Chapter Eight: Plan Recommendations

The analysis completed through this system plan update found that although the aviation system is making progress toward meeting many of the goals and objectives, there are areas where action can be taken to better meet the needs of aviation users. Five public input meetings were held to gather information from system users on their concerns and suggestions on how to meet their needs. The System Plan Technical Advisory Committee also provided input for recommendations to address future planning and development efforts. The recommendations in this chapter are designed to help guide the decisions of the Iowa Department of Transportation (Iowa DOT) - Office of Aviation (Office of Aviation), the Federal Aviation Administration (FAA), airport administrators, and policy makers to effectively use available resources to meet the needs of users of the air transportation system.

Also included are general recommendations for changes to the system, funding needs and recommendations that the Iowa DOT, the FAA and individual airports can implement to help meet the aviation system goals and objectives. The aviation industry will continue to evolve as technology, the economy, and user needs change. The recommendations provide guidance to meet concerns facing aviation in Iowa for the next twenty years.

8.1 National Plan of Integrated Airport Systems (NPIAS)

Iowa currently has 78 airports included in the National Plan of Integrated Airport Systems (NPIAS). In order to be considered for the NPIAS, an airport must meet the following criteria: have at least ten based aircraft; be owned by a public entity unless a private airport relieves a constrained airport, is not located closer than a 30-minute drive time from the nearest NPIAS airport, and be included in the state system plan.

During the system planning process, several airports requested consideration to be included in the NPIAS. **Table 8-1** lists the airports that expressed interest and whether the airports meet the criteria for inclusion.

Table 8-1: Summary of NPIAS Evaluation

Airport	Ownership	Based Aircraft	Nearest NPIAS Airport * (in minutes)	Meets Primary Criteria	Recommended for NPIAS
Manchester	Public	14	Independence (32)	Yes	Yes
Marion	Private	50	Cedar Rapids (30)	No	Public ownership necessary
Onawa	Public	4	Mapleton (32)	No	No
Paullina	Public	7	Cherokee (29)	No	No

Note: * = Drive time not official - calculated from Google Earth

Manchester is currently the only airport that may meet all eligibility criteria and is recommended for further review for inclusion in the NPIAS. Manchester is currently in the process of developing an airport layout plan which will further identify potential infrastructure needs to meet aviation users in Delaware and Clayton counties. Drive time between Manchester and Independence would need to be verified.

Marion is a private, public-use airport that provides a broad range of services and meets the needs of many aviation users in the Marion area. The airport is approximately thirty minutes from the nearest airport, but would need to transfer ownership to a public entity before possible NPIAS consideration.

FAA has the ultimate responsibility to identify whether an airport meets requirements to be included in the NPIAS. At the time of this system plan update, the FAA was beginning a process to review NPIAS entry criteria that may result in a change of eligibility requirements. It is recommended that the most recent *National Plan of Integrated Airport Systems Report to Congress* be referenced when reviewing inclusion eligibility requirements.

8.2 Airport Roles

Airports were assigned to an airport role based on whether they currently met specific infrastructure and services criteria. Aviation demands at an airport may lead to enhancements to infrastructure and services that result in an airport meeting the criteria to be included in a different airport role. The Iowa Aviation System Plan has the flexibility to allow changes to the airport role before the next update through an application process to the Iowa DOT that coincides with the annual application process.

A review of airport roles was completed to determine airports that should be working toward obtaining the infrastructure or providing additional services to advance to the next highest role.

8.2.a Additional Enhanced Service Airports

Economic growth in areas of the state that are not within thirty minute drive time of any Commercial Service or Enhanced Service airports may lend to the need for additional airports that can accommodate larger business aircraft. Airports already serving the area may need additional infrastructure to meet the needs, or if not possible, replacement airports may need to be built.

Two potential new airports identified in the 2004 Iowa Aviation System Plan would serve regional areas and meet growing business aviation needs in northwest Iowa and the Red Rock region. Economic vitality in both the Sioux County area and in the Pella-Oskaloosa area support continued efforts to build new airports.

- **Sioux County –** Neither the existing Sioux Center nor the Orange City Airports are able to expand to meet the increased business needs in northwest Iowa. A new Enhanced Service airport in the region was identified in the 2004 Iowa Aviation System Plan. The Sioux County Airport has been added to the NPIAS and is well on the way to becoming a reality. Sioux County, Orange City and Sioux Center entered into a 28E Agreement and completed site selection study, Master Plan and Environmental Assessment for a new airport located near Maurice. The mutually agreed upon site is approximately eight miles from each city and land acquisition is in process. The addition of this Enhanced Service airport will increase the percentage of employment covered by an enhanced service airport within a thirty minute drive time covering the area between Spencer and Sioux City. Continued support from the local communities, Sioux County, the FAA and the Iowa DOT will help ensure that the new airport is developed to meet aviation needs in northwest Iowa.

- **Pella/Oskaloosa –** Airports in Pella and Oskaloosa have limited capabilities to support the operations of larger business jet aircraft. Feasibility studies for a joint airport and a Pella replacement airport have all shown justification for an Enhanced Service airport in the area. Geographic constraints impacting future development opportunities at both airports combined with their proximity to each other justify a regional approach towards increasing the level of facilities and services for the region. Population and economic growth projected for Marion

and Mahaska counties throughout the planning period will require an airport capable of providing infrastructure and services typically available at an Enhanced Service airport.

It is recommended the cities of Pella and Oskaloosa increase cooperation to develop a new regional airport to replace existing airports serving these communities. A mutually agreed upon location, in proximity to both Pella and Oskaloosa, will be essential to the successful development of a new airport. Lack of cooperation may result in airports with inadequate infrastructure and services to meet the air transportation demands of the region, impacting quality of life and opportunities for economic growth.

General Service airports that have the justification for expanded infrastructure to meet aviation demands may develop infrastructure that meets the Enhanced Service airport criteria. Several airports are in the process of establishing justification and conducting the planning for a runway expansion that would meet the criteria for Enhanced Service airports. Northeast Iowa Regional Airport in Charles City and the Washington airport are currently working toward obtaining the necessary infrastructure that would meet the enhanced service category. When the role criteria are met, an application for a role change can be submitted.

8.2.b Role Recommendations for NPIAS Airports

Since NPIAS airports have received substantial federal and/or state funding to improve and maintain infrastructure, it is reasonable that at least basic services should be provided. Several comments at public input meetings reflected concern that unattended airports are becoming more prevalent, and pilots often do not have anyone to report concerns such as runway conditions or wildlife issues. NPIAS airports that are identified as a Local airport are encouraged to at least provide basic staffing and a runway length that will accommodate more users and meet the criteria for a Basic Service airport role.

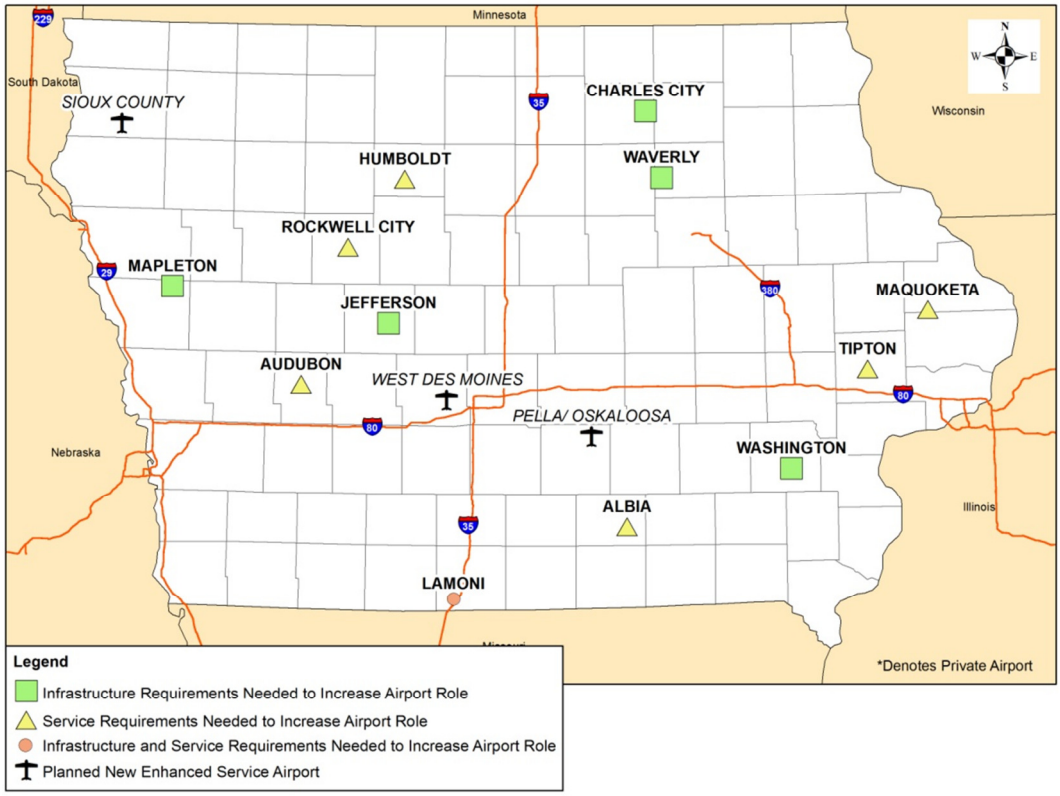
There are also two NPIAS airports that have longer runway infrastructure, yet provide little or no based services. Airports that have a runway length of 5,000 feet or greater and are in the Basic Service role are encouraged to review needs of aviation users in the area and provide based services at the General Service level.

The airports listed in **Table 8-2** are NPIAS airports that are encouraged to provide additional services or enhance infrastructure to advance to the next highest role classification. Other airports are also encouraged to review their services provided, determine needed services for users of their airport and determine if additional services or infrastructure are justified. **Figure 8-1** geographically identifies the airports that should strive to improve facilities and services to advance into the next highest role classification. The locations of proposed Enhanced Service airports in Sioux County and Pella/Oskaloosa region have also been identified. The location of a proposed airport in Dallas County west of Des Moines proposed in the 2004 system plan is also identified.

Table 8-2: NPIAS Local Airports Recommendations for Role Change to Basic Service

Airport	Role Classification		Recommended Facility or Services Improvement
	Existing	Recommended	
Albia	Local	Basic	Availability of staffing or on-call 24/7
Audubon	Local	Basic	Availability of staffing or on-call 24/7
Clarinda	Basic	General Service	Availability of based services
Guthrie Center	Local	Basic	Availability of staffing or on-call 24/7
Humboldt	Local	Basic	Availability of staffing or on-call 24/7
Lamoni	Local	Basic	Availability of staffing or on-call 24/7 Lengthen 2,900 feet runway
Mapleton	Local	Basic	Lengthen 2,801 feet runway
Maquoketa	Local	Basic	Availability of staffing or on-call 24/7
Rockwell City	Local	Basic	Availability of staffing or on-call 24/7
Shenandoah	Basic	General Service	Availability of based services
Tipton	Local	Basic	Increased staffing or on-call 24/7
Waverly	Local	Basic	Lengthen 2,800 feet runway

Figure 8-1: Airport Role Advancement Recommendations



Source: Kirkham Michael (2010)

8.3 Federal, State, and Airport Sponsor Action Steps

After reviewing the analysis of the system performance and comments received from public meetings and System Plan Technical Advisory Committee, recommendations were developed that not only address specific goals, but also more general concepts that may have an overall impact on the system. Federal, state, and airport sponsors all have a role to ensure that the infrastructure and services are available to support the air transportation system. These recommendations are divided by entities that have a stake in ensuring that the system meets the needs of users. Some of these recommendations involve more than one entity that will be needed to be effective and may be listed in multiple categories.

8.3.a Iowa Department of Transportation – Office of Aviation

The Iowa Department of Transportation – Office of Aviation provides products and services to promote and support air transportation in Iowa. The Office of Aviation encourages and enhances aviation through building relationships with many stakeholders and management of programs that promote a safe and secure air transportation system. Programs include funding grant programs, airport inspections, advocacy, safety issues,

aircraft registration, and technical support. Recommendations for programs and initiatives include the following:

- **Obstruction mitigation priority –** Only forty-seven percent (47%) of runway ends of primary runways have clear approaches. The Office of Aviation should emphasize obstruction mitigation at airports by increasing the priority of state funded projects and encouraging airports to make obstruction mitigation a priority.

- **Approach obstruction review** – A separate review of runway approach obstructions was completed concurrently with this study. The obstruction report should be used to identify specific projects that would most benefit the system. Focusing on mitigation at those airports with approach obstructions will be beneficial in ensuring these are well positioned for the development of an LPV approach.

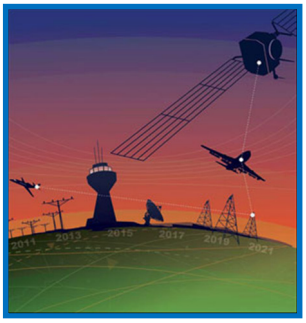
- **Require height zoning for state funding –** Both federal and state grant assurances include a clause that airport sponsors need to take all practical steps to protect air space around airports. The Iowa Code Chapter 329 *Airport Zoning* provides the authorization for local jurisdictions to protect air space around airports through local zoning. The *Iowa Airport Land Use Guidebook* published in 2007 provides guidance for airport sponsors for height and compatible land use around airports. Grant funding is available to assist airport sponsors in the development and enactment of airport zoning ordinances. The next step to ensure that airport sponsors protect federal, state and local investment is to require height zoning as condition for funding. Encouraging compatible land use through comprehensive planning and zoning ordinances is also recommended.

- **Investigate opportunities for state contracting –** Many airports have a need for similar services, such as crack sealing, tree removal or equipment acquisition. There may be opportunities for the Iowa DOT to assist airport sponsors through statewide contracting. An effort to consolidate procurement of services may lower expenses for these services. The Office of Aviation could evaluate opportunities when annual applications are submitted.

- **Develop airport operational checklist –** The development of an operational checklist that can be used by airports on a routine basis and during airport inspections can help airport sponsors monitor safety operations and physical conditions of the airport to provide a safer operation environment. Providing airports with important safety items to monitor weekly will help ensure that airport sponsors are monitoring conditions that impact the safety of the system. This may be modeled after the Federal Aviation Regulation (FAR) Part 139 checklists used at federally certificated airports, but adaptable to airports without scheduled air service.

- **Evaluate aviation related fees and taxes –** Aviation industry costs and available revenues continue to change and it may be advantageous for the Office of Aviation to evaluate various factors associated with taxes and fees that may affect the industry and the State Aviation Fund.

- **Evaluate NextGen coverage –** As methods for air navigation continue to advance towards satellite based technology, it is important that Iowa be positioned to take advantage of the benefits offered by this transition. An assessment of the implementation of Automatic Dependent Surveillance-Broadcast (ADS-B) technology should be investigated. The deployment of ADS-B has challenges both with national deployment, as well as the individual users of the technology. Some ground based stations for triangulation are necessary to help support the efforts of each airport planning to utilize ADS-B.



- **Continue statewide AWOS maintenance and operation –** Six of seven additional Automated Weather Observing System (AWOS) sites recommended in the 2004 Iowa Aviation System Plan have been installed to provide better statewide weather coverage. The Iowa DOT is responsible for maintaining forty-three (43) sites in Iowa to ensure that the service available to pilots across the state. Thirty-one (31) of these sites were installed in the early 1990s and are scheduled to be replaced during the 2011-2013 time period. Maintaining the schedule of replacement of these sites is important because the new equipment will help reduce the annual maintenance costs as well as increase the reliability of the system.

  In addition to maintaining this equipment, the Iowa DOT is also responsible for the transmission of weather data to the National Weather Service (NWS), making the data available nationwide. The Office of Aviation is in the process of transitioning from a hard line, mainframe based system for data storage and

transmission to a wireless system through the use of cellular service, bypassing the need for data to be funneled through the Iowa DOT. This will be a more cost effective and efficient process for transmitting the data into the national system. Maintaining the system and transfer of data are important services to continue.

- **Facilitate strategic planning –** Airports typically develop airport layout plans and master plans, but may not look at the bigger picture on how the airport interacts with business and other organizations within the community. Strategic planning would provide airports an opportunity to engage the community and look at airport operations from a business perspective. The Office of Aviation could help facilitate strategic planning for individual airports by providing templates and serving as facilitator during the process. Many of the suggestions offered at an economic development public input session can be addressed during the strategic planning process.

- **Counting operations at general aviation airports –** Counts of aircraft operations are used in several airport planning processes including system planning, airport master planning, environmental studies, aviation forecasting, as well as to determine funding and design criteria. Only five airports in Iowa have air traffic control towers, which provide an accurate method of counting operations. Iowa has been using a standard number of aircraft operations per based aircraft, supplemented by airports reporting through guest logs. Determining a more accurate method to count aircraft operations is critical for future airport development and planning efforts.

- **Update economic impact, uses and benefits studies** – The studies published in 2007 and 2009 are very useful for airport administrators, governmental officials, policy makers, and the Office of Aviation to demonstrate the importance of airports and their role in supporting the economy and quality of life in local communities and in the state. It is recommended that these studies be updated periodically to reflect changes in levels and types of activities and the impact on local economies and to demonstrate the significance of maintaining a successful air transportation network to serve the needs of Iowans.

- **Continue routine PCI inspections –** The pavement condition inspections at NPIAS airports conducted on a routine basis by the Office of Aviation are used by airports, the Office of Aviation and the FAA to plan pavement maintenance and rehabilitation projects to maximize the life of pavement surfaces. The focus on maintaining pavements has contributed to the high percentage of runways

with a pavement condition index of 70 or higher. Continuation of this annual work is recommended to further advance the management of pavement surfaces to be able to maintain good pavement conditions. Findings from these annual inspections such as the remaining lifespan, timeline for major rehabilitation projects, and costs associated with such projects provide airports and the Office of Aviation with a valuable tool for the continual maintenance of pavement surfaces. Continuation of this program will continue to provide decision makers with necessary tools to make informed decisions.

8.3.b Airport Sponsors

In addition to financial investment from the FAA and the Iowa DOT, local governments have invested in airports as important assets for their community. Airport sponsors own and operate the airports, having the ultimate responsibility for daily and long-term operations and maintenance. Airport sponsors that have accepted federal and state funding have also agreed to assurances that they will maintain facilities in a safe operating condition. The system performance and recommendations for the future of Iowa's aviation system provides a guide for airport sponsors to assess their role in helping the system achieve the goals and objectives. Airport sponsors can use the information to help meet the needs of the aviation users and position their local community to plan an important role in the air transportation system. It's important that airports continue to be key stakeholders in assuring that Iowa's aviation system has safe, quality facilities and services to meet the air transportation needs in the state. These recommended actions will also strengthen the capabilities of airports to meet user needs and achieve the goals and objectives in providing a safe and secure network of airports.

- **Develop emergency response plans** – Emergency response plans provide procedures and guidelines for airport responses to emergencies, such as aircraft accidents or natural disasters, providing a predetermined course of action. These plans should be developed in a way that is appropriate to the size and type of operations an individual airport serves. At a minimum, emergency response plans should identify the process to coordinate communication with local fire and police departments in the event of an incident. Plan development should include an emergency personnel visit to the airport to gain a better understanding of what may be needed if an incident occurs.

- **Actively work to mitigate approach obstructions –** The runway protection zone and areas extending out from the end of the runway end used for aircraft approaches should be protected and kept clear of obstructions. Penetrations into

these approach surfaces can often make it difficult for pilots to navigate a descent to a runway. Active work to mitigate obstructions from penetrating runway approaches enhances the safety of those in an aircraft and on the ground. Clear runway approaches support the continued operation of Iowa airports.

- **Welcome signage and directional signage to and from business areas –** An airport provides the first impression for visitors and business users arriving by air to a community. Providing a welcoming image can promote local economic development. Individuals unfamiliar with an airport will likely need directional guidance upon exiting an airport in order to navigate to and from local business areas. By providing proper signage, an airport can support a connection between the local business community and the airport.

- **Five year strategic plan –** Development of a five year strategic plan with local and regional planners, officials, and business leaders provides a mean to guide future planning and development of an airport. It also lays out strategic planning goals and establishes a vision towards creating a solid foundation for the provision of aviation services. Development of a strategic plan can offer direction by utilizing suggestions of advisory stakeholders, developing vision and mission statements and evaluating strategies to achieve designated goals.

- **Wildlife mitigation** – Wildlife strikes are costly and becoming a concern at airports across the state. Wildlife consultations that reviewed wildlife habitat at airports and potential airport actions to limit the impact of wildlife were conducted by a United States Department of Agriculture (USDA) Wildlife Services' biologist at all NPIAS airports. Airports are encouraged to actively work to discourage wildlife activity on an airport making the airport environment less appealing. The Iowa DOT actively supports wildlife mitigation through cooperative agreements with the USDA Animal and Plant Health Inspection Service (APHIS) Wildlife Services. Services of a wildlife biologist through this agreement may be available to help address wildlife concerns, conduct a wildlife assessment, and help develop a plan for the airport. The FAA will be requiring wildlife planning at NPIAS airports during the next few years. Airports are encouraged to take active steps to reduce wildlife activity at the airport.

- **Compatible land use controls within local community** – Compatible land use around airports is important to preserve the viability of an airport and to protect

the investment which has been made into the existing infrastructure. Airports should work with local governmental agencies to make sure compatible land use around airports is included in city and county comprehensive plans. The *Iowa Airport Land Use Guidebook* includes tools that airports and cities can use to help ensure compatible land use near airports. Airport sponsors are authorized through Iowa Code Chapter 329 to enact Airport Zoning that protects the air space from tall structures and development hazardous to aircraft operations. Airport sponsors are encouraged to develop and enact airport zoning and compatible land use plans.

- **Pavement preservation –** An emphasis on pavement maintenance and preservation, as well as federal NPE funding and the state pavement maintenance program, resulted in 89 percent (89%) of airport pavements having a PCI of at least 70. Airports are encouraged to continue efforts to ensure the preservation of pavement. The annual Pavement Condition Inspections study recommends that airports:

  - Conduct an aggressive campaign against vegetation through timely herbicidal applications to prevent growth in pavement cracks that can be destructive to pavement surfaces, increasing the rate of deterioration.

  - Implement a periodic crack and joint sealing program to keep water and debris from infiltrating runway bases in an effort to extend the life of pavement surfaces.

  - Prevent dirt build up along the edges of pavement surfaces from forming a “bathtub” effect, allowing drainage to prevent seepage into the base layer.

  - Closely monitor the operation of heavy equipment on surfaces to prevent structural damage, limiting use to vehicles and aircraft that do not exceed weight ratings.

  By making these efforts locally, expensive repair and reconstruction can be avoided or deferred. Airport sponsors are encouraged to use available funding to make sure that airfield pavements are in good condition.

- **Work toward meeting facility and service targets** – The review of the system’s performance identified airports that are not meeting facility and service targets for their assigned role. Airports are encouraged to meet the targets for their role,

and assess whether they should be meeting the targets for the next higher role. Airports may already have plans in their five year Capital Improvement Plans to meet the facility targets. The individual airport reports developed as part of this system plan update will address specific airport needs.

8.3.c Federal Aviation Administration (FAA)

The Federal Aviation Administration (FAA) is an important partner to help ensure that Iowa has a safe and effective air transportation system. Recommended changes in national level policies and procedures can help provide a safer system of airports. Implementation of the following recommendations will not only benefit aviation in Iowa, but throughout the United States.

- **Continuation of non-primary entitlement funding** – Non-primary entitlement funding has provided smaller general aviation airports with funding for key infrastructure maintenance and repairs, as well as provided snow removal equipment and hangars for based aircraft. This funding was a key factor in the increase in the percent of airports with clear approaches and with helping many of the airports to have a pavement condition index (PCI) of 70 or greater. Continuing this funding is critical to continue the advance of a safe airport system in Iowa.

- **NPE funding for approach lighting without cost-benefit analysis –** The current policy, established prior to the existence of non-primary entitlement, requires a cost-benefit analysis to show justification for an approach lighting system. Installation of an approach lighting system would allow airports to receive an LPV instrument approaches with nearly the same criteria as if they had an ILS. Not all Enhanced Service airports may be able to meet the benefit-cost ratio, but safety and efficiency would be enhanced if airports were able to install approach lighting systems using NPE funding.

- **Obstructions below 200 feet above ground level (AGL)** – Though obstructions below 200 feet AGL are not considered obstructions to air navigation, there are safety implications for segments of the aviation industry. Of specific concern is the prevalence of meteorological towers associated with the wind energy industry that are being erected around the state at a rapid rate and create a safety hazard for agricultural aviation. FAA has taken steps to encourage the wind energy industry to voluntarily mark and light these towers. FAA is encouraged to monitor the voluntary compliance and determine if additional regulations should be implemented.

- **Strengthen airspace obstruction review process –** Any person or organization that intends to sponsor construction or alterations exceeding 200 feet above ground level, within proximity to an airport, or on an airport is required to file Form 7460-1, *Notice of Proposed Construction of Alteration*, with the FAA. FAA evaluates the effect of a proposed construction on aircraft operating procedures and within 45 days for off-airport construction or 90 days for on-airport construction makes a determination on its impact to air navigation. The FAA's determination after an aeronautical study is advisory in nature and FAA does not approve or deny the construction or alteration activity. Support on a federal level for the timely review of obstructions within the identified review timelines and enforcement of their determinations will help strengthen efforts to preserve airspace and operations at airports.

- **Increase pilot safety initiatives –** Pilot safety programs offer training and safety information for pilots to increase competency and proficiency of the pilot community. Programs provided by the FAA such as the WINGS – Pilot Proficiency Program, FAA Safety Team (FAASTeam), and the Aviation Safety Action Program (ASAP) offer opportunities for pilots to gain valuable information on recommended safety procedures and techniques to refresh pilot skills. Increasing the availability of regularly scheduled FAA sponsored programs through classes, conferences, and open houses hosted at Commercial Service, Enhanced Service, and General Service airports will increase the distribution of safety information to pilots.

8.4 Airport Infrastructure Funding Sources

Airport infrastructure improvements are funded by federal, state, local, and private sources. This section reviews the type of funding available and the historical investment by federal, state, and local sources.

8.4.a Federal Funding

Federal funding provides the most significant funding source for airports included in the NPIAS. Federal funding for airport development projects is appropriated from the Airport and Airway Trust Fund, which is derived from airline passenger fees and taxes, aviation fuel taxes, and air cargo taxes. Public Law 108-176, also known as Vision 100 – Century of Aviation Reauthorization Act, continues to provide the formulas and guidelines for the Federal Airport Improvement (AIP) program. Although the authorization expired in 2007,

congress has continued the AIP through continuing resolutions. Federal AIP funding includes:

- **Entitlements for primary commercial service airports –** Primary commercial service airports with more than 10,000 enplanements are eligible to receive entitlement based on the number of enplanements, with a minimum of $1 million annually. Iowa's six primary airports receive approximately $12 million a year, including cargo entitlements for Des Moines and Cedar Rapids.
- **Entitlements for non-primary airports –** Non-primary airports are eligible to receive up to $150,000 annually based on their five-year development costs that are included in the NPIAS. Iowa's 72 non-primary airports collectively can receive a maximum totaling $10.8 million. Individual airports can accumulate their funds for up to four years for larger projects.
- **State apportionment funds –** State apportionment is based on the state's population and geographic area. Grants using state apportionment funding are distributed to non-primary airports according to project prioritization. The amount of apportionment available each year is dependent on the total funding appropriated for the AIP program and has averaged $3.4 million annually over the last six years.
- **Discretionary funding –** Discretionary funding is based on project prioritization. The total amount available is dependent upon formulas and total AIP funding available.

Airports receive federal AIP funding through grants for airport projects that meet justification and eligibility requirements determined by the AIP program authorization and FAA guidance. The percent of project costs that the federal AIP program will fund is currently 95%, but is set by Congress and may vary under future AIP authorization. Airport sponsors are required to provide a local match to receive funding.

8.4.b State Funding

All publicly owned airports in Iowa are eligible for state funding for development, preservation, safety, planning and emergency repairs. Funding for aviation programs is available from the State Aviation Fund, established in 2008, which includes revenues from aircraft registration and aviation fuel taxes. Approximately $2.2 million is available each year. In addition to funding airport projects, the State Aviation Fund is also used for statewide safety and program initiatives through the Iowa DOT Office of Aviation, including AWOS installation and maintenance, runway marking, air service development, wildlife mitigation, and planning. Since 1999, annual vertical infrastructure appropriations have been used to rehabilitate and construct hangars, terminals, maintenance buildings, and fuel farms. The percent of funding for projects varies by project type, but can be up to 85 percent (85%) for most projects.

8.4.c Local Funding

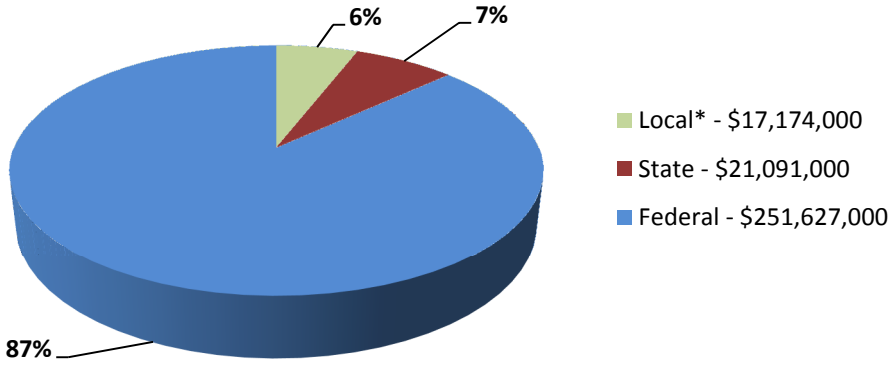
Airport sponsors are responsible for maintaining airports in safe operating conditions, providing daily operating funding and capital funding to match federal and state grants. Local share of funding is typically derived from general fund revenues, bonds, and airport generated revenues. In some cases, airports may work with local businesses or individuals to provide private funding to meet the federal or state match or to construct new hangars or maintenance facilities.

8.4.d Historical Funding 2005-2010

A review of funding from 2005 to 2010 found an annual average of $41 million was invested in Iowa's airports. This reflected a 12 percent (12%) increase from the annual average investment of $36 million reported in the 2004 system plan. The increase in investment can be attributed to additional non-primary entitlement funding, state infrastructure funding, the American Recovery and Reinvestment Act (ARRA) and the creation of the State Aviation Fund.

Federal funding represented nearly 87 percent (87%) of the total airport development investment in Iowa from 2005 to 2010. State funding contributed seven percent (7%), while local funding accounted for six percent (6%) of the investment. Projects that were financed exclusively with local or private funds were not included in this review of funding. **Figure 8-2** graphically depicts the percent share of federal, state, and local funding sources over the six-year time period, while **Table 8-3** identifies the annual investment.

Figure 8-2: 2005-2010 Airport Development Investment



Note: * = does not include infrastructure financed exclusively with local funds

Table 8-3: 2005-2010 Funding Distribution for Iowa Airports

Commercial	2005	2006	2007	2008	2009	2010	TOTAL
Federal	$33,829,000	$16,938,000	$14,778,000	$17,908,000	$23,436,000	$16,383,000	$123,272,000
State	$1,584,000	$1,500,000	$1,500,000	$1,515,000	$1,736,000	$1,687,000	$9,522,000
Local*	$1,829,000	$891,000	$778,000	$943,000	$883,000	$937,000	$6,261,000
Total	**$37,242,000**	**$19,329,000**	**$17,056,000**	**$20,366,000**	**$26,055,000**	**$19,007,000**	**$139,055,000**
General Aviation	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**TOTAL**
Federal	$19,150,000	$23,085,000	$24,628,000	$13,627,000	$26,003,000	$21,863,000	$128,356,000
State	$1,181,000	$1,352,000	$1,378,000	$2,191,000	$2,668,000	$2,801,000	$11,571,000
Local*	$1,758,000	$1,934,000	$1,649,000	$1,548,000	$2,012,000	$2,012,000	$10,913,000
Total	**$22,089,000**	**$26,371,000**	**$27,655,000**	**$17,366,000**	**$30,683,000**	**$26,676,000**	**$150,840,000**
All Airports	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**TOTAL**
Federal	$52,978,000	$40,023,000	$39,405,000	$31,535,000	$49,439,000	$38,246,000	$251,626,000
State	$2,764,000	$2,852,000	$2,878,000	$3,706,000	$4,403,000	$4,488,000	$21,091,000
Local*	$3,587,000	$2,826,000	$2,427,000	$2,490,000	$2,895,000	$2,950,000	$17,175,000
Total	**$59,329,000**	**$45,701,000**	**$44,710,000**	**$37,731,000**	**$56,737,000**	**$45,684,000**	**$289,892,000**

Notes:

* = does not include infrastructure financed exclusively with local funding

2009 includes American Recovery and Reinvestment Act (ARRA) funding

8.5 Future Airport Infrastructure Needs

Although significant investment during the last six years has improved the overall condition of the infrastructure, there continues to be a need to preserve and develop the infrastructure as necessary to meet the needs of aviation system users. The system plan recommendations identify preservation, development and safety needs. Airports have also identified needs for their specific airport through their Capital Improvement Plans and Long Range Needs Assessments. To project the anticipated level of investment that will be required by airports throughout the twenty-year planning period, the following resources were referenced:

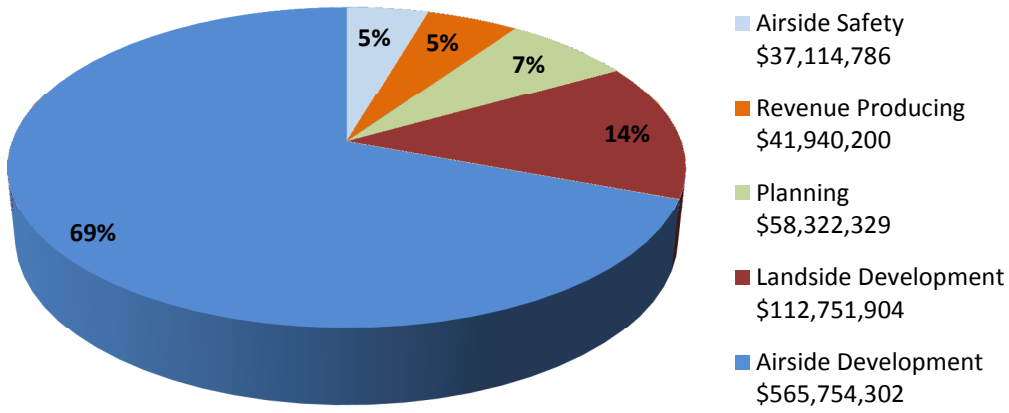
- Cost estimates for airports to achieve 100 percent (100%) of the system plan facility targets.
- 2011-2016 Airport Capital Improvement Program (CIP) plans.
- Airport Long Range Needs Assessments (LRNA).
- Cost estimates to meet the system plan Airport Layout Plan objective, focusing on the development and continual update of electronic ALPs (e-ALPs).
- Cost estimates to maintain Pavement Condition Index at 70 using pavement rehabilitation projects identified in the Iowa Statewide 2010 Pavement Management Report.
- Because of the wide variation in methods to mitigate runway approach obstructions, separate costs were not identified to address the clear approach

objective. These costs are included in many of the airport CIP and LRNA, and will be identified through specific annual initiatives.

8.5.a Infrastructure Needed by Development Categories

An overall total of $816 million is needed to address future system needs over a twenty year period. Infrastructure needs were grouped into five main categories: airside development, airside safety, landside development, planning, and revenue producing projects. Airside development and preservation costs account for 69 percent (69%) of the future costs needed. Landside needs including terminals, electrical vaults, snow removal equipment and buildings, roads and parking lots, account for fourteen (14%) of costs. Costs to keep Airport Layout Plans up-to-date, including meeting new e-ALP requirements represents five percent (5%) of overall needs. Revenue producing projects (hangars and fuel farms) account for five percent (5%) of future costs. **Figure 8-3**, shows the distribution of projects by project type. **Table 8-4** includes the cost details by development category and airport role.

Figure 8-3: 2011-2030 Infrastructure Needs by Project Type

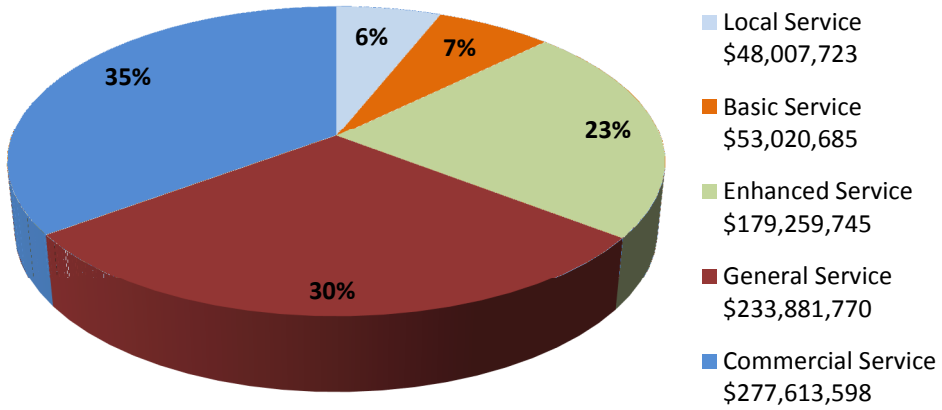


Source: 2011-2016 CIP plans, LRNA plans, Mead & Hunt

8.5.b Infrastructure Needed by Airport Role

Infrastructure needs over the planning period were also grouped by the system plan role. Overall, Commercial Service airports account for 35 percent (35%) of the total investment needed for airport improvements. General Service and Enhanced Service airports, respectively, account for $233 million (30%) and $179 million (23%) in needed improvements by role. Basic Service airports and Local Service airports account for thirteen percent (13%) of the remaining needed investment. **Figure 8-4** illustrates the level of investment needed by role while **Table 8-4** lists the project costs showing both development category and airport role.

Figure 8-4: 2011-2030 Future Project Needs by Airport Role



Source: 2011-2016 CIP plans, LRNA plans, Mead & Hunt

Table 8-4: Investment Needed To Meet Needs

Project Category	Project Type	Commercial Service	Enhanced Service	General Service	Basic Service	Local Service	Iowa DOT	TOTAL
Airside Safety	RSA Improvements	$20,415	$8,371,899	$3,428,929	$3,460,561	$4,037,104	$0	$19,318,908
	AWOS	$0	$1,055,265	$2,205,270	$1,094,320	$0	$0	$4,354,855
	Lighting	$270,000	$4,354,743	$820,000	$341,524	$64,000	$0	$5,850,267
	NAVAIDs	$177,251	$4,510,000	$722,000	$472,651	$0	$0	$5,881,902
	Obstruction Removal	$0	$553,737	$786,117	$369,000	$0	$0	$1,708,854
	TOTAL	**$467,666**	**$18,845,644**	**$7,962,316**	**$5,738,056**	**$4,101,104**	**$0**	**$37,114,786**
Revenue Producing	Fuel Farms	$0	$1,333,000	$425,000	$261,000	$216,000	$0	$2,235,000
	Hangars	$2,566,100	$13,057,866	$15,388,845	$4,562,653	$4,129,736	$0	$39,705,200
	TOTAL	**$2,566,100**	**$14,390,866**	**$15,813,845**	**$4,823,653**	**$4,345,736**	**$0**	**$41,940,200**
Planning	Planning/Studies	$10,850,000	$17,685,195	$21,725,000	$760,000	$130,000	$1,600,000	$52,750,195
	Environmental	$2,948,300	$695,800	$440,600	$1,232,000	$80,000	$0	$5,396,700
	Miscellaneous	$175,434	$0	$0	$0	$0	$0	$175,434
	TOTAL	**$13,973,734**	**$18,380,995**	**$22,165,600**	**$1,992,000**	**$210,000**	**$1,600,000**	**$58,322,329**
Landside Development	ARFF Buildings	$3,571,800	$0	$0	$0	$0	$0	$3,571,800
	Buildings	$5,738,525	$2,077,900	$0	$0	$0	$0	$7,816,425
	Drainage	$0	$648,000	$315,000	$274,000	$381,240	$0	$1,618,240
	Equipment	$6,374,386	$3,094,289	$932,000	$335,000	$300,000	$0	$11,035,675
	Fencing	$799,200	$503,463	$1,226,050	$1,013,990	$0	$0	$3,542,703
	New Airport Construction	$0	$0	$1,964,890	$0	$0	$0	$1,964,890
	Road/Parking Lots	$12,503,007	$5,872,686	$1,816,076	$909,150	$994,333	$0	$22,095,252
	SRE Buildings	$0	$1,673,450	$2,245,793	$0	$206,000	$0	$4,125,243
	Terminal	$51,222,031	$3,332,166	$703,579	$0	$0	$0	$55,257,776
	Vault	$1,270,000	$100,000	$130,000	$0	$223,900	$0	$1,723,900
	TOTAL	**$81,478,949**	**$17,301,954**	**$9,333,388**	**$2,532,140**	**$2,105,473**	**$0**	**$112,751,904**
Airside Development	Airfield Signage	$0	$12,000	$0	$0	$0	$0	$12,000
	Apron	$13,289,257	$21,939,389	$11,007,903	$2,085,982	$3,215,728	$0	$51,538,259
	Development	$2,893,300	$13,973,755	$19,555,640	$4,117,010	$4,391,250	$0	$44,930,955
	Runways	$90,641,354	$59,962,331	$110,497,705	$15,152,422	$22,292,293	$2,500,000	$301,046,105
	Taxiways	$72,303,238	$24,452,811	$47,545,373	$16,579,422	$7,346,139	$0	$168,226,983
	TOTAL	**$179,127,149**	**$120,340,286**	**$188,606,621**	**$37,934,836**	**$37,245,410**	**$2,500,000**	**$565,754,302**
	TOTAL:	**$277,613,598**	**$189,259,745**	**$243,881,770**	**$53,020,685**	**$48,007,723**	**$4,100,000**	**$815,883,521**

Source: 2011-2016 CIP plans, LRNA plans, Mead & Hunt, Iowa Statewide 2010 Pavement Management Report

8.5.c Availability of Continued Funding

Significant investment in the aviation system has historically been from the federal Airport Improvement Program (AIP). Continued reliance on this federal funding source is needed to meet future preservation and development needs. Any significant changes to the funding formulas or amount of funding available in the federal AIP program will directly impact the amount of federal funding available to airports in Iowa. The current distribution level of federal funds is beneficial to the state's airports and any decrease could negatively impact funding to Iowa. In addition, the nonprimary entitlement program has been essential for Iowa's general aviation airport to improve infrastructure. Continuation of this program will also help meet the infrastructure needs in the state.

Any change to the local match requirements for federal funding may also impact an airport sponsor's ability to accept federal funding for projects. The percent of local match required for federal funding is set by the AIP authorization and has been five percent (5%) since 2004. Additional local match may result in smaller communities not having enough local funds to cover their share.

The establishment of the State Aviation Fund in 2008 has provided a consistent funding source for state sponsored initiatives and airport projects. Maintaining this funding source is important to maintain consistency in the aviation program. Annual vertical infrastructure funding during the past decade has also provided an important source of funding to rehabilitate and construct new vertical infrastructure.

8.6 Summary of Recommendations

Airports serve a vital role in the transportation, economic, and quality of life segments for Iowa's population. Continuing to meet these demands is dependent upon implementing recommendations to improve the system over the next twenty years. Addressing these future development needs will ensure users of the aviation system are offered safe, quality facilities and services that support the air transportation demands of Iowa. The following summary of recommendations lists actions that are necessary to help evolve the Iowa aviation system to meet the demands of aviation users:

- **Additional Airports For Inclusion Into The NPIAS –** An initial review indicated Manchester may meet all eligibility criteria for inclusion into the NPIAS. A further analysis is recommended to verify the airport meets all NPIAS inclusion requirements.

- **Additional Enhanced Service Airports –** Construction of Enhanced Service airports are recommended for Sioux County and the Pella/Oskaloosa region to

replace existing airports in need of improvements to meet growing aviation demands.

- **Recommended Role Changes for NPIAS Airports –** Local Service airports identified in the NPIAS that receive federal and/or state funding should provide services that meet or exceed criteria defining the Basic Service role. Basic Service NPIAS airports with runway infrastructure of 5,000 feet in length or greater are encouraged to meet criteria defining the General Service role to better meet NPIAS expectations.

- **Federal, State, and Airport Sponsor Action Steps** – Federal, state, and airport sponsors all play a role in providing infrastructure and services that support the air transportation system. The following recommendations were developed for each entity to improve aviation in Iowa:

    - **Iowa Department of Transportation – Office of Aviation**
        - Encourage airports to make obstruction mitigation a priority and focus on projects at airports with approach obstructions.
        - Require height zoning for state funding.
        - Investigate state contract opportunities.
        - Develop general aviation airport operational checklist.
        - Evaluate aviation related fees and taxes.
        - Evaluate NextGen coverage.
        - Continue statewide AWOS maintenance and operation.
        - Facilitate airport strategic planning.
        - Develop method to accurately count operations at non-towered airports.
        - Update economic impact, uses and benefits study.
        - Continue routine PCI inspections.

    - **Airport Sponsors**
        - Develop emergency response plans.
        - Actively work to mitigate approach obstructions.
        - Install welcome and directional signage to and from business areas.
        - Develop five year strategic plans.
        - Continue wildlife mitigation efforts.
        - Work with local communities to limit/manage incompatible land use.
        - Continue pavement preservation efforts.
        - Work towards meeting facility and service targets.

- **Federal Aviation Administration**
  - Continue non-primary entitlement funding.
  - Eliminate cost-benefit analysis required to use non-primary entitlement funding for approach lighting.
  - Monitor obstructions below 200 feet above ground level (AGL).
  - Strengthen and increase timeliness of airspace obstruction review process.
  - Increase pilot safety initiatives.

- **Future Airport Infrastructure Funding Needs –** An overall total of $816 million is needed to address future system needs throughout the twenty year planning period. The continued availability of federal and state funding is necessary to finance infrastructure preservation and development efforts.

Continued communication and cooperation between airport sponsors, the Office of Aviation, and the FAA is vital to implement a number of the recommendations. Success of the efforts should be monitored and modifications made as necessary to encourage continued implementation of these activities and initiatives.

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