ACRP

REPORT 44

AIRPORT COOPERATIVE RESEARCH PROGRAM

Sponsored by the Federal Aviation Administration

A Guidebook for the Preservation of Public-Use Airports

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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP REPORT 44

A Guidebook for the Preservation of Public-Use Airports

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Ebensburg, PA

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AIRPORT COOPERATIVE RESEARCH PROGRAM

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

The need for ACRP was identified in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions* in 2003, based on a study sponsored by the Federal Aviation Administration (FAA). The ACRP carries out applied research on problems that are shared by airport operating agencies and are not being adequately addressed by existing federal research programs. It is modeled after the successful National Cooperative Highway Research Program and Transit Cooperative Research Program. The ACRP undertakes research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration. The ACRP provides a forum where airport operators can cooperatively address common operational problems.

The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), and the Air Transport Association (ATA) as vital links to the airport community; (2) the TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academies formally initiating the program.

The ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort.

Research problem statements for the ACRP are solicited periodically but may be submitted to the TRB by anyone at any time. It is the responsibility of the AOC to formulate the research program by identifying the highest priority projects and defining funding levels and expected products.

Once selected, each ACRP project is assigned to an expert panel, appointed by the TRB. Panels include experienced practitioners and research specialists; heavy emphasis is placed on including airport professionals, the intended users of the research products. The panels prepare project statements (requests for proposals), select contractors, and provide technical guidance and counsel throughout the life of the project. The process for developing research problem statements and selecting research agencies has been used by TRB in managing cooperative research programs since 1962. As in other TRB activities, ACRP project panels serve voluntarily without compensation.

Primary emphasis is placed on disseminating ACRP results to the intended end-users of the research: airport operating agencies, service providers, and suppliers. The ACRP produces a series of research reports for use by airport operators, local agencies, the FAA, and other interested parties, and industry associations may arrange for workshops, training aids, field visits, and other activities to ensure that results are implemented by airport-industry practitioners.

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The members of the technical panel selected to monitor this project and to review this report were chosen for their special competencies and with regard for appropriate balance. The report was reviewed by the technical panel and accepted for publication according to procedures established and overseen by the Transportation Research Board and approved by the Governing Board of the National Research Council.

The opinions and conclusions expressed or implied in this report are those of the researchers who performed the research and are not necessarily those of the Transportation Research Board, the National Research Council, or the program sponsors.

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FOREWORD

By Lawrence D. Goldstein
Staff Officer
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ACRP Report 44 provides a Guidebook that describes why public-use airports close and identifies measures and strategies that can be undertaken to help preserve and prevent their closure. This guidebook presents step-by-step procedures on how to identify risk factors that can increase the potential of a future airport closure and how to formulate an effective airport preservation program. Included is a detailed listing and evaluation of the reasons, or risk factors, why public-use airports close, addressing economic, operational, revenue, business, land use, and other issues. The Guidebook also identifies potential groups interested in preserving public-use airports and offers practical checklists for identifying and addressing critical issues as part of a comprehensive strategic airport planning program in support of preservation efforts. It presents practical guidance on how to delineate primary airport closure risk factors, identifies extensive resources of value to those working to preserve airports, and collects a wide range of documents in the appendices to support the development of a practical and implementable strategic plan for airport preservation. This Guidebook is intended to be used by state and local agencies, airport owners/operators, and other public and private groups with an interest in preserving public-use airports.

The Guidebook is supplemented by a set of Appendices which are included on a CD bound into this report. The CD is also available for download as an ISO image on the TRB website. A summary, color brochure is also available on the website as a PDF document.

According to the Federal Aviation Administration, there are approximately 5,000 public-use airports in the United States. The historical record shows that there has been a substantial decrease in the number of public-use airports over the last 40 years, despite a substantial increase in the population of the United States during the same time. Many public-use airports, particularly those that are privately owned, are in danger of closure, typically to make land available for alternative development that is considered to be more profitable, from a strict business standpoint, than a public-use airport. These conditions are especially true in the fringes around urban centers and other populated areas with high or rising property values; yet, it is in these areas where air access is often needed the most. Once an airport in an urban fringe area is lost, the chances of building a replacement are almost nonexistent. In addition, aircraft technology is evolving to the point where efficient high-speed executive transport aircraft will soon be able to use smaller and mid-sized public-use gen-

eral aviation airports in areas not served by commercial or scheduled air carriers. If the United States continues to lose small and mid-sized public-use general aviation airports, there will be many communities and regions that will never get the opportunity to be served by efficient, new technology future aircraft.

The actual closure of an airport is usually the last step in a long chain of events that may have occurred over several years. As a result, one of the keys to airport preservation is to recognize problems and take action early in the process when options are still available. Parties (including state and local governments) seeking to preserve public-use airports may have difficulty obtaining information about options and resources that might be available to preserve an airport and increase its economic viability. This Guidebook provides information on how to recognize and identify threats and how to establish an effective program to help prevent closures that otherwise might occur. This Guidebook is based on a broad literature review, evaluation of historic and current airport data, case studies, polling, and interviews.

The research indicates that there is a significant difference between "airport preservation" and "airport rescue." Airport rescues are typically short-term emergency actions designed to keep open an airport already in imminent danger of closing. Airport rescue actions frequently do not deal with the underlying reasons why or how an airport came to the brink of closure. The Guidebook identifies and directly focuses on the fundamental reasons why some public-use airports come to the brink of closure and what can be done to identify and manage the factors that can put an airport at risk of failure and closure. Although the Guidebook will be a key resource for both airport preservation and airport rescue actions, it is principally focused on achieving permanent, long-term preservation.

A major conclusion of the study is that circumstances and factors that put public-use airports at risk of potential failure and closure are often readily identifiable and measurable, and these factors usually manifest themselves years (or even decades) in advance of a potential airport failure or closure. As a result, airport failures or closures generally do not happen suddenly. Closures are usually the cumulative result of a broad array of circumstances that have or could have been seen many years earlier. In addition, the research appears to indicate that there can be a disconnect between *perceived impacts* of land use and zoning around public-use airports and the scope and practical effect of *actual adverse impacts* of incompatible land use and zoning. There is a broadly held perception that ineffective land use planning and zoning may be principally responsible for the closure of many public-use airports. The reality, however, is more complex. Incompatible land use and zoning is a serious negative constraint on public-use airport viability, but other factors may be just as important. What usually occurs is a series of pressures that ultimately forces a public-use airport to succumb.

The Guidebook is a resource for airport professionals and others with an interest in airports and the role they serve in the community. Users should consider the Guidebook as a practical planning tool—an overview of strategic issues and actions useful or even necessary for advancing both (1) public-use airport preservation and (2) developing and sustaining successful public-use airports. Owners and operators of public-use airports, even if these airports currently appear to be at minimal risk of closure, can and will benefit from application of the Guidebook. This Guidebook lays out strategies and actions that will, on implementation, contribute significantly to making an airport incrementally more useful, more successful, and better integrated into the economy of the surrounding community.

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Note: Many of the photographs, figures, and tables in this report have been converted from color to grayscale for printing. The electronic version of the report (posted on the Web at www.trb.org) retains the color versions.

CHAPTER 1

Preservation of Public-Use Airports Research Background

Introduction—Using This Guidebook

This Guidebook provides a user-friendly, plain-language, non-technical outline of (1) why some public-use airports have closed, (2) how to recognize airports with a growing risk of potential closure, and (3) what measures interested parties can take to preserve U.S. public-use airports.

This Guidebook is also a gateway to a large body of technical and non-technical literature relevant to public-use airport preservation. Chapter 7, Airport Advocate Resources, provides information on useful resources and references. Many of these resources and publications are available for free.

Information in this Guidebook is organized as follows:

- Chapter 1 provides an introduction and overview of the research that preceded the Guidebook. The research approach and basic findings are reviewed to give the Guidebook user a foundation on which to read, understand, and implement Guidebook guidance.
- Chapter 2 provides the reader with a "big picture" of the long-term historical data trends applicable to the changing numbers of public-use airports in the United States, the number of active civil aircraft, and civilian pilot licensing numbers and activity.
- Chapter 3 introduces the concepts of "airport closure risk factors" and presents the main body of basic data and information collected during the Guidebook research. Different modes of data collection are addressed in separate sections, so that users can clearly understand the differing data sources and what information emerged from the various different data collection efforts.
- Chapter 4 organizes "airport closure risk factors" in relation to grant obligation status, economic, community and environmental, and infrastructure areas; identifies potential practical roles for individual airport advocates and entities; provides discussion of airport closure risk factors; and identifies extensive airport advocacy and preservation reference materials.
- Chapter 5 discusses selected long-term airport preservation strategies and mechanisms.

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Throughout this Guidebook are text boxes marked with icons. The icons indicate information that may be of interest (FYI), particularly important points (!), and typical questions with their answers (Q&A). This Guidebook cannot provide legal advice or interpret FAA or state or local regulations or policies. [5]

- Chapter 6 presents additional research findings from the interview and polling efforts.
- Chapter 7 lists publications and resources for airport advocates to use in advancing public-use airport preservation. Most of these materials and resources are available for free.

Background and Project Objectives

In 1969 there were more than 6,700 public-use airports in the United States; that number has dropped to about 5,000 public-use airports. [1] For almost four decades, the number of public-use airports in the United States has been in decline. Some public-use airports are still at risk of closure for conversion to non-aviation uses, often for alternative land uses such as residential or commercial development.

It has often been difficult to find comprehensive and reliable information on why airports actually close, how to preserve public-use airports, and what options and strategies may be available to airport advocates. This Guidebook provides information on how to (1) recognize and identify threats to public-use airports and (2) identify and use the options and strategies for preserving public-use airports. This Guidebook describes why public-use airports close, identifies measures and strategies that can be taken to help preserve public-use airports, and discusses the roles and responsibilities of parties interested in preventing public-use airport closures. This Guidebook is intended to be a resource for all interested parties, including state and local agencies, airport owners and operators, airport users, engineering and planning professionals, preservation advocacy groups, and local economic development organizations.

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***Public-use airports* and *public-use landing areas* are different.**

As used in this Guidebook, a public-use airport is any airport that is open to the public, without restriction, except for safety or operational reasons. A public-use airport can be either publicly or privately owned.

Public-use airport numbers do not include public-use heliports and seaplane bases. In 1969 there were about 6,710 public-use airports and in 2007 there were about 5,000 public-use airports. When you include public-use seaplane bases and heliports there were 7,192 public-use landing areas in 1969 and 5,221 public-use landing areas in 2007. [1]

Public-use airport preservation should not be envisioned as a last-minute dramatic rescue to save a runway from approaching bulldozers. Public-use airport preservation is about achieving and promoting those things that, in the long run, will result in a well-equipped, well-maintained, and well-run airport that is integrated into its community. Public-use airport preservation is not a sprint, but a marathon of preventive and corrective actions and can involve a wide spectrum of airport advocates.

The important and most effective efforts for public-use airport preservation are done over the long term by identifying and satisfactorily addressing airport economic, infrastructure, access, funding, and community and environmental issues. This is the real work of public-use airport preservation and it involves all interested airport stakeholders. The rescue of an airport facing closure leaves an airport that still must address its economic, infrastructure, access, funding, and community and environmental issues. This Guidebook can help airport advocates identify and address the real causes of public-use airport closures—deficiencies in dealing with economic, infrastructure, access, funding, and community and environmental issues. The appendices to this Guidebook offers useful technical and non-technical reference documents for immediate study and use by airport advocates.

This Guidebook can help airport advocates use proven, comprehensive public-use airport preservation strategies. Airport advocates

are shown many long- and near-term steps for helping to preserve, or potentially rescue, public-use airports. In using this Guidebook, remember that public-use airports pushed into closure usually get to that point because of the cumulative effects of numerous different long- and short-term factors.

The findings in this Guidebook were developed from the following:

- Interviews and polling of 481 persons involved in U.S. civil aviation.
- Analysis of the characteristics of 200 public-use airports closed from 1997 to 2007.
- Analysis of 10 recently completed State Airport System Plans.
- Analysis of 8 case study public-use airports.
- Analysis of historical data trends for public-use airports, licensed pilots, aircraft, and flight time.
- Identification and documentation of all U.S. public-use airports closed since 1977.
- Literature review findings.

!

Airport preservation actions and airport rescues are NOT the same thing. Airport rescues are emergent actions to save an airport from imminent closing and frequently do not deal with the underlying reasons of why or how an airport came to the brink of closure.

The research behind this Guidebook found many differing reasons why individual public-use airports come to the point of closing. In many cases, the reasons are both complex and cumulative. There is typically no simple "headline reason" that pushes an airport to closure. An airport closure results over time, usually years. Although the end of an airport can occur quickly, the circumstances that ultimately cause the closure almost certainly developed slowly over time.

It is vital that airport advocates and other persons interested in preserving airports understand clearly what circumstances and situations put public-use airports at potential increased risk of closure. [4] Fact-based knowledge and insights into what causes public-use airports to close will give airport advocates crucial knowledge and insights on how to preserve public-use airports.

This Guidebook will show airport advocates and other interested parties how to identify the circumstances that put airports at increased risk of closure and what strategies and measures may be taken to help protect an airport from potential closure. Given that most reasons for airport closures tend to emerge from long-term circumstances, the strategies for protecting airports from closure also tend to be long term in character.

FYI

In the 1960s and 1970s vast portions of America's freight and passenger rail networks permanently closed, although only 20 years earlier rail was a predominant means of intercity passenger and goods movement. Preserving important public infrastructure such as America's intercity railroad could have greatly benefited today's travelers and relieved a considerable amount of highway congestion.

Reasons for Public-Use Airport Closures

The research behind this Guidebook identified 16 separate, but interrelated, reasons why public-use airports come to the point of closure. The reasons can be based on economics, infrastructure, funding, land use, environmental issues, and community relations. Often there are multiple reasons for an airport's closure. Additionally, many of the reasons for closure will have been in place for many years. Each reason

Q&A

Q: Who can get involved in preserving a public-use airport?

A: Almost anyone with a personal, professional, or economic interest in aviation or aviation services.

FYI

87% of interview subjects believe that small airports will be important to the next generation. [7]

can manifest itself as a risk factor. If an airport exhibits too many risk factors, and they are not sufficiently offset by corrective protective actions, an airport is at greatly increased risk of closure. Think of it as a see-saw with risk factors on one side and corrective protective actions on the other. Which side would your airport lean to?

The 16 reasons why public-use airports typically close are as follows.

- Public Funding and Grant Obligation Status. [8] Airports without federal or state airport aid grant obligations are at increased risk.
- Economic Reasons [9]
  - Public/Private Ownership. Privately owned airports are at greater risk of closure than publicly owned airports.
  - Generational Shift at Privately Owned Airports. At times of generational shift in management or ownership, privately owned airports are at increased risk.
  - Level of Traffic and Airport-Based Aircraft. Airports with low levels of airport traffic and/or airport-based aircraft are at increased risk.
  - Total Available Customer Services. Airports with fewer customer services are at increased risk.
  - Total Airport Revenue; Fee and Charges Management. Airports generating insufficient levels of airport revenue are at increased risk.
  - Marketing and Airport Promotion. Airports not engaged in marketing and airport promotion are at increased risk.
  - Business Planning. Airports not engaged in written business planning are at increased risk.
  - Business Succession and Continuity Planning. Airports not engaged in written business succession and continuity planning are at increased risk.
- Community and Environmental Reasons [10]
  - Community Education and Outreach. Airports not engaged in community outreach and education are at increased risk.
  - Land Use Planning and Zoning. Airports surrounded by incompatible land use, planning, and zoning are at increased risk.
  - Community Relations. Airports with poor community relations are at increased risk.
  - Environmental Stewardship and Noise Management. Airports perceived as unresponsive environmental stewards are at increased risk.
  - Part of Community Economic Vision. Airports not generally perceived as being part of a community's "economic vision" are at increased risk.
- Infrastructure Reasons [11]
  - Runway Length and Total Available Airport Infrastructure. Airports with shorter runways and less total available infrastructure are at increased risk.
  - Condition of Airport Infrastructure; Deferred Maintenance. Airports with deteriorating airport infrastructure are at increased risk.

FYI

74% of interview subjects believe that airport closures will be a problem in the future. [12]

Research Approach

To produce the research for this Guidebook, the researchers

- Conducted a literature review to identify why public-use airports are closing, what can be done to help preserve public-use airports, and what is being done in other fields of property preservation so as to identify new ways and means of potentially preserving public-use airports.

- Collected data on the numbers and long-term historical trends for public-use airport numbers, numbers of licensed pilots, hours of civil aircraft flight time, and numbers of registered civil aircraft.
- Collected data to establish and document the numbers, identities, and locations of the public-use airports that have closed in the past 40 years in the United States.
- Collected and analyzed data on the characteristics of the 200 public-use airports that have closed in the United States over the past decade, specifically during the 11 years from 1996 to 2007, inclusive, so as to establish their individual characteristics and identify and document airport closure risk factors.
- Interviewed people active in aviation to collect and analyze data on why public-use airports are closing and what can be done to help preserve public-use airports and to collect related opinion and other data. By the end of the research, 481 persons had been interviewed or polled.
- Analyzed 10 recent State Airport System Plans to collect and analyze data on why public-use airports are closing, what can be done to help preserve public-use airports, and how the closure of airports affects airport systems.
- Analyzed eight case study airports to collect and analyze data on why public-use airports are closing, what can be done to help preserve public-use airports, and how the closure of airports affects airport systems.
- Developed a Guidebook for airport advocates that describes the reasons why public-use airports close, what measures and strategies can be taken to preserve public-use airports, and how airport advocates may effectively organize and act to promote airport preservation.

FYI

Representatives from 49 states and several Canadian Provinces were interviewed during the research for this Guidebook. [13]

FYI

The top five general problems in general aviation cited by the interview subjects were high fuel costs, funding/budget shortfalls, high costs generally, over-regulation, and airspace. The next highest were lack of local and political support, economic conditions generally, land use conflicts, changing land values, incompatible development patterns around airports, and low business profits.

CHAPTER 2

Historical Background and Long-Term Data Trends

World War II created enormous advancements in the industrial, technological, and human infrastructure of aviation. Many of today's civilian airports and military airbases are legacy infrastructure, dating back more than 60 years. As background to the research, various long-term trends were evaluated to help establish a context for the study of the declining numbers of public-use airports.

The research is concerned with the numbers of civilian public-use airports. Resources were not allocated in the research plan to study military aviation so the historical information presented in this chapter focuses on civil (non-military) aviation statistics. It appears that the only public-use airports to close in the United States for at least the past decade were general aviation airports, not scheduled service air carrier airports. Accordingly, the emphasis herein is on presenting long-term data trends particularly useful in understanding general aviation.

Public-Use Airport Data and Trends

Airport Totals from 1969 to 2007

Figure 2-1 depicts FAA data on the total number of public-use airports in the United States from 1969 to 2007 and the total number of public-use landing facilities in the United States from 1969 to 2007. [2] A public-use airport is an airport with a runway that is open to the public without restriction, other than those for safety. A public-use landing facility is any airport, heliport, or seaplane base that is open to the public without restriction, other than those for safety. From 1969 to the present, there has been a continuous decline in the number of both public-use airports and public-use landing facilities. These numbers appear to be unaffected by the steep periodic changes in the historical numbers of FAA-certified pilots, general aviation hours flown, and active general aviation aircraft.

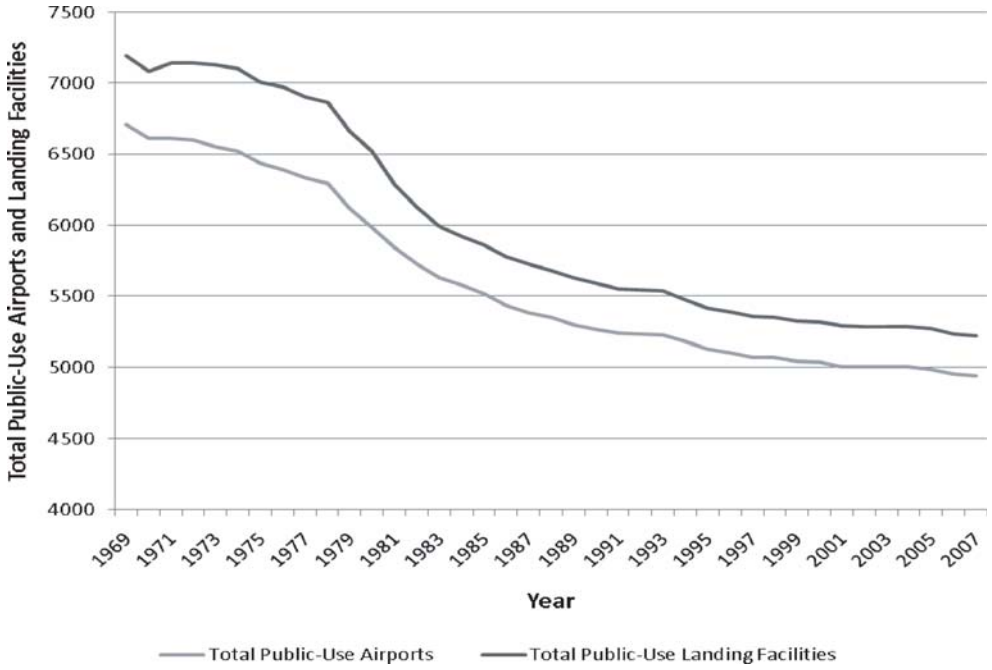
FYI

In 1969, there were about 30,000 persons per public-use airport; by 2007 there were about 60,000 persons per public-use airport. [3]

Public Ownership versus Private Ownership of Public-Use Airports

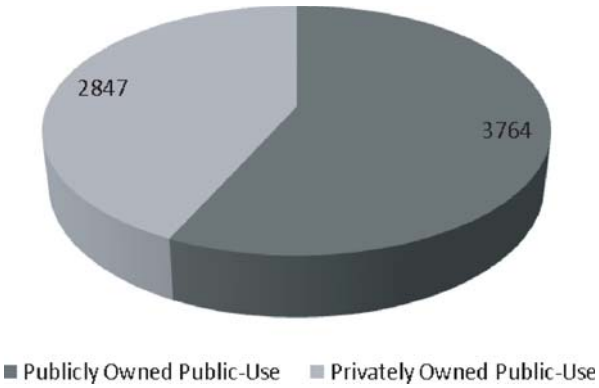
Figures 2-2 and 2-3 depict the ratio of privately owned public-use airports and publicly owned public-use airports for the years 1970 and 2007. [4] The proportion of public-use airports that are privately owned has greatly decreased and the long-term viability of private ownership of public-use airports may be in question.

Figure 2-4 compares the proportion of publicly owned public-use airports with the proportion of privately owned public-use airports. [5] This chart clearly shows a continuing long-



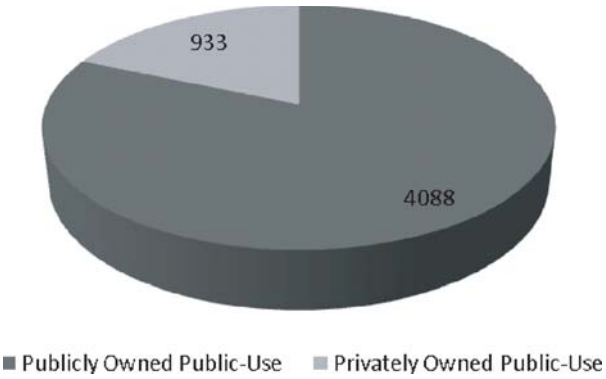
Sources: FAA data compiled by AOPA for public-use landing facilities from 1969 to 2007 and for public-use airports from 1969 to 2007.

Figure 2-1. Total public use airports and landing facilities from 1969 to 2007.



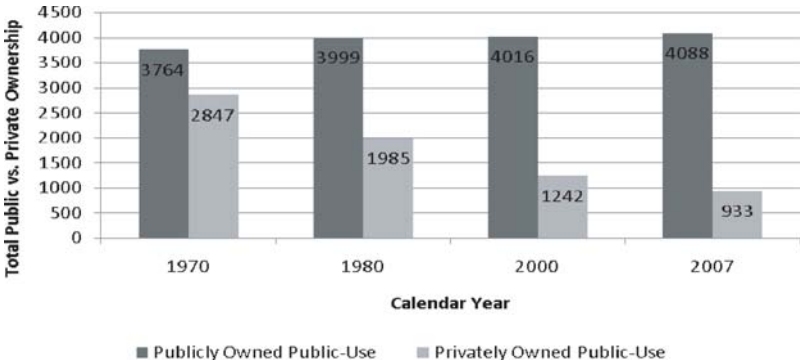
Source: FAA data compiled by AOPA.

Figure 2-2. Public ownership versus private ownership of public-use airports, 1970.



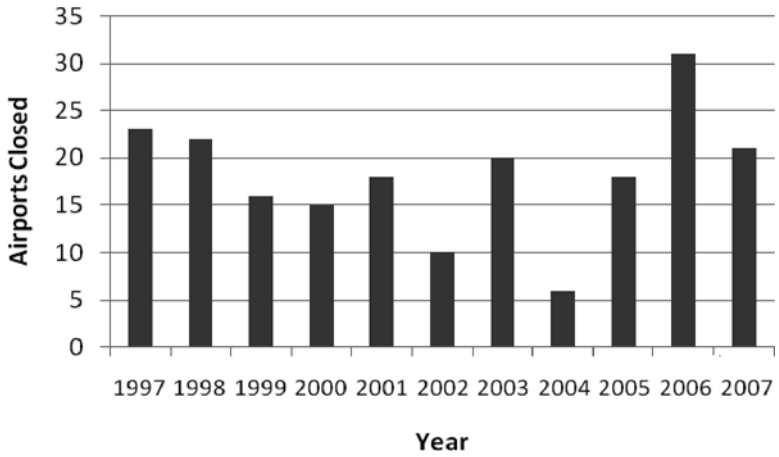
Source: FAA data compiled by AOPA.

Figure 2-3. Public ownership versus private ownership of public-use airports, 2007.



Source: FAA data compiled by AOPA.

Figure 2-4. Public ownership versus private ownership of public-use airports, 1970 to 2007.



Source: FAA data extracted from FAA National Flight Data Center abandoned airports reports.

Figure 2-5. Public-use airport closures by year, 1997 to 2007.

FYI

The steady 40-year decline in the number of public-use airports appears largely unrelated to changes in the historical numbers of FAA-certified pilots, general aviation hours flown, and active general aviation aircraft. [1]

term trend that puts in question the long-term viability of private ownership of public-use airports.

Public-Use Airport Closures by Year, 1997 to 2007

Figure 2-5 depicts the number of public-use airports closed during the years 1997 to 2007.

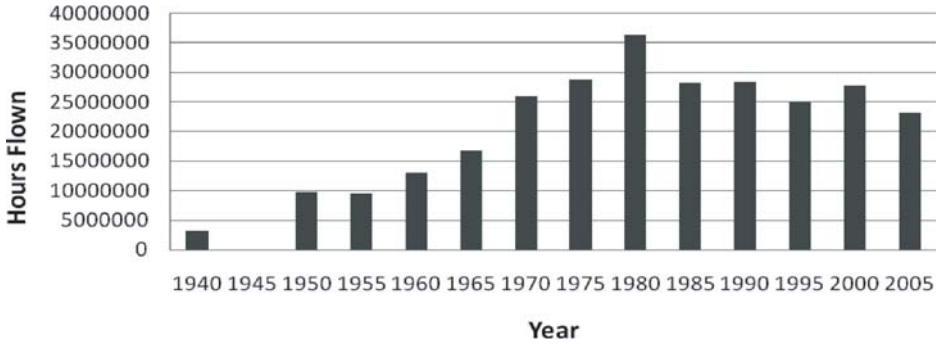
Civil Aircraft Data and Trends

!

From 1970 to 2007, there has been a 67% DECLINE in the number of privately owned public-use airports and an 8.6% INCREASE in the number of publicly owned public-use airports.

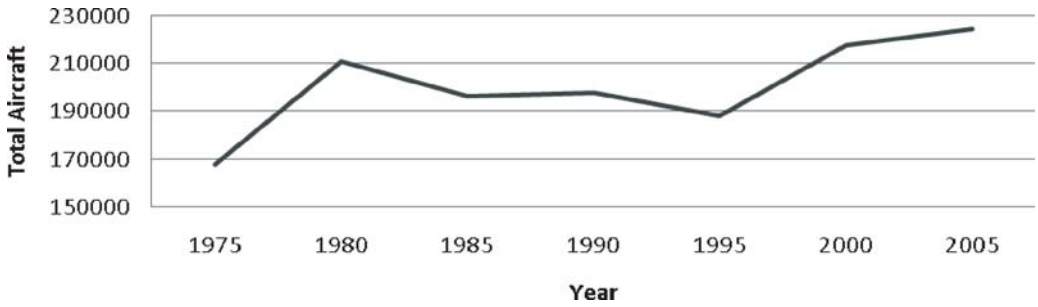
General Aviation Hours Flown, 1940 to 2005

The FAA has kept records on the number of general aviation hours flown since 1940. Figure 2-6 depicts the number of general aviation hours flown going back to 1940. [6] As shown in Figure 6, the number of civilian general aviation hours flown during World War II drops, rebounds sharply after the war, climbs steadily and peaks in the 1980s, then generally declines through the 1990s into the new millennium.



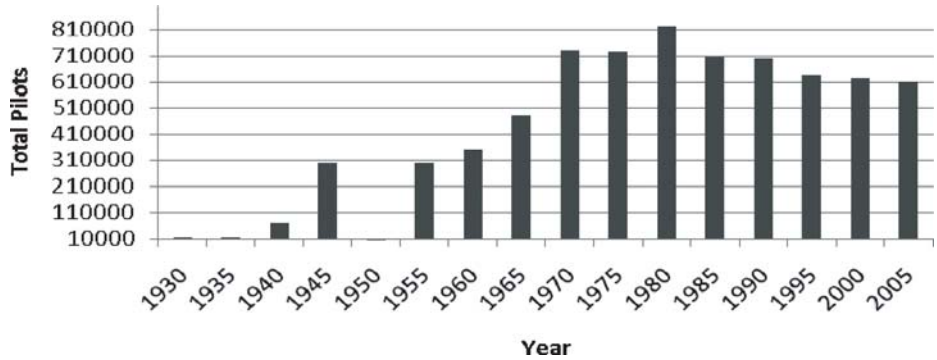
Source: FAA data compiled by AOPA.

Figure 2-6. General aviation hours flown, 1940 to 2005.



Source: FAA data compiled by AOPA.

Figure 2-7. Active general aviation aircraft in the U.S., 1975 to 2005.



Source: FAA data compiled by AOPA.

Figure 2-8. FAA-certified pilots, 1930 to 2005.

Active General Aviation Aircraft in the United States, 1975 to 2005

An important statistic for airports is the number of active general aviation aircraft. These are the aircraft based at and using general aviation airports. The most recent data is the most relevant. Figure 2-7 depicts the number of Active General Aviation Aircraft in the United States from 1975 to 2005. [7]

Civilian Pilot Data and Trends

The FAA has kept historical records on the number of pilots licensed by the U.S. government going back to 1930. [8] Figure 2-8 depicts the number of FAA-certified pilots back to 1930. The number of civilian pilots rises sharply after World War II, peaks in the 1980s, and then declines.

Q&A

Q: What can or will my State Aeronautics Agency do to help preserve local airports?

A: Most States have an Aeronautics Division, Bureau, Office, or Commission, often associated with the State Department of Transportation. State aeronautics programs vary widely. The only way to assess what your State Aeronautics Agency can do to help preserve airports is to contact them directly and ask for information. Many state aeronautics agencies have an aviation promotion mandate; some provide funds for airport projects.

CHAPTER 3

Preservation of Public-Use Airport Research Findings

Q&A

Q: Is it a good idea to go to the FAA and state aeronautics agency with questions?

A: Yes! The FAA and the applicable state aeronautics agency can provide airport advocates with important guidance and insights on how to improve and preserve airports. When working to preserve an airport it is ESSENTIAL to have the FAA and state aeronautics agency working with your team.

Characteristics of 200 Recently Closed Public-Use Airports

Historical data obtained from the FAA National Flight Data Center identified and documented by name, date, and location every public-use airport in the United States that has closed from 1977 through 2007. [1] Detailed closed airport data was extracted for the years 1997 through 2007, inclusive, and documented that 200 public-use airports had closed in the United States during this 11-year period. This information was matched with facility information from other official historical sources so as to identify and document key airport characteristics for each of the 200 airports. Prevailing adjacent land uses and land use densities for each of the closed airport locations were assessed using Google Earth imaging to further assess and document those characteristics of closed public-use airports that could be classified as airport closure risk factors.

Geographic Location

The first characteristic of closed airports to be examined was geographic location. [2] The purpose was to check for regional trends or airport closure clustering as a risk factor. Table 3-1 shows the number of public-use airports closed in each state during the 11-year period. For example, 24 airports closed in the state of Alaska during the subject period; 9 airports closed in each of the states of Indiana and Ohio; no airports closed in 10 states.

Examination of the information does not reveal any conclusive national or regional patterns as risk factors for airport closures. States such as Alaska, Texas, New York, Michigan, Indiana, Ohio, and Pennsylvania experienced a very significant number of public-use airport closures in 11-year period; however, 19 other states have lost just one or no public-use airport in the same period. Simple regional geography does not appear to be an airport closure risk factor. The research also found that state population was not predictive for forecasting the loss of public-use airports.

Runway Lengths

The research next sought to determine if there was a relationship between the lengths of an airport's runways and its potential for closing. Of the 200 recently closed airports, the runway

Table 3-1. Public-use airports closed in each state from 1997 through 2007.

Total No. Of Airports Closed In Each State	State Name Abbreviated									
24	AK									
14	TX									
13	NY									
12	MI									
9	IN	OH								
8	PA									
7	AZ	CA	OK							
6	MN	MO	NV							
5	AL	IL	MA	NM						
4	KS	NC	NJ	WI						
3	CO	IA	KY	LA	MS	ND	TN			
2	MD	NE	WA							
1	AR	CT	FL	ID	MT	SC	UT	VA	WV	
0	DE	GA	HI	ME	NH	OR	RI	SD	VT	WY

Source: FAA data extracted from FAA National Flight Data Center abandoned airports reports.

length before closure could be verified for only 186 airports. Runway lengths for 14 airports cannot be conclusively verified. National runway length data for 4,969 airports was proportionally compared against the 186 airports in the pool of public-use airports closed in the 11-year period (see Table 3-2). [3]

Nationally, airports with runways of less than 3,000 feet in length make up 22% of the public-use airport inventory. By comparison, 59% of the closed public-use airport pool had runways less than 3,000 feet. Airports with runways of more than 4,000 feet in length constitute 51% of the national public-use airport inventory, but only 11% of the closed public-use airport data pool.

The observed data indicate that public-use airports with runways of less than 3,000 feet in length have a higher-than-average rate of potential closure. Public-use airports with runways greater than 4,000 feet in length have a lower-than-average rate of potential closure.

Public Ownership Versus Private Ownership

As shown in Figures 2-2, 2-3, and 2-4, public-use airports under private ownership have a higher-than-average rate of potential closure. Public-use airports under public ownership have a lower-than-average rate of potential closure. [4] It can be concluded that private ownership of a public-use airport tends to be an airport closure risk factor and public ownership of a public-use airport tends to be an airport closure protective factor.

Table 3-2. Runway lengths.

Runway Lengths	National Public-Use Airport Data	Recently Closed Public-Use Airport Data
< 3,000 feet	1,109 of 4,969 = 22%	109 of 186 = 59%
3,001 to 4,000 feet	1,332 of 4,969 = 27%	56 of 186 = 30%
> 4,000 feet	2,528 of 4,969 = 51%	21 of 186 = 11%

Source: FAA data compiled by AOPA.

Available Airport Services and Infrastructure

The data combination of runway paving (i.e., paved or unpaved), runway lighting, fuel availability, and the availability of runway parallel taxiways was evaluated to assess if the availability of airport services and infrastructure could be predictive of an airport's potential for closing. [5] Of the 200 airports in the closed public-use airport data pool, only 11 of the airports provided airport services and infrastructure near the time of closing that included the full combination of paved and lit runways, parallel taxiways, and fuel. This data finding is striking considering this is 11 years of data; therefore, it can be reasonably stated that continued provision by a public-use airport of the combination of paved and lit runways, parallel taxiways, and fuel is a significant airport closure protective factor.

Although the full combination of paved and lit runways, parallel taxiways, and fuel tends to be a significant observed airport closure protective factor, the observed effects of the individual components of this combination are incrementally less definitive. Of the airports in the closed public-use airport data pool, 39% had paved runways, 44% had runway lights, 20% had available fuel, and 7.5% had parallel taxiways. [6] From these data we can generally infer that the availability of fuel and parallel taxiways tends to be an airport closure protective factor and that the risk of a public-use airport closing is somewhat inversely proportional to the level of available airport customer services and infrastructure.

Adjacent Land Uses

The prevailing land uses adjacent to the 200 closed public-use airport data pool were individually assessed using Google Earth. FAA-collected latitude and longitude data published in the annual AOPA Airport Directories was keyed into Google Earth to precisely locate each closed airport and to obtain an overhead aerial view of the airport site. Ground features of most of the closed airports were still recognizable. A limitation of the data in this exercise is that the Google aerial photographs are typically less than 2 years old, although the airports have been closed for an average of 5 years, and some as long as 11. After reviewing the Google overhead aerial photographs, it was concluded that in most cases the prevailing land uses adjacent to the airport locations were unlikely to have changed greatly since the airport closures.

Using the Google Earth overhead aerial photographs, prevailing land uses adjacent to the airport were identified and classified into nine general types of land uses. These classifications were low density development, agriculture, industrial/commercial, undeveloped forest/tundra, medium-density residential, low-density residential, mining, recreation, and water treatment. Table 3-3 provides observed findings.

FYI

Technical and nontechnical material is readily available from many sources on the topic of land use planning around airports. For example, *ACRP Legal Research Digest 5* outlines the legal responsibilities of various key people and entities regarding the enforcement and implementation of airport zoning and land use planning and is a good source of related information.

Although development encroachment is cited as a leading cause for the closure of public-use airports in research interviews, the above data suggests that the impacts of both development and development density near public-use airports are variable and warrant additional research. Effective planning for compatible land use around airports is critically important—without such planning, severe and potentially permanent land use conflicts can result.

Airport Closure Risk Factors

Examination of the characteristics of the pool of closed public-use airports suggests that the following are airport closure risk factors:

Table 3-3. Types of land use.

Prevailing Type Of Land Use	# of Airports	% of Sample*
Low-Density Development	51	26
Agriculture	45	23
Industrial/Commercial	30	15
Undeveloped Forest/Tundra	24	12
Medium-Density Residential	19	9.5
Low-Density Residential	13	6.5
Mining	11	5.5
Recreation	4	2
Water Treatment	3	1.5
TOTALS	**200**	**100 percent**

*Rounded
Source: Evaluation of Google Earth satellite imagery.

- Public-use airports with **runways of less than 3,000 feet in length** have a higher-than-average risk of potential closure. [7]
- **Public-use airports under private ownership** have a significantly higher risk of potential closure than public-use airports under public ownership. [8]
- Public-use airports with **few customer services and limited infrastructure** are at some increased risk of potential closure. The data generally indicates that the risk of a public-use airport closing is generally inversely proportional to the level of available services and infrastructure. [9]

Airport Closure Protective Factors

Examination of the characteristics of the pool of closed public-use airports suggests that the following are airport closure protective factors:

- Public-use airports with **runways greater than 4,000 feet in length** have a lower-than-average risk of potential closure. [10]
- **Public-use airports under public ownership** are at less risk of potential closure than public-use airports under private ownership. [11]
- Public-use airports with **more extensive customer services and better infrastructure** are at some decreased risk of potential closure. Public-use airports whose available customer services and infrastructure include the combination of paved runways, runway lights, parallel taxiways, and fuel are at substantially reduced risk of potential closure. [12]

Findings from Interviews and Polling

A total of 481 people representing 49 states, two Canadian Provinces, and the District of Columbia were interviewed or polled to collect data on (1) what is causing public-use airports to close, (2) what can be done to preserve public-use airports, and (2) other allied data and opinion questions. [13]

The interview and polling process reached people from all over the United States at broadly differing levels of industry leadership and decision making and from many different professions and user profiles within the industry. People in the interview and polling pool averaged over 20 years of experience in aviation. [14] At the end of the initial interview process, 349 people were interviewed. An additional 55 people were interviewed during the airport case studies. [15] Finally, another 77 people participated in one of two polling efforts and provided suggestions as to what

Table 3-4. Sample interview and polling questions and responses.

INTERVIEW QUESTION OR TOPIC	RESPONSES
How are you involved in aviation? [15A] (Top 5 answers shown)	Airport management, FBO, or vendor Pilot or aircrew Consultants, professionals Aircraft owner/operator Government
What is causing public-use airports to close? [15B and 15C] (Top 5 answers shown)	Land use, zoning, value, development No community/political support Noise, environmental issues Costs generally Funding and budget shortfalls
What can be done to preserve public-use airports? [15D] (Top 5 answers shown)	Community education/involvement More funding Better planning/zoning/land use Protective legislation Public ownership/purchase of development rights
What are the top 3 problems in aviation today? [15E] (Top 5 answers shown)	Fuel costs Funding/budget constraints Costs generally Over-regulation Airspace
What could be done to make general aviation airports more profitable or self-sustaining? [15F] (Top 5 answers shown)	More airport business promotion/selling Better airport industry PR/lobbying More flexibility in property development Better rates/charges/fees management Better business planning
Are the business models and business plans at most general aviation airports fully effective for the markets and customers they serve? [15G]	10% Yes 53% No 37% Maybe/Don't Know
Could you support a national airport preservation program that competes for funding with the current airport program? [15H]	49% Yes 22% No 29% Maybe/Don't Know
Do you expect aviation activity to increase, decrease, or stay the same? [15I]	28% Increase 27% Decrease 38% Same 9% Other
Are small public-use airports important to the next generation? [15J]	87% Yes 3% No 12% Maybe/Don't Know
Will airport closures be a problem in the future? [15K]	72% Yes 10% No 17% Maybe/Don't Know
Would your state or local government spend funds to help preserve a public-use airport? [15L]	47% Yes 25% No 28% Maybe/Don't Know
Can/should general aviation airports be self-sustaining regarding their capital construction budget? [15M]	10% Can 77% Can NOT 13% Maybe/Don't Know

could be done to help preserve public-use airports and the general effectiveness of public-use airport business planning and business models.

Table 3-4 lists a sample of interview and polling questions along with responses.

Findings from the Assessments of State Airport System Plans

The research evaluated 10 recent state or regional airport system plans (i.e., plans produced between 2002 and 2008) for statements or indicators of statewide and regional impacts from the closure of public-use airports and the relocation of aircraft. [20] The state airport system plans were

from the states of Colorado, Georgia, Iowa, Maine, Maryland, Missouri, New Jersey, North Dakota, Ohio, and Pennsylvania and provided a widely differing mix of population density, economic bases, prevailing weather, and terrain.

The review and assessment of state airport system plans identified the following key points and findings:

- A total of 38 public-use airports had closed in the 10 study areas. Of these 38 closed airports, only five airport closures were identified in the respective plans as having potentially significant statewide or regional impacts. These airports were Aurora Airpark and Fort Collins Downtown airports in Colorado, Atlantic City Municipal/Bader Field and Marlboro Airport in New Jersey, and Richards-Gebaur Memorial Airport in Missouri. Only 13% of the public-use airports closed in the reviewed state airport system plans generated significant airport system impacts.
- Privately owned public-use airports are often at greater risk of closure than publicly owned airports. In Iowa, since 1974, 38 public-use airports have closed; 35 of these public-use airports were privately owned. In Pennsylvania, since 1974, 52 airports have closed; 45 were privately owned.
- Privately owned public-use airports appear to be at increased risk of closure during times of generational shift. There may or may not be someone willing and able to continue operating a family-owned public-use airport business at the time of a generational shift.
- Public-use airports not taking federal airport aid grant funds, and consequently not subject to federal airport aid grant assurances, are at increased risk of closure than are those which have accepted federal airport aid grant funds.
- Entities that have taken federal airport aid grant funds, and are thus subject to airport aid grant assurances, may still act to allow grant assurances to expire so as to be free from the restrictions of grant assurances. For example, Atlantic City allowed its 20-year-long grant assurances for Atlantic City Municipal/Bader Field to expire. Upon the expiration of the grant assurances, the airport was permanently closed.
- Public-use airports in areas of high growth and high land values are at increased risk of closure. The risk factor here is conversion and redevelopment of the airport property into a land use perceived by decisionmakers as closer to the highest and best use of the airport property.
- A dwindling number of airport-based aircraft, declining airport traffic, or deteriorating airport facilities can indicate an increasing risk of airport closure.
- The closure of a public-use airport with unpaved runways, minimal infrastructure, or infrastructure in poor condition may often have little or no significant impact on a state's airport system.
- A significant negative consequence of the closure of public-use airports is the relocation of airport-based aircraft to other public-use airports where there may or may not be equivalent available aircraft storage facilities and capacity. Of particular concern is the loss of hangar space.
- Airport system plans collected from several states (i.e., Colorado, New Jersey, and North Dakota) appear to suggest that preservation of privately owned public-use airports may be less costly than building new, or redeveloping other existing, public-use airports to accommodate aircraft displaced by closure elsewhere.
- Post-9/11 airspace restrictions and airspace security zones are restricting airside access to some public-use airports and such restrictions can put such facilities at risk of permanent closure.

Findings from Airport Case Studies

Eight airport case studies collected new information and tested and validated information collected in other parts of the research. [21] The case study airports were

- Arlington Municipal Airport, Arlington, Washington State (open and operational) [22]
- Atlantic City Municipal Bader Field, Atlantic City, New Jersey (permanently closed) [23]
- Blaine Municipal Airport, Blaine, Washington State (permanently closed) [24]

- Branson Airport, Branson, Missouri (open and operational) [25]
- Houston Gulf Airport, Houston, Texas (permanently closed) [26]
- Merrill C. Meigs Field, Chicago, Illinois (permanently closed) [27]
- Santa Monica Airport, Santa Monica, California (open and operational) [28]
- Skypark Airport, Bountiful, Utah (open and operational) [29]

The findings and conclusions derived from the case studies are generally consistent with the findings and conclusions derived from other portions of the research. Airport closure risk and airport protective factors that clearly manifested themselves in the various airport case studies were as follows:

- **Omission or Inclusion in the Local Economic Vision**
  - Failure of an airport to be a part of the local economic vision increases the risk of airport closure as demonstrated at Bader Field, Blaine Municipal, Houston Gulf, Meigs Field, and Santa Monica airports.
  - When an airport successfully becomes a part of the local economic vision the risk of airport closure is greatly reduced as demonstrated by Arlington Municipal and Branson airports.
- **Local Land Values.** High local land values or a rapid increase in local land values which increases the relative value of airport land for other land uses is a significant threat to an airport. This was clearly demonstrated at Bader Field and Houston Gulf airports.
- **Customer Base and Airport-Based Aircraft Numbers.** The lack of a substantial customer base or a substantial number of airport-based aircraft can be a precondition to an airport closure as demonstrated at Bader Field and Blaine Municipal airports.
- **Airport Services Dwindle.** A dwindling in airport services can be a precondition to an airport closure as demonstrated at Bader Field and Blaine Municipal airports.
- **Business Succession/Continuity Planning.** The apparent lack of in-place long-term owner/operator business succession or business continuity planning to provide for the continuation of the airport business puts an airport at greater risk of closure as demonstrated at Houston Gulf Airport.
- **Generational Shift.** Times of owner/operator generational shift can put an airport at greater risk of closure as demonstrated at Houston Gulf Airport.
- **Grant Obligations.** In-place federal or state grant obligations are essential elements in preserving public-use airports, either permanently or temporarily, as demonstrated at Bader Field, Meigs Field, Arlington Municipal, and Santa Monica airports.
- **Incompatible Land Uses.** Adjacent or encroaching incompatible land uses create political pressures for airport closures as demonstrated at Bader Field, Houston Gulf, and Santa Monica airports.
- **Desired Alternative Land Uses.** When airport property is wanted for alternative land uses, this increases the risk of airport closure as demonstrated at Bader Field, Blaine Municipal, Houston Gulf, Meigs Field, and Santa Monica airports.
- **Airport Neighbor Dissent.** Significant dissent by airport neighbors increases the risk of airport closure as demonstrated at Bader Field and Santa Monica airports.
- **Political Opposition.** Significant local political opposition to an airport increases the risk of airport closure as demonstrated at Bader Field, Blaine Municipal, Meigs Field, and Santa Monica airports.
- **Noise, Air Quality, and Environmental Issues.** Significant airport noise, air quality, or environmental issues increase the risk of airport closure as demonstrated at Bader Field and Santa Monica airports.
- **Public Relations and Marketing.** Aggressive public relations and marketing is beneficial as demonstrated at Arlington Municipal and Branson airports.

Table 3-5. Profiles of the case study airports.

Airport Name	Open or Closed	Ownership Type	Airport Size	Setting	Airport Condition	Predominate Users	State & Region
Bader Field	Closed	Was Public	Mid Sized 2,948' runway	Urban	Was Fair	Was Light & Medium GA, Light Corp.	New Jersey North-East
Blaine Municipal	Closed	Was Public	Small 2,539' runway	Suburban	Was Fair	Was Light GA	Washington North-West
Houston Gulf	Closed	Was Private	Mid Sized 5,000' runway	Suburban	Was Good	Was Light & Medium GA	Texas South-West
Meigs	Closed	Was Public	Mid Sized 3,899' runway	Urban	Was Good	Was Light and Medium GA, Corp.	Illinois North-Central
Arlington	Open	Public	Large 5,332' runway	Mixed Rural	Very Good	Light & Medium GA, Corp.	Washington North-West
Branson	Open	Private	Large 7,140' runway	Rural	Excellent	Air Carrier, Corp.	Missouri South-Central
Skypark	Open	Private	Small 4,700' runway	Suburban	Good	Light & Medium GA, Corp.	Utah Mid-West
Santa Monica	Open	Public	Mid Sized 4,973' runway	Urban	Good	Light & Medium GA, Corp.	California West Coast

- **Continuing Infrastructure Investment.** An apparent lack of or slow down in continuing infrastructure investments can be a precondition to an airport closure as demonstrated at Bader Field, Blaine Municipal, Houston Gulf, and Meigs Field airports.
- **Infrastructure Finance Tipping Points.** The financing of necessary infrastructure replacement and/or rehabilitation can create a financial tipping point with the potential to force the permanent closure of an airport as demonstrated by Skypark Airport.

Table 3-5 summarizes the information on the case study airports.

FYI

Case study airports were selected in consultation with the ACRP Project 03-11 Panel so as to ensure national geographical diversity and include a representative mix of both closed and open airports, public and private airport ownership, varying airport sizes, varying airport density settings, varying airport infrastructure conditions, and varying airport user types.

CHAPTER 4

Practical Management of 16 Primary Airport Closure Risk Factors

Overview of Airport Closure Risk Factors

In this section research findings are organized, presented, and discussed so as to facilitate their use and application by interested parties and airport advocates. This chapter illustrates how airport advocates can identify airport closure risk factors and organize in a practical manner to influence them.

Public-use airport closures are most often attributable to the cumulative effect of many different, but concurrent, airport closure risk factors. Any combination of airport closure risk factors that puts pressure on an airport to close will be locally fact-specific and differ from airport to airport. Nevertheless, the fundamental strategy for preserving public-use airports is to decrease the number and severity of airport closure risk factors.

Airport advocates can help preserve America's public-use airports, one airport at a time, by employing this simple strategy—decrease the number and severity of airport closure risk factors. One way to think of this is to use the playground see-saw analogy. "Bad" closure risk factors on one side of the see-saw need to be outweighed by "good" closure protective factors on the other side. Reduce closure risk factors and increase closure protective factors so the see-saw always tilts to the "good" side.

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Aircraft noise can be a focal point of negative community perceptions of an airport. Airport sponsors can coordinate with the FAA for the development and approval of reasonable and safe airport noise abatement procedures. Being responsive to neighbor and community concerns and complaints helps build good will and can help avoid escalating adversarial situations. Being a good neighbor encourages others to return the courtesy.

The public-use airport preservation strategies in this Guidebook for organizing effective airport preservation advocacy are win-win oriented. The general themes for preserving public-use airports highlight such practical and positive consensus building strategies as promoting good community relations, compatible land use zoning, good customer service, good business practices, environmental stewardship, safety, and infrastructure investment. This Guidebook presents ways to help preserve public-use airports through positive and constructive actions.

Ways to organize, advocate, and act to help save airports through positive and constructive actions are discussed in the following sections. Airport closure risk factors are classified into four general types. These types are economic, infrastructure, public funding, and community and environmental relations. Applicable risk factors are listed under each of these headings. Finally, applicable guidance is provided for each risk factor identified by the research.

Classification of 16 Primary Airport Closure Risk Factors

Factors the research has identified as increasing pressures on an airport to close are "airport closure risk factors" that can be generally classified into four principal subgroups:

- **Grant Obligation Status** airport closure risk factors. [2]
- **Economic** airport closure risk factors. [1]
- **Community and Environmental** airport closure risk factors. [3]
- **Infrastructure** airport closure risk factors. [4]

Grant Obligation Status

Airports without federal or state airport aid grant obligations are at increased risk of closure. Airports that have accepted federal or state airport aid grant funds are subject to applicable federal or state airport aid grant obligations and may be fully or partially protected from closure. Some aid grant obligations may require an airport to remain open in perpetuity, while other types of grant obligations may require an airport to remain open for a specified duration of time.

Economic Issues

Public/Private Ownership

Privately owned airports have, by far, a greater risk of closing than publicly owned airports. Privately owned airports are often at risk of closure during ownership/management generational changes, have typically less access to federal and state airport capital aid funds, do not have the property tax immunities often given to public entities, and do not have access to public funding to offset operational costs. Privately owned airports are often subject to potential sale to land developers, particularly at times of airport ownership/management generational change.

Generational Shift at Privately Owned Airports

At times of generational shift in management or ownership, privately owned airports are at increased risk of closure. The "next generation" may have insufficient interest or ability to assume ownership/management of the airport. Another risk factor is that distribution of the remaining assets in the estate may require the breakup or sale of the airport or its property in order to provide an equitable distribution of remaining assets or to raise funds for estate taxes that may be applicable on the death of an airport owner.

Level of Traffic & Airport-Based Aircraft

Airports with low levels of airport traffic and/or airport-based aircraft are at increased risk of closure. Airport traffic and airport-based aircraft directly affect total airport revenue.

Q&A

Q: What is the most effective way to preserve a PRIVATELY OWNED public-use airport?

A: Nationally, the statistics show that the most effective SINGLE way to preserve a privately owned public-use airport is to bring it under public ownership with the help of FAA funding for airport acquisition and improvement projects. Unfortunately, such an effort can be complicated, take a considerable amount of time, and comes without any assurance of success. The FAA will make an assessment if the airport warrants the investment of FAA funding; not all airports will qualify for FAA airport acquisition funding. Public ownership also typically requires a willing local public sponsor, general public support, available FAA funding, and frequently the completion of engineering, environmental, and/or economic feasibility studies.

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Airport advocates will spend much of their time educating interested parties, recruiting allies, and finding cooperative solutions to airport/community problems and issues. Fixing "blame" for a problem does NOT fix the problem.

Total Available Customer Services

Airports with fewer customer services are at increased risk of closure. A decline in airport customer services has the dual effect of reducing (1) opportunities for revenue generation for the airport and (2) the value and utility of the airport to current and potential customers. Airport customer services include fuel, aircraft repair and servicing, food, aircraft rental, charter services, instruction, pilot supplies, aircraft shelter and tie down, passenger shelter, briefing facilities, vehicle parking, and ground transportation services.

Total Airport Revenue; Fees and Charges Management

Airports generating insufficient levels of airport revenue are at increased risk of closure. Airports need competitive and profitable fees and charges that are subject to periodic review. Mismanagement of fees and charges can result in reduced airport revenues due to user undercharges, loss of customers due to overcharges, customer dissatisfaction due to inconsistent charges, and loss of market leadership. Airport managements need to manage airport assets to maximize total airport revenues. Often the greatest asset of an airport is land.

Marketing and Airport Promotion

Airports not engaged in marketing and airport promotion are at increased risk of closure. Marketing and promotion is an essential function of virtually all business enterprises.

Business Planning

Airports not engaged in written business planning are at increased risk of closure. Airports are a business and therefore require thoughtful business planning to best ensure business efficiency and success. Business planning is a continuous process that sets realistic measurable goals, outlines business processes, allocates resources, and regularly measures performance in attaining business goals. Airport business plans should be written, specify performance goals, be measurable, and be subject to periodic review.

Business Succession and Continuity Planning

Airports not engaged in written business succession and continuity planning are at increased risk of closure. Airports need to do sufficient advance contingency planning to be able to respond to business crises and disasters. The applicability of business succession planning and business continuity planning applies to almost all complex business enterprises. The lack of business succession planning and business continuity planning is a risk factor for any business enterprise, including public-use airports. Business succession planning tends to be oriented to human resources while business continuity planning tends to be oriented to disaster response.

Community and Environmental Issues

Community Education and Outreach

Airports not engaged in community outreach and education are at increased risk of closure. Community education and outreach is one of the most important general initiatives an airport, and airport advocates, can undertake. The purpose of community education and outreach is to inform and enlighten people in the community regarding aviation in general, and activities done at or made by the airport, its users, and beneficiaries.

Land Use Planning and Zoning

Airports surrounded by conflicting land use (resulting in ineffective planning and zoning) are at increased risk of closure. There is much literature on airport-compatible land use zon-

ing and planning. Serious interest in implementing airport-compatible zoning and planning too often occurs after property near airports has already been developed. Community education and outreach is an important component in promoting airport-compatible land use planning and zoning. Airport-compatible land use and zoning are directly related to high and rising land values.

Community Relations

Airports with poor community relations are at increased risk of closure. It is essential for airports to make every effort to maintain and improve positive community relations. Many excellent reference works deal with improving airport and community relations.

Environmental Stewardship and Noise Management

Airports that are perceived to be unresponsive, have unresolved environmental issues or aircraft noise problems, or are perceived as being environmentally disinterested or irresponsible, increase their risk of potential closure. Ineffective management of environmental stewardship issues can put an airport in an unnecessary adversarial relationship with environmental regulatory agencies, local environmental interest groups, and prevailing community values. Potential airport environmental issues include aircraft noise, toxic/hazardous spills, wildlife management, water quality management, air quality management, and stormwater runoff.

Part of Community Economic Vision

Airports not generally perceived as being part of a community's "economic vision" are at increased risk of closure. Making a local airport a positive and relevant part of a community's economic self-image and vision of itself is something that happens over a long period of time. Success in this factor means that the airport is truly seen as part of the community and that many things are already being done that meet widespread community acceptance and approval.

Infrastructure Issues

Runway Length and Total Available Airport Infrastructure

Airports with shorter runways and less total available infrastructure are at increased risk of closure. The research found that airports with runways greater than 4,000 feet in length have a substantially reduced risk of potential airport closure. Airports with runways of less than 3,000 feet in length have a higher-than-average risk of potential closure. The research found that airports whose customer services and available infrastructure include the complete combination of paved runways, runway lights, parallel taxiways, and available fuel exhibit less risk of airport closure.

Condition of Airport Infrastructure; Deferred Maintenance

Deteriorating airport facilities are observable precursors that increase an airport's risk of closure. The deterioration cycle frequently begins with deferred maintenance and repairs. Lack of infrastructure maintenance tends to compound this problem, resulting in reduced infrastructure service life. Such situations increase the risk of closure.

Q&A

Q: "The airport was here first, then the houses off the runway were built. The neighbors have no right to complain, right?"

A: Wrong! Neighbors and community members will always voice and vote their interests and concerns. Telling a neighbor that the airport was there first and they should not complain about it is a counterproductive way to deal with this situation.

Suggested Roles for Individuals and Entities

Different Types of Airport Advocates

This Guidebook has identified and classified airport advocates into 13 different types. [5] Some advocates are people with a function, like an airport manager, and some advocates are organizations with specific interests, like a Chamber of Commerce, which is made up of many people. Almost all airport advocates, be they a person or an organization, will fit easily into one of the 13 categories. Some advocates may fit into two or more categories, depending on "how many hats they wear" at their airport or in their local community.

Categorizing airport advocates helps provide general guidance to individual airport advocates regarding which of the 16 airport closure risk factors might be most useful for them to get involved with. Different people and organizations have different functions at the airport and in their communities which may make them well suited for some activities and less so for others. In this chapter, airport advocate types will be matched up for potential practical roles with several of the 16 airport closure risk factors. **These are suggested advocacy roles and local circumstances, and the interests and aptitudes of individual advocates may vary considerably.** Accordingly, the guidance in this chapter is intended to assist airport advocates in deciding where they may be the most effective in helping to preserve an airport. In the final analysis, individual airport advocates need to decide where to invest their efforts; this section is designed to assist airport advocates in making these choices.

Table 4-1 describes the 13 different categories of airport advocates discussed in this Guidebook. People and entities within these categories typically have overlapping interests in a public-use airport. **There is no single way to define and group airport advocates.**

Airport Advocate Leadership Opportunities

Different types of airport advocates will have different types of leadership and advocacy opportunities. An airport owner/operator controls or influences a different set of circumstances than a local civic leader, an airport user, a local government official, a community member, or an airport neighbor. Different people in different "chairs" (so to speak) in life have different knowledge sets, different responsibilities, different vested interests, and widely differing abilities to control or influence various events and outcomes. Some airport advocates may share many elements in their leadership and advocacy opportunities (e.g., an airport owner and an airport operator). Some airport advocates may share few elements in their leadership and advocacy opportunities (e.g., an airport FBO and the local Chamber of Commerce). Table 4-2 indicates where airport advocate types may have increased opportunities to provide leadership and airport advocacy.

Organizing Effective Airport Preservation Advocacy and Action

Effective airport preservation advocacy and action does not just happen by itself—it needs interested people, specific purpose, form, organization, and management to sustain it over time. A key question is how to organize local interest and knowledge into effective airport advocacy. Table 4-3 shows one way to initiate and organize an airport preservation advocacy group. [6]

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Organizing and implementing effective airport advocacy is a long-term effort needing the work and cooperation of many people.

Frequently the most motivated airport preservation advocates are airport owners/operators, airport users, airport-based businesses,

Table 4-1. Airport advocate discussion.

ADVOCATE	DISCUSSION
Airport Owners	Airport owners come in many forms. An airport owner can be a private individual, partnership, private corporation, college or university, city, county, public authority or commission, state, multi-state, or regional entity. Public-use airports can be privately owned or publicly owned. In the United States, most public-use airports are publicly owned.
Airport Managements	Airport managements and airport owners are not necessarily the same thing. Many airports are owned by one entity and operated and managed by another entity. This is often done under a lease structure where the owner leases all or some of the airport to another entity to manage and operate.
Airport Oversight Boards	Typically an airport oversight board oversees the management and operation of an airport, without being deeply involved in daily operations. Such board types may include the Board of an Airport Commission or Authority, the Board of Directors for a for-profit or non-profit entity, members of an elected City Council, County Commissioners, or representative airport equity shareholders.
Governments and Public Officials	This category includes federal, state, and local governmental subdivisions and public officials that may become airport advocates but do not necessarily have any official affiliation with an airport.
Public Agencies	Public agencies can be one of any number of potential forms of public entity often called a "commission" or an "authority." These public agencies are often created to either finance, construct, acquire, or operate public infrastructure like highways, bridges, or airports. Many airports are operated by public entities chartered as authorities or commissions.
Airport Employees	As used in this Guidebook, airport employees are people employed on or by the airport. Employment can either be by the airport itself, an aviation business located on the airport, or by a non-aviation business located on the airport. People whose employment is tied to an airport can be very active airport advocates.
Fixed-Base Operators	As used in this Guidebook, fixed-base operators means airport businesses that provide food, fuel, aircraft repairs, aircraft parts, aircraft equipment, aircraft services, aviation training, and other direct aviation oriented products and services to airport users.
Airport Users	Airport users are a broad group of people and entities, both locally based and transient, that use airport infrastructure, airport real property, airport services, or the businesses or fixed-base operators located at the airport. An airport user can be as simple as an individual who periodically visits an airport restaurant or as complex as an airline with major airport ground and passenger/freight handling facilities.
Airport Tenants	As used in this Guidebook, airport tenants means any person or entity, including businesses, that rent or lease airport real property or building space.
Chambers of Commerce	Chambers of Commerce are locally or regionally chartered business advocacy organizations whose principal purpose is to locally or regionally expand business income, promote full employment, and promote investment in local or regional businesses and public infrastructure. Airports are typically considered to be public infrastructure because they serve a broadly based public purpose, are open for public use, and are frequently financed in part with public funds.
Civic Groups	Local civic groups include community-based groups and organizations with an interest in the community and citizen quality of life. This frequently includes community service clubs such as the Rotary, Kiwanis, Lions, and public service and safety organizations like volunteer fire and rescue squads.
Aviation Trade and Advocacy Organizations	As used in this Guidebook, trade and advocacy organizations include organizations such as the Aircraft Owners and Pilots Association (AOPA), the National Association of State Aviation Officials (NASAO), the Experimental Aircraft Association (EAA), and the National Business Aviation Association (NBAA) Aviation trade and advocacy organizations are vital and serve the aviation community and all interested people, by providing a wide array of important and timely information on aviation to the American public, the aviation community, and business and political leaders.
Community Members	Community members include airport neighbors, people in the vicinity of the airport, and other people in the community with awareness of the airport. It is often assumed that community members are predisposed to be airport critics. Look for potential airport advocates and allies everywhere. Work to win the goodwill of community members because they can be persuasive airport advocates or opponents.

Source: Parts of Tables 4-1 and 4-2 were developed from source material contained in FAA Advisory Circular 150/5050-7, *Establishment of Airport Action Groups* and AOPA's *Participating in the Planning Process.*

and businesses dependent on airport services. These types of airport advocates have a direct stake in the long-term success of the airport and are also positioned to be well informed about key airport issues and circumstances.

It has been observed that airport advocates tend to organize from the inside (of the airport) out, and airport antagonists tend to organize from the outside (of the airport) in. Airport preservation advocates should strive to be objective, well organized, well informed, and prepared

Table 4-2. Airport advocate leadership opportunities.

ADVOCATE	LEADERSHIP AND ADVOCACY OPPORTUNITIES	
Airport Owners **Airport Managements** **Airport Oversight Boards**	Public Versus Private Ownership Business Succession & Continuity Planning Airport Revenue; Fee & Charges Management Customer Services Federal and State Grant Obligations Community Relations Community Economic Vision Runway Length & Available Airport Infrastructure Security or Airspace Restrictions	Generational Shift Business Planning Level of Traffic and Airport-Based Aircraft Airport Marketing & Promotion Land Use Planning & Zoning Environmental Stewardship & Noise Issues Community Education & Outreach Airport Infrastructure Condition
Airport Employees **Airport FBOs** **Airport Users** **Airport Tenants**	Public Versus Private Ownership Business Planning Level of Traffic & Airport-Based Aircraft Airport Marketing & Promotion Community Relations Community Economic Vision Runway Length & Available Airport Infrastructure Security or Airspace Restrictions	Business Succession & Continuity Planning Airport Revenue; Fee & Charges Management Customer Services Land Use Planning & Zoning Environmental Stewardship & Noise Issues Community Education & Outreach Airport Infrastructure Condition
Governmental and Public Officials **Public Agencies**	Public Versus Private Ownership Business Planning Customer Services Federal and State Grant Obligations Community Relations Community Economic Vision Runway Length & Available Airport Infrastructure Security or Airspace Restrictions	Business Succession & Continuity Planning Airport Revenue; Fee & Charges Management Airport Marketing & Promotion Land Use Planning & Zoning Environmental Stewardship & Noise Issues Community Education and Outreach Airport Infrastructure Condition
Chambers of Commerce **Civic Groups** **Industry Trade & Advocacy Organizations**	Public Versus Private Ownership Airport Marketing & Promotion Community Relations Community Economic Vision Runway Length & Available Airport Infrastructure Security or Airspace Restrictions	Customer Services Land Use Planning & Zoning Environmental Stewardship & Noise Issues Community Education & Outreach Airport Infrastructure Condition
Community Members	Public Versus Private Ownership Land Use Planning & Zoning Environmental Stewardship & Noise Issues Community Education & Outreach Security or Airspace Restrictions	Airport Marketing & Promotion Community Relations Community Economic Vision Airport Infrastructure Condition

FYI

Most current FAA publications are available free on-line on the Internet for downloading at www.faa.gov. Click on "Airports" as a starting point. People should always check the FAA website to ensure they have the most up-to-date FAA publications.

for a long-term and sustained effort to improve community outreach and education, improve the quality and variety of airport services and infrastructure, better integrate the airport into the community, and promote airport economic health.

It is suggested that Table 4-3 be reviewed in combination with the FAA Advisory Circular *Establishment of Airport Advocate Groups,* AC No. 150/5050-7, available online at www.faa.gov and AOPA's *Participating in the Planning Process.*

Airport Advocates Issues Checklist

The Airport Advocates Issues Checklist in (see Table 4-4) is a comprehensive tool designed to assess and diagnose airport issues that can increase the risk of a public-use airports closure. This checklist organizes the 16 factors that typically cause public-use airports to close into a compact and readily understandable worksheet so that airport advocates can focus on the key questions

Table 4-3. Organizing airport advocacy.

TYPICAL ORGANIZATIONAL STEPS	TYPICAL ACTIONS TO BE UNDERTAKEN DURING ORGANIZATIONAL STEPS
1. Create a Core Discussion Group	**Talk to other airport stakeholders about airport preservation.** Ask questions and get opinions. Assess the situation(s). Facilitate interest and discussions. Call state and federal aviation oversight offices for general guidance. Call AOPA and other airport advocacy organizations for guidance. Create a core group of organizers.
2. Do Background Homework	**Collect appropriate reference and guidance materials.** Use Airport Advocate Discussion table (Table 4-1) to identify and list potential airport advocates. Use Airport Advocates Issues Checklist (Table 4-4) to identify potential airport risk and factors. Use Airport Advocate Leadership Opportunities table (Table 4-2) to identify and match advocate types with risk factors
3. Organize the Discussion Group and Expand the Circle of Influence	**Identify potential leaders and leadership roles and responsibilities.** Organize a group of core leaders. Coordinate with and involve key airport stakeholders. Define the specific interests and goals of the group. Discuss and develop consensus on broad issues and goals. Invite additional interested airport advocates. Promote transparency and manage potential conflicts of interest
4. Create a Mission Statement and Action Planning	**Core leaders prepare a group mission statement.** Develop draft measurable specific goals and desired outcomes. Develop a draft action plan for reaching goals and desired outcomes. Develop draft organization chart with leadership roles and responsibilities for the group. Coordinate with and involve key airport stakeholders. Develop consensus and agreement on the mission statement, goals, and action plan.
5. Continue Expanding the Circle of Influence	**Expand the circle of involved people and entities.** Hold one-on-one meetings with key stakeholders and community leaders. Hold open meetings. Recruit more airport advocates and invite community participation. Present and promote (sell and tell) the mission statement and desired goals and outcomes.
6. Execute Long-Term Airport Advocacy and Action	**Stay focused on mission statement, specific goals, and desired outcomes.** Develop long-term group leadership. Keep the action plan relevant and current. Continue to set and attain specific measurable goals. Use outreach and education to turn airport skeptics into advocates.
7. Stay Relevant	**Situations and circumstances can change and evolve, stay relevant.** Do periodic re-evaluations and updates of the group Mission Statement, goals, action plan, and leadership.

Source: The seven step process was developed using some source materials contained in FAA Advisory Circular 150/5050-7, *Establishment of Airport Action Groups* and AOPA's *Participating in the Planning Process.*

Q&A

Q: What types of projects can typically be funded with FAA airport aid grant funds?

A: Historically, airport projects eligible for FAA funding (at eligible airports) have included a wide range of runway, taxiway, lighting, navigation aid, aircraft parking, and other airport infrastructure type work. FAA airport aid grants are typically competitively awarded based on merit and scored through a priorities assessment process. Even though a proposed project may be eligible for FAA funding, it may not be selected for funding if it scores poorly against other proposed projects competing for limited funding resources. Guidance on what types of projects are eligible for FAA funding can be obtained from the FAA Airport District Office serving your area/region.

Table 4-4. Airport advocates issues checklist.

Airport Advocates Issues Checklist	IS THIS A PROBLEM? YES/NO/MAYBE
Public Funding & Grant Obligation Status	
Federal/State Grant Obligation Status: Airports without federal or state airport aid grant obligations are at increased risk. Grant obligations can be short term or long term. Long-term obligations provide more protection from airport closure.	
Economic	
Public/Private Ownership: Privately owned airports are at increased risk. Publicly owned airports are at less risk of closure.	
Generational Shift at Privately Owned Airports: At times of generational shift in management or ownership, privately owned airports are at increased risk. It is important to do business succession/continuity planning prior to generational shifts.	
Traffic & airport-based Aircraft: Airports with low levels of airport traffic and/or airport-based aircraft are at increased risk. Consider whether current traffic levels and airport-based aircraft are sufficient to sustain the airport.	
Total Available Customer Services: Airports with fewer customer services are at increased risk. Consider whether there are sufficient customer services to attract customers and provide a sufficient airport revenue stream.	
Total Airport Revenue; Fee & Charges Management: Airports generating insufficient levels of airport revenue are at increased risk.	
Marketing & Airport Promotion: Airports not engaged in marketing and airport promotion are at increased risk. Consider developing better and more effective marketing activities.	
Business Planning: Airports not engaged in written business planning are at increased risk. Ensure that written business plans are made and continually updated.	
Business Succession & Continuity Planning: Airports not engaged in written business succession and continuity planning are at increased risk. Include succession and business continuity planning in the written business plan.	
Community & Environmental	
Community Education & Outreach: Airports not engaged in community outreach and education are at increased risk. Consider creating or improving airport outreach programs and activities.	
Land Use Planning & Zoning: Airports surrounded by poor land use, planning, and zoning are at increased risk.	
Community Relations: Airports with poor community relations are at increased risk.	
Environmental Stewardship & Noise Management: Airports perceived to be unresponsive as environmental stewards are at increased risk.	
Part of Community Economic Vision: Airports not generally perceived as being part of a community's "economic vision" are at increased risk.	
Infrastructure	
Runway Length & Total Airport Infrastructure: Airports with shorter runways & less total available infrastructure are at increased risk.	
Condition of Airport Infrastructure; Deferred Maintenance: Airports with deteriorating airport infrastructure are at increased risk.	

that will (1) help identify public-use airports that might be at risk of closing, (2) identify what specific factors are putting an airport at increased risk of potential closure, and (3) suggest an initial strategy to overcome or reverse identified risk factors.

The Airport Advocates Issue Checklist focuses the efforts of airport advocates on substantive issues shown to really matter and is intended to help keep airport advocates looking forward toward solutions, rather than backward toward "blame." Fixing blame does not help preserve airports, but fixing problems does!

Public Funding Risk Factor

No single public-use airport preservation factor is both more important and more widespread than the federal and state grant obligation funding status. Federal and state airport aid grants have many "strings" (that is, grant obligations) attached that are enforced by the federal or state grant agency. Grant obligations vary widely in type and duration, depending on the type of aid granted. Some airport aid grants REQUIRE an airport to remain an airport, in perpetuity. Such airports could be considered to be preserved as airports, in perpetuity. Only the FAA or the appropriate state agency can make an authoritative determination about an airport's grant obligations and their duration. Table 4-5 provides key points for advocates.

Public funding risk factor advocate resources:

- Grothaus, James, et al., *ACRP Report 16: Guidebook for Managing Small Airports,* TRB, Washington, DC (2009) 130+ pp.
- New Hampshire DOT, *Airport Preservation Toolbox, New Hampshire Aviation System Plan,* New Hampshire DOT, Concord, NH (2008) 115 pp.

Table 4-5. Public funding risk factor, advocates, and commentary.

RISK FACTOR	ADVOCATES	COMMENTARY
Federal/State Grant Obligation Status **PRIMARY RISK FACTOR**	**Airport owners, management and oversight boards, governments, public officials, and public agencies can take a leadership and/or constructive supporting or advocacy role in helping to secure airport aid that also activates federal and/or state grant obligations.**	**Public-use airports that do not accept, apply for, or qualify for federal or applicable state airport aid grant funds are at increased risk of closure due to non-applicability of federal or state airport aid grant obligations.** Public-use airports that have accepted federal or state airport aid grant funds are subject to applicable federal or state airport aid grant obligations and may be fully or partially protected from closure. Some aid grant obligations may require an airport to remain open in perpetuity, while other types of grant obligations may require an airport to remain open for a specified duration of time. Only the FAA or the appropriate state agency can make an authoritative determination as to the nature of an airports grant obligations and their duration. Such determinations should be requested in writing and replied to in writing. When federal or state airport aid grant obligations do not run in perpetuity, public-use airports that have taken airport aid grant funds may still be capable, in some cases, of undertaking long-term decisions to let grant assurances expire over time, extinguishing the restrictions, so as to permit airport closures. The availability of federal or state capital aid for public-use airports for the development, replacement, or rehabilitation of airport infrastructure reduces the risk of potential airport closures by providing external resources not generated by the airport business itself. Information on how to qualify and apply for federal or state airport aid can be obtained from the nearest FAA offices and from the aviation offices of the applicable state. The obligations incurred under a state grant(s) can only be determined following detailed review of all state aid grant terms and conditions for all state aid grants received by or applicable to the airport.

- Reimer, Daniel S., et al., *ACRP Legal Research Digest 7: Airport Governance and Ownership,* TRB, Washington, DC (2009) 68+ pp.
- Aircraft Owners and Pilots Association, *Airport Closures at Privately Owned/Public-Use Airports,* Frederick, MD (No year provided) 5 pp.
- FAA, Report to Congress, National Plan of Integrated Airport Systems (NPIAS) 2011-201 Washington, DC (2010) 70+pp.
- FAA, Advisory Circular 150/5190-6b, *FAA Airport Compliance Manual,* Washington, DC (2009) 600+ pp.
- FAA, Order 5090.3C, *Field Formulation of National Plan of Integrated Airport Systems (NPIAS),* Washington, DC (2000).
- FAA, Order 5100.38C, *Airport Improvement Program Handbook,* Washington, DC (2005) 318 pp.
- FAA, Order 5100.39A, *Airports Capital Improvement Plan,* Washington, DC (2000) 22 pp.
- FAA, *Community Involvement Manual,* Washington, DC (1990) 108 pp.

Economic Risk Factors

Building positive airport economics is crucial to an airport's longevity. Of the 16 airport risk factors detailed in this Guidebook, fully half are classified as fundamentally economic in character. Public-use airports, both publicly and privately owned, are businesses. Like any other business enterprise they need to be advantageously chartered, well managed, economically efficient, customer focused, and profitable (to the greatest degree possible). Airports close not just from "outside" pressures, but also from "inside" deficiencies and/or inefficiencies. The economic factors (see Table 4-6) are principally influenced by airport ownership and management.

Economic risk factor airport advocate resources:

- Aircraft Owners and Pilots Association, *Airport Closures at Privately Owned/Public-Use Airports,* Frederick, MD (No year provided) 5 pp.
- Aircraft Owners and Pilots Association, *Airports, A Valuable Community Resource, A Guide to Obtaining Community Support for Your Local Airport,* Frederick, MD (1999) 112 pp.
- FAA, Advisory Circular 150/5050-7, *Establishment of Airport Action Groups,* Washington, DC (1987) 6 pp.
- FAA, Advisory Circular 150/5100-10a, *Accounting Records Guide,* Washington, DC (1976) 756 pp.
- FAA, Advisory Circular 150/5190-6b, *FAA Airport Compliance Manual,* Washington, DC (2009) 600+ pp.
- FAA, *Community Involvement Manual,* Washington, DC (1990) 108 pp.
- FAA, Order 5100.38C, *Airport Improvement Program Handbook,* Washington, DC (2005) 318 pp.
- FAA, Order 5100.39A, *Airports Capital Improvement Plan,* Washington, DC (2000) 22 pp.
- FAA, Report to Congress, National Plan of Integrated Airport Systems (NPIAS) 2007-2011, Washington, DC (2006) 72 pp.
- Grothaus, James, et al., *ACRP Report 16: Guidebook for Managing Small Airports,* TRB, Washington, DC (2009) 130+ pp.
- Kramer, Lois, et al., *ACRP Report 28: Marketing Guidebook for Small Airports,* TRB, Washington, DC (2010) 187 pp.
- Ricondo and Associates, Inc., et al., *ACRP Report 20: Strategic Planning in the Airport Industry,* TRB, Washington, DC (2009) 123+ pp.
- Reimer, Daniel S., et al., *ACRP Legal Research Digest 7: Airport Governance and Ownership,* TRB, Washington, DC (2009) 68+ pp.
- Michigan Aeronautics Commission, *Airport Preservation Policy Statemen*t, Michigan DOT, Lansing, MI (1999) 9 pp.

Table 4-6. Economic risk factors, airport advocates and commentary.

RISK FACTOR	ADVOCATES	COMMENTARY
Private Versus Public Ownership **PRIMARY RISK FACTOR**	**Any interested airport advocate can take a leadership and/or constructive advocacy role in supporting the public acquisition of a privately owned public-use airport.**	**National statistics clearly establish that public-use airports under private ownership have a significantly higher risk of closure than public-use airports under public ownership.** Nationally, privately owned public-use airports have, by far, a greater risk of closing than publicly owned public-use airports. Privately owned public-use airports are often at risk of closure during ownership/management generational changes, have typically less access to federal and state airport capital aid funds, do not have the taxation immunities often given to public entities, do not have powers of condemnation for property acquisition, cannot levy taxes, and do not have access to public funding to offset operational costs. In combination, these factors give publicly owned public-use airports longevity advantages over their privately owned counterparts. Privately owned public-use airports are often readily subject to potential sale to land developers. This is particularly the case at times of airport ownership and/or management generation change. Acquisition of a privately owned airport by a public entity such as a municipality, county, state, or public authority or commission, especially when using federal grant funds, virtually ensures the long-term preservation of a public-use airport. This is primarily due to binding federal grant assurances that accompany the awarding of federal funds for airport acquisitions. The FAA can provide funds to public entities wishing to purchase an airport or study the purchase of an airport. Such funds are competitively awarded, typically require many years to procure, and require sponsorship by a competent local public entity.
Generational Shift at Privately Owned Airports **PRIMARY RISK FACTOR**	**Airport owners, managements and oversight boards can take a leadership and/or constructive advocacy role in supporting generational change planning.**	**There is clear evidence that when there is a generational shift in ownership and/or management at an airport, the airport is at increased risk of closure.** The "next generation" may have insufficient interest or ability to assume ownership and/or management of the airport. Another risk factor is that distribution of the assets in the estate or will may require the breakup or sale of the airport or its property in order to provide an equitable distribution of the remaining assets or to raise funds for estate taxes that may be applicable on the death of an airport owner. Business succession and continuity planning is especially important in helping to navigate generational shifts at privately owned public-use airports. Generational shifts are rarely a problem at publicly owned public-use airports. Airports with detailed, established business succession plans will get through generational shift issues better than airports that do not. This planning must occur well in advance and deal realistically with the difficult issues that can occur at these times of anticipated and unanticipated generational shift. Individual circumstances and applicable local, state, and federal laws will vary greatly. Since the Guidebook cannot provide legal advice, guidance on managing generational shifts should be sought from appropriate local legal counsel.

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Table 4-6. (Continued).

RISK FACTOR	ADVOCATES	COMMENTARY
Traffic & airport-based Aircraft **PRIMARY RISK FACTOR**	**Airport owners, managements and oversight boards, airport employees, FBOs, users, and tenants can take a leadership and/or constructive supporting role in helping to develop an airport's traffic and airport-based aircraft.**	**The research found that a dwindling number of airport-based aircraft or declining traffic were clear and measurable individual precursors to an increasing risk of airport closure. The response to a dwindling number of airport-based aircraft or declining traffic is to solicit and attract more airport-based aircraft and build traffic operations through all available means.** Methods for growing an airport's traffic and airport-based aircraft will vary on a case-by-case basis, but will almost always involve a combination of marketing, customer service, and airport infrastructure and customer services initiatives. Increasing airport traffic and airport-based aircraft will increase total airport revenue. Increasing airport traffic and airport-based aircraft is highly related to airport business planning, marketing, and promotion. Increasing airport traffic and airport-based aircraft may require increasing total available customer services, increasing total available airport infrastructure, and improving the condition of airport infrastructure.
Total Available Customer Services **PRIMARY RISK FACTOR**	**Airport owners, managements and oversight boards, airport employees, FBOs, users, tenants, governments, public officials, and public agencies can take a leadership and/or constructive supporting or advocacy role in helping to develop an airport's customer services.**	**The research found that a dwindling reduction, over time, of an airport's available customer services was a clear and measurable precursor and indicator of increasing risk of airport closure.** A decline in airport customer services has the dual effect of reducing (1) opportunities for revenue generation for the airport and (2) the value and utility of the airport to current and potential customers. Increasing total available customer services is usually done in conjunction with marketing and promotion efforts. Airport (general aviation) customer services include fuel, aircraft repair and servicing, food, aircraft rental, charter services, instruction, pilot supplies, aircraft shelter and tie down, passenger shelter, briefing facilities, vehicle parking, and ground transportation services. Airports should endeavor to take such steps as may be necessary to retain and expand the variety and quality of airport customer services. Airport owners/managers should endeavor to take such steps as may be necessary to retain and expand the variety and quality of airport customer services.
Total Airport Revenue: Fee & Charges Management	**Airport owners, managements and oversight boards, airport employees, FBOs, users, tenants, governments, public officials, and public agencies can take a leadership and/or constructive supporting role in advancing appropriate airport revenue fees and charges.**	**Airports are a form of business enterprise and need to operate efficiently and profitably. The airport, as a business enterprise, needs to be successful for the airport itself to be successful.** The lack of a written business plan to guide total airport revenue and fees and charges management can greatly affect the efficiency and profitability of the core business enterprise(s) of an airport.

Table 4-6. (Continued).

RISK FACTOR	ADVOCATES	COMMENTARY
		Public-use airports need to have competitive and profitable fees and charges that are subject to periodic review. Deficient management of airport fees and charges is an airport closure risk factor. Mismanagement of fees and charges can result in reduced airport revenues. These reductions often arise from undercharging users, losing customers as a result of overcharges, customer dissatisfaction because of inconsistent charges, and loss of competitive position because of obsolete fees and charges. Fees and charges need to reasonably reflect the real total cost of providing airport services and infrastructure and include those fees and charges prescribed within airport leases and contracts. Airport managements need to think in terms of managing airport assets to maximize total airport revenues. Often the greatest asset of an airport is land, thus putting many airports in the land management and development business. Airport fees and charges need to be thoughtfully managed, equitable, and regularly reviewed for competitiveness and revenue sufficiency. It is not necessarily inappropriate for airport managements and owners to view themselves as being in the property management business, with an airport/aviation specialty, in lieu of viewing themselves as being solely in the airport/aviation business. Individual circumstances and applicable local, state, and federal laws will vary greatly. Given that the Guidebook cannot provide legal advice, guidance on managing airport fees and charges should be sought from appropriate local legal, technical, and business counsel.
Marketing & Promotion	**Any interested airport advocate can take a leadership and/or constructive advocacy or supportive role in airport marketing and promotion.**	**Airports engaged in continuing marketing, community education, and self-promotion activities are at decreased risk of closure.** The research found evidence that airports consistently engaged in marketing and promotion were at lesser risk of potential closure. Marketing and promotion is an essential function of virtually all business enterprises. Marketing and promotion are closely related to community education and outreach and improving community relations. Marketing and promotion should be a part of every airport's business planning.
Business Planning	**Airport owners, managements and oversight boards, airport employees, FBOs, users, tenants, governments, public officials, and public agencies can take a leadership and/or constructive advocacy or supporting role in airport business planning.**	**The research found reliable indicators that a great many airports do not have written airport business plans, and many other airports do not have effective business plans. The absence of a realistic written airport business plan puts an airport business enterprise at risk.** Airports are a business and therefore require thoughtful business planning to best ensure efficiency and success. Business planning is a continuous process that sets realistic measurable goals, outlines business processes, allocates resources, and regularly measures performance in attaining business goals.

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Table 4-6. (Continued).

RISK FACTOR	ADVOCATES	COMMENTARY
		Airport business plans should be written. They should include measurable performance objectives and be subject to periodic review.
Business Succession & Continuity Planning	**Airport owners, managements and oversight boards, airport employees, FBOs, users, tenants, governments, public officials, and public agencies can take a leadership and/or constructive advocacy or supporting role in supporting airport business succession continuity planning.**	**There is clear evidence that business succession planning and business continuity planning reduce the potential risk of an airport closing due to loss of key personnel or staff expertise, natural disaster, or other adverse or catastrophic event(s).** Airport owners and operators need to do sufficient advance contingency planning to be able to respond to business crises and disasters. The applicability of business succession planning and business continuity planning applies to almost all complex business enterprises. The lack of business succession planning and business continuity planning is a risk factor for any business enterprise, including public-use airports. Business succession planning tends to be oriented to human resources while business continuity planning tends to be oriented to disaster response. Business succession and continuity planning are especially important in times of generational shifts at privately owned public-use airports. Business succession and continuity planning will better enable an airport to get through foreseeable and unforeseeable adverse events. This planning must occur well in advance and deal realistically with the range of potential problems.

- National Association of State Aviation Officials, *2004 Land Use Survey,* National Association of State Aviation Officials, Washington, DC (2004) 30 pp.
- Nichol, Cindy, *ACRP Synthesis 1: Innovative Finance and Alternative Sources of Revenue for Airports,* TRB, Washington, DC (2007) 42+ pp.
- New Hampshire DOT, *Airport Preservation Toolbox, New Hampshire Aviation System Plan,* New Hampshire DOT, Concord, NH (2008) 115 pp.
- Swigart, Stacy P., and Kerri Woehler, *Participating in the Planning Process, A Guide for Airport Advocates,* AOPA, Frederick, MD (2008) 23 pp.
- Thomas, Bill, "How to Create Airport Support" *EAA Sport Aviation,* (February 2008) http://www.simsburyairport.com/applications/flyingarticle.pdf (As of November 21, 2008).
- Waite, Jocelyn, and James B. McDaniel, *ACRP Legal Research Digest 6: The Impact of Bankruptcies on Airports,* TRB, Washington, DC (May 2009) 59 pp.

Community and Environmental Risk Factors

Community and environmental risk factors affect the contexts in which an airport operates and how that operation is perceived by the surrounding community. Community outreach and education was cited in the hundreds of research interviews as one of the most important airport preservation initiatives airport advocates could do. The burden of maintaining the best possible airport and community/neighbor relations falls principally on the airport and its advocates. Maintaining good airport and community/neighbor relations is a job that is never finished. Table 4-7 presents key points for advocates.

Table 4-7. Community and environmental risk factors, advocates and commentary.

RISK FACTOR	ADVOCATES	COMMENTARY
Community Education & Outreach **PRIMARY RISK FACTOR**	**Any interested airport advocate can take a leadership and/or constructive advocacy or supportive role in helping an airport's community education and outreach efforts.**	**Public education was by far the most cited action that airport advocates could take to help preserve America's public-use airports.** Community education and outreach is one of the most important general initiatives an airport, and airport advocates, can undertake. Community education and outreach informs and enlightens the community about the benefits of aviation in general and the role of the airport in particular. Community education and outreach is closely related to marketing and promotion and community relations.
Land Use Planning & Zoning **PRIMARY RISK FACTOR**	**Any interested airport advocate can take a leadership and/or constructive advocacy or supportive role in advancing better airport land use planning and zoning.**	**Adverse land use zoning and development patterns allow incompatible land uses to encroach on airports and help to create or facilitate anti-airport community and adverse political pressures. Public-use airport-compatible land use planning and zoning for property near airports are at reduced risk of airport closure.** Although there is a long history of addressing airport and surrounding land use compatibility, these issues must be addressed locally and the earlier, the better. Community education and outreach is an important component in promoting airport-compatible land use planning and zoning. Airport-compatible land use and zoning are important components in promoting good community relations and airport noise management. Planning and zoning is a function of government that typically requires public involvement and comment. It is important that airport advocates strive to find solutions for airport-compatible land use zoning and planning as early as possible. High and rising property values tend to be macroeconomic events that are typically not manageable using the microeconomic tools outlined in advocate toolkit guidebooks. High and rising property values can create problems for airports in several differing ways, including increased property taxes, sale/conversion of airport property to non-airport purposes, encroachment of adverse land uses, and conversion of property to a highest best use. This forces airports in the land management business to maximize land asset revenues and minimize land-related expenses such as property taxes. Public-use airports in areas of high growth and high land values are at increased risk of closure and redevelopment of the airport property into land uses perceived as closer to the highest and best use of the property or for purposes more profitable to the land owner than the airport business enterprise.
Community Relations **PRIMARY RISK FACTOR**	**Any interested airport advocate can take a leadership and/or constructive advocacy or supportive role in advancing better airport community relations.**	**It is essential for airports to make every effort to maintain and improve positive community relations. Airports with poor or adversarial relations with the community and local and regional public officials are at increased risk of closure.**

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Table 4-7. (Continued).

RISK FACTOR	ADVOCATES	COMMENTARY
Environmental Stewardship and Noise Management	**Any interested airport advocate can take a leadership and/or constructive advocacy or supportive role in environmental stewardship and noise management issues.**	**Airports that are perceived to be unresponsive, have unresolved environmental issues or aircraft noise problems, or are perceived as being environmentally disinterested or irresponsible, increase their risk of closure. Ineffective management of environmental stewardship issues can put an airport into an unnecessary adversarial relationship with environmental regulatory agencies, local environmental interest groups, and prevailing community values. Potential airport environmental issues include aircraft noise, toxic/hazardous spills, wildlife management, water quality management, air quality management, and stormwater runoff.**
Part of Community Economic Vision	**Any interested airport advocate can take a leadership and/or constructive advocacy or supportive role in helping an airport be perceived as an integral part of the community and economic base.**	**Airports that succeed at becoming a relevant part of the community economic "vision" are at decreased risk of closure.** Making a local airport a positive and relevant part of a community's economic self-image and vision of itself is something that happens over a long period of time. Of all the risk factors, this one perhaps takes the longest period of time to achieve. Success in this factor means that the airport is truly seen as part of the community and that many things are already being done that meet widespread community acceptance and approval.

Community and environmental risk factor airport advocate resources:

- Aircraft Owners and Pilots Association, *Airport Closures at Privately Owned/Public-Use Airports,* Frederick, MD (No year provided) 5 pp.
- Aircraft Owners and Pilots Association, *Airports, A Valuable Community Resource, A Guide to Obtaining Community Support for Your Local Airport,* Frederick, MD (1999) 112 pp.
- Thomas, Bill, "How to Create Airport Support" *EAA Sport Aviation,* (February 2008) http://www.simsburyairport.com/applications/flyingarticle.pdf (As of November 21, 2008).
- California Department of Transportation, *California Airport Land Use Planning Handbook,* California Department of Transportation, Sacramento, CA (2002) 550 pp.
- Cheek, William V., *ACRP Legal Research Digest 5: Responsibility for Implementation and Enforcement of Airport Land-Use Zoning Restrictions,* TRB, Washington, DC (March 2009) 64+ pp.
- Delaware Valley Regional Planning Commission, *Pennsylvania Airport Compatible Land Use & Hazard Zoning,* Delaware Valley Regional Planning Commission, Philadelphia, PA (2006) 103 pp.
- FAA, Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports,* Washington, DC (1983) 72 pp.
- FAA, Advisory Circular 150/5020-32a, *Reporting Wildlife Aircraft Strikes,* Washington, DC (2004) 4 pp.
- FAA, Advisory Circular 150/5020-89, *Environmental Management Systems for Airport Managers,* Washington, DC (2007) 10 pp.
- FAA, Advisory Circular 150/5050-4, *Citizen Participation in Airport Planning,* Washington, DC (1983) 23 pp.
- FAA, Advisory Circular 150/5050-7, *Establishment of Airport Action Groups,* Washington, DC (1987) 6 pp.
- FAA, Advisory Circular 150/5190-4a, *A Model Zoning Ordinance to Limit Height of Objects Around Airports,* Washington, DC (1987) 40 pp.

- FAA, Advisory Circular 150/5190-6b, *FAA Airport Compliance Manual,* Washington, DC (2009) 600+ pp.
- FAA, Advisory Circular 150/5200-33b, *Hazardous Wildlife Attractants On or Near Airports,* Washington, DC (2007) 28 pp.
- FAA, Advisory Circular 150/5320-14, *Airport Landscaping for Noise Control Purposes,* Washington, DC (1978) 16 pp.
- FAA, Advisory Circular 150/5320-15a, *Management of Airport Industrial Waste,* Washington, DC (2008) 128 pp.
- FAA, *Aviation Noise Abatement Policy,* Washington, DC (1976) 66 pp.
- FAA, *Community Involvement Manual,* Washington, DC (1990) 108 pp.
- FAA, *Land Use Compatibility and Airports,* Washington, DC http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf (As of April 2, 2010) 141 pp.
- FAA, Order 1050.1E, *Environmental Impacts: Policies and Procedures,* Washington, DC (2006) 195 pp.
- FAA, Order 5050.4B, *NEPA Implementing Instructions for Airport Actions,* Washington, DC (2006) 192 pp.
- FAA, Order 5100.38C, *Airport Improvement Program Handbook,* Washington, DC (2005) 318 pp.
- Grothaus, James, et al., *ACRP Report 16: Guidebook for Managing Small Airports,* TRB, Washington, DC (2009) 130+ pp.
- National Association of State Aviation Officials, *2004 Land Use Survey,* National Association of State Aviation Officials, Washington, DC (2004) 30 pp.
- New Hampshire DOT, *Airport Preservation Toolbox, New Hampshire Aviation System Plan,* New Hampshire DOT, Concord, NH (2008) 115 pp.
- State of New Jersey, New Jersey Administrative Code, Title 16, New Jersey Department of Transportation, Chapter 62, Air Safety and Zoning, Trenton, NJ (exp. 2010) 14pp.
- Swigart, Stacy P., and Kerri Woehler, *Participating in the Planning Process, A Guide for Airport Advocates,* AOPA, Frederick, MD (2008) 23 pp.
- Thomas, Bill, "How to Create Airport Support" *EAA Sport Aviation,* (February 2008) http://www.simsburyairport.com/applications/flyingarticle.pdf (As of November 21, 2008).
- Ward, Stephanie, et al., *Enhancing Airport Land Use Compatibility, Volume 1: Land Use Fundamentals and Implementation Resources,* TRB, Washington, DC (2010) 311 pp.
- Ward, Stephanie, et al., *Enhancing Airport Land Use Compatibility, Volume 2: Land Use Survey and Case Study Summaries,* TRB, Washington, DC (2010) 296 pp.
- Washington State DOT, Washington State Airports and Compatible Land Use Guidebook, Arlington, WA (May 2010 Draft) 179 pp.
- Washington State DOT, Washington State Airports and Compatible Land Use, Arlington, WA (1999) 48 pp.
- Woodward, Jon M., and Lisa Briscoe and Paul Dunholter, *ACRP Report 15: Aircraft Noise: A Toolkit for Managing Community Expectations,* TRB, Washington, DC (2009) 144+ pp.

Infrastructure Risk Factors

There are several different types of airport infrastructure. "Hard" physical infrastructure includes runways, taxiways, and lights. There is also an infrastructure of "airport services." Airport services include the availability of things such as fuel, repairs, food, and transportation. The physical condition of hard infrastructure is a corollary to the quality and timeliness of airport services infrastructure. The better the overall airport infrastructure, the more desirable and useful it becomes to current and potential users. The decline or lack of investment in an airport's infrastructure makes an airport less desirable and less useful to current and potential users. Table 4-8 provides key points for advocates.

Table 4-8. Infrastructure risk factors, advocates and commentary.

RISK FACTOR	ADVOCATES	COMMENTARY
Runway Length & Total Available Airport Infrastructure **PRIMARY RISK FACTOR**	**Airport owners, managements and oversight boards, airport employees, FBOs, users, tenants, governments, public officials, public agencies, local Chambers of Commerce, civic organizations, and trade and advocacy organizations can take a leadership and/or constructive supporting or advocacy role in helping to grow total airport infrastructure.**	**The research data found that airports with runways greater than 4,000 feet in length have a substantially reduced risk of airport closure. Airports with longer runways are able to serve a greater proportion of the civil aviation fleet, thus increasing their customer base and revenue generation opportunities.** Airports with runways of less than 3,000 feet in length have a higher-than-average risk of potential closure. Airports with runways between 3,001 and 4,000 in length have an average risk of closure. The research data found that airports whose customer services and available infrastructure include the complete combination of paved runways, runway lights, parallel taxiways, and available fuel have less risk of airport closure. The inference of the above is that the increasing of airport runway lengths tends to reduce the risk of an airport closing. Inversely, shorter runway lengths are associated with an increased risk of an airport closing. Consequently, it is seen as generally advantagious, for airport preservation purposes, to maintain and /or increase runway lengths, as opposed to shortening runway lengths.
Condition of Airport Infrastructure and Deferred Maintenance/Repairs	**Airport owners, managements and oversight boards, airport employees, FBOs, users, tenants, governments, public officials, public agencies, local Chambers of Commerce, civic organizatins, and trade and advocacy organizations can take a leadership and/or constructive supporting or advocacy role in helping to preserve and maintain airport infrastructure.**	**The research data found that deteriorating airport facilities are measurable precursors that increase an airport's risk of closure. The deterioration cycle frequently begins with deferred maintenance and repairs. Steadily deteriorating airport infrastructure can potentially lead to accelerated infrastructure deterioration, resulting in increased costs and reduced infrastructure service life. Such situations can lead to a situation where an airport may need to close due to infrastructure-based safety deficiencies.** Some types of slowly deteriorating high-cost airport infrastructure in need of eventual replacement can impose such high future replacement costs that the future economic viability of the airport is at risk. This situation puts airports at risk of closure. An example is replacing a deteriorated paved runway where the airport cannot finance the cost of the project by itself. Without outside economic assistance, the airport is at great risk of closing when the runway pavements become unacceptable and force a decision to close the airport for safety reasons.

Table 4-8. (Continued).

RISK FACTOR	ADVOCATES	COMMENTARY
		The research found that airport facilities deteriorating because of insufficient maintenance and investment in airport infrastructure was a clear precursor to an increasing risk of airport closure. Timely maintenance and investment in airport facilities is characteristic of airports with reduced risk of closure. Airports need to realistically assess future potential infrastructure investment decision points and take appropriate actions well in advance.

Suggested infrastructure risk factor airport advocate resources:

- FAA, Advisory Circular 150/5020-1, *Runway Length Requirements for Airport Design,* Washington, DC (2005) 42 pp.
- FAA, Advisory Circular 150/5100-13a, *Development of State Standards for Nonprimary Airports,* Washington, DC (1999) 14 pp.
- FAA, Advisory Circular 150/5190-6b, *FAA Airport Compliance Manual,* Washington, DC (2009) 600+ pp.
- FAA, Advisory Circular 150/5200-18c, *Airport Safety Self Inspection,* Washington, DC (2004) 31 pp.
- FAA, Advisory Circular 150/5300-13, Airport Design, Washington, DC (1989) 324 pp.
- FAA, Advisory Circular 150/5320-6e, *Airport Pavement Design and Evaluation,* Washington, DC (2009) 124 pp.
- FAA, Advisory Circular 150/5380-6b, *Guidelines and Procedures for Maintenance of Airport Pavements,* Washington, DC (2007) 106 pp.
- FAA, Advisory Circular 150/5380-7a, *Airport Pavement Management Program,* Washington, DC (2006) 15 pp.
- FAA, Order 5100.38C, *Airport Improvement Program Handbook,* Washington, DC (2005) 318 pp.
- FAA, Order 5100.39A, *Airports Capital Improvement Plan,* Washington, DC (2000) 22 pp.
- Grothaus, James, et al., *ACRP Report 16: Guidebook for Managing Small Airports,* TRB, Washington, DC (2009) 130+ pp.
- New Hampshire DOT, *Airport Preservation Toolbox, New Hampshire Aviation System Plan,* New Hampshire DOT, Concord, NH (2008) 115 pp.
- Touran, Ali, et al., *ACRP Report 21: A Guidebook for Selecting Airport Capital Project Delivery Methods,* TRB, Washington, DC (2009) 91+ pp.

CHAPTER 5

Select Long-Term Airport Preservation Strategies and Mechanisms

This chapter provides commentary on certain long-term airport preservation background issues, strategies, and mechanisms. These issues, strategies, and mechanisms are of particular importance because they, (1) could be a fundamental part of the preservation plan for many public-use airports, or (2) the strategy or mechanism is relatively innovative and may provide some airport advocates with useful new means for preserving public-use airports.

In addition to using the Guidebook's "Airport Advocates Issues Checklist" (see Chapter 4, Table 4-4) to evaluate an airport's basic preservation risk factors, airport advocates are strongly encouraged to pay particular attention to an airport's federal and state grant obligation status, the implications of private versus public ownership, an airport's total available infrastructure, an airport's integration with local land use and planning, and the extent and effectiveness of an airport's community education and outreach efforts. At most airports, these issues could be key parts of an airport's preservation strategy and plans. Unaddressed risk factors in any plan may greatly reduce the effectiveness and relevance of an airport's preservation strategy and action plan. It is important therefore for airport preservation action plans to carefully consider all potential issues and strive to move each issue out of the "risk" status. Sometimes it may not be possible to address 100% of a risk issue, but it is certainly worthwhile to at least incrementally reduce the severity of a risk issue, even if it cannot be eliminated entirely.

An Airport Advocate's Commitment to Positive Improvement

An airport advocate's commitment to improving an airport's relationship with its neighbors and host community will be noticed by airport critics and others. An airport advocate's personal commitment to making an airport a better neighbor and a positive contributor to community values is important. Commitment to improvement helps create a more cooperative environment where airport advocates and airport critics can more easily work together for constructive outcomes. It is vital for airport advocates to pursue win-win solutions and outcomes. The only other likely outcome is a win-lose scenario wherein airports are all too often the losers. If airport advocates work closely with the surrounding community to identify and define these issues that generate conflict, the airport is more likely to reach solutions. In summary, airport advocates should be positive, constructive, and respectful.

Federal and State Airport Aid Grant Obligation Status

Federal and state airport aid grant obligations have done more to preserve public-use airports in the US than any other single factor. [1] There are over 4,000 publicly owned public-use airports in the United States today. [2] Most of these public-use airports are subject to one or more federal

and/or state airport aid grant obligations that either temporarily, or permanently, protect these public-use airports from potential closure. It is FAA policy to fully enforce its airport aid grant obligations and the FAA will go to court if necessary to do so. [3]

The FAA Compliance Manual is FAA Order Number 5190.6B, effective September 30, 2009. This manual of 600-plus pages describes, in detail, the obligations of airport sponsors regarding grant assurances, surplus and non-surplus property obligations, and other related applicable federal requirements. Airport sponsor obligations to the federal government are particularly effective and important in preserving public-use airports and protecting them from closure or redevelopment for non public-use airport purposes. In most cases, accepting federal airport aid funds activates airport sponsor assurances and grant obligations. It has been observed that some jurisdictions have decided not to accept federal airport aid grants so as to specifically not activate airport sponsor assurances and grant obligations.

Airport advocates should make every effort to see that both existing airport sponsor grant compliance obligations are met and to encourage and facilitate the acceptance of new federal and/or state grants so as to ensure that new or additional grant compliance obligations come into force and effect. Typically, federal and state airport aid grant compliance obligations will legally compel and require the airport sponsor to keep the public-use airport open to the public and properly maintained and supervised. State airport aid programs vary considerably and must be assessed on a state-by-state or even an airport-by-airport basis.

Airport advocates are advised that only the FAA or the state agency providing grant funds can determine the existence, extent, and length of time of applicable sponsor grant obligations. It would be inappropriate and speculative to rely on third parties to interpret FAA or state grant obligation documents and policies. Such interpretations need to come from either the FAA or the applicable state agency.

Public Versus Private Ownership

In 1970 there were about 2,850 privately owned public-use airports in the United States. [4] In 2007 there were about 930 privately owned public-use airports. [5] From 1970 to 2007 there has been about a 67% reduction in the number of privately owned public-use airports. [6] In the same period the number of publicly owned public-use airports increased by 8.6%. [7] Privately owned public-use airports are far more vulnerable to potential closure than publicly owned public-use airports.

The contraction in the number of privately owned public-use airports is principally due to airport closure and redevelopment of airport property for non-airport uses. Causes cited in the research for the closure of privately owned public-use airports include generational shift, insufficient profitability, shrinking customer base, increasing costs, and high land values. Although some privately owned public-use airports make the transition to public ownership, the number appears to have been limited.

National airport statistics clearly show that a privately-owned public-use airport has a better statistical chance of long-term survival as an airport if it is converted to public ownership. Given this situation, it would be prudent for airport advocates to make conversion to public ownership a candidate agenda item for any action plan for the preservation of any privately owned public-use airport. Airport advocates need to know that converting a privately owned public-use airport to public ownership usually takes many years and certainly is not free of potential controversy. Public ownership usually means purchase of the airport from the private owner by a public entity. Public entities include cities, counties, municipalities, commissions, authorities, and state government. Funding for the public acquisition of a privately owned public-use airport often comes from the FAA. Prior to funding such a project, the FAA would probably first want to see

a professionally executed airport feasibility study, and an airport master plan and have a highly motivated and technically competent public entity as the airport sponsor and future owner.

It would not be at all unusual for the public acquisition of an airport to take 5 to 10 years or longer. The outcome, however, is very important because the newly acquired airport would have stable long-term ownership, better access to future federal funding, and, in all likelihood, be subject to federal airport aid grant assurances that would require the airport to remain open as a public-use airport, in perpetuity. In this manner, conversion to public ownership, just by itself, could permanently preserve a formerly privately owned public-use airport.

Total Available Airport Infrastructure

There is a relationship between the magnitude and condition of an airport's infrastructure and its probable future vitality and perhaps even survival. FAA's data on closed public-use airports reveal an important numerical bias. The bias is that airports with more infrastructure (e.g., longer runways, paved runways and taxiways, runway and taxiway lights, and fuel and other airport services) had somewhat less chance of closing than public-use airports with notably less airport infrastructure. [8] The level of investment in needed airport infrastructure can be predictive of an airport's future. [9] The greater the investment made in needed airport infrastructure, the greater the chance of an airport being, or becoming, relevant and surviving. In the long run, low levels of investment in an airport's infrastructure invites decline of airport serviceability, services, relevance, and perhaps even survival.

The link between airport closures and observed infrastructure deficiencies is apparent. Airports with shorter runways, few or no taxiways, few or no paved operational surfaces, deficient lighting, poor maintenance, and/or few or no airport services, are at a substantial competitive disadvantage compared with airports without these deficiencies. [10] Airports without these deficiencies can serve a broader segment of the general aviation market, generate revenues by selling more products and services, and use these resources to provide a better airport experience to the airport user. [11]

The implications are clear—the long-term survival of a public-use airport is enhanced when the airport owners and operators make continuing and relevant investments in the airport's physical and airport services infrastructure. A halt in infrastructure and airport services investments often leads to decline in serviceability and, therefore, viability of the airport. [12]

Investment in infrastructure generally falls within one of three broad general categories: capital operational infrastructure (typically runways, lighting, buildings, etc), airport services infrastructure (typically fueling, FBO facilities, restaurant facilities, etc.), and general maintenance and repair. Capital operational infrastructure tends to be the most costly and is frequently not revenue producing. Federal airport aid and state airport aid programs tend to focus on providing such capital infrastructure. Airports without access to airport capital aid are operating at a long-term economic disadvantage. Airport services infrastructure typically is revenue producing, but often is accompanied by high operating costs. Airport services infrastructure, because it is revenue producing, tends to attract investment from profit-motivated services providers. General maintenance and repair is an important form of infrastructure investment that, in time of financial stress, is often deferred or sometimes dropped entirely. Deferring maintenance and repairs is usually counterproductive in the long run. Failure to provide maintenance and repairs to capital operational infrastructure usually shortens the service life of such infrastructure and accelerates the need for either capital infrastructure rehabilitation or replacement. Airport sponsors accepting FAA funds are required to properly maintain FAA-funded projects throughout their useful life.

Not all airports will qualify for federal funding. There are procedures where the FAA can review the airport to assess whether it meets federal criteria for inclusion and serves a role in the

National Plan of Integrated Airport Systems (NPIAS). If the airport meets the criteria, serves a necessary role in the airport system, and has a potential public sponsor, the FAA may provide funding to assess the feasibility of the airport.

Integration with Local Land Use and Planning

A fundamental part of any long-term airport preservation strategy should be a genuine effort to improve and/or achieve the best possible mutual integration of the airport with local land use and planning. This task can be difficult because many airports are already surrounded by long-established airport-incompatible land uses. It is in the interest of airport advocates and airport preservation that continual efforts be made to improve the local land use and planning around airports. No matter how good, or how bad, local airport land use planning and zoning can always be made incrementally better.

Much has been written about airport-compatible land use planning and zoning. Application of effective planning and zoning guidelines at the local level can only emerge from local community interaction. What constitutes airport-compatible land use and zoning depends on the size, use, location and situation of the airport and its environs. What is a compatible land use for one airport may be totally incompatible for another airport.

The purpose of this section is to emphasize the importance to airport advocates of understanding and actively pursuing improvements in local airport land use and planning. In doing this, both the community and the airport users will become more knowledgeable and sensitive to airport land use and zoning issues, flash points, and potential remedies.

Ignoring pursuit of improvements in airport land use and zoning risks allowing good situations to go bad, and bad situations to get even worse.

Community Education and Outreach

The research behind this Guidebook involved hundreds of interviews. In these interviews, community education and outreach was the most frequently cited action that could be done to help preserve public-use airports. [13] It was cited almost twice as often as the next most frequently cited action—more airport funding. Community education and outreach far and easily surpassed more money as a factor for helping to preserve public-use airports; however, public-use airport preservation is just as much about people, as it is about infrastructure, airport economics, and myriad other technical and legal issues that affect airports and airport users.

Of the 16 airport closure risk factors, community education and outreach is the one risk factor where virtually every type of airport advocate can play a productive role in advancing airport preservation. [14] Additionally, community education and outreach is also one of the most malleable and adaptable of all the airport preservation tools. It can also be done on almost any budget.

Community education and outreach is not propaganda. It is not a hard sell; it is not "spin." It is the collection of many acts, large and small, that serve to better inform interested parties, to control and correct half-truths and outright misinformation, to connect people with each other, and to help build informed consensus and consent. Community education and outreach lessen adversarial situations. Airport education and outreach is all about talking to airport critics and skeptics and letting them get to know more about airports, what happens at airports, and how airports serve members of the community.

Many articles, manuals, and guides have been written about community education and outreach processes for airports and airport advocates. What constitutes good community education

and outreach efforts for your airport depends on the size, use, location, and situation of the airport and its environs.

Sale of Airport Land Development Rights

A relatively new tool for the preservation of public-use airports is the "purchase of development rights." Exactly what is the purchase of development rights (PDR) and how does it work? PDR involves the payment of funds to a landowner by another party in return for an agreement and deed restriction not to further develop the property or only to develop it in certain limited ways.

How and why did PDR come to be? Although not widely known or understood by the general public, the purchase of development rights (i.e., PDR) is a land and property preservation tool that has been used for many years by farmland, open-space, parkland, and historic property preservation advocates. Farmland, open-space, parkland, and historic properties are viewed by many as socially, culturally, or environmentally desirable community features and uses of land and property. Unfortunately, in many locations these property uses are not economically advantageous for the property owners. Simply stated, it is often much more profitable for landowners to sell and/or develop certain properties to their highest and best economic use then it is to preserve it as farmland, open-space, parkland, or historic properties. When a community or another entity has an interest in preventing certain properties from being sold and/or developed, the most conventional solution has been for the community or other interested party to purchase the property outright at market or near market value to preserve it. This can be an expensive solution.

PDR is an alternative to outright purchase. The benefit of PDR for land use preservation over outright public acquisition is that PDR acquisition usually costs substantially less than outright purchase, there is less liability for the purchasing entity, the property remains in private hands under private management, and the property remains on the local tax rolls.

In essence, the land owner is "selling" his/her rights to further develop his/her property in the future in return for (typically) a cash payment. The original land owner still owns the land, but has agreed to and has been compensated to not develop the property further. The purchase of airport development rights is a voluntary "willing buyer and willing seller" transaction. The PDR usually incorporates two documents: a development rights purchase contract and a development easement, which is recorded against the deed of the airport property. PDR contracts and deed restrictions are strictly enforceable by the courts. The size of the payment to the land owner is typically established by appraisal in combination with negotiation with the property owner being paid approximately the estimated difference in the economic value of the land between its current to be preserved use and the economic value of the land if used for its reasonable and attainable alternative highest-and-best use.

The PDR tool model that has preserved many parcels of farmland, open-space, parkland, and historic property can also work to preserve public-use airports. The FAA and the State of New Jersey both have airport preservation programs that use the purchase of airport development rights. The New Jersey airport PDR program was modeled directly from the state's farmland and open space preservation PDR program. Both the FAA and the State of New Jersey PDR programs provide payments to the airport owner in return for the legal obligation to keep the airport open as a public-use airport, in perpetuity. Although the FAA and the State of New Jersey programs are similar, the programs have significant technical differences which are continuing to evolve over time. The FAA program is a national demonstration program and is funded through the FAA's airport aid program. The State of New Jersey program is applicable only in New Jersey and is funded through the State's Airport Safety Fund and the NJ Transportation Trust fund. Airport participation in either the FAA PDR program or the State of New Jersey PDR program is contingent

on successful competitive application to the FAA or the State of New Jersey and the availability of PDR funding. Public-use airports preserved using the PDR process include

- Lincoln Park Airport in Lincoln Park Borough, NJ (PDR cost on the order of $4+ million). [15]
- Central Jersey Regional Airport in Manville Borough, NJ (PDR cost on the order of $4 million). [16]
- Camden County Airport in Berlin Borough, NJ (PDR cost on the order of $250 thousand). [17]
- Alexandria Field in Alexandria Township, NJ (PDR cost on the order of $1+ million). [18]
- Santa Paula Airport near the City of Los Angeles, CA (PDR cost on the order of $5+ million). [19]

In addition to the public-use airports preserved through the purchase of development rights listed above, the State of New Jersey also made offers to purchase development rights at Spitfire Airport, Oldmans Township; Blairstown Airport, Blairstown; and Sussex County Airport, Sussex. For various reasons the PDR action was not completed at these three airports.

Does the PDR process require special legislation before it can be done? The answer to this question may vary substantially from jurisdiction to jurisdiction. Both the State of New Jersey and the FAA had special legislation authorizing their airport PDR programs. Alternatively, some legal authorities have opined that if a person or entity already has the legal authority to purchase real property outright (i.e., purchase all the rights and title to real property), it may be presumed that they could also have the legal authority to purchase just some (in lieu of all) or partial rights, of real property (i.e., such as the development rights). In fact, people and entities purchase partial property rights with some regularity. Such partial property rights include mineral rights, water rights, driveway easements, utility access, and timber rights. The position could be taken that if the above property rights can be sold and deed recorded without special legislation, than perhaps PDR might not require special legislation in said jurisdiction. [20]

FYI

The FAA only issued one PDR grant under its PDR demonstration program. The FAA did not consider this a successful demo program and the FAA proposed that it sunset at the end of federal FY07.

If a political jurisdiction were to decide to enact PDR legislation for airport PDR actions, it would be useful to know that the State of New Jersey has the most used airport PDR program and includes the following program provisions: [21]

- The PDR purchase is done on a willing-seller/willing-buyer basis.
- PDR is authorized only at public-use airports.
- The PDR purchase must have specific and defined public purpose(s).
- Advance legal notice is provided to impacted political jurisdictions.
- There is a public notice and public hearing process.
- PDR value is set through property appraisal and negotiation.
- Property appraisal documents are considered open public records.
- Property PDR restrictions run in perpetuity.
- Property PDR restrictions are set by contract and recorded deed restriction.
- PDR compensation is paid in dollars at time of contract and deed closing.

By way of innovative PDR financing, a jurisdiction, person, or entity could, as appropriate and in lieu of a PDR compensation in dollars at time of closing, consider having a structured PDR compensation that could include

- Structured future payments over time.
- Future tax abatements by the taxing jurisdiction.
- Tax increment financing.
- On-site zoning and/or development density concessions.
- Off-site zoning and/or development density concessions (i.e., transfer of development rights).
- Property donations or swaps.

Please be advised that no part of this section can or should be considered to be airport PDR program recommendations, legal advice, or interpretation of either the letter or intent of the FAA or State of New Jersey airport PDR programs. [22] Reference documents and information on both the FAA and State of New Jersey PDR programs are provided in the CD and the on-line appendices to this Guidebook as examples. The Guidebook appendices also list numerous farmland, open-space, parkland, and historic property preservation reference books and documents which can also be of assistance to airport advocates interested in preserving public-use airports using PDR strategies and methods.

CHAPTER 6

Additional Research Findings

Table 6-1 presents additional research findings from the interview and polling portion of the research—these are presented as informational "snapshots" and are intended to provide Guidebook users with additional insights into national issues and opinions potentially relevant to public-use airport preservation.

Table 6-1. Additional research findings.

Topic	Comments
Top problems in aviation today. [1]	The top five general problems in aviation cited by the interview subjects were high fuel costs, funding/budget shortfalls, high costs, over-regulation, and airspace. The next highest were no local and political support, the economy generally, land use, land values, development around airports, and low business profits.
Small airports in the future. [2]	Eighty-seven percent (87%) of interview subjects believe that small airports will be important to the next generation.
Airport closures as a local issue. [3]	Fifty-one percent (51%) of interview subjects stated that airport closures are not an issue that people are talking about in their home state.
Airport closures as a future problem. [4]	Seventy-four percent (74%) of interview subjects stated that they believed that airport closures will be a problem in the future.
Airport closures as a personal inconvenience. [5]	Seventy-one percent (71%) of interview subjects stated that they had never been a regular user of an airport that is now closed. This suggests that as much as two thirds of the interview subjects may have never been seriously personally inconvenienced by an airport closure.
Support for a national airport preservation program. [6]	Forty-nine percent (49%) of interview subjects stated that they would support a national airport preservation program that competed for funding with other FAA projects. Twenty-nine percent (29%) of interview subjects were undecided on this question, the highest undecided number recorded in the research.
Future growth in aviation activity. [7]	There is no consensus in the aviation community about whether aviation activity will increase, decrease, or stay the same. Twenty-eight percent (28%) of interview subjects predicted an increase, twenty-seven percent (27%) predicted a decrease, thirty-eight percent (38%) predicted the same, and nine percent (9%) could not be readily classified in said terms. Anecdotally, a number of subjects inferred that heavy and corporate general aviation use was increasing and that light and pleasure general aviation use was decreasing. The inference is that smaller airports that cannot accommodate heavy and corporate general aviation users are at an increased risk of loss of traffic and that large airports accommodating heavy and corporate general aviation are at less risk of loss of traffic.
State and local support for airport preservation. [8]	Forty-seven percent (47%) of interview subjects stated that they thought their state or local governments might be interested in spending funds to help preserve an airport. Twenty-five percent (25%) responded no.
The long-term outlook for GA airports. [9]	Forty-seven percent (47%) of people polled on the question had a positive long-term business outlook for general aviation airports. Ten percent (10%) had a negative outlook and forty-four percent (44%) had a neutral or "other" outlook.
Airport profitability problem areas. [10]	People polled about why general aviation airports were having troubles showing a profit most frequently cited declining markets generally, the economy generally, need for more promotion/selling, and need for better business execution.
Airport layout and design. [11]	People polled on the question should an airport's layout and design drive its business model or should the business model drive airport layout and design overwhelmingly respond (57% to 10%) that the airport business model should drive the airport's layout and design.
Business models and business plans. [12]	People polled about whether or not the business models and business plans at general aviation airports are fully effective for the markets and customers they serve overwhelmingly respond (53% to 10%) that they are NOT fully effective.
Improving airport profitability. [13]	People polled about what can be done to make general aviation airports more profitable or self-sustaining most frequently cited more promotion/selling, better industry PR/lobbying, more flexible property development, better rates/charges/fees management, and better business planning/execution.
Self sustaining funding of the capital budget. [14]	People polled about whether or not general aviation airports can be self-sustaining regarding their capital construction budgets overwhelmingly respond (77% to 10%) that airports CANNOT be self-sustaining.
Airport business plan funding. [15]	Seventy-four percent (74%) of people polled about whether or not federal funding of airport business planning would help airports become more profitable or self-sustaining, answered that it would be helpful.

CHAPTER 7

Airport Advocate Resources

Basic Information for Airport Advocates

As a supplement to this Guidebook, important basic resources for airport advocates are listed below. All of the basic publications and resources are available to airport advocates for free from the FAA at www.faa.gov; TRB at www.trb.org/ACRP; the AOPA in Frederick, Maryland; or with this publication in CD form.

FAA publications, reports, and advisory circulars are being constantly updated, revised, supplemented, and superseded. Airport advocates are advised to download FAA publications directly from the FAA website to ensure they have the most current version of the publication they seek. It is also prudent to periodically check the FAA website for document updates and revisions.

NOTE: Publications shown in bold print below are appended to this report in CD form or are available for download at www.trb.org/ACRP. FAA documents can be downloaded at www.faa.gov.

- Aircraft Owners and Pilots Association, *Airport Closures at Privately Owned/Public-Use Airports*, Frederick, MD, 5 pp.
- Aircraft Owners and Pilots Association, *Airports, A Valuable Community Resource, A Guide to Obtaining Community Support for Your Local Airport*, Frederick, MD (1999) 112 pp.
- **Cheek, William V., *ACRP Legal Research Digest 5: Responsibility for Implementation and Enforcement of Airport Land-Use Zoning Restrictions*, TRB, Washington, DC (March 2009) 68 pp.**
- FAA, Advisory Circular 150/5050-4, *Citizen Participation in Airport Planning*, Washington, DC (1983) 23 pp.
- FAA, Advisory Circular 150/5050-7, *Establishment of Airport Action Groups*, Washington, DC (1987) 6 pp.
- FAA, Advisory Circular 150/5190-6b, *FAA Airport Compliance Manual*, Washington, DC (2009) 600+ pp.
- FAA, Order 5100.38C, *Airport Improvement Program Handbook*, Washington, DC (2005) 318 pp.
- FAA, *Community Involvement Manual*, Washington, DC (1990) 108 pp.
- FAA, *Land Use Compatibility and Airports*, Washington, DC, http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf (As of July 4, 2010) 141 pp.
- **Grothaus, James, and Thomas J. Helms, et.al., *ACRP Report 16: Guidebook for Managing Small Airports*, TRB, Washington, DC (2009) 140 pp**.
- **Kramer, Lois, et.al., *ACRP Report 28: Marketing Guidebook for Small Airports*, TRB, Washington, DC (2010) 187 pp.**
- **New Hampshire DOT, *The Preservation of Privately-Owned Airports*, New Hampshire DOT, Concord, NH (2004) 21 pp.**
- **New Hampshire DOT, *Hampton Airfield Airport Master Plan and Preservation Study*, New Hampshire DOT, Concord, NH (2009) 122 pp.**

- **New Hampshire DOT, *Airport Preservation Toolbox, New Hampshire Aviation System Plan*, New Hampshire DOT, Concord, NH (2008) 115 pp.**
- Swigart, Stacy P., and Kerri Woehler, *Participating in the Planning Process, A Guide for Airport Advocates*, AOPA, Frederick, MD (2008) 23 pp.
- **Ward, Stephanie, et. al., *ACRP Report 27: Enhancing Airport Land Use Compatibility, Volume 1: Land Use Fundamentals and Implementation Resources*, TRB, Washington, DC (2010) 311 pp.**
- **Ward, Stephanie, et. al., *ACRP Report 27: Enhancing Airport Land Use Compatibility, Volume 2: Land Use Survey and Case Study Summaries*, TRB, Washington, DC (2010) 296 pp.**
- **Washington State Department of Transportation, *Washington State Airports and Compatible Land Use Guidebook,* Arlington, WA (May 2010 Draft) 179 pp.**
- **Woodward, Jon M., and Lisa Briscoe and Paul Dunholter, *ACRP Report 15: Aircraft Noise: A Toolkit for Managing Community Expectations*, TRB, Washington, DC (2009) 164 pp.**

Additional Information and Resources for Airport Advocates

The additional publications listed below can provide airport advocates with detailed information relevant to airport advocacy and public-use airport preservation. Many of the listed resources are available for free from either the FAA at www.faa.gov, TRB at www.trb.org/ACRP, or with this report in CD form.

FAA publications, reports, and advisory circulars are being constantly updated, revised, supplemented, and superseded. Airport advocates are advised to download FAA publications directly from the FAA website for the most recent version of publications. It is also prudent to check the FAA website periodically for updates and revisions.

NOTE: Publications shown in bold print below are appended to this report in CD form, or are available for download at www.trb.org/ACRP. FAA documents can be downloaded at www.faa.gov.

Additional General Information and Resources:

- Aircraft Owners and Pilots Association, "General Aviation Statistics" AOPA ONLINE, Frederick, MD, http://www.aopa.org/whatsnew/stats/statistics.html (As of July 4, 2010).
- Aircraft Owners and Pilots Association, "AOPA Aviation Glossary" AOPA ONLINE, Frederick, MD, http://flighttraining.aopa.org/pdfs/Glossary_Phonetic_Alphabet.pdf (As of July 4, 2010).
- **California Department of Transportation, *California Airport Land Use Planning Handbook*, California DOT, Sacramento, CA (2002) 416 pp.**
- **Delaware Valley Regional Planning Commission, *Pennsylvania Airport Compatible Land Use and Hazard Zoning*, DVRPC, Philadelphia, PA (2006) 108 pp.**
- **GAO, *Report to Congressional Requesters: General Aviation, Status of the Industry, Related Infrastructure, and Safety Issues*, GAO, Washington, DC (2001) 83 pp.**
- General Aviation Manufacturers Association and NASAO, *General Aviation's Contribution to the U.S. Economy*, Washington, DC (2006) 43 pp.
- **Maryland Aviation Administration, *Regional Helicopter System Plan for the Maryland and Metropolitan Washington Area*, Baltimore, MD (2005) 299 pp.**
- **Michigan Aeronautics Commission, *Airport Preservation Policy Statement*, Michigan DOT, Lansing, Michigan (1999) 9 pp.**
- National Business Aircraft Association, *NBAA Business Aviation Fact Book 2010*, Washington, DC, (2004) http://www.nbaa.org/business-aviation/fact-book/ (As of January 1, 2011).
- **New Jersey Division of Aeronautics, *Contract by the State for Sale and Purchase of Airport Development Rights*, New Jersey DOT, Trenton, New Jersey (2006).**
- **State of New Jersey, New Jersey Administrative Code, Title 16, New Jersey DOT, *Chapter 62, Air Safety and Zoning*, Trenton, NJ (exp. 2010) 14 pp.**

- **Thatcher, Thomas P., *Preservation of NJ's Public-Use Airports Via the Purchase of Airport Development Rights*, Stockton, NJ (2006) 3pp.**
- Transportation Security Administration, *Security Guidelines for General Aviation Airports*, Information Publication A-001, Washington, DC (2004) 48 pp.
- **Washington State DOT, Washington State Airports and Compatible Land Use, Arlington, WA, (1999) 48 pp.**

Additional TRB reports and digests:

- **Berry, Fiona, et al., *ACRP Report 10: A Synthesis of Airport Practice*, TRB, Washington, DC (2008) 124 pp.**
- **Biggs, D. C., et. al., *ACRP Report 26:, Guidebook for Conducting Airport User Surveys*, TRB, Washington, DC (2009) 251 pp.**
- **Cleary, Edward C., and Archie Dickey, *ACRP Report 32: Guidebook for Addressing Aircraft/ Wildlife Hazards at General Aviation Airports*, TRB, Washington, DC (2010) 190 pp.**
- **Karlsson, Joakim, et.al., *ACRP Synthesis 7: Airport Economic Impact Methods and Models*, TRB, Washington, DC (2008) 72 pp.**
- **Kramer, Louis S., *ACRP Synthesis 19: Airport Revenue Diversification*, TRB, Washington, DC (2010) 65 pp.**
- **Nichol, Cindy, *ACRP Synthesis 1: Innovative Finance and Alternative Sources of Revenue for Airports*, TRB, Washington, DC (2007) 51 pp.**
- **Reimer, Daniel S., et.al., *ACRP Legal Research Digest 7: Airport Governance and Ownership*, TRB, Washington, DC (2009) 72 pp.**
- **Ricondo and Associates, Inc., et al., *ACRP Report 20: Strategic Planning in the Airport Industry*, TRB, Washington, DC (2009) 134 pp.**
- **Touran, Ali, et.al., *ACRP Report 21, A Guidebook for Selecting Airport Capital Project Delivery Methods*, TRB, Washington, DC (2009) 101 pp.**

Additional FAA Advisory Circulars, Orders and Reports:

- FAA, Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, Washington, DC (1983) 72 pp.
- FAA, Advisory Circular 150/5020-8, *Environmental Management Systems for Airport Managers*, Washington, DC (2007) 10 pp.
- FAA, Advisory Circular 150/5100-10a, *Accounting Records Guide*, Washington, DC (1976) 56 pp.
- FAA, Advisory Circular 150/5100-13a, *Development of State Standards for Nonprimary Airports*, Washington, DC (1999) 14 pp.
- FAA, Advisory Circular 150/5190-4a, *A Model Zoning Ordinance to Limit Height of Objects Around Airports*, Washington, DC (1987) 40 pp.
- FAA, Advisory Circular 150/5200-18c, *Airport Safety Self Inspection*, Washington, DC (2004) 31 pp.
- FAA, Advisory Circular 150/5200-32a, *Reporting Wildlife Aircraft Strikes*, Washington, DC (2004) 4 pp.
- FAA, Advisory Circular 150/5200-33b, *Hazardous Wildlife Attractants On or Near Airports*, Washington, DC (2007) 28 pp.
- FAA, Advisory Circular 150/5300-13, *Airport Design*, Washington, DC (1989) 324 pp.
- FAA, Advisory Circular 150/5320-6e, *Airport Pavement Design and Evaluation*, Washington, DC (2009) 124 pp.
- FAA, Advisory Circular 150/5320-14, *Airport Landscaping for Noise Control Purposes*, Washington, DC (1978) 16 pp.
- FAA, Advisory Circular 150/5320-15a, *Management of Airport Industrial Waste*, Washington, DC (2008) 128 pp.
- FAA, Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*, Washington, DC (2009) 42 pp.

- FAA, Advisory Circular 150/5380-6b, *Guidelines and Procedures for Maintenance of Airport Pavements*, Washington, DC (2007) 106 pp.
- FAA, Advisory Circular 150/5380-7a, *Airport Pavement Management Program*, Washington, DC (2006) 15 pp.
- FAA, Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Washington, DC (2006) 195 pp.
- FAA, Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, Washington, DC (2006) 192 pp.
- FAA, Order 5090.3C, *Field Formulation of National Plan of Integrated Airport Systems (NPIAS)*, Washington, DC (2000).
- FAA, Order 5100.39A, *Airports Capital Improvement Plan*, Washington, DC (2000) 22 pp.
- FAA, *Aviation Noise Abatement Policy*, Washington, DC (1976) 66 pp.
- **FAA, *Listing of Abandoned Airports* National Flight Data Center, Washington, DC (annually, 1976 to 2008) 393 pp.**
- **FAA, *Report to Congress, National Plan of Integrated Airport Systems (NPIAS)* 2007-2011, Washington, DC (2010) 72 pp.**
- **FAA, *Report to Congress, National Plan of Integrated Airport Systems (NPIAS)* 2011-2015, Washington, DC (2010) 100 pp.**

Land Conservation and Land Preservation Resources:

- Byers, Elizabeth, and Karin Ponte, *The Conservation Easement Handbook*, Land Trust Alliance and the Trust for Public Land, San Francisco, CA (2005) 556 pp.
- Costello, Kenneth, "Preserving Property-Transfer of Development Rights Saves Natural and Historic Sites." *Commercial Investment Real Estate,* CCIM Institute, Chicago, IL (March/April 2006) http://ciremagazine.com/article.php?article_id=915 (As of July 4, 2010).
- Eastern Michigan University, *Transfer of Development Rights*, Eastern Michigan University, Ypsilanti, MI, http://www.emich.edu/public/geo/557book/d244.tdr.html (As of July 4, 2010).
- **FAA, Program Guidance Letter, *04-5.1 Airport Development Rights Pilot Program*, Washington, DC (August 17, 2004) 9 pp.**
- **FAA, Program Guidance Letter, *04-6 Airport Development Rights Pilot Program*, Washington, DC (September 13, 2004) 2 pp**
- **FAA, Program Guidance Letter Attachment, *04-5.1 Airport Development Rights Pilot Program*, Washington, DC (August 17, 2004) 2 pp.**
- Lawrence, Timothy, *Transfer of Development Rights*, CDFS-1264-98, Ohio State University, Columbus, OH, http://ohioline.osu.edu/cd-fact/1264.html (As of July 4, 2010).
- McQueen, Mike, and Ed McMahon, *Land Conservation Financing*, Island Press, Washington, DC (2003) 224 pp.
- Meck, Stuart, *Farmland Preservation*, American Planning Association, Washington DC (1999) audio CD.
- Morris, Marya, *Innovative Tools for Historic Preservation*, American Planning Association, Washington, DC (1992) 41 pp.
- National Association of Realtors, *Field Guide to the Transfer of Development Rights*, National Association of Realtors, http://www.realtor.org/library/library/fg804 (As of July 4, 2010).
- Ottawa County, *Ottawa County Farmland Development Rights Ordinance*, West Olive, MI, 12 pp. http://www.co.ottawa.mi.us/CoGov/Depts/Planning/pdf/projects/2008/Ottawa_County_Working_PDR_Ordinance.pdf (As of July 4, 2010).
- Pruetz, Rick, *Beyond Takings and Givings, Saving Natural Areas, Farmland, and Historic Landmarks with Transfer of Development Rights and Density Transfer Charges*, Arge Press, Marina Del Rey, CA (2003) 505 pp.
- Snohomish County, *TDR Pilot Program Feasibility Study*, Snohomish County, Everett, WA (2002) 11 pp. http://www.co.snohomish.wa.us/documents/Departments/PDS/GMA_Planning/Agriculture_Resource_Lands/TDR/FinalStudy.pdf (As of July 4, 2010).

Chapter Notes

Chapter 1 Preservation of Public-Use Airports Research Background

1. http://www.aopa.org/whatsnew/stats/airports.html (As of July 21, 2010).
2. The basic information totals over 2,500 pages; additional information and resources totals over 4,500 pages.
3. Thatcher, Thomas P., *Interim Report, A Guidebook for the Preservation of Public-Use Airports*, ACRP Project 03-11, FY 2008, Transportation Research Board, Washington, DC (December 2009) 222 pp. Pages 9-12.
4. Ibid., Chapter 7.
5. Guidebook contents are not and should not be considered legal or policy advice in any form.
6. Ibid., Chapter 7.
7. Ibid., 37.
8. Ibid., 168.
9. Ibid., 167-168.
10. Ibid., 168.
11. Ibid., 168-169.
12. Ibid., 37.
13. Ibid., 32-33.

Chapter 2 Historical Background and Long-Term Data Trends

1. Thatcher, Thomas P., *Interim Report, A Guidebook for the Preservation of Public-Use Airports*, ACRP Project No, 03-11, FY 2008, Transportation Research Board, Washington, DC (December 2009) 222 pp. Pages 16-17.
2. http://www.aopa.org/whatsnew/stats/airports.html (As of July 21, 2010). Source is FAA data compiled by AOPA for public-use landing facilities from 1969 to 2007 and FAA data compiled by AOPA for public-use airports from 1969 to 2001. Data for public-use airports for the years 2002 to 2007 was estimated by comparing the historical numerical relationship between public-use airports and public-use landing facilities. In recent years the number of FAA reported public-use airports has been approximately .9475 times the number of FAA reported public-use landing facilities.
3. Population data from infoplease.com and airport data from FAA data compiled by AOPA.
4. http://www.aopa.org/whatsnew/stats/airports.html (As of July 21, 2010).
5. http://www.aopa.org/whatsnew/stats/airports.html (As of July 21, 2010).
6. http://www.aopa.org/whatsnew/stats/safety.html (As of July 21, 2010).
7. http://www.aopa.org/whatsnew/stats/aircraft.html (As of July 21, 2010).
8. http://www.aopa.org/whatsnew/stats/pilots.html (As of July 21, 2010).

Chapter 3 Preservation of Public-Use Airport Research Findings

1. FAA airport closures by year data found in the electronic appendix resources for *A Guidebook for the Preservation of Public-Use Airports*.
2. Thatcher, Thomas P., *Interim Report, A Guidebook for the Preservation of Public-Use Airports*, ACRP Project No, 03-11, FY 2008, Transportation Research Board, Washington, DC (December 2009) 222 pp. Pages 175-180.
3. Ibid., 26.
4. Ibid., 26-27.
5. Ibid., 26-27.
6. Ibid., 27, 175-180.
7. Ibid., 26.
8. Ibid., 26-27.
9. Ibid., 27, 175-180.

10. Ibid., 26.
11. Ibid., 26-27.
12. Ibid., 27, 175-180.
13. Ibid., Chapter 4.
14. Ibid., 181, 185, 189, 194-195, 199.
15. Ibid., Chapter 6.

15A. Ibid., 32, 181-204.
15B. Ibid., 33, 34, 181-204.
15C. Ibid., 34, 181-204.
15D. Ibid., 35, 181-204.
15E. Ibid., 36, 181-204.
15F. Ibid., 40, 181-204.
15G. Ibid., 40, 181-204.
15H. Ibid., 38, 181-204.
15I. Ibid., 38, 181-204.
15J. Ibid., 37, 181-204.
15K. Ibid., 37, 181-204.
15L. Ibid., 38, 39, 181-204.
15M. Ibid., 40, 181-204.

16. Ibid., 181, 185, 189, 194-195, 199.
17. Ibid., 33-34.
18. Ibid., 34.
19. Ibid., 35.
20. Ibid., Chapter 5.
21. Ibid., Chapter 6.
22. Ibid., 112-123, 157-161.
23. Ibid., 68-78, 157-161.
24. Ibid., 79-89, 157-161.
25. Ibid., 124-133, 157-161.
26. Ibid., 90-100, 157-161.
27. Ibid., 101-111, 157-161.
28. Ibid., 143-156, 157-161.
29. Ibid., 134-142, 157-161.
30. Ibid., 163-165.

Chapter 4 Practical Management of 16 Primary Airport Closure Risk Factors

1. Thatcher, Thomas P., *Interim Report, A Guidebook for the Preservation of Public-Use Airports*, ACRP Project 03-11, FY 2008, Transportation Research Board, Washington, DC (December 2009) 222 pp. Pages 68-78, 101-111, 143-156.
2. Ibid., 167-169.
3. Ibid., 168-169. http://www.aopa.org/whatsnew/stats/airports_data.html (As of July 21, 2010).
4. Ibid., 168-170.
5. Airport advocate study was not undertaken until after the preparation of the Interim Report.
6. Table 4-1 should be read in combination with the FAA Advisory Circular *Establishment of Airport Advocate Groups*, AC No. 150/5050-7 and AOPA's *Participating in the Planning Process*. This seven-step process is one suggested manner in which to organize airport advocacy. Amending the seven-step process may be appropriate, depending on local circumstances.

Chapter 5 Select Long-Term Airport Preservation Strategies and Mechanisms

1. Thatcher, Thomas P., *Interim Report, A Guidebook for the Preservation of Public-Use Airports*, ACRP Project 03-11, FY 2008, Transportation Research Board, Washington, DC (December 2009) 222 pp. Pages 167-168.
2. FAA data compiled by AOPA; Bill Dunn correspondence to Thomas Thatcher, September 1, 2008.
3. Compliance policies articulated and implemented pursuant to Federal Aviation Administration, Advisory Circular 150/5190-6b, *FAA Airport Compliance Manual*, Washington, DC, (2009) 600+ pp.
4. FAA data compiled by AOPA; Bill Dunn correspondence to Thomas Thatcher, September 1, 2008
5. FAA data compiled by AOPA; Bill Dunn correspondence to Thomas Thatcher, September 1, 2008.
6. FAA data compiled by AOPA; Bill Dunn correspondence to Thomas Thatcher, September 1, 2008.
7. FAA data compiled by AOPA; Bill Dunn correspondence to Thomas Thatcher, September 1, 2008.
8. http://www.aopa.org/whatsnew/stats/airports_data.html (As of July 21, 2010).

9. Thatcher, Thomas P., *Interim Report, A Guidebook for the Preservation of Public-Use Airports*, ACRP Project 03-11, FY 2008, Transportation Research Board, Washington, DC (December 2009) 222 pp. Chapter 3 and Pages 168-170.
10. Ibid., Chapter 3.
11. Ibid., Chapter 3. and Pages 33, 36.
12. Interview with Roger Cohen, President, Regional Airline Association.
13. Ibid., 35.
14. Ibid., 35.
15. Source: NJDOT Division of Aeronautics.
16. Source: NJDOT Division of Aeronautics.
17. Source: NJDOT Division of Aeronautics.
18. Source: NJDOT Division of Aeronautics.
19. http://www.ci.santa-paula.ca.us/blog/2008/06/city-of-santa-paula-receives-574.html
20. Source: John W. Thatcher, Esq, NJ Bar 1974.
21. Source: NJDOT Division of Aeronautics.
22. At the time of publication of this Guidebook, there is Federal legislation pending (HR 1586, Section 147) to sunset the FAA purchase of development rights demonstration program.

Chapter 6 Additional Research Findings

1. Thatcher, Thomas P., *Interim Report, A Guidebook for the Preservation of Public-Use Airports*, ACRP Project 03-11, FY 2008, Transportation Research Board, Washington, DC (December 2009) 222 pp. Pages 36, 183.
2. Ibid., 37, 181-204.
3. Ibid., 37, 181-204.
4. Ibid., 37, 181-204.
5. Ibid., 37, 38, 181-204.
6. Ibid., 38, 181-204.
7. Ibid., 38, 181-204.
8. Ibid., 38, 39, 181-204.
9. Ibid., 39, 181-204.
10. Ibid., 39, 181-204.
11. Ibid., 39, 181-204.
12. Ibid., 40, 181-204.
13. Ibid., 40, 181-204.
14. Ibid., 40, 181-204.
15. Ibid., 40, 41, 181-204.

Abbreviations and acronyms used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation