

ACRP

AIRPORT
COOPERATIVE
RESEARCH
PROGRAM

SPONSORED BY THE FEDERAL AVIATION ADMINISTRATION

2014 ANNUAL REPORT OF PROGRESS



ACRP OVERSIGHT COMMITTEE*

CHAIR

Kitty Freidheim
Freidheim Consulting

VICE CHAIR

Kevin C. Dolliole
Unison Consulting

MEMBERS

Deborah Ale Flint
Oakland International Airport
Thella F. Bowens
San Diego County Regional Airport Authority
Benito DeLeon
Federal Aviation Administration
Richard de Neufville
Massachusetts Institute of Technology
Steve Grossman
Jacksonville Aviation Authority
Kelly Johnson
Northwest Arkansas Regional Airport Authority
F. Paul Martinez
Dallas/Fort Worth International Airport
Bob Montgomery
Southwest Airlines
Eric Potts
Freese and Nichols, Inc.
Richard Tucker
Huntsville International Airport
Paul J. Wiedefeld
Baltimore/Washington International Airport

EX OFFICIO MEMBERS

Sabrina Johnson
U.S. Environmental Protection Agency
Richard Marchi
Airports Council International—North America
Laura McKee
Airlines for America
Melissa Sabatine
American Association of Airport Executives
T.J. Schulz
Airport Consultants Council
Robert E. Skinner, Jr.
Transportation Research Board
Gregory Principato
National Association of State Aviation Officials

SECRETARY

Christopher W. Jenks
Transportation Research Board

TRANSPORTATION RESEARCH BOARD 2014 EXECUTIVE COMMITTEE*

OFFICERS

CHAIR: **Kirk T. Steudle**, *Director, Michigan DOT, Lansing*
VICE CHAIR: **Daniel Sperling**, *Professor of Civil Engineering and Environmental Science and Policy; Director, Institute of Transportation Studies, University of California, Davis*
EXECUTIVE DIRECTOR: **Robert E. Skinner, Jr.**, *Transportation Research Board*

MEMBERS

Victoria A. Arroyo, *Executive Director, Georgetown Climate Center, and Visiting Professor, Georgetown University Law Center, Washington, DC*
Scott E. Bennett, *Director, Arkansas State Highway and Transportation Department, Little Rock*
Deborah H. Butler, *Executive Vice President, Planning, and CIO, Norfolk Southern Corporation, Norfolk, VA*
James M. Crites, *Executive Vice President of Operations, Dallas/Fort Worth International Airport, TX*
Malcolm Dougherty, *Director, California Department of Transportation, Sacramento*
A. Stewart Fotheringham, *Professor and Director, Centre for Geoinformatics, School of Geography and Geosciences, University of St. Andrews, Fife, United Kingdom*
John S. Halikowski, *Director, Arizona DOT, Phoenix*
Michael W. Hancock, *Secretary, Kentucky Transportation Cabinet, Frankfort*
Susan Hanson, *Distinguished University Professor Emerita, School of Geography, Clark University, Worcester, MA*
Steve Heminger, *Executive Director, Metropolitan Transportation Commission, Oakland, CA*
Chris T. Hendrickson, *Duquesne Light Professor of Engineering, Carnegie Mellon University, Pittsburgh, PA*
Jeffrey D. Holt, *Managing Director, Bank of Montreal Capital Markets, and Chairman, Utah Transportation Commission, Huntsville, Utah*
Gary P. LaGrange, *President and CEO, Port of New Orleans, LA*
Michael P. Lewis, *Director, Rhode Island DOT, Providence*
Joan McDonald, *Commissioner, New York State DOT, Albany*
Abbas Mohaddes, *President and CEO, Iteris, Inc., Santa Ana, CA*
Donald A. Osterberg, *Senior Vice President, Safety and Security, Schneider National, Inc., Green Bay, WI*
Steven W. Palmer, *Vice President of Transportation, Lowe's Companies, Inc., Mooresville, NC*
Sandra Rosenbloom, *Professor, University of Texas, Austin*
Henry G. (Gerry) Schwartz, Jr., *Chairman (retired), Jacobs/Sverdrup Civil, Inc., St. Louis, MO*
Kumares C. Sinha, *Olson Distinguished Professor of Civil Engineering, Purdue University, West Lafayette, IN*
Gary C. Thomas, *President and Executive Director, Dallas Area Rapid Transit, Dallas, TX*
Paul Trombino III, *Director, Iowa DOT, Ames*
Phillip A. Washington, *General Manager, Regional Transportation District, Denver, CO*

EX OFFICIO MEMBERS

Thomas P. Bostick (Lt. General, U.S. Army), *Chief of Engineers and Commanding General, U.S. Army Corps of Engineers, Washington, DC*
Timothy P. Butters, *Acting Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. DOT*
Alison Jane Conway, *Assistant Professor, Department of Civil Engineering, City College of New York, NY, and Chair, TRB Young Member Council*
T. F. Scott Darling III, *Acting Administrator and Chief Counsel, Federal Motor Carrier Safety Administration, U.S. DOT*
David J. Friedman, *Acting Administrator, National Highway Traffic Safety Administration, U.S. DOT*
LeRoy Gishi, *Chief, Division of Transportation, Bureau of Indian Affairs, U.S. Department of the Interior*
John T. Gray II, *Senior Vice President, Policy and Economics, Association of American Railroads, Washington, DC*
Michael P. Huerta, *Administrator, Federal Aviation Administration, U.S. DOT*
Paul N. Jaenichen, Sr., *Acting Administrator, Maritime Administration, U.S. DOT*
Therese W. McMillan, *Acting Administrator, Federal Transit Administration, U.S. DOT*
Michael P. Melaniphy, *President and CEO, American Public Transportation Association, Washington, DC*
Gregory G. Nadeau, *Acting Administrator, Federal Highway Administration, U.S. DOT*
Peter M. Rogoff, *Under Secretary for Policy, U.S. DOT*
Craig A. Rutland, *U.S. Air Force Pavement Engineer, Air Force Civil Engineer Center, Tyndall Air Force Base, FL*
Joseph C. Szabo, *Administrator, Federal Railroad Administration, U.S. DOT*
Barry R. Wallerstein, *Executive Officer, South Coast Air Quality Management District, Diamond Bar, CA*
Gregory D. Winfree, *Assistant Secretary for Research and Technology, Office of the Secretary, U.S. DOT*
Frederick G. (Bud) Wright, *Executive Director, American Association of State Highway and Transportation Officials, Washington, DC*
Paul F. Zukunft (Adm., U.S. Coast Guard), *Commandant, U.S. Coast Guard, U.S. Department of Homeland Security*

* Membership as of November 2014.

* Membership as of November 2014.

ACRP

AIRPORT
COOPERATIVE
RESEARCH
PROGRAM

SPONSORED BY THE FEDERAL AVIATION ADMINISTRATION

2014 ANNUAL REPORT OF PROGRESS



TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

WASHINGTON, D.C.
2014
www.TRB.org

AIRPORT COOPERATIVE RESEARCH PROGRAM

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

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

The ACRP was authorized in December 2003 as part of the Vision 100-Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), and Airlines for America (A4A) as vital links to the airport community; (2) the TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academies formally initiating the program.

The ACRP benefits from the cooperation and participation of airport professionals, air carriers, shippers, state and local government officials, equipment and service suppliers, other airport users, and research organizations. Each of these participants has different interests and responsibilities, and each is an integral part of this cooperative research effort. Research problem statements for the ACRP are solicited periodically but may be submitted to the TRB by anyone at

any time. It is the responsibility of the AOC to formulate the research program by identifying the highest priority projects and defining funding levels and expected products.

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

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

ADDRESS AND CONTACT INFORMATION

Transportation Research Board
500 Fifth Street, NW
Washington, D.C. 20001
202-334-3224

<http://www.TRB.org>

Address Inquiries to:

Christopher W. Jenks
Director, Cooperative Research Programs
202-334-3089
cjenks@nas.edu

Michael R. Salamone
Manager, Airport Cooperative Research Program
202-334-1268
msalamone@nas.edu

Cover photo courtesy of San Diego International Airport, San Diego, California.

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

The **National Academy of Sciences** is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Ralph J. Cicerone is president of the National Academy of Sciences.

The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. C. D. Mote, Jr., is president of the National Academy of Engineering.

The **Institute of Medicine** was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Victor J. Dzau is president of the Institute of Medicine.

The **National Research Council** was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Ralph J. Cicerone and Dr. C. D. Mote, Jr., are chair and vice chair, respectively, of the National Research Council.

The **Transportation Research Board** is one of six major divisions of the National Research Council. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. www.TRB.org

www.national-academies.org

COOPERATIVE RESEARCH PROGRAMS STAFF

Director
Christopher W. Jenks

ACRP Manager

Michael R. Salamone

NCHRP Manager

Christopher Hedges

Senior Program Officers

Mark S. Bush

Gwen Chisholm Smith

Waseem Dekelbab

B. Ray Derr

Lawrence D. Goldstein

Marci A. Greenberger

Amir N. Hanna

Edward T. Harrigan

Andrew C. Lemer

Joseph D. Navarrete

Stephan A. Parker

David A. Reynaud

William C. Rogers

Theresia H. Schatz

Dianne S. Schwager

Lori L. Sundstrom

Administrative Coordinator

Adrienne C. Blackwell

Administrative Associate

Cynthia E. Butler

Program Associates

Sheila A. Moore

Joseph J. Snell

Senior Program Assistants

Anthony P. Avery

Terri Baker

Megan A. Chamberlain

Thu M. Le

Jeffrey Oser

Andréa Parker

Danna Powell

Charlotte Thomas

Program Assistant

Stephanie L. Campbell

Director of Publications

Eileen P. Delaney

Senior Editors

Natalie Barnes

Hilary Freer

Editors

Ellen M. Chafee

Maria Sabin Crawford

Doug English

Margaret B. Hagood

Scott E. Hitchcock

Sharon Lamberton

Senior Editorial Assistant

Theresa C. Crean

Information Technology Specialist

Roy N. Mesler

Note: Italicized names indicate ACRP staff.

Letter From the AOC Chair

For nearly a decade, the Airport Cooperative Research Program has been producing useful, near-term solutions for the airport industry. Today, the cumulative impact of ACRP's efforts can be found at airports throughout the U.S. Simply stated: ACRP has had a positive impact on the airport industry.

ACRP continues to develop accessible, reliable research, and at the end of 2014 we can count 426 projects and nearly 300 publications as part of our longstanding commitment to the industry. ACRP remains steadfast in its mission to support and advance industry knowledge and practice. Currently, we have 35 new projects underway, and this past year we welcomed seven new voting members and two new non-voting members representing ex officio organizations to the ACRP Oversight Committee.

Economic shocks, emergency preparedness, and sustainability are some of the urgent issues ACRP is addressing head-on. This year's annual progress report shows us how sustainable practices can, in fact, successfully be implemented at the airport. This issue touches upon the triple bottom line of environmental, economic, and social concerns, all of which are ongoing and increasingly relevant for airport managers. As the public and our economy demand greater attention to greener and more cost-effective solutions, ACRP is providing insight and guidance.

There is no better place for airport professionals to look for an actionable response to today's challenges than to ACRP. In 2014, we introduced a new suite of resources that can help airports incorporate sustainability into their business operations. Our reports cover everything from evaluating impacts of green initiatives to useful methods for implementation.

While these research reports contain the resources to immediately improve airport operations, our efforts at ACRP are only as good as our ability to reach those who need them. We consistently engage with the airport community in order to improve the value and utility of our projects. We reach out via our Ambassador Program, conferences, exhibitions, webinars, and projects to build and improve upon our research library and dissemination.

And, of course, we are most appreciative of the strong support and active participation of the Federal Aviation Administration, along with the highly professional and committed efforts of the TRB staff. We look forward to continuing to grow and improve this body of research and our outreach.

Sincerely,



Kitty Freidheim



CONTENTS

Overview	1
Facilitating the Research Process	2
Engaging Airport Practitioners	4
Disseminating Practical Solutions	5
Major Accomplishments of 2014	6
<i>Publications</i>	6
<i>From Research to Practice</i>	8
Impacts on Practices	11
Appendix A: Publications of the Airport Cooperative Research Program	17
Appendix B: Summary of Project Status Through December 31, 2014	26
Notice to Readers	60
How to Order ACRP Publications from TRB	60

AIRPORT COOPERATIVE RESEARCH PROGRAM

Annual Report of Progress

December 31, 2014

Overview

Today's airport practitioners need easy access to the tools that will keep their facilities open and thriving. In this era of uncertainty, the Airport Cooperative Research Program (ACRP) serves as a source of unbiased, accurate research to assist the industry. ACRP is an applied research program managed by the Transportation Research Board of the National Academies and sponsored by the Federal Aviation Administration. Together with public- and private-sector industry experts, ACRP produces reports, syntheses, and digests that cover a diverse set of research fields: safety, policy, planning, airport design, construction, legal issues, maintenance, operations, and administration.

The shift in the airport industry—from predictable traffic and passenger levels to economic instability, capacity constraints, and congestion—has required airport practitioners to respond with creative problem solving. ACRP has been offering practical, hands-on software guidance, modeling tools, sample planning documents, best practices, worksheets, checklists, and more since 2006. Critical to ACRP's success has been its ability to establish and engage with a growing network of airport practitioners. Over the past nine years, industry experts representing all 50 states, Washington, D.C., and Puerto Rico, have contributed to the program's research and helped ensure that ACRP's work is relevant and meaningful to its audience (see Figure 1).

ACRP is a valuable and respected research program that airport executives and our overall industry truly appreciate. I have been actively involved with the program for many years and have always been very impressed with the quality results of the various studies. Additionally I have always been impressed by the true professionalism and dedication of the ACRP staff.

Randall Berg

Director of Airport Operations for Salt Lake City Department of Airports and Chair of the American Association of Airport Executives

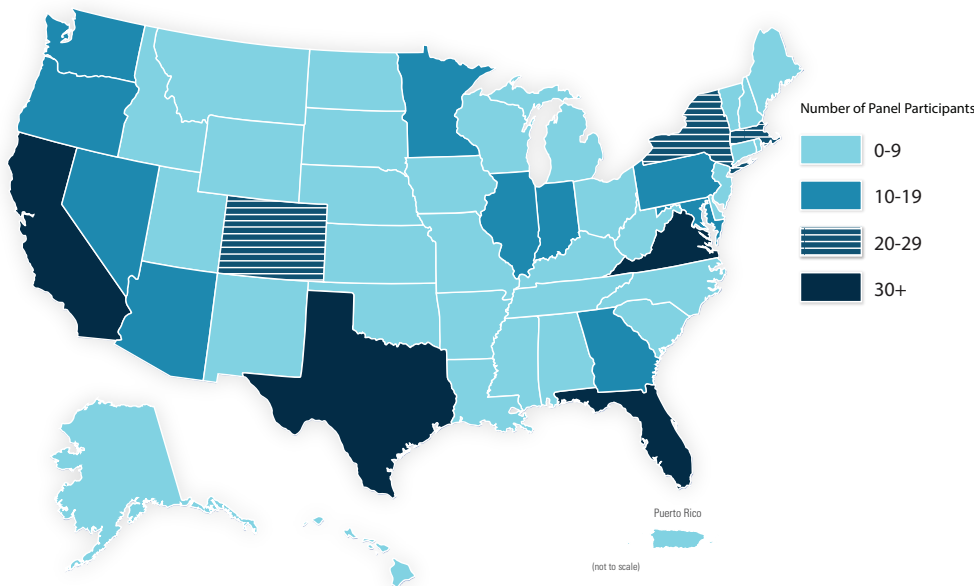


Figure 1: 2014 ACRP Research Panel Participants by State

Sustainability is becoming an accepted way of doing business at airports. ACRP is greatly advancing airport sustainability planning and practice through two recent projects. ACRP 02-28, "Airport Sustainability Practices: Tools for Evaluating, Measuring, and Implementing" creates a framework for airports to evaluate their sustainability progress on an airport-wide basis and focus their efforts on the areas of best value; while ACRP 02-30, "Enhancing the Airport-Industry SAGA Website" will provide an outstanding collaborative website tool for the industry that allows airports to identify sustainability measures and to actively share tried and true practices.

Carol A. Lurie

LEED AP, ENV SP, AICP Senior Planner/Principal VHB and Chair of Airport Consultants Council

In 2014, ACRP continued to identify and address the most pressing new and ongoing issues facing the airport industry. Relying on its proven collaborative process, ACRP published more than two dozen industry reports, syntheses, and research digests—many with a particular emphasis toward environmental sustainability and energy efficiency. These publications help airports identify opportunities to become more environmentally responsible, demonstrate sensitivity to the impact of operations on surrounding communities, diversify fuel supplies, improve air quality, and implement energy efficiency measures that save money and cut greenhouse gas (GHG) emissions. Notable accomplishments in 2014 include the following reports on sustainability (for more information, see www.trb.org/Publications/PubsACRPPublications.aspx):

- *ACRP Report 100: Recycling Best Practices—A Guidebook for Advancing Recycling from Aircraft Cabins*
- *ACRP Report 102: Guidance for Estimating Airport Construction Emissions*
- *ACRP Report 110: Evaluating Impacts of Sustainability Practices on Airport Operations and Maintenance*
- *ACRP Synthesis 53: Outcomes of Green Initiatives: Large Airport Experience*

ACRP's outreach efforts in 2014 provided airport practitioners with opportunities to collaborate and share best practices with other industry stakeholders. Through its webinars, presentations, website, and social media outlets, ACRP provided reliable information and helped build relationships that are improving the way airports do business. Key highlights from 2014 include:

- Conducted 13 webinars
- More than 55,000 web visits
- Continued growth in social media through Twitter, LinkedIn, and Facebook

Facilitating the Research Process

Since 2005, ACRP has authorized more than 426 projects resulting in a diverse set of practical research products covering a wide range of topics relevant to the airport industry. It has distributed more than \$96 million in project funding—providing \$10 million in FY2015 alone (see Figure 2).

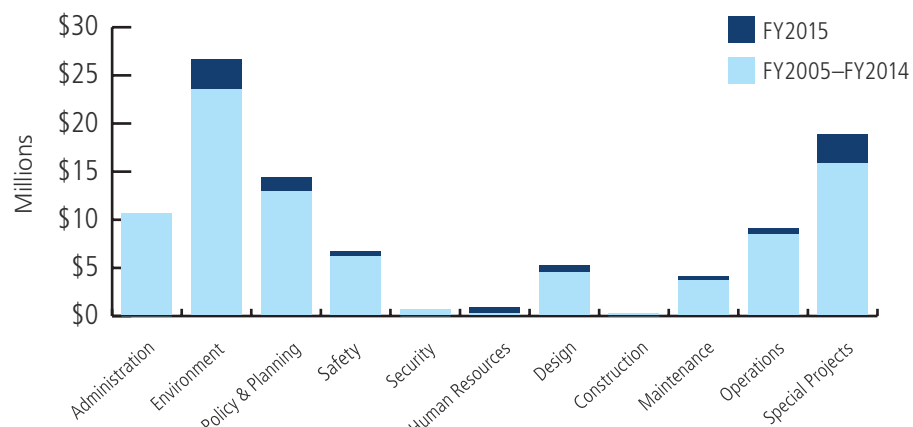


Figure 2: Funding Across ACRP Research Fields

Core to ACRP’s success is the way in which the program engages airport practitioners to help identify gaps in knowledge and practice affecting airports. Each project is scoped and guided by its own panel of industry experts. The research is conducted by contractors who are selected on the basis of competitive proposals. This cooperative process is proven and has been used successfully for more than 50 years by other TRB programs (see Figure 3).

ACRP encourages practitioners to get involved by participating in one or more steps of the research cycle. There are five key ways people can get involved:

- Submit a research idea or problem statement
- Volunteer for a project panel
- Prepare a research proposal
- Respond to a request for information or complete a survey
- Use the research results

ACRP Annual Research Cycle

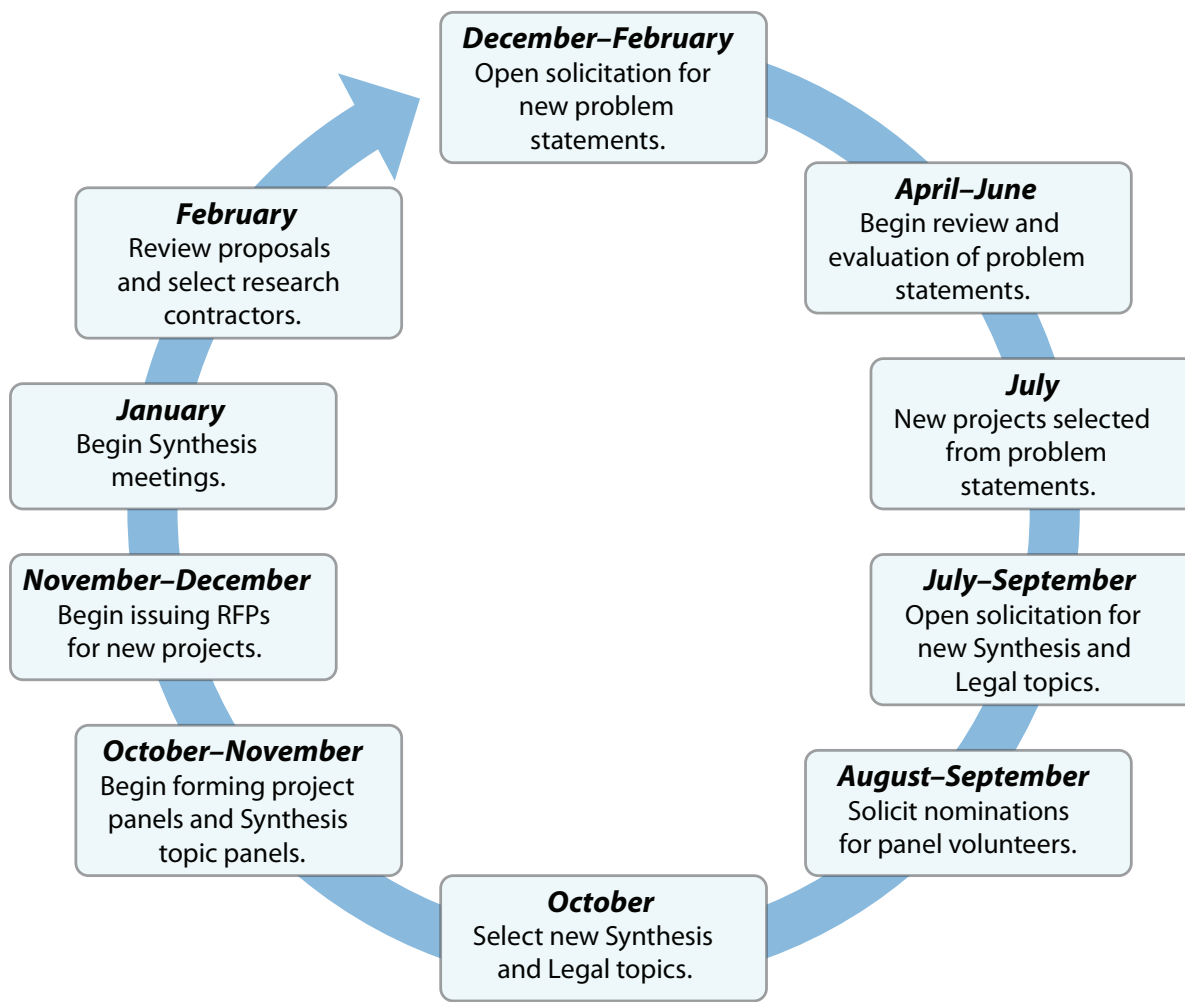


Figure 3: ACRP Research Cycle

ACRP Champions

A new outreach initiative launching in 2015, ACRP Champions will have an internal focus within their host organizations. Champions will serve a vital role in helping their airport practitioner colleagues connect to ACRP resources and engage with ACRP programs and the research process.

ACRP
Champion

Engaging Airport Practitioners

ACRP brings together industry stakeholders and has built a comprehensive network of practitioners. It relies on this network to drive research that focuses on issues relevant and meaningful to the airport community. Throughout the research cycle and across its outreach programs, there are multiple ways in which ACRP invites members of the airport community to contribute to and benefit from its work. The wide variety of participants represent airports, suppliers, public safety agencies, airlines, airport tenants, local and regional government authorities, equipment suppliers, industry associations, research and consulting firms, academic institutions, the media, the public, and many other stakeholders in the airport community. In addition to the following opportunities, ACRP started planning a new engagement activity, the ACRP Champions initiative, described below.

- **Problem statements:** ACRP invites all stakeholders to submit problem statements at any time. Information on how to submit a problem statement and a list of previously funded projects are available on the ACRP homepage (for more information, see www.TRB.org/ACRP/ACRP.aspx).
- **Project panels:** As part of the publication development process, ACRP recruits airport professionals to participate on project panels to provide technical guidance and counsel to research teams. Project panels convene around topics ranging from customer service and community involvement to environmental issues, emergency response, and airport infrastructure. They help guide ACRP research by using selected problem statements to prepare requests for proposals (RFPs), selecting contractors, and providing technical guidance and counsel throughout the life of the project.
- **ACRP Ambassadors:** The Ambassador Program strengthens ACRP's connection to the airport industry and improves stakeholder awareness of, and access to, ACRP's solutions-based research products. Ambassadors serve as liaisons between ACRP and its varied audiences across the United States. In concert with ACRP, Ambassadors identify, select, and attend industry events within their geographic regions; staff the ACRP exhibit booths; describe and promote solutions (in the form of ACRP research products) to a wide array of issues affecting airports; and, as opportunities arise, present on other topics as needed.
- **ACRP Champions:** ACRP Champions will be sponsored by CEOs and senior managers of airports and private organizations to serve as in-house experts on ACRP and its research products and publications. Assuming the role for multiple years, Champions will serve as internal knowledge leaders on ACRP and disseminate ACRP news, information, and research products within their organizations. They will inspire their colleagues to get involved through one of the many engagement channels and better understand the benefits that will accrue back to their host airports and organizations. ACRP is designing the program to feature gamification elements that encourage Champions to accomplish "missions" of varying degrees of complexity with rewards offered once missions are successfully completed.
- **Speakers Bureau:** Airport practitioners and experts who conduct research on behalf of ACRP are encouraged to present at industry forums by participating in ACRP's Speakers Bureau. Speakers represent ACRP and increase awareness of its research products and value to the industry at regional conferences and workshops around the country.

- **Impacts on Practice:** ACRP publishes the Impacts on Practice (IOPs) series to demonstrate how ACRP’s research is applied in airports across the country. ACRP encourages airport practitioners to submit examples of how they are using ACRP research results for inclusion in upcoming IOPs.
- **Graduate Award Program:** ACRP’s Graduate Award Program was reintroduced in 2008 to encourage applied research on airport and related aviation system issues and to foster the next generation of aviation community leaders. The program is intended to stimulate thought, discussion, and research by those who may become future airport managers, operators, designers, and policy makers in aviation.

Participating in the ACRP Graduate Award Program provided me with the opportunity to define and execute an exciting cross-disciplinary project that integrated computer science research in problems facing the aviation community. It positioned me for an academic appointment immediately after finishing my PhD.

Derek Doran

*Assistant Professor,
Wright State University*

Disseminating Practical Solutions

ACRP’s library of more than 300 publications helps practitioners and other stakeholders collaborate and share lessons learned, meet environmental and sustainability goals, and operate safely and efficiently. ACRP works through its various distribution channels to ensure the program’s tools and resources are getting into the hands of airport practitioners who need them. The program has built a presence on the web and through social media to deliver and publicize ACRP research results and activities. Read more about ACRP’s accomplishments with social media and webinars starting on page 8.

ACRP’s website serves as one of its primary tools for disseminating information to airport practitioners. ACRP’s pages attract visitors from all 50 states and many foreign countries, including Canada, India, the United Kingdom, Brazil, China, and France (see Figure 4).

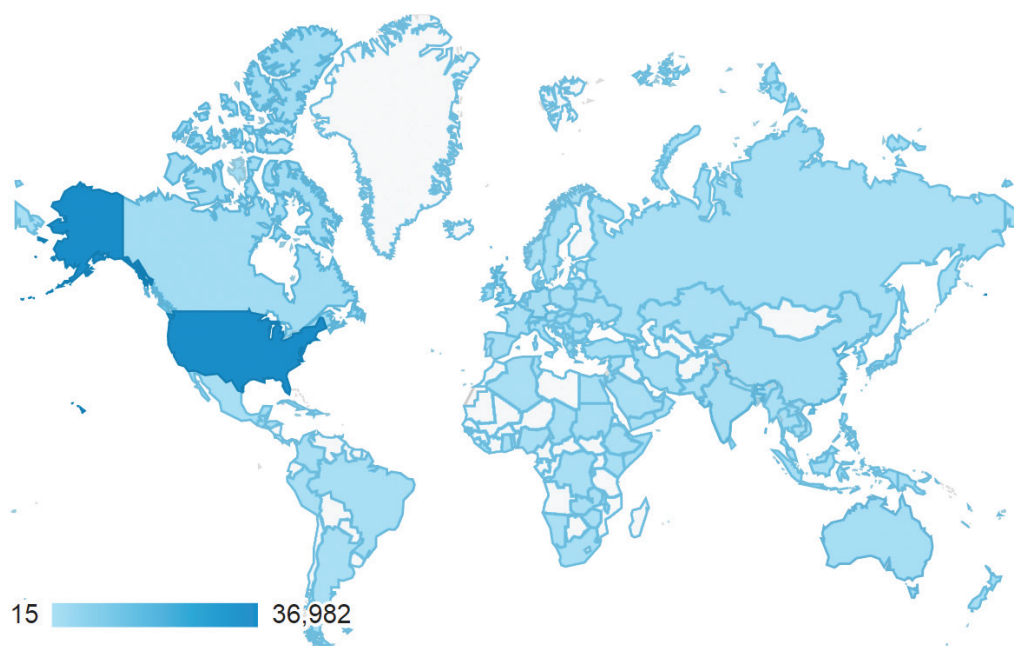


Figure 4: ACRP Web Visits by Country

As a New England Region ACRP Ambassador and state aeronautics director in Massachusetts, I have seen first hand the effectiveness of the ACRP program with airport managers in our region. The industry-developed reports have greatly assisted our general aviation airports in improving overall operations and strategic planning at their respective facilities.

Christopher J. Willenborg

Massachusetts Department of Transportation and past Chair of National Association of State Aviation Officials

The website features a searchable library of ACRP’s project reports, synthesis reports, and research digests, as well as information about how practitioners can get more involved with the program. While most of ACRP’s visitors come via search engine searches, 28% of ACRP’s total web visitors come directly to the site, indicating a strong awareness of the site on the part of many web visitors. Additionally, many users are referred to ACRP through other industry-related websites, such as the FAA, accounting for 18% of ACRP web traffic. For direct and referred visitors, roughly 43% end up downloading at least one of ACRP’s published reports. Since the launch of the ACRP web pages in 2007, visits overall have been increasing from year to year, and in 2014 total visits exceeded 55,000, of which more than 33,000 were unique visits (see Figure 5).

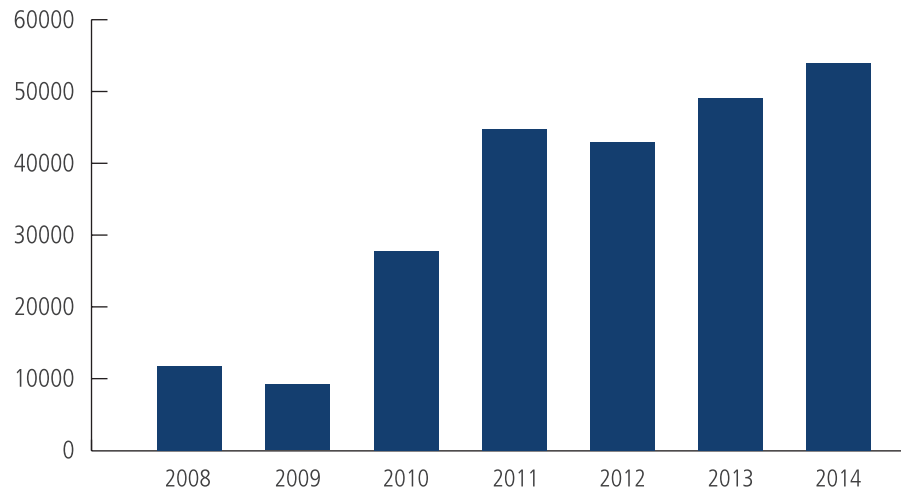


Figure 5: Growth in ACRP Web Visits

Major Accomplishments of 2014

Publications

ACRP’s research products and publications have greatly contributed to and enhanced solutions to real-world airport problems. ACRP publications include project reports, synthesis reports, research digests, and the Impacts on Practice series. In 2014, ACRP produced 43 publications, including 20 reports (eight reports include CD-ROMs containing tools, spreadsheets, videos, and more), four research digests, one legal digest, and 10 syntheses.

Sustainability, one of the many real-world issues addressed by ACRP, represents more than just environmental compliance; it is an opportunity for comprehensive, strategic planning related to an airport’s economic viability, operational efficiency, and impact on the surrounding natural environment and community. Therefore, ACRP has generated numerous reports to help airport personnel explore what sustainability opportunities exist. The following reports from 2014 describe both current practices and future trends in airport sustainability:

- *ACRP Report 100: Recycling Best Practices—A Guidebook for Advancing Recycling from Aircraft Cabins* is intended to equip airlines, airports, and flight kitchens with tools to help them save money, generate revenue, and increase efficiency through recycling initiatives.

- *ACRP Report 110: Evaluating Impacts of Sustainability Practices on Airport Operations and Maintenance* presents case studies from various airport maintenance departments, which were used to develop an evaluation process and cost–benefit tool (EP&CBT). The report also comes with a downloadable CD-ROM that contains spreadsheet tools and an instructional video to demonstrate how to use data from an example project.
- *ACRP Synthesis 53: Outcomes of Green Initiatives: Large Airport Experience* describes how green initiatives at airports have had positive impacts on the environment, financial performance, and, in some cases, the community surrounding the airports.

Top 5 Downloaded Reports in 2014

ACRP Report 103: A Guidebook for Integrating NIMS for Personnel and Resources at Airports

ACRP Report 25: Airport Passenger Terminal Planning and Design, Volume 1: Guidebook

ACRP Report 98: Understanding Airline and Passenger Choice in Multi-Airport Regions

ACRP Report 104: Defining and Measuring Aircraft Delay and Airport Capacity Thresholds

ACRP Report 96: Apron Planning and Design Guidebook

In addition to research around sustainability topics, ACRP also developed publications and tools to assist practitioners in other important areas of airport management:

- *ACRP Synthesis 50: Effective Cooperation Among Airports and Local and Regional Emergency Management Agencies for Disaster Preparedness and Response* uses survey data to highlight the importance of collaboration during times of crises and suggests steps toward healthier and more efficient relationships among practitioners.
- *ACRP Synthesis 58: Safety Reporting Systems at Airports* provides comprehensive information for all airports interested in collecting, analyzing, and reporting on safety data. The range of airport types participating in the study includes large, medium, small, non-hub, general aviation, and joint civilian/military joint-use airports at various locations throughout the United States.
- *ACRP Synthesis 56: Understanding the Value of Social Media at Airports for Customer Engagement* defines the meaning of social media for airport managers and stakeholders and explains how the increased availability of real-time information can affect airport operations.

In 2014, ACRP published three IOPs.

- *Identifying Practices for Controlling Aircraft and Airfield Deicing Runoff* examines how the Gerald R. Ford International Airport (GRR) in Grand Rapids, Michigan utilized *ACRP Report 14: Deicing Planning Guidelines and Practices for Stormwater Management Systems* to develop a long-term stormwater and deicing program that would maintain airport safety and comply with environmental regulations.
- *Improving Airport Curbside and Roadway Operations* highlights the various analytical tools presented in *ACRP Report 40: Airport Curbside and Terminal Area Roadway Operations* which can help airports make informed decisions about roadway infrastructure and operational improvements. Featured in the article are planning efforts by Ottawa Macdonald-Cartier International Airport (YOW) to improve its curbside operations using one of these analytical tools.
- *Planning for Recovery of Disabled Aircraft* reviews the challenges faced by airports when needing to recover a disabled aircraft. Although these events are rare, *ACRP Synthesis 38: Expediting Aircraft Recovery at Airports* provides specific guidance to airport operators in dealing with recovery situations. The article highlights how staff at John Wayne Airport (SNA) in Orange County, CA, looked to *ACRP Synthesis 38* when they were conducting recovery planning.

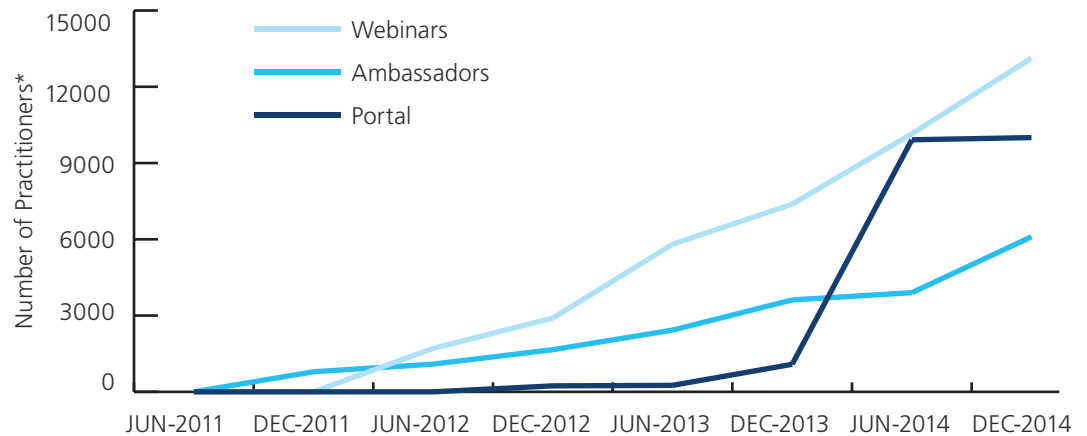
ACRP's large body of research is always growing and keeping pace with the latest trends. I've seen ACRP reports fill a void on essential information and best practices that was missing in the airport community. They have been an indispensable resource for the airport industry.

T.J. Schulz

*President,
Airport Consultants Council*

From Research to Practice

Whether through face-to-face interactions, presentations at industry gatherings, or leveraging new media channels, ACRP is making sure that its research is being disseminated to airport practitioners, that they are using it, and that they are becoming more engaged with ACRP (see Figure 6).



*Some practitioners are reached through multiple avenues.

Figure 6: Practitioners Reached Through ACRP Outreach

Reaching Airport Practitioners Face to Face

ACRP recognizes that one of the most effective ways to reach airport practitioners is through in-person interactions. ACRP staff attend, participate in, and present at airport industry events throughout the year, and these events present valuable opportunities to reach practitioners and distribute ACRP research results during formal presentations and informal interactions. In 2014, staff attended more than a dozen industry events, interacting with thousands of attendees over the course of the year. ACRP's Ambassador Program helped ACRP staff disseminate ACRP results and provided engagement opportunities to airport professionals around the country. The Ambassadors attended more than 30 airport industry events across the country in 2014, reaching approximately 5,500 practitioners through direct interactions.

Airport professionals are also engaged with ACRP through the ACRP Speakers Bureau. The Speakers Bureau provides a "go to" list of experts ready to speak at conferences on ACRP research. Speakers Bureau participants are typically researchers who have been key members of research teams, or project oversight panel members. In 2014, the Speakers Bureau included 31 individuals with affiliations in the private sector, academia, and state and federal government.

Leveraging New Media

Airport practitioners balance diverse workloads, which require them to be flexible and adapt to developments in real time. ACRP has successfully leveraged social media as an avenue for keeping the airport community up to date on announcements relating to new publications, events, and opportunities to engage in the program. ACRP's social media following has grown to more than 7,500 across platforms (see Figure 7).



LinkedIn: Started in late 2010, ACRP’s LinkedIn discussion group includes more than 2,500 members, more than half of whom are at a senior or managerial level within their organizations. Additionally, ACRP staff maintains an expanding list of 3,750 industry connections. ACRP Group members have access to the latest updates from ACRP and the opportunity to communicate with colleagues in the field; request access to the group; and receive regular updates on the latest events, published materials, and other resources from ACRP.



Twitter: The ACRP Twitter accounts (@ACRPAmbassadors and @mikesalamone) use conference, event, and industry hashtags to develop searchable ACRP content on Twitter and to publicize ACRP activities (see sample tweets in the sidebar). ACRP introduced a new hashtag this year, #ACRPImpact, to call attention to the case studies in ACRP’s Impacts on Practice. By the end of 2014, the ACRP Ambassador Twitter account had grown to more than 690 followers.



Facebook: With 380 likes, ACRP keeps its Facebook audience current on the latest webinars, industry events, and opportunities for engagement with the program.

ACRP on Twitter

Does your airport use the Integrated Noise Model? #ACRP’s new Web-only doc takes a look at optimizing its usefulness. <http://ow.ly/D26da>

#ACRPImpact - A case study on Identifying Practices for Controlling Aircraft and Airfield Deicing Runoff
@TRBofNA trb.org/ACRP/Blurbs/170964.aspx

Register Now for #ACRP Winter Webinars. Next webinar is on Feb 11: Getting More out of Airport Mutual Aid. trb.org/webinars

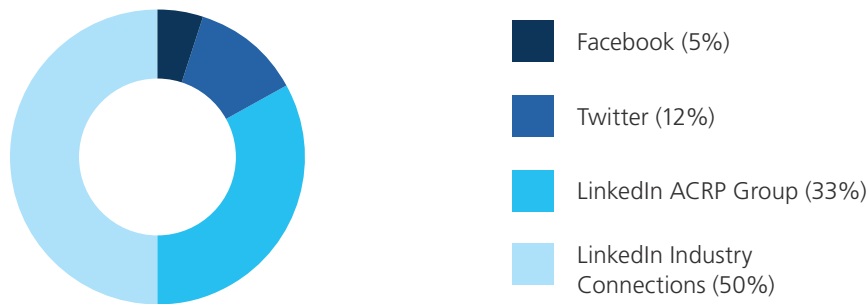


Figure 7: ACRP in Social Media

The ACRP webinar series represents a valuable tool within the program’s dissemination toolbox. Since 2011, ACRP has hosted 30 webinars reaching more than 6,000 practitioners. ACRP considers better communication among practitioners in the airport industry a priority, and thus regularly schedules webinars to connect individuals across the country via 90-minute presentations. These webinars are loaded with relevant information for ACRP stakeholders, and participants have the opportunity to comment and ask questions to the expert panelists. ACRP maintains a list of webinars online, so practitioners always have easy access to recent or historical presentations (past webinars are available online at www.TRB.org/Aviation1/ElectronicSessions.aspx).

In 2014, ACRP continued its successful webinar series, which included several presentations on sustainability:

- Evaluating and Improving Airport Environmental Sustainability Practices
- Emissions Inventories: Considerations for Accurate Reporting
- Facility Planning Tools to Create Alternative Growth and Development Scenarios

Great job, all. It is great to hear from your substantial knowledge base why we (wildlife biologists) are asking for or prioritizing tasks and resources. You didn't just talk about the techniques, you included the basis for taking certain actions—very good stuff!!! Keep up the great work!

Cathy Boyles

*Wildlife Administrator,
Dallas/Fort Worth
International Airport*

In response to the positive reception of its webinars, ACRP continued to expand its webinar offerings in 2014. ACRP produced 13 webinars that attracted more than 2,400 total participants and involved 39 key researchers of ACRP publications as speakers and moderators (see Figure 8).



Figure 8. Highlights of 2014 Webinar Series

2014 Webinar Topics

Getting More out of Airport Mutual Aid • Airport Terminal Planning and Design: Models and Analytical Methods to Support Decision-Making • Safety Management Systems (SMS) • Tools and Strategies for Implementation; Techniques for Successful Airport Wildlife Management Programs • The Effects of Aviation Noise • Aeronautical and Non-Aeronautical Special Event Planning at General Aviation Facilities • Emergency and Disaster Preparedness: Cooperation and Coordination for Effective Response • Airport Legal Research Digests: Understanding Procurement Requirements • Evaluating and Improving Airport Environmental Sustainability Practices • Successful Peer Practices for Comprehensive Training Resources • Emissions Inventories: Considerations for Accurate Reporting • Facility Planning Tools to Create Alternative Growth and Development Scenarios • Tool Demonstrations for Airport Terminal Planning and Design.

Identifying Practices for Controlling Aircraft and Airfield Deicing Runoff

During winter weather, Federal Aviation Administration (FAA) regulations require all aircraft to be free of contamination at takeoff and that runway friction be maintained. To meet these regulations and to help assure the safety of airport passengers and personnel, deicing agents are commonly used to remove frost, snow, and ice from planes and pavement.

The Society of Automotive Engineers (SAE) Aerospace Council has a set of approved deicers for planes and runways;

however, some of these treatments have potentially harmful environmental impacts if airport runoff discharge is not managed as required by the Clean Water Act. Maintaining safety and developing effective runoff management methods can be difficult to achieve, especially for small airports that possess limited staff, resources, and funding.

ACRP Report 14: Deicing Planning Guidelines and Practices for Stormwater Management Systems (2009) was developed to help airports and aircraft operators meet this challenge. The report provides practical guidance in selecting best management practices (BMPs) for controlling deicing runoff. *ACRP Report 14* includes fact sheets which identify several deicing BMPs that can be evaluated by airport personnel and chosen to fit their facility's unique needs.

At Gerald R. Ford International Airport (GRR) in Grand Rapids, Michigan, facilities management director Thomas Ecklund and fellow airport employees utilized *ACRP Report 14* to develop a long-

term stormwater and deicing program that would maintain airport safety and comply with environmental regulations.

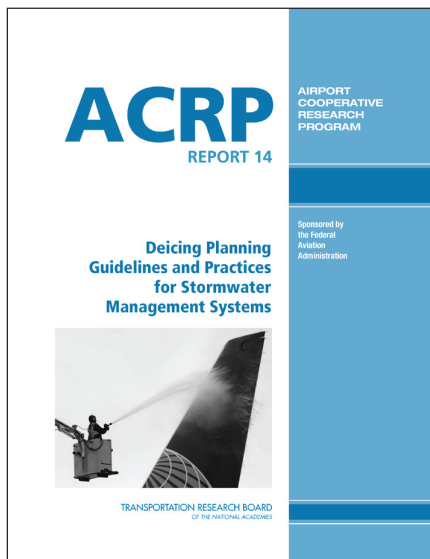
In 2010, the Michigan Department of Environmental Quality (DEQ) issued a National Pollutant Discharge Elimination System (NPDES) permit to GRR authorizing its deicing stormwater discharges, but required implementation of controls for eliminating deicing runoff into a local tributary that had been the major source of biofilm accumulation.

The permit also required GRR to continue using mobile collecting units to collect and recycle glycol, a common deicing agent approved by SAE. To comply with the permit, a long-term runoff management plan had to be submitted to the DEQ by September 1, 2011 and implemented no later than October 1, 2015.

GRR specifically used *ACRP Report 14* to identify a runoff management system and then develop a runoff management plan. The report outlines a step-by-step process for defining suitable management systems that includes:

1. Identify potential practices;
2. Select candidate practices;
3. Identify constraints on system design; and
4. Assemble and evaluate practical system alternatives.

Applying this process, GRR identified potential BMPs suggested by *ACRP Report 14*. The guidelines offered GRR successful BMPs from five different categories: aircraft deicing source reduction; airfield pavement deicing source reduction; deicing runoff contaminant/collection; deicing runoff treatment/recycling; and



Right: Proposed route for redirected stormwater flows at Gerald R. Ford International Airport. The route utilizes twelve natural treatment beds.

Photo courtesy of GRR.

Controlling Deicing Runoff—continued

Since 2006, an industry-driven, applied research program that develops near-term, practical solutions to problems faced by airport operators.

deicing runoff system components. The guidebook displays each BMP in a table which was assessed by GRR for various elements including ease of implementation, constraints, costs, and potential savings. “We looked at every one of those best management practices to identify those that were potentially appropriate,” said Mr. Ecklund. “We went through an elimination process and developed our long-term conceptual plan.”

Members of GRR staff, a consulting team, the FAA, and staff from the airport’s commercial airline partners, cargo and general aviation tenants attended a two-day workshop to review suggested BMPs. Each option was assessed for the following criteria to determine its success at GRR:

- Effectiveness in contributing to the required permit mandates;
- Ease of implementation;
- Impact on airline and tenant operations;
- Capital cost; and
- Operations and maintenance cost and resources.

Each of these criteria is described in *ACRP Report 14* for the assessment of candidate practices. At the conclusion of the workshop, potential systems were identified, including the combination of BMPs and construction. These options were then further refined by an advisory committee. The resulting plan for the new

system was submitted to the DEQ and successfully approved in December 2011.

GRR completed its design process in May 2013, took bids in July and began construction in October of that year. When completed in August 2015, the new system will include airfield storm sewer work redirecting storm flows to an alternate location on a nearby river, and the construction of natural treatment beds to reduce the impacts of glycol (approximately 80% reduction) in the discharge.

ACRP Report 14 presents easy-to-use guidelines to help airport personnel identify, construct, and maintain an effective deicing runoff management plan. The report provides a step-by-step framework (see illustration below) for developing and implementing a deicing runoff management system to comply with environmental regulatory requirements.

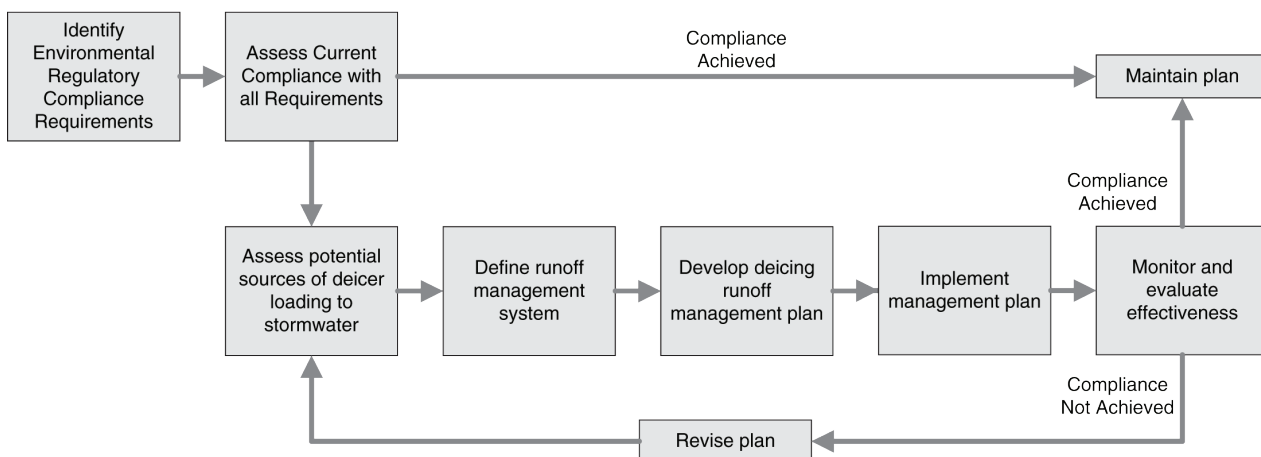
GRR utilized *ACRP Report 14* to help its staff and tenants understand and assess various BMPs that would comply with both airport safety and environmental regulations. “*ACRP Report 14* was a critical starting point for our two-day planning workshop,” noted Mr. Ecklund. “It allowed all participants to start on an equal basis when it came to identifying

A deicing runoff management system is an assemblage of practices that, as an integrated whole, achieves environmental regulatory compliance within the context and constraints of safety, as well as operational and cost requirements and objectives. Practices for controlling deicing runoff can be arranged in three categories:

1. Source reduction;
2. Containment / collection; and
3. Discharge / treatment / recycling.

*ACRP Report 14:
Deicing Planning Guidelines and Practices
for Stormwater Management Systems*

proven, successful techniques for us to consider. The group did not have to spend precious time identifying possible BMPs and determining their potential for success.” The report’s guidelines enabled GRR to more clearly define and engineer a system that best fit the airport facility’s specific needs and to meet timely approval by the DEQ.



Above: Illustration from *ACRP Report 14* of the framework for developing and implementing a deicing runoff management strategy.

ACKNOWLEDGMENT OF SPONSORSHIP: This work was sponsored by the Federal Aviation Administration and was conducted in the Airport Cooperative Research Program, which is administered by the Transportation Research Board of the National Academies.

DISCLAIMER: The opinions and conclusions expressed or implied in ACRP publications are those of the research agencies. They are not necessarily those of the Transportation Research Board, the National Research Council, or the program sponsors.

Improving Airport Curbside and Roadway Operations

An airport's roadway infrastructure is an important operational component that significantly impacts travelers' arrival and departure experiences. These roadway areas are often constrained by terminal buildings or other infrastructure which creates difficulty in adding capacity, improving safety, and reducing delays.

At the Ottawa Macdonald-Cartier International Airport (YOW), traffic volume demand was exceeding curbside and

roadway capacity. To help improve airport operations and travelers' experiences, the planning staff at YOW turned to analytical tools presented in *ACRP Report 40: Airport Curbside and Terminal Area Roadway Operations* (2010).

Analytical tools help airports to make informed decisions when considering improvements or new infrastructure. *ACRP Report 40* describes a comprehensive approach to analyzing traffic operations on airport curbside and terminal area roadways, and introduces an estimation tool known as the 'Quick Analysis Tool for Airport Roadways' (QATAR). The report also provides airport operators, planners unfamiliar with airport roadway operations, and airport consultants with a basic framework and vocabulary for curbside operations typically found inside an airport. The guidance includes data requirements, operational performance measures, and estimation procedures necessary to capture existing and future uses of airport roadway.

Alexander Stecky-Efantis, airport planner with the Ottawa Macdonald-Cartier International Airport Authority, found

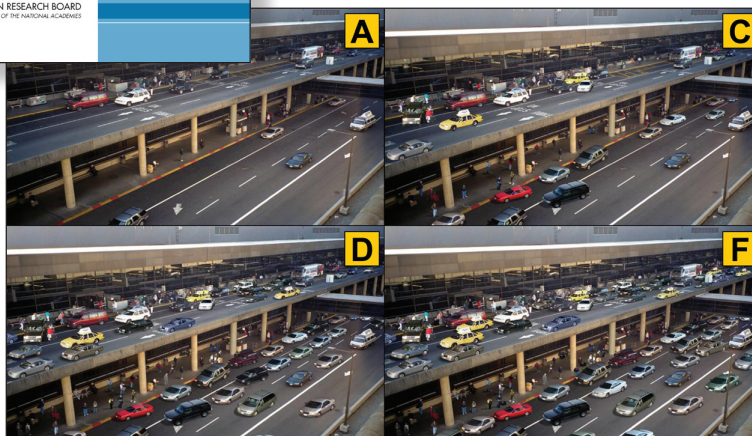
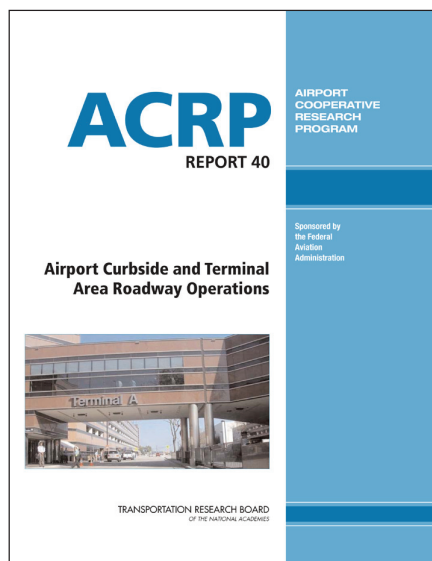
ACRP Report 40 and the QATAR tool to be helpful resources in evaluating a variety of roadway improvement measures discussed in the report. "QATAR has been useful in providing comparable and simple to understand illustrations of different scenarios," said Mr. Stecky-Efantis.

Airport planners at YOW selected two strategies for final review from a toolbox of improvements that included the five solutions listed below. Strategy I combined only improvements 1, 2, and 4, while strategy II included all five solutions:

1. Modifying the public transit parking policy;
2. Modifying the curbside dwell time policy;
3. Reducing the pedestrian crosswalk width;
4. Extending the curb area;
5. Adding a fourth curbside lane.

Using QATAR, planning staff at YOW identified the optimal combination of improvements to increase the airport's ability to process the vehicular traffic demand. The analysis resulted in a finding of significant capacity constraints in the current year (validated by observations by airport personnel) and with a ten-year projection of traffic volumes. Strategies I and II were further analyzed using the software to evaluate the impact of the improvements on the roadway level of service (LOS). The level of service is a traffic performance rating from 'A' (excellent) to 'F' (failing).

The quantification of curbside and roadway operations was essential for determining the optimal set of improvement solutions. The analysis found that each strategy would improve the curbside operations from a failing LOS 'F' to an LOS 'D' and



Right: Conceptual airport curbside levels of service ranging from an excellent LOS (image A) to a failing LOS (image F).

Image courtesy of LeighFisher Management Consultants.

continued on page 2

Improving Curbside and Roadway Operations—continued

also improve the through-traffic movements from a current operating condition of LOS 'F' "By showing the level of service achievable with the scenarios that were modelled using QATAR," said Mr. Stecky-Efantis, "the airport is able to identify and select the best possible solutions." To date at YOW, the airport has implemented one of the improvements—modifying the curbside dwell time policy—and is planning to employ other recommendations in coordination with additional terminal area improvement strategies.

The QATAR tool, based on methodologies presented in *ACRP Report 40*, is available for download on the TRB website (www.trb.org/Main/Blurbs/164469.aspx). The tool was developed by incorporating landside analyses of large U.S. and Canadian airports with the 2010 *Highway Capacity Manual's* (HCM) methodology. QATAR updates the HCM methodology to apply when free-flow operations speeds are less than 35 mph, as is often the case in large airports.

By summarizing airport curbside and terminal area roadway operations according to key performance measures, QATAR allows professionals to evaluate vehicular traffic's level of service and to estimate the impact of mitigation strategies. For curbside analysis, the performance measures include: curbside utilization ratio, number of vehicles parked in the second and third lanes, queue

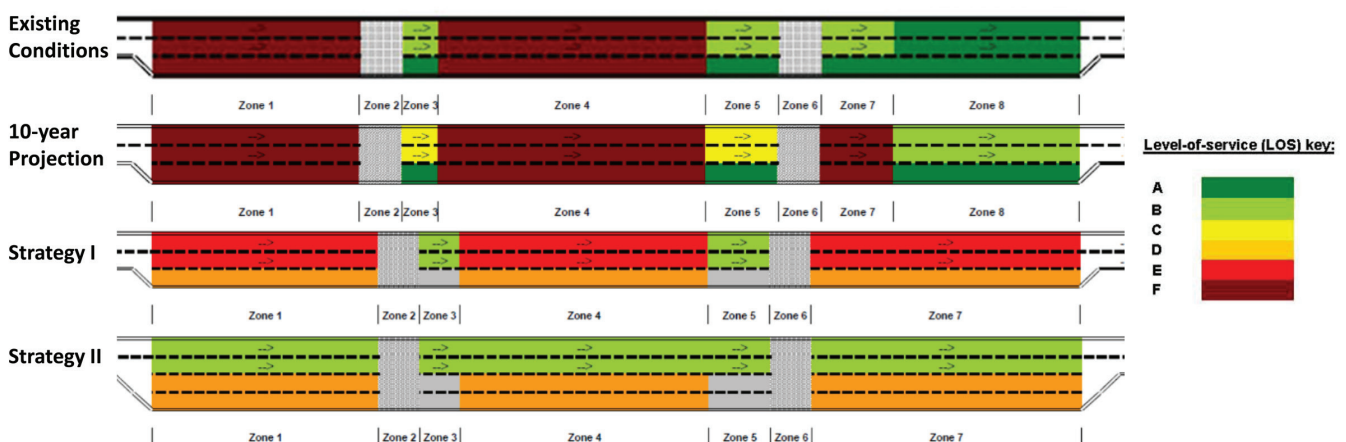
length and duration, and average vehicle delay. For terminal area roadways, the performance measures include: average speed, traffic density, maximum volume-to-capacity ratio, and queue length and duration. Practitioners may target varying LOS depending on the size of the airport and the age of the roadway.

As planning staff at the Ottawa Macdonald-Cartier International Airport Authority discovered, QATAR is a useful tool for practitioners because (1) it does not require a large amount of data; (2) it allows for rapid testing and screening of a range of physical, operational, and demand management strategies; and (3) it displays results in an intuitive format. "I would recommend the use of the QATAR tool for the analysis of future curbside improvement projects," said Mr. Stecky-Efantis.

The methodologies detailed in *ACRP Report 40* have been deployed at several airports, including international airports in Austin (AUS), Bangalore (BLR), Boston (BOS), Cincinnati (CVG), Fort Lauderdale (FLL), Houston (IAH), Memphis (MEM), Seattle (SEA), San Francisco (SFO), Salt Lake City (SLC), Tampa (TPA), and Ottawa (YOW). The applications at these airports included condition assessments, capacity enhancement project evaluation, and demand management strategies assessment.

"QATAR [Quick Analysis Tool for Airport Roadways] allows airport planners and operators to determine the ability of a curbside roadway to accommodate changes in traffic volumes, airline passenger activity, vehicle mix, curbside allocation plans, and curbside enforcement levels. QATAR also allows the user to observe how airport curbside roadway levels of service are expected to vary as these input factors change."

*ACRP Report 40:
Airport Curbside and
Terminal Area Roadway Operations*



Above: Roadway assessment scenarios at Ottawa Macdonald-Cartier International Airport from QATAR outputs. Image courtesy of LeighFisher Management Consultants..

ACKNOWLEDGMENT OF SPONSORSHIP: This work was sponsored by the Federal Aviation Administration and was conducted in the Airport Cooperative Research Program, which is administered by the Transportation Research Board of the National Academies.

DISCLAIMER: The opinions and conclusions expressed or implied in ACRP publications are those of the research agencies. They are not necessarily those of the Transportation Research Board, the National Research Council, or the program sponsors.

Planning for Recovery of Disabled Aircraft

A Boeing 727-200, operated by a FedEx Express crew, landed in early January 2013 at the Riverside Municipal Airport (KRAL), a general aviation (GA) facility in Riverside, California. The B727 had been donated by FedEx to California Baptist University (CBU) for its new aviation science program. Given the aircraft's large size and weight, a landing waiver was obtained for the GA airport. The B727 landed and taxied safely to the ramp, where it was parked for two weeks before a decision was made to re-position the aircraft.

During the subsequent pushback, an underpowered forklift was used as the tow vehicle, causing the aircraft tires to sink into the ramp asphalt. CBU officials and KRAL personnel realized too late that the GA ramp was not designed to support the 100,000+ pound commercial aircraft. As the asphalt failed, preventing the B727 from further towing, the new aircraft owner and airport operator quickly and unexpectedly found themselves in a recovery operation.

Although such events may be rare, disabled aircraft at airports can result in costly flight delays and significant disruption to airport operations. These events often require considerable airport personnel time to manage safety concerns for personnel, the aircraft, and airport infrastructure.

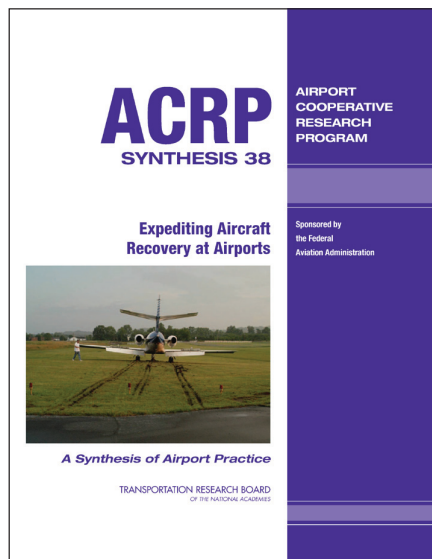
Recovering a disabled aircraft may be as simple as replacing a blown tire, or as complicated as a salvage operation requiring specialized equipment and labor. Despite the risks, industry research reported that "90% of airports and airlines are not adequately prepared to handle even the simplest [aircraft] recovery situation." (Olsen 2008) Without sufficient preparation, it is more likely that these events may result in extended downtime, injuries to

personnel, and additional damage to the aircraft or airport facilities.

ACRP Synthesis 38: Expediting Aircraft Recovery at Airports, provides specific guidance to airport operators in these situations. The synthesis presents current aircraft recovery processes and practices developed by the Federal Aviation Administration (FAA) and International Civil Aviation Organization (ICAO), as well as guidance provided by aircraft manufacturers and industry groups, and lessons learned from aircraft recovery case studies. Recovery efforts for a disabled aircraft involving a National Transportation Safety Board (NTSB) accident investigation also must follow an authorized release by NTSB of the aircraft to be moved.

The recovery process is often quite complex and requires the airport operator to work diligently with the aircraft owner/operator to recover the disabled aircraft. Recovery also commonly involves many other stakeholders including maintenance and operations personnel, insurance agents, and accident investigators. These stakeholders frequently have different priorities during the recovery that can further complicate the process. The principal concern of the airport operator is usually to expedite the aircraft's recovery for a swift return to normal operations. However, the aircraft owner/operator and insurer are more focused on minimizing secondary damage to the aircraft, even if this requires a significant amount of time to resolve.

ACRP Synthesis 38 presents key information on what airports can do to expedite the recovery of disabled aircraft, including the roles of various personnel involved in aircraft recovery, and common complications airports may experience in the recovery process.



Right: Maintenance personnel examine a disabled B727 aircraft at KRAL airport in Riverside, CA. The aircraft, too heavy for the general aviation airport's ramp design, unexpectedly sank into the asphalt during a pushback procedure.

Image courtesy of C. Daniel Prather, Ph.D., CBU.



continued on page 2

Planning for Recovery of Disabled Aircraft—continued

John Wayne Airport (SNA) in Orange County, California, partners with the Orange County Fire Department (OCFD) for its aircraft recovery operations. Firefighter Pete Hamborg and fellow OCFD staff found that *ACRP Synthesis 38* provided much needed guidance for their recovery planning with SNA. “[The synthesis] reinforced from an authoritative outward perspective what we knew was a critical part of our internal operation,” said Hamborg. “It is one thing to encounter real world ‘on the runway’ scenarios involving aircraft recovery; it is another thing entirely to convey those complex demanding dynamics to an administrator. This report bridges that gap.”

The OCFD team followed the synthesis’ recommendation to put together a formal Aircraft Recovery Plan for SNA, ensuring that the recovery process includes all important steps. The synthesis’ findings also helped the department staff build support from their administrators for additional resources, including new equipment and training for new crew members. “Before the report came out, we felt like we were inventing best practice and there was no point of comparison,” Hamborg said. “The great thing this report did was provide us with a touchstone.”

In January 2013, KRAL personnel did not yet have the benefit of guidance from *ACRP*

Synthesis 38 when unexpectedly facing the recovery of a disabled B727. Ironically, the aircraft’s new owner/operator, Daniel Prather, Ph.D., aviation science department chair at CBU, was quite familiar with the synthesis, having just completed his role as principal investigator of its research team. “The knowledge gained in writing the *ACRP synthesis* served me well during this recovery operation,” said Prather. “In reality, more planning by the airport operator and CBU could have occurred prior to this event.”

Neither CBU, a first-time aircraft owner/operator, nor KRAL, a GA airport utilized by light aircraft, had yet developed the planning documents and resources recommended by *ACRP Synthesis 38* for recovery of such a large aircraft. Without this pre-planning, the recovery took a full week and required all needed materials and equipment to be brought to the airport from off-site. “No one wanted to turn this into a \$25,000 recovery operation if this could be avoided,” Prather said. “Thankfully, the aircraft did not impact any movement areas during the duration of the event. If it had, this event would likely have been greatly expedited, resulting in higher costs and less downtime.”

Reference: Olsen, J., “Ready for Recovery?” *Airports International* Vol. 41, No. 2, Mar. 2008, pp. 32–33.

Key findings of *ACRP Synthesis 38* include the need for airports to:

- Develop an Aircraft Recovery Plan,
- Properly communicate with all personnel during a recovery effort,
- Be familiar with both FAA and ICAO guidance on aircraft recovery,
- Use good judgment in weighing expeditious recovery versus the liability associated with causing secondary damage to the aircraft,
- Be aware of possible complications that may occur during the recovery operation, and
- Be aware of locally available materials, equipment, and supplies that may be useful to the recovery effort.



Above: A disabled B727 aircraft is parked on steel plates during its recovery process on the ramp at KRAL airport in Riverside, CA. Following the recovery, permanent concrete pads were poured for long-term parking of the aircraft at KRAL, and asphalt repairs were made to return the ramp to normal use. Image courtesy of C. Daniel Prather, Ph.D., CBU.

ACKNOWLEDGMENT OF SPONSORSHIP: This work was sponsored by the Federal Aviation Administration and was conducted in the Airport Cooperative Research Program, which is administered by the Transportation Research Board of the National Academies.

DISCLAIMER: The opinions and conclusions expressed or implied in *ACRP* publications are those of the research agencies. They are not necessarily those of the Transportation Research Board, the National Research Council, or the program sponsors.

Appendix A. Publications of the Airport Cooperative Research Program

Reports		
No.	Proj. No.	Title, Pages, Publication Year
1	11-02/Task 04	Safety Management Systems for Airports, Vol. 1: Overview, 40 p. (2007)
1	04-05	Safety Management Systems for Airports, Vol. 2: Guidebook, 174 p. (2009)
2	11-02/Task 03	Evaluation and Mitigation of Aircraft Slide Evacuation Injuries, 86 p. (2008)
3	04-01	Analysis of Aircraft Overruns and Undershoots for Runway Safety Areas, 58 p. (2008)
4	11-02/Task 02	Ground Access to Major Airports by Public Transportation, 214 p. (2008)
5	11-02/Task 05	Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs, 34 p. (2008)
6	02-04	Research Needs Associated with Particulate Emissions at Airports, 64 p. (2008)
7	02-03	Aircraft and Airport-Related Hazardous Air Pollutants: Research Needs and Analysis, 64 p. (2008)
8	04-02	Lightning-Warning Systems for Use by Airports, 80 p. (2008)
9	02-04A	Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data, 90 p. (2008)
10	07-01	Innovations for Airport Terminal Facilities, 78 p. (2008)
11	02-06	Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories (& WOD 2), 62 p. (2009)
12	05-01	An Airport Guide for Regional Emergency Planning for CBRNE Events, 52 p. (2009)
13	01-03	Integrating Airport Information Systems, 98 p. (2009)
14	02-02	Deicing Planning Guidelines and Practices for Stormwater Management Systems, 208 p. (2009)
15	02-05	Aircraft Noise: A Toolkit for Managing Community Expectations (& CD 70), 162 p. (2009)
16	01-01	Guidebook for Managing Small Airports (& WOD 5), 140 p. (2009)
17	10-04	Airports and the Newest Generation of General Aviation Aircraft, Vol. 1: Forecast, 36 p. (2009)
17	10-04	Airports and the Newest Generation of General Aviation Aircraft, Vol. 2: Guidebook, 124 p. (2009)
18	03-08	Passenger Air Service Development Techniques, 168 p. (2009)
19	01-06	Developing an Airport Performance-Measurement System (& CD 79), 154 p. (2010)
19A	01-09	Resource Guide to Airport Performance Indicators (& CD 94), 288 p. (2011)
20	03-09	Strategic Planning in the Airport Industry (& CD 73), 136 p. (2009)
21	01-05	A Guidebook for Selecting Airport Capital Project Delivery Methods, 100 p. (2009)
22	06-01	Helping Airport and Air Carrier Employees Cope with Traumatic Events, 82 p. (2009)
23	03-02	Airport Passenger-Related Processing Rates Guidebook, 126 p. (2009)
24	10-03	Guidebook for Evaluating Airport Parking Strategies and Supporting Technologies, 162 p. (2009)
25	07-05	Airport Passenger Terminal Planning and Design, Vol. 1: Guidebook, 426 p. (2010)
25	07-04	Airport Passenger Terminal Planning and Design, Vol. 2: Spreadsheet Models and User's Guide (& CD 75), 82 p. (2010)
26	03-04	Guidebook for Conducting Airport Users Surveys, 256 p. (2009)
27	03-03	Enhancing Airport Land Use Compatibility, Vol. 1: Land Use Fundamentals and Implementation Resources, 316 p. (2010)
27	03-03	Enhancing Airport Land Use Compatibility, Vol. 2: Land Use Survey and Case Study Summaries, 296 p. (2010)
28	01-04	Marketing Guidebook for Small Airports, 196 p. (2010)
29	07-03	Developing Improved Civil Aircraft Arresting Systems, 206 p. (2010)
30	10-05	Reference Guide on Understanding Common Use at Airports (& CD 74), 244 p. (2010)
31	03-10	Innovative Approaches to Addressing Aviation Capacity Issues in Coastal Mega-regions, 178 p. (2010)
32	04-06	Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports, 192 p. (2010)
33	01-02	Guidebook for Developing and Managing Airport Contracts (& CD 81), 82 p. (2011)
34	10-06	Handbook to Assess the Impacts of Constrained Parking at Airports (& CD 80), 112 p. (2010)
35	10-02	Planning for Offsite Airport Terminals, 94 p. (2010)
36	01-07	Airport/Airline Agreements—Practices and Characteristics, 112 p. (2010)

Reports

No.	Proj. No.	Title, Pages, Publication Year
37	03-06	Guidebook for Planning and Implementing Automated People Mover Systems at Airports (& CD 82), 226 p. (2010)
37A	03-07	Guidebook for Measuring Performance of Automated People Mover Systems at Airports, 134 p. (2012)
38	03-13	Understanding Airspace, Objects, and Their Effects on Airports, 164 p. (2010)
39	09-01	Recommended Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management, 108 p. (2010)
40	07-02	Airport Curbside and Terminal Area Roadway Operations, 40 p. (2010)
41	10-07	Guide to the Decision-Making Tool for Evaluating Passenger Self-Tagging (& CD 83; & WOD 10), 70 p. (2011)
42	08-01	Sustainable Airport Construction Practices (& CD 88), 320 p. (2011)
43	02-13	Guidebook of Practices for Improving Environmental Performance at Small Airports (& CD 89), 364 p. (2011)
44	03-11	A Guidebook for the Preservation of Public-Use Airports (& CD 102), 62 p. (2011)
45	10-01	Optimizing the Use of Aircraft Deicing and Anti-Icing Fluids, 180 p. (2011)
46	02-07	Handbook for Analyzing the Costs and Benefits of Alternative Aviation Turbine Engine Fuels at Airports (& CD 91), 78 p. (2011)
47	01-08	Guidebook for Developing and Leasing Airport Property, 140 p. (2011)
48	03-15	Impact of Jet Fuel Price Uncertainty on Airport Planning and Development (& CD 93), 72 p. (2011)
49	01-10	Collaborative Airport Capital Planning Handbook, 136 p. (2011)
50	04-08	Improved Models for Risk Assessment of Runway Safety Areas (& CD 98), 182 p. (2011)
51	04-09	Risk Assessment Method to Support Modification of Airfield Separation Standards, 136 p. (2011)
52	07-06	Wayfinding and Signing Guidelines for Airport Terminals and Landside, 252 p. (2011)
53	02-11	A Handbook for Addressing Water Resource Issues Affecting Airport Development Planning, 170 p. (2011)
54	01-11	Resource Manual for Airport In-Terminal Concessions, 268 p. (2011)
55	03-05	Passenger Level of Service and Spatial Planning for Airport Terminals, 70 p. (2011)
56	02-10	Handbook for Considering Practical Greenhouse Gas Emission Reduction Strategies for Airports (& CD 95), 158 p. (2011)
57	11-02/Task 18	The Carbon Market: A Primer for Airports, 80 p. (2011)
58	11-02/Task 15	Airport Industry Familiarization and Training for Part-Time Airport Policy Makers, 64 p. (2011)
59	01-12	Information Technology Systems at Airports: A Primer, 108 p. (2012)
60	02-18	Guidelines for Integrating Alternative Jet Fuel into the Airport Setting, 136 p. (2012)
61	10-09	Elimination or Reduction of Baggage Recheck for Arriving International Passengers, 142 p. (2012)
62	04-07	Airport Apron Management and Control Programs, 64 p. (2012)
63	02-03A	Measurement of Gaseous HAP Emissions from Idling Aircraft as a Function of Engine and Ambient Conditions, 112 p. (2012)
64	02-25	Handbook for Evaluating Emissions and Costs of APUs and Alternative Systems (& CD 113), 90 p. (2012)
65	10-10	Guidebook for Airport Irregular Operations (IROPS) Contingency Planning, 258 p. (2012)
66	01-14	Considering and Evaluating Airport Privatization (& CD 109), 124 p. (2012)
67	03-14	Airport Passenger Conveyance Systems Planning Guidebook (& CD 110), 68 p. (2012)
68	07-07	Guidebook for Evaluating Terminal Renewal Versus Replacement Options (& CD 112), 152 p. (2012)
69	01-16	Asset and Infrastructure Management for Airports: Primer and Guidebook, 136 p. (2012)
70	10-08	Guidebook for Implementing Intelligent Transportation Systems Elements to Improve Airport Traveler Access Information (& CD 114), 138 p. (2012)
71	02-08	Guidance for Quantifying the Contribution of Airport Emissions to Local Air Quality (& CD 115), 76 p. (2012)
72	02-14	Guidebook for Selecting Methods to Monitor Airport and Aircraft Deicing Materials, 276 p. (2012)
73	04-10	Airport-to-Airport Mutual Aid Programs, 192 p. (2012)
74	01-18	Application of Enterprise Risk Management at Airports (& CD 117), 72 p. (2012)

Reports

No.	Proj. No.	Title, Pages, Publication Year
75	06-02	Airport Leadership Development Program (& CD 133), 334 p. (2013)
76	03-22	Addressing Uncertainty about Future Airport Activity Levels in Airport Decision Making, 152 p. (2012)
77	01-17	Guidebook for Developing General Aviation Airport Business Plans (& CD 119), 174 p. (2012)
78	02-16	Airport Ground Support Equipment (GSE): Emission Reduction Strategies, Inventory, and Tutorial (& CD 123), 114 p. (2012)
79	03-17	Evaluating Airfield Capacity (& CD 124), 172 p. (2012)
80	02-22	Guidebook for Incorporating Sustainability into Traditional Airport Projects (& CD 125), 104 p. (2012)
81	02-19	Winter Design Storm Factor Determination for Airports, 60 p. (2012)
82	03-12	Preparing Peak Period and Operational Profiles—Guidebook (& CD 126; & WOD 14), 146 p. (2013)
83	02-36	Assessing Opportunities for Alternative Fuel Distribution Programs (& CD 129), 128 p. (2013)
84	02-21	Guidebook for Preparing Airport Emissions Inventories for State Implementation Plans (& CD 131), 68 p. (2013)
85	03-21	Developing and Maintaining Support for Your Airport Capacity Project, 40 p. (2013)
86	02-12	Environmental Optimization of Aircraft Departures: Fuel Burn, Emissions, and Noise (& CD 136), 104 p. (2013)
87	01-20	Procuring and Managing Professional Services for Airports, 120 p. (2013)
88	04-11	Guidebook on Integrating GIS in Emergency Management at Airports (& CD 139), 138 p. (2013)
89	02-24	Guidelines for Airport Sound Insulation Programs, 324 p. (2013)
90	03-25	Impact of Regulatory Compliance Costs on Small Airports (& WOD 15 Vol. 1; & WOD 15 Vol. 2), 92 p. (2013)
91	02-20A	Infectious Disease Mitigation in Airports and on Aircraft, 38 p. (2013)
92	10-11	Guidebook to Creating a Collaborative Environment Between Airport Operations and Maintenance, 148 p. (2013)
93	03-18	Operational and Business Continuity Planning for Prolonged Airport Disruptions (& CD 140), 152 p. (2013)
94	04-12	Integrating Web-Based Emergency Management Collaboration Tools into Airport Operations—A Primer, 56 p. (2013)
95	04-13	Integrating Community Emergency Response Teams (A-Certs) at Airports, 168 p. (2013)
96	07-09	Apron Planning and Design Guidebook, 168 p. (2013)
97	02-17	Measuring PM Emissions from Aircraft Auxiliary Power Units, Tires, and Brakes, 52 p. (2013)
98	03-26	Understanding Airline and Passenger Choice in Multi-Airport Regions, 100 p. (2013)
99	02-29	Guidance for Treatment of Airport Stormwater Deicers, 330 p. (2013)
100	02-15	Recycling Best Practices—A Guidebook for Advancing Recycling from Aircraft Cabins, 86 p. (2014)
101	09-02	Best Practices Manual for Working In or Near Airport Movement Areas (& CD 150), 62 p. (2014)
102	02-33	Guidance for Estimating Airport Construction Emissions (& CD 142), 138 p. (2014)
103	10-13	A Guidebook for Integrating NIMS for Personnel and Resources at Airports, 128 p. (2014)
104	03-20	Defining and Measuring Aircraft Delay and Airport Capacity Thresholds, 74 p. (2014)
105	02-31	Guidelines for Ensuring Longevity in Airport Sound Insulation Programs, 56 p. (2014)
106	10-14	Being Prepared for IROPS: A Business-Planning and Decision-Making Approach (& CD 144), 88 p. (2014)
107	04-14	Development of a Runway Veer-Off Location Distribution Risk Assessment Model and Reporting Template (& CD 145), 136 p. (2014)
108	02-38	Guidebook for Energy Facilities Compatibility with Airports and Airspace, 94 p. (2014)
109	07-08	Improving Terminal Design to Increase Revenue Generation Related to Customer Satisfaction, 114 p. (2014)
110	09-06	Evaluating Impacts of Sustainability Practices on Airport Operations and Maintenance (& CD 149), 132 p. (2014)
111	01-21	A Guidebook for Airport-Airline Consortiums, 132 p. (2014)
112	04-15	Airport Terminal Incident Response Planning (& CD 151), 98 p. (2014)
113	07-10	Guidebook on General Aviation Facility Planning, 146 p. (2014)
114	10-12	Guidebook for Through-the-Fence Operations, 186 p. (2014)

Reports

No.	Proj. No.	Title, Pages, Publication Year
115	02-32	Understanding Microbial Biofilms in Receiving Waters Impacted by Airport Deicing Activities, 84 p. (2014)
116	01-22	Guidebook for Successfully Assessing and Managing Risks for Airport Capital and Maintenance Projects, 130 p. (2014)
117	07-11	Airport Escalators and Moving Walkways—Cost-Savings and Energy Reduction Technologies (& CD 156), 50 p. (2014)
118	03-23	Integrating Aviation and Passenger Rail Planning (& CD 157) (In Production)
119	02-28	Prototype Airport Sustainability Rating System—Characteristics, Viability, and Implementation Options, 242 p. (2014)
120	01-19	Airport Capital Improvements: A Business Planning and Decision-Making Approach (& CD 158; & WOD 18), 70 p. (2014)

Research Results Digests

No.	Proj. No.	Title, Pages, Publication Year
1	11-03	Synthesis of Information Related to Airport Practices, 4 p. (2007)
2	11-02/Task 01	Model for Improving Energy Use in U.S. Airport Facilities, 20 p. (2007)
3	11-03	Synthesis of Information Related to Airport Practices, 4 p. (2007)
4	11-03	Synthesis of Information Related to Airport Practices, 4 p. (2009)
5	11-02/Task 07	Current and Emerging Issues Facing the Airport Industry, 32 p. (2009)
6	04-03	Guidance for Identifying and Mitigating Approach Lighting System Hazards, 16 p. (2009)
7	11-02/Task 11	A Summary of How Proposed Firefighting Standards Would Impact Airports, 20 p. (2009)
8	11-03	Synthesis of Information Related to Airport Practices, 4 p. (2010)
9	02-01	Alternative Aircraft and Pavement Deicers and Anti-Icing Formulations with Improved Environmental Characteristics, 12 p. (2010)
10	03-01	Light Detection and Ranging (LIDAR) Deployment for Airport Obstruction Surveys, 30 p. (2010)
11	11-02/Task 14	Helping Airports Understand Payment Card Industry Data Security Standard (PCI DSS), 30 p. (2010)
12	11-03	Synthesis of Information Related to Airport Practices, 6 p. (2011)
13	11-03	Synthesis of Information Related to Airport Practices, 8 p. (2012)
14	11-04	Graduate Research Award Program on Public-Sector Aviation Issues, 20 p. (2012)
15	04-07A	Use of Towbarless Tractors at Airports—Best Practices, 16 p. (2012)
16	11-01	Legal Aspects of Airport Programs, 12 p. (2012)
17	11-03	Synthesis of Information Related to Airport Practices, 8 p. (2013)
18	11-03	Synthesis of Information Related to Airport Practices, 8 p. (2014)
19	11-04	Graduate Research Award Program on Public-Sector Aviation Issues Update: 2008–2013, 20 p. (2014)
20	11-07	Taking Inventory of ACRP Research and the Next Challenges Facing the Airport Industry, 76 p. (2014)
21	11-02/Task 22	Best Practices for General Aviation Aircraft Fuel-Tank Sampling, 20 p. (2014)

Legal Research Digests (Project 11-01)

No.	Topic No.	Title, Pages, Publication Year
1	01-03	Compilation of Airport Law Resources, 38 p. (2008)
2	01-02	Theory and Law of Airport Revenue Diversion, 30 p. (2008)
3	01-04	Survey of Laws and Regulations of Airport Commercial Ground Transportation, 186 p. (2008)

Legal Research Digests (Project 11-01)

No.	Topic No.	Title, Pages, Publication Year
4	01-01	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 31, 2007 (CD 68), 0 p. (2008)
5	01-05	Responsibility for Implementation and Enforcement of Airport Land-Use Zoning Restrictions, 68 p. (2009)
6	01-07	The Impact of Airline Bankruptcies on Airports, 62 p. (2009)
7	01-08	Airport Governance and Ownership, 72 p. (2009)
8	01-06	The Right to Self-Fuel, 82 p. (2009)
9	02-03	Case Studies on Community Challenges to Airport Development, 64 p. (2010)
10	02-04	Analysis of Federal Laws, Regulations, and Case Law Regarding Airport Proprietary Rights, 52 p. (2010)
11	03-03	Survey of Minimum Standards: Commercial Aeronautical Activities at Airports, 60 p. (2011)
12	03-01	Fair Disclosure and Airport Impact Statements in Real Estate Transfers, 70 p. (2011)
13	03-06	An Index and Digest of Decisions: Compilation of Airport Law Resources (CD 108), 0 p. (2012)
14	02-05	Achieving Airport-Compatible Land Uses and Minimizing Hazardous Obstructions in Navigable Airspace, 74 p. (2012)
15	03-02	Compilation of State Airport Authorizing Legislation, 108 p. (2012)
16	04-07	Procurement of Airport Development and Planning Contracts, 50 p. (2012)
17	03-05	State and Federal Regulations That May Affect Initiatives to Reduce Airports' GHG Emissions, 70 p. (2012)
18	04-04	Buy America Requirements for Federally Funded Airports, 72 p. (2013)
19	04-02	Legal Issues Related to Developing Safety Management Systems and Safety Risk Management at U.S. Airports, 48 p. (2013)
20	04-01	Airport Responsibility for Wildlife Management, 162 p. (2013)
21	04-05	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 2012 (CD 141), 0 p. (2013)
22	04-06	The Role of the Airport Sponsor in Airport Planning and Environmental Reviews of Proposed Development Projects under the National Environmental Policy Act (NEPA) and State Mini-NEPA Laws, 62 p. (2014)

Syntheses (Project 11-03)

No.	Topic No.	Title, Pages, Publication Year
1	S01-01	Innovative Finance and Alternative Sources of Revenue for Airports, 52 p. (2007)
2	S03-01	Airport Aviation Activity Forecasting, 32 p. (2007)
3	S04-01	General Aviation Safety and Security Practices, 44 p. (2007)
4	S10-01	Counting Aircraft Operations at Non-Towered Airports, 33 p. (2007)
5	S03-02	Airport Ground Access Mode Choice Models, 151 p. (2008)
6	S10-03	Impact of Airport Pavement Deicing Products on Aircraft and Airfield Infrastructure, 68 p. (2008)
7	S03-03	Airport Economic Impact Methods and Models, 76 p. (2008)
8	S10-02	Common Use Facilities and Equipment at Airports, 132 p. (2008)
9	S02-01	Effects of Aircraft Noise: Research Update on Selected Topics, 100 p. (2008)
10	S02-02	Airport Sustainability Practices, 120 p. (2008)
11	S09-01	Impact of Airport Rubber Removal Techniques on Runways, 116 p. (2008)
12	S04-02	Preventing Aircraft-Vehicle Incidents during Weather Operations and Periods of Low Visibility, 80 p. (2008)
13	S03-05	Effective Practices for Preparing Airport Improvement Program Benefit-Cost Analysis, 76 p. (2009)
14	S03-04	Airport System Planning Practices, 80 p. (2009)
15	S04-03	Identification of the Requirements and Training to Obtain Driving Privileges on Airfields, 52 p. (2009)
16	S02-03	Compilation of Noise Programs in Areas Outside DNL 65, 112 p. (2009)
17	S02-04	Approaches to Integrating Airport Development and Federal Environmental Review Process, 44 p. (2009)

Syntheses (Project 11-03)

No.	Topic No.	Title, Pages, Publication Year
18	S06-01	Aviation Workforce Development Practices, 44 p. (2010)
19	S01-02	Airport Revenue Diversification, 64 p. (2010)
20	S08-01	Airport Terminal Facility Activation Techniques, 136 p. (2010)
21	S10-04	Airport Energy Efficiency and Cost Reduction, 82 p. (2010)
22	S09-02	Common Airport Pavement Maintenance Practices, 112 p. (2011)
23	S04-05	Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports, 40 p. (2011)
24	S02-05	Strategies and Financing Opportunities for Airport Environmental Programs, 228 p. (2011)
25	S03-06	Strategies for Reuse of Underutilized or Vacant Airport Facilities, 72 p. (2011)
26	S04-06	Current Airport Inspection Practices Regarding FOD (Foreign Object Debris/Damage), 96 p. (2011)
27	S06-02	Airport Self-Inspection Practices, 122 p. (2011)
28	S10-06	Investigating Safety Impacts of Energy Technologies on Airports and Aviation, 48 p. (2011)
29	S10-05	Ramp Safety Practices, 68 p. (2011)
30	S01-03	Airport Insurance Coverage and Risk Management Practices, 60 p. (2011)
31	S01-04	Airline and Airline-Airport Consortium to Manage Terminals and Equipment, 102 p. (2011)
32	S04-08	Managing Aerial Firefighting Activities on Airports, 44 p. (2012)
33	S02-06	Airport Climate Adaptation and Resilience, 96 p. (2012)
34	S09-03	Subsurface Utility Engineering Information Management for Airports, 58 p. (2012)
35	S09-04	Issues with Use of Airfield LED Light Fixtures, 44 p. (2012)
36	S06-03	Exploring Airport Employee Commute and Parking Strategies, 70 p. (2012)
37	S04-07	Lessons Learned from Airport Safety Management Systems Pilot Studies, 72 p. (2012)
38	S10-07	Expediting Aircraft Recovery at Airports, 108 p. (2012)
39	S10-09	Airport Wildlife Population Management, 78 p. (2013)
40	S01-05	Issues with Airport Organization and Reorganization, 40 p. (2013)
41	S10-08	Conducting Aeronautical Special Events at Airports, 130 p. (2013)
42	S02-07	Integrating Environmental Sustainability into Airport Contracts, 76 p. (2013)
43	S02-08	Environmental Assessment of Air and High-Speed Rail Corridors, 44 p. (2013)
44	S02-09	Environmental Management System Development Process, 58 p. (2013)
45	S04-09	Model Mutual Aid Agreements for Airports, 64 p. (2013)
46	S01-07	Conducting Airport Peer Reviews, 48 p. (2013)
47	S09-05	Repairing and Maintaining Airport Parking Structures While in Use, 54 p. (2013)
48	S01-06	How Airports Measure Customer Service Performance, 102 p. (2013)
49	S06-04	Helping New Maintenance Hires Adapt to the Airport Operating Environment, 60 p. (2013)
50	S04-11	Effective Cooperation Among Airports and Local and Regional Emergency Management Agencies for Disaster Preparedness and Response, 52 p. (2014)
51	S07-01	Impacts of Aging Travelers on Airports, 36 p. (2014)
52	S10-10	Habitat Management to Deter Wildlife at Airports, 84 p. (2014)
53	S02-10	Outcomes of Green Initiatives: Large Airport Experience, 72 p. (2014)
54	S10-11	Electric Vehicle Charging Stations at Airport Parking Facilities, 70 p. (2014)
55	S03-08	Backcountry Airstrip Preservation, 88 p. (2014)
56	S01-08	Understanding the Value of Social Media at Airports for Customer Engagement, 157 p. (2014)
57	S10-12	Airport Response to Special Events, 148 p. (2014)
58	S04-10	Safety Reporting Systems at Airports, 65 p. (2014)
59	S03-07	Integrating Airport Geographic Information System (GIS) Data with Public Agency GIS, 74 p. (2014)

Web-Only Documents

No.	Proj. No.	Title, Pages, Publication Year
1	01-03	Analysis and Recommendations for Developing Integrated Airport Information Systems, 80 p. (2009)

Web-Only Documents

No.	Proj. No.	Title, Pages, Publication Year
2	02-06	Appendices to ACRP Report 11: Guidebook on Preparing Airport GHG Emissions Inventories (& Rep. 11), 87 p. (2009)
3	02-01	Formulations for Aircraft and Airfield Deicing and Anti-Icing: Aquatic Toxicity and Biochemical Oxygen Demand, 121 p. (2009)
4	04-03	Guidance for Identifying and Mitigating Approach Lighting System Hazards, 88 p. (2009)
5	01-01	Development of a Guidebook for Managing Small Airports (& Rep. 16), 124 p. (2009)
6	01-05	Evaluation and Selection of Airport Capital Project Delivery Methods, 213 p. (2009)
7	11-02/Task 11	How Proposed ARFF Standards Would Impact Airports, 115 p. (2009)
8	02-01	Alternative Aircraft Anti-Icing Formulations With Reduced Aquatic Toxicity and Biological Oxygen Demand, 141 p. (2010)
9	11-02/Task 08	Enhanced Modeling of Aircraft Taxiway Noise, Vol. 1: Scoping, 153 p. (2009)
9	02-27	Enhanced Modeling of Aircraft Taxiway Noise, Vol. 2: Aircraft Taxi Noise Database and Development Process, 138 p. (2013)
10	10-07	Appendix to ACRP Report 41 (self-tagging) (& CD 83; & Rep. 41), 85 p. (2011)
11	02-09	A Comprehensive Development Plan for a Multimodal Noise and Emissions Model, 296 p. (2010)
12	11-02/Task 17	Risk Assessment of Proposed ARFF Standards, 105 p. (2011)
13	02-23	Alternative Fuels as a Means to Reduce PM2.5 Emissions at Airports, 175 p. (2012)
14	03-12	Guidelines for Preparing Peak Period and Operational Profiles (& CD 126; & Rep. 82), 316 p. (2013)
15	03-25	Data Supporting the Impact of Regulatory Compliance on Small Airports, Vol. 1: Appendixes A, B, & C (& Rep. 90), 121 p. (2013)
15	03-25	Data Supporting the Impact of Regulatory Compliance on Small Airports, Vol. 2: Technical Appendixes (& Rep. 90), 151 p. (2013)
16	02-26	Assessing Aircraft Noise Conditions Affecting Student Learning, Vol. 1: Final Report, 71 p. (2014)
16	02-26	Assessing Aircraft Noise Conditions Affecting Student Learning, Vol. 2: Appendixes, 143 p. (2014)
17	02-35	Research Methods for Understanding Aircraft Noise Annoyance and Sleep Disturbance, 174 p. (2014)
18	01-19	Airport Capital Improvements: Developing a Cost-Estimating Model and Database (& CD 158; & Rep. 120), 45 p. (2014)
19	02-37	Integrated Noise Model Accuracy for General Aviation Aircraft, 92 p. (2014)
20	03-16	Estimating the Economic Impact of Air Cargo Operations at Airports, 356 p. (2014)

CDs

No.	Proj. No.	Title, Publication Year
68	11-01/Topic 01-01	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 31, 2007 (LRD 4) (2008)
70	02-05	ACRP Report 15 Toolkit (& Rep. 15) (2009)
73	03-09	Workbook for ACRP Report 20: Strategic Planning in the Airport Industry (& Rep. 20) (2009)
74	10-05	Supplemental Materials for ACRP Report 30 (& Rep. 30) (2010)
75	07-04	Airport Passenger Terminal Planning Spreadsheet Models for ACRP Report 25, Volume 2 (& Rep. 25 Vol. 2) (2010)
79	01-06	Workbook for ACRP Report 19: Developing an Airport Performance-Measurement System (& Rep. 19) (2010)
80	10-06	Parking Forecast Model and Instructions for Use: Supplemental Materials for ACRP Report 34 (& Rep. 34) (2010)
81	01-02	Appendixes to ACRP Report 33 (& Rep. 33) (2011)
82	03-06	Database of APM Systems for ACRP Report 37 (& Rep. 37) (2010)
83	10-07	Decision-Making Tool for Evaluating Passenger Self-Tagging (& Rep. 41; & WOD 10) (2011)
88	08-01	Collection of Practices for ACRP Report 42 (& Rep. 42) (2011)

CDs

No.	Proj. No.	Title, Publication Year
89	02-13	Practices That Enhance Environmental Stewardship (& Rep. 43) (2011)
91	02-07	The Alternative Fuels Investigation Tool (AFIT) for ACRP Report 46 (& Rep. 46) (2011)
93	03-15	Airport Forecasting Risk Assessment Program for ACRP Report 48 (& Rep. 48) (2011)
94	01-09	Interactive Resource Guide for ACRP Report 19A (& Rep. 19A) (2011)
95	02-10	AirportGEAR and Supplemental Material (& Rep. 56) (2011)
98	04-08	Runway Safety Area Risk Analysis Tool for ACRP Report 50 (& Rep. 50) (2011)
102	03-11	Supplemental Materials for ACRP Report 44 (& Rep. 44) (2011)
108	11-01/Topic 03-06	An Index and Digest of Decisions: Compilation of Airport Law Resources (LRD 13) (2012)
109	01-14	Appendices for ACRP Report 66 (& Rep. 66) (2012)
110	03-14	Resource CD for ACRP Report 67 (& Rep. 67) (2012)
112	07-07	Analysis Templates for ACRP Report 68 (& Rep. 68) (2012)
113	02-25	Tools for Evaluating Emissions and Costs of APUs and Alternative Systems (TEECAAS) for ACRP Report 64 (& Rep. 64) (2012)
114	10-08	Applying Intelligent Transportation Systems to Improve Airport Traveler Access Information (& Rep. 70) (2012)
115	02-08	Appendixes to ACRP Report 71 (& Rep. 71) (2012)
117	01-18	Airport ERM Tool for ACRP Report 74 (& Rep. 74) (2012)
119	01-17	Digital Files for ACRP Report 77: Guidebook for Developing General Aviation Airport Business Plans (& Rep. 77) (2012)
123	02-16	Airport Ground Support Equipment: Tutorial and Database (& Rep. 78) (2012)
124	03-17	Supplemental Material to ACRP Report 79: Prototype Airfield Capacity Spreadsheet Model (& Rep. 79) (2012)
125	02-22	Evaluation Tool to Supplement ACRP Report 80 (& Rep. 80) (2012)
126	03-12	Guidebook and Toolboxes for ACRP Report 82 (& Rep. 82; & WOD 14) (2013)
129	02-36	Toolkit for Evaluating Alternative Fuel Distribution Programs and Appendixes to ACRP Report 83 (& Rep. 83) (2013)
131	02-21	Airport Emissions Estimator Tool and Other Support Material for ACRP Report 84 (& Rep. 84) (2013)
133	06-02	Supplemental Materials for ACRP Report 75: Airport Leadership Development Program (& Rep. 75) (2013)
136	02-12	Departure Optimization Investigation Tool (DOIT) (& Rep. 86) (2013)
137	02-20	The Vector-Borne Disease Airport Importation Risk Tool (2013)
139	04-11	Tool Set for Integrating GIS in Emergency Management at Airports (& Rep. 88) (2013)
140	03-18	Airport Business Continuity Planning Software Tool (& Rep. 93) (2013)
141	11-01/Topic 04-05	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 2012 (LRD 21) (2013)
142	02-33	Airport Construction Emissions Inventory Tool (ACEIT) (& Rep. 102) (2014)
144	10-14	IROPS Investment Support Tool (IRIS) (& Rep. 106) (2014)
145	04-14	Lateral Runway Safety Area Risk Analysis (LRSARA) Tool (& Rep. 107) (2014)
149	09-06	Evaluation Process and Cost-Benefit Tool (& Rep. 110) (2014)
150	09-02	Supplemental Materials for ACRP Report 101 (& Rep. 101) (2014)
151	04-15	Airport Terminal Incident Response Plan (TIRP) Tool (& Rep. 112) (2014)
156	07-11	Supplemental Material to ACRP Report 117 (& Rep. 117) (2014)
158	01-19	ACCE: Airport Capital Cost Estimation Tool (& Rep. 120; & WOD 18) (2014)

Conference Proceedings

No.	Proj. No.	Title, Pages, Publication Year
41	11-02	Interagency-Aviation Industry Collaboration on Planning for Pandemic Outbreaks, 52 p. (2008)

Conference Proceedings

No.	Proj. No.	Title, Pages, Publication Year
47	11-02/Task 13	Research on the Transmission of Disease in Airports and on Aircraft, 70 p. (2010)

Note

Publications in parentheses with an ampersand (&) are companion publications.

Publications in parentheses without an ampersand are reports or digests published as stand-alone CDs.

APPENDIX B - SUMMARY OF PROJECT STATUS THROUGH DECEMBER 31, 2014

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
01: Administration									
01-01	Guidebook for Managing Small Airports	\$400,000(06)	\$397,230	University of Minnesota	1/24/2007	3/31/2009	Completed - Published as Report 16 and Web-Only Document 5		
01-02	Guidebook for Developing and Managing Airport Contracts	\$400,000(07)	\$315,000	HNTB	4/24/2007	2/28/2010	Completed - Published as Report 33		
01-03	Integrating Airport Information Systems	\$300,000(07)	\$300,000	Aero Tech Consulting	8/10/2007	11/22/2008	Completed - Published as Report 13 and Web-Only Document 1		
01-04	Marketing Guidebook for Small Airports	\$200,000(07)	\$200,000	Eclat Consulting	10/26/2007	9/30/2009	Completed - Published as Report 28		
01-05	Guidebook for Airport Capital Project Delivery Systems	\$100,000(07) \$25,000(08) \$70,000(10)	\$194,994	Northeastern University	4/4/2007	7/30/2009	Completed - Published as Report 21		
01-06	A Guidebook for Developing an Airport Performance Measurement System	\$400,000(08)	\$400,000	Infrastructure Management Group	5/6/2008	4/2/2010	Completed - Published as Report 19		
01-07	Airport/Airline Agreements - Practices and Characteristics	\$400,000(08)	\$393,005	Ricondo & Associates	5/30/2008	4/5/2010	Completed - Published as Report 36		
01-08	Guidebook for Developing and Leasing Airport Property	\$400,000(08)	\$350,000	R.W. Armstrong and Associates	6/24/2008	9/30/2010	Completed - Published as Report 47		
01-09	Resource Guide to Airport Performance Indicators	\$400,000(09)	\$400,000	Oliver Wyman, Inc.	5/8/2009	12/31/2010	Completed - Published as Report 19A		
01-10	A Handbook for Developing, Implementing and Overseeing Airport Capital Plans	\$400,000(09)	\$399,955	HNTB	7/10/2009	12/31/2010	Completed - Published as Report 49		
01-11	Understanding Airport In-Terminal Concession Programs	\$350,000(09)	\$350,000	Leigh Fisher	6/17/2009	5/31/2011	Completed - Published as Report 54		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
01-12	A Primer for Information Technology Systems at Airports	\$350,000(09)	\$348,843	Faith Group, LLC	7/7/2009	5/31/2011	Completed - Published as Report 59		
01-13	Developing a Database-Driven Web Application for Benchmarking Airport Performance	\$500,000(09A) \$100,000(10)	\$549,727	Amadeus Consulting	9/30/2010	9/30/2015	Research in Progress	D. Duchow	M. Salamone
01-14	Considering and Evaluating Airport Privatization	\$500,000(09A)	\$500,000	Leigh Fisher	5/10/2010	12/31/2011	Completed - Published as Report 66		
01-15	Assessing and Implementing Innovative Revenue Strategies - A Guide for Airports	\$400,000(10)	\$400,000	Kramer Aerotech, Inc.	5/14/2010	12/31/2014	Completed - Publication Pending	G. Fahnestock	L. Goldstein
01-16	Asset and Infrastructure Management for Airports	\$400,000(10)	\$400,000	GHD Consulting	6/16/2010	12/1/2011	Completed - Published as Report 69		
01-17	Guidebook for Developing General Aviation Airport Business Plans	\$400,000(10)	\$398,350	Aviation Management Consulting Group	6/28/2010	6/1/2012	Completed - Published as Report 77		
01-18	Application of Enterprise Risk Management at Airports	\$350,000(10)	\$350,000	Marsh, USA	6/30/2010	3/30/2012	Completed - Published as Report 74		
01-19	Airport Capital Improvements: Developing a Cost-Estimating Model and Database	\$400,000(11)	\$400,000	MCR Federal, LLC	7/13/2011	7/31/2014	Completed - Published as Report 120		
01-20	Procuring and Managing Professional Services for Airports	\$350,000(11)	\$350,000	HNTB	6/15/2011	1/20/2013	Completed - Published as Report 87		
01-21	A Guidebook for Airport-Airline Consortia	\$400,000(12)	\$387,642	AVAirPros	6/1/2012	4/1/2014	Completed - Published as Report 111		
01-22	Guidebook for Successfully Assessing and Managing Risks in Airport Capital and Maintenance Projects	\$300,000(12)	\$300,000	Direct Effect Solutions, Inc.	8/14/2012	5/14/2014	Completed - Published as Report 116		
01-23	Mitigating Disruptive WiFi Interference at Airports	\$350,000(13)	\$349,489	System Planning Corp.	5/2/2013	8/1/2014	Completed - Publication Pending	K. Hoang	T. Schatz

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
01-24	Renewable Energy as an Airport Revenue Source	\$400,000(13)	\$399,612	Harris Miller Miller & Hanson	8/13/2013	3/31/2015	Research in Progress	C. Hugunin S. Swigart	J. Navarrete
01-25	A Guidebook for Increasing Diversity and Small Business Participation in Airport Business Opportunities	\$250,000(13)	\$250,000	Exstare Federal Services, LLC	8/13/2013	9/6/2014	Completed - Publication Pending	L. Miller	T. Schatz
01-26	Improving the Airport Customer Experience	\$400,000(14)	\$400,000	Leigh Fisher	7/11/2014	1/11/2016	Research in Progress	J. Raymond	T. Schatz
01-27	NextGen - A Primer	\$750,000(14)	\$750,000	Logistics Management Institute	6/16/2014	2/15/2016	Research in Progress	T. Diana B. White	M. Salamone
01-28	NextGen - Guidance for Engaging Airport Stakeholders	\$300,000(14)	\$300,000	Grafton Technology, Inc.	6/4/2014	12/3/2015	Research in Progress	D. Scata	T. Schatz
02: Environment									
02-01	Alternative Aircraft and Pavement Deicers and Anti-Icing Formulations with Improved Environmental Characteristics	\$600,000(06)	\$600,000	University of South Carolina	11/1/2006	2/28/2010	Completed - Interim report published as Web-Only Document 3; summary of final report published as Research Results Digest 9; full final report published as Web-Only Document 8		
02-02	Deicing Planning Guidelines and Practices for Stormwater Management Systems	\$300,000(06)	\$300,000	CH2M Hill	10/9/2006	9/12/2008	Completed - Published as Report 14 and Deicing Practices 1-41		
02-03	Aircraft and Airport-Related Hazardous Air Pollutants: Research Needs and Analysis	\$100,000(06)	\$100,000	Aerodyne Research, Inc.	12/19/2006	12/18/2007	Completed - Published as Report 7		
02-03A	Measurement of Gaseous HAP Emissions from Idling Aircraft as a Function of Engine and Ambient Conditions	\$500,000(06)	\$499,741	Aerodyne Research, Inc.	1/12/2009	3/30/2012	Completed - Published as Report 63		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-04	Research Needs Associated with Particulate Emissions at Airports	\$100,000(06)	\$99,897	Environmental Consulting Group, Inc.	1/2/2007	3/1/2008	Completed - Published as Report 6		
02-04A	Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data	\$350,000(07)	\$349,470	University of Missouri-Rolla	4/12/2007	7/11/2008	Completed - Published as Report 9		
02-05	Aircraft Noise: A Toolkit for Managing Community Expectations	\$500,000(07)	\$399,982	Landrum & Brown	4/20/2007	3/31/2009	Completed - Published as Report 15		
02-06	Guidebook on Preparing Airport Greenhouse Gas (GHG) Emissions Inventories	\$200,000(07)	\$199,403	Wyle Laboratories, Inc.	10/9/2007	9/8/2008	Completed - Published as Report 11 and Web-Only Document 2		
02-07	Handbook for Analyzing the Costs and Benefits of Alternative Turbine Engine Fuels at Airports	\$500,000(07)	\$499,960	CSSI, Inc.	10/22/2007	10/29/2010	Completed - Published as Report 46		
02-08	Quantifying Contributions to Local Air Quality Impacts from Airport-Related Emissions	\$600,000(08)	\$599,970	Wyle Laboratories, Inc.	6/4/2008	4/30/2012	Completed - Published as Report 71		
02-09	A Comprehensive Development Plan for a Multimodal Noise and Emissions Model	\$200,000(08)	\$199,630	Wyle Laboratories, Inc.	7/7/2008	10/29/2010	Completed - Published as Web-Only Document 11		
02-10	Handbook for Considering Practical Greenhouse Gas Emission Reduction Strategies for Airports	\$500,000(09)	\$499,921	CDM	6/9/2009	6/9/2011	Completed - Published as Report 56		
02-11	A Handbook for Addressing Water Resource Issues Affecting Airport Capacity Enhancement Planning	\$150,000(09)	\$150,000	Gresham, Smith and Partners	5/11/2009	5/31/2011	Completed - Published as Report 53		
02-12	Environmental Optimization of Aircraft Departures: Fuel Burn, Emissions, and Noise	\$300,000(09)	\$300,000	Wyle Laboratories, Inc.	4/20/2009	3/29/2013	Completed - Published as Report 86		
02-13	Guidebook of Practices for Improving Environmental Performance at Small Airports	\$200,000(09) \$75,000(08)	\$200,000	Gresham, Smith and Partners	6/16/2009	8/20/2010	Completed - Published as Report 43		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-14	Guidebook for Selecting Methods to Monitor Airport and Aircraft Deicing Materials	\$200,000(09A)	\$150,000	Gresham, Smith and Partners	6/3/2010	2/28/2012	Completed - Published as Report 72		
02-15	Recycling Best Practices - A Guidebook for Advancing Recycling from Aircraft Cabins	\$300,000(09A)	\$300,000	Cascadia Consulting Group	9/22/2010	7/15/2013	Completed - Published as Report 100		
02-16	Airport Ground Support Equipment (GSE) Inventory and Emission Reduction Strategies	\$600,000(09A)	\$599,717	CDM	6/18/2010	6/30/2012	Completed - Published as Report 78		
02-17	Measuring PM Emissions from Aircraft Auxiliary Power Units, Tires and Brakes	\$500,000(09A)	\$500,000	Missouri University of Science and Technology	9/3/2010	5/31/2013	Completed - Published as Report 97		
02-18	Guidelines for Integrating Alternative Jet Fuel Into the Airport Setting	\$250,000(09A)	\$249,982	Metron Aviation	6/17/2010	10/16/2011	Completed - Published as Report 60		
02-19	Winter Design Storm Factor Determination for Airports	\$300,000(09A)	\$249,999	CH2M Hill	6/24/2010	12/1/2012	Completed - Published as Report 81		
02-20	The Role of Air Travel in the Transmission and Spread of Insect-Borne Diseases	\$250,000(10)	\$249,995	University of Florida	9/7/2010	9/30/2013	Completed - Published as CRP-CD-137		
02-20A	Infectious Disease Mitigation in Airports and on Aircraft	\$200,000(11)	\$200,000	Environmental Health & Engineering	7/6/2011	5/31/2013	Completed - Published as Report 91		
02-21	Guidebook for Preparing Airport Emissions Inventories for State Implementation Plans	\$500,000(10)	\$499,805	KB Environmental Sciences	8/31/2010	2/28/2013	Completed - Published as Report 84		
02-22	Incorporating Sustainability into Traditional Airport Projects	\$300,000(09A)	\$300,000	Landrum & Brown	7/12/2010	5/31/2012	Completed - Published as Report 80		
02-23	Alternative Fuels as a Means to Reduce PM2.5 Emissions at Airports	\$500,000(10)	\$499,798	Project Performance Corp.	7/6/2010	4/30/2012	Completed - Published as Web-Only Document 13		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-24	Guidelines for Airport Sound Insulation Programs	\$200,000(10)	\$200,000	Jones Payne Group	8/27/2010	3/8/2013	Completed - Published as Report 89		
02-25	Handbook for Evaluating Emissions and Costs of APU's and Alternative Systems	\$200,000(10)	\$199,773	Environmental Science Associates	7/7/2010	12/31/2011	Completed - Published as Report 64		
02-26	Assessing Aircraft Noise Conditions Affecting Student Learning	\$450,000(10)	\$449,672	Wyle Laboratories, Inc.	6/26/2010	11/30/2013	Completed - Published as Web-Only Document 16		
02-27	Aircraft Taxi Noise Database for Airport Noise Modeling	\$150,000(10)	\$149,779	Wyle Laboratories, Inc.	6/11/2010	3/29/2013	Completed - Published as Web-Only Document 9, Volume 1		
02-27A	Developing a Generic Commercial Jet Taxi Noise Directivity Pattern for AEDT	\$75,000(12)	\$74,767	Wyle Laboratories, Inc.	2/22/2012	3/29/2013	Completed - Published as Web-Only Document 9, Volume 2		
02-28	Airport Sustainability Practices: Tools for Evaluating, Measuring, and Implementing	\$800,000(11) \$87,104(14)	\$687,103	Vanasse Hangen Brustlin, Inc.	6/27/2011	12/31/2014	Completed - Published as Report 119		
02-29	Guidance for Treatment of Airport Stormwater Containing Deicers	\$600,000(11)	\$500,000	Gresham, Smith and Partners	5/31/2011	9/30/2013	Completed - Published as Report 99		
02-30	Enhancing the Airport-Industry Database of Sustainable Practices	\$500,000(11) \$196,320(14)	\$696,320	CDM	7/18/2011	1/30/2015	Research in Progress	P. Magnotta	J. Navarrete
02-31	Guidelines for Ensuring Longevity in Airport Sound Insulation Programs	\$350,000(11)	\$349,980	Wyle Laboratories, Inc.	7/8/2011	9/15/2013	Completed - Published as Report 105		
02-32	Understanding Nuisance Microbial Biofilms in Receiving Waters Impacted by Airport Deicing Activities	\$400,000(11)	\$300,000	CH2M Hill	7/20/2011	5/30/2014	Completed - Published as Report 115		
02-33	Guidance for Estimating Airport Construction Emissions	\$350,000(11)	\$349,980	Wyle Laboratories, Inc.	7/1/2011	9/30/2013	Completed - Published as Report 102		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-34	Quantifying Aircraft Lead Emissions at Airports	\$500,000(11)	\$500,000	Sierra Research, Inc.	6/3/2011	10/21/2014	Completed - Publication Pending	J. Byers W. Gillette	M. Greenberger
02-35	Research Methods for Understanding Aircraft Noise Annoyance and Sleep Disturbance	\$600,000(11)	\$599,993	Harris Miller Miller & Hanson	9/20/2011	6/30/2014	Completed - Published as Web-Only Document 17		
02-36	Assessing Opportunities for Alternative Fuel Distribution Programs	\$500,000(11)	\$400,000	Metron Aviation	5/26/2011	12/6/2012	Completed - Published as Report 83		
02-37	Integrated Noise Model Accuracy for General Aviation Aircraft	\$400,000(11)	\$350,000	Harris Miller Miller & Hanson	6/13/2011	9/30/2014	Completed - Published as Web-Only Document 19		
02-38	Guidebook for Energy Facilities Compatibility with Airports and Airspace	\$450,000(12)	\$449,850	Harris Miller Miller & Hanson	5/2/2012	11/2/2013	Completed - Published as Report 108		
02-39	Applying Whole Effluent Toxicity Testing to Evaluate Airport Runoff	\$500,000(12)	\$339,603	NewFields Government Services, LLC	10/5/2012	1/30/2015	Research in Progress	A. Fenedick	J. Navarrete
02-40	Climate Change Risk Assessment and Adaptation Planning at Airports	\$500,000(12)	\$491,923	Dewberry & Davis, LLC	11/20/2012	12/20/2014	Completed - Publication Pending	T. Cuddy A. Freeburg	M. Salamone
02-41	Estimating Takeoff Thrust Settings for Airport Emissions Inventories	\$450,000(12)	\$449,998	The Cadmus Group	9/1/2012	10/31/2014	Completed - Publication Pending	J. DiPardo	J. Navarrete
02-42	Understanding Air Quality and Public Health Studies Related to Airports	\$200,000(12)	\$199,675	Wyle Laboratories, Inc.	9/25/2012	12/31/2014	Research in Progress	K. Delaney C. Sequelra	J. Navarrete
02-43	Development of NOx Chemistry Module for EMDS/AEDT to Predict NO2 Concentrations	\$400,000(13)	\$399,577	KB Environmental Sciences	7/10/2013	4/30/2015	Research in Progress	P. Wade	J. Navarrete
02-44	Helicopter Noise Modeling Guidelines	\$250,000(13)	\$249,811	Wyle Laboratories, Inc.	5/2/2013	6/29/2015	Research in Progress	B. He F. Smigelski	J. Navarrete
02-45	Methodology to Improve EDMS/AEDT Quantification of Aircraft Taxi/Idle Emissions	\$250,000(13)	\$249,959	KB Environmental Sciences	7/8/2013	4/30/2015	Research in Progress	C. Sequeria P. Wade	J. Navarrete

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-46	Improving Ground Support Equipment (GSE) Operational Data for Airport Emissions Modeling	\$275,000(13)	\$275,000	KB Environmental Sciences	7/5/2013	1/13/2015	Research in Progress	A. Fisher P. Wade	T. Schatz
02-47	Assessing Aircraft Noise Conditions Affecting Student Achievement--Case Studies	\$600,000(14)	\$599,939	Harris Miller Miller & Hanson, Inc.	5/22/2014	3/21/2016	Research in Progress	J. Beyers J. Dipardo	L. Goldstein
02-48	Assessing Community Annoyance of Helicopter Noise	\$700,000(14)	\$699,778	Landrum & Brown, Inc.	6/3/2014	6/2/2016	Research in Progress	N. Sizov	J. Navarrete
02-49	Addressing Significant Weather Impacts on Airports	\$550,000(14)	\$550,000	ICF Incorporated, LLC	5/22/2014	1/21/2016	Research in Progress	T. Cuddy	T. Schatz
02-50	Deriving Benefits from Alternative Aircraft-Taxi Systems	\$300,000(14)	\$300,000	Cadmus Group, Inc.	7/15/2014	1/14/2016	Research in Progress	C. Dorbian	M. Salamone
02-51	Evaluating Methods for Determining Interior Noise Levels Used in Airport Sound Insulation Programs	\$300,000(14)	\$299,678	CSDA Design Group	6/9/2014	6/8/2015	Research in Progress	B. He	J. Navarrete
02-52	Improving AEDT Noise Modeling of Hard, Soft and Mixed Ground Surfaces	\$250,000(14)	\$249,603	Wyle Laboratories, Inc.	6/11/2014	12/10/2015	Research in Progress	J. Pietrak	J. Navarrete
02-53	Interpreting Airport Water Monitoring Results	\$250,000(14)	\$250,000	Gresham, Smith and Partners	8/8/2014	11/7/2015	Research in Progress	C. Pociask	M. Salamone
02-54	Measuring and Understanding Emission Factors for General Aviation (GA) Aircraft	\$500,000(14)	\$499,971	Aerodyne Research, Inc.	5/20/2014	3/19/2016	Research in Progress	C. Ma P. Wade	M. Greenberger
02-55	Enhanced AEDT Modeling of Aircraft Arrival and Departure Profiles	\$350,000(14)	\$349,921	ATAC Corporation	6/9/2014	12/8/2015	Research in Progress	J. Pietrak	J. Navarrete
02-56	Developing an Airport Business Case for Renewable Energy	\$300,000(14)	\$299,903	Harris Miller Miller & Hanson, Inc.	5/27/2014	8/26/2015	Research in Progress	R. Solomon	T. Schatz

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
02-57	Reducing the Impact of Lead Emissions at Airports	\$200,000(14)	\$199,971	Sierra Research, Inc.	7/28/2014	7/28/2015	Research in Progress	P. Wade	M. Greenberger
02-58	Dispersion Modeling Guidance for Airports Addressing Local Area Quality Health Concerns	\$400,000(14)	\$399,999	University of North Carolina	6/10/2014	9/10/2015	Research in Progress	C. Sequeira	J. Navarrete
02-59	Water Efficiency Management Strategies at Airports	\$450,000(14)	\$449,999	The Cadmus Group, Inc.	6/4/2014	12/3/2015	Research in Progress	T. Cuddy	T. Schatz
02-60	Managing Perfluorocarbon Impacts at Airports	\$480,000(15)					In Development	M. Tonnaciff	J. Navarrete
02-61	Airport Stormwater Management: Compilation, Update and Training Materials	\$450,000(15)					In Development	G. Legarretta	J. Navarrete
02-62	Incorporating Green Infrastructure for Stormwater Management at Airports	\$350,000(15)					In Development	J. Barrileaux	M. Greenberger
02-63	Improving Ground Access Vehicle Emissions Modeling	\$300,000(15)					In Development	C. Sequeira	J. Navarrete
02-64	Guidance and Best Practices for Strategically Incorporating Pervious Pavement	\$200,000(15)					In Development	D. Johnson	T. Schatz
02-65	Tracking Aviation Alternative Fuel	\$250,000(15)					In Development	A. Jardines	T. Schatz
02-66	Commercial Spaceport Noise and Sonic Boom	\$600,000(15)					In Development	N. Sizov	M. Greenberger
02-67	Air Quality Management Toolbox, Research Compilation, Gap Analysis and Training Materials	\$400,000(15)					In Development	N. Didyk P. Wade	M. Greenberger

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
03: Policy and Planning									
03-01	Light Detection and Ranging (LIDAR) Deployment for Airport Obstructions Surveys	\$350,000(06)	\$350,000	University of Mississippi	1/30/2007	12/31/2009	Completed - Published as Research Results Digest 10		
03-02	Airport Passenger-Related Processing Rates Guidebook	\$200,000(06)	\$200,000	HNTB	1/16/2007	6/30/2009	Completed - Published as Report 23		
03-03	Enhancing Airport Land Use Compatibility	\$500,000(06)	\$500,000	Mead & Hunt	12/28/2006	9/15/2009	Completed - Published as Report 27, Volumes 1 and 2		
03-04	Guidebook for Airport-User Survey Methodology	\$250,000(06)	\$249,350	Jacobs Consultancy	1/16/2007	8/31/2009	Completed - Published as Report 26		
03-05	Passenger Space Allocation Guidelines for Planning and Design of Airport Terminals	\$400,000(07)	\$399,928	Trans Solutions, LLC	6/28/2007	5/31/2011	Completed - Published as Report 55		
03-06	Guidebook for Planning and Implementing Automated People Mover Systems at Airports	\$500,000(07)	\$395,341	Lea & Elliott	6/12/2007	3/30/2010	Completed - Published as Report 37		
03-07	Guidebook for Measuring Performance of Automated People Mover Systems at Airports	\$300,000(07)	\$300,000	Lea & Elliott	6/13/2007	1/31/2012	Completed - Published as Report 37A		
03-08	Passenger Air-Service Development Techniques	\$300,000(07)	\$300,000	InterVISTAS Consulting	6/21/2007	5/15/2009	Completed - Published as Report 18		
03-09	Guidebook for Strategic Planning in the Airport Industry	\$425,000(07)	\$321,049	Ricondo & Associates	6/27/2007	6/15/2009	Completed - Published as Report 20		
03-10	Innovative Approaches to Addressing Aviation Capacity Issues in Coastal Mega-Regions	\$300,000(07)	\$300,000	Resource Systems Group	2/6/2008	9/30/2009	Completed - Published as Report 31		
03-11	A Guidebook for the Preservation of Public-Use Airports	\$600,000(08)	\$522,430	L. Robert Kimball & Associates	6/23/2008	1/15/2011	Completed - Published as Report 44		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
03-12	Preparing Peak Period and Operational Profiles - Guidebook	\$350,000(08)	\$347,044	HNTB	8/13/2008	10/30/2012	Completed - Published as Report 82		
03-13	Understanding Airspace, Objects, and Their Effects on Airports	\$200,000(08)	\$199,938	Jacobs Consultancy	7/11/2008	4/30/2010	Completed - Published as Report 38		
03-14	Airport Passenger Conveyance System Planning Guidebook	\$300,000(08)	\$300,000	Trans Solutions, LLC	8/26/2008	3/30/2012	Completed - Published as Report 67		
03-15	Impact of Jet Fuel Price Uncertainty on Airport Planning and Development	\$400,000(09)	\$399,970	GRA, Inc.	3/4/2009	2/28/2011	Completed - Published as Report 48		
03-16	Guidebook for Estimating the Economic Impact of Air Cargo at Airports	\$500,000(09)	\$499,860	Battelle Memorial Institute	6/5/2009	7/15/2014	Completed - Publication Pending	J. Herbert R. Samis	L. Goldstein
03-17	Evaluating Airfield Capacity	\$525,000(09)	\$525,000	Leigh Fisher	6/29/2009	6/30/2012	Completed - Published as Report 79		
03-18	Operational and Business Continuity Planning for Prolonged Airport Disruptions	\$350,000(10)	\$348,292	Risk Solutions International, LLC	6/3/2010	6/28/2013	Completed - Published as Report 93		
03-19	Passenger Value of Time, Benefit-Cost Analysis, and Capital Investment Decisions	\$350,000(10)	\$349,944	Economic Development Research Group	7/26/2010	12/2/2014	Completed - Publication Pending	R. Samis D. Walsh	L. Goldstein
03-20	Defining and Measuring Aircraft Delay and Airport Capacity Thresholds	\$250,000(10)	\$250,000	Trans Solutions, LLC	8/30/2010	12/31/2013	Completed - Published as Report 104		
03-21	Developing and Maintaining Support for Your Airport Capacity Project	\$300,000(10)	\$299,980	Mead & Hunt	6/3/2010	3/29/2013	Completed - Published as Report 85		
03-22	Addressing Uncertainty About Future Airport Activity Levels in Airport Decision Making	\$350,000(10)	\$350,000	InterVISTAS Consulting	7/15/2010	7/31/2012	Completed - Published as Report 76		
03-23	Integrating Aviation and Passenger Rail Planning	\$400,000(10)	\$399,452	Resource Systems Group	7/29/2010	6/30/2014	Completed - Publication Pending	J. Sweat-Essick D. Rinsler	T. Schatz

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
03-24	Guidelines for Air Cargo Facility Planning and Development	\$400,000(11)	\$400,000	CDMWilbur Smith	7/17/2011	1/31/2015	Research in Progress	C. Hugunin	L. Goldstein
03-25	Impact of Regulatory Compliance Costs on Small Airports	\$300,000(11)	\$299,987	Unison Consulting, Inc.	6/3/2011	1/31/2013	Completed - Published as Report 90 and Web-Only Document 15		
03-26	Understanding Airline and Passenger Choice in Multi-Airport Regions	\$250,000(11)	\$250,000	InterVISTAS Consulting	8/4/2011	9/30/2013	Completed - Published as Report 98		
03-27	Evaluating Methods for Counting Aircraft Operations at Non-Towered Airports	\$400,000(11)	\$400,000	Woolpert	11/21/2011	11/28/2014	Completed - Publication Pending	T. Dupree	J. Navarrete
03-28	Economic Impact of U.S. Airports	\$400,000(12)	\$399,984	Economic Development Research Group	7/17/2012	12/31/2014	Completed - Publication Pending	S. Glasgow	T. Schatz
03-29	Effects of Airline Industry Changes on Small- and Non-Hub Airports	\$300,000(13)	\$299,972	GRA, Inc.	7/22/2013	2/21/2015	Research in Progress	D. Anderson	L. Goldstein
03-30	Unmanned Aircraft Systems at Airports: A Primer	\$150,000(13) \$50,000(14)	\$199,000	Futron Corporation	8/7/2013	1/16/2015	Research in Progress	D. Rinsler C. Swider	T. Schatz
03-31	Aligning Community Expectations with Airport Roles	\$500,000(14)	\$500,000	Mead & Hunt	6/16/2014	4/15/2016	Research in Progress	K. Erhard	L. Goldstein
03-32	Guidance for Preparing and Using Airport Design Day Flight Schedules	\$400,000(14)	\$349,966	HNTB Corporation	7/17/2014	10/16/2015	Research in Progress	D. Rinsler	M. Greenberger
03-33	NextGen - Airport Planning and Development	\$500,000(14)	\$500,000	Leigh Fisher	7/11/2014	1/11/2016	Research in Progress	K. Duffy B. McGray	J. Navarrete
03-34	NextGen - Understanding the Airport's Role in Performance Based Navigation	\$500,000(14)	\$500,000	Saab Sensis Corporation	6/9/2014	2/8/2016	Research in Progress	H. Callon	L. Goldstein
03-35	Improving Airport Services for International Customers	\$600,000(14)	\$600,000	Landrum & Brown, Inc.	6/6/2014	12/5/2015	Research in Progress	L. Miller	T. Schatz

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
03-36	Influence of Demographic Factors on Air Passenger Demand	\$500,000(15)					In Development	P. Devoti	J. Navarrete
03-37	Using GIS for Local Government Management of Airspace Obstructions and Airport Land Use Compatibility	\$350,000(15)					In Development	M. Lawrence	J. Navarrete
03-38	Understanding the Benefits and Impacts of NPIAS Obligations for Airports	\$150,000(15)					In Development	D. Brooks	L. Goldstein
03-39	Realistic Use of Economically Integrated Business Park Development for Airports	\$375,000(15)					In Development	R. Hendricks	T. Schatz
04: Safety									
04-01	Analysis of Aircraft Overruns and Undershoots for Runway Safety Areas	\$250,000(06)	\$249,986	Applied Research Associates	9/19/2006	1/31/2008	Completed - Published as Report 3		
04-02	Lightning-Warning Systems for Use by Airports	\$200,000(06)	\$199,937	MDA Federal, Inc.	11/7/2006	11/7/2008	Completed - Published as Report 8		
04-03	Guidance for Identifying and Mitigating Approach Lighting System Hazards	\$300,000(07)	\$300,000	Virginia Tech	10/3/2007	2/2/2009	Completed - Published as Research Results Digest 6 and Web-Only Document 4		
04-04	Simulation-Based Training and Exercise of Civil Aviation Emergency Response Personnel	\$500,000(07)	\$499,093	Applied Research Associates	9/12/2007	12/31/2011	Completed - Results to 04-04A		
04-04A	Evaluating the Airport Emergency Response Operations Simulation (AEROS) Tool	\$300,000(12)	\$290,000	Futron Corporation	6/18/2013	9/17/2014	Terminated		
04-04B	Exercising Command-Level Decision Making for Critical Incident at Airports	\$125,000(15)					In Development		M. Greenberger

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
04-05	A Guidebook for Airport Safety Management Systems	\$300,000(07)	\$300,000	Applied Research Associates	5/24/2007	5/15/2009	Completed - Published as Report 1, Volume 2		
04-06	A Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports	\$300,000(08)	\$299,905	Biozone	6/2/2008	1/15/2010	Completed - Published as Report 32		
04-07	Airport Apron Management and Control Programs	\$300,000(08)	\$300,000	Ricondo & Associates	5/8/2009	8/30/2011	Completed - Published as Report 62		
04-07A	Use of Towbarless Tractors at Airports - Best Practices	\$300,000(08)	\$38,795	Ricondo & Associates	4/20/2009	8/30/2011	Completed - Published as Research Results Digest 15		
04-08	Improved Models for Risk Assessment of Runway Safety Areas (RSA)	\$400,000(09)	\$400,000	Applied Research Associates	6/8/2009	3/31/2011	Completed - Published as Report 50		
04-09	Risk Assessment Method to Support Modification of Airfield Separation Standards	\$250,000(09)	\$250,000	Applied Research Associates	6/10/2009	2/16/2011	Completed - Published as Report 51		
04-10	Airport-to-Airport Mutual Aid Programs	\$300,000(09A)	\$300,000	Innovative Emergency Management	7/6/2010	3/1/2012	Completed - Published as Report 73		
04-11	Guidebook on Integrating GIS in Emergency Management at Airports	\$350,000(11)	\$274,949	Barich, Inc.	7/12/2011	2/28/2013	Completed - Published as Report 88		
04-12	Integrating Web-Based Emergency Management Collaboration Tools into Airport Operations - A Primer	\$400,000(11)	\$400,000	Innovative Emergency Management	7/15/2011	7/31/2013	Completed - Published as Report 94		
04-13	Integrating Community Emergency Response Teams (A-CERTs) at Airports	\$400,000(11)	\$400,000	Innovative Emergency Management	7/26/2011	7/26/2013	Completed - Published as Report 95		
04-14	Development of a Runway Veer-Off Location Distribution Risk Assessment Model and Reporting Template	\$200,000(12)	\$200,000	Airport Safety Management Consultants	6/6/2012	12/5/2013	Completed - Published as Report 107		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
04-15	Airport Terminal Incident Response Planning	\$325,000(12)	\$325,000	Innovative Emergency Management	7/10/2012	4/2/2014	Completed - Published as Report 112		
04-16	Safety Risk Management for Airports	\$300,000(13)	\$299,992	Futron Corporation	6/18/2013	11/14/2014	Completed - Publication Pending	K. Lyons	M. Greenberger
04-17	Applying an SMS Approach to Wildlife Hazard Management	\$250,000(13)	\$250,000	BASH Incorporated	1/17/2014	3/16/2015	Research in Progress	K. Lyons	T. Schatz
04-18	Runway Protection Zone (RPZ) Risk Assessment Tool	\$400,000(14)	\$400,000	Applied Research Associates	6/4/2014	8/3/2015	Research in Progress	S. Debban	M. Greenberger
04-19	Airport Emergency Planning Template: NIMS - Incident Command System Compliance	\$300,000(15)					In Development	M. Tonnacliff	M. Salamone
05: Security									
05-01	An Airport Guide for Regional Emergency Planning for CBRNE Events	\$250,000(06)	\$248,464	System Planning Corp.	11/15/2006	10/31/2008	Completed - Published as Report 12		
05-02	Airport Cyber-Security Best Practices	\$350,000(13)	\$350,000	Grafton Technologies	8/21/2013	1/31/2015	Research in Progress	A. Tapia	M. Greenberger
06: Human Resources									
06-01	Airport and Air Carrier Resource Manual: Employees Coping with Traumatic Events	\$300,000(07)	\$299,416	University of North Dakota	12/5/2007	5/31/2009	Completed - Published as Report 22		
06-02	Airport Leadership Development Program	\$100,000(10)	\$100,000	Ohio State University	9/29/2010	10/30/2012	Completed - Published as Report 75		
06-03	Airports and Family Assistance After an Aviation Accident	\$300,000(15)					In Development	K. Lyons	T. Schatz
06-04	Assessing, Building, and Retaining Workforce Capacity in the Aviation Industry	\$250,000(15)					In Development	R. Moseng	L. Goldstein

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
07: Design									
07-01	Innovations for Airport Terminal Facilities	\$400,000(06)	\$400,000	Corgan Associates, Inc.	12/8/2006	7/8/2008	Completed - Published as Report 10		
07-02	Airport Curbside and Terminal Area Roadway Operations	\$400,000(06) \$150,000(09)	\$528,000	Jacobs Consultancy	11/15/2006	5/19/2010	Completed - Published as Report 40		
07-03	Developing Improved Civil Aircraft Arresting Systems	\$500,000(07)	\$499,455	Protection Engineering Consultants	5/23/2007	10/31/2009	Completed - Published as Report 29		
07-04	Airport Passenger Terminal Planning and Design: Spreadsheet Models and User's Guide	\$400,000(07)	\$400,000	Landrum & Brown	6/6/2007	10/31/2009	Completed - Published as Report 25, Volume 2		
07-05	Airport Passenger Terminal Planning and Design: Guidebook	\$400,000(07)	\$400,000	Landrum & Brown	6/28/2007	10/31/2009	Completed - Published as Report 25, Volume 1		
07-06	Airport Signage and Wayfinding Information Guidelines	\$250,000(08)	\$250,000	Gresham, Smith and Partners	8/21/2008	3/1/2011	Completed - Published as Report 52		
07-07	Evaluating Terminal Renewal Versus Replacement Options	\$400,000(10)	\$400,000	Ricondo & Associates	8/16/2010	3/15/2012	Completed - Published as Report 68		
07-08	Improving Terminal Design to Increase Revenue Generation and Customer Satisfaction	\$500,000(11)	\$496,888	Landrum & Brown	6/3/2011	11/30/2013	Completed - Published as Report 109		
07-09	Apron Planning and Design Guidebook	\$250,000(12)	\$250,000	Ricondo & Associates	6/15/2012	7/31/2013	Completed - Published as Report 96		
07-10	General Aviation Facility Planning	\$300,000(12)	\$300,000	Delta Airport Consultants	5/17/2012	2/28/2014	Completed - Published as Report 113		
07-11	Evaluation of Cost-Saving and Energy Reduction Technologies for Escalators and Moving Walks at Airports	\$250,000(12)	\$249,947	Project Performance Corp.	9/18/2012	7/31/2014	Completed - Published as Report 117		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
07-12	Guidebook for Airport Terminal Restroom Planning and Design	\$250,000(12)	\$249,986	Architectural Alliance	3/25/2013	9/30/2014	Completed - Publication Pending	M. Sedarous	J. Navarrete
07-13	Enhancing Airport Wayfinding for the Elderly and Persons with Disabilities	\$450,000(14)	\$450,000	Gresham Smith & Partners	6/9/2014	12/8/2015	Research in Progress	R. Hendricks	T. Schatz
07-14	Acoustical Design to Improve Intelligibility of Airport Terminal PA Systems	\$350,000(15)					In Development	H. Cyrus	T. Schatz
07-15	Airport Terminal Design: Compilation, Update and, Training Materials	\$300,000(15)					In Development	W. Reinhardt	T. Schatz
08: Construction									
08-01	Sustainable Airport Construction Practices	\$150,000(09)	\$150,000	Ricondo & Associates	6/1/2009	6/22/2010	Completed - Published as Report 42		
09: Maintenance									
09-01	Recommended Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management	\$350,000(06)	\$299,636	Applied Research Associates	11/6/2006	4/30/2010	Completed - Published as Report 39		
09-02	Best Practices Manual for Working in or Near Airport Movement Areas	\$500,000(11)	\$325,000	Ricondo & Associates	8/31/2011	11/30/2013	Completed - Published as Report 101		
09-03	Airport Parking Garage Lighting Solutions	\$300,000(12)	\$300,000	Virginia Polytechnic Institute & State University	6/4/2012	7/31/2014	Completed - Publication Pending	T. Mai	J. Navarrete
09-04	Airport Building Operations and Maintenance (O&M) Optimization and Recommissioning: A Whole Systems Approach	\$250,000(12)	\$249,835	Sebesta Blomberg & Associates	12/14/2012	12/31/2014	Completed - Publication Pending	K. Slusarski	J. Navarrete

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
09-05	Guidance on Successful Computer Maintenance Management Systems (CMMS) Selection and Practices	\$300,000(12)	\$300,000	Ross & Barrunzini	7/12/2012	10/17/2014	Completed - Publication Pending	R. Zee	M. Greenberger
09-06	Evaluating Impacts of Sustainability Practices on Airport Operations and Maintenance	\$300,000(12)	\$312,000	Booz Allen	9/27/2012	4/25/2014	Completed - Published as Report 110		
09-07	Airport Maintenance Roles in Planning, Design, Construction, Commissioning, and Activation	\$200,000(12)	\$200,000	Michigan State University	11/13/2012	10/31/2014	Completed - Publication Pending	P. Whealan	M. Salamone
09-08	Balancing Airport Stormwater and Wildlife Management: Analysis Tools and Guidance	\$250,000(12)	\$249,209	Environmental Resource Solutions	10/1/2012	8/29/2014	Completed - Publication Pending	J. Robinson	J. Navarrete
09-09	LED Airfield Lighting System Operation and Maintenance	\$340,000(13)	\$340,000	Burns Engineering	8/9/2013	2/8/2015	Research in Progress	A. Logan T. Mai	J. Navarrete
09-10	Benchmarking and Profiling Airport Terminal Energy End Uses	\$400,000(13)	\$399,331	Texas A&M University	9/16/2013	3/15/2015	Research in Progress	P. Magnotta	M. Greenberger
09-11	Pavement Maintenance Guidelines for General Aviation Airport Management	\$350,000(14)	\$350,000	Texas A&M University Transportation Institute	6/16/2014	9/15/2015	Research in Progress	G. Cline	M. Greenberger
09-12	NextGen - Leveraging NextGen Spatial Data to Benefit Airports	\$200,000(14)	\$200,000	Woolpert, Inc.	6/13/2014	9/12/2015	Research in Progress	M. McNerney R. Solomon	M. Greenberger
09-13	Incorporating Life Cycle Cost Considerations in Airport Facilities Procurement	\$350,000(15)					In Development		M. Greenberger
10: Operations									
10-01	Optimizing the Use of Aircraft Deicing and Anti-icing Fluids	\$300,000(06) \$50,000(08) \$100,000(08)	\$349,030	APS Aviation, Inc.	3/20/2007	7/31/2010	Completed - Published as Report 45		
10-02	Planning for Offsite Airport Terminals	\$350,000(06)	\$350,000	MarketSense	12/18/2006	9/1/2009	Completed - Published as Report 35		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
10-03	Guidebook for Evaluating Airport Parking Strategies and Supporting Technologies	\$300,000(07)	\$300,000	Jacobs Consultancy	9/14/2007	9/1/2009	Completed - Published as Report 24		
10-04	Airports and the Newest Generation of General Aviation Aircraft	\$500,000(07)	\$496,390	GRA, Inc.	6/27/2007	5/31/2009	Completed - Published as Report 17, Volumes 1 and 2		
10-05	Reference Guide on Understanding Common Use at Airports	\$500,000(08)	\$399,981	Barich, Inc.	5/30/2008	9/29/2009	Completed - Published as Report 30		
10-06	Handbook to Assess the Impacts of Constrained Parking at Airports	\$400,000(08)	\$398,563	Ricondo & Associates	6/16/2008	3/8/2010	Completed - Published as Report 34		
10-07	Current Status and Future Implications of Passenger Self-Tagging	\$350,000(09)	\$350,000	Barich, Inc.	6/16/2009	7/30/2010	Completed - Published as Report 41 and Web-Only Document 10		
10-08	Applying Intelligent Transportation Systems to Improve Airport Traveler Access Information	\$350,000(09)	\$350,000	Gresham, Smith and Partners	4/13/2009	4/30/2012	Completed - Published as Report 70		
10-09	Elimination or Reduction of Baggage Recheck for Arriving International Passengers	\$400,000(09)	\$400,000	InterVISTAS Consulting	7/22/2009	10/31/2011	Completed - Published as Report 61		
10-10	Guidebook for Airport Irregular Operations (IROPS) Contingency Planning	\$600,000(10)	\$599,976	Mead & Hunt	8/26/2010	2/24/2012	Completed - Published as Report 65		
10-10A	Guidebook for Airport Irregular Operations (IROPS) Contingency Planning -Training Sessions	\$300,000(12)	\$151,053	Mead & Hunt	2/24/2012	1/31/2013	Completed - Training Sessions Held		
10-11	Guidebook to Creating a Collaborative Environment Between Airport Operations and Maintenance	\$500,000(11)	\$399,840	Amadeus Consulting	7/27/2011	4/30/2013	Completed - Published as Report 92		
10-12	Guidebook for Through-the-Fence (TTF) Operations	\$350,000(12)	\$350,000	Mead & Hunt	7/30/2012	2/28/2014	Completed -Published as Report 114		

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
10-13	A Guidebook for Integrating NIMS for Personnel and Resources at Airports	\$200,000(12)	\$200,000	System Planning Corp.	5/23/2012	8/24/2013	Completed - Published as Report 103		
10-14	Being Prepared for IROPS: A Business Planning and Decision Making Approach	\$300,000(12)	\$299,395	MCR Federal, LLC	8/2/2012	11/4/2013	Completed - Published as Report 106		
10-15	Guidebook for Airport Winter Operations	\$400,000(12)	\$400,000	Gresham, Smith and Partners	6/25/2012	8/29/2014	Completed - Publication Pending	M. Hovan	T. Schatz
10-16	Ground Transportation at Airports: Best Practices	\$300,000(13)	\$300,000	Leigh Fisher	7/10/2013	5/8/2015	Research in Progress	P. Lo	T. Schatz
10-17	Implementing Integrated Self-Service at Airports	\$450,000(13)	\$449,980	Barich, Inc.	8/5/2013	2/4/2015	Research in Progress	D. Rinsler	T. Schatz
10-18	Guidebook on Preventative Maintenance at General Aviation Airports	\$400,000(13)	\$299,496	Delta Airport Consultants	9/18/2013	2/18/2015	Research in Progress	R. Moseng	M. Greenberger
10-19	Advancing Collaborative Decision Making (CDM) at Airports	\$300,000(13)	\$299,783	Mosaic ATM, Inc.	9/3/2013	12/3/2014	Completed - Publication Pending	K. Duffy S. Gardner	M. Greenberger
10-20	Guidance for Planning, Design, and Operations of Airport Communications	\$300,000(13)	\$299,281	TranSecure, Inc.	8/9/2013	11/8/2014	Research in Progress	F. James	M. Greenberger
10-21	Complying with Federal Regulations: An Integrated Approach	\$350,000(14)	\$350,000	Aviation Management Consulting	6/27/2014	8/26/2015	Research in Progress		M. Greenberger
10-22	Improving Stakeholder Engagement in Aircraft Accident Planning	\$500,000(14)	\$499,988	Futron Corporation	4/18/2014	10/17/2015	Research in Progress	M. Tonnacliff	M. Greenberger
10-23	IROPS Stakeholder Communication and Coordination	\$400,000(14)	\$399,930	Metron Aviation, Inc.	6/9/2014	12/8/2015	Research in Progress	L. Miller	T. Schatz
10-24	Guidance for Establishing Airport Apron Ramp Towers	\$400,000(15)					In Development	F. James M. Lawrence	M. Greenberger

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
10-25	Use of Campus Notification and Lockdown System at Airports	\$200,000(15)					In Development	T. Carter S. Raman	M. Salamone
11: Special Projects									
11-01	Legal Aspects of Airport Programs	\$200,000(06) \$475,000(07) \$300,000(08) \$600,000(09) \$500,000(10) \$50,000(11) \$200,000(12) \$50,000(13) \$200,000(14) \$350,000(15)		Transportation Research Board	2/1/2006		Continuing Project: See 11-01 Table	D. Fuller F. SanMartin	M. Greenberger
11-02	Quick Response for Special Needs	\$590,000(06) \$467,000(07) \$1,000,000(08) \$25,000(09) \$250,000(10) \$100,000(11) \$40,000(12) \$216,000(13) \$123,576(14) \$250,000(15)		Various	2/1/2006		Continuing Project: See 11-02 Table	L. Miller	M. Salamone
11-03	Synthesis of Information Related to Airport Practices	\$500,000(06) \$700,000(07) \$500,000(08) \$500,000(09) \$900,000(10) \$700,000(11) \$1,270,000(12) \$1,160,000(13) \$1,053,000(14) \$1,170,000(15)		Transportation Research Board	2/1/2006		Continuing Project: See 11-03 Table; Annual Status Reports Published as Research Results Digests 1,3,4,8,12,13, 17, 18	P. Devoti	M. Salamone

APPENDIX B (continued)

No.	Title	Allocation	Contract Amount	Contractor	Start Date	End Date	Status	FAA Liaison(s)	Staff Officer
11-04	Graduate Research Award Program on Public-Sector Aviation Issues	\$100,000(08) \$100,000(09) \$100,000(10) \$140,000(11) \$140,000(12) \$140,000(13) \$140,000(14) \$568,779(15)		Transportation Research Board (08-13) Old Dominion University Research Foundation (14)			Continuing Project: Papers published as TRB TRR 2184, 2206, 2266, 2325 and 2400, Status Reports Published as Research Results Digests 14 and 19	R. Samis	L. Goldstein
11-04A	Airport Research Competition for Universities	\$200,000(14)		Old Dominion University Research Foundation	5/9/2014	5/8/2016	Research in Progress	R. Samis	L. Goldstein
11-05	Dissemination of ACRP Research Results	\$600,000(10) \$148,947(11) \$200,000(12) \$600,000(13) \$600,000(14) \$650,000(15)		Various			Continuing Project	J. Showalter	M. Salamone
11-06	Evaluating ACRP Processes	\$250,000(10)		Transportation Research Board			Completed - Results to AOC		
11-07	ACRP Problem Statement Development	\$500,000(13) \$300,000(14)		Transportation Research Board			Research in Progress; status published as Research Results Digest 20		M. Salamone

APPENDIX B (continued)
ACRP PROJECT 11-01
Legal Aspects of Airport Programs

No.	Title	Consultant	Start Date	Estimated Completion Date	Staff Officer
01-01	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters through December 31, 2007	Spiegel & McDiarmid LLP	December 2006	Completed - Published as Legal Research Digest 4 (CRP-CD-68)	
01-02	Theory and Law of Airport Revenue Diversion	Paul Dempsey	January 2007	Completed - Published as Legal Research Digest 2	
01-03	Compilation/List of Airport Law Resources	McGill University	January 2007	Completed - Published as Legal Research Digest 1	
01-04	Survey of Airport Laws and Regulation of Commercial Ground Transportation	Smith Armundsen	April 2007	Completed - Published as Legal Research Digest 3	
01-05	Responsibility for Implementation and Enforcement of Airport Land-Use Zoning Restrictions	William V. Cheek & Associates	April 2007	Completed - Published as Legal Research Digest 5	
01-06	The Right to Self-Fuel	C. Daniel Prather, Ph.D.	January 2008	Completed - Published as Legal Research Digest 8	
01-07	The Impact of Airline Bankruptcies on Airports	Jocelyn Waite	October 2007	Completed - Published as Legal Research Digest 6	
01-08	Airport Governance and Ownership	Daniel S. Reimer	February 2008	Completed - Published as Legal Research Digest 7	
01-09	Survey of Elements of Disparity Studies for Airport Disadvantaged Business Enterprise Programs			Cancelled	
02-01	Obstructions Affecting Navigable Airspace	Cheek & Associates	July 2008	Incorporated into 02-05	
02-02	Use and Success of Avigation Easement and Other Tools for Airport-Compatible Land Use and Development of Model Language	Lemongrass Consulting	June 2008	Incorporated into 02-05	
02-03	Case Studies on Community Challenges to Airport Development	Jaye Pershing Johnson	October 2008	Completed - Published as Legal Research Digest 9	
02-04	Analysis of Federal Laws, Regulations, and Case Law Regarding Airport Proprietary Rights	Jodi Howick, Esq.	October 2008	Completed - Published as Legal Research Digest 10	

APPENDIX B (continued)

No.	Title	Consultant	Start Date	Estimated Completion Date	Staff Officer
02-05	Achieving Airport-Compatible Land Uses and Minimizing Hazardous Obstruction in Navigable Airspace	Jocelyn Waite	August 2010	Completed - Published as Legal Research Digest 14	
03-01	Fair Disclosure and Airport Impact Statements in Real Estate Transfers	Larry Thomas, Esq.	July 2009	Completed - Published as Legal Research Digest 12	
03-02	Compilation of State Aviation Authorizing Legislation	Jodi Howick, Esq.	August 2009	Completed - Published as Legal Research Digest 15	
03-03	Survey of Minimum Standards: Commercial Aeronautical Activities at Airports	Kaplan Kirsch Rockwell, LLP	July 2009	Completed - Published as Legal Research Digest 11	
03-04	Airport Rates and Charges: Law and Policy	Spiegel & McDiarmid LLP	November 2009	Completed - Incorporated into 4-05	
03-05	State and Federal Regulations That May Affect Initiatives to Reduce Airports' GHG Emissions	Kaplan Kirsch Rockwell, LLP	November 2009	Completed - Published as Legal Research Digest 17	
03-06	An Index and Digest of Decisions: Compilation of Airport Law Resources	Kaplan Kirsch Rockwell, LLP	December 2009	Completed - Published as Legal Research Digest 13 (CRP-CD-108)	
04-01	Airport Responsibility for Wildlife Management	Broad and Cassell	April 2011	Completed - Published as Legal Research Digest 20	
04-02	Legal Issues Related to Developing Safety Management Systems and Safety Risk Management at U.S. Airports	Foley & Lardner	December 2011	Completed - Published as Legal Research Digest 19	
04-03	Analysis of Federal Laws, Regulations, Case Law, and Survey of Existing Airport NPDES Permits Regarding Tenant-Operator Responsibilities Under NPDES and Storm Water Management BMP's Under Owner/Airport's Operating Permits	CDM	September 2012	Completed - Publication Pending	M. Greenberger
04-04	Buy America Requirements for Federally Funded Airports	Conner Gwyn Schenk	March 2011	Completed - Published as Legal Research Digest 18	
04-05	Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 2012	Spiegel & McDiarmid LLP	February 2012	Completed - Published as Legal Research Digest 21 (CRP-CD-141)	

APPENDIX B (continued)

No.	Title	Consultant	Start Date	Estimated Completion Date	Staff Officer
04-06	The Role of the Airport Sponsor in Airport Planning and Environmental Reviews of Proposed Development Projects Under the National Environmental Policy Act (NEPA) and State Mini-NEPA Laws	Conner Gwyn Schenk	March 2012	Completed - Published as Legal Research Digest 22	
04-07	Procurement of Airport Development and Planning Contracts	Broad and Cassell	April 2011	Completed - Published as Legal Research Digest 16	
05-01	Regulations Affecting the Exercise of First Amendment Activities at Airports	Jodi Howick, Esq.	August 2013	Research in Progress	M. Greenberger
05-02	Sovereign Immunity for Public Airport Operators	Seay Law International, PA	November 2013	Completed - Publication Pending	M. Greenberger
05-03	The Fourth Amendment and Airports	Jodi Howick	August 2014	Research in Progress	M. Greenberger
05-04	A Guide for Compliance with Grant Agreement Obligations to Provide Reasonable Access to an AIP-Funded Public Use General Aviation Airport	Kaplan Kirsch Rockwell, LLP	July 2013	Completed - Publication Pending	M. Greenberger
06-01	Operational and Legal Issues with Fuel Farms			In Development	M. Greenberger
06-02	Contract Risk Management for Airport Agreements			In Development	M. Greenberger
07-01	Impact of Firearms Laws on Airports			In Development	M. Greenberger

APPENDIX B (continued)

ACRP PROJECT 11-02 Quick Response for Special Needs

No.	Title	Contractor	Start Date	End Date	Status	Staff Officer
Task 01	Model for Improving Energy Use in U.S. Airport Facilities	Texas A&M University Energy Systems Laboratory	10/13/2006	7/31/2007	Completed - Published as Research Results Digest 2	
Task 02	Ground Access to Major Airports by Public Transportation	Matthew Coogan	8/16/2006	9/30/2007	Completed - Published as Report 4	
Task 03	Evaluation and Mitigation of Aircraft Slide Evacuation Injuries	George Washington University	10/9/2006	12/15/2007	Completed - Published as Report 2	
Task 04	Airport Safety Management Systems for Airports: Overview	MITRE Corporation	1/2/2007	11/2/2007	Completed - Published as Report 1, Volume 1	
Task 05	Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs	System Planning Corp.	3/28/2007	11/3/2007	Completed - Published as Report 5	
Task 06	Interagency-Industry Collaboration on Pandemic Planning for Aviation: A Workshop	Transportation Research Board	2/15/2007	9/15/2007	Completed - Workshop Held - Published as TRB Conference Proceedings 41	
Task 07	Current and Emerging Issues Facing the Airport Industry	Transportation Research Board	8/1/2007	1/31/2009	Completed - Published as Research Results Digest 5	
Task 08	Enhanced Modeling of Aircraft Taxiway Noise - Scoping	Wyle Laboratories, Inc.	2/14/2008	8/31/2009	Completed - Published as Web-Only Document 9, Volume 1	
Task 09	Visibility of Airfield Signs and Markings from Aircraft and Ground Vehicles				Cancelled	
Task 10	Estimate of National Use of Aircraft and Airfield Deicing Materials	CH2M Hill	10/16/2007	6/15/2008	Completed - Results to ACI-NA, AAAE, A4A	
Task 11	A Summary of How Proposed Firefighting Standards Would Impact Airports	GRA, Inc.	12/23/2008	6/15/2009	Completed - Published as Web-Only Document 7 and Research Results Digest 7	
Task 12	Ramp Incident Data from Selected Large and Medium Hub Airports	Ricondo & Associates	4/17/2009	8/30/2011	Completed - Results to FAA	
Task 13	Research Symposium on the Transmission of Disease in Airports and on Aircraft	Transportation Research Board			Completed - Symposium Held - Published as TRB Conference Proceedings 47	

APPENDIX B (continued)

No.	Title	Contractor	Start Date	End Date	Status	Staff Officer
Task 14	Helping Airports Understand the Payment Card Industry Data Protection Standard (PCI DSS)	Barich, Inc.	10/15/2009	5/15/2010	Completed - Published as Research Results Digest 11	
Task 15	Aviation Industry Familiarization and Training for Part-Time Airport Policymakers	Delta Airport Consultants	1/19/2010	11/18/2010	Completed - Published as Report 58	
Task 16	Analysis, Scoping, and Prioritizing ACRP Deicing Problem Statements				Cancelled	
Task 17	Risk Assessment of Proposed ARFF Standards	Robert David & Assoc.	2/19/2010	1/4/2011	Completed - Published as Web-Only Document 12	
Task 18	The Carbon Market: A Primer for Airports	Pace Global Energy Services	11/2/2010	8/30/2011	Completed - Published as Report 57	
Task 19	Symposium on Air Travel and the Spread of Disease				In Development	J. Navarrete
Task 20	Developing Problem Statements on Information Technology Issues at Airports	Transportation Research Board	12/1/2011	12/1/2011	Completed - Workshop Held - Results to AOC	
Task 21	Innovative Airport Response to Threatened and Endangered Species	Environmental Science Associates	4/22/2013	8/29/2014	Completed - Publication Pending	J. Navarrete
Task 22	Best Practices for General Aviation Aircraft Fuel-Tank Sampling	Hagerty Environmental LLC	8/14/2013	4/13/2014	Completed - Published as Research Results Digest 21	
Task 23	Alternative IT Delivery Methods and Best Practices for Small Airports	Barich, Inc.	8/5/2013	7/31/2014	Completed - Publication Pending	M. Greenberger
Task 24	ACRP Electronic Product Options				In Development	M. Salamone
Task 25	Developing Environmental Problem Statements	Harris Miller Miller & Hanson	9/12/2014	4/23/2015	Research in Progress	M. Salamone
Task 26	AOC Strategic Planning	Ricondo & Associates	9/12/2014	5/24/2015	Research in Progress	M. Salamone

APPENDIX B (continued)

ACRP PROJECT 11-03 Synthesis of Information Related to Airport Practices

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
01: Administration						
S01-01	Innovative Finance and Alternative Sources of Revenue for Airports	Jacobs Consultancy	July 2006	Completed - Published as Synthesis 1		
S01-02	Airport Revenue Diversification	Kramer Aerotech, Inc.	March 2009	Completed - Published as Synthesis 19		
S01-03	Airport Insurance Coverage and Risk Management Practices	Ron Rakich & Assoc.	April 2010	Completed - Published as Synthesis 30		
S01-04	Airline and Airline-Airport Consortiums to Manage Terminals and Equipment	AvAirPros	April 2010	Completed - Published as Synthesis 31		
S01-05	Issues with Airport Organization and Reorganization	Kim Kenville Consulting	February 2012	Completed - Published as Synthesis 40		
S01-06	How Airports Measure Customer Service Performance	Kramer Aerotech, Inc.	February 2012	Completed - Published as Synthesis 48		
S01-07	Conducting Airport Peer Reviews	CTC & Associates	February 2012	Completed - Published as Synthesis 46		
S01-08	Understanding the Value of Social Media at Airports for Customer Engagement	Leigh Fisher	March 2013	Completed - Published as Synthesis 56		
S01-09	Practices to Develop Effective Stakeholder Relationships at Airports	Delta Airport Consultants, Inc.	May 2014	Research in Progress	A. Braswell	G. Staba
S01-10	Strategies for Maintaining Air Service	Sixel Consulting Group, Inc.	May 2014	Research in Progress	A. Toney	G. Staba
S01-11	Continuity of Operations Planning for Small Airports			In Development		G. Staba
02: Environment						
S02-01	Effects of Airport Noise: Research Update on Selected Topics	Mestre Greve Associates	March 2007	Completed - Published as Synthesis 9		
S02-02	Airport Sustainability Practices	Arup	March 2007	Completed - Published as Synthesis 10		

APPENDIX B (continued)

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
S02-03	Compilation of Noise Programs in Areas Outside DNL 65	Harris Miller Miller & Hanson	April 2008	Completed - Published as Synthesis 16		
S02-04	Approaches to Integrating Airport Development and Federal Environmental Review Processes	RS & H / Synergy	April 2008	Completed - Published as Synthesis 17		
S02-05	Funding Opportunities for Airport Environmental Projects	Unison Consulting, Inc.	April 2010	Completed - Published as Synthesis 24		
S02-06	Airport Climate Adaptation and Resilience	AEA Group	April 2011	Completed - Published as Synthesis 33		
S02-07	Integrating Environmental Sustainability into Airport Contracts	Leigh Fisher	March 2012	Completed - Published as Synthesis 42		
S02-08	Environmental Assessment of Air and High-Speed Rail Corridors	Arizona State University	March 2012	Completed - Published as Synthesis 43		
S02-09	Environmental Management System Development Process	First Environment, Inc.	March 2012	Completed - Published as Synthesis 44		
S02-10	Outcomes of Green Initiatives: Large Airport Experience	First Environment, Inc.	March 2013	Completed - Published as Synthesis 53		
S02-11	Lessons Learned from Airport Sustainable Master Planning Programs	A Ripple Effect, PLC	May 2014	Research in Progress	P. Magnotta	G. Staba
S02-12	Airport sustainability Practices - Drivers and Outcomes of Green Initiatives for Small and GA Airports			In Development		G. Staba
S02-13	Helicopter Noise Information for Airport Noise Managers			In Development		G. Staba
S02-14	Airport Sustainability Practices			In Development		
03: Policy and Planning						
S03-01	Aviation Forecasting Methodologies	GRA, Inc.	August 2006	Completed - Published as Synthesis 2		

APPENDIX B (continued)

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
S03-02	Airport Ground Access Mode Choice Models	Aviation Systems Consulting	October 2006	Completed - Published as Synthesis 5		
S03-03	Airport Economic Impact Methods and Models	Hoyle Tanner & Associates	March 2007	Completed - Published as Synthesis 7		
S03-04	Airport System Planning Practices	Wilbur Smith Associates	April 2008	Completed - Published as Synthesis 14		
S03-05	Effective Practices for Preparing Airport Improvement Program Benefit Cost Analysis	Economic Development Research Group	April 2008	Completed - Published as Synthesis 13		
S03-06	Strategies for Reuse of Underutilized or Vacant Airport Facilities	Kramer Arotek, Inc.	April 2010	Completed - Published as Synthesis 25		
S03-07	Integrating Airport GIS Data with Public Agency GIS	Grafton Technologies	March 2013	Completed - Published as Synthesis 59		
S03-08	Backcountry Airstrip Preservation	T-O Engineering, Inc.	March 2013	Completed - Published as Synthesis 55		
S03-09	Cell Phone Lots at Airports	Kramer Arotek, Inc.	May 2014	Research in Progress	A. Hanson	G. Staba
S03-10	Preservation and Development of Seaplane Facilities and Services	Stephen Quilty	May 2014	Research in Progress	P. Oien	G. Staba
04: Safety						
S04-01	General Aviation Safety and Security Practices	Reynolds, Smith and Hills, Inc.	October 2006	Completed - Published as Synthesis 3		
S04-02	Preventing Aircraft-Vehicle Incidents During Winter Operations and Periods of Low Visibility	Bowling Green State University	June 2007	Completed - Published as Synthesis 12		
S04-03	Identification of the Requirements and Training to Obtain Driving Privileges on Airfields	Airport Safety Consultants	May 2008	Completed - Published as Synthesis 15		
S04-05	Bird Repellant Techniques on Airports	Mississippi State University	April 2010	Completed - Published as Synthesis 23		

APPENDIX B (continued)

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
S04-06	Current Airport Inspection Practices Regarding FOD	Prather Airport Solutions	April 2010	Completed - Published as Synthesis 26		
S04-07	Lessons Learned from Airport Safety Management Systems Pilot Study	Landry Consultants, LLC	April 2011	Completed - Published as Synthesis 37		
S04-08	Managing Aerial Firefighting Activities on Airports	Critical Path International	May 2011	Completed - Published as Synthesis 32		
S04-09	Model Mutual Aid Agreements for Airports	Smith-Woolwine Associates	March 2012	Completed - Published as Synthesis 45		
S04-10	Safety Reporting Systems at Airports	Landry Consultants, LLC	February 2013	Completed - Published as Synthesis 58		
S04-11	Effective Cooperation Among Airports and Local and Regional Emergency Management Agencies for Disaster Preparedness and Response	Smith-Woolwine Associates	February 2013	Completed - Published as Synthesis 50		
S04-12	Post-Traumatic-Event (Disaster/Emergency) Recovery Techniques for Airports	Smith-Woolwine Associates, Inc.	June 2014	Research in Progress	A. Freeburg	G. Staba
S04-13	Combining Mixed Use Flight Operations Safety at Airports			In Development		G. Staba
S04-14	Airport Safety Risk Management Panel Activities and Outcomes			In Development		G. Staba
S04-15	Flight Operations Advisories at Non-Towered Airports			In Development		G. Staba
S04-16	Emergency Communications Planning for Airports			In Development		G. Staba
S04-17	Table Top and Full-Scale Exercises for Small Airports			In Development		G. Staba
05: Security						
S05-01	Intelligent Transportation System (ITS) Sensor Technology for General Aviation			Cancelled		

APPENDIX B (continued)

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
06: Human Resources						
S06-01	Aviation Workforce Development Practices	International Aviation Management Group	March 2009	Completed - Published as Synthesis 18		
S06-02	Airport Self-Inspection Practices	Prather Airport Solutions	May 2010	Completed - Published as Synthesis 27		
S06-03	Exploring Airport Employee Commuting and Parking Strategies	DMR Consulting	May 2011	Completed - Published as Synthesis 36		
S06-04	Adapting New Maintenance Hires to the Airport Environment	SMQ Airport Services	March 2012	Completed - Published as Synthesis 49		
07: Design						
S07-01	Impacts of Aging Travelers on Airports	Corgan Associates, Inc.	February 2013	Completed - Published as Synthesis 51		
08: Construction						
S08-01	Airport Terminal Facility Activation Techniques	Arup	March 2009	Completed - Published as Synthesis 20		
09: Maintenance						
S09-01	Impact of Rubber Removal Techniques on Runways	University of Oklahoma	June 2007	Completed - Published as Synthesis 11		
S09-02	Common Airport Pavement Maintenance Practices	Applied Research Associates	March 2009	Completed - Published as Synthesis 22		
S09-03	Subsurface Utility Engineering Information Management for Airports	J. H. Anspach Consulting	May 2011	Completed - Published as Synthesis 34		
S09-04	Issues with Use of Airfield LED Light Fixtures	RPI University	May 2011	Completed - Published as Synthesis 35		
S09-05	Repairing and Maintaining Airport Parking Structures While in Use	Walker Parking Consultants	February 2012	Completed - Published as Synthesis 47		

APPENDIX B (continued)

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
S09-06	Snow Removal Practices at Small Airports	Stephan Quilty	June 2014	Research in Progress	G. Legaretta	G. Staba
S09-07	Building Information Modeling for Airports			In Development		G. Staba
10: Operations						
S10-01	Counting Aircraft Operations at Non-Towered Airports	Aerofinity	October 2006	Completed - Published as Synthesis 4		
S10-02	Common-Use Facilities and Equipment at Airports	Barich, Inc.	March 2007	Completed - Published as Synthesis 8		
S10-03	Impact of Airport Deicing Products on Aircraft and Airfield Infrastructure	Montana State University, Western Transportation Institute	March 2007	Completed - Published as Synthesis 6		
S10-04	Airport Energy Efficiency and Cost Reduction	Miller Dunwiddie Architecture	March 2009	Completed - Published as Synthesis 21		
S10-05	Ramp Safety Practices	Landry Consultants, LLC	May 2010	Completed - Published as Synthesis 29		
S10-06	Investigating Safety Impacts of Energy Technologies on Airports and Aviation	Harris Miller Miller & Hanson	May 2010	Completed - Published as Synthesis 28		
S10-07	Expediting Aircraft Recovery at Airports	Prather Airport Solutions	May 2011	Completed - Published as Synthesis 38		
S10-08	Conducting Aeronautical Special Events at Airports	Prather Airport Solutions	February 2012	Completed - Published as Synthesis 41		
S10-09	Airport Wildlife Population Management	Savannah River Ecological Laboratory	February 2012	Completed - Published as Synthesis 39		
S10-10	Habitat Management to Deter Wildlife at Airports	Mississippi State University	March 2013	Completed - Published as Synthesis 52		
S10-11	Electric Vehicle Charging Stations at Airport Parking Facilities	Leigh Fisher	March 2013	Completed - Published as Synthesis 54		

APPENDIX B (continued)

No.	Title	Topic Consultant	Start Date	Status	FAA Liaisons	Staff Officer
S10-12	Airport Response to Special Events	Kramer Aerotech, Inc.	February 2013	Completed - Published as Synthesis 57		
S10-13	Issues Related to Airport Fueling System Operations and Maintenance	Stephan Quilty	May 2014	Research in Progress	M. Tonnacliff	G. Staba
S10-14	Issues Related to Accommodating Animals Passing through Airports	Smith-Woolwine Associates, Inc.	May 2014	Research in Progress	L. Miller	G. Staba

NOTICE TO READERS

Information about project status is available on the ACRP website at www.TRB.org/ACRP. Detailed project write-ups will be available only on the ACRP website.

HOW TO ORDER ACRP PUBLICATIONS FROM TRB

ACRP publications are listed in Appendix A.

ACRP reports, syntheses, research results digests, and legal research digests can be ordered with a credit card through the online TRB bookstore (<http://TRB.org/bookstore>), by telephone (202-334-3213), or by fax (202-334-2519). We accept Visa, MasterCard, or American Express. TRB uses a secure web server; credit card numbers are encrypted for transmittal and erased from the system as soon as an order is processed. To pay with a check, make your check payable to TRB and mail it with your order to:

National Academy of Sciences—TRB
PO Box 936135
Atlanta, GA 31193-6135

Payment must accompany all orders. Payments made by international check or money order must be payable in U.S. funds drawn on a U.S. bank. All taxes and duty are the responsibility of the customer.

TRANSPORTATION RESEARCH BOARD

500 Fifth Street, NW

Washington, DC 20001

ADDRESS SERVICE REQUESTED



THE NATIONAL ACADEMIES™

Advisers to the Nation on Science, Engineering, and Medicine

The nation turns to the National Academies—National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council—for independent, objective advice on issues that affect people's lives worldwide.

www.national-academies.org



AP14