



Chapter 7 - Future Performance Targets and Recommendations

7.1. Introduction

This chapter represents the culmination of many analyses included in the 2022 Indiana State Aviation System Plan (ISASP) and documents the recommendations identified from these analyses. Two types of recommendations are presented in this chapter: project recommendations and airport or agency considerations. **Project recommendations** were made after establishing future performance targets for each of the Performance Measures (PMs) and identifying potential areas of improvement. **Airport and agency considerations** were also identified through evaluations included in the 2022 ISASP but do not include project recommendations or associated cost estimates (presented in **Chapter 8 - Indiana Airport Development Fund and System Cost Estimates**). Instead, airport considerations are intended to provide an overview of action items that airport or heliport sponsors can implement that may enhance their facility. Agency considerations are intended to provide Indiana Department of Transportation (INDOT) Office of Aviation with opportunities and action items that support system goals and other system needs, but do not relate to any on-facility project. These considerations were identified by reviewing results of the Performance Indicator (PI) analyses and coordinating with INDOT and the Industry Advisory Committee (IAC).

This remainder of this chapter is organized as follows:

- 7.2 Future Performance Targets and Project Recommendations
- 7.3 Airport and Agency Considerations
- 7.4 Summary

7.2. Future Performance Targets and Project Recommendations

The following sections document the existing system's performance as outlined in **Chapter 6 - Existing System Performance** and identifies future performance targets. Future performance targets are developed only for PMs and are presented by 2022 ISASP goal category. Future performance targets are defined as the percent of airports by category that *should* be achieving each PM to meet the overarching goals of the system plan. Future performance targets were established under advisement of the IAC and INDOT. During an in-person IAC meeting, IAC members participated in an activity where they evaluated the results of each PM by facility category and participated in group discussions to identify where performance could be improved over time. IAC members were asked to consider future performance in an unconstrained environment, where funding, competing priorities, geographical constraints, and other limitations do not impact goal setting. This allows for a comprehensive picture of what is needed to develop a fully optimized system and provides INDOT with an understanding of the different projects that can be implemented to improve system performance. In some instances, the future performance target for a 2022 ISASP category may equal that category's existing performance. This indicates that no additional facilities within that category need improvement, but the facilities that currently meet the PM should continue to maintain those facilities or services. Moreover, future performance targets are not all set at 100 percent as it may not be necessary that all system airports meet a PM to optimize system performance. More details about how future performance targets were set are provided in the following subsections.





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The PMs that were used to evaluate system performance and to ultimately identify project recommendations correspond with four 2022 ISASP goals:¹

- Goal 1. Safety and Security
- Goal 2. Economic Sustainability and Quality of Life
- Goal 3. Infrastructure Preservation and Development
- Goal 4. Environmental Responsibility and Land Planning



7.2.1. Goal 1. Safety and Security

Safety and security will continue to be a top priority for Indiana’s aviation system. Supporting the safe movement of aircraft in the air and on the ground includes the consideration of many airfield design factors. Goal 1. Safety and Security has one PM that relates to meeting Federal Aviation Administration (FAA) design standards and has three components that are evaluated to promote safety of aircraft operations and the airfield environment as outlined in FAA Advisory Circular (AC) 150/5300-13B, *Airport Design* (FAA AC 150/5300-13B). For more information about the parameters and methodologies for evaluating airfield design, refer to **Chapter 3 - Inventory of Existing Conditions, Section 3.3.1.1.**

7.2.1.1. Percent of Airports Meeting FAA Design Standards

The following subsections present the future performance targets and recommendations for the three individual components of the overall PM:

- Runway Safety Areas (RSAs)
- Taxiway Geometries
- Separation Standards

It is important to note that the analyses used to evaluate if system airports were meeting the identified FAA design criteria were conducted using geospatial and visual analyses and therefore should be considered estimates of an airport’s existing condition. Airports should continue to conduct aviation facility planning at the local level to better understand areas of design non-compliance and options for mitigating those occurrences.

Runway Safety Areas (RSAs)

RSAs provide a buffer if an aircraft overshoots or veers from a runway; therefore, the areas should be clear of obstructions or other potential hazards. Obstructions in an RSA may include a body of water, shrubbery or trees, buildings, roadways, and other physical objects. Because RSAs are such an important component of airfield safety, a future performance target of 100% was set for all National Plan of Integrated Airport Systems (NPIAS) facilities.

As shown in **Table 7.1**, this recommendation results in a systemwide future performance target of 98 percent compared to the existing system performance of 94 percent. The Unclassified facilities correspond with an 80 percent future performance target because this facility category includes a non-NPIAS airport. The one facility in this category that does not have clear RSAs is not an NPIAS facility and is therefore excluded from the future performance target.

¹ Goal 5. Aviation Industry Advancement does not have any PMs; therefore, there are no future performance targets, nor are there any project recommendations for this goal.





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Despite not being included in the future performance targets, all non-NPIAS facilities should also strive to achieve clear RSAs to promote safety on the airfield.

Table 7.1. Existing Performance and Future Targets - Clear RSAs

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (68)	64	94%	98%	3
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	14	88%	100%	2
Local (27)	26	96%	100%	1
Basic (14)	14	100%	100%	0
Unclassified (5)	4	80%	80%	0

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

The systemwide future performance target of 98 percent translates to three airports receiving a project recommendation related to clearing at least one RSA, as shown in **Table 7.2**. RSAs for each airport’s runway(s) were evaluated as part of this analysis; however, corresponding recommendations only pertain to one RSA at each airport because these airports only had one non-compliant RSA. The needs related to clearing an RSA at each of these airports should be evaluated at the airport level to identify appropriate strategies for mitigating the issue. Anderson Municipal Airport (AID) and Elkhart Municipal Airport (EKM) were all found to have a roadway within an RSA on at least one runway end, while Clark Regional Airport (JYV) was found to have a body of water in an RSA. Mitigating these issues in RSAs could be a relatively simple task for an airport, such as clearing some shrubbery, or it may be more complex, such as draining and grading a body of water or relocating an existing roadway. Mitigating or clearing obstructions becomes more complicated if the obstruction is not on airport property. In these instances, there may be very little an airport can do to clear the obstruction, and other strategies may need to be discussed. Recently, the FAA has been proactive in having aviation facilities complete RSA Determinations to assess for safety and overall compliance with *FAA AC 150/5300-13B, Airport Design*. RSA determinations are useful in identifying the next step for an RSA if it is found to be non-compliant. In some instances, an RSA may not meet FAA standards, but there are practicable improvements that will bring the RSA into compliance. In other instances, an RSA determination may find that there is no practical solution to improve the RSA, or perhaps a solution may enhance safety at that runway end while the RSA will still not meet standards.





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Table 7.2. Airports Identified for an RSA Compliance Project

Associated City	Airport Name	FAA ID	RSA Obstruction
Regional			
Elkhart	Elkhart Municipal	EKM	Roadway
Jeffersonville	Clark Regional	JVY	Water
Local			
Anderson	Anderson Municipal-Darlington Field	AID	Roadway

Source: Kimley-Horn, 2022.

Taxiway Geometries

In 2014, the FAA made changes to its guidance related to how airfields were designed, specifically related to taxiways and access to runways. These changes were adopted to reduce “hot spots” and increase pilots’ situational awareness while operating aircraft in movement areas. Multiple FAA design methods were revised; however, three specific changes were analyzed as part of the 2022 ISASP based on FAA AC 150/5300-13B, as documented in **Chapter 3 - Inventory of Existing Conditions** (direct access, three-node intersections, and wide expanses of pavement). Specific on-facility conditions may make redesigning taxiway geometries difficult due to land availability constraints or funding limitations, especially in cases where it requires major shifts in airfield pavement. For this reason, the recommendations related to the taxiway geometry design standards focus specifically on direct access issues, as these can potentially be combined with other airfield projects. Other design standards evaluated under this PM, including more than three-node intersections and wide expanses of pavement, are likely to be resolved in conjunction with other planned airfield projects and are not assessed separately here as project recommendations. Furthermore, the majority of taxiway geometry standard issues were related to direct access concerns.

The recommendation for the percent of airports meeting the direct access taxiway geometry design standard is 100 percent for all NPIAS airports which results in a systemwide future performance target of 98 percent because one of the three Unclassified airports not meeting this PM is not a NPIAS airport and is therefore not included in the future performance target. While Grissom Air Reserve Base (ARB) (GUS) is not an NPIAS airport it is included in the future performance target as it is pursuing NPIAS eligibility. Therefore, it is important that the facility meet the taxiway geometry standards established by the FAA. The other two non-NPIAS Unclassified airports are already meeting this PM as they do not have any direct access concerns at their airport. As shown in **Table 7.3**, systemwide, 46 percent of airports do not have direct access taxiways, compared to the future performance target of 98 percent. It is important to note that because the recommendations for this PM only focus on direct access issues, and not three-node intersections or wide expanses of pavement, the existing performance shown here differs from the performance presented in **Chapter 6 - Existing System Performance, Section 6.2.1.2**.





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Table 7.3. Existing Performance and Future Targets - Direct Access Taxiways

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (68)	31	46%	98%	36
Primary (4)	1	25%	100%	3
National (2)	0	0%	100%	2
Regional (16)	8	50%	100%	8
Local (27)	13	48%	100%	14
Basic (14)	7	50%	100%	7
Unclassified (5)	2	40%	80%	2

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

The future performance target of 98 percent translates to 36 airports receiving a project recommendation related to mitigating direct access taxiways. For efficiency, it is recommended that airports plan these mitigation efforts with other airfield design projects. The airports identified for a project recommendation related to direct access taxiway mitigation are presented in **Table 7.4**. Airports receiving recommendations for this PM should evaluate their airport’s Capital Improvement Plan (CIP) to identify the most appropriate solution and timing for mitigating direct access taxiway conflicts.

Table 7.4. Airports Identified for a Direct Access Taxiway Mitigation Project

Associated City	Airport Name	FAA ID	Taxiway Geometry Issue
Primary			
Evansville	Evansville Regional	EVV	Direct Access
Fort Wayne	Fort Wayne International	FWA	Direct Access
South Bend	South Bend International	SBN	Direct Access
National			
Gary	Gary/Chicago International	GYG	Direct Access
Indianapolis	Indianapolis Executive	TYQ	Direct Access
Regional			
Auburn	DeKalb County	GWB	Direct Access
Bloomington	Monroe County	BMG	Direct Access
Elkhart	Elkhart Municipal	EKM	Direct Access
Goshen	Goshen Municipal	GSH	Direct Access
Huntingburg	Huntingburg	HNB	Direct Access
Jeffersonville	Clark Regional	JVY	Direct Access
Lafayette	Purdue University	LAF	Direct Access
Terre Haute	Terre Haute Regional	HUF	Direct Access





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Associated City	Airport Name	FAA ID	Taxiway Geometry Issue
Local			
Anderson	Anderson Municipal-Darlington Field	AID	Direct Access
Angola	Tri-State Steuben County	ANQ	Direct Access
Bedford	Virgil I Grissom Municipal	BFR	Direct Access
Crawfordsville	Crawfordsville Regional	CFJ	Direct Access
Fort Wayne	Smith Field	SMD	Direct Access
Huntington	Huntington Municipal	HHG	Direct Access
Kendallville	Kendallville Municipal	C62	Direct Access
Knox	Starke County	OXI	Direct Access
Kokomo	Kokomo Municipal	OKK	Direct Access
La Porte	La Porte Municipal	PPO	Direct Access
Madison	Madison Municipal Airport	IMS	Direct Access
Peru	Peru Municipal	I76	Direct Access
Richmond	Richmond Municipal	RID	Direct Access
Seymour	Freeman Municipal	SER	Direct Access
Basic			
Delphi	Delphi Municipal	1I9	Direct Access
French Lick	French Lick Municipal	FRH	Direct Access
Logansport	Logansport/Cass County	GGP	Direct Access
Rochester	Fulton County	RCR	Direct Access
Tell City	Perry County Municipal	TEL	Direct Access
Wabash	Wabash Municipal	IWH	Direct Access
Winamac	Arens Field	RWN	Direct Access
Unclassified			
Griffith	Griffith-Merrillville	05C	Direct Access
Peru	Grissom ARB	GUS	Direct Access

Source: Kimley-Horn, 2022.

Separation Standards

Airfield separation standards were the final component of FAA design standards evaluated at system airports. The three separation standards evaluated were from the runway centerline to holding positions, taxiway centerlines, and aircraft parking areas, respectively. Nonprimary runways were also included in this analysis. By reviewing existing conditions and coordinating with INDOT and the IAC, the systemwide future performance target was established for all NPIAS airports to meet FAA separation standards. In addition to NPIAS airports, the future performance target includes Grissom ARB (GUS), which is a non-NPIAS airport undergoing a feasibility study for NPIAS inclusion. For this reason, it is important that Grissom ARB (GUS) aims to meet all FAA design standards. Considering that all NPIAS airports and Grissom ARB should be meeting separation standard minimums, the future performance target is set at 98 percent, compared to the existing system performance of 87 percent, as shown in **Table 7.5**.





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The Unclassified facilities correspond with an 80 percent future performance target because this facility category includes one airport that does not meet separation standards but is not included in the NPIAS and is therefore not included in the future performance target. Despite not being included in the future performance targets, this non-NPIAS facility should also strive to meet separation standards to promote safety on the airfield.

Table 7.5. Existing Performance and Future Targets - Separation Standards

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (68)	59	87%	98%	8
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	14	88%	100%	2
Local (27)	24	89%	100%	3
Basic (14)	12	86%	100%	2
Unclassified (5)	3	60%	80%	1

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

The airports identified for a separation standard project recommendation are presented in **Table 7.6**. Several airports identified for a project recommendation have an ongoing or planned future project where the separation standard issue can be resolved in combination with the airfield project. The other airports that do not have an ongoing or planned future airfield project should seek out future opportunities to combine a separation standard resolution with another airfield design project. As with other design criteria evaluated for the 2022 ISASP, it is critical that airports evaluate their needs and work to bring their separation standards into compliance.

Table 7.6. Airports Identified for a Separation Standards Project

Associated City	Airport Name	FAA ID	Inadequate Separation
Regional			
Indianapolis	Eagle Creek Airpark	EYE	RWY 03/21: Hold position short by 40 ft and taxiway centerline separation short by 20-40 ft
Indianapolis	Indy South Greenwood	HFY	RWY 01/19: Hold position short by 75 ft
Local			
Madison	Madison Municipal Airport	IMS	RWY 03/21: Hold position short by 75 ft
Marion	Marion Municipal-McKinney Field	MZZ	RWY 04/22: Taxiway centerline separation short by 100 ft
Sullivan	Sullivan County	SIV	RWY 18/36: Taxiway centerline separation short by 50 ft
Basic			
Monticello	White County	MCX	RWY 18/36: Taxiway centerline separation short by 90 ft
Portland	Portland Municipal	PLD	RWY: No hold position markings



Associated City	Airport Name	FAA ID	Inadequate Separation
Unclassified			
Peru	Grissom ARB	GUS	RWY 05/23: Hold position short by 50 ft

Source: Kimley-Horn, 2022.

The PMs related to RSAs, taxiway geometries, and separation standards were documented in a combined manner as a single result in **Chapter 6 - Existing System Performance, Section 6.2.1.4** to present a total percentage of airports that are currently meeting all, or not meeting any, of the FAA design standards evaluated as part of the 2022 ISASP. This chapter instead presents each component individually in order to have recommendations for each airport to support future cost analyses.



7.2.2. Goal 2. Economic Sustainability and Quality of Life

Developing an aviation system that can support economic sustainability and contribute to Indiana residents' quality of life is a key focus of the 2022 ISASP. Goal 2. Economic Sustainability and Quality of Life has one PM related to the availability of aviation fuel (either Jet A or 100 low lead [100LL]) 24 hours a day, seven days a week. The future performance target and related project recommendations for this PM are presented in the following subsection.

7.2.2.1. Percent of Facilities with 24/7 Fuel Availability (Jet A and/or 100LL offered via Credit Card Machine or 24/7 Staffing)

Having 24/7 fuel availability is a priority for most airports. Around the clock fuel availability provides an opportunity for facilities to increase revenue, and more importantly, it benefits emergency response activities allowing for fueling at all times, day or night. Based on these benefits, and with input from the IAC and INDOT, it is recommended that all Primary through Basic facilities offer 24/7 fuel, which corresponds to a future performance target of 97 percent. As shown in **Table 7.7**, 96 percent of the system is currently meeting this PM compared to the 97 percent future performance target.

The future performance target of 97 percent translates to one airport receiving a project recommendation for acquiring 24/7 fuel availability, as shown in **Table 7.8**. The Local airport without 24/7 fuel availability does currently offer Jet A and 100LL fuel during regular business hours, so the recommendation is specific to acquiring a self-service credit card reader.

Table 7.7. Existing Performance and Future Targets - 24/7 Fuel Availability

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (69)	66	96%	97%	1
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	16	100%	100%	0

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Local (27)	26	96%	100%	1
Basic (14)	14	100%	100%	0
Unclassified (6)	4	67%	67%	0

Note: Indianapolis Downtown Heliport (8A4) is included in this analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

Table 7.8. Airport Identified for a 24/7 Fuel Project

Associated City	Airport Name	FAA ID	Current Fuel Availability
Local			
New Castle	New Castle Henry County Marlatt Field	UWL	100LL/Jet A Full Service

Source: Kimley-Horn, 2022.



7.2.3. Goal 3. Infrastructure Preservation and Development

Preserving existing airport infrastructure and identifying future airport infrastructure development opportunities is key to enhancing the viability of an aviation system. The future performance targets and recommendations for this goal are presented in the following subsections and relate to the following PMs:

- Percent of Facilities with Primary Runway/Helipad Pavement Condition Index (PCI) within 10 Points of INDOT’s Minimum Service Level Recommendations (MSLRs)
- Percent of Facilities with Approach Procedures Appropriate to their Category
- 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
- Percent of Facilities that Perform Pavement Maintenance at least Once Every Five Years
- Percent of Facilities with Certified On-Site Weather Reporting Stations (Automated Weather/Surface Operating System [AWOS/ASOS])

7.2.3.1. Percent of Facilities with Primary Runway/Helipad Pavement Condition Index (PCI) within 10 Points of INDOT’s Minimum Service Level Recommendations (MSLRs)

An aviation facility’s primary runway or helipad is its most critical piece of infrastructure. Runway and helipad pavement requires routine monitoring and maintenance to ensure the pavement can safely support existing activity. INDOT identified PCI MSLRs that indicate a target PCI range for an aviation facility based on the function it serves within the system. To support the continued maintenance of primary runway and helipad surfaces at ISASP facilities, it is recommended that all system facilities are within the PCI range recommended by INDOT. Therefore, the systemwide future performance target is set at 100 percent. As shown in **Table 7.9**, 96 percent of facilities are currently meeting this PM compared to the 100 percent future performance target.



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Table 7.9. Existing Performance and Future Targets - Primary Runway/Helipad within 10 Points of INDOT's MSLRs

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (68)	65	96%	100%	3
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	15	94%	100%	1
Local (27)	26	96%	100%	1
Basic (14)	14	100%	100%	0
Unclassified (5)	4	80%	100%	1

Notes: Indianapolis Downtown Heliport (8A4) is included in this analysis. Grissom ARB (GUS) is excluded from this analysis. Sources: INDOT, 2021; 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

The airports identified for a primary runway rehabilitation project recommendation are presented in **Table 7.10**. The existing PCI for these three airports is approximately 10 PCI points lower than is recommended by INDOT, and the associated recommendations are to pursue rehabilitation projects to increase their PCIs.

Table 7.10. Airports Identified for a Primary Runway PCI Project

Associated City	Airport Name	FAA ID	Existing Primary Runway PCI
Regional			
Auburn	DeKalb County	GWB	43*
Local			
Knox	Starke County	OXI	49*
Unclassified			
Lebanon	Boone County	6I4	19

Notes: * The primary runway at DeKalb County Airport (GWB) will undergo a pavement rehabilitation project after the current runway extension project is complete. The primary runway at Starke County Airport (OXI) is undergoing a pavement rehabilitation project in 2022. Both airports are shown as deficient as these projects were not yet complete at the time of the analysis. Source: Kimley-Horn, 2022.

7.2.3.2. Percent of Facilities with Approach Procedures Appropriate to their Category

The type of approach procedure(s) available at an airport can influence the airport's ability to accommodate varying types of operations and users. This PM measured each airport's existing approach(es) to their primary runway or helipad against an approach type that was considered appropriate based on their ISASP category. Appropriate approaches were identified based on determinations made by INDOT Office of Aviation and in alignment with the MSLRs related to runway markings. For this reason, the future performance target for this PM is set at 100 percent, indicating that all system facilities should have approach procedures appropriate to their role. As shown in **Table 7.11**, 99 percent of the system is currently meeting this PM compared to the 100 percent future performance target.





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Table 7.11. Existing Performance and Future Targets - Approach Procedures Appropriate to their Category

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (69)	68	99%	100%	1
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	15	94%	100%	1
Local (27)	27	100%	100%	0
Basic (14)	14	100%	100%	0
Unclassified (6)	6	100%	100%	0

Note: Indianapolis Downtown Heliport (8A4) is included in this analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; FAA ADIP, 2021; Kimley-Horn, 2022.

The 100 percent future performance target corresponds to a project recommendation for one Regional airport as shown **Table 7.12**. The existing approach for this airport is a non-precision area navigation (RNAV) approach on both ends of the primary runway. The airport will be considered as meeting this PM and therefore satisfying the future performance target, if it can achieve vertical guidance on at least one runway end (i.e., RNAV with a Localizer Performance with Vertical Guidance [LPV]). An airport’s ability to implement vertical guidance may depend on controlling obstructions and other airport-specific airspace conditions. As such, it is critical that airport-level facility planning be conducted before any capital improvement projects are programmed.

Table 7.12. Airport Identified for an Approach Procedure Project

Associated City	Airport Name	FAA ID	Existing Approach
Regional			
Indianapolis	Indianapolis Metropolitan	UMP	Non-precision: RNAV/RNAV

Source: Kimley-Horn, 2022.

7.2.3.3. 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

The key to extending the viability of aviation facilities is conducting routine, or as needed, airport facility planning, which can be accomplished through developing and/or updating an ALP. ALPs are required for all federally obligated facilities; however, they can also be an asset to non-federally obligated facilities, particularly those with aspirations to be integrated into the NPIAS. This PM identified the percentage of facilities within each category that completed ALPs less than 10 years ago, 10-20 years ago, more than 20 years ago, or that have not completed an ALP. An airport’s or heliport’s need to update their ALP may depend on a variety of factors and is often based on existing conditions and future development goals of the airport.

ALP age targets were developed for each facility category, as shown in **Table 7.13**. ALP age targets were developed based on feedback received from the IAC and INDOT regarding when a typical aviation facility may need to consider updating their ALP based on the role they serve within the system.





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It is recommended that Primary facilities maintain an ALP dated within 10 years because of the high demand and ever-evolving needs at these types of facilities. Regional through Basic airports are subject to less fluctuations in activity, and therefore, having an ALP age target within 10 - 20 years is considered more appropriate for airports in these categories. There is no age target set for Unclassified facilities, as an ALP over 20 years old may still be considered current for these facilities. However, it is recommended that non-NPIAS Unclassified facilities complete an ALP if they aspire to be integrated into the NPIAS.

Table 7.13. ALP Age Targets by Category

Facility Category	ALP Age Target
Primary	Within 10 Years
National	Within 10 Years
Regional	Between 10 and 20 Years
Local	Between 10 and 20 Years
Basic	Between 10 and 20 Years
Unclassified	No Target*

Note: * It is recommended that non-NPIAS Unclassified facilities should complete an ALP if pursuing NPIAS inclusion. Source: Kimley-Horn, 2022.

Table 7.14 presents the number of facilities that have ALPs within their category’s age target, which is associated with an existing system performance of 87 percent. It is important to note that this existing performance differs from the performance presented in **Chapter 6 - Existing System Performance**, since this same PM as that chapter was presenting the percent of facilities with an ALP within each timeframe: within 10 years, 10-20 years, or older than 20 years. It is recommended that all facilities maintain ALPs within their category’s ALP age target, which results in a future performance target of 100 percent of facilities having an ALP within their category’s age target.

Table 7.14. Existing Performance and Future Targets - Meeting the ALP Age Target for their Category

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Facilities Meeting their ALP Age Target	Percent of Facilities Meeting their ALP Age Target		
Systemwide (67)	58	87%	100%	9
Primary (4)	3	75%	100%	1
National (2)	1	50%	100%	1
Regional (16)	15	94%	100%	1
Local (27)	23	85%	100%	4
Basic (14)	13	93%	100%	1
Unclassified (4)	3	75%	100%	1

Notes: Indianapolis Downtown Heliport (8A4) is included in this analysis. Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

The future performance target of having 100 percent of the system having ALPs that are within their category’s ALP age target corresponds with a recommendation for the nine airports presented in **Table 7.15** to update or develop an ALP.





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The Unclassified airport is currently undergoing a feasibility study for NPIAS integration and completing an ALP is a critical step for NPIAS eligibility. Airports not included in **Table 7.15** should continue to monitor their facility needs to identify when it is appropriate to update their ALP.

Table 7.15. Airports Identified for an ALP Update

Associated City	Airport Name	FAA ID	Most Recent ALP Date
Primary			
Evansville	Evansville Regional	EVV	2009
National			
Indianapolis	Indianapolis Executive	TYQ	2009
Regional			
Columbus	Columbus Municipal	BAK	2000
Local			
Kendallville	Kendallville Municipal	C62	1988
Knox	Starke County	OXI	1997
Kokomo	Kokomo Municipal	OKK	1999
Sullivan	Sullivan County	SIV	2000
Basic			
Tell City	Perry County Municipal	TEL	1993
Unclassified			
Peru	Grissom ARB	GUS	None Completed

Source: Kimley-Horn, 2022.

7.2.3.4. Percent of Airports that Perform Pavement Maintenance at least Once Every Five Years

Monitoring the condition of pavement and making informed decisions about pavement maintenance will continue to be a goal for all ISASP facilities. The primary runway is not an airport's or heliport's only pavement asset; these facilities must also monitor and maintain the condition of aprons, taxiways, and other airfield pavement surfaces. Continued and intentional pavement rehabilitation projects can delay the need to completely reconstruct pavement, avoiding unnecessary runway and/or taxiway closures. NPIAS facilities also receive funding assistance for pavement maintenance, further incentivizing proper pavement maintenance practices. Eligible FAA Airport Improvement Program (AIP) pavement maintenance projects include performing spall repair, crack sealing, or the repair of a small portion of a total pavement area. It should be noted that maintenance project AIP grants are typically only issued once during a given pavement's life cycle. In addition to the maintenance projects that are eligible for federal funding, airports are responsible for a variety of other non-eligible maintenance practices, such as applying herbicide in pavement cracks, mowing airfield grass, and sweeping airfield pavement.

System facilities are already performing well in this PM, with every facility, excluding one non-NPIAS Unclassified facility, reporting that they perform pavement maintenance at least once every five years. It was determined that the current performance for this PM is considered adequate to meet existing and future pavement maintenance needs; therefore, the future performance target is set at 99 percent, matching that of the existing system performance, as shown in **Table 7.16**. No recommendations were developed related to this PM, as airports are performing routine pavement maintenance and are expected to continue doing so.





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Table 7.16. Existing Performance and Future Targets - Pavement Maintenance at least Once Every Five Years

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (67)	66	99%	99%	0
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	16	100%	100%	0
Local (27)	27	100%	100%	0
Basic (14)	14	100%	100%	0
Unclassified (4)	3	75%	75%	0

Notes: Indianapolis Downtown Heliport (8A4) is included in this analysis. Sheridan Airport (5I4) and Boone County Airport (6I4) are excluded from the analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

7.2.3.5. Percent of Facilities with Certified On-site Weather Reporting Stations (Automated Weather/Surface Operating System [AWOS/ASOS])

Certified weather reporting stations, such as an AWOS or an ASOS contribute to expanded airport functionality and accessibility, as the stations support a wide range of user needs, from recreational flyers to charter flights and aeromedical operations. In fact, some operations, such as aeromedical, require an AWOS or ASOS be present at an airport in order to land there. AWOS or ASOS equipment enhance on-airport safety and broaden the functionality of the airport, making it a critical piece of infrastructure for most system airports.

In order to identify the future performance target for this PM, a number of considerations were proposed by members of the IAC. A summary of those considerations and how those considerations impacted the future performance target is presented in **Table 7.17**.

Table 7.17. IAC Considerations for AWOS/ASOS Project Recommendations

IAC Consideration for AWOS/ASOS Recommendations	System Meets IAC Considerations
All facilities with Part 135 certificated businesses on the airfield should have an AWOS/ASOS	Yes
All airports with a primary runway length of 5,000 feet or greater should have an AWOS/ASOS	Yes
Any airport that is more than 15 nautical miles from an airport with an AWOS/ASOS should have an AWOS/ASOS on their airfield	No

Sources: 2022 ISASP IAC Meeting #3, 2022; Kimley-Horn, 2022.

As shown, the system currently meets two of the three considerations posed by the IAC but does not meet the service area consideration that proposes any airport more than 15 nautical miles from a system airport with an AWOS or ASOS should have an AWOS or ASOS on their airfield. A Geographic Information System (GIS) analysis was conducted to generate 15 nautical mile buffers around system facilities with certified weather reporting equipment in order to





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identify the existing geographical coverage and determine which facilities were not included in the service area buffers.

It was determined through this GIS analysis that seven airports were located outside of the 15-nautical-mile certified weather service areas. To improve the geographical coverage of facilities with certified weather reporting capabilities, the future system performance target is set at 83 percent, compared to the existing performance of 72 percent, as shown in **Table 7.18**.

Table 7.18. Existing Performance and Future Targets - Certified On-Site Weather Reporting Stations (AWOS/ASOS)

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (69)	50	72%	83%	7
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	16	100%	100%	0
Local (27)	21	78%	89%	3
Basic (14)	6	43%	71%	4
Unclassified (6)	1	17%	17%	0

Note: Indianapolis Downtown Heliport (8A4) is included in this analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

The future performance target of 83 percent corresponds with the airports in **Table 7.19** being identified for an AWOS or ASOS project recommendation. It should be noted that if all seven of these facilities install an AWOS or ASOS, there will be very little overlap, with only two facilities having a 17-square-mile overlap in their service areas. The majority of airports presented in **Table 7.19** are equipped with a Unicom, which is a nongovernment air and ground radio communication station that provides airport information upon a pilot's request. Unicom stations may provide a pilot with local weather information, wind direction, recommended runway, and other important information, but are not considered certified weather reporting stations.

Table 7.19. Airports that are Identified for an AWOS/ASOS Project

Associated City	Airport Name	FAA ID	Existing Weather Reporting
Local			
Greensburg	Greensburg Municipal	I34	AWOS-III - 17 nautical miles
Sullivan	Sullivan County	SIV	Unicom
Washington	Daviess County	DCY	Unicom
Basic			
Kentland	Kentland Municipal	50I	Unicom
Salem	Salem Municipal	I83	Unicom
Wabash	Wabash Municipal	IWH	Unicom
Winchester	Randolph County	I22	Unicom

Source: Kimley-Horn, 2022.





7.2.4. Goal 4. Environmental Responsibility and Land Planning

Establishing an airport or heliport environment that is free of wildlife hazards and incompatible land uses is critical for extending the longevity and functionality of an aviation facility. The PMs associated with Goal 4. Environmental Responsibility and Land Planning identify different activities or strategies that an airport or heliport can implement to reduce impacts of wildlife hazards and unrestricted airport access. There are two PMs within this goal that produce future performance targets and project recommendations that are discussed in the following subsections:

- Percent of Facilities that have Completed a Wildlife Hazard Assessment (WHA) and a Wildlife Hazard Management Plan (WHMP), if Required
- Percent of Facilities that have Full Wildlife or Security Fencing around the Airport Operations Area (AOA)

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

It is important to monitor and manage wildlife populations on and around the airport or heliport environment because wildlife can cause significant safety concerns for aircraft operations. There are two separate but related planning efforts that can mitigate concerns of encroaching wildlife into the airport or heliport environment. More information regarding both of these efforts is presented in the following two subsections.

Wildlife Hazard Assessment (WHA)

Before any action can be taken to reduce wildlife populations, an aviation facility must first be aware of the wildlife hazards that may be impacting them. For this reason, a WHA is conducted. A WHA can be an expensive undertaking for smaller General Aviation (GA) airports that may need to use their limited funding for capital improvements; therefore, the future performance target focuses on developing a WHA as a recommendation for Primary through Regional airports. Local, Basic, and Unclassified facilities may opt to have a wildlife hazard site visit completed to determine if there are potential wildlife hazards without having to conduct a full WHA, however this is not a part of the future performance target or recommendation for this PM. As shown in **Table 7.20**, these considerations result in a future performance target of 51 percent, compared to the existing performance of 43 percent.

Table 7.20. Existing Performance and Future Targets - WHA

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (69)	31	45%	51%	4
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	12	75%	100%	4
Local (27)	11	41%	41%	0
Basic (14)	2	14%	14%	0
Unclassified (6)	0	0%	0%	0

Note: Indianapolis Downtown Airport (8A4) is included in this analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.



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The future performance target of 51 percent corresponds with the airports presented in **Table 7.21** being identified for a WHA project recommendation. It is recommended that these airports program a WHA in their next CIP. In addition, as it relates to the subsequent section, if the findings of the WHA identify potential wildlife hazards that could impact airport safety, then it is also recommended that a WHMP be completed.

Table 7.21. Airports Identified for a WHA Project

Associated City	Airport Name	FAA ID	WHA Status
Regional			
Indianapolis	Indianapolis Metropolitan	UMP	Not Complete
Indianapolis	Indy South Greenwood	HFY	Not Complete
Huntingburg	Huntingburg	HNB	Not Complete
Warsaw	Warsaw Municipal	ASW	Not Complete

Source: Kimley-Horn, 2022.

Wildlife Hazard Management Plan (WHMP), if Required

The WHMP is a follow-on study that uses the findings from the WHA to develop strategies and an implementation plan for reducing wildlife hazard risks. A WHMP is not always necessary as WHAs may find that there are no impactful wildlife hazards in the airport or heliport environment. For the aviation facilities with WHAs that have identified a need for a WHMP, it is important that the airport follows through with developing the WHMP and implementing the strategies identified through that planning process. For this reason, the future performance target for this PM is set so that the airports who completed a WHA that identified a need for a WHMP complete one if they have not already done so. It is important to note that the future performance target for this PM only includes 28 airports, as those are the only airports appropriate for a WHMP recommendation. Therefore, 100 percent of applicable airports should complete a WHMP, compared to the existing performance of 75 percent, as shown in **Table 7.22**. Airports identified for a WHA recommendation, as shown in **Table 7.21**, should also complete a WHMP if it is deemed necessary based on the results of the WHA. The existing performance for the percent of airports meeting this PM is 68 percent in **Chapter 6 - Existing Performance System** because the evaluation included a category for airports who advised that a WHMP was not required. Those three airports were removed from the future performance target evaluation, resulting in an evaluation of 28 airports instead of 31.

Table 7.22. Existing Performance and Future Targets - Applicable Airports with a WHMP

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (28)	21	75%	100%	7
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (10)	9	90%	100%	1
Local (10)	5	50%	100%	5
Basic (2)	1	50%	100%	1

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





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The 100 percent future performance target for applicable airports results in a WHMP recommendation for the airports presented in **Table 7.23**. The evaluation used to identify these recommendations only included airports that completed a WHA, and it was indicated that a WHMP would be the next step. For the airports that indicated a WHMP was not necessary, they should continue monitoring their airport environment and revisit their WHA as needed in case wildlife habitats grow over time to the level of concern for airport safety.

Table 7.23. Airports that are Identified for a WHMP Project

Associated City	Airport Name	FAA ID	WHMP Status
Regional			
Jeffersonville	Clark Regional	JVY	WHA Complete, WHMP Required
Local			
Crawfordsville	Crawfordsville Regional	CFJ	WHA Complete, WHMP Required
Indianapolis	Hendricks County-Gordon Graham Field	2R2	WHA Complete, WHMP Required
Madison	Madison Municipal Airport	IMS	WHA Complete, WHMP Required
New Castle	New Castle Henry County Marlatt Field	UWL	WHA Complete, WHMP Required
Sullivan	Sullivan County	SIV	WHA Complete, WHMP Required
Basic			
Monticello	White County	MCX	WHA Complete, WHMP Required

Source: Kimley-Horn, 2022.

7.2.4.2. Percent of Aviation Facilities that have Full Wildlife or Security Fencing around the Air Operations Area (AOA)

Adequate fencing is a critical component to on-airport or on-heliport safety. Not only is fencing a deterrent for trespassing by prohibited individuals, but it can also be an effective method for keeping some wildlife, like deer and other ground animals, off of the airfield. INDOT recognizes that fencing an airport's full property can be quite extensive, and it can be cost prohibitive to fence the entire perimeter of the airport. Therefore, the minimum suggestion for fencing is that it surrounds the AOA, which includes runways, taxiways, and apron areas. Per the FAA's definition, the AOA is considered to encompass all airport areas where aircraft can operate, either under their own power or while in tow. There are two types of fencing that are recommended at ISASP airports: wildlife and security fencing. Both fencing types should be six feet tall, with the security fence having a barbed-wire top and the wildlife fencing having a buried skirt to prevent animals from digging underneath. It is up to the airport to identify which of these fencing types is more applicable to their needs. Adequate AOA fencing that meets wildlife or security objectives is most needed at airports that support a high level of traffic as the chance for a wildlife incursion or unwanted trespassers is higher. For this reason, the future performance target for aviation facilities with adequate fencing around the AOA is set at 55 percent, corresponding to all Primary through Regional airports meeting this PM. As shown in **Table 7.24**, 51 percent of the system is meeting this PM compared to the 55 percent future system target.





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Table 7.24. Existing Performance and Future Targets - Full Wildlife or Security Fencing Around the AOA

Facility Category	Existing Performance		Future Performance Target	Additional Airports Needed to Achieve Future Performance Target
	Number of Airports Meeting PM	Percentage of Airports Meeting PM		
Systemwide (69)	35	51%	55%	3
Primary (4)	4	100%	100%	0
National (2)	2	100%	100%	0
Regional (16)	13	81%	100%	3
Local (27)	9	33%	33%	0
Basic (14)	4	29%	29%	0
Unclassified (6)	3	50%	50%	0

Note: Indianapolis Downtown Heliport (8A4) is included in this analysis. Sources: 2022 ISASP Airport Manager Survey, 2021; Kimley-Horn, 2022.

The future performance target of 55 percent results in a fencing recommendation for the three airports identified in **Table 7.25**. The existing fencing conditions at these facilities is varied, with two airports reporting six-foot full-perimeter fencing and one airport with four-foot partial-perimeter fencing. It is recommended that the existing six-foot fencing be updated to security fencing by adding barbed wire, and the four-foot fence would need to be a minimum of six feet tall with barbed wire, or a buried skirt, to meet the objectives of this PM.

Table 7.25. Airports Identified for a Full Wildlife or Security Fencing Project

Associated City	Airport Name	FAA ID	Existing Fencing
Regional			
Huntingburg	Huntingburg	HNB	4' Fence, Partial Perimeter
Indianapolis	Indy South Greenwood	HFY	6' Fence, Full Perimeter
Warsaw	Warsaw Municipal	ASW	6' Fence, Full Perimeter

Source: Kimley-Horn, 2022.

7.2.5. Summary of Project Recommendations

The prior sections of this chapter have identified a series of project recommendations to address PMs associated with four of the five system goals. **Table 7.26** presents the number of PMs and projects related to each goal. As shown, the majority of the projects identified as a part of the PM analysis are attributed to Goal 1. Safety and Security, with 48 projects across 42 airports. It is important to note that while there is only one PM under Goal 1, the PM has three subsections that produce project recommendations. Similarly, Goal 4. Environmental Responsibility and Land Planning has a PM with two subsections that each produce project recommendations. **Table 7.26** also demonstrates that some airports have multiple project needs, considering that there are only 53 airports receiving projects, but 83 total project recommendations stemming from the PM and future performance target analysis.





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Table 7.26. Summary of Projects for 2022 ISASP Goals

Goal	Number of PMs	Number of Projects	Number of Airports Receiving a Project Recommendation
1. Safety and Security	1 (3 subsections)	47	41
2. Economic Sustainability and Quality of Life	1	1	1
3. Infrastructure Preservation and Development	5	20	18
4. Environmental Responsibility and Land Planning	2 (1 has 2 subsections)	14	11
5. Aviation Industry Advancement	0	N/A	N/A
	Total	86	52

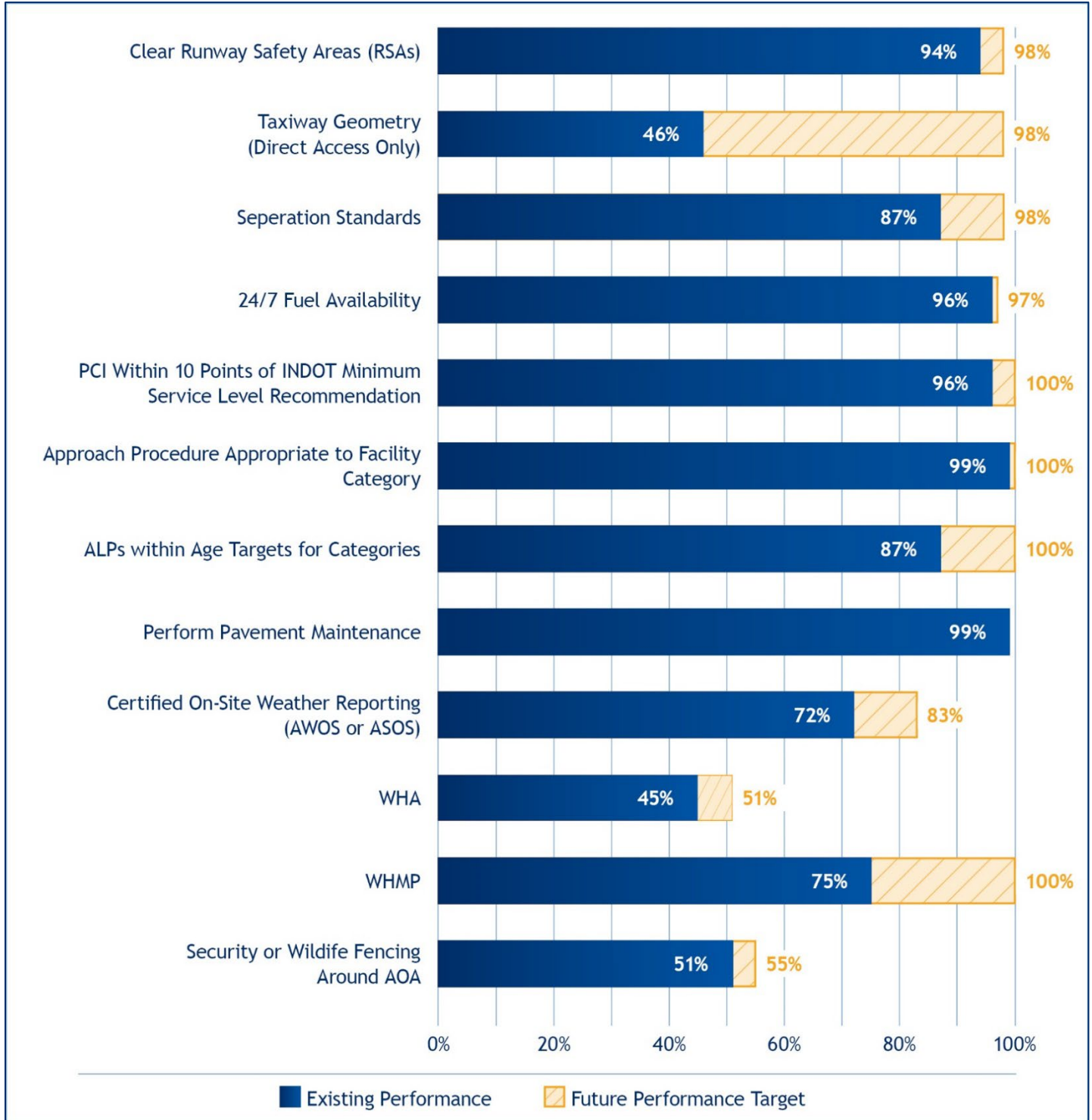
Note: The total number of airports receiving project recommendations will not sum accurately because some airports received projects across multiple goals. Source: Kimley-Horn, 2022

A summary of the existing performance and future performance targets is presented in **Figure 7.2**. The title of the PMs are abbreviated and presented in the same order as they are presented in **Section 7.2.1** through **7.2.4**. The PMs with the largest deficiency between existing performance and the future performance targets are related to direct access taxiway concerns and WHMPs. In many instances, the marginal improvement needed is between zero and five percent to achieve the future performance target.

Cost estimates related to goal and the associated PMs are presented in **Chapter 8 - Indiana Airport Development Fund and Cost Estimates**.



Figure 7.1. Summary of Systemwide Existing System Performance and Future Performance Targets



Source: Kimley-Horn, 2022.



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7.3. Airport and Agency Considerations

As mentioned in Section 7.1, two types of metrics were used to evaluate system performance:

- **PMs:** Which, in many cases, resulted in project recommendations and are presented in Sections 7.2.1 through 7.2.4
- **PIs:** Developed to evaluate system performance but do not generate project recommendations

This section focuses on non-project recommendations, largely stemming from the analyses of PIs which were used to provide greater context of the overall system of airports. Some of the PI analyses uncovered an area of potential improvement and are identified below as consideration airports, or ones that INDOT can focus attention to improve facilities, processes, or the aviation industry in Indiana. The intended audience for each consideration is indicated by using a bold **Airport** or **INDOT** in the following subsections. These considerations provide general action items or suggestions that, if implemented, could also contribute to enhanced system performance over the planning period. The PIs that informed airport or agency considerations are presented in the following subsections.² In addition to the PIs, a review of private heliport policy also informed an agency consideration, which is also presented in a following subsection.

7.3.1. Goal 1. Safety and Security PI

7.3.1.1. Percent of Non-Part 139 Facilities Whose Local Responders have Basic Aircraft Rescue and Fire Fighting (ARFF) Training

There are 11 Part 139 facilities in Indiana that are required to provide on-site ARFF in case of an airport or aircraft emergency. Airport and aircraft emergencies are not isolated to only Part 139 airports; the remaining 58 facilities (which include NPIAS and Non-NPIAS ISASP facilities) are also at risk of these emergencies and should plan accordingly. **Airport** managers who do not have local responders trained in basic ARFF protocols should consider reviewing FAA AC 150/5210-17C, *Programs for Training of Aircraft Rescue and Firefighting Personnel*, which provides information on courses and reference materials for training ARFF personnel. This may give airport managers important insight into what is required for these protocols and give them necessary context when coordinating with the local first responding agencies on training opportunities. Moreover, the FAA offers an 11-part ARFF training series that provides an introduction to ARFF protocols, as well as a five-part series that presents important information regarding aircraft forcible entry, firefighting with high-reach extendible turret (HRET), and cargo aircraft firefighting. These resources may be helpful for airports to review when considering opportunities for coordinating with their local first responders. The 21 non-Part 139 **airports** that reported having local responders trained in ARFF should continue coordinating with these agencies so that the local first responders can be aware of continuing educating requirements or opportunities to keep their skills current with the latest protocols.

² Airport or agency considerations were not developed for every PI in the 2022 ISASP.





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7.3.2. Goal 2. Economic Sustainability and Quality of Life PI

7.3.2.1. Percent of Facilities with Active Development Partnerships with Chambers of Commerce, Tourism Bureaus, Air Service Development Groups, Service Organizations, Local or Regional Governments, Recreation Districts, or Other Similar Entities

Business relationships between airports and local governments, economic agencies, and service organizations can promote sharing of information that could identify opportunities for new on-airport businesses, new air service opportunities, other opportunities for improving the relationship between the airport and the community, and more. Public/private partnerships (P3) have proven effective at many facilities across the nation, as well as in the state of Indiana. **Airports** who do not have partnerships with local development groups should engage with their constituents.

The United States (U.S.) Congress passed The Bipartisan Infrastructure Law (BIL) through the Infrastructure Investment and Jobs Act on November 15, 2021. BIL is a five-year infrastructure investment of \$550 billion from Fiscal Year (FY) 2022 through FY 2026 for airports, roads, bridges, public transit, passenger rail, electric vehicles (EV), and more. Approximately \$25 billion of the federal investment is allocated to airport terminals, air traffic facilities, and airport infrastructure. These funds are available through grants, but state and/or local matches are still necessary. Securing these funds puts an increased burden on airports to come up with the local match, proving even more the importance of local airport advocates as well as partnerships that may assist or supplement the local investment needs. More information on BIL funding is presented in **Chapter 8 - Indiana Airport Development Fund and Cost Estimates**.

7.3.3. Goal 3. Infrastructure Preservation and Development PI

7.3.3.1. Percent of Facilities at 90 Percent Capacity for T-Hangars and Conventional Box Hangars

More than 70 percent of ISASP facilities reported having 90 percent of their covered aircraft storage facilities occupied by based aircraft, indicating a low supply and high demand for these facilities. Historically, hangar construction costs have been high and are increasing further due to increased costs of materials and global supply chain issues. Additionally, many airports charge low rental rates, so return on investment can take decades. To compound this issue, hangars are difficult to justify for funding through the FAA AIP because these projects are typically low priority and only funded once all of the other airport infrastructure needs are addressed. However, due to the availability of the recent BIL funding, additional resources are available for lower-priority projects, such as hangar development. Additionally, many states, including Indiana, provide little to no funding for hangars, leaving the cost for hangars largely on private investment or the airport sponsor. As such, **airports** should consider managing and preserving their existing hangar infrastructure to accommodate demand. Airport managers should consider keeping accurate covered aircraft storage waiting lists to gauge interest in hangars as well as to monitor appropriate use of hangar storage facilities which may be necessary to justify additional hangar development.

7.3.4. Goal 4. Environmental Responsibility and Land Planning PIs

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

Approximately 40 percent of ISASP facilities reported that their local planning agency has not adopted, or does not enforce, height and land use controls. Creating and enforcing these controls is important because it protects an airport's airspace and environment from incompatible land uses, as well as protects people on the ground from potential airport noise and other impacts.





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INDOT should consider developing statewide guidance to support airports pursuing coordination with their local planning agencies to develop height and land use controls. One strategy that could encourage airports to pursue these types of land use controls is for INDOT to develop a handbook that provides guidance to airport sponsors and communities in drafting compatible land use plans and includes a model zoning ordinance that meets state guidance. The handbook could also offer information about why compatible land use development is critical for airports and what the benefits of establishing these controls may be and the issues that may arise if these controls aren't established. The handbook could include different information for ISASP categories so proposed minimum requirements would be appropriate for the role that the facility is serving in the system. This practice has been successfully implemented in other states. Airport managers can then download this handbook and use it to develop proposed zoning ordinances and/or other land use tools for their airport environment. It is important to note that establishing the controls is only half of the process, as it is equally important that the controls are also enforced. **Airports** should consider using the resources that may be available to them in the future and actively engage with their local planning authorities to demonstrate the importance of appropriate land use controls for airport safety, continued airport enhancement, and protection of individuals living and working nearby from noise and other potential airport annoyances. There can be challenges associated with land use control enforcement when the airport environment and protected airspace crosses multiple jurisdictions. In these instances, airports would have to seek acceptance and enforcement of their height and land use controls from multiple municipalities. **Airports** should also use available national guidance resources, such as Airport Cooperative Research Program (ACRP), Report 27, *Enhancing Airport Land Use Compatibility* or Draft FAA AC 150/5190-4B, *Airport Land Use Compatibility Planning*, to learn more about the benefits of establishing land use compatibility measures (including height and land use controls) and specific scenarios appropriate to each. Additionally, **Appendix B - Quick Reference Guides** includes a two-page information brochure related to land use compatibility information and resources to help educate the aviation community on the importance of land use planning for aviation facility preservation.

7.3.4.2. Percent of Facilities included in Local or Regional Comprehensive Plans

Almost half of ISASP facilities reported that they are not included in local or regional comprehensive planning efforts. Being incorporated into these plans can create opportunities for airport enhancements because it allows for integration between the airport and other modal types. For example, if there are plans to enhance a major arterial road near an airport, but the airport is concurrently planning for a runway extension that would impact the route of that road, coordinating in advance will likely save time and resources and eliminate multiple projects needed on a single roadway. In addition, coordination between airports and local or regional planning agencies can reinforce the importance of practicing compatible land use planning and support protection of nearby airport property for future airport needs.

Airports that are not currently included in local or regional comprehensive plans should consider working with their local or regional planning authorities to identify how they may be incorporated in these planning efforts. In order to support these efforts moving forward, INDOT hosted a webinar with the Metropolitan Planning Organizations (MPOs) in the state as part of the 2022 ISASP to share the importance of including airports in their planning efforts and, equally as important, that airports include their MPOs in their planning efforts, as well. During the webinar, examples of how airports have been effectively included in these planning efforts (and vice versa) were shared, and MPO directors were able to share their own experiences working with airports in their regions.





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7.3.5. Goal 5. Aviation Industry Advancement Pls

7.3.5.1. Percent of Facilities that Host or Participate in Science, Technology, Engineering, and Math (STEM) Education Programs, Aviation Outreach Program, and Other Similar Events

Nearly sixty percent of ISASP facilities reported that they host or participate in STEM education programs, aviation outreach programs, or other similar events. These outreach programs can be as simple as offering open house events or tours for students or be more involved such as on-airport internships or job shadowing events. Educating students on aviation career opportunities is an important step in fostering future workforce development, especially in the aviation industry which has notable workforce shortages. **Airports** should consider partnering with nearby educational entities (such as K-12 and/or technical schools/colleges/universities) and community organizations (such as Scouts BSA or Young Eagles) to offer access to the airport via tours or something as simple as providing meeting space. **INDOT** should consider continuing to offer internship opportunities at their agency as these are excellent opportunities for students to be exposed to career opportunities in aviation. Other states, including Colorado and Washington, have established programs to support paid internships at system airports. **INDOT** could consider a similar program if additional funding becomes available to support it in Indiana. **INDOT** can also continue working closely with Aviation Indiana (AI) on opportunities for aviation education awareness.

Currently, AI is developing a strategic initiative, referred to as the Indiana Aviation Career and Workforce Development Plan, with a vision to “strengthen the aviation workforce and career development in the State of Indiana.” This initiative will be driven by three over-arching goals:

- A) Promote the visibility and importance of aviation in Indiana through enhanced state-wide coordination, communication, and collective focus.
- B) Engage more Indiana K-12 students in classroom, informal education, and activities related to aviation; and better prepare students for careers in the field through STEM learning, career awareness, and work experience.
- C) Develop stronger aviation industry talent pipelines from higher education to adult workers by aligning outreach and training in support of critical employer needs.

Each of these goals are associated with action items that will propel the mission forward. Such initiatives, such as integrating Project Lead the Way (PLTW)³ curriculum into K-12 classrooms support the goals of the Indiana Aviation Career and Workforce Development Plan. Offering PLTW curriculum in hundreds of Indiana schools exposes students of all ages to aviation education and helps them learn about the many viable aviation career opportunities that exist across Indiana, and nationally. PLTW has also recognized four school districts and over 50 schools (elementary - high school) across Indiana as distinguished PLTW districts/schools due to their commitment to helping students gain access to STEM and PLTW programs. In addition to the PLTW opportunities in Indiana, there are several high schools and career centers across the state that offer dual enrollment or dual credit opportunities with colleges in Indiana, including Ivy Tech Community College and Vincennes University. These dual credit/enrollment opportunities give high school students opportunities to start working toward aviation-related degrees before graduating high school. Exposing high school students to dual credit/enrollment opportunities can help them better understand course load and the

³ PLTW is a national non-profit organization that develops STEM curriculum for students in elementary, middle, and high-school.





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expectations of college, identify their career objectives, and reduce their time spent in college. Ivy Tech Community College offers dual enrollment or dual credit for aviation courses at over 35 schools or career centers in Indiana. These courses include Introduction to Aviation Technology, Aviation Safety Management Systems, Aviation Weather Services, Air Traffic Control, and more. Vincennes University offers dual credit opportunities at 40 different high schools or career centers across Indiana. Vincennes University offers degrees in Aviation Maintenance, including certifications for Powerplant and Airframe maintenance, as well as Aviation Flight Technology degrees.

Not only do the K-12 schools in Indiana work hard to generate opportunities for their students to get interested and involved in aviation education opportunities, but there are also other activities conducted across the state that help to engage future aviation professionals. For example, the Purdue University School of Aviation and Transportation holds a Technology Career Fair and provides focus areas for students interested in aeronautical engineering, aerospace financial analysis, aviation management, professional flight, and UAS. In addition to the programs offered at Purdue University (and Purdue University Global), Vincennes University, and Ivy Tech Community College, there are also college aviation programs available at Indiana State University, Valparaiso University, and the Aviation Institute of Maintenance - Indianapolis. These seven higher-education institutions offer programs for certificates, associate degrees, bachelor's degrees, and master's degrees, with opportunities for students to pursue general aviation and airline pilot training, aircraft maintenance licensure, and aviation management degrees. Students seeking aerospace engineering or aeronautical engineering programs can find those at the University of Notre Dame and at Purdue University's Polytechnic Institute. Outside of the traditional university setting there is also the Leadership In Flight Training (LIFT) Academy, that is training future pilots and aviation professionals. LIFT Academy was established to create a direct pipeline from flight training to airline-ready commercial pilot by partnering with Republic Airways to get students jobs as pilots right after they complete all of their necessary training. LIFT Academy has also recently established an Aviation Maintenance Technician (AMT) apprenticeship program that leads to students earning their Aviation Mechanic Airframe & Powerplant (A&P) Certificate and becoming fully prepared for a career as an AMT.

There are also a number of opportunities for Indiana residents, or residents of neighboring states, to participate in flight training certification courses. Of the 69 system facilities, 59 of them reported offering some type of career training or flight instruction. These include Hoosier Aviation, Indy Flight Training, New Horizon's Aviation, Alpha Flight, and so many more. In recent years concerns about pilot shortages have come to the surface, both nationally and globally; having the ability to offer instruction for future pilots at 85 percent of system facilities is critical. With continued efforts to expose students early on to aviation education, foster that interest throughout high school with dual credit/enrollment opportunities, and provide ample opportunities at higher education institutions and system facilities to become a certified aviation professional, Indiana has positioned itself well to grow its aviation industry workforce.

7.3.5.2. Emerging Technology PIs

There are three PIs from Goal 5. Aviation Industry Advancement related to emerging technologies that include:

- Percent of Facilities with Formal Procedures for Managing Proximate On-Facility Unmanned Aerial System (UAS) Operations
- Percent of Facilities with Formal Procedures for Managing Proximate Off-Facility UAS Operations
- Percent of Facilities that have Taken Steps to Prepare for the Needs of Electric Aircraft





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Approximately 70 percent of ISASP facilities reported that they do not currently have any formal procedures for managing on-facility or off-facility UAS operations, and 91 percent of the facilities also reported taking no steps to prepare for electric aircraft advancement. These percentages may seem high, but it is to be expected as federal guidance on UAS management practices, electric aircraft, and on the broader topic of advanced air mobility (AAM) is still in development and changing rapidly. The FAA continues to work on developing official guidance that will facilitate AAM preparedness, and this future guidance will provide airports with a comprehensive understanding of the requirements for these advancements. **INDOT** and **airports** should consider continuing to monitor FAA announcements and follow future guidance as these advancements come to fruition and expand in their use. Guidance may include how to prepare for electric aircraft charging stations, electric aircraft storage, electric vertical takeoff and landing (eVTOL) aircraft and the facilities required for eVTOL to operate at airports and vertiports, and other enhancements to existing airport infrastructure to support future aviation needs. While still in draft form, the FAA has released a draft engineering brief on vertiport design, *FAA Engineering Brief No #105: Vertiport Design*. The purpose of this draft brief is to provide initial and interim design guidance for vertiports and vertistops. The brief includes information on modification of existing helicopter and airplane landing facilities, as well as the establishment of new sites. Information presented in the brief is specific to eVTOL aircraft that meet specific criteria and design characteristics outlined in the brief.

This draft engineering brief is intended to provide interim guidance only, and future updates will be established based on performance-driven data. Future updates will also include more advanced operations, including autonomy, different propulsion methods, high-tempo facilities, and the use of alternative fuel sources such as hydrogen and hybrid engines in eVTOL aircraft.⁴

As UAS operations continue to proliferate, the INDOT Office of Aviation recently developed a small UAS (sUAS) Integration Program intended to standardize sUAS operations on behalf of INDOT. This program will be led by the INDOT UAS Coordinator and establishes a set of clear and consistent policies, procedures, and technology applications for INDOT, contractors, and other state agencies to follow while using sUAS. The mission of the program is to implement a formal UAS program to improve INDOT efficiencies, maintain public safety, and enhance INDOT service to the community. There are four strategic goals associated with the sUAS Integration Program, including:

- **Safety:** Mitigate risks to airspace, infrastructure, and the users of Indiana’s transportation system.
- **Resiliency:** Protect consistent quality and performance over years of time and impact from external factors.
- **Innovation:** Lead evaluation and deployment of UAS solutions and enhancements statewide.
- **Collaboration:** Cooperate between all stakeholders to construct and maintain the most effective program.

To accompany the four program goals, there are six strategic objectives that define the focus areas of the program deployment. These objectives include:

- Stakeholder engagement to develop a program structure and implementation plan unique to INDOT.
- Implement recognizable, repeatable, and valuable policies and procedures across INDOT.
- Mitigate risk with mature UAS technology, deployments, and training and through safety protocols.

⁴ https://www.faa.gov/airports/engineering/engineering_briefs/drafts/media/eb-105-vertiport-design-industry-draft.pdf (Accessed May 2022)





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- Validate and improve UAS program framework through controlled tests.
- Integrate UAS support infrastructure needs into current software and operational policies.
- Establish training and outreach plans to ensure consistent and safe operations now and in the future.

Together, the goals and strategic objectives will reinforce state sUAS operations that are efficient, standardized, safe, beneficial to Indiana’s communities, and integrated with the National Airspace System (NAS). Moreover, the program and the concept of operations (CONOPS) that provide program guidance will be revisited annually and updated as needed so regulations and operations remain up to date.⁵ INDOT should consider sharing elements of the program and the CONOPS with airport and heliport sponsors for awareness as some information may be useful to them. **Airports** should consider reviewing the program and identifying strategies or objectives that they may adopt to facilitate safe sUAS integration within the airport environment.

7.3.6. Private Heliport Considerations

Privately owned heliports serve a variety of different uses and are owned by a host of various entities. While private heliports may be owned by individuals and used for personal use, or a business may own a heliport to transport executives to different locations, the majority of private heliports in Indiana are owned by hospitals and used for emergency patient transportation or the transportation of doctors and/or medical supplies. Currently, INDOT and many other states across the country are not responsible for the licensing or certification of privately owned heliports. In fact, a survey distributed to state aviation directors across the country identified that only 38 percent of responsive states have some type of private heliport licensing or certification policy in place.⁶ It is for this reason that a comparative analysis of five states’ current private heliport licensure and certification practices was conducted to better understand the type of policies in place for licensing and certifying private heliports. The five states included in this comparative analysis were:

- California
- Illinois
- Michigan
- Minnesota
- Pennsylvania

The comparative analysis reviewed relevant policy guidance, statutes, and codes that were available on each state’s website and looked closely at permit requirements, permit processes, and the design standards and/or facility requirements for privately owned heliports. As shown in **Table 7.27**, all five of the aviation agencies are responsible for conducting privately owned heliport inspections before they are licensed or certified. The heliport inspections are conducted intermittently, either every two or five years.

⁵ INDOT’s sUAS Program Overview and Concept of Operations (CONOPS), Draft, July 2021

⁶ The Private Heliport Survey was distributed via the NASAO, and 26 states replied to the survey.





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Table 7.27. State Responses to NASAO Private Heliport Survey

State	Certification/Licensing Process for Private Heliports	Inspections Conducted Prior to Certification/Licensing	Conducts Subsequent Inspections	Agency Responsible for Licensing/Certification
California	Yes	Yes	No Data	Caltrans Aeronautics
Illinois	Yes	Yes	Yes, every 2 years	IDOT, Aviation Services
Michigan	Yes	Yes	Yes, every 5 years	MDOT, Office of Aeronautics
Minnesota	Yes	Yes	Yes, every 5 years	MnDOT, Aeronautics and Aviation
Pennsylvania	Yes	Yes	Yes, every 5 years	PennDOT, Bureau of Aviation

Note: Caltrans Aeronautics did not respond to the National Aviation Association of State Aviation Directors (NASAO) survey. Online resources were reviewed to determine frequency of heliport inspections, but the information was not publicly available. Sources: NASAO Private Heliport Survey, 2021; Kimley-Horn, 2022.

The comparative analysis between these states revealed some similarities and differences. Where the states aligned the most was in terms of heliport design standards, facility requirements, and obstruction standards. States tended to differ more in regard to the permitting process, with some states having more requirements than others when it comes to approving a new heliport landing location. While each state’s process is nuanced and developed to fit its needs, the permitting process across the five states follows similar steps:

- The sponsor must complete an application identifying the proposed site.
- The site must be approved.
- The FAA must issue a favorable airspace determination per Form 7480-1.
- The airport sponsor must demonstrate that the heliport design meets the state and federal standards.

Currently, if an individual or organization would like to design and construct a privately owned heliport in Indiana, they must receive a favorable airspace determination from the FAA per Form 7480-1, but are not required to obtain inspection or certification from INDOT. The only authority INDOT has over these facilities is the ability to issue waivers for commercial operations as private facilities.

While the comparative analysis was helpful in better understanding other states’ practices when it comes to private heliport licensure and certification, it was equally important to understand the perspective of those using private heliports in Indiana. For this reason, case example interviews were also conducted to learn more about private heliport use from a commercial helicopter operator and an aeromedical provider perspective. Based on the information provided by these private heliport users, it became evident that both commercial and aeromedical operators must go through a series of steps to ensure that helicopter operations are as safe as possible when operating at privately owned heliports.





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Ultimately, based on the findings from the comparative policy analysis, as well as feedback provided by commercial helicopter operators and considerations provided by INDOT, it is recommended that INDOT work with the state legislature to develop policies for the inspection and certification of existing and proposed privately owned hospital heliports. Considering the majority of private heliports in the state are hospital heliports, as well as the number and nature of the operations occurring at these facilities, it is in the state's, hospitals', and public's best interest that a governing authority have some level of oversight of these facilities. **Agency considerations** for future hospital heliports include expanding the scope of Indiana Code (IC) Title 8, Article 21, Chapter 1 to include privately owned hospital heliports:

- Proposed hospital heliports should be inspected based on appropriate obstruction, design, and facility standards.
 - If the proposed facility meets or exceeds those standards, then INDOT will issue a certificate of approval as established in IC Title 8.
- Existing hospital heliports should be inspected based on appropriate obstruction, design, and facility standards.
 - If the existing facility meets or exceeds those standards, then INDOT will issue a certificate of approval as established in IC Title 8. Considering the number of existing facilities that need to be inspected, INDOT may develop an inspection schedule that inspects facilities over a period of time.
 - If an existing hospital heliport does not meet INDOT standards, then an action plan will be put in place to bring that facility into compliance.
- INDOT will conduct routine inspections of these facilities, occurring every three to five years, to ensure that these facilities remain in compliance with the obstruction, design, and facility standards. This is the same process and criteria that are currently used by INDOT to certify airports.

The recommendations outlined for future policy considerations for private hospital heliports do not extend to other private heliports supporting different user needs. INDOT acknowledged that the critical nature of aeromedical operations warranted oversight by the aviation authority in the State of Indiana.

7.4. Summary

The project recommendations outlined in **Sections 7.2.1** through **7.2.4** that were identified from the delta between the future performance targets and existing system performance of the PMs allow for traceability of improvements made toward meeting the 2022 ISASP goals. The project recommendations identified in this chapter are used to develop 2022 ISASP cost estimates that are presented in **Chapter 8 - Indiana Airport Development Fund and Cost Estimates**. The airport and agency considerations that were identified through evaluation of the PIs and other system plan assessments can be used by INDOT and airports to identify action items that support system needs and may enhance system performance over time.

