Chapter 6 - Existing System Performance

6.1. Introduction

A critical step in the system planning process is to identify how system facilities are performing based on the goals, performance measures (PMs), performance indicators (PIs), and minimum service level recommendations (MSLRs) established for the 2022 Indiana State Aviation System Plan (ISASP). As discussed in detail in **Chapter 1 - Study Design and Goals**, the 2022 ISASP goals, associated PMs and PIs, and MSLRs were developed by reviewing the 2012 ISASP goals and objectives, coordinating with Indiana Department of Transportation (INDOT) Office of Aviation, and receiving input from the Industry Advisory Committee (IAC). The goals that drive the 2022 ISASP are:

Figure 6.1. 2022 ISASP Goals

Source: Kimley-Horn, 2022.

PMs and PIs were established specific to each of the five 2022 ISASP goals so the results of the system performance analyses can be used to generate future performance targets and policy recommendations that correspond directly to those goals. As a note, PMs are related to components of the system that can be directly impacted by policy or project recommendations, while PIs are informational only and provide additional context regarding activity occurring within Indiana's aviation system.

MSLRs serve a slightly different purpose than PMs and PIs as they are not directly associated with system goals and are intended to evaluate how ISASP facilities are performing within their facility category. See **Chapter 2 – ISASP Facility Categories, Section 2.6,** for more information regarding the purpose and function of MSLRs. PMs, PIs, and MSLRs were largely analyzed using airport or heliport data collected from the 2022 ISASP Airport Manager Survey. When needed, other federal and state sources were relied upon to complete the system performance analyses. It should be noted that this analysis did not consider airports with modifications to standards and was evaluated in a standard environment only. In this chapter, all graphs and figures which display PM and PI performance have the number of facilities in each category displayed in parenthesis next to the category title. Results of the system performance analyses are organized by goal for the PMs and PIs and presented at the ISASP facility category level, while MSLRs results are summarized at the statewide level in the following subsections:

- 6.2 Goal 1. Safety and Security
- 6.3 Goal 2. Economic Sustainability and Quality of Life
- 6.4 Goal 3. Infrastructure Preservation and Development
- 6.5 Goal 4. Environmental Responsibility and Land Planning
- 6.6 Goal 5. Aviation Industry Advancement
- 6.7 Minimum Service Level Recommendations
- 6.8 Summary

For brevity, this chapter is focused on the performance of the system in meeting the PMs and PIs presented earlier in the 2022 ISASP. For details and additional context on each of the PMs and PIs and their importance, see **Chapter 3 – Inventory of Existing Conditions**.

6.2. Goal 1. Safety and Security

Safety and security are key focal points in the aviation industry. The protection of not only the passengers, but also the pilots, ground crew, and all other involved parties is essential to the continued safe operation of aviation facilities and aircraft. Airport and heliport safety and security can be improved through compliant airfield design and emergency preparedness. This goal evaluated safety and security by better understanding Federal Aviation Administration (FAA) design standard compliance at system facilities and by determining ISASP facility preparedness in the event of a fire or related emergency. The following two subsections document current performance of the system in meeting the PM and PI related to Goal 1. Safety and Security.

6.2.1. PM: Percent of Airports Meeting Federal Aviation Administration (FAA) Design Standards

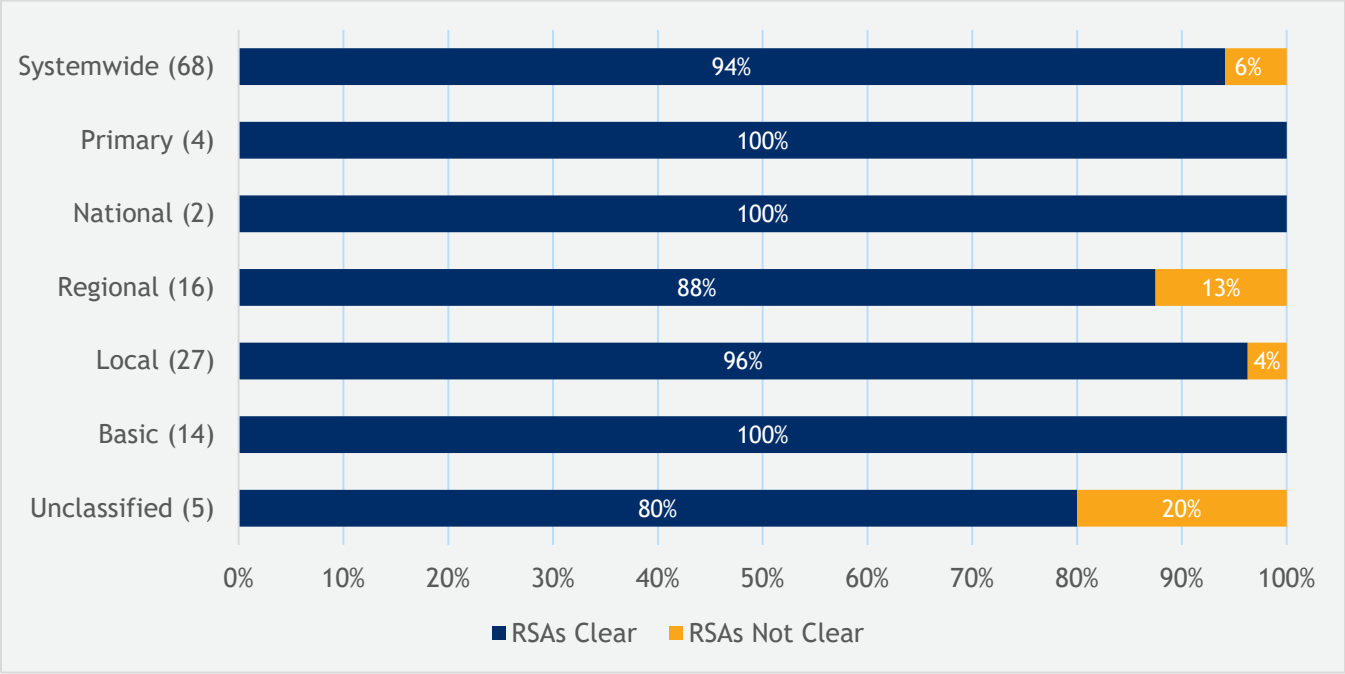
One of the most critical contributing factors to airport safety is the overall design of the airside facilities. The FAA establishes certain airport design standards that airports should follow to promote safe operation of aircraft. These design standards include clear Runway Safety Areas (RSAs), taxiway geometry standards, and separation standards.

Each of these design standards were analyzed for each system facility and the systemwide performance was determined.

6.2.1.1. Runway Safety Areas (RSAs)

RSAs for all runways were evaluated as a part of this PM. Systemwide, 94 percent of airports have clear RSAs, as shown in **Figure 6.2**. All Primary and National airports within the system have clear RSAs, with all other categories having at least 80 percent of airports meeting the clear RSAs requirements. It should be noted that Indianapolis Downtown Heliport (8A4) was excluded because it is a heliport and not applicable to this analysis.

Figure 6.2. Percent of Airports with Clear RSAs



Note: Indianapolis Downtown Heliport (8A4) is excluded from the analysis. Sources: FAA AC 150/5300-13B, 2014; Google Earth, 2021; 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.2.1.2. Taxiway Geometries

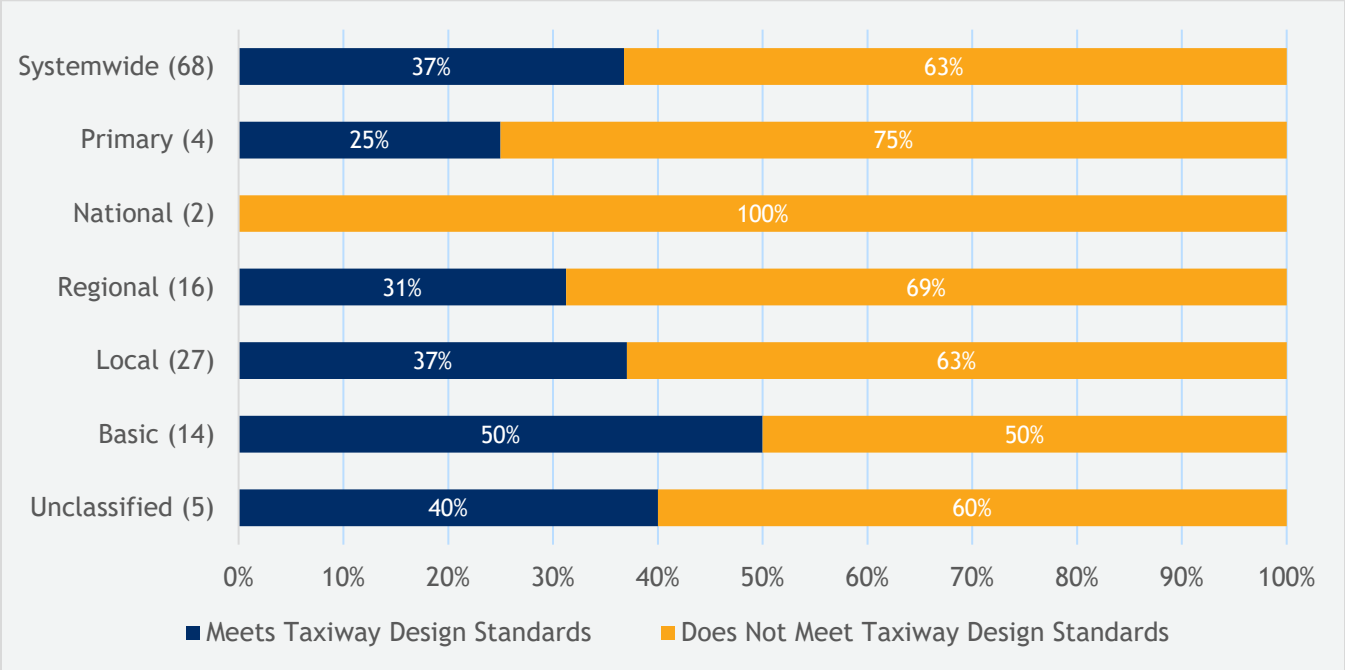
The FAA provides guidance on taxiway design concepts that are considered compliant with FAA standards as well as geometry scenarios that should be avoided. For this analysis, three taxiway geometry design standards were evaluated: direct access issues, intersections with more than three nodes, and wide expanses of pavement. Examples of these geometry design standards are presented in **Figure 6.3**. Additional information on each of the three design standards can be found in **Chapter 3 – Inventory of Existing Conditions**. These taxiway geometry design standards were evaluated visually using Google Earth at each airport to determine if any of the standards were not met. The visual analysis only assessed taxiway configurations and did not focus specifically on taxiway width or edge geometries. If none of the given taxiway design concepts were violated, the airport was considered as meeting FAA taxiway geometry design standards. Systemwide, only 37 percent of airports have taxiway geometry standards that are considered FAA compliant, as shown in **Figure 6.4**. This performance may seem low; however, design standards were updated by the

FAA in 2012. Because of funding and other factors, many smaller airports have not yet been able to update entire taxiway systems to conform to these standards. It should be noted that Indianapolis Downtown Heliport (8A4) was not included in this analysis as taxiway geometry standards do not apply.

Figure 6.3. Taxiway Design Geometry Examples

Sources: FAA AC 150/5300-13B, 2014; Kimley-Horn, 2021.

Figure 6.4. Percent of Airports Meeting FAA Taxiway Geometry Design Standards

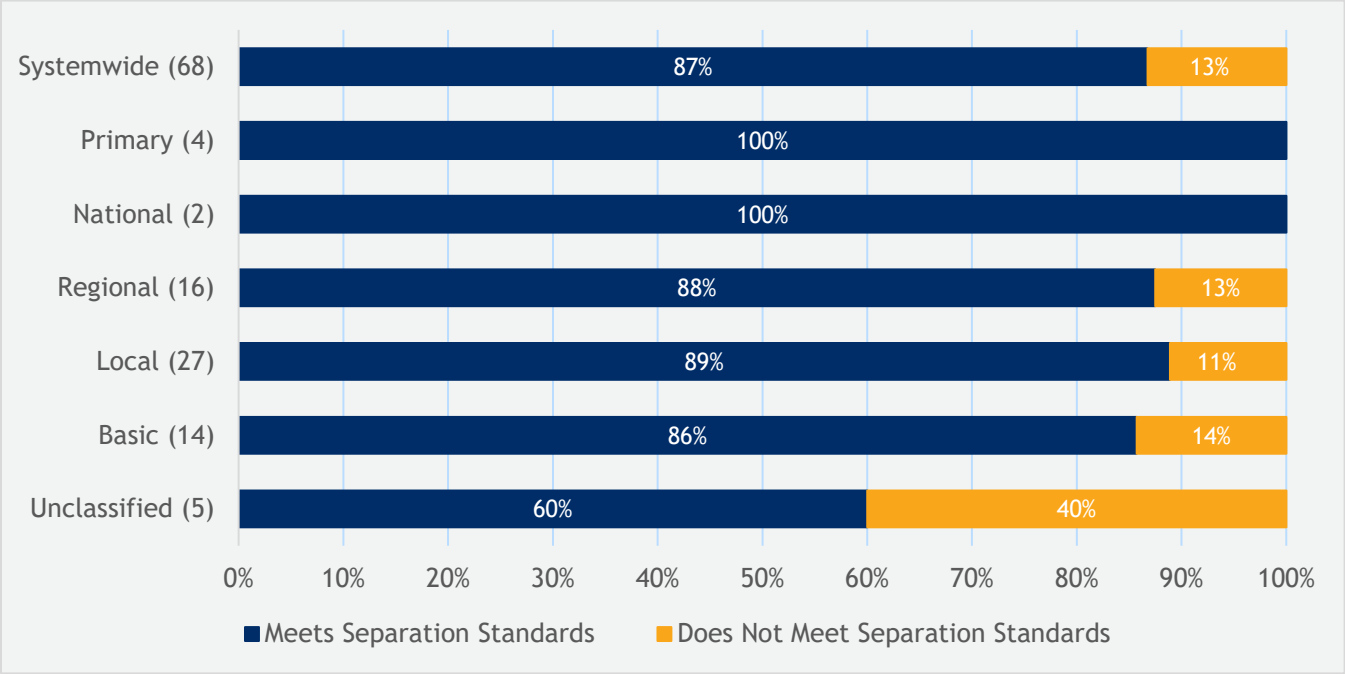


Note: Indianapolis Downtown Heliport (8A4) is excluded from the analysis. Sources: FAA AC 150/5300-13B, 2014; Google Earth, 2021; 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.2.1.3. Separation Standards

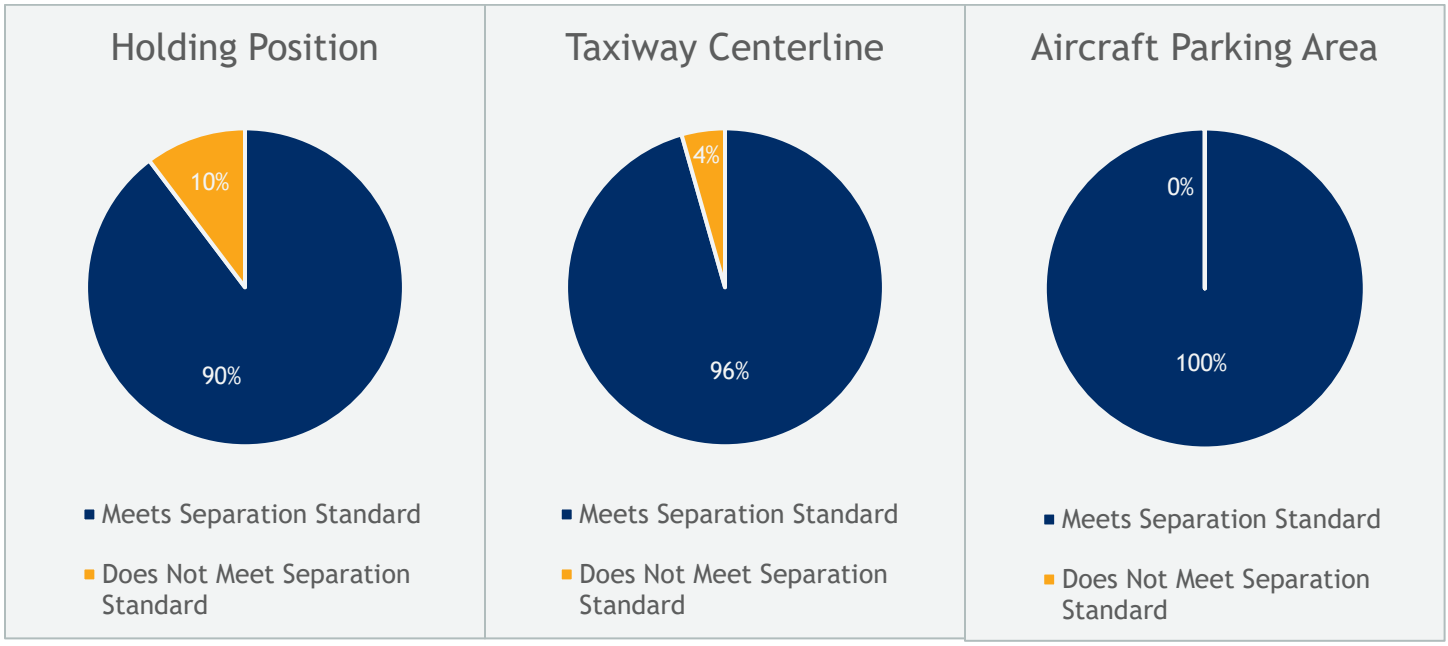
Separation standards are another FAA design standard that should be followed to promote the safe operation of aircraft on an airfield. The three separation standards evaluated were from the primary runway centerline to holding positions, taxiway centerlines, and aircraft parking areas, respectively. These separation standards were evaluated using Runway Design Codes (RDCs) obtained through Airport Manager Surveys or from Airport Layout Plans (ALPs), when necessary, and visual analysis using Google Earth. If an airport had direct access from an apron to a runway, then it was determined to be in violation of the hold position standard if there was not adequate distance from the hold position marking to the runway centerline or if there were no hold position markings present at the airport. Systemwide, 87 percent of airports meet all given separation standards, as shown in **Figure 6.5**. This systemwide performance is associated with 100 percent of Primary and National airports, 88 percent of Regional airports, 89 percent of Local airports, 86 percent of Basic airports, and 60 percent of Unclassified airports meeting the FAA separation standards included in this analysis. The most common separation standard not being met is the distance between runway centerline and holding positions, as shown in **Figure 6.6**, with 10 percent of airports systemwide not meeting the appropriate separation. Ninety-six percent of airports systemwide meet the taxiway centerline, and all airports meet the aircraft parking area to runway centerline separations. It should be noted that Indianapolis Downtown Heliport (8A4) was not included as these separation standards do not apply to heliports.

Figure 6.5. Percent of Airports Meeting Separation Standards



Note: Indianapolis Downtown Heliport (8A4) is excluded from the analysis. Sources: FAA AC 150/5300-13B, 2014; Google Earth, 2021; 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

Figure 6.6. Percent of Airports Meeting Holding Position, Taxiway Centerline, and Aircraft Parking Area Separation Standards

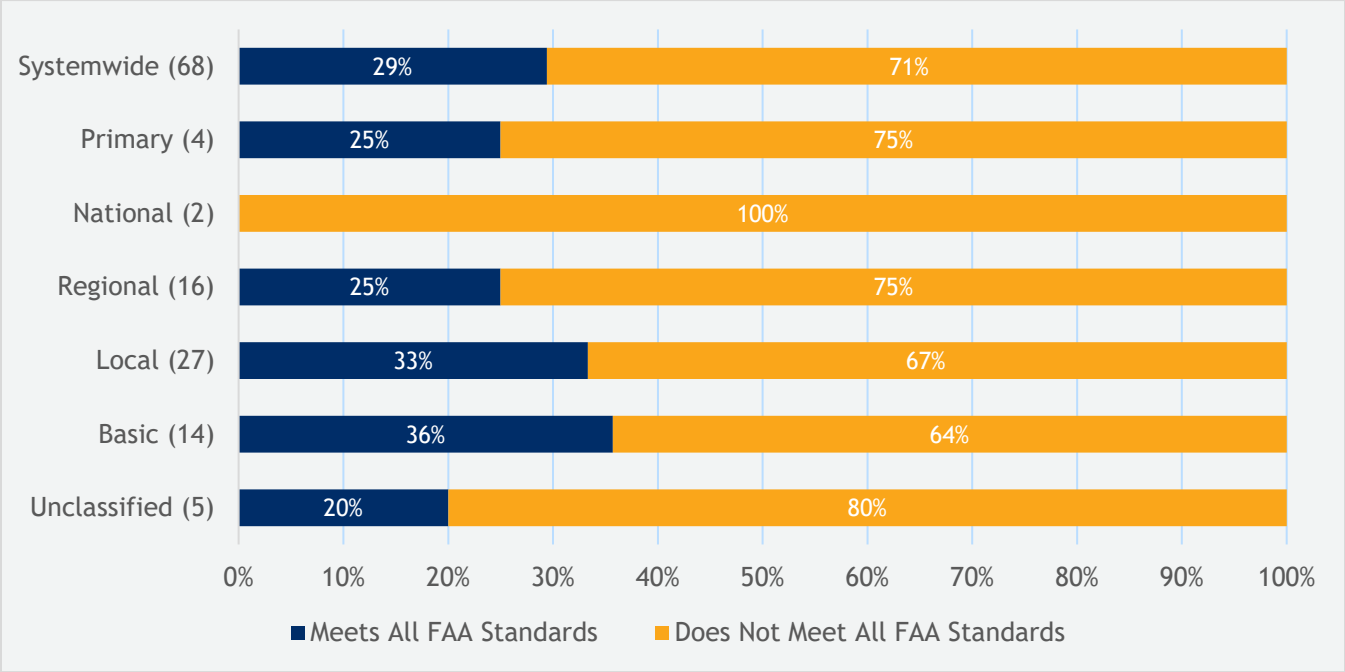


Note: Indianapolis Downtown Heliport (8A4) is excluded from the analysis. Sources: FAA AC 150/5300-13B, 2014; Google Earth, 2021; 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.2.1.4. Percent of Airports Meeting All FAA Design Standards

As shown in **Figure 6.6**, 29 percent of airports were found to meet the FAA design standards measured for the 2022 ISASP. This includes 25 percent of Primary airports, 25 percent of Regional airports, 33 percent of Local airports, 36 percent of Basic airports, and 20 percent of Unclassified airports that all have clear RSAs, compliant taxiway designs, and adequate separation between the runway and the hold position, taxiway, and apron. The relatively low performance in this PM is most heavily influenced by the taxiway geometry design standards.

Figure 6.7. Percent of Airports Meeting All FAA Design Standards



Note: Indianapolis Downtown Heliport (8A4) is excluded from the analysis. Sources: FAA AC 150/5300-13B, 2014, Google Earth, 2021; 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.2.2. PI: Percent of Non-Part 139 Facilities whose Local Responders have Basic Aircraft Rescue and Firefighting (ARFF) Training

The FAA requires all Part 139 facilities to have ARFF personnel on site; however, non-Part 139 facilities are not required to do so. As such, a non-Part 139 facility can arrange to host ARFF training at their aviation facility so local first responders are equipped with the skills and knowledge necessary to respond to aviation facility emergencies. The 11 Part 139 airports that were excluded from this analysis are shown in **Table 6.1**.

Table 6.1. 2022 ISASP Part 139 Airports

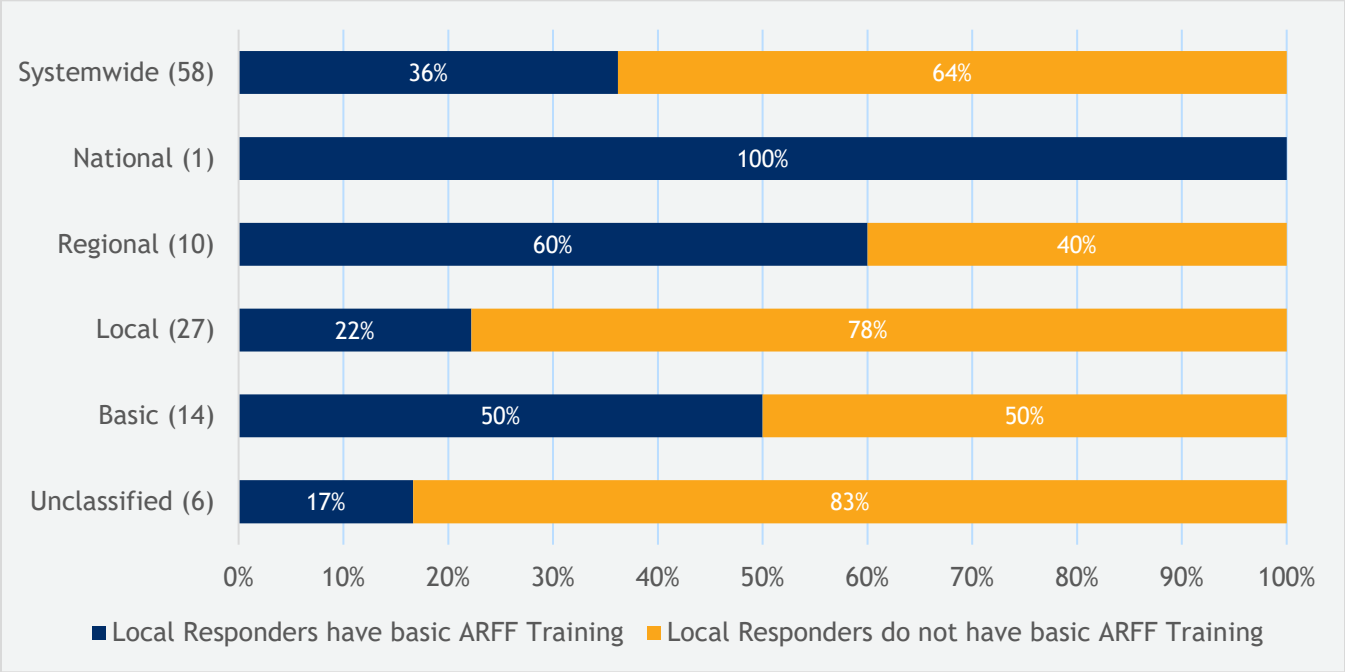
Associated City	FAA ID	Airport Name	2022 ISASP Category
Commercial Service			
Evansville	EVV	Evansville Regional	Primary
Fort Wayne	FWA	Fort Wayne International	Primary
Indianapolis	IND	Indianapolis International	Primary
South Bend	SBN	South Bend International	Primary
General Aviation (GA)			
Columbus	BAK	Columbus Municipal	Regional
Bloomington	BMG	Monroe County	Regional
Gary	GYY	Gary/Chicago International	National
Lafayette	LAF	Purdue University	Regional

Associated City	FAA ID	Airport Name	2022 ISASP Category
Muncie	MIE	Delaware County Regional	Regional
Valparaiso	VPZ	Porter County Regional	Regional
Terre Haute	HUF	Terre Haute Regional	Regional

Source: FAA Part 139 Certification Status List, 2022.

Systemwide, 36 percent of non-Part 139 aviation facilities reported having local responders who have been trained in ARFF, as shown in **Figure 6.8**. All National airports, 60 percent of Regional airports, and 50 percent of Basic airports reported that the local first responders are trained in ARFF. Less than a quarter of Local and Unclassified aviation facilities reported having local first responders trained in ARFF.

Figure 6.8. Percent of Non-Part 139 Facilities whose Local Responders have Basic ARFF Training



Note: Part 139 airports were excluded from this analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

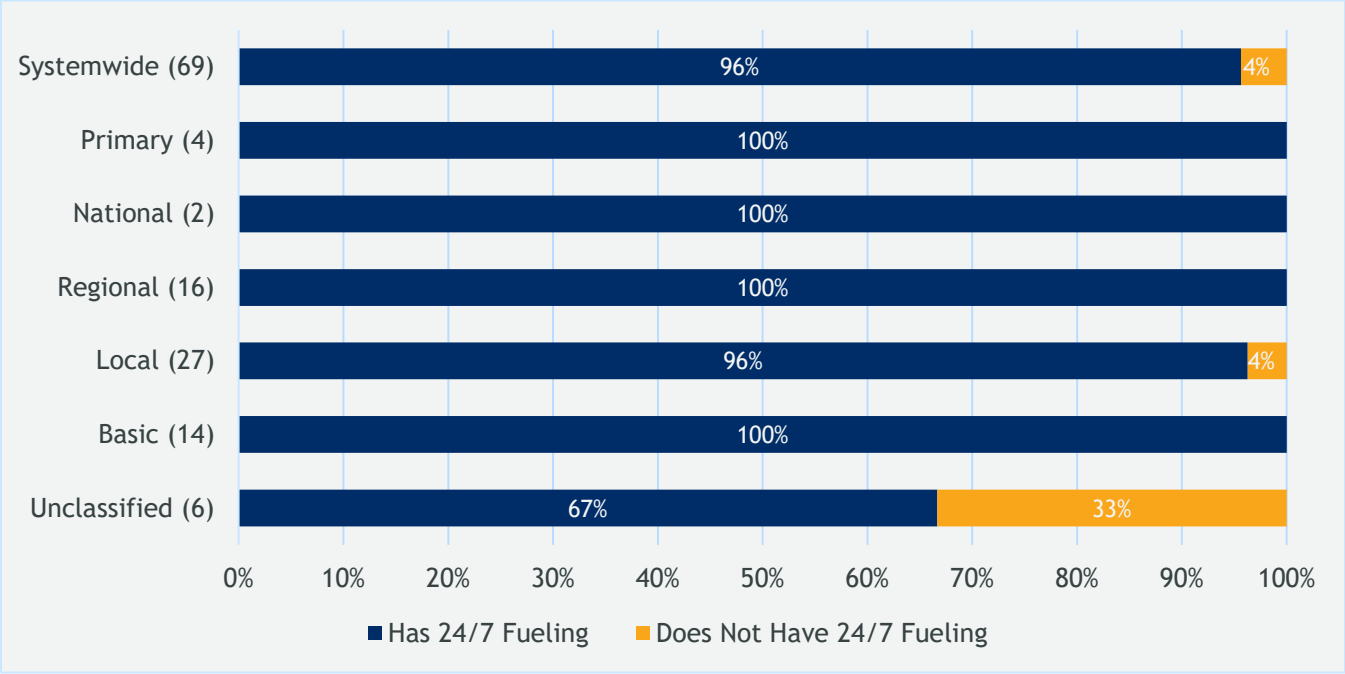
6.3. Goal 2. Economic Sustainability and Quality of Life

Aviation facilities can help support economic development and increase their economic sustainability and quality of life for users in many ways. Some examples include offering 24/7 fueling, working with local municipalities to foster active development partnerships with local government agencies and economic development organizations, and diversifying the type of activities and operations at their facility. The following four subsections document current performance of the system in meeting the PMs and PIs related to Goal 2. Economic Sustainability and Quality of Life.

6.3.1. PM: Percent of Facilities with 24/7 Fuel Availability (Jet A and/or 100 low lead [LL] offered via credit-card machines or 24/7 staffing)

A facility was considered meeting this PM if they offer fuel, either Jet A or 100LL, 24 hours a day, seven days a week. This around-the-clock service can be achieved through self-service credit card machines or on-call fixed-base operator (FBO) personnel. The availability of 24/7 fueling was determined based on responses from facility representatives. Systemwide, 96 percent of aviation facilities have 24/7 fuel availability, as shown in **Figure 6.9.**

Figure 6.9. Percent of Facilities with 24/7 Fuel Availability

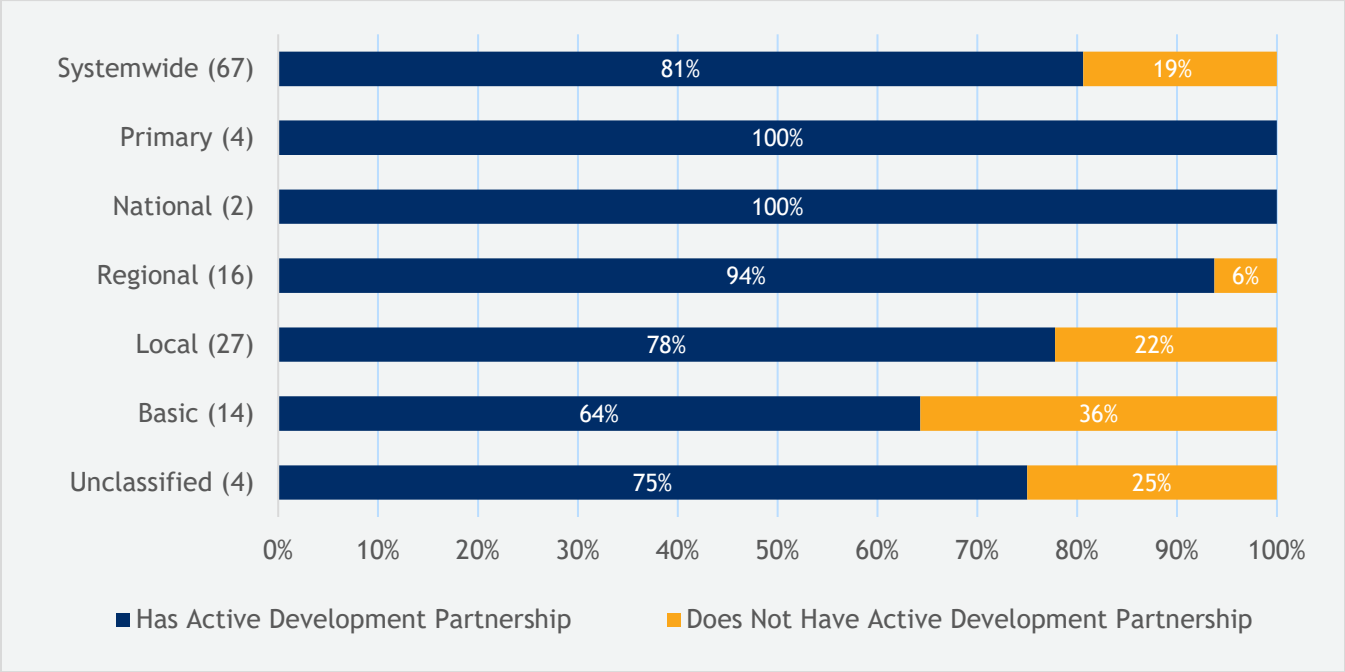


Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.3.2. PI: Percent of Facilities with an Active Development Partnership with Chambers of Commerce, Tourism Bureaus, Air Service Development Groups, Service Organizations, Local or Regional Governments, Recreation Districts, or Other Similar Entities

Facility representatives were asked to report whether they have established an active development partnership with a local organization or agency. Systemwide, 81 percent of facilities have an active development partnership with some form of local organization or entity, as shown in **Figure 6.10**. All Primary and National airports reported establishing these partnerships and 64 percent or more of Local, Basic, and Unclassified facilities meet this PI. It should be noted that Sheridan Airport (5I4) and Boone County Airport (6I4) were not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.10. Percent of Facilities with Active Development Partnership

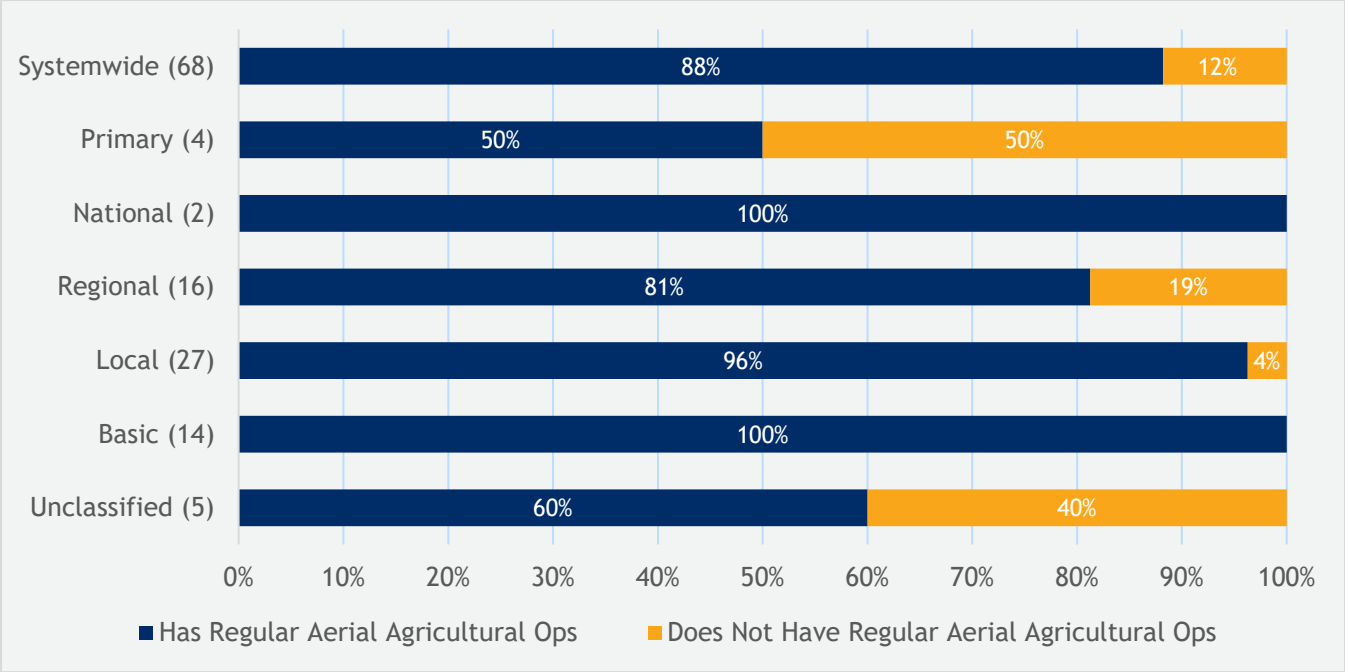


Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.3.3. PI: Percent of Airports that Experience Regular Aerial Agricultural Operations

Facility representatives were asked to report whether their facilities experience aerial agricultural operations, and if so, the general frequency of those operations. For this analysis, any frequency of operations—whether annually, seasonally, or daily—was considered regular. Systemwide, 88 percent of airports experience some form of regular aerial agricultural operations, as shown in **Figure 6.11**. Only half of Primary airports reported experiencing these operations, which is most likely because agricultural operators usually rely on smaller GA airports that do not experience the same congestion levels as Primary airports. At least 60 percent of all other facility categories reported having these operations, with National airports reporting 100 percent. It should be noted that Sheridan Airport (5I4) was not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.11. Percent of Airports that Experience Regular Aerial Agricultural Operations

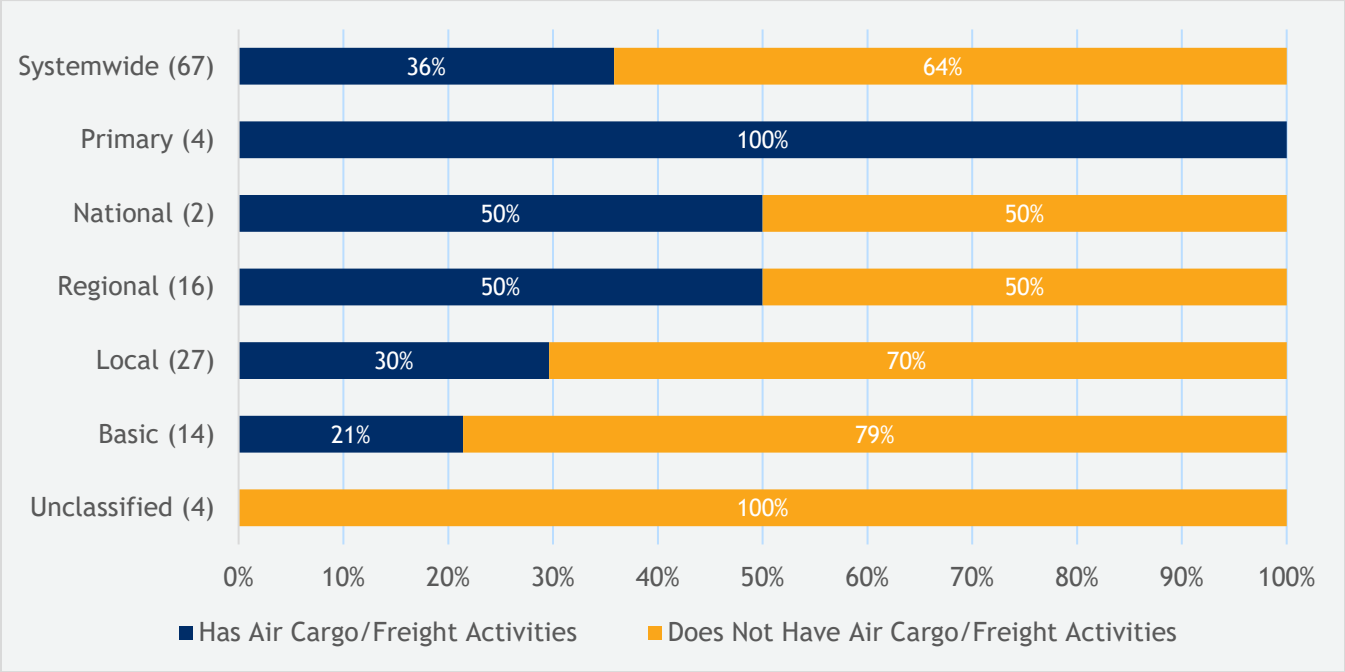


Note: Sheridan Airport (5I4) is excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.3.4. PI: Percent of Facilities with Air Cargo/Freight Activities Including Small Operators

Air cargo or freight activities were determined by responses from facility representatives. Systemwide, 36 percent of aviation facilities experience some form of air cargo or freight activity (including small operators), as shown in **Figure 6.12**. While these activities are present at all the Primary airports, only half of Indiana's National and Regional airports experience air cargo or freight operations. This ratio continues to decrease, with less than a third of Local airports and less than a quarter of Basic airports seeing similar operations. It should be noted that Sheridan Airport (5I4) and Boone County Airport (6I4) were not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.12. Percent of Facilities with Air Cargo or Freight Activities



Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.4. Goal 3. Infrastructure Preservation and Development

The third goal of the 2022 ISASP is the continued development and preservation of aviation facility and airfield infrastructure. One of the largest expenses to any airport or heliport is the maintenance and upkeep required for aviation facilities and equipment such as airfield pavement, navigational aids (NAVAIDS), and more. With these costs in mind, it is essential to understand the condition of airfield infrastructure at system facilities. The following six subsections present the results of the PMs and PIs related to Goal 3. Infrastructure Preservation and Development.

6.4.1. PM: Percent of Facilities with Primary Runway/Helipad Pavement Condition Index (PCI) within 10 Points of INDOT's Minimum Service Level Recommendation (MSLR)

INDOT provides a range of what is considered a satisfactory PCI rating for aviation facilities, as shown in **Table 6.2**.

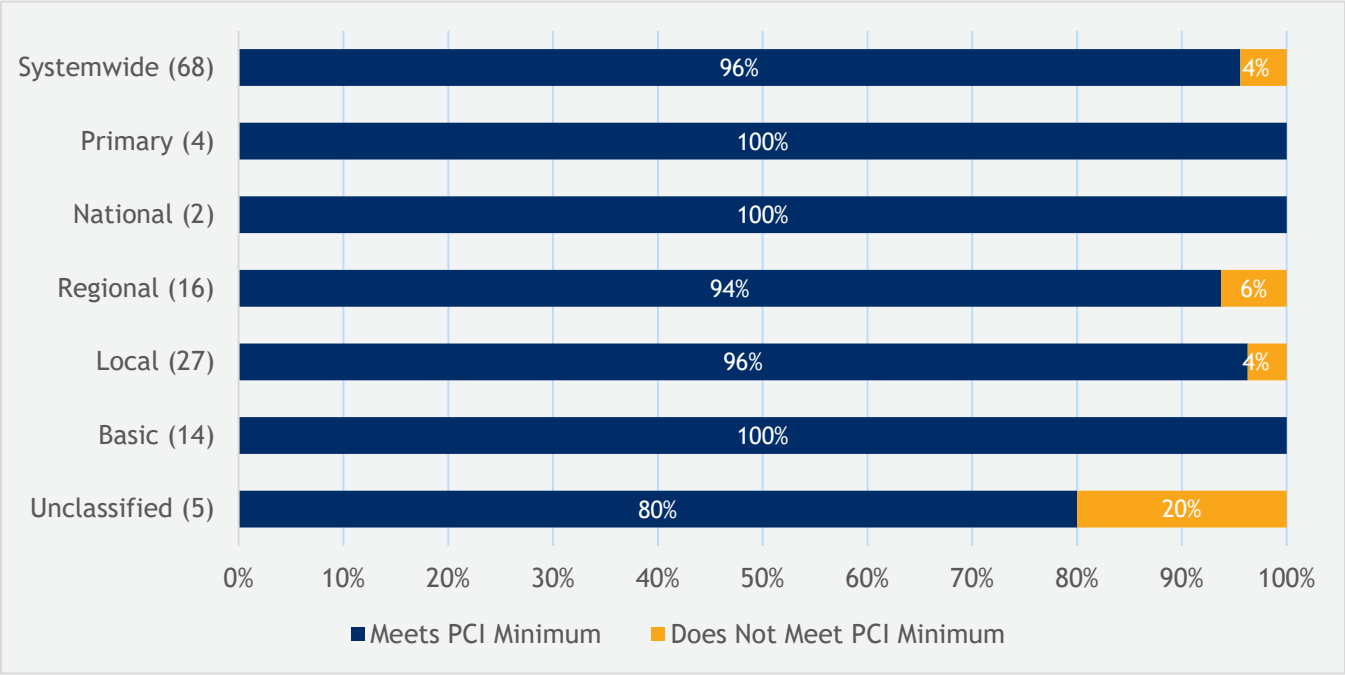
Table 6.2. Primary Runway/Helipad PCI Minimums for 2022 ISASP Facilities

Facility Type	Minimum Primary Runway/Helipad PCI Thresholds
Primary Airports	70+
Large GA Airports (Runway > 4,500')	60+
Small GA Airports (Runway < 4,449')	55+
Heliport	60+

Source: INDOT Office of Aviation, 2021.

Each airport's primary runway PCI and the helipad's pavement was evaluated to determine if its PCI was within 10 points of the minimum PCI based on its facility type. If the given aviation facility's PCI was more than 10 points below the minimum PCI, it was listed as not meeting the PCI minimum. The 2022 ISASP Airport Manager Survey was pre-populated with PCI data gathered from INDOT's 2020 Interactive Data Exchange Application (IDEA) web application. PCIs were then confirmed or updated from responses provided by facility representatives. Systemwide, 96 percent of aviation facilities meet the necessary PCI rating for their classification, as shown in **Figure 6.13**. Only four aviation facilities did not meet the primary runway PCI minimum, with one Regional, one Local, and one Unclassified airport failing to meet the needed PCI. It should be noted that Grissom Air Reserve Base (ARB) (GUS) was not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.13. Percent of Facilities that Meet PCI Minimums



Note: Grissom ARB (GUS) is excluded from the analysis. Sources: INDOT, 2021; 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.4.2. PM: Percent of Facilities with Approach Procedures Appropriate to their Category

There are four approach types considered in the 2022 ISASP: Precision Approach (PIR), Non-Precision Approach with Vertical Guidance, Non-Precision Approach (NP), and Visual Approach (V). The type of approach considered appropriate to each 2022 ISASP category is shown in **Table 6.3**, which are based on the MSLRs established in **Chapter 2 – ISASP Facility Categories**.

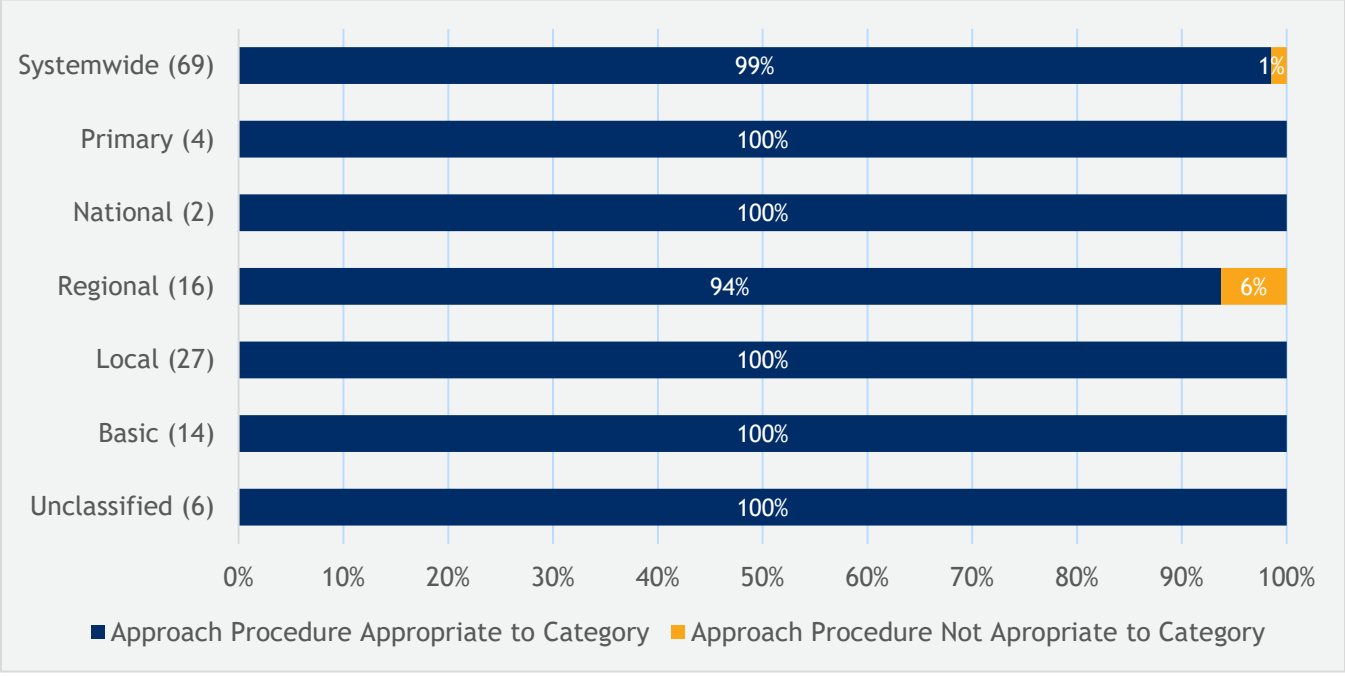
Table 6.3. Approach Procedures Appropriate to 2022 ISASP Category

2022 ISASP Category	Approach Appropriate to Category
Primary	PIR
National	PIR
Regional	NP with Vertical Guidance
Local	NP
Basic	NP or V
Unclassified	V

Sources: INDOT, 2021; Kimley-Horn, 2022.

The approach procedure present at each aviation facility was based on responses received from facility representatives that were confirmed through the FAA's Airport Data and Information Portal (ADIP). Systemwide, 99 percent of aviation facilities have an approach procedure that is appropriate to its facility category, as shown in **Figure 6.14**. The only category of airport not achieving 100 percent performance is Regional, which has 15 of its 16 airports meeting the approach procedure appropriate to that category.

Figure 6.14. Percent of Facilities with Approaches Appropriate to their Category



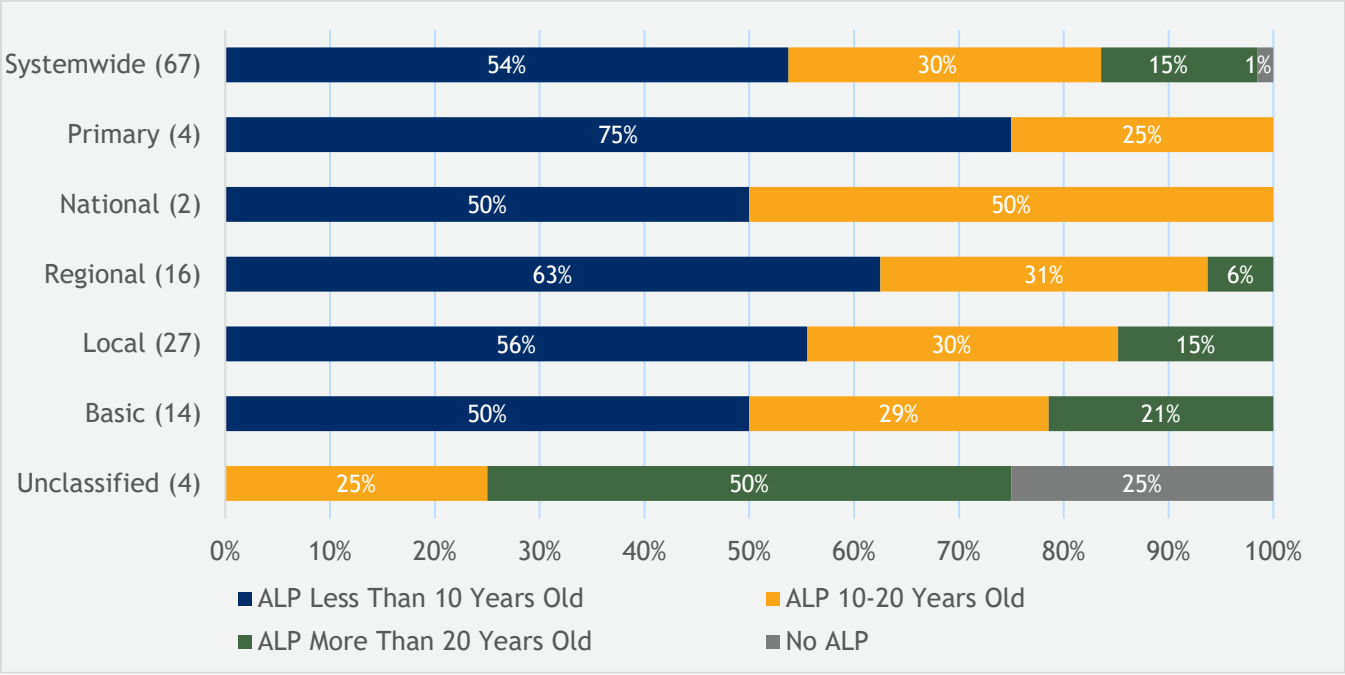
Sources: 2022 ISASP Airport Manager Survey, 2021; FAA ADIP, 2021; Kimley-Horn, 2022.

6.4.3. PM: Percent of Facilities with an Airport Layout Plan (ALP) Less than 10 Years Old, Between 10 and 20 Years Old, and Greater than 20 Years Old

Figure 6.15 demonstrates the breakdown of ALPs by age, as reported by facility representatives. Systemwide, more than half of all airports' ALPs are less than 10 years old, with approximately a quarter of airports' ALPs being between 10 and 20 years old.

Six percent of Regional, 15 percent of Local, 21 percent of Basic, and 50 percent of Unclassified facilities reported having an ALP older than 20 years. It is important to note that during the data collection for the 2022 ISASP, some airports had ALPs in the process of being completed or have an upcoming ALP that will be completed as a part of a master plan. In these instances, the draft date was used in the analysis, or the year 2022 was used if the ALP is upcoming. If the draft ALP or information of an upcoming ALP was not provided, then the airport was analyzed based on the year of the last completed and approved ALP. It should be noted that Sheridan Airport (5I4) and Boone County Airport (6I4) were not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.15. Percent of Facilities with an ALP Less than 10 Years Old, Between 10 and 20 Years Old, and Greater than 20 Years Old

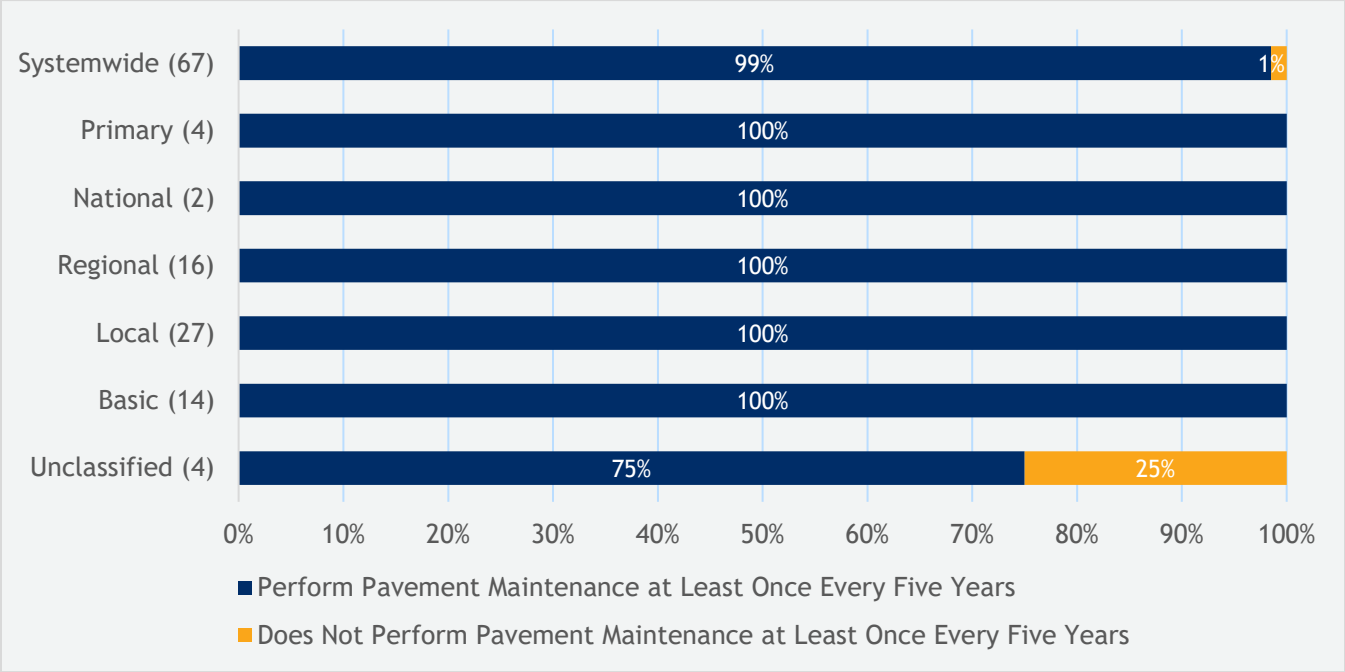


Notes: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. The following airports have an ongoing ALP or upcoming ALP that will be completed as a part of current master plan process: Crawfordsville Regional (CFJ), Eagle Creek Airpark (EYE), Jasper County (RZL), and South Bend International (SBN). Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.4.4. PM: Percent of Facilities that Perform Pavement Maintenance At Least Once Every Five Years

Facility representatives were asked to report whether they conduct pavement maintenance at least once every five years as a part of the 2022 ISASP Airport Manager Survey. Systemwide, nearly every system facility reported performing some form of pavement maintenance at least once every five years, as shown in **Figure 6.16**. Only a single Unclassified aviation facility did not report performing routine pavement maintenance. The system's high performance in this PM shows a commitment by Indiana airports to prolonging the useful life of aviation facility pavement. It should be noted that Sheridan Airport (5I4) and Boone County Airport (6I4) were not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.16. Percent of Facilities that Perform Pavement Maintenance At Least Once Every Five Years

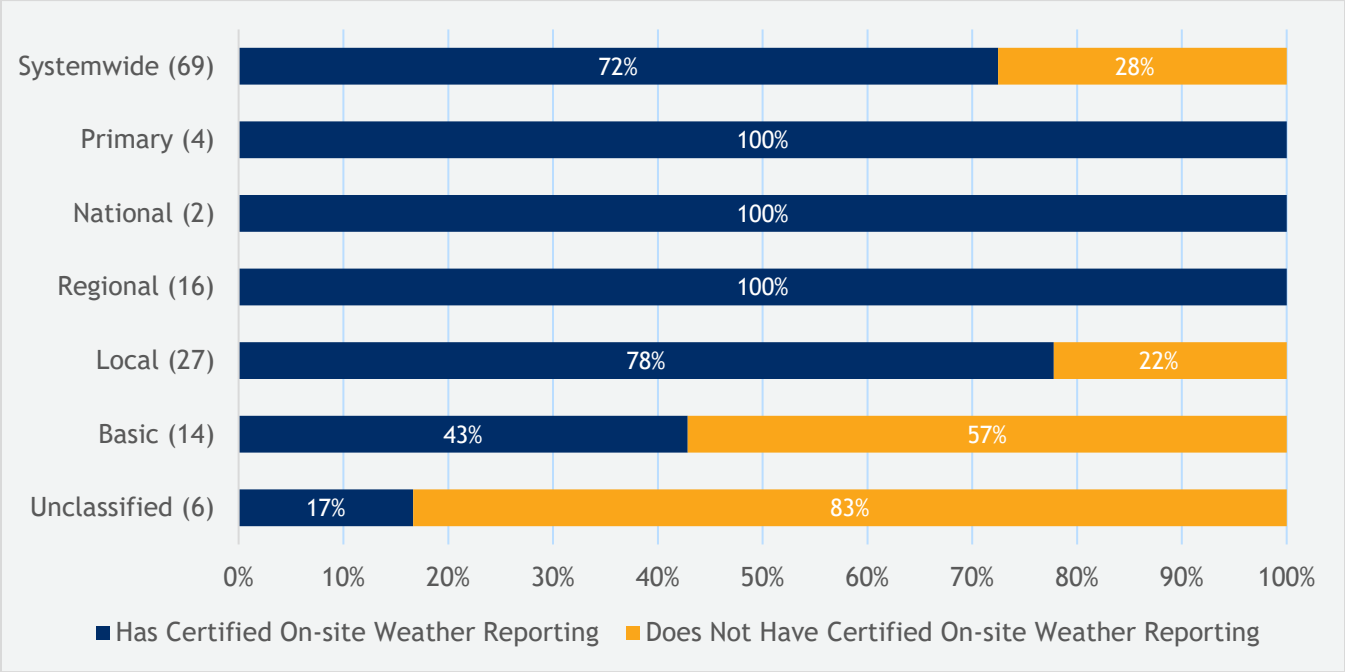


Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.4.5. PM: Percent of Facilities with Certified On-Site Weather Reporting Stations (Automated Weather or Surface Observing System [AWOS/ASOS])

Systemwide, 72 percent of facilities have certified on-site weather reporting systems, as shown in **Figure 6.17**. All Primary, National, and Regional airports possess these systems and 78 percent of Local airports reported having an AWOS or ASOS. Forty-three percent of Basic airports and 17 percent of Unclassified aviation facilities have certified on-site weather reporting stations.

Figure 6.17. Percent of Facilities with Certified On-site Weather Reporting Stations

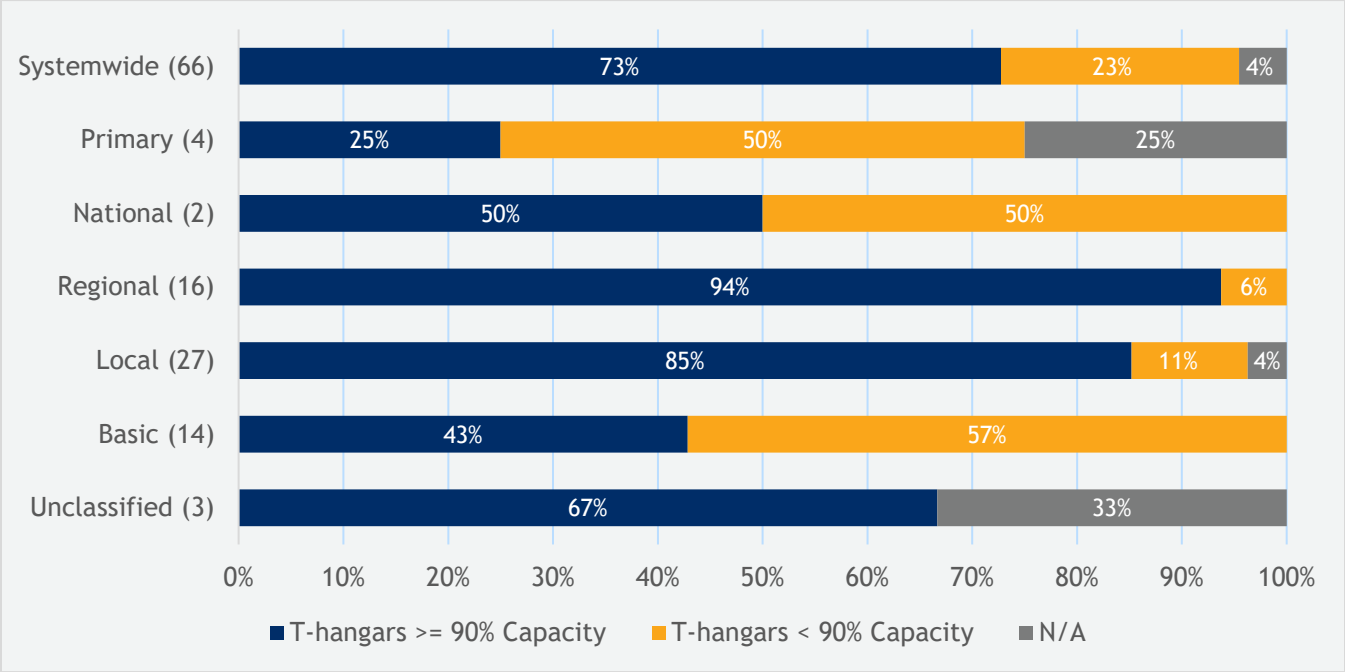


Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.4.6. PI: Percent of Facilities at 90 Percent Capacity for T-Hangars and Conventional Box Hangars

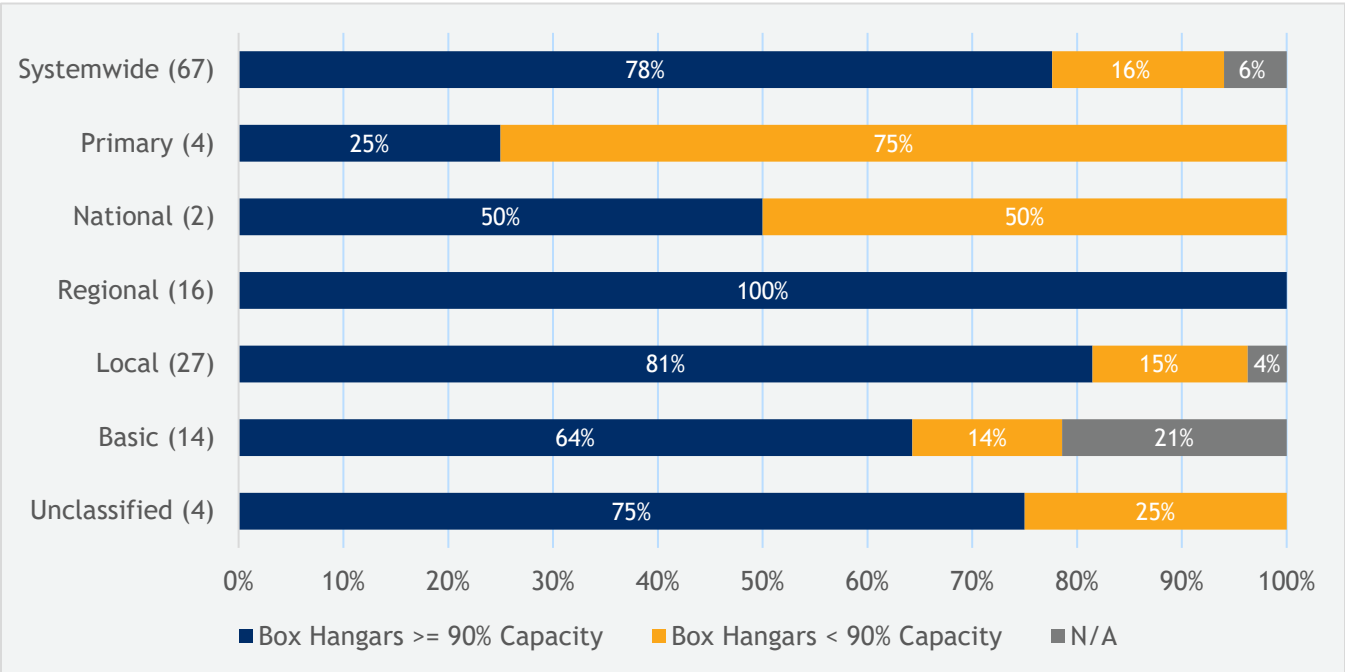
Hangar capacity was determined using responses from facility representatives, including the number of total T-hangar and conventional hangar parking spaces and the number of spaces currently occupied. **Figure 6.18** and **Figure 6.19** present the percent of facilities with T-hangar and conventional hangar capacity greater than 90 percent. Facilities that reported having no T-hangars or box hangars are presented as "N/A" for not applicable in **Figure 6.18** and **Figure 6.19,** respectively. Systemwide, approximately 75 percent of aviation facilities have T-hangars and conventional hangars over 90 percent capacity. A large majority of the system's capacity issues are experienced at the Regional and Local level. Additionally, facility representatives were asked if they currently have a hangar waitlist, to which 65 of 69 reported having one.

Figure 6.18. Percent of Facilities at 90 Percent Capacity for T-Hangars



Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

Figure 6.19. Percent of Facilities at 90 Percent Capacity for Conventional Box Hangars



Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

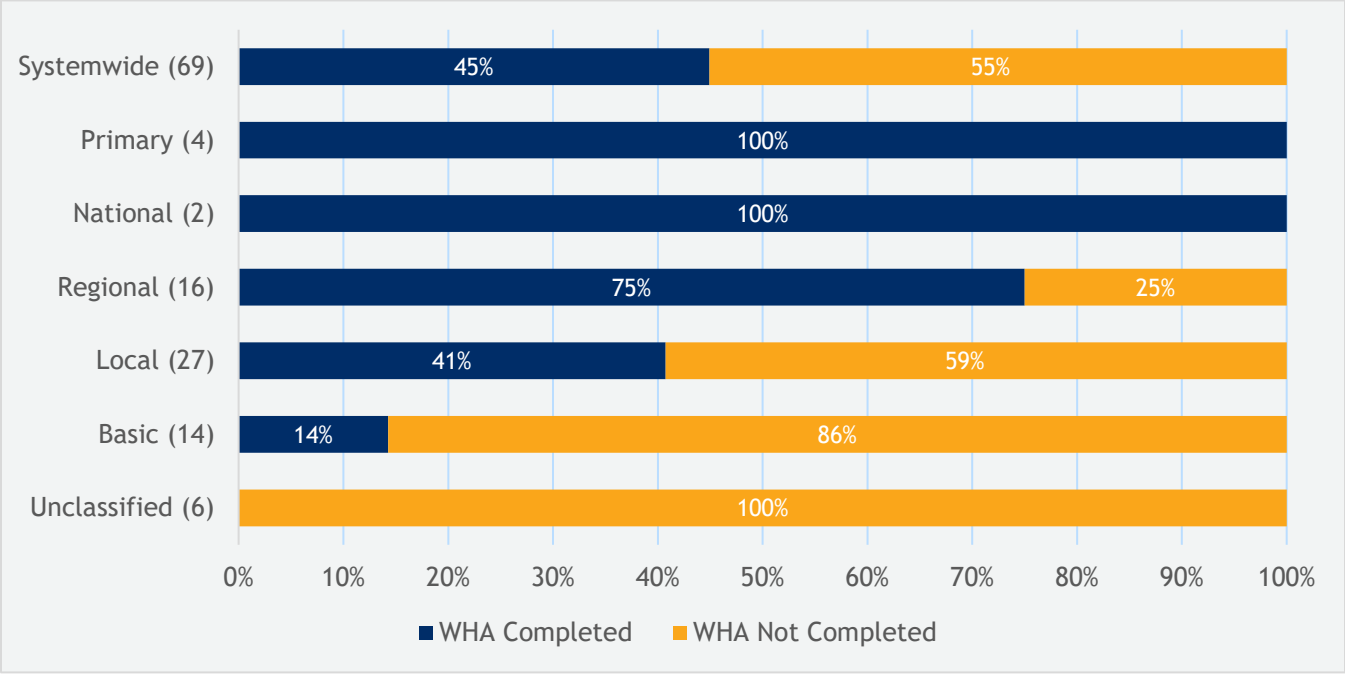
6.5. Goal 4. Environmental Responsibility and Land Planning

Environmental responsibility and the effective planning and development of land surrounding aviation facilities can be achieved in part through wildlife hazard assessment and management, implementation and enforcement of land use controls, inclusion in local or regional comprehensive plans, and commitment to environmentally friendly initiatives. The following five subsections present the results of the PMs and PIs associated with Goal 4. Environmental Responsibility and Land Planning.

6.5.1. PM: Percent of Facilities that have Completed a Wildlife Hazard Assessment (WHA) and Wildlife Hazard Management Plan (WHMP) if Required

Systemwide, 43 percent of aviation facilities reported having completed a WHA as shown in **Figure 6.20**. All Primary and National airports and 75 percent of Regional airports meet this requirement, whereas Local and smaller airports reported much lower rates of completion for a WHA. It should be noted that all Part 139 airports are required to complete a WHA, which explains the high performance for Primary and National airports. Additionally, the FAA has a wildlife hazard site assessment alternative for smaller aviation facilities, allowing for more facilities to complete this analysis.

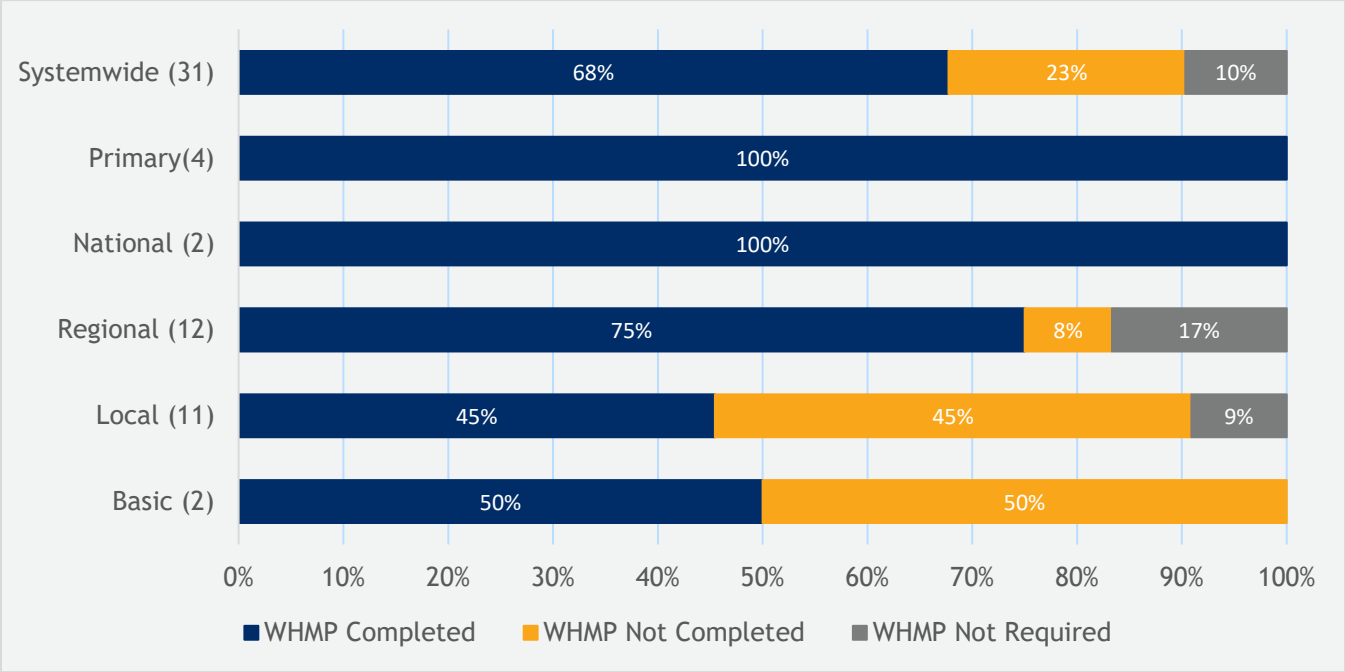
Figure 6.20. Percent of Facilities that have Completed a WHA



Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

For the 31 airports reported having completed a WHA, **Figure 6.21** presents the percent of those airports that have completed the necessary WHMP or if a WHMP was determined to be not necessary. Systemwide, for airports that have completed a WHA, 23 percent have not completed a WHMP. This primarily comes from Local airports, with five of 11 airports completing a WHA and not completing a WHMP. In addition, one Regional and one Basic airport have completed a WHA and not completed a WHMP.

Figure 6.21. Percent of Facilities that have Completed a WHMP



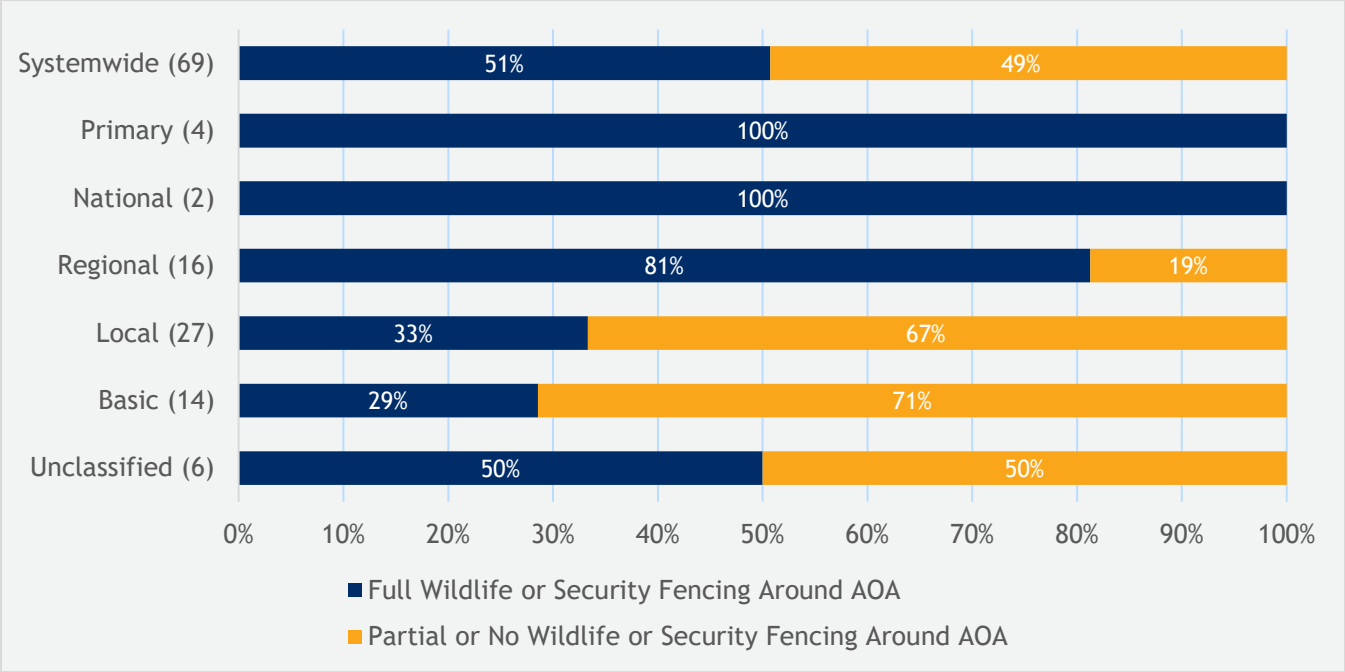
Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.5.2. PM: Percent of Airports that have Full Wildlife or Security Fencing Around the Air Operations Area (AOA)

The 2022 ISASP established minimum fencing recommendations by facility category. Wildlife fences in this study are 10-foot chain link with three strands of barbed wire on top. They must also have a buried skirt to prevent wildlife from digging underneath. A security fence must be at least six feet tall chain link with three strands of barbed wire. Facilities met this PM if they possess either of these fence types around their AOA, at a minimum.

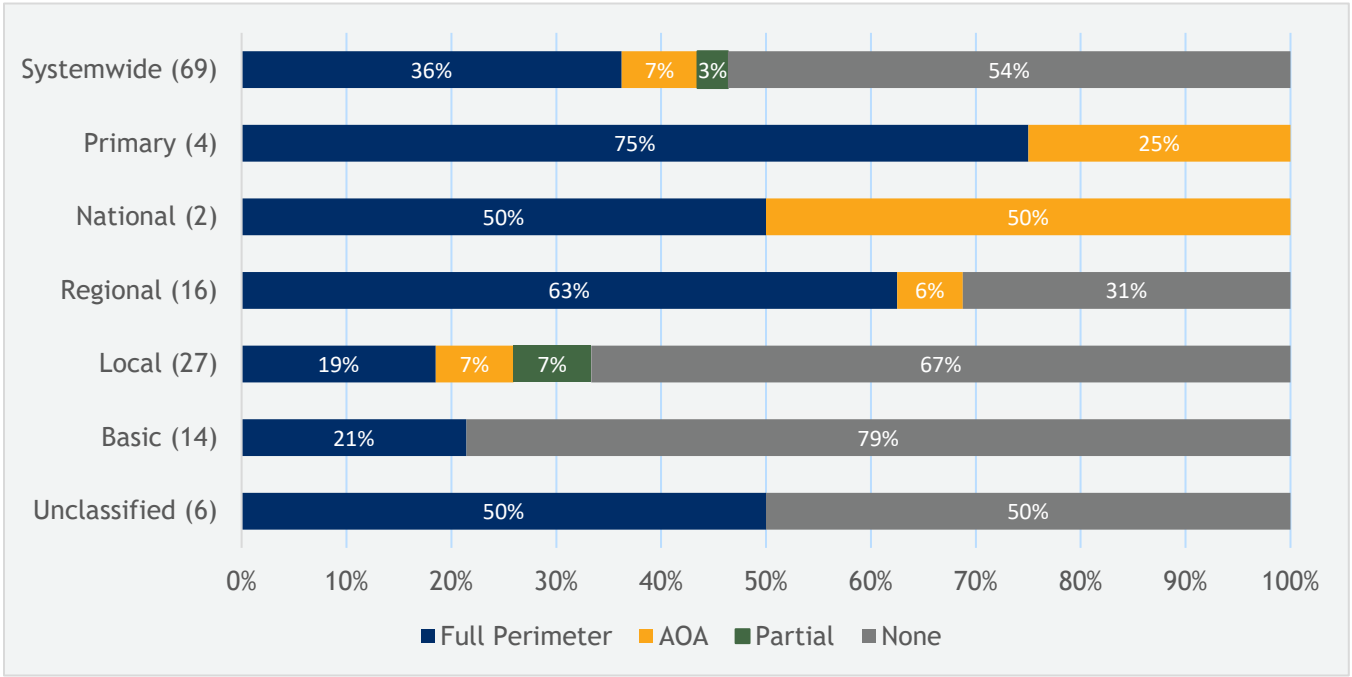
Facility representatives were asked to report the type of fencing at their facility. Systemwide, 51 percent of facilities have adequate fencing to meet this PM, as shown in **Figure 6.22**. All Primary and National airports and 81 percent of Regional airports have adequate fencing. Local, Basic, and Unclassified facilities had lower performance, with 33 percent or less of Local and Basic airports and 50 percent of Unclassified facilities meeting this PM. In order to provide additional context on wildlife protection, **Figure 6.23** presents the facilities that reported having wildlife fencing, specifically around the full perimeter of the facility, around the AOA, partial wildlife fencing, or no wildlife fencing.

Figure 6.22. Percent of Airports that have Full Wildlife or Security Fencing around the AOA



Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

Figure 6.23. Wildlife Fencing at System Facilities

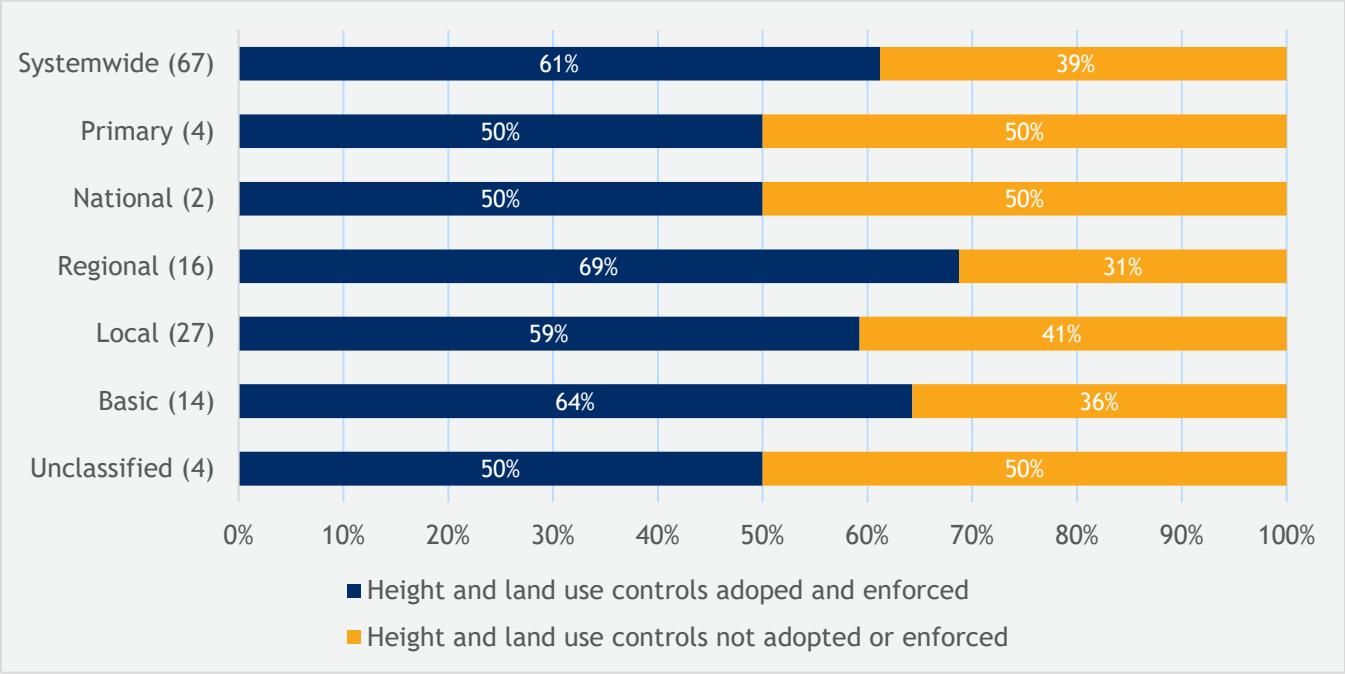


Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.5.3. PI: Percent of Facilities with Height and Land Use Controls Adopted and Enforced by the Local Planning Agency

Facility representatives were asked to report if height and land use controls have been adopted and enforced by their local planning agency. Systemwide, 61 percent of aviation facilities reported having these controls, as shown in **Figure 6.24**. This performance is largely independent from facility size or type, with all facility categories performing between 50 and 70 percent. It should be noted that Sheridan Airport (5I4) and Boone County Airport (6I4) were not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.24. Percent of Facilities with Height and Land Use Controls Adopted and Enforced by the Local Planning Agency

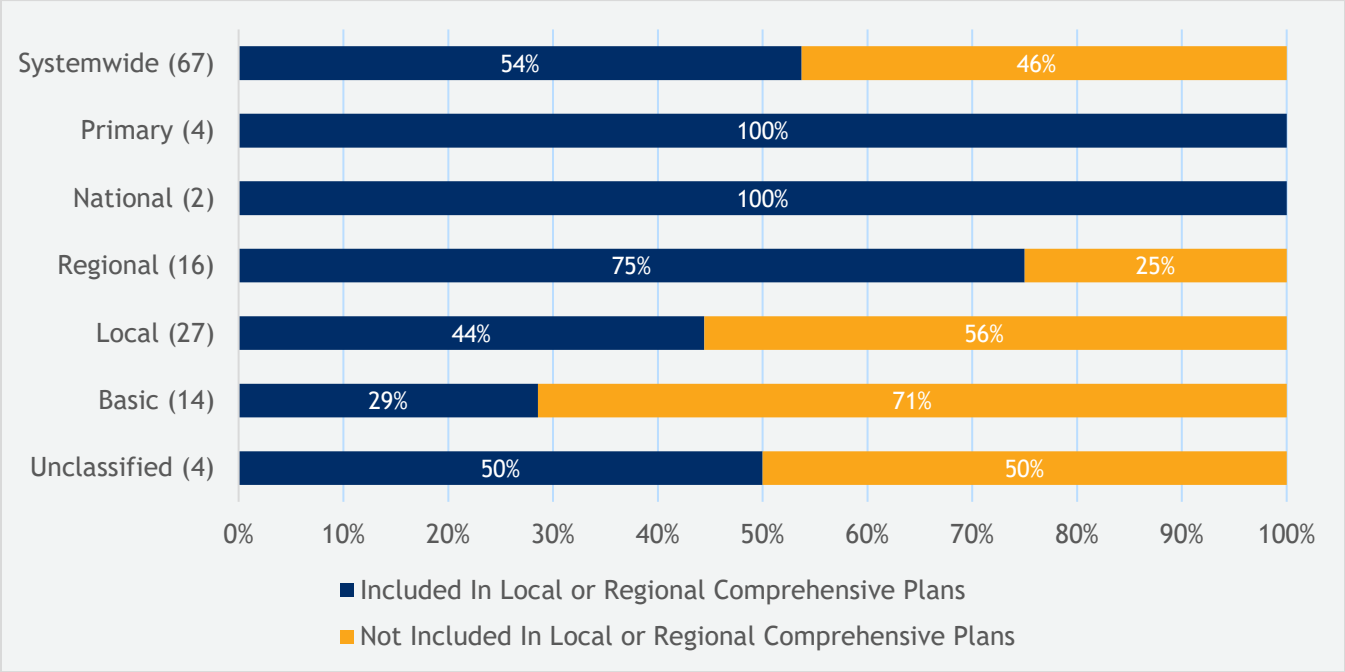


Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.5.4. PI: Percent of Facilities Included in Local or Regional Comprehensive Plans

Facility representatives were asked to report whether their airport or heliport is included in their respective local or regional comprehensive plan. As shown in **Figure 6.25**, 54 percent of all facilities are included in local or regional comprehensive plans. The percent of facilities meeting this PI varies greatly between facility categories, with all Primary and National airports and 75 percent of Regional airports meeting this PI. Local, Basic, and Unclassified airports are performing at 50 percent or less. It should be noted that Sheridan Airport (5I4) and Boone County Airport (6I4) were not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.25. Percent of Facilities Included in Local or Regional Comprehensive Plans

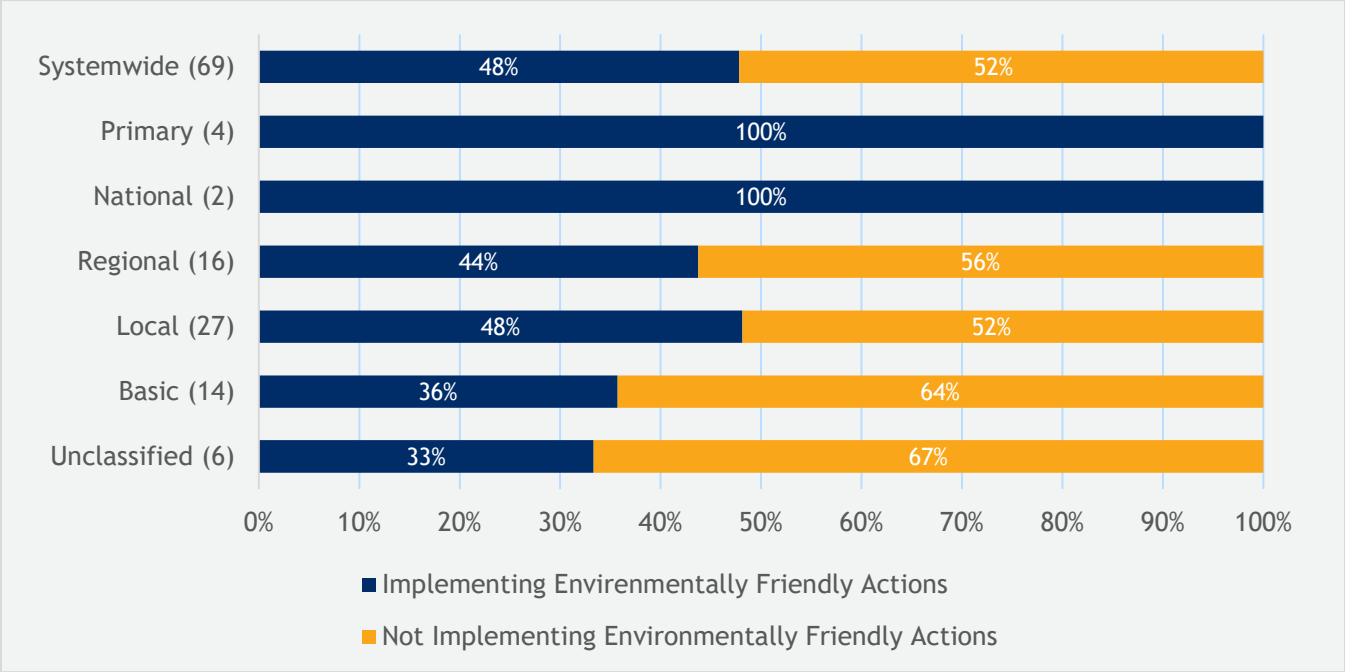


Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.5.5. PI: Percent of Facilities Implementing Environmentally Friendly Actions

By implementing environmentally friendly actions, aviation facilities can show they are committed to environmental sustainability and the future. Environmentally friendly actions can take many forms. For this evaluation, they include recycling protocols, renewable energy initiatives, electric ground vehicle charging stations, and various other protocols implemented by facilities. As shown in **Figure 6.26**, 48 percent of system facilities reported implementing environmentally friendly actions. Participation in these efforts is heavily weighted toward the larger and busier facilities in the system, with all Primary and National airports meeting this PI while less than 50 percent of Regional, Local, Basic, and Unclassified facilities reported participating in any environmentally friendly actions.

Figure 6.26. Percent of Facilities Implementing Environmentally Friendly Actions



Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

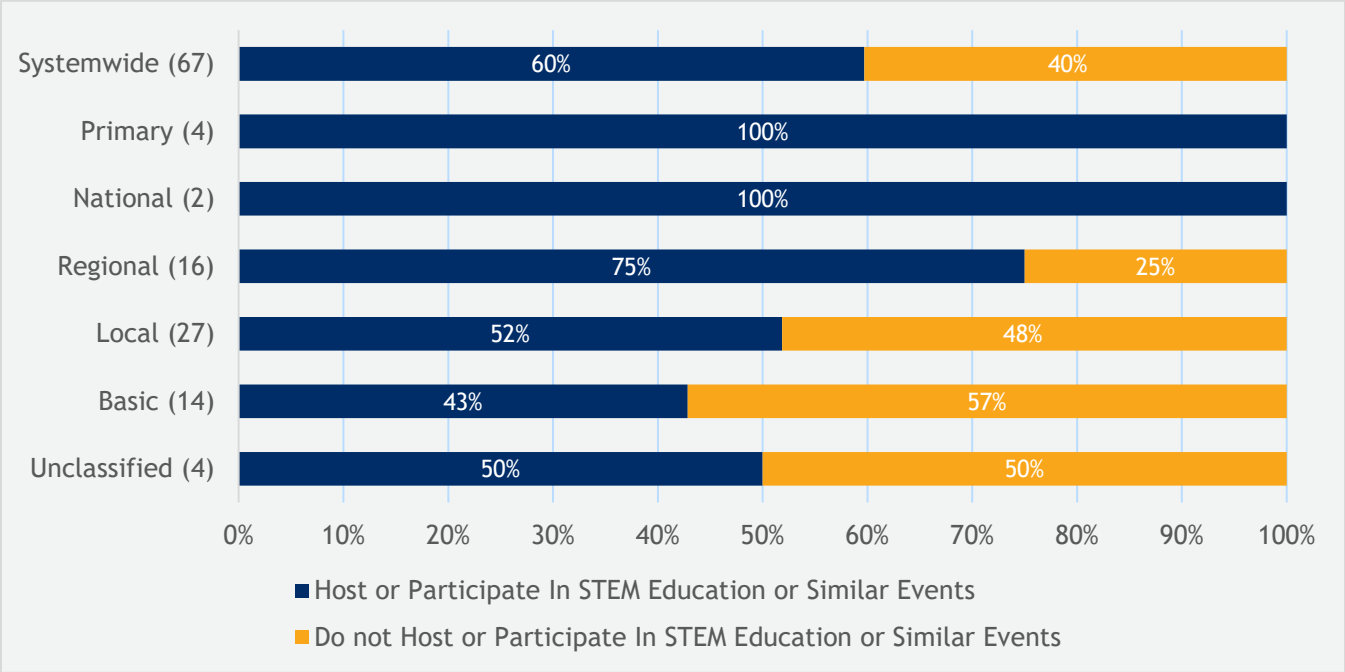
6.6. Goal 5. Aviation Industry Advancement

Technological advancements are shaping the future of the aviation industry. By organizing and/or supporting educational programs to inspire the next generation of aviation professionals and staying on the leading edge of unmanned and electric aircraft integration into the aviation system and national airspace, aviation facilities and users can be better prepared to adapt to the ever-changing aviation landscape. The PIs associated with Goal 5. Aviation Industry Advancement provide a better understanding of how changes in the aviation industry may impact system facilities and provide awareness to facility representatives on how to prepare for these changes.

6.6.1. PI: Percent of Facilities that Host or Participate in Science, Technology, Engineering, and Mathematics (STEM) Education Programs, Aviation Outreach Programs, or Other Similar Events

Systemwide, 60 percent of aviation facilities reported hosting or participating in some form of STEM education program, aviation outreach program, or other similar event, as shown in **Figure 6.27**. All the Primary and National airports reported that they host some type of education program, and 75 percent of Regional airports reported the same. Approximately half of Local, Basic, and Unclassified facilities meet this PI. It should be noted that Sheridan Airport (5I4) and Boone County Airport (6I4) were not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.27. Percent of Facilities that Host or Participate in STEM Education Programs, Aviation Outreach Programs, or Other Similar Events

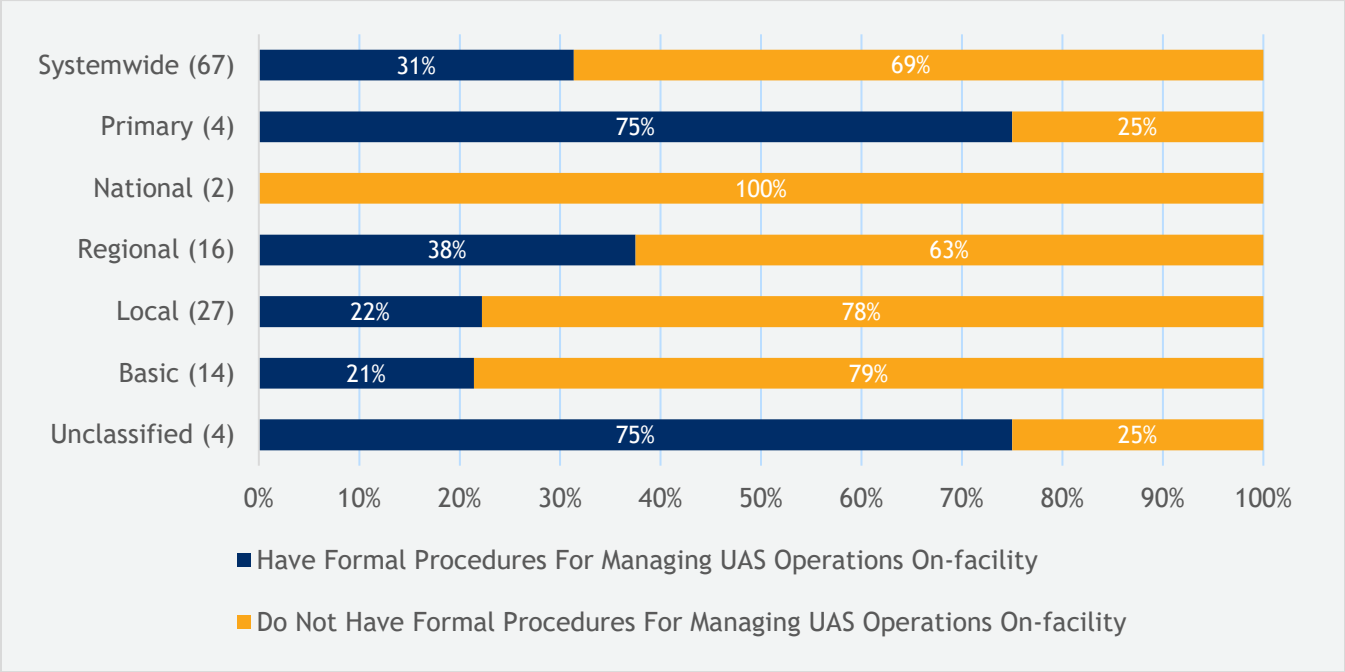


Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.6.2. PI: Percent of Facilities with Formal Procedures for Managing On-Facility and Proximate Off-Facility Unmanned Aircraft System (UAS) Operations

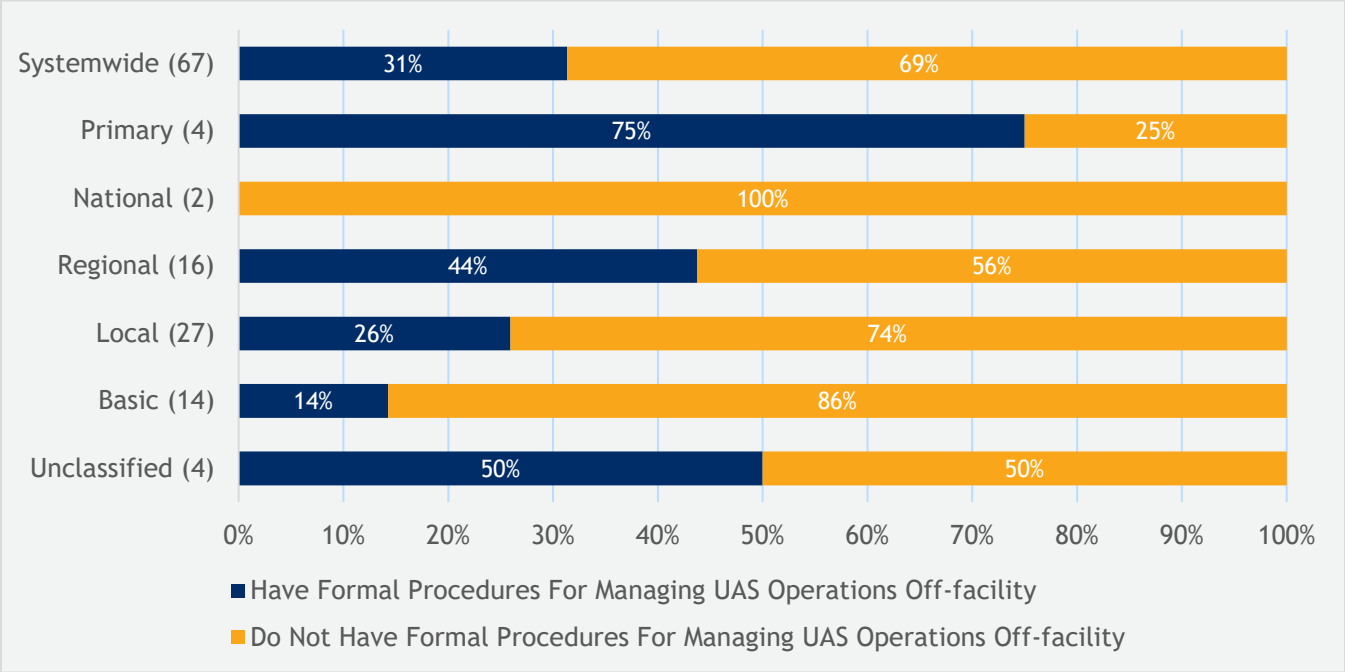
Systemwide, 31 percent of Indiana facilities reported having formal procedures in place for managing UAS operations, both on-facility and proximately off-facility, as shown in **Figure 6.28** and **Figure 6.29**. By category, Primary and Unclassified facilities are performing at 75 percent having procedures in place for on-facility operations, with other categories ranging from zero to 38 percent performance. Performance in managing nearby off-facility UAS operations is similar to that reported for on-facility UAS operations.

Figure 6.28. Percent of Facilities with Formal Procedures for Managing On-Facility UAS Operations



Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

Figure 6.29. Percent of Facilities with Formal Procedures for Managing Proximate Off-Facility UAS Operations

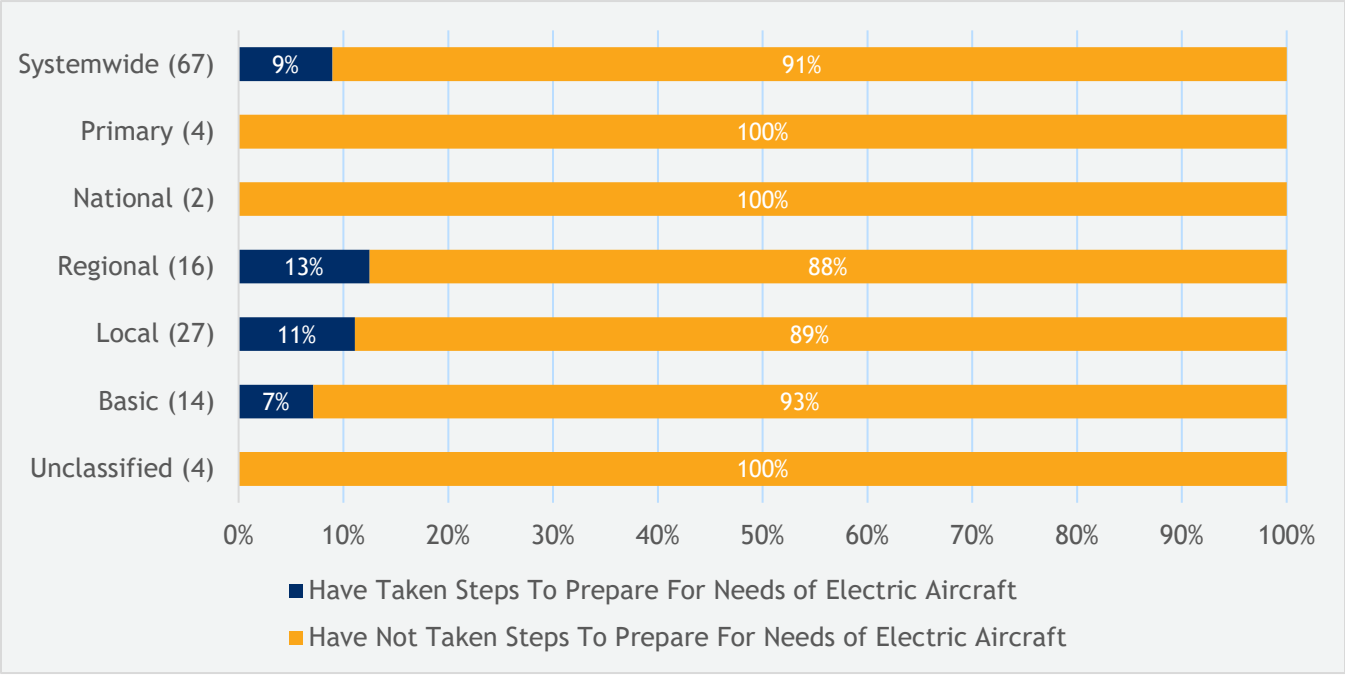


Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.6.3. PI: Percent of Facilities that have Taken Steps to Prepare for the Needs of Electric Aircraft

Aircraft electrification is rapidly progressing with some reports indicating that commercial air passenger flights could go electric by 2026.[1] In addition to commercial aircraft, several electric GA aircraft are being designed and tested and are expected to be operating at airports of all sizes in the near future. Systemwide, only nine percent of facilities reported taking steps to prepare for the needs of electric aircraft, as shown in **Figure 6.30**. These steps include incorporating electric aircraft needs in a master plan, considering airside locations and funding for charging stations, infrastructure and utility needs/updates, etc. It should be noted that Sheridan Airport (5I4) and Boone County Airport (6I4) were not included in this analysis as information was not provided by aviation facility representatives and was not otherwise available from other sources.

Figure 6.30. Percent of Facilities that have Taken Steps to Prepare for the Needs of Electric Aircraft



Note: Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.7. Minimum Service Level Recommendations (MSLRs)

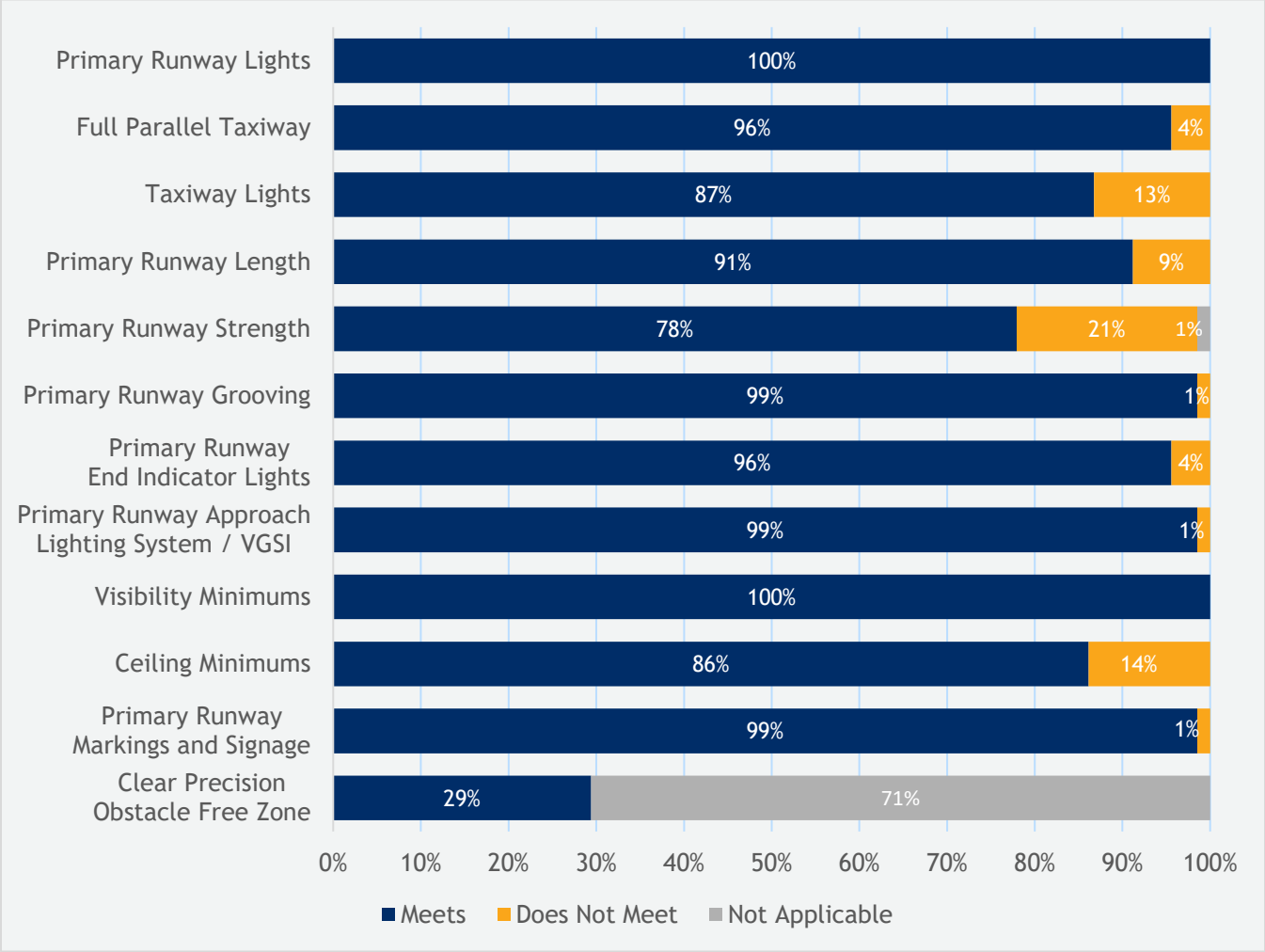
As established in **Chapter 2 - ISASP Facility Categories,** MSLRs provide the minimum suggested level of facilities and services recommended to support the type and volume of aviation activity for each 2022 ISASP facility category. Using the MSLRs for each facility category, an analysis was conducted for each of the 2022 ISASP facilities to determine the current performance of Indiana's aviation system in meeting or not meeting each MSLR.

[1] https://www.reuters.com/business/sustainable-business/united-airlines-buy-100-19-seat-electric-planes-heart-aerospace-2021-07-13/

Figure 6.31 shows this systemwide performance for each of the MSLRs established in **Chapter 2** and defined in **Chapter 3 - Inventory of Existing Conditions**. Results of the MSLR analysis at the individual facility level are presented in **Appendix A -Individual Aviation Facility Report Cards.**

It is important to note that MSLRs are not requirements for aviation facilities; rather, they serve as recommendations for responsible aviation development. An aviation facility which offers services and facilities above or below these objectives can still fulfill its role based on local needs and context. As shown in **Figure 6.31**, ISASP facilities are performing at a high level in accommodating needs appropriate with their facility category. It should be noted that for the Full Parallel Taxiway MSLR, Basic and Local airports are recommended, but not required, to have a full parallel taxiway to meet the MSLR. This means that all Basic and Local airports with partial parallel, connector, or turnaround taxiways meet the MSLR target. Additionally, for the Clear Precision Obstacle Free Zone MSLR, 100 percent of applicable facilities are meeting.

Figure 6.31. MSLR Systemwide Performance



Sources: INDOT, 2021; 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

6.8. Summary

The performance of the Indiana aviation system varies across each of the five goals and subsequent PMs and PIs established in the 2022 ISASP. The performance of the Indiana aviation system for each goal and the subsequent PMs and PIs is shown in **Table 6.4**. Evaluating system performance is critical for making data-driven decisions and identifying targeted policy and project recommendations that will support the system now and into the future. Two goals with the highest overall performance are Goal 2. Economic Sustainability and Quality of Life and Goal 3. Infrastructure Preservation and Development. Indiana aviation facilities are committed to supporting economic development and impact in their communities and maintaining and protecting critical aviation infrastructure. **Chapter 7 - System Recommendations** presents future targets for system performance and recommendations necessary to achieve those targets.

Table 6.4. 2022 ISASP PM and PI Systemwide Performance Summary

Performance Measure or Performance Indicator	Meeting PM/PI	Not Meeting PM/PI	Other
Goal 1. Safety and Security			
Performance Measures			
Percent of Airports Meeting FAA Design Standards:			
Runway Safety Areas (RSAs)	94%	6%	N/A
Taxiway Geometries[1]	37%	63%	N/A
Separation Standards	72%	28%	N/A
Performance Indicator			
Percent of Non-Part 139 Facilities whose Local Responders have Basic ARFF Training	36%	64%	N/A
Goal 2. Economic Sustainability and Quality of Life			
Performance Measure			
Percent of Facilities with 24/7 Fuel Availability (Jet A and/or 100LL offered via credit-card machines or 24/7 staffing)	96%	4%	N/A
Performance Indicators			
Percent of Facilities with an Active Development Partnership with Chambers of Commerce, Tourism Bureaus, Air Service Development Groups, Service Organizations, Local or Regional Governments, Recreation Districts, or Other Similar Entities	81%	19%	N/A
Percent of Airports that Experience Regular Aerial Agricultural Operations	88%	12%	N/A
Percent of Facilities with Air Cargo/Freight Activities Including Small Operators	36%	64%	N/A
Goal 3: Infrastructure Preservation and Development			
Performance Measures			
Percent of Facilities with Primary Runway/Helipad PCI within 10 Points of INDOT's MSLRs	96%	4%	N/A
Percent of Facilities with Approach Procedures Appropriate to their Category	99%	1%	N/A

Performance Measure or Performance Indicator	Meeting PM/PI	Not Meeting PM/PI	Other
Goal 3: Infrastructure Preservation and Development			
Performance Measures			
Percent of Facilities with an ALP:			
Less than 10 Years Old	54%	N/A	N/A
10-20 Years Old	30%	N/A	N/A
Greater than 20 Years Old	15%	N/A	N/A
No ALP	1%	N/A	N/A
Percent of Facilities that Perform Pavement Maintenance At Least Once Every Five Years	99%	1%	N/A
Percent of Facilities with Certified On-Site Weather Reporting Stations (AWOS/ASOS)	72%	28%	N/A
Performance Indicator			
Percent of Facilities at 90 Percent Capacity for:			
T-Hangars	73%	23%	4%[2]
Conventional Box Hangars	78%	16%	6%[2]
Goal 4: Environmental Responsibility and Land Planning			
Performance Measures			
Percent of Facilities that have Completed a WHA	43%	57%	N/A
Percent of Facilities that have Completed a WHMP, if Required[3]	68%	23%	10%[4]
Percent of Aviation Facilities that have Full Wildlife or Security Fencing around the AOA	51%	49%	N/A
Performance Indicators			
Percent of Facilities with Height and Land Use Controls Adopted and Enforced by the Local Planning Agency	61%	39%	N/A
Percent of Facilities Included in Local or Regional Comprehensive Plans	54%	46%	N/A
Percent of Facilities Implementing Environmentally Friendly Actions	48%	52%	N/A
Goal 5: Aviation Industry Advancement			
Performance Indicators			
Percent of Facilities that Host or Participate in STEM Education Programs, Aviation Outreach Programs, or Other Similar Events	60%	40%	N/A
Percent of Facilities with Formal Procedures for Managing On-Facility UAS Operations	31%	69%	N/A
Percent of Facilities with Formal Procedures for Managing Proximate Off-Facility UAS Operations	31%	69%	N/A
Percent of Facilities that have Taken Steps to Prepare for the Needs of Electric Aircraft	9%	91%	N/A

Notes: [1]Taxiway geometries evaluated include wide expanse of pavement, three-node concepts, and direct access. [2]Indicates the percentage of airports that do not have any T-hangar or conventional box hangar storage. [3] Performance only includes 31 applicable airports. [4]Indicates the percentage of airports that indicated a WHMP was not required based on the findings of their WHA. Source: Kimley-Horn, 2022.