
Federal Aviation Administration

# Airport Cooperative Research Program (ACRP)

# 2005-2007

Report of the Secretary of Transportation
to the United States Congress

Pursuant to Section 44511 of Title 49, United States Code

**June 1, 2008**

Federal Aviation Administration
Associate Administrator for Airports

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# Executive Summary

Airports are vital national resources. There are approximately 600 commercial-service airports and 2,800 smaller general aviation airports that make up the national airport system. These airports operate in a complex environment with many, and often competing, requirements and expectations. To succeed in this environment, airport operators need access to high quality, reliable information and technical guidance based on sound research.

In recognition of these needs, the Vision 100–Century of Aviation Reauthorization Act of 2003 (Vision 100) established the Airport Cooperative Research Program (ACRP). The purpose of ACRP is to carry out applied research on problems that are shared by airport operating agencies and are not being adequately addressed by existing Federal research programs. ACRP undertakes research in a variety of airport subject areas, including design, construction, environment, maintenance, safety, policy, planning, human resources, administration, and operations.

The Federal Aviation Administration (FAA) submits this report about the ACRP to the U.S. Congress in accordance with Section 44511, Aviation Research Grants, of Vision 100. This report covers all program activities from the events leading up to the authorizing legislation through the end of the calendar year 2007 (December 31, 2007).

As called for in Vision 100, a Memorandum of Agreement (MOA) was developed to provide organizational guidance for the three main entities that fund, administer, and oversee ACRP. The FAA funds the program. The Transportation Research Board (TRB) of the National Academies administers the program. The ACRP Oversight Committee (AOC), an independent governing board comprised of airport managers, appropriate Federal agencies, and other aviation officials appointed by the U.S. Secretary of Transportation, selects all of the program's research projects (Table 3 on page 9 shows the current AOC membership). The other main participants are the airport industry stakeholders: they serve as the foundation of ACRP. The program benefits from the cooperation and participation of airport professionals, air carriers, shippers, State and local government officials, equipment and service suppliers, airport users, educational institutions, other research organizations, and the general flying public. These stakeholders generate project ideas, guide projects while they are under way, and serve as the ultimate end-users of the final research products.

## ACRP Process

Potential research ideas, in the form of "problem statements", are submitted to ACRP throughout the year from the airport industry stakeholders. The AOC meets twice per year to review all submitted research problem statements and select the most promising projects for funding.

Approximately 20 to 25 projects are initiated annually. Following the AOC selection meeting, the administrative process of preparing for each project begins. As program administrators, TRB staff adjusts the original problem scope according to the guidance of the AOC, coordinate

project meeting dates, and select qualified individuals to serve as experts on the individual project technical panels.

A basic outline of the research process is as follows:

**Phase 1: Research Selection**

- Airport industry stakeholders submit research needs (problem statements) to TRB
- TRB and FAA staff review problem statements
- AOC convenes and selects projects for initiation

**Phase 2: Project Development**

- TRB staff make project preparations (e.g. select panel members)
- First Technical Panel meeting refines research scope (2 days)
- TRB issues Request for Proposal (RFP)
- Researchers submit proposals to TRB (approximately 6 weeks)
- Technical Panel reviews all proposals (approximately 1 month)
- Second Technical Panel meeting results in contractor selection (1 day)
- TRB negotiates contract with researchers (approximately 2 months)

**Phase 3: Project Management**

- Technical Panel and researcher hold kickoff meeting to provide comments, modifications
- Researcher submits interim deliverables to TRB
- Technical Panel and researcher hold meeting(s) to assess progress, provide guidance
- Researcher submits draft and final reports
- Technical Panel makes comments and modifications
- TRB publishes final report

## Program Results

During its short history, ACRP has made excellent progress. The initial idea for an airport research program gained ground with the FAA's Reauthorization (AIR 21) in April 2000. Since that date, the program has met the following major program milestones:

| | |
|---|---|
| April 2000 | AIR 21 authorizes study of the need for ACRP. |
| March 2002 | FAA contracts with TRB, and study of the need for ACRP begins. |
| March 2003 | TRB issues Special Report 272, recommending an ACRP. |
| December 2003 | Vision 100 authorizes ACRP. |
| September 2005 | Memorandum of Agreement executed, Secretary of Transportation appoints AOC, and FAA provides initial program funding |
| January 2006 | First AOC meeting, 29 projects initiated |
| July 2006 | Second AOC meeting, 26 projects initiated |
| January 2007 | Third AOC meeting, 12 projects initiated |
| July 2007 | Fourth AOC meeting, 27 projects initiated |

As a result of the AOC meetings in 2006 and 2007, ACRP has allocated over $24 million for over 94 research projects that will result in a variety of products. The nature of airport problems requires ACRP research to have products specifically tailored to obtain maximum effectiveness. Two main types of research projects are usually initiated: "standard" research or "special" research. Standard research projects are relatively low-cost studies lasting 1 to 2 years and resulting in original research that can be published as a report, guidebook, multimedia disk (CD or DVD), computer software, informational pamphlet, and/or a presentation. Special research projects are conducted in areas of specific interest to the airport community, such as: legal aspects of airport programs, quick-response studies for special needs, synthesis of information related to airport problems, and a graduate research award program on public-sector aviation issues. The products of special research will generally be legal briefs or short reports intended to capture and consolidate information or practices currently in use by the airport industry.

As of December 2007, 14 of the 94 initiated projects are complete. They have generated 2 reports, 10 synthesis studies, 1 research digest, and 1 workshop:

- Safety Management Systems for Airports, Vol.1: Overview
  (Report 1 / originally ACRP #11-02/T4)
- Ground Access to Major Airports by Public Transportation
  (Report 2 / originally ACRP #11-02/T2)
- Innovative Finance and Alternative Sources of Revenue for Airports
  (Synthesis 1 / originally ACRP #11-03/S01-01)
- Aviation Forecasting Methodologies
  (Synthesis 2 / originally ACRP #11-03/S03-01)
- General Aviation Safety and Security Practices
  (Synthesis 3 / originally ACRP #11-03/S04-01)
- Counting Aircraft Traffic Operations at Small and Non-Towered Airports
  (Synthesis 4 / originally ACRP #11-03/S10-01)
- Airport Ground Access Mode Choice Models
  (Synthesis 5 / originally ACRP #11-03 / S03-02)
- Impact of Airport Pavement Deicing Products on Aircraft and Airfield Infrastructure
  (Synthesis 6 / originally ACRP #11-03 / S10-03)
- Airport Economic Impact Methods and Models
  (Synthesis 7 / originally ACRP #11-03 / S03-03)
- Common Use Facilities and Equipment at Airports
  (Synthesis 8 / originally ACRP #11-03 / S10-02)
- Effects of Aircraft Noise: Update on Selected Topics
  (Synthesis 9 / originally ACRP #11-03 / S02-01)
- Airport Sustainability Practices
  (Synthesis 10 / originally ACRP #11-03 / S02-02)
- Model for Improving Energy Use in U.S. Airport Facilities
  (ACRP Research Results Digest 2, Fall 2007 / originally ACRP #11-02/T1)
- Interagency-Industry Collaboration on Pandemic Planning for Aviation: A Workshop
  (ACRP Workshop 1, held Sep. 07 / originally ACRP #11-02/T6)

These and other ACRP research products are available, free of charge, on the Transportation Research Board's website (**http://www.trb.org/ACRP**).

## Findings

Airport operators around the world encounter a wide variety of very complex and difficult issues. While every airport is unique, the problems that must be solved are often similar in nature. The airport community has a great resource in solving these shared problems through ACRP. Research within ACRP covers many areas of interest, and the products can be tailored for delivery in many different formats for maximum effectiveness.

A number of conclusions, and resulting recommendations, can be drawn from the progress of ACRP:

- ACRP serves the airport industry as a dynamic, well-designed vehicle for solving a variety of airport problems through applied research.
- The ACRP MOA provides a strong foundation for the program.
- The composition of the program's governing board, the AOC, provides a balanced representation of the airport industry.
- The AOC provides excellent guidance and ensures projects are carefully considered during the selection process and funded according to the greatest needs of the industry.
- ACRP operating costs are contained and in-line with similarly run cooperative research programs in other industries.
- TRB staff provides successful program management and administration of ACRP.
- There is significant involvement from airport industry stakeholders in all phases of the ACRP research cycle.

## Recommendations

- ACRP should be made permanent.
- ACRP funding should be increased to perform research addressing the increasing focus on airport-related environmental issues.

## Report Organization

This report is organized into six chapters:

- Chapter 1: Introduction
- Chapter 2: Background
- Chapter 3: Organizational Structure
- Chapter 4: The Research Process
- Chapter 5: ACRP Progress
- Chapter 6: Conclusions and Recommendations

Chapter 1 describes the purpose of ACRP and outlines the various research areas in the program. The different research project categories, including available product formats, are also introduced.

Chapter 2 discusses the basis for airport cooperative research, the establishment of ACRP, and the relationship between ACRP and other Federal research programs.

Chapter 3 outlines the organizational and administrative structure of ACRP, including major participants in the program and their roles in the research process.

Chapter 4 describes the operational structure of the research program and the three main phases of ACRP research.

Chapter 5 presents the progress of the program since September 2005, when research operations officially began, as well as an overview of ACRP finances.

Chapter 6 discusses preliminary findings and recommendations for future ACRP activities.

This report also includes appendices for more detailed information. Appendix A provides a detailed status of all 94 initiated ACRP projects. Appendix B contains the ACRP Memorandum of Agreement, which provides the official structure and procedures for the administration and operation of ACRP. Appendix C contains the relevant section in the Vision 100–Century of Aviation Authorization Act of 2003 that authorized the creation of ACRP.

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# Chapter 1: Introduction

The Nation's airport system is a complex, decentralized, and dynamic network of physical facilities, operations, and management practices. Within this rapidly changing environment, airport operators must confront an array of challenges. Emerging national problems, increased regulatory pressure, the changing economy, and resource constraints are just a few of the varied demands that airports must manage. Yet, despite all of these issues, airports must continue to operate at the very highest levels of safety and efficiency possible.

Airport leaders must take a proactive role to address anticipated demands that will be placed on the system in the future. Our country's ability to sustain a robust national airport system is dependant on how well the aviation industry can develop innovative solutions to complex problems.

Systematic, well-designed research provides the most effective approach to solving many of the problems facing airport operators. In some cases, airport problems are of local interest and can best be studied by airport operators individually or in cooperation with universities or other institutions and commercial organizations; however, airport research and development of interest to many airport operators is best accomplished through a coordinated program of cooperative research.

The Airport Cooperative Research Program (ACRP) exists in order to help address some of the airport industry's most pressing problems. Through applied research, ACRP aims to provide significant contributions and much needed guidance to airport operators nationwide.

## ACRP's Purpose

The purpose of ACRP is to carry out applied research on complex problems that are shared by airport operators. In this capacity, the ACRP helps to study issues that existing Federal research programs do not adequately address.

## ACRP Research Areas

ACRP projects seek practical remedies for operational problems in a variety of different research areas. Table 1 displays the ACRP classification system, which divides airport research along the following broad areas:

**Table 1: ACRP Research Areas**

| | | |
|---|---|---|
| 1. Administration | 6. Human Resources | 11. Special Projects |
| 2. Environment | 7. Design | 11-01 Legal Studies Program |
| 3. Policy and Planning | 8. Construction | 11-02 Quick Response Projects |
| 4. Safety | 9. Maintenance | 11-03 Synthesis Studies |
| 5. Security | 10. Operations | 11-04 Graduate Research Award Program |

## Research Categories

The nature of airport problems requires ACRP research to have products specifically tailored to obtain maximum effectiveness. ACRP research projects conducted under areas 1 through 10 are considered "standard" projects, while those in area 11 contain the program's "special" projects.

Standard research projects are relatively low-cost studies lasting 1 to 2 years and resulting in original research that can be published as a report, guidebook, multimedia disk (CD or DVD), computer software, informational pamphlet, and/or presentation.

Special research projects currently address four main areas: legal aspects of airport programs (11-01), quick-response studies for special needs (11-02), synthesis of information related to airport problems (11-03), and the Graduate Research Award Program on Public-Sector Aviation Issues (11-04). The products of this special research will generally be legal briefs or short reports intended to capture and consolidate information or practices currently in use by the airport industry.

The National Academies and the Transportation Research Board (TRB) publish and distribute all ACRP research products and make them available free of charge on the TRB website (**http://www.trb.org/ACRP**).

# Chapter 2: Background

## Program Origins

Over the past decade, there has been growing recognition of the need for airport operators to pool their ideas and resources to develop practical solutions to their shared problems. Cooperative research programs have provided similar assistance to a variety of other industries and environments for quite some time. The National Cooperative Highway Research Program (NCHRP) and the Transit Cooperative Research Program (TCRP), both run by the National Academies, are two programs in particular that have proven to be very successful over the years.

Throughout the 1990s, many believed that a cooperative research program could similarly benefit airports and airport operators. Support for this idea was expressed by many groups and individuals, including airport industry trade associations that represent an overwhelming majority of the airport community. Included among these were the Airports Council International–North America (ACI-NA), the National Association of State Aviation Officials (NASAO), and the American Association of Airport Executives (AAAE).

Further, many recognized the importance of research for developing critical in-house expertise. Applied research does not just produce research products, but also provides invaluable expertise that can later be applied to future design, operations, litigation, special investigations, and other practical problems. With the changing age profile of U.S. airport professionals, the contribution that research can make to succession planning is also a major benefit.

## Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR 21)

A request by Congress in the 2000 Federal Aviation Administration (FAA) reauthorization (AIR 21) called for a more detailed study of the cooperative research question. AIR 21 (Section 906) required that:

> "The Secretary of Transportation, in consultation with the National Academy of Sciences and representatives of airports, shall evaluate the applicability of the techniques used to fund and administer research under the National Cooperative Highway Research Program and the National Transit [Cooperative] Research Program to the research needs of airports. The Secretary shall transmit to Congress a report on the results of the evaluation conducted under this section."

In response, the FAA contracted with the TRB, under the auspices of the National Research Council of the National Academy Academies of Sciences, to conduct the study.

## TRB Special Report 272

Following established NRC procedures, the TRB assembled a committee with a range of expertise and a balanced perspective on issues related to the study topic; in March 2003, the committee published its findings in *TRB Special Report 272: Airport Research Needs: Cooperative Solutions*. Among other items, the report highlighted examples of airport research needs in topical areas such as operational safety, maintenance, design of infrastructure and equipment, finance and administration, planning, environment, and security. The committee concluded that such cooperative research is essential for ensuring airport safety, efficiency, and environmental compatibility and urged Congress to establish a national cooperative research program for airports.

## VISION 100

Following industry acceptance of *TRB Special Report 272*, Congress began the process of implementing the report's recommendations. Later that year, Congress passed Vision 100, which formally authorized the creation of ACRP.

Vision 100 (Section 712) authorized the Secretary of Transportation to establish ACRP as a 4-year pilot program. Through ACRP, applied research would be carried out on problems "that are shared by airport operating agencies and…are not being adequately addressed by existing Federal research programs." In order to perform this task, the Secretary was granted the authority to fund the program.

In keeping with the recommendations of *TRB Special Report 272,* Vision 100 directed that governance of ACRP be similar to that of the National Academies' NCHRP and TCRP. In keeping with these models, and to ensure the independence and objectivity of the program's research, Vision 100 called for the Secretary to select an independent governing board comprised of airport managers and other respected industry personnel to oversee the new program. The governing board, or ACRP Oversight Committee (AOC), would include individuals chosen for their commitment to the success of the Nation's airport system. Appointments would be made from candidates "nominated by national associations representing public airport operating agencies, airport executives, State aviation officials, and the scheduled airlines." Representatives from appropriate Federal agencies would also be expected to serve on the AOC. The leadership and guidance from such a diverse and successful group of executives would be instrumental in ensuring the future success of ACRP.

Vision 100 also made sure the National Academies would play a critical role in the implementation of ACRP. The two-fold mission of the National Academies, as directed by the legislation, was to provide staff support to and carry out the projects chosen by the AOC. The practical effects of this order were to install a Secretariat position in the AOC (held by the TRB's Director of Cooperative Research Programs) and task the TRB to manage the daily operations of ACRP activities.

## Memorandum of Agreement

Perhaps the most urgent action necessitated by the directives in Vision 100 was for all concerned parties to develop a binding agreement outlining the administrative and operational details of the program. Working toward this goal, representatives from the FAA, TRB, and national airport trade associations began formulating an arrangement in the summer of 2005. In September 2005, an official ACRP Memorandum of Agreement (MOA) was signed. The overriding purpose of the MOA was to establish ACRP operating procedures and to delineate the roles of the cooperating organizations involved in the program.

The conceptual framework outlined for ACRP in the MOA provided the basis for rapid administrative and operational developments in 2005. In September 2005, the Secretary of Transportation finalized the appointments for the initial members of the AOC. The following month, ACRP operations officially began when the FAA provided the start-up funding ($3 million appropriated by Congress in FY 2006) to the National Academies and the TRB. Since FY 2006, Congress has funded ACRP at $10 million in fiscal years 2004 through 2008, which is the amount authorized in Vision 100 for fiscal years 2004 and 2005.

## Initiation Milestones

A summary of the major events that occurred during the initiation of ACRP are shown below in Table 2:

**Table 2: ACRP Initiation Milestones**

| Date | Event |
|---|---|
| April 2000 | AIR 21 authorizes study of the need for ACRP. |
| March 2002 | FAA contracts with TRB, and study of the need for ACRP begins. |
| March 2003 | TRB issues Special Report 272, recommending an ACRP. |
| December 2003 | Vision 100 authorizes ACRP. |
| September 2005 | ACRP MOA executed. |
| September 2005 | Secretary of Transportation appoints AOC. |
| October 2005 | FAA provides $3 million to TRB for ACRP. |

## DOT/FAA Research

ACRP operates complementary to, rather than as a substitute for or duplicate of, other research programs. As such, it is worth noting the relationship between ACRP and other airport research programs funded by the FAA, DOT, and Department of Homeland Security (DHS).

It might be expected that strong correlation should exist among the technical objectives and individual projects for the ACRP and other airport research programs. However, existing research programs include differences that can be attributed to policies, management perspectives, and emphasis in project definition and scope. Other Federally funded programs conducting airport-related research include—

- FAA's Airport Technology Research Center – an FAA research and development program that conducts research on airport capacity and safety issues.
- The Innovative Pavement Research Foundation (IPRF) and Airfield Asphalt Pavement Technology Program (AAPTP) – organizations conducting research in airport concrete and asphalt pavements, respectively.
- National Safe Skies Alliance – the FAA provides this organization an annual grant of $5 million from the Airport Improvement Program. These funds are used to conduct testing and evaluation of new airport surveillance and equipment.

ACRP was conceived as an operator-based, problem-solving program (i.e. real-world, day-to-day operational issues with near- to mid-term timeframes). The FAA's airport technology research program includes these objectives, but also provides for projects of longer-term research and development and projects related to the FAA's mission. To ensure that research efforts within ACRP are not duplicative of these other efforts, FAA representatives are involved in the annual ACRP planning processes and are regularly briefed by ACRP staff on the progress they are making. Security research, for example, is conducted by the Transportation Security Administration, and is not funded by ACRP.

The needs of the airport industry and the scope of the ACRP are not confined to research in the narrow sense of the word. It is essential that the needs and opportunities for innovation in airport operations be met by not just research (both fundamental and applied), but also by development, education, technology transfer, and other activities needed to bring about improvements in both administrative and technical activities. In the context of the ACRP, therefore, the term "research" is used to denote all activities that are used to promote innovative approaches to solving airport problems and meeting airport needs.

# Chapter 3: Organizational Structure

## Cooperative Structure

The primary entities involved with ACRP are (1) the AOC, an independent governing board appointed by the Secretary of Transportation; (2) the TRB, which provides program management and the AOC secretariat; and (3) the FAA, which sponsors the program. Figure 1 illustrates the relationships among these organizations, as specified in the overarching ACRP Memorandum of Agreement (MOA). Although not shown in the figure, airport industry stakeholders are also important participants and are represented on the AOC, on project panels, and as researchers. Each of these groups has different interests and responsibilities, and each is an integral part of the cooperative research effort.

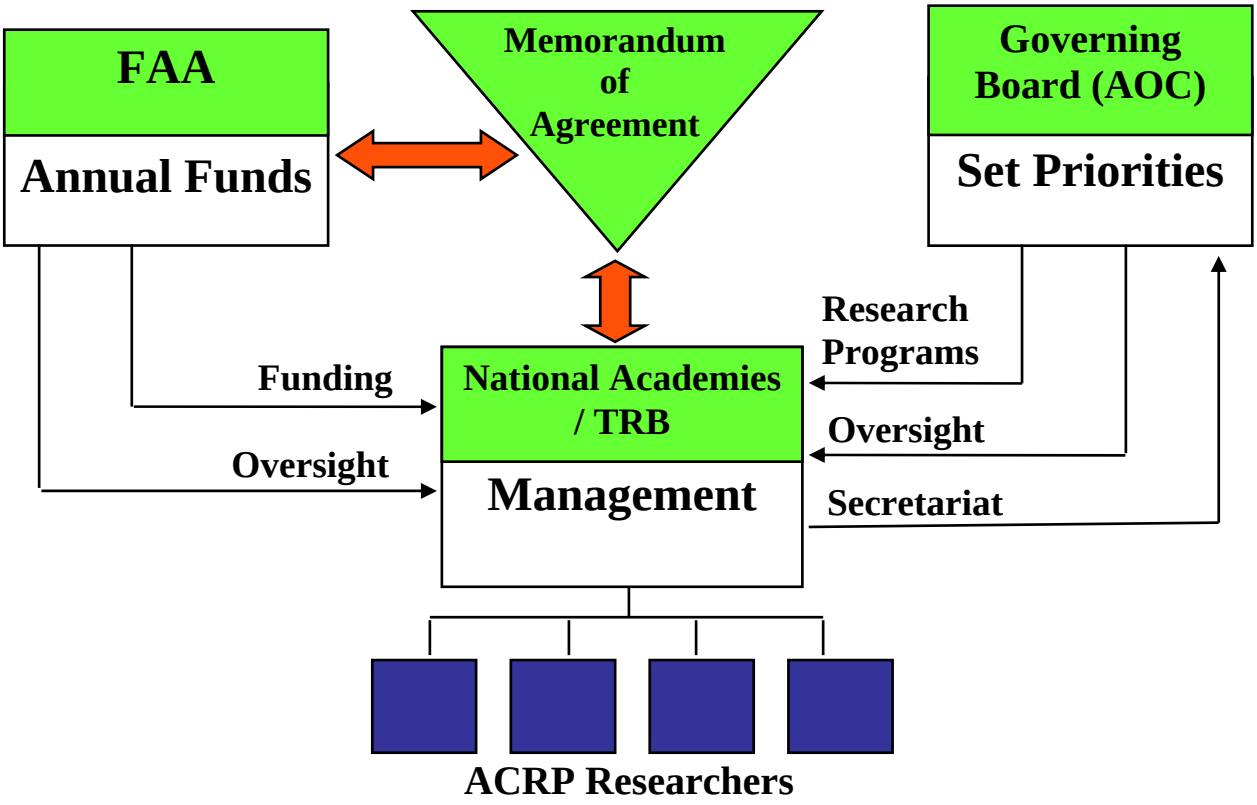



*Figure 1: ACRP Organizational Structure*

## The AOC

The AOC provides policy guidance and sets priorities for ACRP research. Additionally, it monitors program progress and recommends any corrective action to the FAA and the TRB. The ACRP MOA assigns the following responsibilities to the AOC:

- Reviewing research needs,
- Selecting research topics,
- Setting project priorities and funding levels,
- Approving budgets and financial statements of the ACRP,
- Adopting policies and procedures governing the AOC, and
- Evaluating program effectiveness.

More specifically, the AOC (1) determines if proposed topics represent important research needs in the airport field; (2) determines, on the basis of evaluations provided by the TRB and other information sources, whether the proposed research topic duplicates other research; and (3) formulates an annual program with recommended project funding consisting of new projects and, when appropriate, continuation of projects.

## AOC COMPOSITION

The MOA identifies 20 members to the AOC. Thirteen of the members have voting rights, while the remaining seven are non-voting members. The total size and composition of the AOC may be adjusted at the discretion of the Secretary of Transportation. The MOA delineates the AOC composition as follows:

Voting members (13):

- 7 members are chief executive officers, managers, or members of the governing boards of airports (3 from large hubs, 2 from medium-size hubs, and 2 from small hubs, non-hubs, or general aviation airports);
- 5 members are officers or officials of universities or private entities that are air carriers, shippers, suppliers, researchers, consultants, or others engaged in providing airport equipment or services (1 industry position is currently vacant on the AOC); and
- The Administrator of the FAA or a designee (currently the FAA's Deputy Associate Administrator for Airports).

Non-voting members (7):

- The Administrator of the Environmental Protection Agency (EPA),
- The Administrator of the National Aeronautics and Space Administration (NASA) (position is currently vacant on the AOC),
- The chief executive of the Airports Council International–North America (ACI-NA),
- The chief executive of the American Association of Airport Executives (AAAE),
- The chief executive of the National Association of State Aviation Officials (NASAO),
- The chief executive of the Air Transport Association (ATA), and
- The Executive Director of the TRB.

The MOA specifically notes term limits for "voting" members of the AOC. These members are appointed for a period of 4 years and may serve for two successive 4-year terms (except for the FAA representative, who is a permanent member). To provide for staggered representation on the AOC, five of the initial AOC members were randomly selected and appointed for an initial 2-year term. However, at the conclusion of those terms in September 2007, those members were

reappointed to full 4-year terms by the Secretary. After completing their initial terms, voting members must wait 4 years before becoming eligible for reappointment to the AOC.

Table 3 provides a complete list of the AOC members.

**Table 3: The ACRP Oversight Committee (AOC)**

| Name | Title, Organization | Member Status (Term Limit Expiration) |
|---|---|---|
| **AOC Chair** James "Jim" Wilding | President (ret.), Metropolitan Washington Airports Authority | Voting (2009) |
| **AOC Vice-Chair** Jeff Hamiel | Executive Director, Minneapolis-St. Paul Metropolitan Airports Commission | Voting (2009) |
| **AOC Secretary** Christopher W. Jenks | Director, Cooperative Research Programs, Transportation Research Board | Non-Voting |
| James Crites | Executive Vice President for Airport Operations, Dallas/Fort Worth International Airport | Voting (2009) |
| Richard de Neufville | Professor of Engineering Systems and Civil and Environmental Engineering, Massachusetts Institute of Technology | Voting (2011) |
| Kevin C. Dolliole | Senior Vice-President, UCG Associates | Voting (2011) |
| John K. Duval | Safety and Security Coordinator, Beverly Municipal Airport | Voting (2009) |
| Steve Grossman | Director of Aviation, Oakland International Airport | Voting (2011) |
| Tom Jensen | President/CEO, National Safe Skies Alliance | Voting (2011) |
| Catherine M. Lang | Deputy Associate Administrator for Airports, Federal Aviation Administration | Voting |
| Gina Marie Lindsey | Executive Director, Los Angeles World Airports | Voting (2009) |
| Carolyn Motz | Airport Manager, Hagerstown Regional Airport | Voting (2009) |
| Richard "Rick" Tucker | Executive Director, Huntsville International Airport | Voting (2011) |
| Vacant | A representative at-large from the airport industry | Voting (TBD) |
| Sabrina Johnson | Senior Policy Analyst, US Environmental Protection Agency | Non-Voting |
| Richard Marchi | Senior Advisor - Policy and Regulatory Affairs, Airports Council International - North America | Non-Voting |
| John M. Meenan | Executive Vice President / COO, Air Transport Association of America, Inc. | Non-Voting |
| Henry Ogrodzinski | President/CEO, National Association of State Aviation Officials | Non-Voting |
| Melissa Sabatine | Vice President, Regulatory Affairs, American Association of Airport Executives | Non-Voting |
| Robert E. Skinner, Jr. | Executive Director, Transportation Research Board | Non-Voting |
| Vacant | A representative from the National Aeronautics and Space Administration | Non-Voting |

The AOC is meant to be a microcosm of the U.S. airport industry. Approximately 30 percent of the voting AOC members represent large-hub primary airports, 15 percent represent medium-hub airports, and another 15 percent represent small- or non-hub and general aviation airports. Universities, private industries, and associations make up about 30 percent of the AOC voting members. The FAA represents the remaining 10 percent. The non-voting members represent over 140 local, regional, and State governing bodies that account for over 300 commercial service airports that service more than 90 percent of the U.S. domestic scheduled air passenger and cargo traffic and virtually all scheduled international travel. Additionally, AOC members represent the managers of airports that enplane over 99 percent of the passengers in the United States as well as the managers of major U.S. flagged airlines that collectively account for over 97 percent of the revenue passenger miles and over 95 percent of the freight ton miles flown throughout the country.

## The National Academies

To provide a better sense of how ACRP fits into the administrative scheme of the National Academies and the TRB, a streamlined organizational chart is provided in Figure 2:

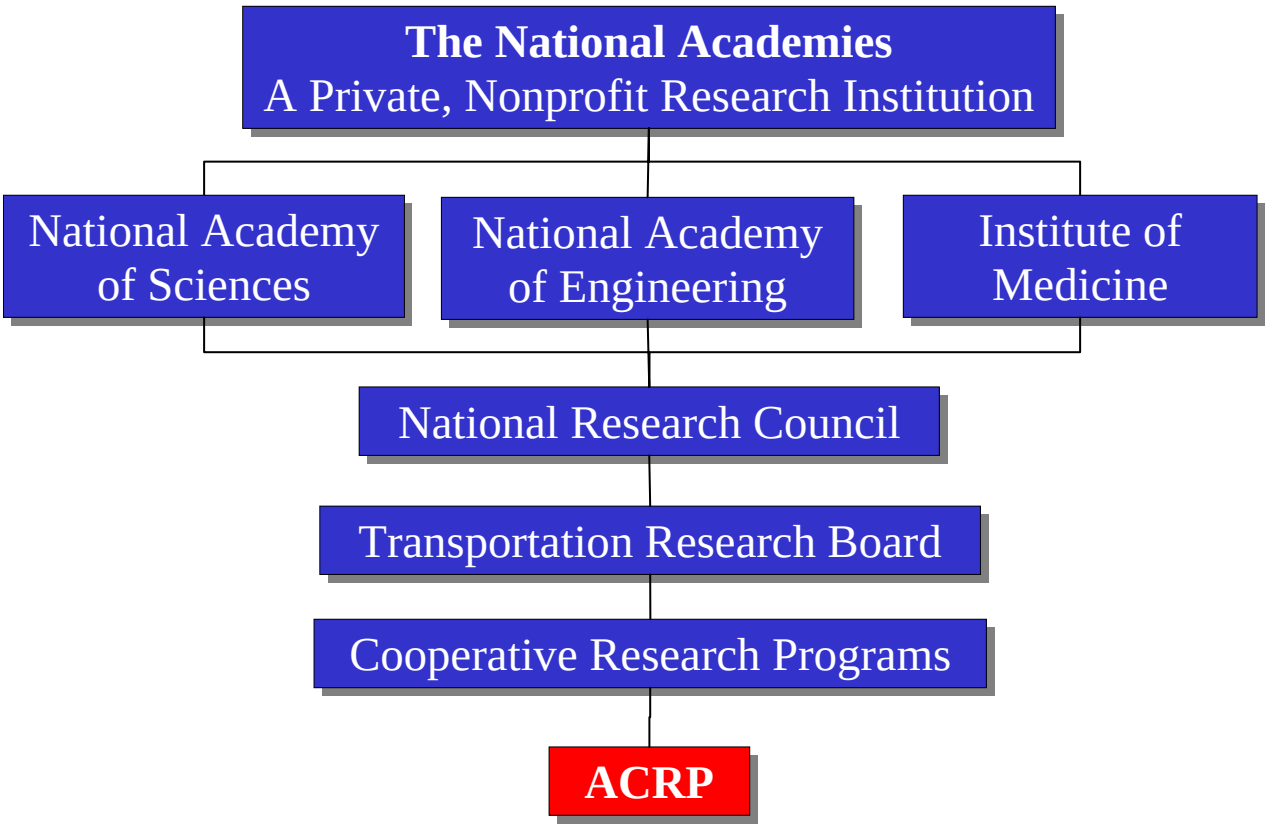



***Figure 2: The National Academies Organizational Structure***

The National Academies perform a unique public service by bringing together committees of experts in all areas of scientific and technological endeavor. These experts serve pro bono to address critical national issues and give advice to the Federal government and the public. Four organizations make up the National Academies: the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council (which is jointly administered by members of the three other organizations).

## THE NATIONAL ACADEMIES BACKGROUND

The National Academies is an honorific society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and their use for the general welfare. The National Academies was signed into being by President Abraham Lincoln on March 3, 1863, at the height of the Civil War. As mandated in its Act of Incorporation, the National Academies has, since 1863, served to "investigate, examine, experiment, and report upon any subject of science or art" whenever called upon to do so by any department of the Government. Since 1863, the Nation's leaders have often turned to the National Academies for advice on the scientific and technological issues that frequently pervade policy decisions. Most of the institution's science policy and technical work is conducted by its operating arm, the National Research Council, which was created expressly for this purpose. These non-profit organizations provide a public service by working outside the framework of Government to ensure independent advice on matters of science, technology, and medicine. They enlist committees of the Nation's top scientists, engineers, and other experts, all of whom volunteer their time to study specific concerns. The results of their deliberations have inspired some of America's most significant and lasting efforts to improve the health, education, and welfare of the population. The National Academies' service to Government has become so essential that Congress and the White House have issued legislation and executive orders over the years reaffirming its unique role.

## THE TRANSPORTATION RESEARCH BOARD

The mission of the TRB—one of six major divisions of the National Research Council—is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, the TRB facilitates the sharing of information on transportation practice and policy by researchers and practitioners, stimulates research and offers research management services that promote technical excellence, provides expert advice on transportation policy and programs, and disseminates research results broadly and encourages their implementation.

TRB fulfills this mission through the work of its standing committees and task forces addressing all modes and aspects of transportation, publication and dissemination of reports and peer-reviewed technical papers on research findings, management of cooperative research and other research programs, conduct of special studies on transportation policy issues at the request of the U.S. Congress and Government agencies, operation of an online database of transportation research information, and the hosting of an annual meeting that typically attracts 10,000 transportation professionals from throughout the United States and abroad.

## NATIONAL ACADEMIES AND TRB MANAGEMENT OF ACRP

Management of the research program is critical to ACRP's success. TRB manages the day-to-day operations of the program, a broad task encompassing 10 major activities. Outlined below, each of these functions are necessary to formulate, manage, and administer research projects and ultimately disseminate research results to the airport community. The activities are—

- Serving as Secretariat to the AOC,
- Appointing and coordinating expert technical panels to guide research,
- Developing and distributing Requests for Proposals (RFPs),
- Processing and evaluating proposals to select the best-qualified research agency,
- Executing contracts with the selected researchers,
- Providing technical and financial oversight of research agencies,
- Coordinating review of research reports by project panels,
- Preparing research reports for publication and dissemination,
- Promoting the application of research results, and
- Closing out contracts.

TRB supports the AOC and the FAA by performing these program management functions. A more detailed description of TRB program management responsibilities are outlined in Chapter 4: The Research Process as well as in the ACRP MOA found in Appendix B.

## TRB AS THE AOC SECRETARIAT

The TRB—or more specifically, the TRB Director of Cooperative Research—serves as the Secretariat to the AOC. The Secretariat supports and works in consultation with the AOC Chair. The listing below shows just a few of the many responsibilities of the AOC Secretariat:

- Issuing announcements to solicit research needs statements for consideration by the ACRP,
- Conducting preliminary evaluation of research needs statements to determine whether the proposed research duplicates previous or ongoing studies,
- Making preliminary estimates of the cost of conducting each proposed research topic,
- Distributing material necessary for the AOC's prioritization of research for the ACRP,
- Recording AOC meeting decisions,
- Scheduling meetings and preparing and distributing agendas for AOC meetings,
- Preparing and distributing minutes following AOC meetings,
- Keeping records related to ACRP activities,
- Rendering to the AOC and the FAA quarterly reports on the progress and financial status of the ACRP, and
- Providing other necessary staff support.

Due to the significant amount of work needed to adequately perform the overall program management and Secretariat duties called for by ACRP, TRB receives up to 25 percent of annual program funds (currently $2.5 million per year) to cover administrative and operational costs. A more complete discussion of ACRP finances can be found in the Program Finance section of Chapter 5: ACRP Progress.

## The Federal Aviation Administration

The FAA's Office of the Associate Administrator for Airports (Office of Airports) sponsors and funds ACRP. The FAA's role as the steward of Federal funds necessitates it provide program oversight to ensure achievement of ACRP technical objectives, budget adherence, and schedule milestones. The FAA also provides the TRB with timely guidance and information on emerging issues of national priority, new Federal program initiatives, and complementary FAA programs or projects that can enhance ACRP's effectiveness. The FAA and the TRB maintain close coordination in the development of detailed technical program plans, RFPs, and technical work statements. The close coordination among the AOC, the FAA, and the TRB provides fertile opportunities for developing creative and more cost-effective projects.

The FAA works cooperatively with the AOC, the National Academies, the TRB, and others to manage ACRP. This cooperative effort is designed to ensure the effectiveness and success of the overall ACRP process and is consistent with sound fiscal and resource management. The FAA's responsibilities include the following activities:

- Participating with the AOC in developing the ACRP annual program;
- When practicable, selecting and assigning FAA staff to serve on project panels;
- Supporting periodic program reviews;
- Participating in planning, developing, and conducting conferences, workshops, seminars, and other technical meetings associated with ACRP activities; and
- Working closely with the TRB and industry associations to ensure dissemination, distribution, marketing, and promotion of the results of ACRP studies, with an emphasis on timely deployment and mainstreaming of products and practices resulting from ACRP.

### FAA BACKGROUND

Safety is the FAA's primary mission and most important responsibility. The agency's dedication to keeping airports safe is central to the public's interest as well as the economic health of aviation. As an organization, the Office of Airports provides leadership to the airport and aviation community to ensure the National Plan of Integrated Airport Systems (NPIAS) is planned and developed to meet FAA mission goals. The Office of Airports has a continuing stake in the safety, security, capacity, financial, and environmental aspects of airports. Indeed, the organization's major goal is to improve the safety, capacity, and condition of U.S. airports and to maintain a level of investment for airport infrastructure projects that benefits the National Airspace System. A strong research program is critical to ensuring this mission is accomplished.

The Office of Airports establishes regulations for safe operation of commercial service airports and regularly inspects certificated airports for compliance. It also administers the Airport Improvement Program, which provides priority consideration for safety-related development at airports that benefits both commercial service and general aviation operations. In addition, the office supports research in airport technology to develop improvements in airport marking and lighting, airport rescue and fire fighting, airport planning and design, and mitigation of wildlife hazards near airports. The results from research performed under ACRP are instrumental in supporting these and the many other goals of the FAA and the Office of Airports.

## Airport Industry Stakeholders

ACRP benefits greatly from the cooperation and participation of airport industry stakeholders. Though not shown in the ACRP organizational chart, industry members are present throughout the entire research process, serving an important role in every phase. Industry trade groups 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) represent a large portion of the professional airport community. These groups, and other airport professionals, are solicited annually by the TRB for a variety of functions.

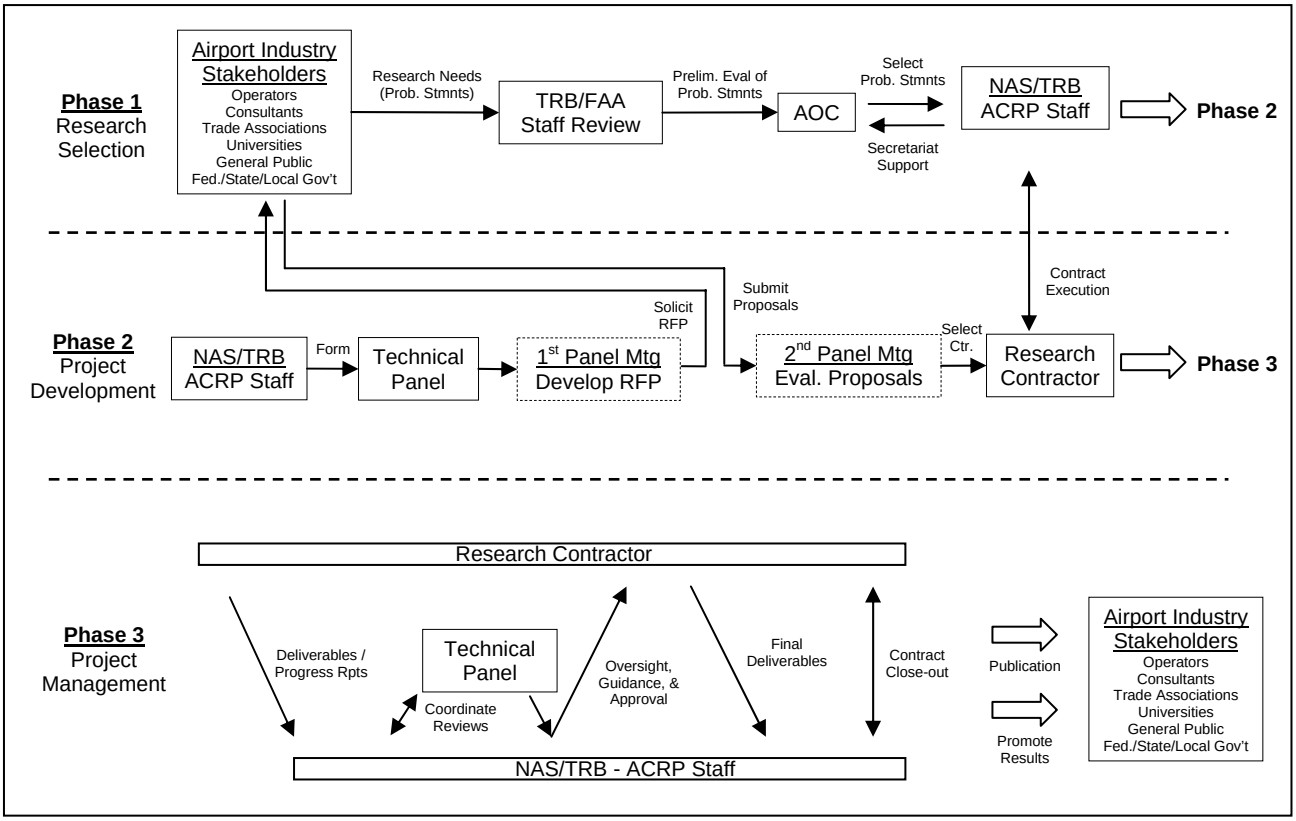
As will be described in the following chapter, the main ways that members of the general public can participate in ACRP are by—

- Submitting research needs for consideration in the form of problem statements,
- Serving as subject matter experts on ACRP project technical panels, and
- Submitting proposal responses to an ACRP Request for Proposal (RFP) and performing the required research.

# Chapter 4: The Research Process

Research projects are the primary activity of the ACRP. Selected research projects are based on needs that have been identified by published literature, surveys, AOC members (including industry representatives), airport operators, and others. Research objectives are principally aimed at identifying solutions to immediate problems in the airport environment, and they focus on high-priority issues with a reasonably high expectation of producing results with practical applicability.

The annual research program selected by the AOC and managed by the TRB provides ACRP's foundation. Each project follows an efficient and effective research process developed by the TRB over 40 years of successful cooperative research experience. This process includes three main phases: (1) Research Selection, (2) Project Development, and (3) Project Management. Figure 3 illustrates these phases.




Note: NAS is the National Academies.

***Figure 3: Standard ACRP Research Process***

## Phase 1 – Research Selection

The ACRP research selection phase generally includes three components:

- 1.1 Solicitation of research needs,
- 1.2 Evaluation of problem statements, and
- 1.3 Selection of problem statements.

### 1.1 SOLICITATION OF RESEARCH NEEDS

A sequence of events initiates each year's research activities. The process generally begins with TRB's annual general solicitation for research needs. Although ACRP will accept research ideas from anyone at anytime, the program makes a call for research only once a year.

The AOC selects research projects on a year-to-year basis, focusing on emerging issues and current priorities. To identify research opportunity areas and corresponding problem statements, the program relies on the following methods:

- Annual problem solicitations,
- Recommendations from specially appointed panels or committees,
- Recommendations from workshops, and
- Recommendations from completed research.

The annual solicitation provides the most straightforward method for determining the problems to be researched; it can also result in a very large response. When problem statements are solicited, ACRP staff provides specific instructions on how they must be written. This guidance results in submissions in a standard TRB format known as a "problem statement." This standardization is important because potential submitters may not have experience writing research problem statements. However, the success of the ACRP and the benefits to the airport industry depend on good ideas being clearly presented.

The annual solicitation goes to airport operators as well as to other members of the broad airport community. Suppliers of equipment and services, universities, other research organizations, and consultants might all want to offer input to the ACRP.

Specially appointed panels or committees are also excellent sources of research problem statements or research topics. The AOC uses a variety of panels and committees to supply input when forming the annual program. The panels or committees must have members who are very knowledgeable about the day-to-day activities and problems faced by airport operators.

The AOC can also ask the TRB to conduct workshops to gather specific problems for research. This method can both help identify individual problems and develop emphasis areas. Workshops are effective tools for bringing together the thinking of many experts and practitioners within a short period of time. The product of a workshop is usually a prioritized list of research needs in a well-defined emphasis area.

Lastly, in addition to requesting problem statements, the AOC can refer to previously completed ACRP projects where investigations or other efforts result in the identification of specific airport-related problems.

## 1.2 EVALUATION OF PROBLEM STATEMENTS

Problem statements are evaluated based on need, urgency, probability of success, and funds available. Once research problem statements are received, TRB and FAA staff begins reviewing each statement, identifying related research, making suggestions about the probability of success of the effort, and commenting on the technical content and relevance of the problem to be solved.

## 1.3 SELECTION OF PROBLEM STATEMENTS

After the initial evaluation, the AOC considers the problem statements and relevant supplemental information. It then selects the problem statements to be included in the annual program. The AOC has the opportunity to select either specific subjects with narrow focus or broader research of strategic importance. Each annual program may include both new and continuing research and has a unique composition, based on the most important issues and problems at the time.

After problem statements are selected, the AOC provides the TRB with guidance on the technical content and scope of work for each item, effectively transforming the "problem statement" into a "research project."

During this phase, the AOC also closely examines existing research program areas. To meet the strategic objectives of the program and address the changing needs of the airport industry, ACRP might occasionally require adjustments to its program definition and research categories. ACRP began a strategic planning process in the summer of 2007 to provide AOC members and FAA officials the insight they will need to calibrate or redirect the programs and adjust the roles and operating characteristics of the ACRP, the FAA's research program, and other airport research activities.

Table 4 provides a sample schedule for Phase 1.

**Table 4: Sample Phase 1 Schedule**

| Time | Event |
|---|---|
| Week 1 | Announcement of problem statement solicitation |
| Week 12 | Due date for problem statements |
| Week 17 | Evaluation of problem statements by ACRP and FAA staff |
| Week 19 | Distribution of research candidate list and project selection ballots to the AOC |
| Week 24 | AOC meeting to select research topics and set funding levels for new projects |
| Week 26 | Announcement of new ACRP projects |
| **Total Time: approximately 26 weeks** | |

## Phase 2 – Project Development

The second phase of the ACRP research process develops the foundation upon which each individual research project operates. Principal activities in this phase include—

- 2.1 Selection of technical panels,
- 2.2 Development of a scope of work and subsequent RFP,
- 2.3 Evaluation of project proposals and researcher selection, and
- 2.4 TRB and researcher contract execution.

Every AOC-approved project is assigned to a TRB Senior Program Officer (SPO), who provides project management throughout the research process. SPOs perform all manner of administrative and operational project support and must often coordinate these tasks for a number of projects simultaneously (typically 20 to 25 at a time).

Once assigned a project, the SPO must assemble a technical panel of subject matter experts for the given research area. The appointed panel provides technical guidance and counsel throughout the life of a project. Each project panel has the responsibility for developing the project's objectives, selecting the researcher, monitoring and guiding project output, and reviewing and approving the final research report. While panel size varies depending on the expertise required by the project, each panel includes at least six to eight voting members.

The panel drives the technical direction and conduct of the research project. The credibility of ACRP research findings and recommendations will be based, to a great degree, on the program's ability to reach consensus among technical professionals through the ACRP advisory panel system. Supporting the panels throughout the process, SPOs serve as the secretariat for panel meetings and act as technical coordinators, meeting facilitators, and full-time project managers.

### 2.1 TECHNICAL PANEL SELECTION

SPOs select panel members by reaching out to a wide variety of people and organizations having the desired expertise. Panels include individuals from airports; Federal, State, and local government agencies; universities; national associations; institutions with related interests; consultant firms; industry; and other agencies. Various sectors of the airport industry might be included: for example, an airport executive, a maintenance manager, an information systems manager, a computer vendor, a government official, a member of the AOC, and a university researcher might serve together on a panel. Where possible, the person primarily responsible for preparing the original project statement will be included as a panel member because the insight of potential users of the research is vital to the successful implementation of the final products.

The panels also have non-voting liaison members from the staffs of the FAA and the TRB to provide lines of communication with those organizations about ongoing and completed research. In this way, ACRP can address pertinent needs without duplicating existing efforts. Liaison members participate fully in all panel deliberations but do not vote on issues before the panel.

SPOs solicit nominations for panel membership for each new round of projects. In addition, SPOs supplement nominations by networking with FAA staff and industry contacts to form panels that meet strict National Research Council requirements for subject matter knowledge; balance; and gender, ethnic, and geographical diversity. In developing panels, TRB makes great effort to avoid conflicts of interest. Because it is rarely possible to secure panel members with the required knowledge and judgment who are completely devoid of technical bias, the SPO pays particular attention to maintaining a balance of such biases. Further, panel members are appointed as individuals possessing expertise in specialized areas and not as representatives of the organizations by which they are employed. Emphasis is also placed on considering women and minorities for panel membership as a means of increasing opportunities for participation by these traditionally under-represented groups.

After compiling a list of appropriate and willing panelists, the SPO submits the proposed panel membership list to the National Research Council for approval, according to standard TRB procedures. If the panelists are acceptable, the TRB Executive Director confirms the panel appointments.

Project panelists are appointed for the duration of individual projects and are expected to provide technical guidance and counsel throughout the research and reporting phases. As in other TRB activities, ACRP project panel members serve voluntarily without compensation and cannot act as individual consultants or advisors to the researchers. Also, as a condition for accepting appointment to a panel, members cannot submit proposals on research projects under their jurisdiction.

The ACRP MOA identifies the following specific responsibilities of project panels:

- Developing project objectives and an estimate of the total cost and time to achieve the objectives,
- Drafting definitive statements of scope and requests for proposals,
- Reviewing proposals submitted by research agencies and making decisions about selection of research agencies,
- Reviewing the progress of research,
- Providing counsel and advice to researchers about technical aspects of projects,
- Reviewing and evaluating project reports as to the accomplishment of objectives and suitability for publication, and
- Making recommendations to the AOC about the need for continuation of projects included in prior fiscal year programs.

## 2.2 DEVELOPMENT OF REQUEST FOR PROPOSALS

After project panels are formed, the first panel meeting takes place, marking the start of the project. Held in Washington, DC, at the National Academies, the initial panel meeting lasts for 2 days. At this meeting, the panel reviews and refines the problem statement originally selected by the AOC. The technical panel also modifies the scope of research according to members' collective practical experience in the field being studied.

The first major task of each project panel is to translate its assigned problem statement into a fully detailed project statement or RFP that will be used to solicit proposals from the research community. Project statements include (1) a statement of the background on the problem and associated needs; (2) a statement of the research desired to satisfy the needs, including a clear and specific statement of the objectives to be met; and (3) statements of the funds available for the agreement, the project's performance period, and the deadline for proposal submission. The project statements also can provide policy and procedural guidance and general information.

The TRB distributes project statements using an e-mail list that includes individual researchers, private and public research institutions, transportation study centers, university researchers, and consulting firms. In coordination with the FAA, SPOs will continue to expand the existing RFP mailing list for a broad distribution of the project statements to the airport-research community. The current mailing list includes contacts at traditionally black colleges and women- and minority-owned firms. Anyone who requests to be added to the list will be included. Special efforts have been made, particularly in the early years of ACRP, to ensure that opportunities for participation are well known to all potential researchers.

## 2.3 SELECTION OF RESEARCHERS

The TRB uses the same process for selecting ACRP researchers that it has used in managing the NCHRP for more than 40 years and the TCRP for more than 14 years. This open process allows all potential research agencies to compete on the basis of technical merit, ensures that all proposers are treated fairly, and provides the program with access to the best talent available for each project. The TRB continues to expand its researcher base by identifying additional Disadvantaged Business Enterprises (DBEs) that might be interested in participating and adding them to the ACRP e-mail list for RFP notification.

ACRP SPOs maintain a web-based brochure, "Information and Instructions for Preparing Proposals," to assist proposing organizations. SPOs are available to discuss the specifics of each research project and the instructions for preparing proposals but will not generally schedule pre-proposal briefing meetings for proposing organizations. Proposers are allowed at least 45 days to respond to the project statements.

When evaluating proposals submitted to the TRB in response to an RFP, the ACRP staff and project panels consider the following factors:

- The proposer's demonstrated understanding of the problem;
- The merit of the proposed research approach and experiment design;
- The experience, qualifications, and objectivity of the research team in the same or closely related areas;
- The plan for promoting application of results;
- The proposer's plan for participation by DBEs—small firms owned and controlled by minorities or women; and
- The adequacy of the research facilities.

The project statement specifies the level of available funding, and the proposers submit responses outlining their technical plans for spending these funds to complete the project. The project panel evaluates proposals entirely on the basis of technical merit and the probability of success, an approach that is well received by panel members and proposing researchers.

Upon receipt of proposals, SPOs review them for completeness and conformity to TRB standard requirements. Proposals received after the submission deadline are rejected without further review. Accepted proposals are then forwarded to the appropriate panels for evaluation within 1 week. At the same time, submitters of any rejected proposals are informed of the reasons for their rejection.

The technical panel selects the researcher at the second panel meeting, held at least 25 days after the panel has received the proposals. Prior to the meeting, the panel is instructed to (1) evaluate and rate each proposal in accordance with the criteria discussed at the first meeting, and (2) be prepared to discuss the strengths and weaknesses of each proposal. A panel's first and second (contingency backup) choice for contract award requires a two-thirds consensus and is based on technical merit. The panel's specific reasons for selection are fully documented. Strict confidentiality is applied to all panel deliberations.

## 2.4 EXECUTION OF RESEARCH CONTRACTS

Research contract negotiations begin when the first-choice proposer receives notification of the project panel's decision. At this stage, the project's SPO must (1) notify the first-choice organization of its tentative selection, (2) provide the necessary documentation for the organization to complete the contracting procedure, and (3) request that the National Academies' Office of Contracts and Grants begins a pre-contract financial investigation. Each selected organization must provide documentation to support its proposed indirect cost rates and forward information about its travel policy and salary and wage schedules. The notification to the first-choice proposer also refers the selected organization to an online *Procedural Manual for Agencies Conducting Research in the ACRP,* which provides detailed guidance on policy and procedural matters.

ACRP SPOs must also notify unsuccessful (including the second-choice) proposers of the results of the second project panel meeting and debrief these organizations upon request. The oral debriefings indicate the technical areas in which specific proposals were judged to be weak or deficient and how the weaknesses or deficiencies resulted in their not having been selected. The SPO disposes of the unsuccessful proposals in accordance with the National Academies policy.

Table 5 includes a sample schedule for Phase 2.

**Table 5: Sample Phase 2 Schedule**

| Time | Event |
|---|---|
| Week 26 | SPOs solicit panel nominations |
| Week 40 | Project panels meet to write project statements (RFPs) |
| Week 41 | TRB Issues RFPs |
| Week 48 | Proposals due |
| Week 54 | Project panels meet to select researchers |
| Week 60 | Contracts are executed with selected agencies |
| **Total Time: approximately 34 weeks** | |

## Phase 3 – Project Management

Research officially begins when the TRB and the research contractor finalize their contract. The project panel and SPO then start the process of monitoring the administrative and technical progress of the project. Drawing on the contents of the approved proposal and working plan, the SPO maintains a close but unobtrusive watch over the researcher's activities to ensure conformance with contractual obligations.

The main elements of this phase include—

- 3.1 Monitoring research progress,
- 3.2 Reviewing / approving research deliverables, and
- 3.3 Closing out the research contract.

### 3.1 MONITORING RESEARCH PROGRESS

The project panel maintains control over the research process during execution of the study. Initially, the panel reviews and approves the researcher's detailed working plan. This revised research plan is created upon contract execution and contains a detailed update of the plan included in the researcher's original proposal. Its purpose is to assist the panel and SPO in monitoring activities.

The panel receives copies of quarterly reports directly from the researcher and is encouraged to comment on them. The researcher is required to respond in writing to the panel's comments; correspondence, both to and from the researcher, must pass through the responsible SPO. Panel approval is required for any changes in the conduct of the research plan, any change in principal investigators, and any interim reports required in the work plan.

The project's SPO usually meets with each researcher at least once a year. Between site visits, the TRB maintains frequent telephone and mail/e-mail contact with the principal investigators. SPOs regularly check researcher invoices to ensure use of project funds is consistent with the approved plan. Researchers are required to budget for two trips to Washington, DC, to discuss research progress.

Usually an initial site visit is made soon after panel approval of the project's working plan. At this visit, the SPO provides all liaison actions necessary to maintain the project panel's awareness of research progress and to acquire panel guidance and counsel in technical matters. SPOs work with panel chairs to coordinate all panel actions (e.g., additional meetings or mail ballots) that may be necessary for major changes to adjust for promising new leads or unproductive lines of study, interim or final report reviews, and related activities.

SPOs are responsible for producing quarterly progress reports to the AOC and the FAA. In addition to keeping project status reports up to date on the ACRP website, the TRB prepares annual reports to discuss ACRP progress in general and the status of each project. Annual reports include a narrative on the overall operation of the ACRP, a summary table of projects and their status, a list of ACRP publications, and brief summaries of all ACRP projects. The annual report is submitted before February 15th of each year. SPOs are available, at the request of the FAA, to make presentations to selected audiences summarizing ACRP activities and progress.

## 3.2 REVIEWING RESEARCH DELIVERABLES

All ACRP projects conclude with a final report prepared by the researcher. The ACRP contracts require submission of preliminary drafts documenting the research effort. Panels review draft final reports to assess fulfillment of objectives, adequacy of documentation, and clarity of presentation. Each panel member is asked to recommend publication or non-publication of the research report on a form accompanying the draft final reports. The project SPO reviews each report at the same time it is undergoing panel review and summarizes and transmits all reviewer comments to the principal investigator. Based on reviews by panel and SPO, decisions are made concerning publication in the report series. On receipt of the revised final report, the SPO performs a review to determine compliance with panel recommendations and then forwards the revised report and researcher's point-by-point response to the panel.

## 3.3 CLOSING OUT RESEARCH CONTRACTS

After receipt of each project final report, the close-out of the project contract begins. The TRB begins by obtaining and evaluating the researcher's inventory of data and equipment. Generally, National Academies' policy requires researchers to retain data for 3 years, following which the researchers can notify the National Academies of their intent to destroy the data unless otherwise directed. Capital equipment purchased or fabricated by researchers using project funds is retained by the researchers until the National Academies determines its disposition. If a decision is made that the equipment is to be sold rather than delivered for further use in ACRP, the researchers credit its fair and reasonable price to ACRP. SPOs are also responsible for notifying the National Academies and the FAA of the status of the close-out activities and disbanding the technical panels.

Table 6 provides a sample schedule for Phase 3.

**Table 6: Sample Phase 3 Schedule**

| Time | Event |
|---|---|
| Week 60 | Research begins |
| Week 61 | Site visit by ACRP staff |
| Week 63 | Technical Panel Reviews / approves working plan |
| Monthly | Researcher submits progress reports |
| Quarterly | Researcher submits progress reports |
| Month 20 | Researcher submits final report |
| Month 22 | Panel reviews / approves final report |
| Month 24 | TRB closes out contract |
| **Total Time: approximately 24 months** | |

## Special Projects

The general ACRP research process described thus far refers primarily to standard projects (areas 1 through 10). However, there often arises an airport need that requires other research methods available through ACRP special projects research (area 11). In order to conduct special projects research, the AOC appoints specific panels comprised of subject matter experts for a given topic area.

To begin special projects research in ACRP, the AOC assigns a funding level to one of the designated ACRP special project areas. The respective panel is then entrusted with selecting the specific projects within that area. Such is the case with the legal studies (11-01) and synthesis studies (11-03) programs. On occasion, the AOC will recommend that a specific topic be studied as a legal studies or synthesis project, in which case the respective panel will further refine the scope of work.

Conversely, the AOC may designate that certain funds be placed in the ACRP quick-response area (11-02), which acts as a reserve account that can only be utilized on an ad-hoc basis by the AOC to study urgent airport needs. Quick-response projects are only initiated if an urgent need is discovered between AOC meetings. The AOC can increase, decrease, or reallocate funds within the 11-02 account to other areas of the ACRP research portfolio at the discretion of the AOC members.

## Research Completion: Publishing and Disseminating Products

Research results are of little value if they are not disseminated. Therefore, it is the normal practice of the TRB to make every reasonable attempt to publish and widely distribute the reports submitted for each project. The TRB encourages researchers to write clear and succinct reports that make it easy for readers to determine their applicability to daily airport operations. More technical details are included as appendices in each report.

Rights to publish and distribute project reports, digests, technical articles, computer software, slides, and audiovisual aids for presenting research findings are reserved by the National Academies and FAA, and are exercised according to its policy for broad dissemination of all publications and ancillary materials through the TRB, the FAA, and other appropriate distribution processes. Permission to use copyrighted materials that are to be included in ACRP research reports must be obtained by the ACRP contractor in writing from both the author and the publisher. Documents granting permission must be transmitted to the ACRP where they become part of the permanent file on the particular report. Researchers may not copyright or cause or permit to be copyrighted any article, data, written materials, computer software, or other information prepared under an ACRP contract, whether published directly or by others, in book form or in a scientific or technical journal. Material contained in interim or final reports that have been reviewed by ACRP may be published by the researcher, provided that credit is given to the individuals and organizations that conducted and sponsored the work.

## PROMOTING APPLICATION OF RESEARCH RESULTS

The success of an applied research program should be measured by the benefits derived from applying the results. ACRP puts a strong emphasis on the delivery of results to potential users. During the early stages of ACRP, the AOC and TRB staff are working on strategies for ensuring that ACRP products are disseminated to the right people in a timely manner.

Prior to publication, extra measures are taken to ensure that useful research results are made immediately available to target audiences. After publication, each report is distributed widely through the TRB's and selected airport associations' distribution systems. Copies go automatically to approximately 100 libraries, more than 150 university-liaison representatives, appropriate TRB panels and committees, and individual TRB members who have signed up to receive publications in the particular subject area of the report. As a further means of disseminating the research reports, announcements of their availability go to airport industry press. FAA and airport-association staffs automatically receive a copy of each published report. Every ACRP publication is posted in full text, free of charge on the ACRP website.

Selected groups receive mailings outlining specific research results in their areas of operations, but there may be segments of the airport industry that are not easily reached by the current system, and the need to further expand the distribution process is constantly considered. The AOC may decide to authorize an ACRP study to systematically evaluate distribution options and develop a plan for promoting application of ACRP research results.

## TYPES OF ACRP RESEARCH PRODUCTS

There are advantages to customizing research approaches to fit the nature of the problem to be solved. So the results are suitable, the ACRP makes use of seven different types of research formats. "Standard" projects require original research to be performed, while all other projects are characterized as "special," and generally involve the collection of existing data.

- Standard research projects,
- Synthesis studies,
- Legal studies,
- Continuation studies,
- Quick-response projects,
- Workshops on research results, and
- Graduate research award projects.

## STANDARD RESEARCH PROJECTS

The form of research described throughout this chapter has been that of a standard research project. These types of projects tend to be complex and require a budget of more than $300,000 and 18 to 24 months to accomplish the stated objective. The other project formats vary from this standard format in one way or another.

## SYNTHESIS STUDIES

Reports on the state of the practice in critical areas are an important part of a well-rounded research program. Synthesis studies examine what airports have done about specific problems and the findings are collected into a readable, useful form for the practicing professional. Given the decentralized nature of the airport industry, where hundreds of airports face many similar problems, transferring information on practical experiences can be extremely valuable.

Syntheses reports present case studies, based on an extensive examination of current and recent activity on the topic, and often include results of surveys of practitioners. Synthesis studies produced by ACRP strive to inform airport managers about innovations that are being used by others to solve problems. In this manner, a broad implementation of successful innovation can be achieved by effectively communicating the current state of practice for a given topic.

General funding amounts are determined by the AOC, although specific synthesis study topics are selected by a panel appointed to oversee this portion of the program.

## LEGAL STUDIES

Legal research has proven to be an important area of research in the NCHRP and the TCRP, so a vehicle for legal studies has been included in ACRP. Problems in transportation law are so specific that general solicitations for research needs are not effective and a special mechanism is used to generate legal research problem statements. An ACRP legal panel, composed of experts in airport law, reviews these legal issues and recommends problems to be researched. The need for legal studies continues from year to year, and the emphasis areas will be determined by the ACRP panel on a periodic basis. These emphasis areas will change over time, depending on conditions in the airport industry. Legal studies have proved to be highly cost-effective in producing timely information on legal findings, conclusions, and precedent-setting cases.

## CONTINUATION STUDIES

Some research projects may take 2 years or more to complete. During the course of some projects, the ACRP panel may identify an expanded scope of work that requires additional funding. Each annual program may include funds for projects that started in an earlier year and have a need to continue. The AOC decides the amount of funding to be allocated to continuation projects as a regular part of the annual programming and funding process.

## QUICK-RESPONSE PROJECTS

Research is needed for problems that demand a near-term response. Such studies are of short duration with concentrated levels of effort. The flexibility to perform such research is an important asset for ACRP. The normal process for cooperative research requires lead time to define the scope of work, solicit proposals, and select the researcher. On the other hand, rapid-response studies can complement research that is undertaken through this normal process.

The use of "quick response" funds, as designated by the AOC, is tightly controlled through rules about who can apply for their use and how they can be used. Typically, the funds are spent for limited-scope research tasks that require a quick turnaround, and they often have smaller budgets than standard research topics.

For each ACRP quick-response task, an informal working group is formed to develop the final scope, determine the appropriate mechanism to procure the needed technical assistance (this mechanism can include sole source, limited solicitation, or fully open solicitation), select the research agency based on the procurement process used, and review task deliverables.

Quick-response studies may provide a more timely response to new or emerging regulatory requirements or may produce answers to a problem where help is needed urgently. Such studies may be carried out in collaboration with committees of airport-related associations or other organizations to enable groups of volunteers to accomplish more than they could accomplish without the help of paid consultants.

## WORKSHOP ON RESEARCH RESULTS

This type of project functions as a means to quickly coordinate a meeting between airport stakeholders to discuss various pressing aviation issues affecting airports. Outcomes of this type of effort serve to clarify roles, stimulate discussion of issues of mutual interest, and to identify further coordination activities that are needed.

## GRADUATE RESEARCH AWARD PROGRAM

The ACRP Graduate Research Award Program on Public-Sector Aviation Issues presents an opportunity to encourage enterprising graduate students with the ability to study various airport-related problems. The program extends relatively small amounts of research funds along with close supervision by specially selected board members to mentor these students. Annual funds set aside to support these innovations not only offer alternative and new approaches to

solving transportation problems, but simultaneously increase the interest of successful graduate students in pursuing careers in aviation.

# Chapter 5: ACRP Progress

From the start of the program, ACRP activities have been directed toward building a well-rounded research portfolio and achieving a steady-state operational level. In the 2 years that ACRP has been operating, over $24 million in program funds have been invested directly in 94 independent projects.

Table 7 shows ACRP's operational milestones.

**Table 7: ACRP Operational Progress**

| Date | Event |
|---|---|
| September 2004 | TRB solicitation for research needs |
| December 2004 | 120+ ACRP problem statements received |
| October 2005 | $3 million appropriated for FY 2005 and $10 million for FY 2006 |
| January 2006 | First meeting of the AOC, 29 research projects initiated |
| July 2006 | Second AOC meeting, 26 research projects initiated |
| January 2007 | Third AOC meeting, 12 research projects initiated |
| July 2007 | Fourth AOC meeting, 27 research projects initiated |

## The Fiscal Year (FY) 2005/2006 Research Program

In order to collect enough problem statements for the first AOC meeting, TRB staff, in 2004, solicited research problems from a broad group of individuals interested in airport operations. Because relatively little coordinated research has been performed on topics initiated by airport operators prior to the creation of ACRP, there was a substantial backlog of important problems that needed to be solved.

The solicitation effort by TRB generated much interest in the program and more than 100 problem statements by the time the AOC had its first meeting in January 2006. As Table 8 shows, the AOC allocated more than $7 million at its first meeting to initiate over 29 research projects.

**Table 8: First AOC Meeting, January 2006 – FY 2005/2006 Research Program**

| Project Number | Title | Allocation ($) |
|---|---|---|
| 1-01 | Guidebook for Managing Small Airports | $400,000 |
| 2-01 | Alternative Aircraft and Airfield Deicing and Anti-Icing Formulations with Reduced Aquatic Toxicity and Biological Oxygen Demand | $600,000 |
| 2-02 | Managing Runoff from Aircraft and Airfield Deicing and Anti-Icing Operations | $300,000 |
| 2-03 | Airport-Related Hazardous Air Pollutants Analysis | $600,000 |
| 2-04 | Research Needs Associated with Particulate Emissions at Airports | $100,000 |
| 3-01 | Light Detection and Ranging (LIDAR) Deployment Standard for Airport Obstruction Surveys | $350,000 |
| 3-02 | U.S. Airport Passenger-Related Processing Rates | $200,000 |
| 3-03 | Enhancing Airport Land Use Compatibility | $500,000 |
| 3-04 | Guidebook for Airport-User Survey Methodology | $250,000 |
| 4-01 | Aircraft Overrun and Undershoot Analysis for Runway Safety Areas | $250,000 |
| 4-02 | Lightning-Warning Systems for Use by Airports | $200,000 |
| 5-01 | Guidance for Developing Regionally Coordinated Airport Emergency Plans for CBRNE Events | $250,000 |
| 7-01 | New Concepts for Airport Terminal Landside Facilities | $400,000 |
| 7-02 | Airport Curbside and Terminal-Area Roadway Operations | $400,000 |
| 9-01 | Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management | $350,000 |
| 10-01 | Optimizing the Use of Aircraft Deicing and Anti-Icing Fluids | $300,000 |
| 10-02 | Planning Guide for Offsite Terminals | $350,000 |
| 11 | Special Projects Program | $1,290,000 |
| **Total Allocation for First AOC Meeting, FY 2005/2006** | | **$7,090,000** |

The projects selected at the first AOC meeting consisted of both “standard” and “special” research projects. Table 9 lists the special projects selected and associated funds allocated at the first AOC meeting.

## Table 9: First AOC Meeting – Itemized Special Projects

| Project Number | Title | Allocation ($) |
|---|---|---|
| | | |
| **PROJECT 11-01: Legal Aspects of Airport Programs** | | |
| | No specific projects chosen. Funds provided to ACRP Legal Panel for distribution. | $200,000 |
| **Total Legal Program** | | **$200,000** |
| | | |
| **PROJECT 11-02: Quick Response for Special Needs** | | |
| 11-02 / Task 1 | Model for Improving Energy Use in U.S. Airport Facilities | $100,000 |
| 11-02 / Task 2 | Airport Ground Access: Updating and Building Upon the Work of TCRP Reports 62 and 83 | $100,000 |
| 11-02 / Task 3 | Improving Stabilization and Use of Aircraft Evacuation Slides at Airports | $100,000 |
| | *Funds remaining for future urgent requests* | $290,000 |
| **Total Quick Response Program** | | **$590,000** |
| | | |
| **PROJECT 11-03: Synthesis of Information Related to Airport Problems** | | |
| | No specific projects chosen. Funds provided to ACRP Synthesis Panel for distribution | $500,000 |
| **Total Synthesis Program** | | **$500,000** |
| | | |
| **Total Itemized Special Projects** | | **$1,290,000** |

The allocation of funds to the three special projects areas required TRB to initiate the process of forming the respective panels of experts for the synthesis and legal studies programs.

At the first Synthesis Panel meeting in May 2006, panelists selected a total of 5 projects to receive the funds provided during the first AOC meeting. Two of the projects were designated as "fast-track" products in order for the program to have valuable research products while the longer-term standard projects were being investigated. A "fast-track" designation in ACRP simply refers to a project having a priority placement in TRB's administrative processes, such as contracting and editing. Table 10 lists the projects selected at the first Synthesis Panel meeting.

**Table 10: First Synthesis Panel Meeting, May 2006**

| Project Number | Title | Allocation ($) |
|---|---|---|
| 11-03 / S01-01 (Fast-Track) | Synthesis 1 – Innovative Finance and Alternative Sources of Revenue for Airports | $100,000 |
| 11-03 / S03-01 (Fast-Track) | Synthesis 2 – Aviation Forecasting Methodologies | $100,000 |
| 11-03 / S03-02 | Synthesis 5 – Airport Ground Access/Egress Mode Choice Models | $100,000 |
| 11-03 / S04-01 | Synthesis 3 – General Aviation Safety and Security Practices | $100,000 |
| 11-03 / S10-01 | Synthesis 4 – Counting Aircraft Traffic Operations at Small and Non-Towered Airports | $100,000 |
| **Total Synthesis Panel Distribution** | | **$500,000** |

The Legal Studies Panel met in June 2006. At this first meeting, the panel of legal experts selected nine projects and funded the three most pressing legal issues first. The remaining projects were developed and managed with the remaining legal funds but required future funding from the AOC to become fully operational. Table 11 lists the projects selected by the first Legal Studies Panel.

**Table 11: First Legal Panel Meeting, June 2006**

| Project Number | Title | Allocation ($) |
|---|---|---|
| 11-01 / Topic 1 | Compilation of Digest - Parts 13 and 16 Determinations and Related Documents | $90,000 |
| 11-01 / Topic 2 | Theory and Law of Airport Revenue Diversion | $40,000 |
| 11-01 / Topic 3 | Compilation / List of Airport Law Resources | $18,000 |
| 11-01 / Topic 4 | Survey of Airport Laws and Regulation of Commercial Ground Transportation | AOC Funding Requested |
| 11-01 / Topic 5 | Responsibilities for Implementation and Enforcement of Airport Land-Use Zoning Restrictions | AOC Funding Requested |
| 11-01 / Topic 6 | Who is the Owner or Operator for Purposes of the Right to Self-Fuel? | AOC Funding Requested |
| 11-01 / Topic 7 | The Impact of Airline Bankruptcies on Airports | AOC Funding Requested |
| 11-01 / Topic 8 | The Law and Regulation of Airport Ownership | AOC Funding Requested |
| 11-01 / Topic 9 | Survey of Elements of Disparity Studies for Airport Disadvantaged Business Enterprise Programs | AOC Funding Requested |
| | *Remaining for program management and development of other topics* | $52,000 |
| **Total Legal Panel Distribution** | | **$200,000** |

Table 12 provides a summary of the progress made in ACRP's first research cycle.

**Table 12: Summary of ACRP Progress – First AOC Meeting**

| | |
|---|---|
| Performance Period: | September 26, 2005 – January 31, 2006 |
| Funding: | FY 2005 $3.0 million<br>FY 2006 $10.0 million |
| Studies Authorized at Meeting: | 29 (17 full projects, 3 legal studies, 3 quick-response studies, and 5 synthesis projects) |
| Problem Statements Considered: | 118 (representing over $140 million in research requests) |

## The FY 2007 Research Program

The research cycle observed by ACRP in FY 2005/2006 provided a template for subsequent years. An AOC meeting is held each summer and winter, and the appropriate panel convenes to select specific topics for study for any funded special projects.

Two AOC meetings were conducted for the FY 2007 research program in July 2006 and January 2007. Because of the timing of the Federal budgeting process, the summer AOC meeting operated under the assumption that the full requested FAA appropriation for the coming fiscal year would be available. The summer meeting, therefore, served as the "primary" meeting of the year; whatever funds the AOC chose not to allocate then would be available for the winter meeting. For the July 2006 meeting, remaining funds from the FY 2005/2006 budget ($2.5295 million) and initial FY 2007 funds ($4.8455 million) determined the baseline amount of available funds of $7.375 million. Table 13 lists the projects selected by the AOC at that meeting.

**Table 13: Second AOC Meeting, July 2006 – Initial FY 2007 Research Program**

| Project Number | Title | Allocation ($) |
|---|---|---|
| 1-02 | Contract Award and Management-Best Practices for Airport Operators | $300,000 |
| 1-03 | Software Solutions for Airport Management Budget and Reconciliation Tools | $300,000 |
| 2-04A | Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions at Airports | $350,000 |
| 2-05 | Primer for Airport Managers on Community Attitudes to Aircraft Noise | $500,000 |
| 3-05 | Airport Passenger Movement and Queuing Behavior Analysis | $400,000 |
| 3-06 | Guidebook for Planning Automated People Mover Systems at Airports | $500,000 |
| 3-07 | Performance Measures for Automated People Mover Systems at Airports | $300,000 |
| 3-08 | Use of Incentives, Guarantees, and Subsidies for Air Carrier Service at Small Airports | $300,000 |
| 3-09 | Guide for Developing Airport Strategic Plans and a Portfolio of Strategic Plans for U.S. Airport Operators for an Uncertain Future | $425,000 |
| 4-03 | Runway End Approach Lighting Structure Hazard-Mitigation Analysis | $300,000 |
| 4-04 | Simulation-Based Training and Exercise of Civil Aviation Emergency Response Personnel | $500,000 |
| 4-05 | A Guidebook for Developing Airport Safety Management Systems | $300,000 |
| 7-03 | Developing Improved Civil Aircraft Arresting Systems | $500,000 |
| 7-04 | Use of Computer Tools for Airport Terminal Design | $400,000 |
| 7-05 | Updated Terminal Design Guidelines | $400,000 |
| 10-03 | Guide to Evaluating Parking Concepts and Technologies at Airports | $300,000 |
| 10-04 | Potential Impacts of Very Light Jets on U.S. Airports | $250,000 |
| 11 | Special Projects Program | $1,050,000 |
| **Total Allocation for Second AOC Meeting, FY 2007** | | **$7,375,000** |

The second AOC meeting provided funds for all three special project areas. In particular, three legal topics previously chosen by the legal panel were funded, two quick-response projects were identified and funded, and the synthesis panel received funding for an additional five projects (Table 14).

## Table 14: Second AOC Meeting – Itemized Special Projects

| Project Number | Title | Allocation ($) |
|---|---|---|
| | | |
| **PROJECT 11-01: Legal Aspects of Airport Programs** | | |
| 11-01 / Topic 4 | Survey of Airport Laws and Regulation of Commercial Ground Transportation | $25,000 |
| 11-01 / Topic 5 | Responsibilities for Implementation and Enforcement of Airport Land-Use Zoning Restrictions | $28,000 |
| 11-01 / Topic 6 | Who is the owner or Operator for Purposes of the Right to Self-Fuel? | $42,000 |
| | *Remaining for program management and development of other topics* | $105,000 |
| **Total Legal Program** | | **$200,000** |
| | | |
| **PROJECT 11-02: Quick Response for Special Needs** | | |
| 11-02 / Task 4 | Overview of Safety Management Systems for Airports | $100,000 |
| 11-02 / Task 5 | Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs | $100,000 |
| | *Funds remaining for future urgent requests* | $150,000 |
| **Total Quick Response Program** | | **$350,000** |
| | | |
| **PROJECT 11-03: Synthesis of Information Related to Airport Problems** | | |
| | No specific projects chosen. Funds provided to ACRP Synthesis Panel for distribution | $500,000 |
| **Total Synthesis Program** | | **$500,000** |
| | | |
| **Total Itemized Special Projects** | | **$1,050,000** |

The second Synthesis Panel convened shortly after the AOC meeting to select specific topic areas for study. The panel identified six projects in total (Table 15). However, given that synthesis projects cost approximately $100,000 to complete, there was only enough funding for five of the projects. The panel prioritized the projects and funded the top five, keeping the sixth project as an alternate to be funded when more funds were made available. The panel sent a specific funding request for the alternate synthesis project to AOC members for consideration at the next meeting (third AOC meeting).

## Table 15: Second Synthesis Panel Meeting, November 2006

| Project Number | Title | Allocation ($) |
|---|---|---|
| 11-03 / S02-01 | Effects of Aircraft Noise | $100,000 |
| 11-03 / S02-02 | Sustainable Facilities and Practices | $100,000 |
| 11-03 / S03-03 | Airport Economic Impact Methods and Models | $100,000 |
| 11-03 / S10-02 | Common Use Facilities and Practices | $100,000 |
| 11-03 / S10-03 | Airport Pavement Deicing Products, Use and Corrosion Damage | $100,000 |
| 11-03 / S09-01 | Rubber Removal Techniques to Minimize Damage on Grooved Runways | AOC Funding Requested |
| **Total Synthesis Panel Distribution** | | **$500,000** |

One year after AOC's first meeting, most ACRP research projects were well under way and showing signs of progress (Table 16). Two of the fast-tracked synthesis projects had been completed and were in the process of publishing findings. All other projects selected at the first AOC meeting were in the active research phase of the research cycle (Phase 3), and many of the projects selected at the second AOC meeting were well into their project development phase (Phase 2).

**Table 16: Summary of ACRP Progress – Second AOC Meeting**

| | |
|---|---|
| Performance Period: | February 1, 2006 – July 31, 2006 |
| Funding: | FY 2007: $10 million |
| Studies Authorized at Meeting: | 26 (17 full projects, 3 legal studies, 2 quick-response studies, and 5 synthesis projects) |
| Studies Authorized To Date: | 55 (34 full projects, 6 legal studies, 5 quick-response studies, and 10 synthesis projects) |
| Studies in Progress: | 28 (16 full projects, 3 legal studies, 4 quick-response studies, and 5 synthesis projects) |
| Number of Panel Slots (Active Projects): | 121 |
| Panel Meetings: | 19 |
| Problem Statements Considered: | 135 (representing over $49.5 million in research requests)<br>– 63 from FY 2005/2006 ($22.2 million)<br>– 68 new submissions ($26.1 million)<br>– 4 continuation requests from panels ($1.2 million) |

It was discovered during the development phase of two project selections that an additional level of effort (and subsequent additional funds) was required to fully accomplish the original objectives of the AOC. The respective project panels sent "continuation" request to the AOC for additional funds for these projects. The AOC considered those requests, as well as other problem statements, at their third meeting in January 2007. A total of $2,842,000 was allocated at the third meeting, resulting in the initiation of 11 projects (Table 17).

**Table 17: Third AOC Meeting, January 2007 – Remaining FY 2007 Research Program**

| Project Number | Title | Allocation ($) |
|---|---|---|
| | | |
| **NEW PROJECTS** | | |
| 01-04 | Marketing Techniques for Small Airports | $200,000 |
| 01-05 | Guidebook for Airport Capital Project Delivery Systems | $100,000 |
| 02-06 | Airport Implications of Climate Change Issues | $200,000 |
| 02-07 | Evaluation of Airport Benefit/Cost Potential for Alternative Aviation Fuels | $500,000 |
| 03-10 | Innovative Approaches to Addressing Aviation Capacity Issues in Coastal Mega-Regions | $300,000 |
| 06-01 | Human Factors in Recovering from Airport Disasters/Disruptions | $300,000 |
| 11 | Special Projects Program | $892,000 |
| **Total New Projects** | | **$2,492,000** |
| | | |
| **CONTINUATIONS** | | |
| 01-02 | Guidebook for Developing and Managing Airport Contracts | $100,000 |
| 10-04 | Potential Impacts of Very Light Jets on U.S. Airports | $250,000 |
| **Total Continuations** | | **$350,000** |
| | | |
| **Total Allocation for Third AOC Meeting, FY 2007** | | **$2,842,000** |

As in previous meetings, funding was allocated to all three special project areas (Table 18). Funds to the ACRP Legal Panel allowed for the full development of Topics 7 through 9. In addition, the AOC identified one quick-response project and one synthesis project for initiation and agreed to the Synthesis Panel's request to fund the previously identified alternate project.

## Table 18: Third AOC Meeting – Itemized Special Projects

| Project Number | Title | Allocation ($) |
|---|---|---|
| | | |
| **PROJECT 11-01: Legal Aspects of Airport Programs** | | |
| 11-01 / Topic 7 | The Impact of Airline Bankruptcies on Airports | $45,000 |
| 11-01 / Topic 8 | The Law and Regulation of Airport Ownership | $40,000 |
| 11-01 / Topic 9 | Survey of Elements of Disparity Studies for Airport Disadvantaged Business Enterprise Programs | $59,000 |
| | *Remaining for program management and development of other topics* | $131,000 |
| **Total Legal Program** | | **$275,000** |
| | | |
| **PROJECT 11-02: Quick Response for Special Needs** | | |
| 11-02/ Task 6 | Interagency Collaboration Workshop on the National Pandemic Plan for Airports and Airlines | $100,000 |
| | *Funds remaining for future urgent requests* | $317,000 |
| **Total Quick Response Program** | | **$417,000** |
| | | |
| **PROJECT 11-03: Synthesis of Information Related to Airport Problems** | | |
| 11-03 / S04-02 | Winter Operations Equipment and Procedures | $100,000 |
| 11-03 / S09-01 | Rubber Removal Techniques to Minimize Damage on Grooved Runways | $100,000 |
| **Total Synthesis Program** | | **$200,000** |
| | | |
| **Total Itemized Special Projects** | | **$892,000** |

A summary of ACRP progress made by the third AOC meeting is shown in Table 19.

**Table 19: Summary of ACRP Progress – Third AOC Meeting**

| | |
|---|---|
| Performance Period: | August 1, 2006 – January 31, 2007 |
| Funding: | FY 2007: $2.242 million remaining |
| Studies Authorized at Meeting: | 12 (6 full projects, 3 legal studies, 1 quick-response studies, and 2 synthesis projects) |
| Studies Authorized To Date: | 67 (40 full projects, 9 legal studies, 6 quick-response studies, and 12 synthesis projects) |
| Studies in Progress: | 28 (16 full projects, 3 legal studies, 4 quick-response studies, and 5 synthesis projects) |
| Number of Panel Slots (Active Projects): | 223 |
| Panel Meetings: | 35 for the period, or 54 since program start-up |
| Problem Statements Considered: | 18 (representing $5.06 million in research requests)<br>– 14 new submissions ($4.33 million)<br>– 4 continuation requests from current panels ($.73 million) |

## FY 2008 Research Program

For FY 2008, ACRP continued to focus on high-priority needs identified by the airport community. As in previous years, the summer AOC meeting, held in July 2007, assumed that the full FAA appropriation of $10 million would be available for research programming. Table 20 lists the results of the fourth AOC meeting.

**Table 20: Fourth AOC Meeting, July 2007 – FY 2008 Research Program**

| Project Number | Title | Allocation ($) |
|---|---|---|
| | | |
| **NEW PROJECTS** | | |
| 01-06 | A Guidebook for Developing an Airport Performance-Measurement System | $400,000 |
| 01-07 | Airport-Airline Agreements and Rate Methodologies-Trends and Characteristics | $400,000 |
| 01-08 | Developing Best Management Practices-Airport Leasing Policy and Metrics for Evaluating Private Investments on Airports | $400,000 |
| 02-08 | Quantifying Contribution to Local Air Quality Impacts from Airport-Related Emissions | $600,000 |
| 02-09 | Developing a Comprehensive Work Plan for a Multi-Modal Noise and Emissions Model | $200,000 |
| 03-11 | Preservation of Public-Use Airports | $600,000 |
| 03-12 | Guidelines for Preparing Peak Period and Operational Profiles to Improve Airport Facility Planning and Environmental Analyses | $350,000 |
| 03-13 | Understanding Airspace Analysis Tools for Airport Planning | $200,000 |
| 03-14 | Airport Passenger Conveyance System Usage/Throughput | $300,000 |
| 04-06 | Analysis and Best Management Practices for the Prevention of Wildlife Strikes at Small Airports | $300,000 |
| 07-06 | Airport Signage and Wayfinding Information Guidelines | $250,000 |
| 10-05 | Improved Understanding of Common Use Facilities at Airports | $500,000 |
| 10-06 | Effects of Constrained Public and Employee Parking on Airport Access | $400,000 |
| 11 | Special Projects Program | $2,375,000 |
| **Total New Projects** | | **$7,275,000** |
| | | |
| **CONTINUATIONS** | | |
| 01-05 | Guidebook for Airport Capital Delivery Systems | $25,000 |
| **Total Continuations** | | **$25,000** |
| | | |
| **Total Allocation for the Fourth AOC Meeting, FY 2008** | | **$7,300,000** |

In addition to funding the three special projects program areas, the AOC established and funded a new, fourth area: 11-04, Graduate Research Award Program on Public-Sector Aviation Issues. The new area aimed to accomplish several objectives simultaneously, including having the ability to study small-scale problems of interest to airport operators or very focused aspects of much larger, ongoing ACRP efforts. The dual benefit of having enterprising graduate students perform this research would be providing ACRP with high-quality research results at a fraction of the costs and encourage young researchers to work in the airport industry. Table 21 provides a breakdown of the special projects selected at the fourth meeting.

## Table 21: Fourth AOC Meeting – Itemized Special Projects

| Project Number | Title | Allocation ($) |
|---|---|---|
| | | |
| **PROJECT 11-01: Legal Aspects of Airport Programs** | | |
| | No specific projects chosen. Funds provided to ACRP Legal Panel for distribution. | $300,000 |
| **Total Legal Program** | | **$300,000** |
| | | |
| **PROJECT 11-02: Quick Response for Special Needs** | | |
| 11-02 / Task 7 | Strategic Process for Developing ACRP Research Problem Statements | $100,000 |
| 11-02 / Task 8 | Enhanced Modeling of Aircraft Taxiway Noise-Scoping | $100,000 |
| 11-02 / Task 9 | Visibility of Airfield Signs and Markings from Aircraft and Ground Vehicles | $100,000 |
| 11-02 / Task 10 | Estimate of National Use of Aircraft and Airfield Deicing Materials | $100,000 |
| | *Funds remaining for future urgent requests* | $1,075,000 |
| **Total Quick Response Program** | | **$1,475,000** |
| | | |
| **PROJECT 11-03: Synthesis of Information Related to Airport Problems** | | |
| | No specific projects chosen. Funds provided to ACRP Synthesis Panel for distribution. | $500,000 |
| **Total Synthesis Program** | | **$500,000** |
| | | |
| **PROJECT 11-04: Graduate Research Award Program** | | |
| | No specific projects chosen. Funds provided to ACRP Graduate Research Panel for distribution. | $100,000 |
| **Total Graduate Research Program** | | **$100,000** |
| | | |
| **Total Itemized Special Projects** | | **$2,375,000** |

A second Legal Studies Panel was convened in October 2007 as the full complement of projects previously selected by the panel had been funded and initiated. The overall progress of the legal program was reviewed at the meeting, and new problem statements were considered for future initiation. Four new projects were chosen for development, as shown in Table 22.

**Table 22: Second Legal Panel Meeting, October 2007**

| Project Number | Title | Allocation ($) |
|---|---|---|
| 11-01 / Topic 10 | The Implications of Obstructions that Affect Navigable Airspace | $60,000 |
| 11-01 / Topic 11 | The Use and Success of Avigation Easements and Other Tools for Compatible Land Use | $60,000 |
| 11-01 /Topic 12 | Case Studies on Community Challenges to Airport Development | $60,000 |
| 11-01 / Topic 13 | Analysis of Federal Laws, Regulations, and Case Law Regarding Airport Proprietary Rights | $60,000 |
| | *Remaining for program management and development of other topics* | $60,000 |
| **Total Legal Panel Distribution** | | **$300,000** |

The outcome of the fourth Synthesis Panel meeting was very similar to that of the second meeting. Six projects were identified for research (Table 23), but there was only enough funding for five projects. As before, the panel prioritized the projects, funded the top five, and prepared a request for the AOC to consider funding the sixth project at the next AOC meeting.

**Table 23: Fourth Synthesis Panel Meeting, December 2007**

| Project Number | Title | Allocation ($) |
|---|---|---|
| 11-03 / S02-03 | Addressing Noise Outside the DNL 65 | $100,000 |
| 11-03 / S02-04 | Approaches to the Integration of Airport Planning and National Environmental Policy Act (NEPA) Processes | $100,000 |
| 11-03 / S03-04 | Airport System Planning Practices | $100,000 |
| Tentative (cancelled) | Intelligent Transportation System (ITS) Sensor Technology for General Aviation Airports | $100,000 |
| 11-03 / S03-05 | Measuring Benefits from Airport Development Projects at Smaller Airports / Best Practices for Determining Benefits for Airport Benefit-Cost Analysis | $100,000 |
| 11-03 / S-04-03 | Identification of the Requirements and Training to Obtain Driving Privileges on Airfields. | AOC Funding Requested |
| **Total Synthesis Panel Distribution** | | **$500,000** |

The Graduate Research Award Panel will meet in January 2007 to establish procedures for program. Individual research projects will subsequently be chosen in late FY 2008 or early FY 2009.

Table 24 summarizes ACRP progress made by the fourth AOC meeting.

**Table 24: Summary of ACRP Progress – Fourth AOC Meeting**

| | |
|---|---|
| Performance Period: | February 1, 2007 – December 31, 2007 |
| Funding: | FY 2008: $10 million |
| Studies Authorized at Meeting: | 27 (13 full projects, 4 legal studies, 4 quick-response studies, 5 synthesis projects, and 1 graduate research program) |
| Studies Authorized To Date: | 94 (53 full projects, 13 legal studies, 10 quick-response studies, 17 synthesis projects, and 1 graduate research program) |
| Studies in Progress: | 56 (37 full projects, 7 legal studies, 6 quick-response studies, and 6 synthesis projects) |
| Studies Completed To Date: | 14 (6 syntheses, 1 full project, 2 legal studies, 4 quick-response, and 1 workshop) |
| Studies Published: | 7 (1 report, 4 syntheses, and 2 digests) |
| Number of Panel Slots (Active Projects): | 387 |
| Panel Meetings: | 75 for the period, 129 since program start up |
| Problem Statements Considered: | 142 (representing $46.3 million in research requests)<br>– 139 new submissions ($45.2 million)<br>– 3 continuation requests from current panels ($1.1 million) |

## Program Finance

Because program funding is an integral part of ACRP, a summary of the budgets for each ACRP operational years is provided in Tables 25 through 27.

## Table 25: ACRP FY 2005/2006 Program Budget

| PROGRAM BUDGET<br>ACRP FY 2005/2006 | | |
|---|---|---|
| FRINGE BENEFITS = | 33.43% | |
| OVERHEAD = | 70.88% | |
| GENERAL & ADMINISTRATIVE = | 19.81% | |
| FLOW-THROUGH = | 3.62% | |
| ACRP Program Appropriation | 13,000,000 | |
| FAA Administrative Takedown | 174,000 | |
| **FUNDS AVAILABLE** | | **12,826,000** |
| **Technical Direction*** | | |
| Salaries & Wages | 682,300 | |
| Fringes | 228,093 | |
| Overhead | 645,259 | |
| Travel | 450,000 | |
| Publications | 250,000 | |
| Technology | 80,000 | |
| Other | 10,000 | |
| Printing & Duplicating (Office) | 40,000 | |
| G&A | 472,622 | |
| **SUBTOTAL** | | **(2,858,274)** |
| **Balance Available for Research + F-T** | | **9,967,726** |
| **F-T (Subcontract)** | | **(348,226)** |
| **BALANCE AVAILABLE FOR RESEARCH** | | **9,619,500** |
| **AMOUNT PROGRAMMED BY AOC IN JANUARY 2006** | | **(7,090,000)** |
| **AMOUNT PROGRAMMED BY AOC IN JULY 2006** | | **(2,529,500)** |
| **BALANCE AVAILABLE FOR PROGRAMMING** | | **0** |

** Note: For clarification purposes, the amounts budgeted for indirect costs are determined by the indirect cost rates established and adjusted each year by Government auditing agencies. These costs are used to support rent, utilities, accounting, contracts and grants, personnel administration, and other services.*

## Table 26: ACRP FY 2007 Program Budget

| PROGRAM BUDGET<br>ACRP FY 2007 | | |
|---|---|---|
| FRINGE BENEFITS = | 33.43% | |
| OVERHEAD = | 70.88% | |
| GENERAL & ADMINISTRATIVE = | 19.81% | |
| FLOW-THROUGH = | 3.62% | |
| ACRP Program Appropriation | 10,000,000 | |
| FAA Administrative Takedown | 150,000 | |
| **FUNDS AVAILABLE** | 9,850,000 | **9,850,000** |
| **Technical Direction** | | |
| Salaries & Wages | 524,040 | |
| Fringes | 175,187 | |
| Overhead | 495,591 | |
| Travel | 345,735 | |
| Publications | 192,075 | |
| Technology | 61,084 | |
| Other | 7,561 | |
| Printing & Duplicating (Office) | 30,840 | |
| G&A | 362,960 | |
| **SUBTOTAL** | | **(2,195,073)** |
| **Balance Available for Research + F-T** | | **7,654,928** |
| **F-T (Subcontract)** | | **(267,428)** |
| **BALANCE AVAILABLE FOR RESEARCH** | | **7,387,500** |
| **AMOUNT PROGRAMMED BY AOC IN JULY 2006** | | **(4,845,500)** |
| **AMOUNT PROGRAMMED BY AOC IN JANUARY 2007** | | **(2,542,000)** |
| **BALANCE AVAILABLE FOR PROGRAMMING** | | **0** |

## Table 27: ACRP FY 2008 Program Budget

| PROGRAM BUDGET<br>ACRP FY 2008 | | |
|---|---|---|
| FRINGE BENEFITS = | 33.43% | |
| OVERHEAD = | 70.88% | |
| GENERAL & ADMINISTRATIVE = | 19.81% | |
| FLOW-THROUGH = | 3.62% | |
| ACRP Program Appropriation | 10,000,000 | |
| FAA Administrative Takedown | 200,000 | |
| Assumed Income | 9,800,000 | |
| **FUNDS AVAILABLE** | | **9,800,000** |
| Adjustment for 2007 Increased Administrative Takedown | | **50,000** |
| **Technical Direction** | | |
| Salaries & Wages | 526,500 | |
| Fringes | 173,745 | |
| Overhead | 501,533 | |
| Travel | 331,120 | |
| Publications | 192,601 | |
| Technology | 61,569 | |
| Other | 8,525 | |
| Printing & Duplicating (Office) | 27,159 | |
| G&A | 360,282 | |
| **SUBTOTAL** | | **(2,183,034)** |
| **Balance Available for Research + F-T** | | **7,616,966** |
| **F-T (Subcontract)** | | **(316,966)** |
| **BALANCE AVAILABLE FOR RESEARCH** | | **7,300,000** |
| **AMOUNT PROGRAMMED BY AOC IN JULY 2007** | | **(7,300,000)** |
| **BALANCE AVAILABLE FOR PROGRAMMING** | | **0** |

An important contribution to ACRP that is not reflected in the ACRP budgets above is the value of volunteer time contributed by ACRP panel members. All panel members serve as volunteers; they are reimbursed only for travel expenses. There are currently 267 airport professionals working on project panels, each for an average of at least 3 days per year. The value of time

spent by volunteers is estimated to be more than $1.5 million annually, representing significant savings for the ACRP budget.

## Progress Summary

Tables 28 through 31 summarize key indicators representing ACRP progress during the first 2 years of operation.

## Table 28: ACRP Fact Sheet

| | |
|---|---|
| Performance Period: | September 26, 2005 – December 31, 2007 |
| Funding: | FY 2005: $3 Million<br>FY 2006: $10 Million<br>FY 2007: $10 Million<br>FY 2008: $10 Million |
| FY 2005/2006 Studies Authorized: | First AOC Meeting: 29 (17 full projects, 3 legal studies, 3 quick-response studies, and 5 synthesis projects) |
| FY 2007 Studies Authorized: | Second AOC Meeting: 26 (17 full projects, 3 legal studies, 2 quick-response studies, and 5 synthesis projects)<br>Third AOC Meeting: 12 (6 full projects, 3 legal studies, 1 quick-response studies, and 2 synthesis projects) |
| FY 2008 Studies Authorized: | Fourth AOC Meeting: 27 (13 full projects, 4 legal studies, 4 quick-response studies, 5 synthesis projects, and 1 graduate research program) |
| Total Studies Authorized: | 94 (53 full projects, 13 legal studies, 10 quick-response, 17 synthesis projects, and 1 graduate research program) |
| Total Allocated to Research | $24,307,000 |
| Studies Completed: | 14 (6 syntheses, 1 full project, 2 legal studies, 4 quick-response, and 1 workshop) |
| Studies Published: | 7 (1 report, 4 syntheses, and 2 digests) |
| Number of Panel Slots (Active Projects): | 387 |
| Panel Meetings: | 129 |
| Problem Statements Considered To Date: | 338 |
| Proposals Received: | 252 (average 6.5 per project) |
| Proposers: | 151 |

## Table 29: Allocation of ACRP Funds Through 2007

| Research Field | Allocated ($) | With Special Projects (%) | Without Special Projects (%) |
|---|---|---|---|
| 1. Administration | $2,625,000 | 11 | 14 |
| 2. Environment | $3,950,000 | 16 | 21 |
| 3. Planning | $4,975,000 | 21 | 26 |
| 4. Safety | $1,550,000 | 7 | 10 |
| 5. Security | $250000 | 1 | 1 |
| 6. Human Resources | $300000 | 1 | 2 |
| 7. Design | $2,350,000 | 10 | 12 |
| 8. Construction | $0 | 0 | 0 |
| 9. Maintenance | $350000 | 1 | 2 |
| 10. Operations | $2,350,000 | 10 | 12 |
| 11. Special Projects | $5,307,000 | 22 | -- |
| | | | |
| TOTAL | $23,107,000 | 90 | 95 |

## Table 30: Origin of Problem Statements

| Organization | FY 2005/2006 | | FY 2007 | | FY 2008 | | Selected to Date | |
|---|---|---|---|---|---|---|---|---|
| | Number | Percentage (%) | Number | Percentage (%) | Number | Percentage (%) | Number | Percentage (%) |
| Airport Operator | 23 | 20.0 | 9 | 13.2 | 16 | 11.5 | 9 | 16.6 |
| State DOT | 13 | 11.3 | 5 | 7.4 | 8 | 5.8 | 3 | 5.6 |
| FAA | 0 | 0 | 0 | 0 | 8 | 5.8 | 6 | 11.1 |
| Industry Associations Staff / Committee | 13 | 11.3 | 2 | 2.9 | 11 | 7.9 | 10 | 18.5 |
| TRB Committee | 1 | 0.9 | 0 | 0 | 6 | 4.3 | 4 | 7.4 |
| Industry | 1 | 0.9 | 6 | 8.8 | 23 | 16.5 | 2 | 3.8 |
| University | 30 | 26.1 | 15 | 22.1 | 22 | 15.8 | 6 | 11.1 |
| Consultant | 29 | 25.2 | 26 | 38.2 | 30 | 21.6 | 9 | 16.6 |
| Other | 5 | 4.3 | 5 | 7.4 | 15 | 10.8 | 5 | 9.3 |
| **TOTAL** | **0** | **94** | **0** | **74** | **0** | **76** | **0** | **74** |

## Table 31: Panel Composition of Active Projects

| | | Number | Percentage (%) |
|---|---|---|---|
| Affiliation | Airport Operator | 128 | 47.9 |
| | State Gov't | 9 | 3.4 |
| | Local Gov't/MPO | 6 | 2.3 |
| | Federal Gov't | 8 | 3 |
| | Industry/Consultants/ Private Sector | 89 | 33.3 |
| | University | 22 | 8.2 |
| | Association | 5 | 1.9 |
| | | Members / Chairs | Members / Chairs |
| Race | White | 168 / 33 | 80.0 / 82.5 |
| | Minorities | 42 / 7 | 20.0 / 17.5 |
| | | Members / Chairs | Members / Chairs |
| Gender | Male | 174 / 30 | 76.7 / 75.0 |
| | Female | 53 / 10 | 23.3 / 25.0 |

# Chapter 6: Findings and Recommendations

The applied research activities conducted thus far under the auspices of ACRP signal the beginning of a new era in the exploration and development of solutions to problems faced by U.S. airports.

A number of conclusions can be drawn from the progress of ACRP throughout its initial years and recommendations made to improve and expand the program's possibilities.

## Findings

- **ACRP serves the airport industry as a dynamic, well-designed vehicle for solving a variety of airport problems through applied research.**
  The operating foundation provided by the FAA, National Academies, and the TRB allows ACRP to function smoothly and efficiently. Research needs submitted to ACRP cover a wide range of interests, and the program is able to deliver a variety of research products needed to solve identified needs. The current ACRP research portfolio contains a combination of long- and short-term, broad and narrow-scoped projects covering the full spectrum of airport problems.

- **The ACRP Memorandum of Agreement (MOA) provides a strong foundation for the program.**
  The main tenets of the MOA regarding organization, direction, management, and funding have provided a strong foundation for running the program as it was envisioned during the drafting of the original guidance documents. Because the TRB has successfully operated other cooperative research programs for many years, TRB staff was able to draw upon and refine both the lessons from and most successful elements of those programs when managing ACRP.

- **The composition of the program's governing board, the ACRP Oversight Committee (AOC), provides a balanced representation of the airport industry.**
  The AOC is meant to represent a microcosm of the U.S. airport industry. Members come from a good mix of large-, medium-, and small-hub airports as well as non-hubs and general aviation airports. Members also come from academia, private industry, aviation associations, airlines, and the Government.

- **The AOC provides excellent guidance and ensures projects are carefully considered during the selection process and funded according to the greatest needs of the industry.**
  The AOC has responded admirably to the responsibility and challenge of selecting projects for the ACRP research portfolio. Through December 2007, the AOC has reviewed over 338 problems statements representing over $140 million in research requests. Of those requests, 94 projects have been selected and initiated at a cost of $24.307 million.

- **ACRP operating costs are contained and in-line with similarly run cooperative research programs in other industries.**
  When compared to the two other long-standing cooperative research programs at TRB, the cost structure for ACRP is reasonable, if not superior to the NCHRP and TCRP models. Fully 75 percent of funds expended within ACRP are dedicated directly to research, as compared to 74 percent for NCHRP and 66 percent for TCRP. Of the remaining 25 percent of ACRP funds, overhead accounts for 3.68 percent.

- **The TRB staff provides successful program management and administration of ACRP.**
  The TRB staff—including the Director of Cooperative Research, who serves as the AOC's Secretariat, and the many Senior Program Officers (SPOs), who manage the day-to-day operations of individual projects—work diligently and professionally to carry out the mission of ACRP. They provide notable support to the AOC support, including logistical support for meetings and problem statement collection and review. The duties required to manage and support the resulting individual projects are significant, and the SPOs must do so while managing a number of projects simultaneously.

- **There is significant involvement from airport industry stakeholders in all phases of the ACRP research cycle.**
  There are three primary ways to participate in ACRP, and the initial statistics showing how airport industry stakeholders participate in the program are very promising. For the purposes of this report, airport industry stakeholders include airport operators; the general/flying public; consultants; trade associations; universities; and Federal, State, and local government officials. These stakeholders participate in the following ways:

    - **Identifying research needs and submitting problem statements.**
      Through the submission of problem statements, concerned stakeholders have provided the ideas for virtually every research project currently under way in ACRP, save for the few that have been suggested by AOC members (who are also stakeholders). To date, ACRP has received over 338 problem statements, covering all areas of interest in the airport industry (see Tables 29 and 30).

    - **Serving as subject matter experts on technical panels.**
      The number of volunteers for project panels indicates strong support for the program. Of the 387 individuals currently serving on ACRP panels, almost half are airport operators. They are also a diverse group with minorities and women accounting for 20 and 22 percent of panelists, respectively (see Table 32).

    - **Submitting proposals in response to RFPs and conducting research on selected projects.**
      Industry members both capable and qualified to perform ACRP research have shown significant interest in the program. Over 151 different proposers and organizations have taken the time and energy to develop and submit over 252 project proposals, yielding an average of over 6.5 submissions per project.

## Recommendations

- **ACRP should be made permanent.**
  The Vision 100–Century of Aviation Reauthorization Act of 2003 (Vision 100) initially formed ACRP as a pilot program. Based on the success of the program in its first two operational years and the demonstrated need and interest of the airport community, the Secretary recommends that ACRP be converted into a permanent entity.

- **ACRP funding should be increased to perform research addressing the public's increasing concern over airport-related environmental issues.**
  A proposed increase in the environmental research currently being performed under ACRP would allow examination of the impact an airport has on the surrounding environment and new technologies for creating an environmentally friendly airport system. Potential project areas would include the study of airport-related hazardous air pollutants, the impact of airports on climate change, alternative aviation fuels, and advanced noise and emissions models.

  The FAA's FY 2008 reauthorization proposal includes a provision to continue ACRP beyond the four-year pilot program and make it permanent. The proposal also includes a provision to increase ACRP funding authorization from $10 to $15 million annually. The additional funds would be dedicated to applied environmental research.

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# Appendix A: Research Project Details

Appendix A provides more detailed descriptions of ongoing and completed ACRP research projects.

## Completed Research

| | | | |
|---|---|---|---|
| **Project:** | **11-02 / Task 01** | | |
| **Title:** | **Model for Improving Energy Use in U.S. Airport Facilities** | | |
| **Objective:** | The objective of this task was to demonstrate the potential for energy savings in U.S. airports by conducting a study of Terminals B and D at Dallas-Fort Worth Airport regarding Operations and Maintenance (O&M), commissioning of energy consuming systems, and energy conservation retrofit measures. This objective was accomplished by conducting airport surveys, engineering analysis and producing a model energy report and informational brochure that focuses on pro-typical operations, building commissioning, and energy conservation retrofits opportunities. | | |
| **Start Date:** | 10/13/2006 | **End Date:** | 7/31/2007 |
| **Budget:** | $150,000 (FY 06) | **Contractor:** | Texas A&M Energy Systems Laboratory |
| **Status:** | The revised final report will be published as ACRP Research Results Digest 2 in December 2007. | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-02 / Task 02** | | |
| **Title:** | **Airport Ground Access: Updating and Building Upon the Work of TCRP Reports 62 and 83** | | |
| **Objective:** | The objectives of this task are to: (a) improve the documentation of all airport ground access projects, with an emphasis on those which have occurred since the publication of TCRP Report 62 in 2000; (b) improve the documentation of changes in airport access strategies since the publication of both reports with a review of recent developments in such areas as downtown check- in, automation of the check in process, and integration with existing regional rail infrastructure; (c) provide airport managers with user-friendly, concise, and accurate documentation concerning trends in the area of airport ground access; and (d) support and facilitate the dissemination of the latest information relative to airport managers through media such as printed reports, and PowerPoint presentations to relevant professional organizations. The proposed research will create new updated, timely documentation of the characteristics of ground access markets in a manner which builds upon existing products already produced under the Transit Cooperative Research Program. | | |
| **Start Date:** | 8/16/2006 | **End Date:** | 9/30/2007 |
| **Budget:** | $90,000 (FY 06) | **Contractor:** | Matthew Coogan |
| **Status:** | Completed - Publication Pending | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-02 / Task 04** | | |
| **Title:** | **Overview of Safety Management Systems--Definition and Status** | | |
| **Objective:** | The objective of this task was to develop an overview document regarding airport safety management systems that defines what such a system is, and provides a summary of existing practice in other countries and industries. | | |
| **Start Date:** | 1/2/2007 | **End Date:** | 11/2/2007 |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | MITRE Corporation |
| **Status:** | Completed - Published as Report 1, Volume 1 in September 2007 | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-02 / Task 06** | | |
| **Title:** | **Interagency-Industry Collaboration on Pandemic Planning for Aviation: A Workshop** | | |
| **Objective:** | This task conducted a workshop of airport and airline representatives with the various Federal agencies involved in responding to a potential pandemic to clarify roles, discuss issues of mutual interest, and identify further coordination activities needed. | | |
| **Start Date:** | 2/15/2007 | **End Date:** | 9/15/2007 |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | TRB Technical Activities Division |
| **Status:** | Completed - Workshop held in September 2007 | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S01-01** | | |
| **Title:** | **Innovative Finance and Alternative Sources of Revenue for Airports** | | |
| **Objective:** | This report explores alternative financing options and revenue sources currently available or that could be available in the future to airport operators, stakeholders, and policymakers in the United States. The report examines common capital funding sources used by airport operators, a reviews capital financing mechanisms used by airports, describes various revenue sources developed by airport operators, and a reviews privatization options available to U.S. airport operators. | | |
| **Start Date:** | 6/30/2006 | **End Date:** | 4/30/2007 |
| **Budget:** | $100,000 (FY 06) | **Contractor:** | Jacobs Consultancy |
| **Status:** | Completed - Published as Synthesis 1 | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S02-01** | | |
| **Title:** | **Effects of Aircraft Noise: Update on Selected Topics** | | |
| **Objective:** | The objective of this project is to provide a compendium of research conducted since 1985 that addresses the effects of aircraft noise on residents living near airport. | | |
| **Start Date:** | 3/1/2007 | **End Date:** | 3/1/2008 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Mestre Greve Associates |
| **Status:** | Research Completed - Publication Pending | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S02-02** | | |
| **Title:** | **Airport Sustainability Practices** | | |
| **Objective:** | The objective of this project is to synthesize information on airport sustainability practices beyond LEED certification and EMS, and include a discussion on monitoring, measuring and reporting techniques used throughout the industry. It will identify triple bottom line components (defined as categories of economic, environmental and social equity practices) airports are considering, planning, or have undertaken. Barriers to implementation of sustainable practices will also be identified. | | |
| **Start Date:** | 3/1/2007 | **End Date:** | 3/1/2008 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Arup & Partners California Ltd. |
| **Status:** | Research Completed - Publication Pending | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S03-01** | | |
| **Title:** | **Airport Aviation Activity Forecasting** | | |
| **Objective:** | This report examines how airport forecasts are used and identifies common aviation metrics, aviation data sources, issues in data collection and preparation, and special data issues at non-towered airports. The report also explores available forecasting methods, including the primary statistical methods; market share analysis; econometric modeling; and time series modeling. In addition the report reviews forecast uncertainty, accuracy, issues of optimism bias, and options for resolving differences when multiple forecast are available. | | |
| **Start Date:** | 6/30/2006 | **End Date:** | 4/1/2007 |
| **Budget:** | $100,000 (FY 06) | **Contractor:** | GRA, Inc. |
| **Status:** | Completed - Published as Synthesis 2 | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S03-02** | | |
| **Title:** | **Airport Ground Access Mode Choice Models** | | |
| **Objective:** | The objective of this project is to synthesis the state of the practice for Airport Access Mode Choice Models. | | |
| **Start Date:** | 10/1/2006 | **End Date:** | 3/1/2008 (est.) |
| **Budget:** | $100,000 (FY 06) | **Contractor:** | Aviation System Consulting, LLC. |
| **Status:** | Research Completed - Publication Pending | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S03-03** | | |
| **Title:** | **Airport Economic Impact Methods and Models** | | |
| **Objective:** | The focus of this synthesis is on how economic impact studies of airports are conducted today, which is quite different from the incremental economic benefit/cost analysis of investing in an airport project. This project will focus specifically on methods and models used to (a) define and identify, (b) evaluate and measure and (c) communicate the different facets of economic impact and community benefits that local airports are having on or provide to communities and regions. | | |
| **Start Date:** | 3/1/2007 | **End Date:** | 3/1/2008 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Hoyle, Tanner & Associates |
| **Status:** | Research Completed - Publication Pending | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S04-01** | | |
| **Title:** | **General Aviation Safety and Security Practices** | | |
| **Objective:** | The purpose of this project is to examine resources used by the general aviation community in the development of safety and security programs, explores funding sources and issues that determine the amount of money spent on such programs, and describes current practices that general aviation airports use to keep their facilities safe and secure. | | |
| **Start Date:** | 10/1/2006 | **End Date:** | 8/1/2007 |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Reynolds, Smith & Hills, Inc. |
| **Status:** | Completed - Published as Synthesis 3 | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S10-01** | | |
| **Title:** | **Counting Aircraft Operations at Non-Towered Airports** | | |
| **Objective:** | This report explores the different methods used by states, airports, and metropolitan planning organizations (MPOs) to count and estimate aircraft operations at non-towered airports. The report also examines new technologies that can be used for these counts and estimates. | | |
| **Start Date:** | 11/1/2006 | **End Date:** | 8/1/2007 |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Aerofinity |
| **Status:** | Completed - Published as Synthesis 4 | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S10-02** | | |
| **Title:** | **Common Use Facilities and Equipment at Airports** | | |
| **Objective:** | The intended audience of this report includes airport operators and stakeholders considering transition to common use facilities and equipment. Stakeholder perspectives considered are airlines, passengers, government, vendors and ground handlers. The researcher will survey airports on their experience with current and planned common-use facilities. The synthesis will include advantages and disadvantages of common-use systems, business and operational practices that require modification to implement common-use, and actual experience to date. | | |
| **Start Date:** | 3/1/2007 | **End Date:** | 3/1/2008 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Barich, Inc |
| **Status:** | Research Completed - Publication Pending | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-03 / S10-03** | | |
| **Title:** | **Impacts of Airport Pavement Deicing Products on Aircraft and Airfield Infrastructure** | | |
| **Objective:** | The synthesis will assemble and update information on the quantities and types of PDPs used over the years on aircraft and airfield infrastructure. Field reports increasingly suggest that the use of Pavement Deicing Products (PDPs), including alkali acetate and alkali formate products (such as sodium- and potassium- acetate and formate based products), on aprons, runways and taxiways may result in substantial damage to various aircraft and airfield infrastructure. The researcher will produce a matrix identifying specific PDPs used and their respective volumes at each respondent airport, and conduct a literature review and assemble readily available documentation of damage reported from the use of PDPs at airports, including reports from the Federal Aviation Administration; aircraft brake manufacturers, airframe manufacturers, airlines, airports, and PDP manufacturers, along with any information on outcomes from reported damage. | | |
| **Start Date:** | 3/1/2007 | **End Date:** | 3/1/2008 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Jacobs Consultancy |
| **Status:** | Research Completed - Publication Pending | | |

# Ongoing Research

## 1. Administration

| | | | |
|---|---|---|---|
| **Project:** | **01-01** | | |
| **Title:** | **Guidebook for Managing Small Airports** | | |
| **Objective:** | The objective of this research is to develop a practical, easy-to-use guidebook for managing small airports. The guidebook should be useful to owners, operators, managers, and policy makers of small airports. To achieve this objective, it will be necessary to (1) identify fundamental management principles, (2) identify best practices for effective use and management of resources and facilities, and (3) present the information in an attractive, convenient format. A major element of this research should be to identify best practices to achieve safe and efficient operation while maintaining compliance with regulatory requirements and Federal obligations. | | |
| **Start Date:** | 9/19/2006 | **End Date:** | 10/23/2008 (est.) |
| **Budget:** | $397,230 (FY 06) | **Contractor:** | University of Minnesota |
| **Status:** | Research in Progress | | |

| | | | |
|---|---|---|---|
| **Project:** | **01-02** | | |
| **Title:** | **Guidebook for Developing and Managing Airport Contracts** | | |
| **Objective:** | The objective of this project is to develop an intuitive, easy-to-use guidebook of best practices for developing, soliciting, and managing airport agreements for use by airports of all sizes. The guidebook shall include an interactive CD-ROM that contains templates with options and alternatives for each type of agreement. These shall include, but not be limited to, agreements for airport use (airline and non-airline); design and construction; commercial development; commercial operations; management; intergovernmental relations; real estate; maintenance and operations of buildings and grounds; utilities; administrative services; military use; airport "through-the-fence" operations; common-use facilities; ground transportation; concessions for a variety of passenger services (rental car, parking, retail/food/beverage); and others as appropriate. For the purpose of this project, the term "agreement" includes contracts, leases, purchase orders and similar documents. | | |
| **Start Date:** | 4/24/2007 | **End Date:** | 6/23/2008 (est.) |
| **Budget:** | $315,000 (FY 07) | **Contractor:** | HNTB |
| **Status:** | Research in Progress | | |

| | | | |
|---|---|---|---|
| **Project:** | **01-03** | | |
| **Title:** | **Recommended Practices to Collect and Integrate Airport Operational and Financial Data** | | |
| **Objective:** | The objective of this research is to develop a handbook of recommended practices to identify, gather, process, and report an airport's financial and operational data. The handbook shall provide useful information and resources for airports as they implement systems necessary to meet operational needs properly, make informed business decisions, and forecast operational and financial trends.<br><br>The handbook shall (a) identify current airport industry best practices; (b) examine technologies that can be used to timely, efficiently, and accurately gather, process, and report financial and operational data; (c) develop cafeteria-style technical specifications that can be used by airports to procure appropriate technologies; (d) develop minimum voluntary performance guidelines for practices and technologies used to identify, gather, process, and report financial and operational data; (e) describe a vision for a fully integrated airport-business data system, based on new desirable practices, and needed technology; and (f) describe a process that can be followed to put this vision into practice. | | |
| **Start Date:** | 8/10/2007 | **End Date:** | 9/10/2008 (est.) |
| **Budget:** | $300,000 (FY 07) | **Contractor:** | Aero Tech Consulting |
| **Status:** | Research in Progress | | |

| | | | |
|---|---|---|---|
| **Project:** | **01-04** | | |
| **Title:** | **Marketing Techniques for Small Airports** | | |
| **Objective:** | The objective of this research is to develop a guidebook for small airport marketing, external communications, and public information. The guidebook should describe effective airport marketing practices, provide guidance in their use, and assist airports in developing an airport marketing strategy. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $200,000 (FY 07) | **Contractor:** | Eclat Consulting |
| **Status:** | Contract Pending | | |

| | | | |
|---|---|---|---|
| **Project:** | **01-05** | | |
| **Title:** | **Guidebook for Airport Capital Project Delivery Systems** | | |
| **Objective:** | Building on the work of TCRP Project G-8, A Guidebook for the Evaluation of Project Delivery Methods, and NCHRP Project 20-73, Accelerating Transportation Program and Project Delivery: Conception to Completion, the objective of this research would be to develop a guidebook for airport capital project delivery systems. | | |
| **Start Date:** | 4/4/2007 | **End Date:** | 7/4/2008 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Northeastern University |
| | $25,000 (FY 08) | | |
| **Status:** | Research in Progress | | |

| | | | |
|---|---|---|---|
| **Project:** | **01-06** | | |
| **Title:** | **Guidebook for Developing an Airport Performance-Measurement System** | | |
| **Objective:** | The objective of this research is to produce a practical, user-friendly guidebook that will (1) assist airport management in understanding the practical benefits of a performance-measurement system; (2) identify methods to help airports discern how well they are meeting their customer and stakeholder expectations; (3) guide the development and implementation of the most appropriate performance-measurement system; and (4) provide examples of key performance indicators, and how to incorporate them into a system. Performance-measurement systems resulting from this guidebook will enhance the decision-making process to improve service and efficiency. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $400,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

| | | | |
|---|---|---|---|
| **Project:** | **01-07** | | |
| **Title:** | **Airport/Airline Agreements and Rate Methodologies—Practices and Characteristics** | | |
| **Objective:** | The objective of this research is to develop a resource manual for airport and airline professionals that will (1) describe the current range of practices and characteristics of airport and airline relationships and their relative, underlying airport and airline business models; (2) identify and briefly summarize rates and charges policies and guidance; (3) identify, compare, and contrast airport and airline critical issues, objectives, and considerations inherent in airport/airline agreements or other business arrangements; and (4) identify and synthesize the trade-offs and linkages among the critical issues as they relate to common objectives for airport/airline negotiations.<br><br>Note: For purposes of this project, some examples of critical issues include, but are not limited to, air service incentives, discretionary revenue or revenue sharing, tenant-airline participation in negotiations, capital plan approval processes, categorization of space, space utilization policies, cost recovery strategies, classification of carriers, loss (bankruptcy) mitigation strategies, common-use facility or services, financial goals, and debt management strategies. An essential part of this project will include discussion among airport and airline industry representatives to validate the content and conclusions in the resource manual and to maximize the value and credibility of a final publication. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $400,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

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| **Project:** | **01-08** | | |
| **Title:** | **Developing Best Management Practices-Airport Leasing Policy and Metrics for Evaluating Private Investments on Airports** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $400,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

## 2. Environment

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| **Project:** | **02-01** | | |
| **Title:** | **Alternative Aircraft and Airfield Deicing and Anti-Icing Formulations with Reduced Aquatic Toxicity and Biological Oxygen Demand** | | |
| **Objective:** | The objectives of this project are to (1) define the present state of the art of ADAF with respect to minimizing their aquatic toxicity and BOD5 ; (2) identify ADAF components causing aquatic toxicity and BOD5; (3) identify promising alternative ADAF formulations with reduced aquatic toxicity and BOD5 ; (4) evaluate the performance, efficiency, material compatibility, and environmental, operational, and safety impacts of these alternative ADAF formulations compared with current commercial products; and (5) describe the fate and transport of ADAF and their degradation products. The outcome of this research project will be a report informing stakeholders of the opportunities for alternative ADAF formulations with reduced aquatic toxicity and BOD5 . | | |
| **Start Date:** | 11/1/2006 | **End Date:** | 10/31/2008 (est.) |
| **Budget:** | $600,000 (FY 06) | **Contractor:** | University of South Carolina |
| **Status:** | Research in Progress | | |

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| **Project:** | **02-02** | | |
| **Title:** | **Managing Runoff From Aircraft and Airfield Deicing and Anti-Icing Operations** | | |
| **Objective:** | The objective of this project is to develop planning guidelines incorporating an array of BMPs for the practical, cost-effective control of runoff from aircraft and airfield deicing and anti-icing operations. These planning guidelines and BMPs will (1) be consistent with the laws and regulations for protecting water quality and ensuring flight safety; (2) provide practical technical guidance to airports and local, state, and Federal regulators; and (3) support the U.S. EPA's ongoing efforts to gain better information on how airports manage ADAF-affected stormwater runoff. | | |
| **Start Date:** | 10/9/2006 | **End Date:** | 11/8/2007 (est.) |
| **Budget:** | $265,000 (FY 06) | **Contractor:** | CH2M Hill |
| **Status:** | Research in Progress | | |

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| **Project:** | **02-03** | | |
| **Title:** | **Aircraft and Airport-Related Hazardous Air Pollutants: Research Needs and Analysis** | | |
| **Objective:** | The objective of this research is to produce a prioritized agenda of research needs associated with aircraft and other airport-related sources of HAPs. These needs should include, but not be limited to, identifying the types of HAPs being emitted; their sources, detection and measurement; and possible health and other environmental impacts. | | |
| **Start Date:** | 12/19/2006 | **End Date:** | 12/18/2007 (est.) |
| **Budget:** | $100,000 (FY 06) | **Contractor:** | Aerodyne Research, Inc. |
| **Status:** | Research in Progress | | |

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| **Project:** | **02-04** | | |
| **Title:** | **Research Needs Associated with Particulate Emissions at Airports** | | |
| **Objective:** | The objective of this research is to develop a prioritized agenda of research needs relating to airport sources of PM emissions. The agenda will be developed by (1) conducting a survey of airports regarding PM emissions issues and concerns and (2) identifying, reviewing, and evaluating past and current research relating to airport sources of PM emissions. | | |
| **Start Date:** | 12/1/2006 | **End Date:** | 2/1/2008 (est.) |
| **Budget:** | $99,897 (FY 06) | **Contractor:** | Environmental Consulting Group, Inc. |
| **Status:** | Research in Progress | | |

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| **Project:** | **02-04A** | | |
| **Title:** | **Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data** | | |
| **Objective:** | The objective of this research is to summarize, analyze, and interpret the scientific data available from the Aircraft Particle Emissions Experiment (APEX) 1-3 and the Unnamed Airport-Unnamed Airline (UNA-UNA) experiment. The results will be presented in a comprehensive report to help the airport community and general public understand the data's ability to contribute to developing better air quality assessments in the airport environment. | | |
| **Start Date:** | 4/12/2007 | **End Date:** | 4/11/2008 (est.) |
| **Budget:** | $349,470 (FY 07) | **Contractor:** | University of Missouri-Rolla |
| **Status:** | Research in Progress | | |

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| **Project:** | **02-05** | | |
| **Title:** | **Guidebook on Community Responses to Aircraft Noise** | | |
| **Objective:** | The objectives of this project are to (I) develop an informative guidebook about local aircraft noise to inform readers with a direct interest, involvement, or investment in airports; (2) develop a toolkit that airport decision makers can use to manage expectations related to aircraft noise within the community; (3) investigate alternative metrics to communicate noise issues to the community; and (4) suggest other improvements that go beyond current practice to ease aircraft-noise issues. For this project, the term "noise issues" involves the socioeconomic, political, operational, safety, environmental, and legal impacts of aircraft noise on an airport; the complaints about aircraft noise from neighbors; the effects that noise has on neighbors; and the communication between the airport and its neighbors. This research should identify the actual jurisdictional authority over various aspects of the aircraft-noise issue, and the obstacles to airport operations and development because of community perceptions of local aircraft noise. | | |
| **Start Date:** | 4/20/2007 | **End Date:** | 10/19/2008 (est.) |
| **Budget:** | $399,982 (FY 07) | **Contractor:** | Landrum & Brown |
| **Status:** | Research in Progress | | |

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| **Project:** | **02-06** | | |
| **Title:** | **Guidebook on Preparing Airport Greenhouse Gas (GHG) Emissions Inventories** | | |
| **Objective:** | The objective of this research is to develop a guidebook that can be used to prepare airport source-specific inventories of greenhouse gas (GHG) emissions. The guidebook shall provide methods to calculate airport GHG emissions inventories in a consistent manner and will provide information on considerations that should be taken into account when scoping and preparing such inventories. This guidebook should focus on the following six GHG emissions since they are widely recognized as relevant and quantifiable: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluoro compounds (HFC), and perfluorocarbons (PFC). | | |
| **Start Date:** | 10/9/2007 | **End Date:** | 9/8/2008 (est.) |
| **Budget:** | $199,403 (FY 07) | **Contractor:** | Wyle Laboratories |
| **Status:** | Research in Progress | | |

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| **Project:** | **02-07** | | |
| **Title:** | **Handbook for Analyzing the Costs and Benefits of Alternative Turbine Engine Fuels at Airports** | | |
| **Objective:** | The objective of this research is to prepare a handbook that airport operators can use to evaluate the costs and benefits of providing a "drop-in" alternative turbine engine fuel at airports, taking into account that such fuel may also be used for other purposes (e.g., ground vehicles, generators). The cost and benefit analysis shall include, at a minimum: infrastructure changes, operational/maintenance impacts, and environmental factors. The handbook shall include templates and illustrative examples of cost and benefit analyses for different sizes of airports and types of fueling facilities. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $499,960 (FY 07) | **Contractor:** | CSSI, Inc. |
| **Status:** | Contract Pending | | |

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| **Project:** | **02-08** | | |
| **Title:** | **Guidance for Quantifying the Contribution of Airport Emissions to Local Air Quality** | | |
| **Objective:** | The objective of this research project is to provide guidance for airport operators on effective tools and techniques for measuring airport contributions to ambient air quality. The research will evaluate existing and potential monitoring strategies and forecasting techniques that airport operators can use to measure airport-related air quality impacts on local jurisdictions that may exceed what is traditionally measured and modeled for National Environmental Policy Act (NEPA) purposes. The evaluation process will require selection of a specific airport as a test case for application of a combination of air quality measurement and state-of-the-art modeling techniques and an evaluation of the results of that application. This research project will identify gaps in existing models and the inputs to those models, future research needed to fill those gaps to improve the predictive capabilities of available models, a set of detailed recommendations for implementing an optimal emissions monitoring and forecasting strategy, and guidance to airport operators on how to select and carry out that strategy. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $600,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

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| **Project:** | **02-09** | | |
| **Title:** | **Developing a Comprehensive Work Plan for a Multimodal Noise and Emissions Model** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $200,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

## 3. Planning

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| **Project:** | **03-01** | | |
| **Title:** | **Light Detection and Ranging (LIDAR) Deployment for Airport Obstructions Surveys** | | |
| **Objective:** | The objectives of this research are (a) to describe requirements that must be met to use LIDAR data in aeronautical obstructions surveys and airport layout plan (ALP) elevation surveys; (b) to recommend procurement specifications and procedures that could be used by airports or other agencies for procuring and using LIDAR data; and (c) to describe the technical bases that could justify acceptance of LIDAR-based obstructions surveys by the NGS, FAA, airports, and airlines. | | |
| **Start Date:** | 12/8/2006 | **End Date:** | 1/29/2009 (est.) |
| **Budget:** | $350,000 (FY 06) | **Contractor:** | University of Mississippi |
| **Status:** | Research in Progress | | |

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| **Project:** | **03-02** | | |
| **Title:** | **U.S. Airport Passenger-Related Processing Rates** | | |
| **Objective:** | The objectives of this research are to (1) compile a unified database on passenger-related processing rates in an electronic spreadsheet or database format that is useful to planners, designers, and other interested parties and (2) provide guidance on how best to collect passenger-related processing point data. | | |
| **Start Date:** | 9/19/2006 | **End Date:** | 1/15/2008 (est.) |
| **Budget:** | $200,000 (FY 06) | **Contractor:** | HNTB |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **03-03** | | |
| **Title:** | **Enhancing Airport Land Use Compatibility** | | |
| **Objective:** | The objective of this research is to develop guidance to protect airports from incompatible land uses that impair current and future airport and aircraft operations and safety and constrain airport development. This research project does not address land uses within airport boundaries. For the purposes of this research, incompatible land uses are defined by criteria pertaining to aircraft noise exposure and to safety concerns including aircraft accidents; FAR Part 77 and TERPS height restrictions; FAA engine-out regulations; FAA airport design standards; wildlife attractants; and distractions such as smoke, lighting, glare, and electronic interference. | | |
| **Start Date:** | 9/19/2006 | **End Date:** | 1/15/2008 |
| **Budget:** | $500,000 (FY 06) | **Contractor:** | Mead & Hunt, Inc. |
| **Status:** | Research in Progress | | |

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| **Project:** | **03-04** | | |
| **Title:** | **Guidebook for Airport-User Survey Methodology** | | |
| **Objective:** | The objective of this project is to develop a Guidebook for planning, designing, conducting, and analyzing airport user surveys. | | |
| **Start Date:** | 1/16/2007 | **End Date:** | 6/15/2008 (est.) |
| **Budget:** | $249,350 (FY 06) | **Contractor:** | Jacobs Consultancy |
| **Status:** | Research in Progress | | |

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| **Project:** | **03-05** | | |
| **Title:** | **Passenger Space Allocation Guidelines for Planning and Design of Airport Terminals Project Data** | | |
| **Objective:** | The objective of this project is to develop passenger space allocation guidelines for terminal functional areas. The guidelines are to be based on level-of-service (LOS) scales developed from data collected at a sample of 10 airports. The guidelines will be used by airport operators, planners, and consultants in making decisions on development of new terminals and renovation of existing facilities. | | |
| **Start Date:** | 6/28/2007 | **End Date:** | 9/28/2008 (est.) |
| **Budget:** | $399,928 (FY 07) | **Contractor:** | TransSolutions |
| **Status:** | Research in Progress | | |

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| **Project:** | **03-06** | | |
| **Title:** | **Guidebook for Planning and Implementing Automated People Mover Systems at Airports** | | |
| **Objective:** | The objective of this research is to prepare a comprehensive guidebook for planning and implementing APM systems at airports. The guidebook should include, as appropriate, a CD-ROM with interactive tools that will assist airports to plan and implement an APM system. The scope of this research includes APM systems that provide transportation on airport grounds as well as access to remote facilities (e.g., airport parking, car rental facilities, hotels, off-airport public transportation, and other related activity centers). | | |
| **Start Date:** | 6/12/2007 | **End Date:** | 6/11/2009 (est.) |
| **Budget:** | $395,341 (FY 07) | **Contractor:** | Lea & Elliott |
| **Status:** | Research in Progress | | |

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| **Project:** | **03-07** | | |
| **Title:** | **A Guidebook for Measuring Performance of Automated People Mover Systems at Airports** | | |
| **Objective:** | The objective of this research is to develop a user-friendly guidebook for measuring performance of automated people mover (APM) systems at airports. The guidebook should identify a set of performance measures and associated data requirements for APM operators at airports to assess and improve performance, compare APM systems, and plan and design future APM systems. The performance measures should address the efficiency, effectiveness, and quality of APM systems at airports, particularly focusing on impacts on APM passengers and on airport performance. | | |
| **Start Date:** | 6/13/2007 | **End Date:** | 7/12/2009 (est.) |
| **Budget:** | $300,000 (FY 07) | **Contractor:** | Lea & Elliot |
| **Status:** | Research in Progress | | |

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| **Project:** | **3-08** | | |
| **Title:** | **Passenger Air Service Development Techniques** | | |
| **Objective:** | The objective of this project is to develop a guide that describes techniques that airports and communities can employ in their efforts to develop passenger air service. The guide should include fundamental information to assist airports and the communities they serve to understand the nature of ASD within the general context of the airport, community, and airline business perspectives. | | |
| **Start Date:** | 6/21/2007 | **End Date:** | 12/20/2008 (est.) |
| **Budget:** | $300,000 (FY 07) | **Contractor:** | Inter VISTAS-ga2 Consulting |
| **Status:** | Research in Progress | | |

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| **Project:** | **03-09** | | |
| **Title:** | **Guidebook for Strategic Planning in the Airport Industry** | | |
| **Objective:** | The objective of this project is to prepare a practical guidebook for airport professionals, airport policy-making organizations, and industry associations that provides procedures, tools, and benefits of the strategic planning process. The guidebook should address the use of continuous strategic planning and consider relevant policy, management, and technical issues at airports, recognizing local, national, and global uncertainties. | | |
| **Start Date:** | 10/3/2007 | **End Date:** | 4/2/2009 (est.) |
| **Budget:** | $321,049 (FY 07) | **Contractor:** | Ricondo & Associates |
| **Status:** | Research in Progress | | |

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| **Project:** | **03-10** | | |
| **Title:** | **Innovative Approaches to Addressing Aviation Capacity Issues in Coastal Mega-Regions** | | |
| **Objective:** | The objective of this research is to develop integrated strategic actions to enhance decision making to address the constrained aviation system capacity and growing travel demand in the high-density, multijurisdictional, multimodal, coastal mega-regions along the east and west coasts. The research is intended to be used by transportation agencies and operators, as well as for informing public officials at the Federal, state, and local levels. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $300,000 (FY 07) | **Contractor:** | Resource Systems Group, Inc. |
| **Status:** | Contract Pending | | |

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| **Project:** | **03-11** | | |
| **Title:** | **A Guidebook for the Preservation of Public-Use Airports** | | |
| **Objective:** | The objective of this research is to develop a guidebook that describes the reasons why public-use airports close and identifies measures and strategies that can be taken to preserve public-use airports. An interactive tool will accompany the guidebook that allows a user to access information on specific circumstances pertaining to closures, preventive measures and strategies, and roles and responsibilities of parties that have a role in preventing the closure. This guidebook is intended to be used by State and local agencies, airport owners/operators, and advocacy groups in preserving public-use airports. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $600,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

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| **Project:** | **03-12** | | |
| **Title:** | **Guidebook for Preparing Peak-Period and Operational Profiles to Improve Airport Facility Planning and Environmental Analyses** | | |
| **Objective:** | The objective of this research is to prepare a guidebook enabling airport operators to define more effectively airport peak-period and operational profiles necessary for facility and environmental planning. This guidebook will include an analytical toolbox and associated application and implementation procedures. The analytical components of the toolbox will include a software program suitable for use by airport professionals in preparation of peak-period and operational forecasts used in facility and environmental planning. Procedures incorporated in the guidebook will make use of historical data and existing, available forecasts (including FAA TAFs, master plan forecasts, and related environmental study forecasts), building on current best practices to forecast future flight schedules.<br><br>The guidebook will help airport facility managers and operators evaluate (a) capacity requirements and operational improvements (e.g., examine how common-use or preferential gate use can accommodate increased passenger demand); (b) implications of designing facilities to accommodate alternative peak periods (e.g., those occurring more or less frequently); and (c) specific facility requirements as a function of larger-scale control totals (e.g., annual passengers or aircraft operations). The guidebook and associated toolbox will enhance the ability of airport operators to address demand and operational constraints and enable users to create alternative growth and development scenarios by analyzing effects of potential change in aircraft, passenger, demographic, environmental and other relevant factors. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $350,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

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| **Project:** | **03-13** | | |
| **Title:** | **Understanding Airspace, Objects, and Their Effects on Airports** | | |
| **Objective:** | The objective of this research is to develop a guidebook that defines and explains the various criteria used to identify objects that affect the airspace needed by an airport for its current and future operations, as well as the interrelationships between these criteria. The guidebook is intended to be used by airport operators, consultants, and surrounding communities in understanding the airport's current and future airspace needs and how objects individually and collectively can affect the safety, utility, and efficiency of their airport. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $200,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

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| **Project:** | **03-14** | | |
| **Title:** | **Airport Passenger Conveyance System Usage/Throughput** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $300,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

## 4. Safety

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| **Project:** | **04-01** | | |
| **Title:** | **Aircraft Overrun and Undershoot Analysis for Runway Safety Areas** | | |
| **Objective:** | The objective of this research is to compile and analyze historical data related to both overrun and undershoot occurrences to assist airport operators in evaluating runway safety areas. | | |
| **Start Date:** | 9/19/2006 | **End Date:** | 10/17/2007 |
| **Budget:** | $249,986 (FY 06) | **Contractor:** | Applied Research Associates, Inc. |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **04-02** | | |
| **Title:** | **Lightning-Warning Systems for Use by Airports** | | |
| **Objective:** | The objective of this research is to recommend potential improvements to lightning-warning systems for use by airports. To accomplish this objective, it will be necessary to (1) characterize lightning detection and prediction technologies currently in use by airports and air carriers in the vicinity of airports; (2) evaluate the feasibility of improving operational lightning-warning capabilities (e.g., by integrating these technologies with other existing/developing operating weather-measuring systems); and (3) estimate the reduction in direct and indirect operating costs for airlines and airport operators that would result if the improved lightning-warning capability were implemented. | | |
| **Start Date:** | 11/7/2006 | **End Date:** | 11/7/2008 (est.) |
| **Budget:** | $199,937 (FY 07) | **Contractor:** | MDA Federal, Inc. |
| **Status:** | Research in Progress | | |

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| **Project:** | **04-03** | | |
| **Title:** | **Guidebook for Approach Light System Hazard Assessment and Mitigation** | | |
| **Objective:** | The objective of this research is to develop a guidebook for airport operators on (1) performing a risk assessment of hazards associated with approach light systems and (2) determining measures that can be taken to mitigate the identified hazards. | | |
| **Start Date:** | 10/3/2007 | **End Date:** | 11/2/2008 (est.) |
| **Budget:** | $300,000 (FY 07) | **Contractor:** | Virginia Tech |
| **Status:** | Research in Progress | | |

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| **Project:** | **04-04** | | |
| **Title:** | **Exercising Command-Level Decision Making for Critical Incidents at Airports** | | |
| **Objective:** | The objective of this research is to create a tool for exercising command-level decision making for critical incidents at 14 CFR Part 139 airports. The tool will include methods to measure and evaluate actions and outcomes including compliance with nationally recognized standards and Federal Aviation Administration (FAA) and Department of Homeland Security (DHS) requirements.<br><br>The tool will be used to meet the training and exercise requirements of 14 CFR Part 139.325, Airport Emergency Plan, and will cover civil-aviation-specific scenarios for the nine hazard-specific sections identified in FAA Advisory Circular 150-5200/31 A, Airport Emergency Plan (September 30, 1999). The 10 functional sections, identified in AC150-5200/31 A, provide a good starting point for development of the tool; to reflect airport needs, however, the tool will allow an airport to readily customize training and exercises for their staffing and geographic areas. Finally, the tool will present training and exercise options and will track the progress of individual employees and teams in meeting training requirements. The tool must also be configured to protect airport information that is too sensitive to be publicly released. | | |
| **Start Date:** | 9/12/2007 | **End Date:** | 12/11/2009 (est.) |
| **Budget:** | $399,067 (FY 07) | **Contractor:** | Applied Research Associates |
| **Status:** | Research in Progress | | |

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| **Project:** | **04-05** | | |
| **Title:** | **A Guidebook for Airport Safety Management Systems** | | |
| **Objective:** | The objective of this research is to create a guidebook for developing and implementing airport safety management systems (SMS). The guidebook must be applicable to all airports that have certificates issued under 14 Code of Federal Regulations (CFR) Part 139, Certification of Airports, and should consider variations in operations and complexities at these airports. | | |
| **Start Date:** | 5/24/2007 | **End Date:** | 9/23/2008 (est.) |
| **Budget:** | $300,000 (FY 07) | **Contractor:** | Applied Research Associates |
| **Status:** | Research in Progress | | |

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| **Project:** | **04-06** | | |
| **Title:** | **Analysis and Best Management Practices for the Prevention of Wildlife Strikes at Small Airports** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $300,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

## 5. Security

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| **Project:** | **05-01** | | |
| **Title:** | **Guidance for Developing Regionally Coordinated Airport Emergency Plans for CBRNE Events** | | |
| **Objective:** | The objective of this research is to provide guidance for developing regionally coordinated airport emergency plans for CBRNE events.<br><br>The research will include an analysis and description of potential responses to various incident scenarios, including the roles of airport management and local authorities having jurisdiction. Analysis of scenarios should delineate relationships between airports and jurisdictions and the obstacles that may prevent communications or appropriate responses for protecting the health, security, safety, and welfare of potentially affected populations. A major product of this research will be a template for regionally coordinated airport emergency plans for CBRNE events. | | |
| **Start Date:** | 11/19/2007 | **End Date:** | 1/31/2008 (est.) |
| **Budget:** | $248,464 (FY 07) | **Contractor:** | System Planning Corporation |
| **Status:** | Research in Progress | | |

## 6. Human Resources

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| **Project:** | **06-01** | | |
| **Title:** | **Airport and Air Carrier Resource Manual: Employees Coping with Traumatic Events** | | |
| **Objective:** | The objective of this project is to develop a resource manual of human-impact considerations and practices for airport and air carrier managers related to human-made accidents or attacks, or natural disaster events. The manual should rationalize the need for airport and air carrier preparedness, and should describe critical considerations and steps that can be taken to mitigate employee psychological trauma before, during, and after such distressing events. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $300,000 (FY 07) | **Contractor:** | University of North Dakota |
| **Status:** | Contract Pending | | |

## 7. Design

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| **Project:** | **07-01** | | |
| **Title:** | **New Concepts for Airport Terminal Landside Facilities** | | |
| **Objective:** | The objective of this research is to develop new concepts that will stimulate design innovation for terminal landside facilities at FAA-designated large- and medium-hub airports to improve passenger accessibility and level of service between ground transportation and the secure parts of the terminal. | | |
| **Start Date:** | 12/8/2006 | **End Date:** | 7/8/2008 (est.) |
| **Budget:** | $400,000 (FY 06) | **Contractor:** | Corgan Associates, Inc. |
| **Status:** | Research in Progress | | |

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| **Project:** | **07-02** | | |
| **Title:** | **Airport Curbside and Terminal-Area Roadway Operations** | | |
| **Objective:** | The objective of this project is to develop a guide to analyze the operation of the airport curbside and the terminal-area roadways, including the effects of direct access points (e.g., on-airport commercial parking, rental car operations, and hotels). | | |
| **Start Date:** | 11/15/2007 | **End Date:** | 7/9/2008 (est.) |
| **Budget:** | $400,000 (FY 06) | **Contractor:** | Jacobs Consultancy |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **07-03** | | |
| **Title:** | **Developing Improved Civil Aircraft Arresting Systems** | | |
| **Objective:** | The objective of this project is to advance the development of alternative civil aircraft arresting systems that safely decelerate an aircraft overrunning a runway. This research will (1) identify and evaluate the most promising alternatives to the existing FAA-approved system; (2) identify the steps that must be taken to have such promising alternatives approved for use at a civil airport in the United States, and identify barriers that may preclude manufacturers from making the alternative solutions commercially available; and (3) conduct a sensitivity analysis of the FAA's design and performance parameters for civil aircraft arresting systems to show the effects on system design of varying one or more of the parameters (e.g., aircraft leaving the runway at 60 knots rather than 70 knots). The product of this research project will be a report informing stakeholders of (1) alternatives to the current civil aircraft arresting system, (2) steps required to pursue approval of such systems, and (3) tradeoffs involved in changing current aircraft arresting system design and performance parameters. | | |
| **Start Date:** | 5/23/2007 | **End Date:** | 4/23/2009 (est.) |
| **Budget:** | $499,455 (FY 07) | **Contractor:** | Protection Engineering Consultants |
| **Status:** | Research in Progress | | |

| | | | |
|---|---|---|---|
| **Project:** | **07-04** | | |
| **Title:** | **Spreadsheet Models for Airport Terminal Planning and Design** | | |
| **Objective:** | The objectives of this research are to (1) develop a user–friendly spreadsheet model (or models), with an accompanying manual, to analyze issues common to airport passenger terminal planning and design and (2) produce a compendium that identifies the types, scopes, and availability of spreadsheet and discrete event models that can be used by airport operators for airport passenger terminal planning and design. The prime users of this project's products are intended to be employees of airport operators who are involved in terminal planning and design. | | |
| **Start Date:** | 6/6/2007 | **End Date:** | 12/5/2008 (est.) |
| **Budget:** | $400,000 (FY 07) | **Contractor:** | Landrum & Brown |
| **Status:** | Research in Progress | | |

| | | | |
|---|---|---|---|
| **Project:** | **07-05** | | |
| **Title:** | **Airport Passenger Terminal Planning Guidebook** | | |
| **Objective:** | The objective of this project is to produce an Airport Passenger Terminal Planning Guidebook. The guidebook should include sections (a) describing the airport passenger terminal planning process and (b) identifying current and future issues, trends, impacts, and solutions in airport passenger terminal planning. | | |
| **Start Date:** | 6/28/2007 | **End Date:** | 2/28/2009 (est.) |
| **Budget:** | $400,000 (FY 07) | **Contractor:** | Landrum & Brown |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **07-06** | | |
| **Title:** | **Airport Signage and Wayfinding Information Guidelines** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $250,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

## 8. Construction

There are no construction-related projects at this time.

## 9. Maintenance

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|---|---|---|---|
| **Project:** | **09-01** | | |
| **Title:** | **Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management** | | |
| **Objective:** | The objective of this research is to develop guidelines for the collection and use of geospatially referenced pavement-related data for the management of airfield pavements. | | |
| **Start Date:** | 11/6/2006 | **End Date:** | 4/5/2008 (est.) |
| **Budget:** | $149,998 (FY 06) | **Contractor:** | Applied Research Associates, Inc. |
| **Status:** | Research in Progress | | |

## 10. Operations

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|---|---|---|---|
| **Project:** | **10-01** | | |
| **Title:** | **Optimizing the Use of Aircraft Deicing and Anti-Icing Fluids** | | |
| **Objective:** | The objective of this project is to identify procedures and technologies that optimize the use of aircraft deicing and anti-icing fluids, thus reducing their environmental impact while assuring safe aircraft operations in deicing and anti-icing conditions. The project will produce (1) a description of the application of currently available procedures and technologies to optimize ADAF use, (2) the results of an experiment to validate the effectiveness of promising procedures and technologies, (3) a plan for implementation of these promising procedures and technologies, and (4) recommendations for further study. | | |
| **Start Date:** | 3/20/2007 | **End Date:** | 1/18/2009 (est.) |
| **Budget:** | $288,792 (FY 06) | **Contractor:** | APS Aviation, Inc. |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **10-02** | | |
| **Title:** | **Planning Guide for Offsite Terminals** | | |
| **Objective:** | The objective of this research is to provide a guide for airport operators and others to use in planning offsite terminals. The research shall address topics such as warrants for offsite terminals and factors that influence their success; cover the range of services provided; and identify potential stakeholders and partners. | | |
| **Start Date:** | 12/18/2006 | **End Date:** | 12/17/2007 (est.) |
| **Budget:** | $350,000 (FY 06) | **Contractor:** | MarketSense |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **10-03** | | |
| **Title:** | **Evaluating Airport Parking Strategies and Supporting Technologies** | | |
| **Objective:** | The objective of this project is to develop a guidebook that airport operators can use to compare and contrast various parking strategies and supporting technologies and then evaluate each for application to individual airport situations and demographics. The guidebook will describe airport-parking strategies, categorize each strategy, offer methods to evaluate each strategy, match existing and emerging technologies that support each strategy, and provide guidance on how to implement each strategy and its supporting technology.<br><br>For the purpose of this project, the term "parking strategies" includes, but is not limited to, techniques for control of parking revenue, value-added services, safety and security features, operational efficiencies, traffic flow, capacity management, and facility balance. Many of these strategies can be enhanced through the application of technology. Examples include (a) "pay-on-foot" advance payment, (b) credit card in/out automated lot operation, (c) license plate recognition, (d) way-finding or single-space parking guidance, and (e) automated vehicle identification. | | |
| **Start Date:** | 9/14/2007 | **End Date:** | 11/13/2008 (est.) |
| **Budget:** | $300,000 (FY 07) | **Contractor:** | Jacobs Consultancy |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **10-04** | | |
| **Title:** | **Airports and the Newest Generation of General Aviation Aircraft** | | |
| **Objective:** | The objectives of this project are to (1) forecast GA aircraft activity by category of airport and geographical location due to the introduction of the newest generation of GA aircraft and (2) develop a user-friendly guidebook that will help airport operators to (a) estimate the level of activity from these aircraft at their particular airport; (b) assess the impact of these aircraft on their particular airport's infrastructure, facilities, and services; (c) accommodate existing and anticipated demand for facilities and services from these aircraft; and (d) attract new business from the newest generation of GA aircraft.<br><br>For the purposes of this project, the newest generation of GA aircraft refers to small-sized (12,500 lbs or less) aircraft with high-technology "all glass" digital cockpits, including VLJs; micro jets; and the newest piston and turbo-prop aircraft. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $496,390 (FY 07) | **Contractor:** | GRA, Inc. |
| **Status:** | Contract Pending | | |

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|---|---|---|---|
| **Project:** | **10-05** | | |
| **Title:** | **Understanding Common-Use Approaches at Airports** | | |
| **Objective:** | The objective of this research is to develop a reference guide for airports, airlines, and other stakeholders to identify and understand the financial, operational, liability, safety, customer service, and competitive elements of a common-use approach to the utilization of airport facilities and the provision of services. The guide should provide detailed analyses and information enabling individual airports and airlines to evaluate the feasibility and applicability of implementing a common-use approach. It should also provide common practices for evaluating, implementing, operating, and maintaining common-use facilities and services.<br><br>Note: For purposes of this project, the term common-use approach shall refer to non-exclusive facilities available to more than one tenant and certain airport-provided services to tenants. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $500,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

| | | | |
|---|---|---|---|
| **Project:** | **10-06** | | |
| **Title:** | **Effects of Constrained Public and Employee Parking on Airport Access** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $400,000 (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

## 11-01. Legal Studies

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|---|---|---|---|
| **Project:** | **11-01 / Topic 01-01** | | |
| **Title:** | **Compilation of Digest-Parts 13 and 16 Determinations and Related Documents, Including FAA Chief Counsel and DOT General Counsel Opinions Related to Airports** | | |
| **Objective:** | The objective of this project is to make Parts 13 and 16 determinations and related documents, including FAA Chief Counsel and DOT General Counsel's Opinions related to airports, readily and inexpensively available to airport attorneys, the public, and other researchers. Ideally, the product of this research, if all phases are implemented, would be a web-based searchable database containing the full text of each document as well as a short summary of the outcome. The database should allow allows searches by topic, date, author (where applicable), type of proceeding, FAA region, and by individual word or words (i.e., Boolean searches). FAA airport compliance staff and attorneys will also benefit from the searchable data base as they assist airports and users with informal resolutions, evaluate complaints and prepare decisions. | | |
| **Start Date:** | 12/11/2006 | **End Date:** | 5/1/2008 (est.) |
| **Budget:** | $83,000 (FY 06) | **Contractor:** | Spiegel & McDiarmid |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 01-02** | | |
| **Title:** | **Theory and Law of Airport Revenue Diversion** | | |
| **Objective:** | This project would synthesize the available legal theory, statutes, policy guidance, analysis, and case decisions pertaining to airport revenue diversions into a single report. This report should provide examples of the types and actual experiences of revenue diversion. The goal is to produce a comprehensible Legal Research Digest Report of approximately 100-125 typewritten double-spaced pages with relevant precedent and guidance concentrated in one source. | | |
| **Start Date:** | 1/18/2007 | **End Date:** | 5/1/2008 (est.) |
| **Budget:** | $35,000 (FY 06) | **Contractor:** | Paul Dempsey |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 01-03** | | |
| **Title:** | **Compilation/List of Airport Law Resources** | | |
| **Objective:** | The objective of this project is to develop a list or an index of legally related topics, substantive areas, and/or issues that airport attorneys encounter and to develop an index and a bibliography of sources that airport lawyers may consult for purposes of research or for purposes of keeping informed of developments in airport-related legal issues. These sources may be web-based or in print; they may be published as part of a series (such as a newsletter or law review) or in single issues (such as a book). | | |
| **Start Date:** | 1/3/2007 | **End Date:** | 2/1/2007 (est.) |
| **Budget:** | $15,000 (FY 06) | **Contractor:** | Kaplan, Kirsch & Rockwell |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 01-04** | | |
| **Title:** | **Survey of Airport Laws and Regulation of Commercial Ground Transportation** | | |
| **Objective:** | This project would synthesize available guidance, including regulations, statutes, policies, and case decisions (administrative or court) pertaining to commercial ground transportation. Ideally, the product of this effort should produce a listing of Federal, state, and local commercial ground transportation rules with extensive examples of each. Each type of guidance would also include a summary of litigation. | | |
| **Start Date:** | 4/2/2007 | **End Date:** | 4/2/2008 (est.) |
| **Budget:** | $26,000 (FY 06) | **Contractor:** | Smith Amundsen |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 01-05** | | |
| **Title:** | **Responsibilities for Implementation and Enforcement of Airport Land-Use Zoning Restrictions** | | |
| **Objective:** | This project should synthesize all available Federal, state, regional, and local laws, administrative agency determinations, court decisions and regulations pertaining to aviation land-use and zoning, and identify the primary responsibilities of each relevant legal body and how this responsibility is communicated and enforced. The project should include an assessment of compatibility and non-compatibility between the laws and regulations and illustrate how conflicts have been resolved historically. The goal is to produce a comprehensive Legal Research Digest Report with relevant precedent and guidance concentrated in one source. | | |
| **Start Date:** | 6/1/2007 | **End Date:** | 7/1/2008 (est.) |
| **Budget:** | $39,860 (FY 07) | **Contractor:** | William V. Cheek & Associates |
| **Status:** | In Development | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 01-06** | | |
| **Title:** | **Who is the Owner or Operator for Purposes of the Rights to Self-Fuel?** | | |
| **Objective:** | Aviation, government, environmental, and other interested attorneys; legislative and administrative personnel; airport developers; aviation managers; and researchers have need of a thorough understanding of the meaning of and constraints involved with self-fueling and to distinguish this concept from commercial self service fueling. A primer is needed that will contain basic coverage of the subject, including appropriate regulations, and offer model definitions and provisions obtained either from existing airport rules and regulations or developed anew. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | (FY 07) | **Contractor:** | |
| **Status:** | In Development | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-01 / Topic 01-07** | | |
| **Title:** | **The Impact of airlines Bankruptcies on Airports** | | |
| **Objective:** | There is a need for an information source that synthesizes the available legal theory, statutes, analysis, and case decisions pertaining to the impact of airline bankruptcies on airports; includes in one place those sections of the Bankruptcy Code that apply to airport claims; summarizes the bankruptcy process for airport attorneys, paying particular attention to those sections of the bankruptcy code that apply only to airports; references reported judicial decisions in airline bankruptcies; and summarizes any recent articles in law reviews or similar publication that describe problems and issues that have arisen in airline bankruptcies. The project should describe how the airport claims listed below are 1) treated under the bankruptcy code and 2) have been dealt with in recent airline bankruptcies:<br><br>- Pre-petition and post-petition amounts owed by airlines for terminal rental fees, landing fees, fees for the rental of other airport facilities, and other amounts owed to airports by airlines;<br>- Passenger facility charges, including issues raised by FAA regulations created and/or proposed to protect passenger facility charge revenues;<br>- Acceptance or Rejection (by the debtor) of leases for real property and improvements at airports. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | (FY 07) | **Contractor:** | |
| **Status:** | In Development | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 01-08** | | |
| **Title:** | **The Law and Regulations of Airport Ownership** | | |
| **Objective:** | This project should define what airport governance includes, identify and analyze a number of projects where airports were transferred from one form of governance to another, and determine the legal problems encountered during these transfers. These transactions should include a variety of governance structure (Authority, Independent Commission, leases, management and operation contracts, etc.). The study should also include a review and analysis of State airport enabling laws. One result of this analysis would be a compendium of anticipated legal issues for those considering or embarking on changing their governance structure and the way in which those legal issues have been resolved. All Federal, State and local legislation and regulations that affect the transfer of airports should be identified. The goal is to produce a comprehensive Legal Research Digest Report with relevant precedent and legal guidance. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | (FY 07) | **Contractor:** | |
| **Status:** | In Development | | |

| | | | |
|---|---|---|---|
| **Project:** | **11-01 / Topic 01-09** | | |
| **Title:** | **Survey of the Elements of Disparity Studies for Airport Disadvantaged Business Enterprise Programs** | | |
| **Objective:** | The goal of this project is to provide airports with a clear understanding of the current requirements needed to conduct a valid and legally defensible disparity/availability study and to develop elements of successful disparity/availability studies that can be used in the future. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | (FY 07) | **Contractor:** | |
| **Status:** | In Development | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 02-01** | | |
| **Title:** | **Obstructions Affecting Navigable Airspace / The Implications of not Declaring Structures to be Hazardous Obstructions Affecting Navigable Airspace/ TERPS** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 02-02** | | |
| **Title:** | **Use and Success of Avigation Easements and Other Tools for Airport Compatible Land Use and Development of Model Language** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 02-03** | | |
| **Title:** | **Case Studies on Community Challenges to Airport Development** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

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|---|---|---|---|
| **Project:** | **11-01 / Topic 02-04** | | |
| **Title:** | **Analysis of Federal Laws, Regulations and Case Law Regarding Airport Proprietary Rights** | | |
| **Objective:** | | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | (FY 08) | **Contractor:** | |
| **Status:** | In Development | | |

## 11-02. Quick-Response Projects

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|---|---|---|---|
| **Project:** | **11-02 / Task 03** | | |
| **Title:** | **Improving Stabilization and Use of Aircraft Evacuation Slides at Airports** | | |
| **Objective:** | This research will identify challenges associated with the use of slides at airports, focusing on causes of injury rates and ways to reduce those rates. A comprehensive report is to be prepared that will include: (1) literature review of known incidents where aircraft evacuations via the slides occurred and identified causes of known injuries One study to include in this review is the NTSB Safety Study 001 published in 2000., (2) survey/interview of airport operators and emergency responders involved in those incidents, slide manufacturers and aircraft manufacturers, as appropriate, (3) Review of tools relative to aircraft slide evacuations available to first responders, specifically those tools available through the FAA Technical Center (4) Recommended guidance for airport operators & emergency personnel on preparing for aircraft slide evacuations that will include best practices for minimizing injury rates. | | |
| **Start Date:** | 10/9/2006 | **End Date:** | 1/1/2008 (est.) |
| **Budget:** | $100,000 (FY 06) | **Contractor:** | George Washington University |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **11-02 / Task 05** | | |
| **Title:** | **Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs** | | |
| **Objective:** | The objective of this task is to develop a set of criteria and guidance for use by airport operators in identifying potential quarantine facilities on or off the airport and for continuity of airport operations. The guidance will be developed in consideration of and based on evaluation of requirements and constraints, including such factors as: (a) physical needs of individuals to be quarantined (e.g. beds, sanitation, security, food); (b) non-airport resources available to provide basic necessities (e.g. Red Cross); (c) structural requirements for such facilities (square footage, climate control, plumbing, etc.); (d) transportation from aircraft to facility; (e) potential existing facilities at airports or in community, including those identified in other plans (e.g. hurricane shelters, family assistance sites, etc.); (f) potential for multiple use for new facilities; (g) operational and financial impacts of identifying on-airport facilities; and (h) planning guidelines for expected maximum number of individuals to be quarantined. | | |
| **Start Date:** | 3/28/2007 | **End Date:** | 11/3/2007 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | System Planning Corporation |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **11-02 / Task 07** | | |
| **Title:** | **Strategic Process for Developing ACRP Research Problem Statements** | | |
| **Objective:** | This task will develop and implement a process that the ACRP Governing Board can use to identify strategic research areas for use with the FY 2009 ACRP problem statement solicitation process. | | |
| **Start Date:** | 8/1/2007 | **End Date:** | 1/30/2008 (est.) |
| **Budget:** | $100,000 (FY 08) | **Contractor:** | TRB Staff |
| **Status:** | Work is in progress | | |

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|---|---|---|---|
| **Project:** | **11-02 / Task 08** | | |
| **Title:** | **Enhanced Modeling of Aircraft Taxiway Noise--Scoping** | | |
| **Objective:** | This task will indentify the specifications required to update existing aviation noise models to accommodate taxiway noise. | | |
| **Start Date:** | | **End Date:** | |
| **Budget:** | $100,000 (FY 08) | **Contractor:** | |
| **Status:** | In development | | |

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|---|---|---|---|
| **Project:** | **11-02 / Task 10** | | |
| **Title:** | **Estimate of National Use of Aircraft and Airfield Deicing Materials** | | |
| **Objective:** | This task will develop a national estimate of the amount of aircraft and airfield deicing materials used. | | |
| **Start Date:** | 10/16/2007 | **End Date:** | 4/15/2008 |
| **Budget:** | $100,000 (FY 08) | **Contractor:** | CH2M Hill |
| **Status:** | Work is in progress | | |

## 11-03. Synthesis Studies

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|---|---|---|---|
| **Project:** | **11-03 / S04-02** | | |
| **Title:** | **Preventing Vehicle/Aircraft Incidents During Winter Operations** | | |
| **Objective:** | The objective of this synthesis is to identify existing procedures, training, and systems that airport operators use to reduce the risk of vehicle/aircraft incidents during winter operations. The synthesis should address airports with operating airport traffic control towers (ATCTs), as well as airports that do not have an ATCT or only have a part time ATCT. The synthesis is also intended to take into account airports that may have a fleet of several winter operations vehicles to those airports that may have only one or two such vehicles. | | |
| **Start Date:** | 6/1/2007 | **End Date:** | 6/1/2008 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | Bowling Green State University |
| **Status:** | Research in Progress | | |

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|---|---|---|---|
| **Project:** | **11-03 / S09-01** | | |
| **Title:** | **Effective Rubber Removal Techniques to Minimize Damage on Grooved Runways** | | |
| **Objective:** | Guidance is needed to consolidate the many practices of rubber removal methods and equipment in use throughout the country in order to establish sets of best practices. This report will synthesize grooved runway rubber removal practices at North American airports and all techniques used to minimize damage. Any patterns of damage that could be attributed to rubber removal will also be synthesized. | | |
| **Start Date:** | 6/1/2007 | **End Date:** | 6/1/2008 (est.) |
| **Budget:** | $100,000 (FY 07) | **Contractor:** | University of Oklahoma |
| **Status:** | Research in Progress | | |

# Appendix B – ACRP Memorandum of Agreement (MOA)

## MEMORANDUM OF AGREEMENT ON OPERATING PROCEDURES FOR AN AIRPORT COOPERATIVE RESEARCH PROGRAM

### I. INTRODUCTION

The Vision 100-Century of Aviation Reauthorization Act (Vision 100), enacted in December 2003, authorized, in Section 712, establishment of a 4-year pilot Airport Cooperative Research Program (ACRP).

Vision 100 calls for the ACRP to carry out applied research on problems "… that are shared by airport operating agencies and … are not being adequately addressed by existing Federal research programs…." The mission of the ACRP is to produce research results that will be used to improve the planning, design, and operation of airports in the United States. Specific research projects will be selected by a board composed of airport managers and others committed to the success of the Nation's airport system. ACRP studies will be managed by the Transportation Research Board of the National Academy of Sciences using procedures designed to ensure that the research is objective and productive.

Airports are vital national resources. There are approximately 500 commercial-service airports and 2,800 smaller general aviation airports that make up the national airport system. These airports operate in a complex environment with many and often competing requirements and expectations. To succeed in this environment, airport operators need access to good information and technical guidance based on sound research.

Over the past decade, there has been growing recognition of the need for a mechanism for airports to pool their ideas and resources to develop and disseminate practical solutions to shared problems by creating an airport cooperative research program, modeled partly on existing cooperative research programs for highways and transit. The Airports Council International–North America (ACI-NA), the National Association of State Aviation Officials (NASAO), and the American Association of Airport Executives (AAAE) have expressed support for the ACRP. In 2000 legislation (Public Law 106-181) reauthorizing the Federal Aviation Administration (FAA), Congress requested a formal study of the concept by the U.S. Department of Transportation. The study request (in Section 906 of the Act) reads as follows:

> The Secretary of Transportation (the Secretary), in consultation with the National Academy of Sciences and representatives of airports, shall evaluate the applicability of the techniques used to fund and administer research under the National Cooperative Highway Research Program and the …Transit (Cooperative) Research Program to the research needs of airports. The Secretary shall transmit to Congress a report on the results of the evaluation conducted under this section.

In response, FAA contracted with the Transportation Research Board (TRB), under the auspices of the National Research Council (NRC) of the National Academy of Sciences (NAS), to conduct the study.

Following established NRC procedures, TRB assembled a committee with a range of expertise and a balance of perspectives on issues related to the study topic; the committee met three times, and in June 2003, the committee's findings were published in TRB Special Report 272: Airport Research Needs: Cooperative Solutions. The committee concluded that such cooperative research is essential for ensuring airport security, efficiency, safety, and environmental compatibility and urged Congress to establish a national airport cooperative research program (ACRP).

Following enactment of Vision 100, the Secretary wishes to enter into an agreement with NAS to manage the ACRP, under the direction of an independent board, to be appointed by the Secretary as provided herein. This Memorandum of Agreement establishes operating procedures for the ACRP and delineates the roles of the cooperating organizations.

## II. ORGANIZATION

This Memorandum of Agreement provides a conceptual framework for the establishment and conduct of the ACRP as approved by the cooperating organizations.

1. In accordance with 49 U.S.C. Section 44511, the ACRP shall be governed by an independent board charged with recommending airport research, development, and technology transfer activities to be carried out by NAS in accordance with the terms and conditions of grants or cooperative agreements awarded by FAA.

2. The cooperating organizations participating in this Agreement to establish and administer the ACRP are: (a) the FAA of the United States Department of Transportation, hereinafter referred to as **"**FAA"; and (b) the National Academy of Sciences, hereinafter referred to as "NAS" acting through its Transportation Research Board, hereinafter referred to as "TRB." TRB is a major operating unit of NAS and is not a separate legal entity.

## III. DIRECTION

The participating parties agree that the Secretary will appoint an independent governing board, to be designated the ACRP Oversight Committee (AOC). The membership of AOC shall be consistent with the composition of the governing board specified in the legislation authorizing the ACRP, and the initial board members ("members") shall be appointed by the Secretary, in consultation with TRB and national associations representing the airport industry.

AOC shall operate as follows:

1. The AOC shall be responsible for: (a) reviewing the research needs that are solicited by TRB from airport operators, industry associations, FAA, and other interested entities; (b) evaluating and selecting research topics; (c) setting project

priorities and recommending funding levels; and (d) evaluating program effectiveness. The AOC shall be supported in these efforts by NAS, through the staff of TRB providing administrative support to AOC, with the responsibilities enumerated below in Paragraph IV.2.

2. The AOC shall be led by a Chair, selected by a majority of the voting members, and shall meet at the call of the Chair, but not less than one time per year. The voting members shall also select, by majority vote, a Vice Chair who shall assume the duties of the Chair if the Chair is unavailable.

3. The AOC shall have the responsibility for determining the technical objectives of all ACRP projects.

4. The NAS will have legal, financial, and technical responsibility for the award and administration of research contracts to achieve project objectives, subject to Paragraph III.6 below and the terms of this Agreement.

5. The AOC will carry out the following functions:

    a. Determine if the proposed topics (resulting from the TRB solicitation of research needs) represent important research needs in the airport field;

    b. Determine, on the basis of evaluation provided by NAS, acting through TRB and other information sources, whether the proposed research topic does or does not, to its knowledge, duplicate any similar effort undertaken currently or previously in which the results were considered adequate and sufficiently conclusive; and

    c. Formulate an annual program with recommended project funding consisting of new projects and, when appropriate, continuation of projects established in prior fiscal year programs. In formulating the annual program, AOC may form and utilize such subcommittees as it deems appropriate. Membership on such subcommittees is not limited to AOC members.

6. The annual program of the ACRP will be adopted after a vote by AOC and transmitted to FAA and NAS. NAS reserves the right to object to any proposed research determined to be inappropriate for conduct by NAS. NAS will explain its reason for objecting in writing to AOC. In addition, NAS may petition the Secretary in writing to reconsider the appropriateness of any proposed research. Subcommittee decisions are subject to acceptance by AOC.

7. The AOC is responsible for monitoring the progress of the ACRP and recommending to FAA and TRB any corrective action that it may deem necessary and appropriate.

8. The AOC shall be governed by the following rules:

a. The AOC shall initially be composed of thirteen (13) voting members and shall include seven (7) members who are chief executive officers, managers, or members of the governing boards of airports (3 from large hubs, 2 from medium-size hubs, and 2 from small hubs, non-hubs, or general aviation airports); five (5) members who are officers or officials of universities, or private entities that are air carriers, shippers, suppliers, researchers, or consultants engaged in providing airport equipment or services; and the Administrator of the FAA or his/her designee. Any such entity shall have no more than one member on AOC. The size of AOC may be adjusted at the discretion of the Secretary.

b. Upon the request of the Secretary, the following individuals shall serve as "ex-officio," non-voting, members of AOC:

    i. The Administrator of the Environmental Protection Agency (EPA) or his/her designee.

    ii. The Administrator of the National Aeronautics and Space Administration (NASA) or his/her designee.

    iii. The chief executive of the Airports Council International–North America (ACI-NA) or his/her designee.

    iv. The chief executive of the American Association of Airport Executives (AAAE) or his/her designee.

    v. The chief executive of the National Association of State Aviation Officials (NASAO) or his/her designee.

    vi. The chief executive of the Air Transport Association (ATA) or his/her designee.

    vii. The Executive Director of the Transportation Research Board or his/her designee.

c. Excluding the Administrator of FAA or his/her designee, voting members of AOC shall be appointed for a period of 4 years, and may serve for two successive full 4-year terms. To provide for staggered representation on AOC, certain of the initial members of AOC shall be appointed for an initial 2-year term.

d. Members to fill expired terms shall be appointed by the Secretary. Any voting members having served two successive full 4-year terms shall be ineligible for reappointment to AOC for a period of 4 years.

e. Members may voluntarily withdraw from AOC during their term by notification in writing to the Chair. Any member whose employment changes during his/her term in such a way that he/she no longer represents an

organization qualified to be represented on AOC, shall be considered to have voluntarily withdrawn. If an individual leaves AOC prior to the completion of his or her term of office, his or her replacement will be appointed to complete the term of office and may be chosen from an organization different from that of the replaced Member.

f. Unless otherwise provided by statute, any member of AOC may be removed, either with or without cause, and a successor appointed, by the Secretary.

g. The AOC shall meet at the call of the Chair, not less than one time per year. The Chair may call such additional meetings as it deems necessary and appropriate, and shall provide members of AOC at least 14 days prior notice of such meeting (which notice may be waived by a member).

h. The presence of 50 percent of the total number of members of AOC entitled to vote shall be necessary and sufficient to constitute a quorum for the transaction of any business at any duly called meeting. Members may participate in AOC meetings by teleconference provided each member can hear all other members.

i. In the absence of a quorum at any meeting of AOC, the members present and entitled to vote thereat may adjourn the meeting without further notice until a quorum is present. At any such adjourned meeting at which a quorum is present, any business may be transacted which might have been transacted at the meeting as originally called, if a quorum had been present.

j. The affirmative vote of a majority of the members of AOC present and entitled to vote at a meeting shall be necessary and sufficient to decide such question or matter. With the exception of those individuals serving as "ex-officio" non-voting members of AOC, each member present at meetings shall have one vote. Voting shall be either by voice vote or by written ballot at the discretion of the Chair. Proxy votes shall not be permitted.

k. Any action to be taken at a meeting of AOC may be taken without a meeting if, prior to such action, a consent in writing, setting forth the action taken, shall be signed by all of the members of AOC, and such written consent is filed with the minutes of the proceedings of AOC with the Chair.

l. The AOC shall have the following powers and duties:

    i. To approve the annual budget and financial statements of the ACRP.

    ii. To prioritize research needs and approve funding for the selected research proposals.

    iii. To adopt general policies and procedures governing the operations of AOC.

m. No member of AOC may receive compensation for serving in such office but may be reimbursed reasonable and necessary expenses in connection with carrying out the business of AOC.

n. To the extent commercially available, NAS shall purchase and maintain a separate insurance policy on behalf of members of AOC intended to cover liability asserted against him/her and arising out of his/her status as a member of AOC. NAS shall disclose the general terms of any such insurance to AOC members, or if such insurance is not commercially available, shall so inform AOC members. Any funds received by NAS pursuant to such insurance shall be promptly provided to the appropriate AOC member pursuant to the terms and conditions of such insurance.

## IV. MANAGEMENT

The FAA will work cooperatively with AOC, NAS, and others as may be appropriate in the management of the ACRP. This cooperative effort is designed to ensure the effectiveness and success of the overall ACRP process and is consistent with sound fiscal and resource management.

1. The FAA's responsibilities will include the following activities:

    a. Participating with AOC in developing the ACRP annual program;

    b. When practicable, selecting and assigning FAA staff personnel to serve on project panels;

    c. Supporting periodic program reviews;

    d. Participating in planning, developing, and conducting conferences, workshops, seminars, and other technical meetings associated with ACRP activities; and

    e. Working closely with NAS, through TRB and industry associations, to ensure dissemination, distribution, marketing, and promotion of the results of ACRP studies, with an emphasis on timely deployment and mainstreaming of products and practices resulting from the ACRP.

2. The TRB will provide administrative support for AOC. The TRB's responsibilities will include the following activities to be carried out in consultation with the Chair of the AOC.

    a. Issuing announcements to solicit research needs statements for consideration by the ACRP;

    b. Conducting preliminary evaluation of proposed research needs statements to determine whether the proposed research duplicates previous or ongoing studies;

c. Making preliminary estimates of the cost of conducting each proposed research topic;

d. Providing necessary staff support;

e. Distributing material necessary for AOC's prioritization of research for the ACRP;

f. Recording AOC meeting decisions on matters related to the ACRP;

g. Scheduling meetings and preparing and distributing agendas for AOC meetings;

h. Preparing and distributing minutes following AOC meetings;

i. Keeping records related to ACRP activities; and

j. Rendering to AOC and FAA quarterly reports on the progress and financial status of the ACRP.

3. The NAS is the responsible body for technical review and acceptance of research projects that are referred by AOC to NAS for acceptance and action.

4. Following approval by AOC and acceptance by NAS, NAS shall administer, conduct, and monitor, as appropriate, individual research projects.

5. Administration of ACRP activities shall be the responsibility of NAS, acting through the TRB Executive Director.

6. The NAS shall be responsible for the operational management of the ACRP, and shall enter into contracts necessary to obtain technical and administrative services in support of the ACRP.

7. The NAS will prepare annual ACRP progress reports that will be distributed to AOC and FAA.

8. The NAS shall cooperate with and fully use the skills and experience, as appropriate, of organizations represented on AOC and other potential users of the research.

9. The NAS shall select and be responsible for the management of program staff, subject to the general policies of NAS and specific policies of the TRB Executive Director.

10. The NAS shall administer ACRP project panels to bring experience, expertise, and counsel from government, university, industry, and other sources to the ACRP.

11. Project panels, with the support of NAS staff, will be responsible for the following.

    a. Developing plans for the attainment of problem objectives, including an estimate of the total cost and time to achieve the objectives;

b. Drafting definitive statements of scope and objectives for projects;

c. Reviewing proposals submitted by research agencies and making decisions regarding selection of research agencies;

d. Reviewing the progress of research;

e. Providing counsel and advice to researchers regarding technical aspects of projects;

f. Reviewing and evaluating project reports as to the accomplishment of objectives and suitability for publication; and

g. Cooperating with AOC and FAA in decisions regarding the continuation of projects included in prior fiscal year programs.

12. The TRB will furnish periodic financial information to the NAS, AOC, and FAA on the progress of the ACRP.

## V. FUNDING

Participation in and financing of the ACRP shall be in accordance with the following.

1. The FAA will provide funding in support of this Agreement through execution of agreements or modifications thereto with NAS. In no event is FAA obligated for any amount above these funding commitments, whether to NAS (including TRB) or to any contractors, grant or cooperative agreement recipients, or employees of the NAS.

2. The FAA will annually notify NAS of the funds available for continuing the ACRP in accordance with 49 U.S.C. Section 44511 and paragraph 1 above.

3. The NAS may, with prior concurrence of AOC, enter into agreements with other entities to cooperatively fund specific ACRP projects.

4. The NAS will submit annual applications to FAA for funding of the ACRP to include its estimate of costs for administration of the ACRP, including program formulation costs, costs of publications, information dissemination, and funds available for research projects. Total costs for the ACRP as submitted will not exceed the total funds made available by FAA and other ACRP contributors for any fiscal year. Funds in the NAS account for the ACRP shall roll over to the next fiscal year.

5. The NAS shall be reimbursed for the allowable direct and indirect costs of administering the ACRP in accordance with the provisions of Office of Management and Budget Circular A-122 or grants or cooperative agreements awarded by FAA, and shall obtain advance payment of such costs through a letter of credit or other payment mechanism to

be coordinated with FAA. Indirect rates shall be reimbursed in accordance with the annual rate negotiation agreement entered into with the Office of Naval Research.

6. To the extent consistent with grants or cooperative agreements awarded by FAA, NAS will provide auditing, contracting, accounting, personnel, and legal support in connection with the ACRP. The ACRP also shall have reasonable access to other standard services of NAS, such as library and archives and committee membership files.

7. The ACRP shall be subject to normal NAS overhead and general and administrative expenses consistent with NAS's established cost accounting practices.

8. It is anticipated that 75 percent of the funds provided by FAA to the ACRP shall be directly expended to fund research.

9. Members of AOC traveling to AOC meetings shall be reimbursed by NAS using ACRP administrative funds, pursuant to Federal Travel Regulations to the extent consistent with grants or cooperative agreements awarded by FAA.

10. Except as provided herein or as approved in writing by FAA, no FAA funds shall be used to indemnify any member or representative of AOC for payment arising under or resulting from any claim or suit, action, or proceeding of any kind whatsoever. This restriction does not preclude the FAA from providing funds to purchase appropriate liability insurance which shall be an allowable direct expense under this Agreement.

## VI. INTELLECTUAL PROPERTY

1. Rights in Data

The FAA retains Government Purpose Rights in all data developed under this agreement with FAA funds.

"Data" means recorded information, regardless of form or method of recording, which includes but is not limited to, technical data, computer software, trade secrets, and mask works. The term does not include financial, administrative, cost, pricing, or management information.

"Government Purpose Rights" means the rights to:

a. Use, modify, reproduce, release, perform, display, or disclose data within the Government without restriction; and

b. Release or disclose technical data outside the Government and authorize persons to whom release or disclosure has been made to use, modify, reproduce, release, perform, display, or disclose those data for Government purposes.

"Government Purpose" means any activity in which the United States Government is a party, including cooperative agreements with international or multi-national defense organizations, or sales or transfers by the United States Government to foreign

Governments or international organizations. Government purposes include competitive acquisition by or on behalf of the Government but do not include the rights to use, modify, reproduce, release, perform, display, or disclose data for commercial purposes or authorize others to do so.

The NAS shall own the data and may copyright any work that is subject to copyright and was developed, or for which ownership was purchased, in connection with NAS's administration of the ACRP.

2. Patent Rights – Retention by the Contractor

The rights in any patents under the ACRP shall be in accordance with FAA Clause 3.5-10 Patent Rights--Retention by the Contractor (Short Form) (October 1996), which is set out in Exhibit A hereto, and incorporated into this Agreement as if fully set forth herein. "Contractor" under the foregoing clause shall mean NAS or any of NAS's contractors or subcontractors under the ACRP. The parties acknowledge that NAS does not intend to assert any patent rights on its own behalf in an invention made by one of its contractors or subcontractors.

3. All agreements and contracts entered into under this Agreement by NAS shall contain the provisions substantially in conformance with 1 and 2. above.

## VII. DISSEMINATION OF INFORMATION AND RESEARCH RESULTS

1. The TRB may enter into cooperative arrangements, contractual or other, with ACI-NA, AAAE, or NASAO to ensure early dissemination and adoption of ACRP research findings by airport professionals.

2. The TRB will publish, furnish, and disseminate such technical reports as are necessary and desirable for reporting on the results of research and accomplishing the objectives of the ACRP, in accordance with appropriate NAS review and publication policies.

## VIII. AUDITS

The FAA shall have the right to examine or audit the records of NAS under this Agreement in accordance with FAA Clause 3.2.2.3-8 Audit and Records (January 2004), which is set out in Exhibit B hereto and incorporated into this MOA as if fully set forth herein.

## IX. REVISION OR TERMINATION OF THIS AGREEMENT

This Agreement is subject to mutually acceptable written revision or written modification at the request of any subscriber hereto. Participation by any signatory Party hereto may be

terminated on six month's notice to the other signators, provided such termination shall not impair any obligations or commitments already validly incurred.

## X. EFFECTIVE DATE

This Agreement shall be effective upon complete execution by the cooperating organizations.

Date: SEP 26 2005

Norman Mineta
Secretary
Department of Transportation

Date: APR 14 2005

Marion C. Blakey
Administrator
Federal Aviation Administration

Date: _____

Ralph J. Cicerone
President
National Academy of Sciences

# ACRP MOA, Exhibit A

**3.5-10 Patent Rights--Retention by the Contractor (Short Form) (October 1996)**

(a) Definitions.

(1) "Invention" means any invention or discovery which is or may be patentable or otherwise protectable under Title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321, et seq.).

(2) "Made" when used in relation to any invention means the conception of first actual reduction to practice of such invention.

(3) "Nonprofit organization" means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

(4) "Practical application" means to manufacture, in the case of a composition of product; to practice, in the case of a process or method, or to operate, in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are, to the extent permitted by law or Government regulations, available to the public on reasonable terms.

(5) "Small business firm" means a small business concern as defined in the Federal Aviation Administration (FAA) Acquisition Management System. For the purpose of this clause, the size standards for small business concerns involved in Government procurement and subcontracting at 13 CFR 121.3-8 and 13 CFR 121.3-12, respectively, will be used.

(6) "Subject invention" means any invention of the contractor conceived or first actually reduced to practice in the performance of work under this contract, provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d)) must also occur during the period of contract performance.

(b) Allocation of principal rights. The Contractor may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this clause and 35 U.S.C. 203. With respect to any subject invention in which the Contractor retains title, the Federal Government shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject invention throughout the world.

(c) Invention disclosure, election of title, and filing of patent application by contractor.

(1) The Contractor will disclose each subject invention to the Federal agency within 2 months after the inventor discloses it in writing to Contractor personnel responsible for patent matters. The disclosure to the agency shall be in the form of a written report and shall identify the contract under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of the disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a

manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to the agency, the contractor will promptly notify the agency of the acceptance of any manuscript describing the invention for publication, or of any on sale or public use planned by the Contractor.

(2) The Contractor will elect in writing whether or not to retain title to any such invention by notifying the Federal agency within 2 years of disclosure to the Federal agency. However, in any case where publication, on sale or public use has initiated the 1 year statutory period wherein valid patent protection can still be obtained in the United States, the period for election of title may be shortened by the agency to a date that is no more than 60 days prior to the end of the statutory period.

(3) The Contractor will file its initial patent application on a subject invention to which it elects to retain title within 1 year after election of title, or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the United States after a publication, on sale, or public use. The Contractor will file patent applications in additional countries or international patent offices within either 10 months of the corresponding initial patent application or 6 months from the date permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications where such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure election, and filing under subparagraphs (c) (1), (2), and (3) of this clause may, at the discretion of the agency, be granted.

(d) Conditions when the Government may obtain title. The Contractor will convey to the Federal agency, upon written request, title to any subject invention-

(1) If the Contractor fails to disclose or elect title to the subject invention within the times specified in paragraph (c) of this clause, or elects not to retain title; provided, that the agency may only request title within 60 days after learning of the failure of the Contractor to disclose or elect within the specified times.

(2) In those countries in which the Contractor fails to file patent applications within the times specified in paragraph (c) of this clause; provided, however, that if the Contractor has filed a patent application in a country after the times specified in paragraph (c) of this clause, but prior to its receipt of the written request of the Federal agency, the Contractor may continue to retain title in that country.

(3) In any country in which the Contractor decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum rights to Contractor and protection of the Contractor right to file.

(1) The Contractor will retain a nonexclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the Contractor fails to disclose the invention within the times specified in paragraph (c) of this clause. The Contractor's license extends to its domestic subsidiary and affiliates, if any, within the corporate structure of which the Contractor is a party and includes the right to grant sublicenses of the same scope to the extent the Contractor was legally obligated to do so at the time the contract was awarded. The license is transferable only with the approval of the Federal Agency, except when transferred to the successor of that part of the Contractor's business to which the invention pertains.

(2) The Contractor's domestic license may be revoked or modified by the funding Federal agency to the extent necessary to achieve expeditious practical application of subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR part 404 and agency licensing regulations (if any). This license will not be revoked in that field of use or the geographical areas in which the Contractor has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at the discretion of the funding Federal agency to the extent the Contractor, its licensees, or the domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, the funding Federal agency will furnish the Contractor a written notice of its intention to revoke or modify the license, and the Contractor will be allowed 30 days (or such other time as may be authorized by the funding Federal agency for good cause shown by the Contractor) after the notice to show cause why the license should not be revoked or modified. The Contractor has the right to appeal, in accordance with applicable regulations in 37 CFR part 404 and agency regulations, if any, concerning the licensing revocation of modification of the license.

(f) Contractor action to protect the Government's interest.

(1) The Contractor agrees to execute or to have executed and promptly deliver to the Federal agency all instruments necessary to (i) establish or confirm the rights the Government has throughout the world in those subject inventions to which the Contractor elects to retain title, and (ii) convey title to the Federal agency when requested under paragraph (d) of this clause and to enable the Government to obtain patent protection throughout the world in that subject invention.

(2) The Contractor agrees to require, by written agreement, its employees, other than clerical and nontechnical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Contractor each subject invention made under contract in order that the Contractor can comply with the disclosure provisions of paragraph (c) of this clause, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. This disclosure format should require, as a minimum, the information required by subparagraph (c)(1) of this clause. The Contractor may instruct such employees, through employee agreements or other suitable educational programs, on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The Contractor will notify the Federal agency of any decisions not to continue the prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than 30 days before the expiration of the response period required by the relevant patent office.

(4) The Contractor agrees to include, within the specification of any United States patent application and any patent issuing thereon covering a subject invention, the following statement, "The invention was made with Government support under (identify the contract) awarded by (identify the Federal agency). The Government has certain rights in the invention."

(g) Subcontracts.

(1) The Contractor will include this clause, suitably modified to identify the parties, in all subcontracts, regardless of tier, for experimental, developmental, or research work to be performed by

a small business firm or domestic nonprofit organization. The subcontractor will retain all rights provided for the Contractor in this clause, and the Contractor will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractor's subject inventions.

(2) The Contractor will include in all other subcontracts, regardless of tier, for experimental, developmental, or research work the patent rights clause required to adequately protect the Government's interests consistent with section 3.5 of the FAA Acquisition Management System.

(3) In the case of subcontracts, at any tier, the agency, subcontractor, and the Contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subcontractor and the Federal agency with respect to the matters covered by the clause; provided, however, that nothing in this paragraph is intended to confer any jurisdiction under the FAA disputes resolution process, or any board or judicial proceeding, in connection with proceedings under paragraph (j) of this clause.

(h) Reporting on utilization of subject inventions. The Contractor agrees to submit, on request, periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Contractor or its licensees or assignees. Such reports may include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Contractor, and such other data and information as the agency may reasonably specify. The Contractor also agrees to provide additional reports as may be requested by the agency in connection with any march-in proceeding undertaken by the agency in accordance with paragraph (j) of this clause. As required by 35 U.S.C. 202(c)(5), the agency agrees it will not disclose such information to persons outside the Government without permission of the Contractor.

(i) Preference for United States industry. Notwithstanding any other provision of this clause, the Contractor agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject invention in the United States unless such person agrees that any product embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an agreement may be waived by the Federal agency upon a showing by the Contractor or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

(j) March-in rights. The Contractor agrees that, with respect to any subject invention in which it has acquired title, the Federal agency has the right in accordance with the procedures in 37 CFR 401.6 and any supplemental regulations of the agency to require the Contractor, an assignee or exclusive licensee of a subject invention to grant a nonexclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances, and if the Contractor, assignee, or exclusive licensee refuses such a request the Federal agency has the right to grant such a license itself if the Federal agency determines that--

(1) Such action is necessary because the Contractor or assignee has not taken, or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;

(2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Contractor, assignee, or their licensees;

(3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the Contractor, assignee, or licensees;

(4) Such action is necessary because the agreement required by paragraph (i) of this clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the United States is in breach of such agreement.

(k) Special provisions for contracts with nonprofit organizations. If the Contractor is a nonprofit organization, it agrees that--

(1) Rights to a subject invention in the United States may not be assigned without the approval of the Federal agency, except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the Contractor;

(2) The Contractor will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when the agency deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;

(3) The balance of any royalties or income earned by the Contractor with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions will be utilized for the support of scientific research or education; and

(4) It will make efforts that are reasonable under the circumstances to attract licensees of subject inventions that are small business firms, and that it will give a preference to a small business firm when licensing a subject invention if the Contractor determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally as likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided, that the Contractor is also satisfied that the small business firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the contractor. However, the Contractor agrees that the Secretary of Commerce may review the Contractor's licensing program and decisions regarding small business applicants, and the Contractor will negotiate changes to its licensing policies, procedures, or practices with the Secretary of Commerce when the Secretary's review discloses that the Contractor could take reasonable steps to more effectively implement the requirements of this subparagraph (k)(4).

(l) Communications. (Reserved)

(End of clause)

**3.2.2.3-8 Audit and Records** (January 2004)

(a) 'Records' includes books, documents, accounting procedures and practices, and other data, regardless of type and form.

(b) Offerors (you, your) must maintain all records and other evidence that reflect direct or indirect real or anticipated costs you claim or anticipate incurring as part of this contract. You must also permit the CO to examine and audit any record or evidence you might rely on to support any claim for payment you might anticipate making, and to inspect during normal business hours the parts of your plant(s) where you are performing work under this contract.

(c) If you submitted cost or pricing data for this contract, you must permit the CO to examine and audit all of your records, including computations and projections, to evaluate the accuracy, completeness, and currency of your cost or pricing data. This includes information related to:

1. The proposal for the contract, subcontract, or modification;
2. Communicating about the proposal(s), including negotiating;
3. Pricing the contract, subcontract, or modification; or
4. Performing the contract, subcontract or modification.

(d) The Comptroller General of the United States, or an authorized representative, may examine your records involving transactions related to this contract or any subcontract. This does not mean you or your subcontractors must create or maintain records other than those you maintain in the ordinary course of business or required by law.

(e) If you must provide cost, funding, or performance reports, the CO may audit your supporting records and materials, and evaluate how effectively you produce data for these reports and present the data reported.

(f) You must make records, materials and other evidence described in paragraphs (a) through (e) of this clause available for FAA (us, we, our) inspection at your office during normal business hours for three (3) years after final payment under this contract, or for any longer period required by statute or by other clauses of this contract. You must allow us to examine, audit, or reproduce this information when we request to do so. When requested, you must also provide us--

(1) All records relating to any contract that is completely or partially terminated for three (3) years after any final termination or settlement, whichever is later; and

(2) Any records relating to appeals under a Contract Disputes clause, litigation, or to the settlement of contract disputes relating to this contract until any appeals, litigation, or contract disputes are finally resolved.

(g) You must include all the terms of this clause in subcontracts

(1) that exceed $1,000,000;
(2) that are cost-reimbursement, incentive, time-and-materials, labor-hour, or price-redeterminable or any combination of these;
(3) for which the FAA requires cost or pricing data; or
(4) that require the subcontractor provide reports as described in paragraph (e) of this clause.

(h) Neither party may alter this clause except to identify the contracting parties properly.

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# Appendix C: VISION 100–Century of Aviation Reauthorization Act of 2003

## *§ 44511. Aviation research grants*

**(a) General Authority.—** The Administrator of the Federal Aviation Administration may make grants to institutions of higher education and nonprofit research organizations to conduct aviation research in areas the Administrator considers necessary for the long-term growth of civil aviation.

**(b) Applications.—** An institution of higher education or nonprofit research organization interested in receiving a grant under this section may submit an application to the Administrator. The application must be in the form and contain the information the Administrator requires.

**(c) Solicitation, Review, and Evaluation Process.—** The Administrator shall establish a solicitation, review, and evaluation process that ensures—

> **(1)** providing grants under this section for proposals having adequate merit and relevancy to the mission of the Administration;
>
> **(2)** a fair geographical distribution of grants under this section; and
>
> **(3)** the inclusion of historically black institutions of higher education and other minority nonprofit research organizations for grant consideration under this section.

**(d) Records.—** Each person receiving a grant under this section shall maintain records that the Administrator requires as being necessary to facilitate an effective audit and evaluation of the use of money provided under the grant.

**(e) Annual Report.—** The Administrator shall submit an annual report to the Committee on Science of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate on carrying out this section.

**(f) Airport Cooperative Research Program.—**

> **(1) Establishment.—** The Secretary of Transportation shall establish a 4-year pilot airport cooperative research program to—
>
> > **(A)** identify problems that are shared by airport operating agencies and can be solved through applied research but that are not being adequately addressed by existing Federal research programs; and
> >
> > **(B)** fund research to address those problems.

**(2) Governance.—** The Secretary of Transportation shall appoint an independent governing board for the research program established under this subsection. The governing board shall be appointed from candidates nominated by national associations representing public airport operating agencies, airport executives, State aviation officials, and the scheduled airlines, and shall include representatives of appropriate Federal agencies. Section 14 of the Federal Advisory Committee Act shall not apply to the governing board.

**(3) Implementation.—** The Secretary of Transportation shall enter into an arrangement with the National Academy of Sciences to provide staff support to the governing board established under paragraph (2) and to carry out projects proposed by the governing board that the Secretary considers appropriate.

**(4) Report.—** Not later than 6 months after the expiration of the program under this subsection, the Secretary shall transmit to the Congress a report on the program, including recommendations as to the need for establishing a permanent airport cooperative research program.