado	DEN	1
Newark Liberty International Airport, Newark, New Jersey	EWR	1
Harry Reid International Airport, Las Vegas, Nevada	LAS	1
Los Angeles International Airport, Los Angeles, California	LAX	1
Memphis International Airport, Memphis, Tennessee	MEM	1
Miami International Airport, Miami, Florida	MIA	1
Chicago O'Hare International Airport, Chicago, Illinois	ORD	1
Seattle-Tacoma International Airport, Seattle, Washington	SEA	1

The complete RIM inventory as of the end of FY2024 is in Appendix A.

3. MITIGATION ANALYSIS

Once the FRT adds a PTG location to the RIM inventory, relevant stakeholders (e.g., FAA personnel, local airport sponsor) coordinate to determine the most appropriate mitigation strategies for the location, as is typical for proper airport planning and design. Upon selecting mitigation strategies, the project progresses through the typical phases of planning, environmental assessment, design, and construction. The 138 active RIM locations are in various stages of mitigation. Figure 6 provides a breakdown of RIM locations by mitigation milestone. As shown in Figure 6, 107 (77%) active RIM locations have initiated mitigation activities and are in the planning, design, or construction phases. Note that 13 of the 31 RIM locations with no project identified entered the RIM inventory in the fourth quarter of FY2024.

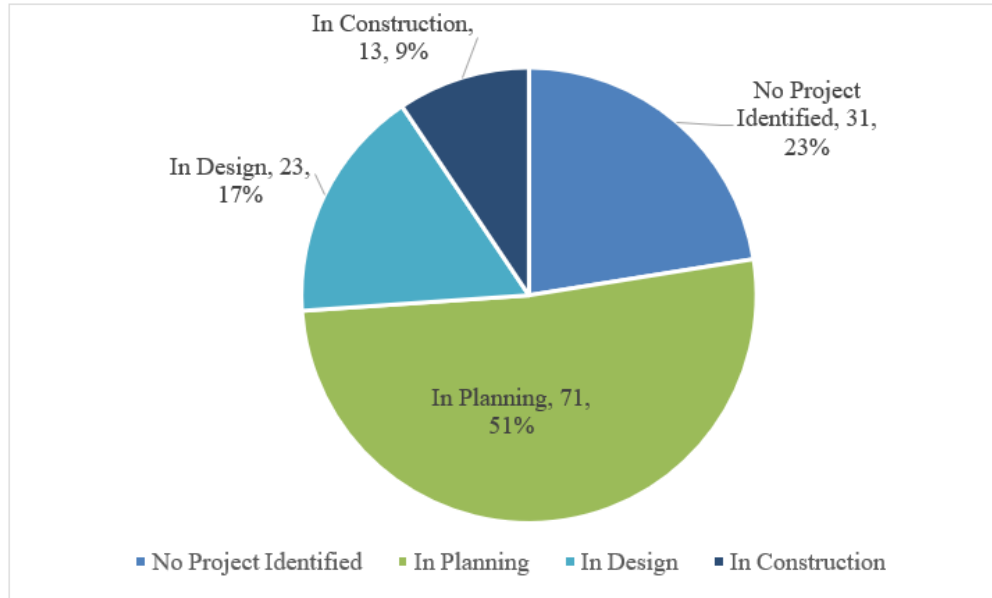


Figure 6. Status of Active RIM Locations

Airports use a variety of mitigation strategies to eliminate nonstandard geometry configurations and reduce the likelihood of pilot confusion and, ultimately, RIs. AC 150/5300-13 (FAA, 2024) and EB 75 (FAA, 2007) provide airports with airport geometry strategies to reduce the risk of RIs. In addition to geometry improvements, airports often use a combination of mitigation strategies for RIM locations. Mitigation strategies include changes to airfield lighting, signage, markings, and/or operational procedures. Table 4 provides examples of mitigation strategies.

Table 4. Mitigation Strategy Examples (FAA, 2022)

Mitigation Type	Mitigation Strategy Examples
Airport Geometry Changes	<ul style="list-style-type: none"> • Reconfigure taxiway to intersect runway at 90-degree angle • Relocate taxiway to eliminate direct access • Narrow the taxiway pavement entrance • Close a taxiway or runway
Lighting	<ul style="list-style-type: none"> • Install elevated or in-pavement runway guard lights • Install stop bars • Install color-coded taxiway centerline lights
Signage	<ul style="list-style-type: none"> • Relocate signs to meet FAA standards • Adjust hold position signs to align with incoming taxiway centerline
Markings	<ul style="list-style-type: none"> • Relocate markings to meet FAA standards • Install enhanced centerline markings • Collocate instrument landing system (ILS) and hold position markings • Install runway holding position markings at runway/runway intersections

Mitigation Type	Mitigation Strategy Examples
Procedures/Operational	<ul style="list-style-type: none"> • Notify pilots of problems with correct runway selection through Automated Traffic Information System (ATIS), Notices to Airmen (NOTAMs), and airport diagram notations • Discontinue use of runways as taxiways

FAA personnel developed procedures to confirm mitigation of RIM locations and successful mitigation techniques.

By the end of FY2024, the RIM program mitigated 100 locations. Airports used a variety of mitigation strategies to eliminate the problematic geometry characteristics or reduce their effects at these locations. Refer to Appendix B for the location descriptions of each mitigated RIM location by FY.

The RIM-mitigated locations experienced a total of 1,251 RIs prior to mitigation, compared to 108 RIs after mitigation. Because some of these locations were mitigated relatively recently, i.e., within the past 5 years, significant post-mitigation RI trending data do not yet exist. Monitoring these locations over time determines if mitigation efforts are successful. Appendix C provides summary data for all RIM-mitigated locations.

4. CONCLUSION

The goal of the RIM program is to identify locations at towered airports with nonstandard geometry characteristics and a high occurrence of RIs, mitigate the nonstandard geometry characteristics present at these locations, and ultimately reduce the number of RIs at these locations. This program continues to be one of the most successful safety programs in the FAA.

At the end of FY2024:

- There were 138 active RIM locations.
- There were 81 airports with at least 1 RIM location.
- 108 locations initiated mitigation activities (planning, design, or construction phases).
- There were 100 mitigated locations since the June 2015 inception.
- As of CY2023, the 87 locations that have contributed to the short-term and long-term reduction in RIM Inventory experience, on average, 78% fewer incursions per year after mitigation activity.
- Mitigations eliminated HS polygons from the airport diagrams at 34 of these locations.

The FAA continues to monitor these locations to ensure the mitigations successfully reduce the number of RIs.

The FRT continues to monitor the progress of the program by visiting as many airports with RIM locations as feasible. Personnel from FAA Headquarters, the regions, and the Airports District Offices are available to provide advisory and financial assistance to airport sponsors with

mitigation strategies, as the goal is to reduce RIs as much as possible and eliminate RIM locations across all airports.

5. REFERENCES

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APPENDIX A—RUNWAY INCURSION MITIGATION INVENTORY

The FAA Runway Incursion Mitigation (RIM) program personnel developed this preliminary inventory of airport locations where runway incursions (RIs) have occurred and are now working with airports on mitigation strategies. The RI data collected from fiscal year (FY) 2008 to calendar year (CY) 2023 indicate airport locations where three or more peak annual RIs have occurred in a given CY or where cumulative incursion counts averaged one or more RIs per year of data analyzed. Cumulative RI counts reflect total RIs to date since FY2008 for each location validated prior to 2020. For locations validated in 2020 and later, cumulative RI counts reflect total RIs beginning 10 CYs prior to their validation year. Table A-1 shows this information, which is subject to change as the FAA works with airport sponsors. Bold and italic rows in Table A-1 indicate new RIM locations that were added to the inventory in FY2024. The RIM program inventory will be updated as projects proceed, and additional RI data are collected.

Table A-1. The RIM Program Inventory of Airport Locations as of September 2024

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
ABQ	Albuquerque International Sunport, NM	Eastbound holding position on Taxiway E for Runway 3/21	ABQ-09-HS	2022	ASW	Medium	NA	Y	12	2021 - 4
APA	Centennial Airport, CO	Approach end of Runway 35R	APA-07	2019	ANM	Reliever	National	N	16	2018 - 4
ARR	Aurora Municipal Airport, IL	Holding position on Taxiway A3 for Runway 9/27	ARR-03	2020	AGL	Reliever	National	N	7	2019 - 3
ARR	Aurora Municipal Airport, IL	Intersection of Runway 15/33 and Runway 9/27	ARR-15	2023	AGL	Reliever	National	N	7	2021 - 3
ARR	Aurora Municipal Airport, IL	Westbound holding position on Taxiway A for Runway 15/33	ARR-17-HS	2023	AGL	Reliever	National	N	7	2022 - 4
ASE	Aspen-Pitkin County/Sardy Field Airport, CO	Holding position on Taxiway A9 at approach end of Runway 33	ASE-07-HS	2019	ANM	Non-Hub Primary	NA	Y	20	2018 - 4
ATL	Hartsfield-Jackson Atlanta International Airport, GA	Southbound holding position on Taxiway D for Runway 8L/26R	ATL-33-HS	2015	ASO	Large	NA	Y	10	2010 - 4
<i>ATL</i>	<i>Hartsfield-Jackson Atlanta International Airport, GA</i>	<i>Southbound holding position on Taxiway D for Runway 8R/26L</i>	<i>ATL-34-HS</i>	<i>2024</i>	<i>ASO</i>	<i>Large</i>	<i>NA</i>	<i>Y</i>	<i>13</i>	<i>2016 - 3</i>

Bold and italic rows are new RIM locations that were added to the inventory in FY2024.

¹ NPIAS = National Plan of Integrated Airport Systems

² Airport Certification, Title 14 Code of Federal Regulations Part 139 (14 C.F.R § 139).

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
<i>ATL</i>	<i>Hartsfield-Jackson Atlanta International Airport, GA</i>	<i>Southbound holding position on Taxiway C for Runway 8R/26L</i>	<i>ATL-49-HS</i>	<i>2024</i>	<i>ASO</i>	<i>Large</i>	<i>NA</i>	<i>Y</i>	9	2017 - 3
AZO	Kalamazoo/Battle Creek International Airport, MI	Eastbound holding position on Taxiway C for Runway 17/35	AZO-02	2015	AGL	Non-Hub Primary	NA	Y	6	2009 - 3
<i>BFI</i>	<i>Boeing Field/King County International Airport, WA</i>	<i>Landing threshold of Runway 14L</i>	<i>BFI-04</i>	<i>2024</i>	<i>ANM</i>	<i>Non-Hub Primary</i>	<i>NA</i>	<i>Y</i>	9	2023 - 4
BFI	Boeing Field/King County International Airport, WA	Holding position on parallel Taxiway Z for Runway 14R approach area	BFI-24-HS	2020	ANM	Non-Hub Primary	NA	Y	8	2019 - 3
<i>BFI</i>	<i>Boeing Field/King County International Airport, WA</i>	<i>Holding position on Taxiway A9 for Runway 14R/32L</i>	<i>BFI-25-HS</i>	<i>2024</i>	<i>ANM</i>	<i>Non-Hub Primary</i>	<i>NA</i>	<i>Y</i>	14	2023 - 2
BJC	Rocky Mountain Metropolitan Airport, CO	Approach end of Runway 30R	BJC-02	2021	ANM	Reliever	National	Y	17	2022 - 4
BJC	Rocky Mountain Metropolitan Airport, CO	Intersection of Runway 3/21 and Runway 12R/30L	BJC-18-HS	2020	ANM	Reliever	National	Y	14	2024 - 5
BOI	Boise Air Terminal/Gowen Field, ID	Holding positions on Taxiway J between Runway 10R and Runway 10L approach	BOI-01	2018	ANM	Medium	NA	Y	28	2021 - 9
BOI	Boise Air Terminal/Gowen Field, ID	Westbound holding position on Taxiway J for Runway 10L/28R approach area	BOI-20-HS	2019	ANM	Medium	NA	Y	17	2023 - 3

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS ¹ Hub Classification	Asset Category	Part 139 ²	Cumulative RI	Peak CY Annual RI
BOS	General Edward Lawrence Logan International Airport, MA	Eastbound holding position on Taxiway D for Runway 15R/33L	BOS-15-HS	2022	ANE	Large	NA	Y	8	2021 - 3
BOS	General Edward Lawrence Logan International Airport, MA	Westbound holding position on Taxiway N at approach end of Runway 22R	BOS-42	2024	ANE	Large	NA	Y	11	2019 - 3
BOS	General Edward Lawrence Logan International Airport, MA	Intersection of Runways 15L/33R and 4L/22R	BOS-44-HS	2015	ANE	Large	NA	Y	17	2018 - 3
BOS	General Edward Lawrence Logan International Airport, MA	Eastbound holding position on Taxiway K for Runway 4L/22R	BOS-46-HS	2015	ANE	Large	NA	Y	13	2022 - 5
BTV	Burlington International Airport, VT	Holding position on Taxiway A at approach end of Runway 19	BTV-06-HS	2023	ANE	Small	NA	Y	9	2022 - 3
BUR	Bob Hope Airport, CA	Holding position for Runways 15/33 at the northwest corner of the terminal ramp	BUR-22-HS	2019	AWP	Medium	NA	Y	11	2018 - 4
CCR	Buchanan Field Airport, CA	Holding position on Taxiways B/J at approach end of Runway 32R	CCR-03-HS	2016	AWP	General Aviation	National	Y	22	2013 - 4
CHD	Chandler Municipal Airport, AZ	Approach end of Runway 22L	CHD-12	2021	AWP	Reliever	Regional	N	11	2020 - 4
CLL	Easterwood Field Airport, TX	Holding position on Taxiway B at approach end of Runway 11	CLL-01-HS	2023	ASW	Non-Hub Primary	NA	Y	4	2022 - 3
CMA	Camarillo Airport, CA	Holding position on Taxiway A at approach end of Runway 26	CMA-01	2015	AWP	Reliever	National	N	17	2014 - 5

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
CNO	Chino Airport, CA	Taxiway P between Runway 8L/26R and 8R/26L	CNO-05	2015	AWP	Reliever	National	N	15	2019 - 4
CNO	Chino Airport, CA	Southbound holding position on Taxiway P at approach end of Runway 26R	CNO-10	2017	AWP	Reliever	National	N	31	2017 - 8
CNO	Chino Airport, CA	Approach end of Runway 26L	CNO-19	2015	AWP	Reliever	National	N	21	2017 - 6
CNO	Chino Airport, CA	Northbound holding position on Taxiways K for Runways 8L/26R	CNO-24-HS	2016	AWP	Reliever	National	N	15	2015 - 4
CNO	Chino Airport, CA	Taxiway L between Runways 3/21 and 8R/26L	CNO-26-HS	2018	AWP	Reliever	National	N	8	2017 - 5
CNO	Chino Airport, CA	Northbound holding position on Taxiway D for Runway 8L/26R	CNO-27-HS	2024	AWP	Reliever	National	N	10	2016 - 3
CRG	Jacksonville Executive At Craig Airport, FL	Holding position on Taxiways C for Runways 5/23 and 14/32	CRG-04-HS	2020	ASO	Reliever	Regional	N	15	2022 - 4
CRQ	Mc Clellan-Palomar Airport, CA	Holding position on Taxiway A1 at approach end of Runway 24	CRQ-03	2022	AWP	General Aviation	National	Y	18	2016 - 5
DAL	Dallas Love Field Airport, TX	Holding position on parallel Taxiway A at approach end of Runway 13L	DAL-45-HS	2019	ASW	Medium	NA	Y	44	2013 - 12
DCA	Ronald Reagan Washington National Airport, DC	Holding position on Taxiway J at approach end of Runway 19	DCA-04-HS	2015	AEA	Large	NA	Y	31	2023 - 6

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
DCA	Ronald Reagan Washington National Airport, DC	Holding position on Taxiway J at approach end of Runway 1	DCA-27	2023	AEA	Large	NA	Y	9	2022 - 3
DEN	Denver International Airport, CO	Eastbound holding position on Taxiway ED for Runway 17R approach area	DEN-15-HS	2017	ANM	Large	NA	Y	36	2023 - 6
DSM	Des Moines International Airport, IA	Westbound holding position on Taxiway P for Runway 13/31	DSM-13-HS	2024	ACE	Small	NA	Y	10	2016 - 3
DVT	Phoenix Deer Valley Airport, AZ	Landing threshold of Runway 7R	DVT-07	2018	AWP	Reliever	National	N	20	2021 - 3
DVT	Phoenix Deer Valley Airport, AZ	Holding position on Taxiway B5 for Runway 7R/25L	DVT-26-HS	2015	AWP	Reliever	National	N	13	2017 - 3
DVT	Phoenix Deer Valley Airport, AZ	Holding position on Taxiway B9 for Runway 7R/25L	DVT-27-HS	2016	AWP	Reliever	National	N	41	2019 - 5
DWH	David Wayne Hooks Memorial Airport, TX	Holding position on Taxiway C for Runway 17R/35L	DWH-09-HS	2015	ASW	Reliever	Regional	N	29	2016 - 5
DWH	David Wayne Hooks Memorial Airport, TX	Westbound holding position on Taxiway E for Runway 17R/35L	DWH-11-HS	2023	ASW	Reliever	Regional	N	23	2015 - 6
DWH	David Wayne Hooks Memorial Airport, TX	Holding position on Taxiway G for Runway 17L/35R	DWH-13-HS	2018	ASW	Reliever	Regional	N	23	2022 - 5
DWH	David Wayne Hooks Memorial Airport, TX	Holding position on Taxiway K for Runway 17L/35R	DWH-18-HS	2021	ASW	Reliever	Regional	N	14	2020 - 6

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
EWR	Newark Liberty International Airport, NJ	Eastbound holding position on Taxiway Z at approach end of Runway 22R	EWR-34-HS	2022	AEA	Large	NA	Y	8	2021 - 3
FAT	Fresno Yosemite International Airport, CA	Landing threshold of Runway 29R	FAT-21	2016	AWP	Small	NA	Y	18	2024 - 3
<i>FCM</i>	<i>Flying Cloud Airport, MN</i>	<i>Southbound holding position on Taxiway C at approach end of Runway 28R</i>	<i>FCM-17-HS</i>	<i>2024</i>	<i>AGL</i>	<i>Reliever</i>	<i>National</i>	<i>N</i>	<i>11</i>	<i>2017 - 6</i>
FCM	Flying Cloud Airport, MN	Southbound holding position on Taxiway G for Runway 10L/28R	FCM-23-HS	2022	AGL	Reliever	National	N	13	2021 - 4
FCM	Flying Cloud Airport, MN	Approach ends of Runway 28L and 28R	FCM-25	2015	AGL	Reliever	National	N	24	2018 - 4
FFZ	Falcon Field Airport, AZ	Southbound holding position on Taxiway B for Runway 4R/22L	FFZ-01	2019	AWP	Reliever	Regional	N	21	2023 - 4
FFZ	Falcon Field Airport, AZ	Approach end of Runway 22L	FFZ-13	2018	AWP	Reliever	Regional	N	20	2013 - 4
FFZ	Falcon Field Airport, AZ	Holding position on Taxiway D5 for Runway 4R/22L	FFZ-19	2023	AWP	Reliever	Regional	N	7	2022 - 3
FRG	Republic Airport, NY	Eastbound holding position on Taxiway A for Runway 1/19	FRG-02-HS	2022	AEA	Reliever	National	Y	11	2022 - 3
FWA	Fort Wayne International Airport, IN	Holding position on Taxiway C2 for Runway 5/23	FWA-19-HS	2023	AGL	Small	NA	Y	5	2022 - 3
GCN	Grand Canyon National Park Airport, AZ	Holding position on Taxiway A at approach end of Runway 21	GCN-01-HS	2020	AWP	General Aviation	National	Y	17	2024 - 5

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
GLS	Scholes International Airport At Galveston, TX	Westbound holding position on Taxiway E for Runway 18/36	GLS-04	2015	ASW	Reliever	Regional	N	13	2016 - 4
HIO	Portland-Hillsboro Airport, OR	Intersection of Runway 2/20 and Runway 13R/31L	HIO-16	2023	ANM	Reliever	National	N	12	2022 - 4
HIO	Portland-Hillsboro Airport, OR	Holding position on Taxiway A/A6 for Runway 13R/31L	HIO-18-HS	2018	ANM	Reliever	National	N	8	2017 - 3
HLN	Helena Regional Airport, MT	Eastbound holding position on Taxiway C for Runway 35	HLN-01	2018	ANM	Non-Hub Primary	NA	Y	10	2016 - 3
HND	Henderson Executive Airport, NV	Eastbound holding position on Taxiway E for Runway 17R/35L	HND-15-HS	2020	AWP	Reliever	National	N	5	2019 - 3
<i>HNL</i>	<i>Daniel K Inouye International Airport, HI</i>	<i>Holding positions on Taxiway E between Runways 4L/22R and 4R/22L</i>	<i>HNL-01-HS</i>	<i>2024</i>	<i>AWP</i>	<i>Medium</i>	<i>NA</i>	<i>Y</i>	<i>15</i>	<i>2023 - 4</i>
<i>HNL</i>	<i>Daniel K Inouye International Airport, HI</i>	<i>Holding positions on Taxiway D between Runways 4L/22R and 4R/22L</i>	<i>HNL-02-HS</i>	<i>2024</i>	<i>AWP</i>	<i>Medium</i>	<i>NA</i>	<i>Y</i>	<i>13</i>	<i>2012 - 4</i>
<i>HNL</i>	<i>Daniel K Inouye International Airport, HI</i>	<i>Holding positions on Taxiway F between Runways 4L/22R and 4R/22L</i>	<i>HNL-05-HS</i>	<i>2024</i>	<i>AWP</i>	<i>Medium</i>	<i>NA</i>	<i>Y</i>	<i>15</i>	<i>2014 - 4</i>
<i>HNL</i>	<i>Daniel K Inouye International Airport, HI</i>	<i>Approach ends of Runway 4R and Runway 4L</i>	<i>HNL-27</i>	<i>2024</i>	<i>AWP</i>	<i>Medium</i>	<i>NA</i>	<i>Y</i>	<i>19</i>	<i>2015 - 4</i>

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
<i>HNL</i>	<i>Daniel K Inouye International Airport, HI</i>	<i>Northbound holding position on Taxiway K for Runway 8L/26R and Runway 4L/22R</i>	<i>HNL-31-HS</i>	<i>2024</i>	<i>AWP</i>	<i>Medium</i>	<i>NA</i>	<i>Y</i>	<i>7</i>	<i>2023 - 3</i>
HWD	Hayward Executive Airport, CA	Holding position on parallel Taxiway A1 at approach end of Runway 28L	HWD-03-HS	2016	AWP	Reliever	National	N	52	2015 - 13
HWD	Hayward Executive Airport, CA	Holding position on parallel Taxiway Z1 at approach end of Runway 28L	HWD-04-HS	2020	AWP	Reliever	National	N	23	2021 - 7
HWD	Hayward Executive Airport, CA	Landing threshold of Runway 28L	HWD-24	2021	AWP	Reliever	National	N	13	2019 - 2
<i>IAG</i>	<i>Niagara Falls International Airport, NY</i>	<i>Holding position on Taxiway D1 for Runway 10L/28R</i>	<i>IAG-04-HS</i>	<i>2024</i>	<i>AEA</i>	<i>Non-Hub Primary</i>	<i>NA</i>	<i>Y</i>	<i>10</i>	<i>2022 - 5</i>
IAG	Niagara Falls International Airport, NY	Holding position on Taxiway D for Runway 28R approach area	IAG-05-HS	2022	AEA	Non-Hub Primary	NA	Y	9	2023 - 3
IWA	Phoenix-Mesa Gateway Airport, AZ	Approach end of Runway 12C	IWA-04	2015	AWP	Small	NA	Y	17	2018 - 4
JLN	Joplin Regional Airport, MO	Holding position on parallel Taxiway E at approach end of Runway 13	JLN-04-HS	2018	ACE	Non-Hub Primary	NA	Y	10	2015 - 3
LAS	Harry Reid International Airport, NV	Intersection of Runway 8L/26R and 1R/19L	LAS-15	2022	AWP	Large	NA	Y	13	2021 - 4
<i>LAX</i>	<i>Los Angeles International Airport, CA</i>	<i>Northbound holding position on Taxiway F at approach end of Runway 25L</i>	<i>LAX-46-HS</i>	<i>2024</i>	<i>AWP</i>	<i>Large</i>	<i>NA</i>	<i>Y</i>	<i>23</i>	<i>2023 - 5</i>

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
LIT	Bill And Hillary Clinton National Airport/Adams Field, AR	Holding position on Taxiway K for Runway 18/36	LIT-12	2022	ASW	Small	NA	Y	4	2021 - 3
LOU	Bowman Field Airport, KY	Holding position on Taxiway A1 for Runway 6/24	LOU-02-HS	2022	ASO	Reliever	Regional	N	8	2021 - 3
LVK	Livermore Municipal Airport, CA	Southbound holding position on Taxiway B for Runway 7L/25R	LVK-07-HS	2015	AWP	Reliever	Regional	N	23	2016 - 4
MEM	Memphis International Airport, TN	Holding position on Taxiway V2 at approach end of Runway 27	MEM-01	2015	ASO	Medium	NA	Y	3	2010 - 3
MFE	McAllen Miller International Airport, TX	Holding position on parallel Taxiway A at approach end of Runway 14	MFE-02-HS	2020	ASW	Small	NA	Y	15	2021 - 4
MIA	Miami International Airport, FL	Taxiway L1 between Runways 8L/26R and 8R/26L	MIA-24-HS	2020	ASO	Large	NA	Y	7	2019 - 3
MKC	Charles B Wheeler Downtown Airport, MO	Northbound holding position on Taxiway G for Runway 4/22	MKC-06-HS	2022	ACE	Reliever	National	Y	14	2021 - 4
MQY	Smyrna Airport, TN	Holding position on Taxiway D at approach end of Runway 19	MQY-06-HS	2022	ASO	Reliever	National	Y	21	2018 - 8
MQY	Smyrna Airport, TN	Intersection of Runway 1/19 and Runway 14/32	MQY-09	2024	ASO	Reliever	National	Y	11	2024 - 4
MRI	Merrill Field Airport, AK	Southbound holding position on Taxiway K at approach end of Runway 25	MRI-24	2020	AAL	Non-Hub Primary	NA	N	16	2021 - 3

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
MRI	Merrill Field Airport, AK	Northbound holding position on Taxiway K at approach end of Runway 25	MRI-25	2015	AAL	Non-Hub Primary	NA	N	17	2014 - 3
MRI	Merrill Field Airport, AK	Southbound holding position on Taxiway G for Runway 5/23	MRI-26	2015	AAL	Non-Hub Primary	NA	N	14	2017 - 5
<i>MRY</i>	<i>Monterey Regional Airport, CA</i>	<i>Approach end of Runway 28R</i>	<i>MRY-23</i>	<i>2024</i>	<i>AWP</i>	<i>Non-Hub Primary</i>	<i>NA</i>	<i>Y</i>	<i>8</i>	<i>2023 - 4</i>
MYF	Montgomery-Gibbs Executive Airport, CA	Holding position on Taxiway A at approach end of Runway 28R	MYF-01	2018	AWP	Reliever	National	N	25	2023 - 4
MYF	Montgomery-Gibbs Executive Airport, CA	Holding position on Taxiway B at approach end of Runway 28L	MYF-06-HS	2015	AWP	Reliever	National	N	26	2018 - 5
MYF	Montgomery-Gibbs Executive Airport, CA	Eastbound holding position on Taxiway H for Runway 5/23	MYF-13	2018	AWP	Reliever	National	N	9	2016 - 4
MYF	Montgomery-Gibbs Executive Airport, CA	Landing threshold of Runway 28R	MYF-15	2017	AWP	Reliever	National	N	17	2014 - 5
MYF	Montgomery-Gibbs Executive Airport, CA	Holding positions on Taxiway F between Runways 10L/28R and 10R/28L	MYF-22	2017	AWP	Reliever	National	N	15	2016 - 9
<i>NEW</i>	<i>Lakefront Airport, LA</i>	<i>Holding position on Taxiway F at approach end of Runway 36L</i>	<i>NEW-14-HS</i>	<i>2024</i>	<i>ASW</i>	<i>Reliever</i>	<i>National</i>	<i>N</i>	<i>18</i>	<i>2012 - 11</i>
OPF	Miami-Opa Locka Executive Airport, FL	Holding position on Taxiway T8 at approach end of Runway 30	OPF-03	2019	ASO	Reliever	Regional	N	6	2018 - 4

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
OPF	Miami-Opa Locka Executive Airport, FL	Holding position on Taxiways T1/T2 at approach end of Runway 12	OPF-20	2020	ASO	Reliever	Regional	N	14	2019 - 3
ORD	Chicago O'Hare International Airport, IL	Holding position on Taxiway U2 for Runway 4L/22R	ORD-32	2024	AGL	Large	NA	Y	6	2023 - 5
PBI	Palm Beach International Airport, FL	Intersection of Runway 14/32 and 10L/28R	PBI-24	2022	ASO	Medium	NA	Y	11	2021 - 3
PBI	Palm Beach International Airport, FL	Holding position on parallel Taxiway L at approach end of Runway 10L	PBI-38-HS	2023	ASO	Medium	NA	Y	10	2013 - 5
PDK	Dekalb-Peachtree Airport, GA	Holding positions on Taxiway G between Runway 3R/21L and 3L/21R	PDK-16-HS	2023	ASO	Reliever	National	N	12	2024 - 8
PDK	Dekalb-Peachtree Airport, GA	Southbound holding position on Taxiway A for Runway 16/34	PDK-18	2024	ASO	Reliever	National	N	5	2023 - 3
PDK	Dekalb-Peachtree Airport, GA	Eastbound holding position on Taxiway G at approach end of Runway 21R	PDK-24-HS	2024	ASO	Reliever	National	N	12	2009 - 4
PIE	St Pete-Clearwater International Airport, FL	Southbound holding position on Taxiway A for Runway 4	PIE-05-HS	2018	ASO	Small	NA	Y	16	2021 - 4
POC	Brackett Field Airport, CA	Southbound holding position on Taxiway E for Runway 8L/26R	POC-02	2015	AWP	Reliever	Regional	N	10	2013 - 2

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
PSP	Palm Springs International Airport, CA	Westbound holding position on Taxiway B at approach end of Runway 31R	PSP-19-HS	2015	AWP	Small	NA	Y	19	2021 - 4
PWM	Portland International Airport Jetport, ME	Holding position on parallel Taxiway C at approach end of Runway 18	PWM-01-HS	2023	ANE	Small	NA	Y	11	2024 - 6
RHV	Reid-Hillview Airport of Santa Clara County, CA	Holding positions on Taxiway E between Runways 13L and 13R	RHV-01	2015	AWP	Reliever	Regional	N	21	2013 - 4
RHV	Reid-Hillview Airport of Santa Clara County, CA	Westbound holding position on Taxiway A at approach end of Runway 31R	RHV-12-HS	2015	AWP	Reliever	Regional	N	20	2016 - 3
RNO	Reno/Tahoe International Airport, NV	Landing threshold of Runway 34L	RNO-18	2022	AWP	Medium	NA	Y	18	2015 - 5
SAT	San Antonio International Airport, TX	Holding position on Taxiway K for Runway 13R/31L	SAT-05	2015	ASW	Medium	NA	Y	14	2011 - 6
SAT	San Antonio International Airport, TX	Intersection of Runway 4/22 and 13R/31L	SAT-28-HS	2015	ASW	Medium	NA	Y	40	2017 - 9
SBA	Santa Barbara Municipal Airport, CA	Holding positions on Taxiway C between Runways 15R and 15L	SBA-17	2022	AWP	Small	NA	Y	6	2021 - 3
SDL	Scottsdale Airport, AZ	Holding position on Taxiway A16 at approach end of Runway 21	SDL-01	2023	AWP	Reliever	National	N	11	2023 - 7
SDM	Brown Field Municipal Airport, CA	Holding positions on Taxiway B between Runways 8L/26R and 8R/26L	SDM-04	2018	AWP	Reliever	Regional	N	4	2017 - 4

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
SEA	Seattle-Tacoma International Airport, WA	Westbound holding position on Taxiway C at approach end of Runway 16L	SEA-02	2015	ANM	Large	NA	Y	6	2013 - 3
SLC	Salt Lake City International Airport, UT	Holding positions on Taxiway Q between Runways 34R/16L and 14/32	SLC-02-HS	2016	ANM	Large	NA	Y	13	2015 - 3
SLC	Salt Lake City International Airport, UT	Holding position on Taxiway K1 for at approach end of Runway 35	SLC-33-HS	2015	ANM	Large	NA	Y	28	2016 - 5
SNA	John Wayne/Orange County Airport, CA	Holding positions on Taxiway L between Runways 20L and 20R	SNA-03	2015	AWP	Medium	NA	Y	7	2008 - 2
SNA	John Wayne/Orange County Airport, CA	Holding positions on Taxiway K between Runways 2R/20L and 2L/20R	SNA-05	2023	AWP	Medium	NA	Y	11	2022 - 4
SNA	John Wayne/Orange County Airport, CA	Westbound holding position on Taxiway L at approach end of Runway 20L	SNA-17-HS	2015	AWP	Medium	NA	Y	18	2022 - 3
<i>SNA</i>	<i>John Wayne/Orange County Airport, CA</i>	<i>Holding positions on Taxiway H between Runways 2L/20R and 2R/20L</i>	<i>SNA-18-HS</i>	<i>2024</i>	<i>AWP</i>	<i>Medium</i>	<i>NA</i>	<i>Y</i>	<i>14</i>	<i>2016 - 6</i>
<i>SRQ</i>	<i>Sarasota/Bradenton International Airport, FL</i>	<i>Intersection of Runway 4/22 and Runway 14/32</i>	<i>SRQ-21-HS</i>	<i>2024</i>	<i>ASO</i>	<i>Small</i>	<i>NA</i>	<i>Y</i>	<i>10</i>	<i>2017 - 4</i>
<i>SRQ</i>	<i>Sarasota/Bradenton International Airport, FL</i>	<i>Southbound holding position on Taxiway A for Runway 4/22</i>	<i>SRQ-26-HS</i>	<i>2024</i>	<i>ASO</i>	<i>Small</i>	<i>NA</i>	<i>Y</i>	<i>13</i>	<i>2016 - 4</i>

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
STS	Charles M Schulz - Sonoma County Airport, CA	Northbound holding position on Taxiway A for Runway 20 approach area	STS-08-HS	2016	AWP	Non-Hub Primary	NA	Y	18	2017 - 7
STS	Charles M Schulz - Sonoma County Airport, CA	Holding position on Taxiway H at approach end of Runway 20	STS-13-HS	2017	AWP	Non-Hub Primary	NA	Y	28	2019 - 7
STS	Charles M Schulz - Sonoma County Airport, CA	Intersection of Runways 14/32 and 2/20	STS-14-HS	2019	AWP	Non-Hub Primary	NA	Y	10	2014 - 3
TIW	Tacoma Narrows Airport, WA	Holding position on Taxiway A4 at approach end of Runway 35	TIW-02	2021	ANM	General Aviation	Regional	N	6	2020 - 5
TOA	Zamperini Field Airport, CA	Southbound Holding position on Taxiway H for Runway 29L approach area	TOA-10-HS	2020	AWP	Reliever	Regional	N	22	2023 - 7
TUS	Tucson International Airport, AZ	Southbound holding position on Taxiway D for Runway 12/30	TUS-42-HS	2024	AWP	Small	NA	Y	17	2009 - 4
UAO	Aurora State Airport, OR	Holding position on Taxiway A1 at approach end of Runway 17	UAO-01-HS	2018	ANM	General Aviation	National	N	11	2016 - 5
UES	Waukesha County Airport, WI	Holding position on Taxiway C3 for Runway 10/28	UES-19	2023	AGL	Reliever	National	N	4	2022 - 3
VGT	North Las Vegas Airport, NV	Northbound holding position on Taxiway K at approach end of 30L	VGT-05	2024	AWP	Reliever	National	N	8	2024 - 4
VGT	North Las Vegas Airport, NV	Northbound holding position on Taxiway G at approach end of Runway 7	VGT-18-HS	2016	AWP	Reliever	National	N	78	2023 - 19

Airport Identifier	Airport Name	Location	Location Identifier	Year Added to RIM	Region	NPIAS¹ Hub Classification	Asset Category	Part 139²	Cumulative RI	Peak CY Annual RI
VGT	North Las Vegas Airport, NV	Northbound holding position on Taxiway G at approach end of 12R	VGT-19-HS	2015	AWP	Reliever	National	N	28	2012 - 6
<i>VGT</i>	<i>North Las Vegas Airport, NV</i>	<i>Approach ends of Runway 12R and Runway 12L</i>	<i>VGT-23</i>	<i>2024</i>	<i>AWP</i>	<i>Reliever</i>	<i>National</i>	<i>N</i>	10	2024 - 3
VNY	Van Nuys Airport, CA	Eastbound holding position on Taxiway C for Runway 16R/34L	VNY-11	2022	AWP	Reliever	National	N	21	2021 - 4

**APPENDIX B—LOCATION DESCRIPTIONS OF RUNWAY INCURSION
MITIGATION-MITIGATED LOCATIONS**

Table B-1 lists the Runway Incursion Mitigation (RIM)-Mitigated locations by fiscal year (FY) and their location descriptions.

Table B-1. The RIM-Mitigated Locations By Year

FY	Airport Identifier	Airport Name	Location Description
2015	CLT	Charlotte/Douglas International Airport, Charlotte, North Carolina	Holding position on Taxiway D for Runway 5/23
	FDK	Frederick Municipal Airport, Frederick, Maryland	Northbound holding position on Taxiway A for Runway 12/30
2016	APA	Centennial Airport, Denver, Colorado	Holding position on Taxiway A1 at approach end of Runway 17L
	CRP	Corpus Christi International Airport, Corpus Christi, Texas	Holding position on Taxiway A at approach ends of Runway 31 and Runway 36
	MDW	Chicago Midway International Airport, Chicago, Illinois	Holding position on Taxiways E1, E2, and E3 at approach end of Runway 31C
	RNO	Reno/Tahoe International Airport, Reno, Nevada	Holding position on Taxiway J for Runway 16L/34R
2017	ACT	Waco Regional Airport, Waco, Texas	Approach end of Runway 32
	DWH	David Wayne Hooks Memorial Airport, Houston, Texas	Westbound holding position of Taxiway E for Runway 17L/35R
	FXE	Fort Lauderdale Executive Airport, Fort Lauderdale, Florida	Holding position on Taxiway C (Current Taxiway A5) at approach end of Runway 26
	FXE	Fort Lauderdale Executive Airport, Fort Lauderdale, Florida	Holding position on Taxiway E (Current Taxiway A1) at approach end of Runway 8
	FXE	Fort Lauderdale Executive Airport, Fort Lauderdale, Florida	Eastbound holding position on Taxiway A for Runway 13/31
	PHL	Philadelphia International Airport, Philadelphia, Pennsylvania	Southbound holding position on Taxiway D for Runway 9L/27R
	PHL	Philadelphia International Airport, Philadelphia, Pennsylvania	Northbound holding position on Taxiway D at approach end of Runway 8
2018	ABQ	Albuquerque International Sunport, Albuquerque, New Mexico	Northbound holding position on Taxiway E1 for Runway 8 and Runway 12
	DAB	Daytona Beach International Airport, Daytona, Florida	Holding position on Taxiway P5 for Runway 7L/25R
	HUF	Terre Haute Regional Airport, Terre Haute, Indiana	Holding position on Taxiway D for Runway 18/36 and 14/32
	ISM	Kissimmee Gateway Airport, Orlando, Florida	Northbound holding position on Taxiway B for Runway 15/33
	MLU	Monroe Regional Airport, Monroe, Louisiana	Holding positions on Taxiway A between Runways 14/32 and 18/36
	PRC	Ernest A. Love Field Airport, Prescott, Arizona	Holding positions on Taxiways E and C2 for Runway 3R/21L
	SEA	Seattle-Tacoma International Airport, Seattle, Washington	Eastbound holding position on Taxiway F for Runway 16L/34R

FY	Airport Identifier	Airport Name	Location Description
	SEA	Seattle-Tacoma International Airport, Seattle, Washington	Westbound holding position on Taxiway Q for Runway 16L/34R
	SMO	Santa Monica Municipal Airport, Santa Monica, California	Holding position on Taxiway B at approach end of Runway 21
	TUL	Tulsa International Airport, Tulsa, Oklahoma	Northbound holding positions on Taxiways K and J for Runway 8/26
2019	DVT	Phoenix Deer Valley Airport, Phoenix, Arizona	Holding position on Taxiway A4 at approach end of Runway 7L
	FTY	Fulton County Airport-Brown Field, Atlanta, Georgia	Northbound holding position on Taxiway K for Runway 8/26
	LGB	Long Beach Airport/Daugherty Field, Long Beach, California	Northbound holding position on Taxiway D at approach end of Runway 25L
	LOU	Bowman Field Airport, Louisville, Kentucky	Holding positions on Taxiway J for Runway 6/24
	MAF	Midland International Air and Space Port Airport, Midland, Texas	Holding position on Taxiway A at the approach end of Runway 10
	MHT	Manchester-Boston Regional Airport, Manchester, New Hampshire	Holding positions on Taxiways P and U at approach end of Runway 35
	MIA	Miami International Airport, Miami, Florida	Holding position on Taxiway M5 for Runway 8R/26L
	MIA	Miami International Airport, Miami, Florida	Eastbound holding position on Taxiway T/T8 for Runway 12/30
	SFB	Orlando Sanford International Airport, Orlando, Florida	Northbound holding position on Runway 18/36 for Runway 9R/27L
	SFB	Orlando Sanford International Airport, Orlando, Florida	Northbound holding position on Taxiway R for Runway 9R approach area
	TMB	Miami Executive Airport, Miami, Florida	Holding position on Taxiway A at approach end of Runway 9L
	VNY	Van Nuys Airport, Van Nuys, California	Northbound holding position on Taxiway B at approach end of Runway 16L
2020	ADS	Addison Airport, Dallas, Texas	Holding position on Taxiway G for Runway 16/34
	ADS	Addison Airport, Dallas, Texas	Holding position on Taxiway C for Runway 16/34
	ATL	Hartsfield-Jackson Atlanta International Airport, Atlanta, Georgia	Northbound holding position on Taxiway D for Runway 9L/27R
	CXO	Conroe-North Houston Regional Airport, Houston, Texas	Eastbound holding position on Taxiway J for Runway 14/32
	DAL	Dallas Love Field Airport, Dallas, Texas	Holding position on Taxiway B5 for Runway 13L/31R
	IWA	Phoenix-Mesa Gateway Airport, Phoenix, Arizona	Northbound holding position on Taxiway K for Runway 12/30
	JNU	Juneau International Airport, Juneau, Alaska	Holding positions on Taxiway D for Runway 8/26
	LGB	Long Beach Airport/Daugherty Field, Long Beach, California	Eastbound holding position on Taxiway J for Runway 12/30
	MIC	Crystal Airport, Minneapolis, Minnesota	Holding positions on Taxiway E4 between Runways 14L and 14R
	ORD	Chicago O'Hare International Airport, Chicago, Illinois	Holding positions on Taxiway T for Runway 9R/27L approach area
	ORL	Orlando Executive Airport, Orlando, Florida	Holding positions on Taxiway E4 at approach end of Runway 7

FY	Airport Identifier	Airport Name	Location Description
	ORD	Chicago O'Hare International Airport, Chicago, Illinois	Westbound holding position on Taxiway G for Runway 4L/22R
	PDK	DeKalb Peachtree Airport, Atlanta, Georgia	Holding positions on Taxiways C and B between Runways 3L/21R, 3R/21L, and 16/34
	SJC	Norman Y. Mineta San Jose International Airport, San Jose, California	Approach end of Runway 30R
	SJC	Norman Y. Mineta San Jose International Airport, San Jose, California	Approach end of Runway 30L
	SPI	Abraham Lincoln Capital Airport, Springfield, Illinois	Intersections of Runways 18/36, 4/22, and 13/31
	TYR	Tyler Pounds Regional Airport, Tyler, Texas	Holding position on parallel Taxiway F at approach end of Runway 22
2023	ADS	Addison Airport, Dallas, Texas	Holding position on Taxiway A at approach end of Runway 16
	APA	Centennial Airport, Denver, Colorado	Holding position on Taxiway C1 at approach end of Runway 10
	APA	Centennial Airport, Denver, Colorado	Eastbound holding position on Taxiway B8 for Runway 17L/35R
	BOS	General Edward Lawrence Logan International Airport, Boston, Massachusetts	Intersection of Runways 4R/22L and 14/32
	DVT	Phoenix Deer Valley Airport, Phoenix, Arizona	Westbound holding position on Taxiway C for Runway 1/19
	FCM	Flying Cloud Airport, Minneapolis, Minnesota	Holding position on Taxiway C3 for Runway 7R/25L
	HIO	Portland-Hillsboro Airport, Portland, Oregon	Approach runway ends of Runway 10L and 10R
	HIO	Portland-Hillsboro Airport, Portland, Oregon	Holding position on Taxiway A9 for Runway 13R/31L
	HNL	Honolulu International Airport, Honolulu, Hawaii	Holding position on Taxiway T for Runway 8L/26R
	LAS	Harry Reid International Airport, Las Vegas, Nevada	Holding position on Taxiway A8 for Runway 13R/31L
	MLI	Quad Cities International Airport, Illinois	Intersection of Runways 8L/26R and 1L/19R
	PBI	Palm Beach International Airport, Florida	Holding position on Taxiway R1 at approach end of Runway 10R
	PRC	Ernest A. Love Field Airport, Prescott, Arizona	Holding position on Taxiway A1 at the approach end of Runway 3L
	PRC	Ernest A. Love Field Airport, Prescott, Arizona	Holding position on Taxiway C4 for Runway 3R/21L
	TMB	Miami Executive Airport, Miami, Florida	Holding positions on Taxiways E and H for Runway 13/31
2024	BET	Bethel Airport, Bethel, Alaska	Intersection of Runway 30 blast pad and Runway 1L/19R
	CMI	University of Illinois/Willard Airport, Champaign-Urbana, Illinois	Southbound holding position on Taxiway B for Runway 14L/32R
	FAI	Fairbanks International Airport, Fairbanks, Alaska	Holding position on Taxiway U for Runway 2/20 (ski strip)
	LAF	Purdue University Airport, Lafayette, Indiana	Intersection of Runways 10/28 and 5/23

FY	Airport Identifier	Airport Name	Location Description
	LAX	Los Angeles International Airport, Los Angeles, California	Holding positions on Taxiway AA between Runways 6R/24L and 6L/24R
	TUS	Tucson International Airport, Tucson, Arizona	Approach end of Runway 29R
	TUS	Tucson International Airport, Tucson, Arizona	Holding positions on Taxiway D between Runway 11L/29R and Runway 11R/29L
	SFO	San Francisco International Airport, San Francisco, California	Southbound holding position on Taxiway T for Runway 10R/28L

APPENDIX C—RUNWAY INCURSION MITIGATION-MITIGATED LOCATIONS

Table C-1 shows the summary of Runway Incursion Mitigation (RIM)-Mitigated locations, runway incursion (RI) pilot deviation (PD) and vehicle/pedestrian deviation (V/PD) totals for years 2007 to 2023, RI totals before and after mitigation, and average RIs per year before and after mitigation. Locations mitigated in fiscal year (FY) 2024 are highlighted in the Date Complete column. In the RI Totals Per Year column, red represents years with no mitigation in place, yellow represents year of mitigation, and green represents years after mitigation was in place.

Table C-1. The RIM-Mitigated Locations Summary

Color Legend

Years Prior to Mitigation	Year Mitigation Was Completed	Years After Mitigation Was Completed
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RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year																Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year				
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation		
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0
AAL	Bethel Airport	BET-16-HS	Signage, Marking, and/or Lighting	10/2/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	2	0	0	8	0	0.50	N/A ¹
AAL	Fairbanks International Airport	FAI-11	Taxiway/Runway Geometry Reconfiguration	9/4/2024	0	1	1	3	0	0	0	0	0	1	0	0	1	0	1	0	1	0	1	9	N/A ²	0.55	N/A ¹
AAL	Fairbanks International Airport	FAI-27-HS	Taxiway/Runway Geometry Reconfiguration	10/29/2021	0	3	2	4	0	1	3	0	0	4	1	5	0	0	0	0	0	0	23	0	1.63	N/A ¹	
AAL	Juneau International Airport	JNU-01	Taxiway/Runway Geometry Reconfiguration	8/5/2020	0	0	1	0	0	3	1	2	2	0	0	1	0	1	1	0	0	11	1	0.86	0.29		
AAL	Merrill Field Airport	MRI-13	Taxiway/Runway Geometry Reconfiguration	10/5/2020	0	2	1	4	0	0	0	4	1	2	0	0	0	1	0	0	0	15	0	1.15	0.00		
AEA	Frederick Municipal Airport	FDK-10-HS	Signage, Marking, and/or Lighting	7/10/2015	0	0	0	0	0	0	0	1	4	0	0	0	0	1	0	0	0	5	1	0.64	0.12		

* A highlighted date indicates that the location was mitigated in FY2024.
¹ Post-mitigation period is not long enough to provide a meaningful average that reflects the result of mitigation efforts.
² Post-mitigation runway incursion data are not yet available for mitigations implemented in CY2024.

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year														Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year				
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3				
AEA	Philadelphia International Airport	PHL-01	Signage, Markings, and/or Lighting; Operational/Procedural	7/27/2017	0	0	2	0	2	1	1	0	0	0	1	0	0	0	0	1	0	6	2	0.61	0.31
AEA	Philadelphia International Airport	PHL-42-HS	Signage, Markings, and/or Lighting; Taxiway/runway geometry reconfiguration	8/24/2017	1	2	1	1	0	1	0	0	0	1	1	0	0	0	0	0	8	0	0.81	0.00	
AEA	Teterboro Airport	TEB-18-HS	Taxiway/Runway Geometry Reconfiguration	11/22/2019	0	0	0	0	1	3	1	1	0	0	1	1	0	0	0	8	0	0.66	0.00		
AEA	Teterboro Airport	TEB-19-HS	Signage, Marking, and/or Lighting	6/1/2021	0	0	0	0	0	1	1	0	1	0	3	1	0	0	0	7	2	0.51	N/A ¹		
AGL	Cleveland Hopkins International Airport	CLE-18-HS	Taxiway/Runway Geometry Reconfiguration	11/19/2021	0	0	4	0	0	0	0	1	0	0	0	0	1	0	0	6	0	0.42	N/A ¹		
AGL	Cleveland Hopkins International Airport	CLE-19-HS	Taxiway/Runway Geometry Reconfiguration	11/2/2020	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0.38	0.00		
AGL	University of Illinois/Willard Airport	CMI-08-HS	Taxiway/Runway Geometry Reconfiguration	9/1/2024	0	0	1	0	0	1	1	0	1	2	3	1	1	0	2	1	15	N/A ²	0.92	N/A ¹	
AGL	Flying Cloud Airport	FCM-13	Taxiway/Runway Geometry Reconfiguration	5/19/2023	0	0	0	2	0	0	1	1	2	0	2	1	1	3	3	1	17	0	1.09	N/A ¹	

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year														Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year					
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3					
AGL	Terre Haute International Hulman Field	HUF-15-HS	Taxiway/Runway Geometry Reconfiguration	12/10/2017	0	0	0	0	0	0	2	0	1	8	0	0	0	1	0	0	0	11	1	1.08	0.17	
AGL	Purdue University Airport	LAF-02	Taxiway/Runway Geometry Reconfiguration	6/15/2024	0	0	0	0	0	1	1	2	1	1	2	2	2	0	1	3	2	18	0	1.11	N/A ¹	
AGL	Chicago Midway International Airport	MDW-03	Signage, Marking, and/or Lighting	5/9/2016	0	0	1	0	0	3	0	1	0	0	0	0	1	0	1	1	1	5	4	0.58	0.52	
AGL	Crystal Airport	MIC-16-HS	Taxiway/Runway Geometry Reconfiguration	8/25/2020	0	1	1	4	4	1	2	0	0	1	2	2	1	1	0	0	0	20	0	1.55	0.00	
AGL	Quad Cities International Airport	MLI-20	Taxiway/Runway Geometry Reconfiguration	11/3/2022	0	0	2	0	0	0	8	2	0	0	1	0	0	0	0	0	1	1	13	2	0.86	N/A ¹
AGL	Chicago O'Hare International Airport	ORD-73	Taxiway/Runway Geometry Reconfiguration	6/1/2020	0	0	0	0	0	0	1	0	6	0	1	1	1	0	0	0	0	10	0	0.79	0.00	
AGL	Chicago O'Hare International Airport	ORD-31-HS	Taxiway/Runway Geometry Reconfiguration	11/1/2021	0	1	0	0	0	0	2	0	0	1	0	1	6	2	0	0	0	13	0	0.92	N/A ¹	
AGL	Abraham Lincoln Capital Airport	SPI-23-HS	Taxiway/Runway Geometry Reconfiguration	9/8/2022	0	2	3	0	0	2	0	0	0	0	0	0	0	0	0	1	0	8	0	0.54	N/A ¹	

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year															Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year			
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3				
ANE	General Edward Lawrence Logan International Airport	BOS-47	Operational/Procedural	8/29/2023	0	2	0	1	0	2	1	0	0	0	0	0	0	0	0	1	6	1	0.38	N/A ¹	
ANE	Burlington International Airport	BTV-12	Signage, Marking, and/or Lighting	10/29/2021	0	1	0	0	1	1	1	0	0	1	3	1	0	0	0	0	9	0	0.64	N/A ¹	
ANE	Manchester Boston Regional Airport	MHT-09-HS	Taxiway/Runway Geometry Reconfiguration	8/12/2022	2	10	2	0	1	0	0	0	0	0	0	0	0	0	0	0	15	0	1.01	N/A ¹	
ANE	Manchester Boston Regional Airport	MHT-10-HS	Taxiway/Runway Geometry Reconfiguration	9/24/2019	2	1	1	0	1	1	0	0	0	0	0	0	0	2	0	0	0	6	2	0.50	0.47
ANM	Centennial Airport	APA-20-HS	Taxiway/Runway Geometry Reconfiguration; Other	3/9/2016	0	3	2	2	3	1	2	1	5	0	1	1	2	1	2	1	1	19	9	2.25	1.15
ANM	Centennial Airport	APA-22-HS	Taxiway/runway geometry reconfiguration; Signage, Markings, and/or Lighting	8/30/2023	0	1	3	1	3	2	1	2	1	2	2	4	4	4	2	4	2	37	1	2.32	N/A ¹
ANM	Centennial Airport	APA-19-HS	Signage, Marking, and/or Lighting	8/30/2023	0	1	0	2	2	0	0	2	4	8	2	2	8	2	1	2	0	36	0	2.26	N/A ¹

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year														Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year					
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation		
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3					
ANM	Boise Air Terminal	BOI-08	Taxiway/Runway Geometry Reconfiguration	12/4/2021	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	4	0	0.28	N/A ¹
ANM	Portland-Hillsboro Airport	HIO-05	Signage, Marking, and/or Lighting	10/31/2022	0	1	0	0	2	1	0	0	0	3	3	0	1	1	3	0	1	0	15	1	0.99	N/A ¹
ANM	Portland-Hillsboro Airport	HIO-01-HS	Signage, Marking, and/or Lighting	10/10/2022	0	0	0	1	1	0	2	4	0	2	2	1	1	3	3	4	1	0	23	2	1.53	N/A ¹
ANM	Idaho Falls Regional Airport	IDA-09-HS	Taxiway/Runway Geometry Reconfiguration	6/21/2021	1	0	1	0	0	4	1	0	0	1	0	1	2	0	2	2	0	0	13	2	0.95	N/A ¹
ANM	Seattle-Tacoma International Airport	SEA-26	Operational/Procedural	8/10/2018	0	1	0	1	0	0	0	4	0	0	0	0	0	1	0	0	0	0	6	1	0.55	0.19
ANM	Seattle-Tacoma International Airport	SEA-25-HS	Signage, Marking, and/or Lighting	4/29/2018	0	1	2	2	0	1	1	1	0	0	0	1	0	0	0	0	0	0	8	1	0.76	0.18
ASO	Hartsfield Jackson Atlanta International Airport	ATL-18	Operational/Procedural	5/29/2020	0	1	0	1	0	3	0	0	0	0	0	0	2	0	0	2	0	0	7	2	0.55	0.56
ASO	Charlotte Douglas International Airport	CLT-06	Signage, Markings, and/or Lighting; Operational/Procedural	6/18/2015	0	0	0	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	5	0	0.65	0.00

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year																		Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year		
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3						
ASO	Columbus Airport	CSG-08-HS	Signage, Marking, and/or Lighting	8/30/2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0.20	N/A ¹
ASO	Daytona Beach International Airport	DAB-02	Taxiway/Runway Geometry Reconfiguration	8/4/2018	0	0	1	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	5	0	0.46	0.00	
ASO	Fulton County Airport Brown Field	FTY-04	Taxiway/Runway Geometry Reconfiguration	9/1/2019	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0.34	0.00	
ASO	Fort Lauderdale Executive Airport	FXE-08	Signage, Marking, and/or Lighting	2/16/2017	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	2	0.43	0.29
ASO	Fort Lauderdale Executive Airport	FXE-19-HS	Signage, Marking, and/or Lighting	2/16/2017	0	0	1	0	0	1	1	2	1	0	0	0	1	4	0	2	1	0	6	8	0.64	1.16	
ASO	Fort Lauderdale Executive Airport	FXE-21-HS	Signage, Marking, and/or Lighting	2/16/2017	0	0	0	0	2	0	5	1	0	2	0	0	0	0	0	0	0	0	10	0	1.07	0.00	
ASO	Kissimmee Gateway Airport	ISM-02	Signage, Marking, and/or Lighting	7/31/2018	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0.28	0.18	
ASO	Bowman Field	LOU-01	Signage, Marking, and/or Lighting	5/1/2019	0	0	1	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0.43	0.00	

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year																Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year		
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3				
ASO	Miami International Airport	MIA-02-HS	Taxiway/Runway Geometry Reconfiguration; Signage, Marking, and/or Lighting	11/16/2018	0	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	5	0	0.45	0.00	
ASO	Miami International Airport	MIA-45-HS	Taxiway/Runway Geometry Reconfiguration	8/16/2019	0	0	0	4	2	0	0	2	0	0	0	1	0	0	1	0	2	9	3	0.76	0.69
ASO	Orlando Executive Airport	ORL-01	Taxiway/Runway Geometry Reconfiguration	5/6/2020	0	3	0	0	3	0	1	1	0	1	2	3	2	0	0	3	1	16	4	1.27	1.09
ASO	Palm Beach International Airport	PBI-02	Taxiway/Runway Geometry Reconfiguration; Signage, Marking, and/or Lighting	7/26/2023	0	0	3	0	0	0	0	0	0	0	0	0	3	2	0	1	1	10	0	0.63	N/A ¹
ASO	DeKalb Peachtree Airport	PDK-26-HS	Signage, Marking, and/or Lighting	12/31/2019	0	0	3	1	1	0	1	0	0	1	1	0	0	1	0	2	5	8	8	0.65	2.00
ASO	DeKalb Peachtree Airport	PDK-11	Taxiway/Runway Geometry Reconfiguration	10/1/2021	0	1	0	0	1	0	1	2	3	4	0	0	1	0	0	0	0	13	0	0.93	N/A ¹
ASO	Orlando Sanford International Airport	SFB-05	Taxiway/Runway Geometry Reconfiguration	10/15/2018	0	0	1	0	1	1	1	0	1	0	1	0	0	0	0	0	0	6	0	0.54	0.00
ASO	Orlando Sanford International Airport	SFB-28-HS	Taxiway/Runway Geometry Reconfiguration	10/15/2018	0	3	1	0	1	3	0	2	5	2	0	0	0	0	0	0	0	17	0	1.54	0.00

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year														Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year				
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3				
ASO	Miami Executive Airport	TMB-04	Taxiway/Runway Geometry Reconfiguration; Signage, Marking, and/or Lighting Change(s)	3/29/2019	0	0	0	1	0	3	2	2	4	3	2	4	0	0	0	0	1	21	1	1.83	0.21
ASO	Miami Executive Airport	TMB-14	Taxiway/Runway Geometry Reconfiguration	12/28/2022	1	0	1	2	0	1	2	3	1	1	1	0	1	1	0	0	0	15	0	0.98	N/A ¹
ASW	Albuquerque International Sunport Airport	ABQ-34-HS	Taxiway/Runway Geometry Reconfiguration	5/11/2018	0	0	0	2	1	2	2	2	1	0	0	2	1	0	1	2	2	11	7	1.04	1.24
ASW	Albuquerque International Sunport Airport	ABQ-36-HS	Taxiway/Runway Geometry Reconfiguration	9/16/2022	0	1	0	0	0	0	0	1	0	0	0	2	0	3	2	0	1	9	1	0.60	N/A ¹
ASW	Waco Regional Airport	ACT-04	Taxiway/Runway Geometry Reconfiguration; Operational/Procedural	10/10/2016	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0.11	0.00
ASW	Addison Airport	ADS-05-HS	Signage, Marking, and/or Lighting	10/15/2022	0	3	5	4	5	2	3	0	2	2	2	5	1	1	2	1	2	37	3	2.46	N/A ¹
ASW	Addison Airport	ADS-08-HS	Operational/Procedural	11/11/2019	0	0	0	0	1	0	9	0	0	0	0	0	0	0	0	0	0	10	0	0.83	0.00
ASW	Addison Airport	ADS-12-HS	Operational/Procedural	11/11/2019	1	1	0	1	2	1	0	0	1	0	0	0	0	0	0	0	0	7	0	0.58	0.00

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year														Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year						
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation			
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3						
ASW	Corpus Christi International Airport	CRP-08-HS	Taxiway/Runway Geometry Reconfiguration	5/26/2016	0	1	6	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	15	0	1.73	0.00	
ASW	Conroe-North Houston Regional Airport	CXO-02	Signage, Marking, and/or Lighting	9/14/2020	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0.39	0.00	
ASW	Dallas Love Field	DAL-14-HS	Signage, Marking, and/or Lighting	7/1/2022	0	1	6	3	1	0	3	5	3	5	3	0	3	0	2	0	0	0	35	0	2.37	N/A ¹	
ASW	Dallas Love Field	DAL-15	Signage, Marking, and/or Lighting	7/1/2022	0	0	0	0	0	1	0	0	0	0	2	7	2	0	0	0	0	0	12	0	0.81	N/A ¹	
ASW	Dallas Love Field	DAL-33	Taxiway/Runway Geometry Reconfiguration	10/31/2019	0	0	1	0	3	0	3	2	0	0	0	1	0	0	0	0	0	0	10	0	0.83	0.00	
ASW	David Wayne Hooks Memorial Airport	DWH-10-HS	Signage, Markings, and/or Lighting, Operational/Procedural, and Taxiway/Runway Geometry Reconfiguration	12/31/2016	1	0	1	0	1	1	5	5	5	7	0	0	0	0	0	0	0	0	26	0	2.81	0.00	
ASW	William P Hobby Airport	HOU-01	Taxiway/Runway Geometry Reconfiguration	7/1/2022	0	0	1	3	0	0	1	0	0	2	1	3	0	2	1	1	0	0	15	0	1.02	N/A ¹	
ASW	William P Hobby Airport	HOU-15	Taxiway/Runway Geometry Reconfiguration	7/1/2022	1	0	0	0	0	1	1	0	0	1	3	1	0	0	1	0	2	0	0	9	2	0.61	N/A ¹

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year														Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year				
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3				
ASW	William P Hobby Airport	HOU-27-HS	Taxiway/Runway Geometry Reconfiguration	7/1/2022	0	0	4	2	3	0	1	0	0	3	1	2	2	1	2	1	2	22	2	1.49	N/A ¹
ASW	Midland International Air and Space Port	MAF-18-HS	Taxiway/Runway Geometry Reconfiguration	1/1/2019	0	1	0	0	6	1	1	0	1	2	1	0	0	1	0	0	0	13	1	1.15	0.20
ASW	Monroe Regional Airport	MLU-07-HS	Taxiway/Runway Geometry Reconfiguration	5/4/2018	1	0	0	4	0	0	0	0	0	1	0	0	1	0	0	0	0	6	1	0.57	0.18
ASW	Tulsa International Airport	TUL-32-HS	Taxiway/Runway Geometry Reconfiguration	8/1/2018	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3	0	0.28	0.00
ASW	Tyler Pounds Regional Airport	TYR-20-HS	Signage, Marking, and/or Lighting	8/4/2022	0	0	0	0	0	0	0	0	0	0	0	0	5	1	2	7	0	14	1	0.94	N/A ¹
AWP	Napa County Airport	APC-09	Other	11/23/2021	0	0	0	0	0	0	0	0	1	0	1	4	0	1	0	0	1	7	1	0.49	N/A ¹
AWP	Phoenix Deer Valley Airport	DVT-12	Taxiway/Runway Geometry Reconfiguration	5/7/2019	0	0	0	1	2	3	0	1	2	3	0	1	0	2	1	1	0	13	4	1.12	0.86
AWP	Phoenix Deer Valley Airport	DVT-24	Operational/Procedural	6/21/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	2	9	2	2	13	2	0.83	N/A ¹
AWP	Honolulu International Airport	HNL-33-HS	Taxiway/Runway Geometry Reconfiguration	8/23/2023	0	0	0	1	0	0	0	0	1	3	2	1	1	0	0	0	0	9	0	0.57	N/A ¹

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year														Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year				
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation	
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3				
AWP	Honolulu International Airport	HNL-36	Signage, Marking, and/or Lighting	7/2/2021	0	0	0	0	0	1	1	0	1	3	0	4	1	0	2	1	1	13	2	0.94	N/A ¹
AWP	Phoenix-Mesa Gateway Airport	IWA-16	Taxiway/Runway Geometry Reconfiguration	7/16/2020	1	1	3	0	1	1	2	1	0	1	1	3	0	0	0	1	0	15	1	1.17	0.29
AWP	Harry Reid International Airport	LAS-52-HS	Taxiway/Runway Geometry Reconfiguration	9/1/2023	0	0	0	0	0	1	0	0	0	1	2	1	2	1	2	3	0	13	0	0.82	N/A ¹
AWP	Los Angeles International Airport	LAX-43-HS	Signage, Marking, and/or Lighting	7/12/2024	0	0	0	1	4	0	2	1	4	3	3	5	6	0	1	0	1	31	N/A ²	1.91	N/A ¹
AWP	Long Beach /Daugherty Field Airport	LGB-38-HS	Taxiway/Runway Geometry Reconfiguration	12/29/2020	0	1	0	0	0	1	0	0	0	0	2	3	0	0	0	0	0	7	0	0.53	0.00
AWP	Long Beach /Daugherty Field Airport	LGB-40-HS	Taxiway/Runway Geometry Reconfiguration	9/15/2020	0	2	3	2	0	0	1	1	1	1	1	0	0	1	0	0	0	13	0	1.00	0.00
AWP	Long Beach /Daugherty Field Airport	LGB-35	Taxiway/Runway Geometry Reconfiguration	10/11/2018	0	0	1	1	0	1	4	0	0	0	1	0	0	0	0	0	2	8	2	0.72	0.38
AWP	Montgomery-Gibbs Executive Airport	MYF-23-HS	Operational/Procedural	1/7/2022	0	0	0	0	0	0	0	0	0	0	2	0	1	5	3	2	1	11	3	0.77	N/A ¹
AWP	Palo Alto Airport	PAO-01	Signage, Marking, and/or Lighting	12/31/2019	0	5	0	3	1	2	1	5	4	7	7	4	5	1	2	1	4	44	8	3.59	2.00
AWP	Phoenix Sky Harbor International Airport	PHX-02	Technological Enhancements	8/26/2021	0	2	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	6	0	0.43	N/A ¹

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year														Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year				
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
					7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3				
AWP	Ernest A. Love Field	PRC-26-HS	Taxiway/Runway Geometry Reconfiguration	8/31/2018	0	0	2	0	0	3	2	1	2	1	0	0	0	0	0	0	11	0	1.01	0.00	
AWP	Ernest A. Love Field	PRC-27-HS	Taxiway/Runway Geometry Reconfiguration	3/17/2023	0	1	4	0	1	1	2	3	1	4	1	0	2	3	1	0	24	0	1.55	N/A ¹	
AWP	Ernest A. Love Field	PRC-28-HS	Taxiway/Runway Geometry Reconfiguration	8/17/2023	0	1	4	1	0	1	0	1	0	0	1	3	0	1	0	17	0	1.07	N/A ¹		
AWP	Reno/Tahoe International Airport	RNO-11	Taxiway/Runway Geometry Reconfiguration; Signage, Markings, and/or Lighting	5/31/2016	0	0	0	0	0	0	0	0	5	0	0	0	0	0	1	5	1	0.58	0.13		
AWP	Reno/Tahoe International Airport	RNO-26-HS	Taxiway/Runway Geometry Reconfiguration	7/11/2020	0	0	0	1	0	0	0	2	4	5	3	0	2	0	0	17	0	1.33	0.00		
AWP	San Francisco International Airport	SFO-45-HS	Taxiway/Runway Geometry Reconfiguration	6/21/2024	0	1	1	2	4	1	1	1	2	0	1	1	1	1	0	23	N/A ²	1.41	N/A ¹		
AWP	Norman Y. Mineta San Jose International Airport	SJC-28	Signage, Marking, and/or Lighting	9/8/2022	0	0	2	0	0	0	1	0	1	1	0	0	0	0	0	5	1	0.33	N/A ¹		
AWP	Norman Y. Mineta San Jose International Airport	SJC-29	Signage, Marking, and/or Lighting	6/6/2022	1	2	0	0	0	0	0	0	0	1	0	0	0	0	0	4	0	0.27	N/A ¹		

RIM-Mitigated Locations					Runway Incursion (PD & V/PD) Totals Per Year													Runway Incursion (PD & V/PD) Totals		Average Runway Incursions (PD & V/PD) Per Year												
Region	Airport Name	Identifier	Mitigation Type	Date Complete*	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Before Mitigation	After Mitigation	Before Mitigation	After Mitigation
AWP	Santa Monica Municipal Airport	SMO-02	Taxiway/Runway Geometry Reconfiguration	12/22/2017	0	0	0	0	0	3	3	5	3	5	1	1	0	0	0	0	0	0	0	0	0	0	0	20	1	1.95	0.17	
AWP	Tucson International Airport	TUS-03-HS	Taxiway/Runway Geometry Reconfiguration	11/30/2023	0	1	0	0	2	4	0	0	0	3	2	4	0	3	0	0	0	1	0	0	0	0	20	N/A ²	1.24	N/A ¹		
AWP	Tucson International Airport	TUS-35-HS	Taxiway/Runway Geometry Reconfiguration	11/30/2023	0	1	3	0	0	0	1	3	1	1	5	1	2	0	1	1	1	0	0	0	0	0	21	N/A ²	1.30	N/A ¹		
AWP	Van Nuys Airport	VNY-02	Signage, Marking, and/or Lighting	3/31/2019	0	1	0	0	0	1	2	4	1	0	2	0	0	0	1	1	0	0	0	0	0	0	11	2	0.96	0.42		
																									Total 1251	Total 108	Avg. 0.96	Avg. 0.29				