Transportation Research Board

Compilation of Published Reports

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Section 1: ACRP Research Reports

ACRP Research Report 1 – Safety Management Systems for Airports, Volume 1: Overview

Report Blurb: Provides a brief description of safety management systems (SMS) and is intended to be an easy-to-read, quick introduction to SMS for airport directors and their governing boards. The report explores the advantages associated with instituting such a system and examines the four components or pillars that are part of an SMS--safety policy, safety risk management, safety assurance, and safety promotion.

The report also includes background information on the International Civil Aviation Organization's requirements for SMS at airports and relates the experiences of airports located outside the United States in implementing SMS. Summaries of interviews on SMS implementation at airports outside the United States developed out of research conducted during the development of the report are available online.

Published: September 2007
Link: http://www.trb.org/ACRP/Blurbs/159030.aspx

ACRP Research Report 1 – Safety Management Systems for Airports, Volume 2: Guidebook

Report Blurb: Explores what constitutes an airport safety management system (SMS). The report examines SMS components and their interactions and offers guidance in the planning, implementation, and operation of an airport SMS. It also provides detailed information on how to carry out each of the necessary SMS processes.

This guidebook supplements *ACRP Research Report 1: Safety Management Systems for Airports, Volume 1: Overview*, which provides an overview of SMS and explains how a systems approach to safety management can benefit both the safety and business aspects of airports.

http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_001a.pdf

Published: November 2009
Link: http://www.trb.org/ACRP/Blurbs/162491.aspx

ACRP Research Report 2 – Evaluation and Mitigation of Aircraft Slide Evacuation Injuries

Report Blurb: Explores guidance on reducing injuries and improving safety and coordination during aircraft slide evacuation events. The report also examines injuries to aircraft crew and passengers incurred during aircraft slide evacuations.

Published: May 2008
Link: http://www.trb.org/ACRP/Blurbs/159901.aspx

ACRP Research Report 3 – Analysis of Aircraft Overruns and Undershoots for Runway Safety Areas

Report Blurb: Explores overrun and undershoot accident and incident data conditions relating to these occurrences. The report also includes an assessment of risk to the runway safety area and highlights a set of alternatives to the traditional runway safety area. The appendices to the ACRP Report 3 are available online.

ACRP Report 50: Improved Models for Risk Assessment of Runway Safety Areas, which was released in July 2011, expands on the research presented in the report and analyses aircraft veer-offs, the use of declared distances, the implementation of the Engineered Material Arresting System, and the incorporation of a risk approach for consideration of obstacles in or near the runway safety area.

View the *Impact on Practice* related to this report.

Published: June 2008
Link: http://www.trb.org/ACRP/Blurbs/159849.aspx

ACRP Research Report 4 – Ground Access to Major Airports by Public Transportation

Report Blurb: Examines key elements associated with the creation of a six-step market-based strategy for improving the quality of public mode services at U.S. airports. The report also addresses the context for public transportation to major airports, explores the attributes of successful airport ground access systems, presents an airport-by-airport summary of air traveler ground access mode-share by public transportation services, and more.

Published: July 2008
Link: http://www.trb.org/ACRP/Blurbs/157099.aspx

ACRP Research Report 5 – Quarantine Facilities for Arriving Air Travelers: Identification of Planning Needs and Costs

Report Blurb: Explores facility issues, security considerations, and estimated costs (including operating costs) that airport operators and policymakers may want to consider when planning for the potential quarantine of arriving air travelers.

Published: July 2008
Link: http://www.trb.org/ACRP/Blurbs/158136.aspx

ACRP Research Report 6 – Research Needs Associated with Particulate Emissions at Airports

Report Blurb: Examines the state of industry research on aviation-related particulate matter emissions and explores knowledge gaps that existing research has not yet bridged.

Published: July 2008
Link: http://www.trb.org/Main/Blurbs/160036.aspx

ACRP Research Report 7 – Aircraft and Airport-Related Hazardous Air Pollutants: Research Needs and Analysis

Report Blurb: Examines the state of the latest research on aviation-related hazardous air pollutant emissions and explores knowledge gaps that existing research has not yet bridged.

Published: August 2008
Link: http://www.trb.org/Main/Blurbs/160113.aspx

ACRP Research Report 8 – Lightning-Warning Systems for Use by Airports

Report Blurb: Explores the operational benefits associated with delay reductions that lightning detection and warning systems may be able to generate. The report is designed to help in the assessment of whether such systems are cost-beneficial on an individual airport or airline basis.

An *Impacts on Practice – September 2011: Protecting Airport Personnel from Lightning Strikes* related to the report was produced in 2011.

Impacts on Practice series is designed to provide examples of how airport industry practitioners are using ACRP research results to assist them in their work.

The goal of the Airport Cooperative Research Program is to provide well-researched, useful publications that can contribute to the growth and development of the nation's airport industry.

ACRP publications can help improve airport administrative practices, develop safer and more effective operational techniques, and increase performance efficiency.

Published: November 2008
Link: http://www.trb.org/Main/Blurbs/160409.aspx

ACRP Research Report 9 – Summarizing and Interpreting Aircraft Gaseous and Particulate Emissions Data

Report Blurb: Explores a series of government-sponsored aircraft emissions tests that were undertaken to gain a better understanding of gaseous and particulate emissions from aircraft engines.

Published: December 2008
Link: http://www.trb.org/Main/Blurbs/160507.aspx

ACRP Research Report 10 – Innovations for Airport Terminal Facilities

Report Blurb: Explores worldwide developments in airport landside facilities design, and examines future trends and innovative passenger service/processing concepts. View information about the TRB Webinar: Airport Terminal Planning and Innovative Facilities on this report, which was held on Monday, April 26, 2010.

Published: February 2009
Link: http://www.trb.org/ACRP/Blurbs/160766.aspx

ACRP Research Report 11 – Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories

Report Blurb: Explores a framework for identifying and quantifying specific components of airport contributions to greenhouse gas emissions (GHG). The report is designed to help airport operators and others to prepare an airport-specific inventory of greenhouse gas emissions.

Appendices A through F to the report were published online as *Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories*. The appendices titles are as follows:

- Appendix A-Reasons for Developing GHG Inventories
- Appendix B-Emissions and Sources
- Appendix C-Methods for Calculating GHG Emissions
- Appendix D-Methods for Calculating CO2 Equivalencies
- Appendix E-Inventory Development Protocols
- Appendix F-Approaches Used in Airport Inventories Prepared to Date

An *Impacts on Practice – October 2011: Estimating Airport Greenhouse Gas (GHG) Emissions* related to the report is available.

Published: April 2009
Link: http://www.trb.org/Main/Blurbs/160829.aspx

ACRP Research Report 12 – An Airport Guide for Regional Emergency Planning for CBRNE Events

Report Blurb: Explores details airports should cover in their hazard and threat assessments and their Airport Emergency Plans (AEPs) and Annexes. The report also examines issues involving terrorist use of chemical, biological, radiological, nuclear, or explosive (CBRNE) materials targeted to airports.

Published: March 2009
Link: http://www.trb.org/ACRP/Blurbs/160783.aspx

ACRP Research Report 13 – Integrating Airport Information Systems

Report Blurb: Designed to help airport managers and information technology professionals address issues associated with integrating airport information systems. A summary of the efforts associated with the development of ACRP Report 13 was published online as *Web-Only Document 1: Analysis and Recommendations for Developing Integrated Airport Information Systems*.

Published: June 2009
Link: http://www.trb.org/ACRP/Blurbs/161613.aspx

ACRP Research Report 14 – Deicing Planning Guidelines and Practices for Stormwater Management Systems, Second Edition

Report Blurb: Explores a wide array of practices designed to provide for the practical, cost-effective control of runoff from aircraft and airfield deicing and anti-icing operations. Detailed operational practices were published by TRB as a collection of fact sheets.

The May 2014 *Impacts on Practice – Identifying Practices for Controlling Aircraft and Airfield Deicing Runoff* examines how the Gerald R. Ford International Airport (GRR) in Grand Rapids, Michigan utilized this report to develop long-term stormwater and deicing program that would maintain airport safety and comply with environmental regulations.

Published: June 2009
Link: http://www.trb.org/ACRP/Blurbs/180557.aspx

ACRP Research Report 15 – Aircraft Noise: A Toolkit for Managing Community Expectations

Report Blurb: Explores ways to improve communications with the public about issues related to aircraft noise exposure. The report examines practices that characterize an effective communications program and provides basic information about noise and its abatement to assist in responding to public inquiries.

This report also identifies tools designed to help initiate a new or upgrade an existing program of communication with public and private stakeholders about noise issues. An accompanying CD-ROM with the printed version of the report contains a toolkit with examples of material that has been successfully used to communicate information about noise, as well as numerous guidance documents about noise and communications.

Published: January 2010
Link: http://www.trb.org/ACRP/Blurbs/162800.aspx

ACRP Research Report 16 – Guidebook for Managing Small Airports - Second Edition

Report Blurb: Designed to help airport practitioners, owners, operators, managers, and policymakers of small airports, who may have varying degrees of experience and backgrounds, to fulfill their responsibilities in such areas as financial management, oversight of contracts and leases, safety, and security, noise impacts, community relations, compliance with federal and state obligations, facility maintenance, and capital improvements.

The first edition has been edited and reformatted for currency, relevance, and usability and updated with additional information and new subject areas (e.g., unmanned aircraft systems, geographic information systems, digital Notices to Airmen, social media, and federal and state obligations).

Since the publication of the report, a significant amount of research that could be of direct benefit to small airports has been completed, and the Federal Aviation Administration, state agencies, and trade and industry groups have developed and initiated new policies and guidance. In addition, small airports are facing new industry challenges not addressed in the first edition (e.g., unmanned aerial systems). Therefore, an update was needed.

WebResource 6: Resources for Managing Small Airports is a companion to the report. The web resource serves as an electronic library delivering additional resources and tools to allow small airport managers to dig deeper into topics of interest frequently encountered in their airport manager roles. It also contains implementation resources and tools associated with recommendations in the guidebook.

Published: August 2009
Link: http://www.trb.org/ACRP/Blurbs/162145.aspx

ACRP Research Report 17 – Airports and the Newest Generation of General Aviation Aircraft, Volume 1: Forecast

Report Blurb: Explores a forecast of anticipated fleet activity associated with the newest generation of general aviation aircraft for 5- and 10-year outlooks. *ACRP Research Report 17: Airports and the Newest Generation of General Aviation Aircraft, Volume 2: Guidebook* is designed to help airport operators assess the practical requirements and innovative approaches that may be needed to accommodate these new aircraft.

Published: October 2009
Link: http://www.trb.org/ACRP/Blurbs/162360.aspx

ACRP Research Report 17 – Airports and the Newest Generation of General Aviation Aircraft, Volume 2: Guidebook

Report Blurb: Designed to help airport operators assess the practical requirements and innovative approaches that may be needed to accommodate these new aircraft. *ACRP Research Report 17: Airports and the Newest Generation of General Aviation Aircraft, Volume 1: Forecast* explores a forecast of anticipated fleet activity associated with the newest generation of general aviation aircraft for 5- and 10-year outlooks.

Published: October 2009
Link: http://www.trb.org/Main/Blurbs/162359.aspx

ACRP Research Report 18 – Passenger Air Service Development Techniques

Report Blurb: Explores the underlying competitive challenges that small communities face in retaining or enhancing their commercial air service, examines how communities can address those challenges, and describes the basic components and tools of an air service development program.

Published: October 2009
Link: http://www.trb.org/ACRP/Blurbs/162396.aspx

ACRP Research Report 19 – Developing an Airport Performance-Measurement System

Report Blurb: Provides guidance on developing and implementing an effective performance-measurement system for airports. The report's accompanying CD-ROM provides tools designed to help users complete the step-by-step process for developing an airport performance-measurement system as presented in this report.

Published: October 2010
Link: http://www.trb.org/ACRP/Blurbs/164175.aspx

ACRP Research Report 19A – Resource Guide to Airport Performance Indicators

Report Blurb: Explores airport performance indicators (APIs) for use in benchmarking and performance measurement. These APIs are sorted by functional type and their criticality to the airport strategic plan.

More than 800 performance indicators are presented in three main categories: Core, Key, and Other APIs. "Core" or fundamental indicators are important for the overall operation of the airport and of interest to the Chief Executive Officer or governing board. "Key" or departmental indicators are important for the operations of key airport functions and departments. The remaining "Other" indicators are considered useful as secondary departmental unit performance indicators but not critical to the airport's overall function.

The printed versions of the report include a bound-in CD (CRP-CD-94) of the Interactive Resource Guide that is identical to the pdf that is posted online.

Published: April 2011
Link: http://www.trb.org/Main/Blurbs/165238.aspx

ACRP Research Report 20 – Strategic Planning in the Airport Industry

Report Blurb: Explores practical guidance on the strategic planning process for airport board members, directors, department leaders, and other employees; aviation industry associations; a variety of airport stakeholders, consultants, and other airport planning professionals; and aviation regulatory agencies.

A workbook of tools and sequential steps of the strategic planning process is provided with the report as on a CD. The CD is also available online for download as an ISO image or the workbook can be downloaded in pdf format.

Published: January 2010
Link: http://www.trb.org/Main/Blurbs/162801.aspx

ACRP Research Report 21 – A Guidebook for Selecting Airport Capital Project Delivery Methods

Report Blurb: Explores various project delivery methods for major airport capital projects. The guidebook also examines the impacts, advantages, and disadvantages of various project delivery methods including design-bid-build, construction manager at risk, and design-build.

A companion publication to this report, *Web-Only Document 6: Evaluation and Selection of Airport Capital Project Delivery Methods*, reviews pertinent literature and research findings related to various project delivery methods for airport projects. It contains definitions of project delivery methods and discusses the existing selection approaches commonly used by airports.

Appendixes C to F for this report are available online. Electronic versions of the forms contained in Appendixes C–E are also available.

- Appendix C-Forms for Project Description and Goals
- Appendix D-Forms for Analytical Delivery Decision Approach (Tier 1)
- Appendix E-Forms for Weighted-Matrix Delivery Decision Approach (Tier 2)
- Appendix F-Case Study Example: Logan International Airport Central Parking Garage

Published: October 2009
Link: http://www.trb.org/ACRP/Blurbs/162449.aspx

ACRP Research Report 22 – Helping Airport and Air Carrier Employees Cope with Traumatic Events

Report Blurb: Provides insight and practical guidance to address the difficult emotional and psychological implications in response and exposure to traumatic events. These traumatic events can be the result of human-made accidents, acts of terrorism, or natural disasters that have occurred at, in the vicinity of, or resulting from the operation of an air carrier at an airport.

An *Impacts on Practice – November 2011: Traumatic Event Assistance for Aviation Employees* related for this report was produced in 2011.

Information on buying a recording of a webinar produced in 2010 on this report is available online.

Published: October 2009
Link: http://www.trb.org/ACRP/Blurbs/162365.aspx

ACRP Research Report 23 – Airport Passenger-Related Processing Rates Guidebook

Report Blurb: Provides guidance on how to collect accurate passenger-related processing data for evaluating facility requirements to promote efficient and cost-effective airport terminal design.

Published: November 2009
Link: http://www.trb.org/ACRP/Blurbs/162539.aspx

ACRP Research Report 24 – Guidebook for Evaluating Airport Parking Strategies and Supporting Technologies

Report Blurb: Explores various parking strategies and technologies that are employed, or have potential applications, at airports in the United States.

View information about the TRB Webinar: Evaluating Airport Parking Strategies and Managing Parking Constraints, which addresses this report and *ACRP Research Report 34: A Handbook to Assess Impacts of Constrained Parking*.

Published: January 2010
Link: http://www.trb.org/Publications/Blurbs/162823.aspx

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

Report Blurb: Comprises a guidebook, spreadsheet models, and a user's guide in two volumes and a CD-ROM intended to provide guidance in planning and developing airport passenger terminals and to assist users in analyzing common issues related to airport terminal planning and design.

This report explores the passenger terminal planning process and provides, in a single reference document, the important criteria and requirements needed to help address emerging trends and develop potential solutions for airport passenger terminals. This report also addresses the airside, terminal building, and landside components of the terminal complex.

Volume 2 of ACRP Research Report 25 consists of a CD-ROM containing 11 spreadsheet models, which include practical learning exercises and several airport-specific sample data sets to assist users in determining appropriate model inputs for their situations, and a user's guide to assist the user in the correct use of each model. The models on the CD-ROM include such aspects of terminal planning as design hour determination, gate demand, check-in, and passenger and baggage screening, which require complex analyses to support planning decisions. The CD-ROM is also available for download from TRB's website as an ISO image.

Published: April 2010
Link: http://www.trb.org/ACRP/Blurbs/163252.aspx

ACRP Research Report 25 – Airport Passenger Terminal Planning and Design, Volume 2: Spreadsheet Models and User's Guide

Report Blurb: A guidebook, spreadsheet models, and a user's guide in two volumes and a CD-ROM intended to provide guidance in planning and developing airport passenger terminals and to assist users in analyzing common issues related to airport terminal planning and design.

This report consists of a CD-ROM containing 11 spreadsheet models, which include practical learning exercises and several airport-specific sample data sets to assist users in determining

appropriate model inputs for their situations, and a user's guide to assist the user in the correct use of each model. The models on the CD-ROM include such aspects of terminal planning as design hour determination, gate demand, check-in, and passenger and baggage screening, which require complex analyses to support planning decisions.

Volume 1 of ACRP Research Report 25 describes the passenger terminal planning process and provides, in a single reference document, the important criteria and requirements needed to help address emerging trends and develop potential solutions for airport passenger terminals. Volume 1 addresses the airside, terminal building, and landside components of the terminal complex.

Published: March 2010
Link: http://www.trb.org/Main/Blurbs/163171.aspx

ACRP Research Report 26 – Guidebook for Conducting Airport User Surveys

Report Blurb: Explores the basic concepts of survey sampling and the steps involved in planning and implementing a survey. The guidebook also examines the different types of airport user surveys and includes guidance on how to design a survey and analyze its results.

Published: January 2010
Link: http://www.trb.org/ACRP/Blurbs/162765.aspx

ACRP Research Report 27 – Enhancing Airport Land Use Compatibility, Volume 1: Land Use Fundamentals and Implementation Resources

Report Blurb: A part of a three-volume report that explores issues related to land use around airports. This volume provides guidance designed to help protect airports from incompatible land use that impairs current and future airport and aircraft operations and safety.

Enhancing Airport Land Use Compatibility, Volume 2: Land Use Survey and Case Study Summaries include 15 case studies that targeted a wide range of airports and land use issues. The case study sites include large commercial service, military, and general aviation airports and are geographically diverse. Volume 2 also provides states and local governments with examples and a common basis for establishing zoning that protects the public interest and investment in airports. Volume 3 includes aircraft accident data, a framework for an economic assessment of airport costs, and an annotated bibliography. Volumes 1 and 2 are available in print and online. Volume 3 is only available in electronic format and is made up of three individual components that collectively contain some of the resource documents developed to support the information explored in Volume 1. Volume 3 includes additional detail on specific topics of aircraft accident data and third-party risk, and on the economic methodology for assessing the costs associated with incompatible land uses. Volume 3 also includes an annotated bibliography that contains approximately 300 entries related to airport land use compatibility.

View more information about the TRB Webinar: Enhancing Airport Land Use Compatibility, which focuses on Volume 1.

Published: April 2010
Link: http://www.trb.org/ACRP/Blurbs/163344.aspx

ACRP Research Report 27 – Enhancing Airport Land Use Compatibility, Volume 2: Land Use Survey and Case Study Summaries

Report Blurb: Part of a three-volume report that explores issues related to land use around airports. The report includes 15 case studies that targeted a wide range of airports and land use issues. The case study sites include large commercial service, military, and general aviation airports and are geographically diverse. Volume 2 also provides states and local governments with examples and a common basis for establishing zoning that protects the public interest and investment in airports.

Volume 1: Land Use Fundamentals and Implementation Resources provides guidance designed to help protect airports from incompatible land uses that impair current and future airport and aircraft operations and safety. Volume 3 includes aircraft accident data, a framework for an economic assessment of airport costs, and an annotated bibliography.

Volume 3: Additional Resources is made up of three individual components that collectively contain some of the resource documents developed to support the information explored in Volume 1. Volume 3 includes additional detail on specific topics of aircraft accident data and third party risk, and on the economic methodology for assessing the costs associated with incompatible land uses. Volume 3 also includes an annotated bibliography that contains approximately 300 entries related to airport land use compatibility.

Published: April 2010
Link: http://www.trb.org/Main/Blurbs/163345.aspx

ACRP Research Report 28 – Marketing Guidebook for Small Airports

Report Blurb: Explores the development of a marketing program for general aviation or commercial service airports on a small or minimal budget.

View information about the TRB Webinar: Managing and Marketing Small Airports for this report on Tuesday, April 6, 2010, at 2 PM EDT.

The November 2013 *Impacts on Practice: Implementing Effective Airport Marketing Approaches to Tenants and the Community* highlights how the Fort Wayne International Airport in Indiana used for this report to create a marketing plan.

Published: March 2010
Link: http://www.trb.org/ACRP/Blurbs/163059.aspx

ACRP Research Report 29 – Developing Improved Civil Aircraft Arresting Systems

Report Blurb: Explores alternative materials that could be used for an engineered material arresting system (EMAS), as well as potential active arrestor designs for civil aircraft applications. The report examines cellular glass foam, aggregate foam, engineered aggregate, and a main-gear engagement active arrestor system.

Published: January 2010
Link: http://www.trb.org/Main/Blurbs/162818.aspx

ACRP Research Report 30 – Reference Guide on Understanding Common Use at Airports

Report Blurb: Designed to assist airports and airlines in exploring the possibility of and evaluating the appropriateness of integrating "common use" in their operations. The report's accompanying CD-ROM provides an alternative source of and approach to the information found in the reference guide and includes spreadsheet models that can be used in analyzing and evaluating how to integrate common use.

"Common use" most generally refers to a technological method that airlines use to process passengers: at the ticket counter, at self-service kiosks, or the gates. In this report, however, "common use" is also discussed as an operating philosophy that an airport can use in managing and administering the airport--representing a paradigm shift in the traditional tenant-landlord relationship.

Published: May 2010
Link: http://www.trb.org/ACRP/Blurbs/163513.aspx

ACRP Research Report 31 – Innovative Approaches to Addressing Aviation Capacity Issues in Coastal Mega-regions

Report Blurb: Examines the aviation capacity issues in the two coastal mega-regions located along the East and West coasts of the United States. The report explores integrated strategic actions that could potentially address the constrained aviation system capacity and growing travel demand in the high-density, multijurisdictional, multimodal, coastal mega-regions.

Published: April 2010
Link: http://www.trb.org/ACRP/Blurbs/163311.aspx

ACRP Research Report 32 – Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports

Report Blurb: Explores wildlife challenges that airports may face and potential techniques and strategies for addressing them.

The guidebook examines the different species that can be found at airports and specific information that may help identify and control them, and the various wildlife attractants and best management practices that can be employed by airport operators to minimize wildlife activity at and around airports. The report also highlights wildlife control strategies and techniques that may be appropriate at general aviation airports and reviews on how to develop a wildlife control program.

Learn more about the TRB Webinar: Wildlife vs. Aviation: Repelling and Deterring Techniques related to this product scheduled for October 24, 2011.

View the *Impacts on Practice – Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports* for this report.

Published: July 2010
Link: http://www.trb.org/ACRP/Blurbs/163690.aspx

ACRP Research Report 33 – Guidebook for Developing and Managing Airport Contracts

Report Blurb: A guidebook of best practices for developing, soliciting, and managing airport agreements and contracts for use by a variety of airports. The agreements referenced in this guidebook range from airline-related agreements to communication and utility service as well as common-use, ground transportation, and concessions agreements for a variety of passenger services. An accompanying CD-ROM provides sample agreements in each of these areas.

Published: February 2011
Link: http://www.trb.org/Main/Blurbs/164803.aspx

ACRP Research Report 34 – Handbook to Assess the Impacts of Constrained Parking at Airports

Report Blurb: Explores different types of parking constraints that airports experience and highlight tools to assess the impacts of the constraints and strategies to deal with them.

The handbook includes a predictive modeling tool in a CD-ROM format designed to help determine the effects of implementing various parking strategies.

Published: October 2010
Link: http://www.trb.org/ACRP/Blurbs/164238.aspx

ACRP Research Report 35 – Planning for Offsite Airport Terminals

Report Blurb: Explores issues related to providing originating passengers with remote terminal facilities. The report examines how to identify potential customers for an offsite terminal and how the concept fits into airport planning.

Published: September 2010
Link: http://www.trb.org/ACRP/Blurbs/164094.aspx

ACRP Research Report 36 – Airport/Airline Agreements—Practices and Characteristics

Report Blurb: Designed to assist both airport operators and airlines with negotiating and understanding various aspects of airline/airport operator business relationships including those in use and lease agreements–by enhancing mutual understanding's decision-making process during negotiations.

Appendices A, C, and F to this report are available online. Titles of the appendices are as follows:

- Appendix A-Annotated Bibliography
- Appendix C-CIP Primer
- Appendix F-Airport Online Survey

Published: December 2010
Link: http://www.trb.org/ACRP/Blurbs/164482.aspx

ACRP Research Report 37 – Guidebook for Planning and Implementing Automated People Mover Systems at Airports

Report Blurb: Includes guidance for planning and developing automated people mover (APM) systems at airports. The guidance in the report encompasses the planning and decision-making process, alternative system infrastructure and technologies, evaluation techniques and strategies, operation and maintenance requirements, coordination and procurement requirements, and other planning and development issues.

The guidebook includes an interactive CD that contains a database of detailed characteristics of the 44 existing APM systems.

In March 2012, TRB released *ACRP Research Report 37A: Guidebook for Measuring Performance of Automated People Mover Systems at Airports* as a companion to ACRP Report 37. ACRP Report 37A is designed to help measure the performance of automated people mover (APM) systems at airports.

In June 2012, TRB released *ACRP Research Report 67: Airport Passenger Conveyance Systems Planning Guidebook* that offers guidance on the planning and implementation of passenger conveyance systems at airports.

Published: October 2010
Link: http://www.trb.org/ACRP/Blurbs/164211.aspx

ACRP Research Report 37A – Guidebook for Measuring Performance of Automated People Mover Systems at Airports

Report Blurb: Designed to help measure the performance of automated people mover (APM) systems at airports.

The guidebook identifies, defines, and demonstrates the application of a broad range of performance measures encompassing service availability, safety, operations, and maintenance expense, capacity utilization, user satisfaction, and reliability.

The project that developed the report developed the set of forms below that are designed to help periodically compile the necessary data for input into the overall performance measurement process.

- Form A-System and Service Descriptive Characteristics
- Form B-Airport APM Performance Measures Page 1 of 2
- Form B-Airport APM Performance Measures Page 2 of 2
- Passenger Satisfaction Survey

The project also developed an interactive Excel model containing spreadsheets that can be used to help track and calculate system-wide performance and service characteristics.

The set of forms and Excel models are only available electronically.
The report is a companion to *ACRP Research Report 37: Guidebook for Planning and Implementing Automated People Mover Systems at Airports*.

In June 2012, TRB released *ACRP Research Report 67: Airport Passenger Conveyance Systems Planning Guidebook*, which offers guidance on the planning and implementation of passenger conveyance systems at airports.

Published: March 2012
Link: http://www.trb.org/ACRP/Blurbs/166387.aspx

ACRP Research Report 38 – Understanding Airspace, Objects, and Their Effects on Airports

Report Blurb: Provides a comprehensive description of the regulations, standards, evaluation criteria, and processes designed to protect the airspace surrounding airports.

This report is designed to help understand and apply the appropriate airspace design and evaluation criteria to ensure a safe operating environment for aircraft and to maintain airport operational flexibility and reliability, without unduly restricting desirable building development and attendant economic growth in the surrounding community.

Published: December 2010
Link: http://www.trb.org/ACRP/Blurbs/164477.aspx

ACRP Research Report 39 – Recommended Guidelines for the Collection and Use of Geospatially Referenced Data for Airfield Pavement Management

Report Blurb: Offers recommended guidelines for the collection and use of geospatially referenced data for airfield pavement management.

The guidelines provide a data schema, data collection methods, data quality requirements, and other relevant information required for developing specifications and standards for integrating geospatial data into pavement management systems.

Appendixes A through C to this report are available online. Titles of the appendixes are as follows:

- Appendix A-Survey Questionnaire
- Appendix B-Questionnaire Responses
- Appendix C-Pavement Management Systems Software Data Elements

Published: December 2010
Link: http://www.trb.org/ACRP/Blurbs/164479.aspx

ACRP Research Report 40 – Airport Curbside and Terminal Area Roadway Operations

Report Blurb: Includes guidance on a cohesive approach to analyzing traffic operations on airport curbside and terminal area roadways.

The report examines operational performance measures for airport curbside and terminal area roadway operations and reviews methods of estimating those performance measures. The report includes a quick analysis tool for curbside operations and low-speed roadway weaving area, highlights techniques for estimating traffic volumes, and presents common ways of addressing operational problems.

Appendix A, Glossary, to this report is included in the printed report. Appendices B through G, are available online and listed below:

- Appendix B-Bibliography
- Appendix C-Summary of Terminal Area Roadway Traffic Volume Surveys
- Appendix D-Summary of Curbside Roadway Characteristic Surveys
- Appendix E-Summary of Focus Group Surveys
- Appendix F-A Reproduction of Portions of TRB Circular 212
- Appendix G-Overview of QATAR Curbside Analysis Methodology

Link to QATAR Curbside Analysis Methodology.

Published: December 2010
Link: http://www.trb.org/ACRP/Blurbs/164469.aspx

ACRP Research Report 41 – Guide to the Decision-Making Tool for Evaluating Passenger Self-Tagging

Report Blurb: Provides the information and tools, included on and accompanying CD-ROM, necessary for an airport or airline to determine the appropriateness of pursuing passenger self-tagging should it be allowed in the United States in the future.

The tools, in an Excel Spreadsheet format, allow for the input of airport-specific information, such as facility size and passenger flows, while also providing industry averages to assist those airports and airlines that haven't yet collected their individual information. The decision-making tools provide both qualitative and quantitative information that can then be used to assess if passenger self-tagging meets organizational needs or fits into their strategic plan.

Appendix A to the report was published online as *Web-Only Document 10: Appendix A: Research Documentation for ACRP Research Report 41*.

Published: January 2011
Link: http://www.trb.org/ACRP/Blurbs/164693.aspx

ACRP Research Report 42 – Sustainable Airport Construction Practices

Report Blurb: Explores a set of best practices, methods, procedures, and materials that if implemented during construction may have a sustainable, positive economic, operational, environmental, or social effect.

The report includes the collection of sustainable airport construction practices in a searchable, filterable spreadsheet format on a CD-ROM, which is packaged with the report.

Published: January 2011
Link: http://www.trb.org/ACRP/Blurbs/164240.aspx

ACRP Research Report 43 – Guidebook of Practices for Improving Environmental Performance at Small Airports

Report Blurb: Outlines federal environmental regulations and requirements, and identifies activities in which airport operators can be proactive in promoting environmental stewardship.

As a quick reference, summary graphics provide information on the cost and savings as well as the necessary knowledge and amount of time to implement a particular activity. Also, five case studies discuss environmental initiatives already undertaken at airports that can serve as a guide for other airports.

This report includes the collection of environmental stewardship practices in a searchable, filterable spreadsheet format on a CD-ROM, which is packaged with the report.

Published: February 2011
Link: http://www.trb.org/ACRP/Blurbs/164885.aspx

ACRP Research Report 44 – A Guidebook for the Preservation of Public-Use Airports

Report Blurb: Describes why public-use airports close and identifies measures and strategies that can be undertaken to potentially help preserve and prevent an airport closure.

The guidebook presents systematic procedures on how to identify risk factors that can increase the potential of a future airport closure and how to formulate an effective airport preservation program; it also identifies potential groups interested in preserving public-use airports and offers practical checklists for identifying and addressing issues as part of a comprehensive strategic airport-planning program in support of preservation efforts.

The guidebook is supplemented by a set of appendices that are available on a CD-ROM included with the printed version of the report.

Published: July 2011
Link: http://www.trb.org/ACRP/Blurbs/165624.aspx

ACRP Research Report 45 – Optimizing the Use of Aircraft Deicing and Anti-Icing Fluids

Report Blurb: Provides guidance on procedures and technologies designed to help reduce the use of aircraft deicing and anti-icing fluids (ADAF) while maintaining safe aircraft operations across the wide range of winter weather conditions found in the United States and Canada.

The report includes a series of best management practices that have the potential to be immediately implemented and highlights the detailed findings and recommendations of experiments to evaluate holdover time determination systems, spot deicing for aircraft frost removal, and ADAF dilutions.

In 2016, the 16 ACRP Fact Sheets were reviewed to assess if they reflected current technologies and practices in the industry. That review resulted in updates to Fact Sheets 45, 55, and 56, and the creation of a new Fact Sheet 112, describing promising technologies and procedures from Chapter 2, in the form of readily implementable best management practices.

Published: May 2011
Link: http://www.trb.org/ACRP/Blurbs/165328.aspx

ACRP Research Report 46 – Handbook for Analyzing the Costs and Benefits of Alternative Aviation Turbine Engine Fuels at Airports

Report Blurb: Consists of the Alternative Fuel Investigation Tool (AFIT), a handbook on the use of AFIT, and a report on its development. AFIT is an analytical model designed to help airport operators and fuel suppliers evaluate the costs associated with introducing "drop-in" alternative turbine engine fuel at airports and the benefits as measured by reduced emissions.

AFIT, which is included in CD-ROM format with the print version of the report, takes into account options for using alternative fuel for other airside equipment, including diesel-powered ground support equipment.

The report also addresses the characteristics of current fuel usage and distribution and describes what is required to switch to alternatives.

Published: June 2011
Link: http://www.trb.org/ACRP/Blurbs/165496.aspx

ACRP Research Report 47 – Guidebook for Developing and Leasing Airport Property

Report Blurb: Explores issues associated with developing and leasing available airport land and summarizes best practices from the perspective of the airport sponsor.

The guidebook includes a diverse set of case studies that show several approaches airports have taken to develop and lease property for both aeronautical uses and non-aeronautical uses.

The project that developed the guidebook also produced two presentation templates designed to help airports in effective stakeholder communication regarding developing and leasing airport property. The templates, designed for a non-technical audience, provide content, examples, and definitions for a presentation to community stakeholders. The templates, one for aeronautical use development presentations, and the second for non-aeronautical use development presentations are available only online.

An *Impacts on Practice – Development of Airport Property: Policy Guidance and Workforce Training* related to this report are available.

ACRP Research Report 48 – Impact of Jet Fuel Price Uncertainty on Airport Planning and Development

Report Blurb: Designed to help airport operators and planners measure the impact of changes in jet fuel price on supply and demand for air service at commercial service airports.

The report includes background research; a computer model, available online and in CD ROM format attached to the printed version of the report; and a user manual. Please note that macros must be enabled in the Microsoft Excel file for the program to run.

The output of the model can ultimately be used to help evaluate the impact of uncertainty on airport development and finance. Applying specific input parameters, the model, embedded in a user-friendly program, allows airport planners and managers to assess how fuel, economic, and other uncertainties may affect their particular airport and to test the sensitivity of varying assumptions about key drivers of airport activity.

The supporting research examines historical changes in fuel prices in the context of changing economic conditions and uses this experience to assess risk in adhering to existing air traffic forecasts when planning future airport improvements or expansion. The model illustrates risk using confidence bands that indicate a range of forecasts as a function of changing jet fuel prices and other factors. The research also examines the historic link between changes in jet fuel prices to the periodic occurrence of recessions and how changing demand may, in turn, result in changes in fleet composition and size.

Published: April 2011
Link: http://www.trb.org/ACRP/Blurbs/165241.aspx

Published: May 2011
Link: http://www.trb.org/ACRP/Blurbs/164688.aspx

ACRP Research Report 49 – Collaborative Airport Capital Planning Handbook

Report Blurb: Provides guidance to those in the airport community who have responsibility for, and a stake in, developing, financing, managing, and overseeing an airport capital plan and the individual projects included in it.

The handbook provides guidance on appropriate performers for each task in the collaborative planning process and defines and describes the different ways to communicate to help ensure effective exchanges between internal and external stakeholders.

Published: July 2011
Link: http://www.trb.org/ACRP/Blurbs/165584.aspx

ACRP Research Report 50 – Improved Models for Risk Assessment of Runway Safety Areas

Report Blurb: Analyzes aircraft veer-offs, the use of declared distances, the implementation of the Engineered Material Arresting System (EMAS), and the incorporation of a risk approach for consideration of obstacles in or in the vicinity of the runway safety area (RSA).

An interactive risk analysis tool, updated in 2017, quantifies risk and support planing and engineering decisions when determining RSA requirements to meet an acceptable level of safety for various types and sizes of airports. The Runway Safety Area Risk Analysis Version 2.0 (RSARA2) can be downloaded as a zip file. View the installation requirements for more information.

This report expands on the research presented in *ACRP Report 3: Analysis of Aircraft Overruns and Undershoots for Runway Safety Areas*. View the *Impact on Practice - Improving the Safety of Runway Safety Areas* related to this report.

Published: July 2011
Link: http://www.trb.org/ACRP/Blurbs/165581.aspx

ACRP Research Report 51 – Risk Assessment Method to Support Modification of Airfield Separation Standards

Report Blurb: Intended to be used to support requests for modification of standards in those circumstances where the design criteria for separations between taxiways/taxi lanes and other taxiways/taxi lanes and fixed or movable objects as well as separations between taxiways and runways cannot be met.

The following appendices, included in the pdf and print version of the report, will be helpful in understanding the methodology.

- Appendix A-Risk Assessment Methodology presents a methodology for five different types of circumstances: taxiway/taxilane to taxiway, taxiway to object, taxilane to taxilane, taxilane to an object, and runway to taxiway/taxilane or object
- Appendix F-Aircraft Database Summary presents a summary of aircraft characteristics by model
- Appendix H-Analysis of MOS Cases summarizes information collected in the modification of standards survey and presents results of application of the methodology described in Appendix A to each modification of standards case.

Other report appendices, which are available online only, provide detail and information on the development of the methodology.

- Appendix B-Collision Risk Model
- Appendix C-Key Studies on Aircraft Deviation
- Appendix D-List of Veer-Off Accidents and Incidents
- Appendix E-Sample of Normal Operations Data
- Appendix G-Summary of FAA/Boeing Taxiway Deviation Studies

In addition, the project developed a PowerPoint presentation that may be useful for introducing and explaining the methodology to stakeholders.

Published: August 2011
Link: http://www.trb.org/ACRP/Blurbs/165180.aspx

ACRP Research Report 52 – Wayfinding and Signing Guidelines for Airport Terminals and Landside

Report Blurb: Designed to provide airports with the tools necessary to help passengers find their way in and around the airport.

The guidelines focus on four areas of the airport: (1) roadways—both on-airport and off-airport access roads; (2) parking; (3) curbside and ground transportation; and (4) terminal. Also, the guidelines discuss developing a wayfinding strategy; the use of technology and visual displays; and color, fonts, and sizes.

View the *Impact on Practice - Wayfinding and Signing Guidelines for Airports* for this report.

Published: September 2011
Link: http://www.trb.org/ACRP/Blurbs/165910.aspx

ACRP Research Report 53 – A Handbook for Addressing Water Resource Issues Affecting Airport Development Planning

Report Blurb: Identifies appropriate responses to a variety of water resource issues affecting airport planning and development.

The handbook includes options for setting up a water resource management program and outlines the steps necessary to implement that program in response to local conditions.

The handbook also presents strategies for including water resource planning and management as part of a broader life cycle planning and development process. Also, the handbook provides an overview of the National Environmental Policy Act (NEPA) procedures that control environmental reviews affecting airport development.

Published: September 2011
Link: http://www.trb.org/ACRP/Blurbs/165998.aspx

ACRP Research Report 54 – Resource Manual for Airport In-Terminal Concessions

Report Blurb: Provides guidance on the development and implementation of airport concession programs.

The report includes information on the airport concession process; concession goals; potential customers; developing a concession space plan and concession mix; the Airport Concessions Disadvantaged Business Enterprise (ACDBE) program; and concession procurement, contracting, and management practices.

Published: November 2011
Link: http://www.trb.org/ACRP/Blurbs/166191.aspx

ACRP Research Report 55 – Passenger Level of Service and Spatial Planning for Airport Terminals

Report Blurb: Examines passenger perception of the level of service related to space allocation in specific areas within airport terminals.

The report evaluates level-of-service standards applied in the terminal planning and design process while testing the continued validity of historic space allocation parameters that have been in use for more than 30 years.

Published: October 2011
Link: https://www.nap.edu/read/14589/chapter/1

ACRP Research Report 56 – Handbook for Considering Practical Greenhouse Gas Emission Reduction Strategies for Airports

Report Blurb: Designed to assist airport operators in identifying, evaluating, prioritizing, and implementing practical, low-cost strategies to reduce and manage greenhouse gas emissions.

AirportGEAR, an interactive decision support tool developed as a companion to the handbook, considers a range of strategies that can be implemented by all types of airports—regardless of size, geography, or resources—either directly or in partnership with airport stakeholders, including airlines, airport tenants, and host communities. AirportGEAR is on a CD-ROM that is included with the print version for this report.

Published: January 2012
Link: http://www.trb.org/ACRP/Blurbs/166519.aspx

ACRP Research Report 57 – The Carbon Market: A Primer for Airports

Report Blurb: Provides information on carbon and other environmental credit trading markets, and highlights the potential opportunities and challenges to an airport's participation in these markets.

The primer also addresses the new terms and concepts related to the carbon and other environmental markets.

Published: December 2011
Link: http://www.trb.org/ACRP/Blurbs/166411.aspx

ACRP Research Report 58 – Airport Industry Familiarization and Training for Part-Time Airport Policy Makers

Report Blurb: Highlights policy issues affecting airport administrative and operational decisions. The report is designed to provide airport policy leaders, stakeholders, and policy-related decision-makers with a common framework to understand airport administrative and operational requirements to assist them in making more informed policy decisions.

ACRP has also produced a primer report of issues affecting the airport industry as well as a customizable orientation program in the form of a presentation. The primer and presentation are designed to assist airports during a typical familiarization and training program for a new policymaker that generally includes an orientation briefing about the airport organization, a report of airport issues, and a tour of airport facilities and activities.

Published: December 2011
Link: http://www.trb.org/ACRP/Blurbs/166244.aspx

ACRP Research Report 59 – Information Technology Systems at Airports--A Primer

Report Blurb: Designed to help facilitate mutual understanding between airport executives and information technology (IT) professionals to enable them to work together effectively on IT projects. One of the goals of the report is to help airports achieve better performance and reliability of IT systems and fewer cost overruns and delays during system implementation.

The report offers techniques to identify critical IT issues and communicate effectively on those issues. The report also addresses sound IT principles for implementing new IT systems, describes the benefits and value of various IT systems, and highlights the fundamental architecture concepts of IT systems as they relate to airports.

Published: January 2012
Link: http://www.trb.org/ACRP/Blurbs/166592.aspx

ACRP Research Report 60 – Guidelines for Integrating Alternative Jet Fuel into the Airport Setting

Report Blurb: Identifies the types and characteristics of alternative jet fuels; summarizes potential benefits; addresses legal, financial, environmental, and logistical considerations and opportunities; and aids in evaluating the feasibility of alternative jet fuel production facilities.

The report also summarizes issues and opportunities associated with locating on- or off-airport alternative jet fuel production facilities and their fuel storage and distribution requirements.

Published: February 2012
Link: http://www.trb.org/ACRP/Blurbs/166622.aspx

ACRP Research Report 61 – Elimination or Reduction of Baggage Recheck for Arriving International Passengers

Report Blurb: Identifies potential alternative procedures that might be implemented to help reduce or eliminate the need for the recheck of baggage for arriving international passengers at U.S. airports.

The report describes the potential benefits and costs to airports, airlines, and federal agencies related to adopting the procedures and also compares the alternative procedures with current practices.

Published: March 2012
Link: http://www.trb.org/ACRP/Blurbs/166874.aspx

ACRP Research Report 62 – Airport Apron Management and Control Programs

Report Blurb: Explores the effectiveness of apron management programs around the world.

The report compares and contrasts apron management programs around the world to U.S. airports while considering the common operational and ownership differences between the U.S. and non-U.S. airports.

Published: May 2012
Link: http://www.trb.org/ACRP/Blurbs/167097.aspx

ACRP Research Report 63 – Measurement of Gaseous HAP Emissions from Idling Aircraft as a Function of Engine and Ambient Conditions

Report Blurb: Designed to help improve the assessment of hazardous air pollutants (HAP) emissions at airports based on specific aircraft operating parameters and changes in ambient conditions.

Published: May 2012
Link: http://www.trb.org/ACRP/Blurbs/167069.aspx

ACRP Research Report 63 – Measurement of Gaseous HAP Emissions from Idling Aircraft as a Function of Engine and Ambient Conditions

Report Blurb: Designed to help improve the assessment of hazardous air pollutants (HAP) emissions at airports based on specific aircraft operating parameters and changes in ambient conditions.

Published: May 2012
Link: http://www.trb.org/ACRP/Blurbs/167069.aspx

ACRP Research Report 64 – Handbook for Evaluating Emissions and Costs of APUs and Alternative Systems

Report Blurb: Designed to help airports evaluate alternatives to aircraft auxiliary power units (APUs).

The handbook addresses environmental impacts, costs, infrastructure and maintenance requirements, and funding options.

The printed version of the handbook includes a CD-ROM that contains software that can be used to help quantify emissions from APUs and alternative systems, while also providing quantitative analysis of the financial implications of implementing and operating the systems.

Published: May 2012
Link: http://www.trb.org/ACRP/Blurbs/167070.aspx

ACRP Research Report 65 – Guidebook for Airport Irregular Operations (IROPS) Contingency Planning

Report Blurb: Designed to help guide commercial passenger service airports of all sizes to develop, continually evaluate, and update their contingency plans for procedures about irregular operations (IROPS) that may cause significant disruptions to customers.

This guidebook is designed to assist aviation system partners in enhancing their response to customer care during a broad array of IROPS conditions and includes systematic templates for the preparation of contingency plans that include necessary communications, collaboration, and coordination to address customer needs.

Interactive Microsoft Word versions of Resources A, B, and C from the report are also available online.

- Resource A–Topics for IROPS Plan Development
- Resource B–Model IROPS Contingency Plan
- Resource C–Tools

The April 2013 issue of *Impact on Practice: – Contingency Planning for Unexpected Passenger Delays* describes how Fort Wayne International Airport (FWA) and Buffalo Niagara International Airport (BNIA) have developed and implemented IROPS plans based on ACRP Report 65.

Published: February 2012
Link: http://www.trb.org/ACRP/Blurbs/166569.aspx

ACRP Research Report 66 – Considering and Evaluating Airport Privatization

Report Blurb: Addresses the potential advantages and disadvantages of implementing various approaches to airport privatization.

The report covers a range of potential privatization options and highlights case studies conducted at a variety of airports both within the United States and internationally.

Appendices C through H, to the report, are available on a CD-ROM that is included with the print version of the publications.

Published: May 2012
Link: http://www.trb.org/Publications/Blurbs/167156.aspx

ACRP Research Report 67 – Airport Passenger Conveyance Systems Planning Guidebook

Report Blurb: Offers guidance on the planning and implementation of passenger conveyance systems at airports.

The guidebook describes best practices and specific design considerations and presents decision-making frameworks for implementing passenger conveyance systems.

For the purposes of the report, passenger conveyance components include escalators, elevators, moving walkways, and passenger assist vehicles/carts.

To provide a comprehensive guide for evaluating passenger conveyance systems at airports, a database was designed and developed with information collected from the five airports. The database is included with the print version of the report as a CD-ROM.

Automated people mover systems, personal rapid transit systems, and shuttle bus systems are not covered by this report.

The subject of automated people movers was covered in the following two previous ACRP reports:

- *ACRP Research Report 37: Guidebook for Planning and Implementing Automated People Mover Systems at Airports*
- *ACRP Research Report 37A: Guidebook for Measuring Performance of Automated People Mover Systems at Airports*

Published: June 2012
Link: http://www.trb.org/ACRP/Blurbs/167229.aspx

ACRP Research Report 68 – Guidebook for Evaluating Terminal Renewal Versus Replacement Options

Report Blurb: Details a systematic process for conducting a business-driven evaluation of competing options to renew or replace airport terminal facilities.

Factors considered during the evaluation include life-cycle cost, airside/landside or terminal capacity with passenger demand, facilities obsolescence and condition, development risk, development schedule, changes in regulatory requirements, airline needs, operational constraints, tenant make-up, and airport business model.

Excel-based analysis templates that reflect the unique operating and business environment of a particular airport are included on CD-ROM that is included with the printed version of the report.

Published: June 2012
Link: http://www.trb.org/ACRP/Blurbs/167299.aspx

ACRP Research Report 69 – Asset and Infrastructure Management for Airports—Primer and Guidebook

Report Blurb: Addresses asset and infrastructure management applicable to all areas of the operation of an airport.

The primer portion of the report includes an overview of an asset and infrastructure management program and explores the benefits and costs of implementation.

The guidebook portion of the report provides examples from various airports and is designed to be a reference for integrating proven asset and infrastructure management practices and techniques at airports of all sizes. The report defines an asset and infrastructure management program and its components and how a program relates to daily operations and longer-term planning.

Also, the project that developed the report produced a PowerPoint presentation, which can be used to present the benefits of a program to stakeholders. The PowerPoint presentation is available for download from TRB's website.

Published: June 2012
Link: http://www.trb.org/ACRP/Blurbs/167332.aspx

ACRP Research Report 70 – Guidebook for Implementing Intelligent Transportation Systems Elements to Improve Airport Traveler Access Information

Report Blurb: Provides descriptions, component details, and examples of how airport ground access information can be disseminated using various intelligent transportation systems (ITS) technologies.

The guidebook contains tables to help airport operators determine the applicability of certain ITS strategies based on airport operational needs and airport size.

The printed version of the report includes an interactive CD-ROM designed to help explore and evaluate the information needs of various airport traveler market segments and to identify ITS technologies that best meet the needs of the airport user.

The CD-ROM also contains a decision support tool that allows users to identify appropriate methods of delivering airport traveler information based on the airport traveler market segment.

Published: August 2012
Link: http://www.trb.org/ACRP/Blurbs/167644.aspx

ACRP Research Report 71 – Guidance for Quantifying the Contribution of Airport Emissions to Local Air Quality

Report Blurb: Addresses procedures for using air quality models in combination with on-site measurement equipment to prepare a comprehensive assessment of air pollution concentrations in the vicinity of airports.

The report is designed to help airports respond to regulatory needs, including those of the National Environmental Policy Act, and generate information desired by local communities as they seek to develop more detailed local air quality assessments.

The report also provides information on the capabilities and limitations of modeling and measurement tools and describes how to use available models, in combination with potential on-site monitoring programs, to conduct air quality assessments.

Information on monitoring campaigns and modeling assessments is included in a set of appendices that are integrated with the printed version of the report in CD-ROM format.

Published: July 2012
Link: http://www.trb.org/ACRP/Blurbs/167479.aspx

ACRP Research Report 72 – Guidebook for Selecting Methods to Monitor Airport and Aircraft Deicing Materials

Report Blurb: Provides a systematic process for identifying, evaluating, and selecting methods to monitor stormwater that is subject to runoff containing deicing materials.

The report addresses identifying the parameters to be monitored and discusses the appropriateness of various monitoring methods and instrument types to meet an airport's specific needs. The report also guides the setup, operation, and maintenance of each monitoring method.

Technical information on various on-site monitoring methods is provided in a series of fact sheets. These fact sheets, which are organized by the parameter being monitored, describe key factors such as how the method works, its current level of adoption within the industry, implementation considerations, cost, and advantages/disadvantages.

Published: August 2012
Link: http://www.trb.org/ACRP/Blurbs/167504.aspx

ACRP Research Report 73 – Airport-to-Airport Mutual Aid Programs

Report Blurb: Designed to help guide airports that would like to enter into formal or informal mutual aid agreements with other airports in the event of a community-wide disaster that requires support and assistance beyond its capabilities.

The report describes the potential benefits that an airport-to-airport mutual aid program (MAP) can provide and outlines the different issues that should be considered when setting up an airport-to-airport MAP.

Published: July 2012
Link: http://www.trb.org/ACRP/Blurbs/167497.aspx

ACRP Research Report 74 – Application of Enterprise Risk Management at Airports

Report Blurb: Summarizes the principles and benefits of enterprise risk management (ERM) and its application to airports.

The report discusses the implementation of the iterative ERM process, including roles and responsibilities from airport governing boards to all staff members.

The project that developed this report also developed an electronic tool that can be used to support the ERM process by creating a risk score and a risk map that can be used to identify mitigation strategies. The tool is included in the CD-ROM format with the print version of the report.

Published: September 2012
Link: http://www.trb.org/ACRP/Blurbs/167515.aspx

ACRP Research Report 75 – Airport Leadership Development Program

Report Blurb: Designed to assist existing and future airport leaders to assess, obtain, and refine airport-industry leadership skills.

The program includes forms for a full 360-degree individual assessment of core leadership traits.

A complete facilitator guide with Microsoft PowerPoint presentations and participant workbooks and materials are also included on the CD-ROM that accompanies the print version of the report.

Published: May 2013
Link: http://www.trb.org/Publications/Blurbs/168958.aspx

ACRP Research Report 76 – Addressing Uncertainty about Future Airport Activity Levels in Airport Decision Making

Report Blurb: Provides a systems analysis methodology that augments standard airport master planning and strategic planning approaches.

The methodology includes a set of tools for improving the understanding and application of risk and uncertainty in air traffic forecasts as well as for increasing the overall effectiveness of airport planning and decision-making.

Published: October 2012
Link: http://www.trb.org/ACRP/Blurbs/167934.aspx

ACRP Research Report 77 – Guidebook for Developing General Aviation Airport Business Plans

Report Blurb: Designed to help airports develop and implement an airport business plan and maximize financial self-sufficiency.

The guidebook identifies the role, value, and the compelling reasons for having an airport business plan as it applies to all sizes of airports; highlights the elements of an airport business plan; and addresses each step of the development and implementation process.

The print version of the report includes a CD-ROM, which provides the option of learning the material by watching a series of presentations. The CD-ROM also provides worksheets that may help gather the information necessary for developing and implementing an airport business plan.

Published: November 2012
Link: http://www.trb.org/ACRP/Blurbs/168114.aspx

ACRP Research Report 78 – Airport Ground Support Equipment (GSE): Emission Reduction Strategies, Inventory, and Tutorial

Report Blurb: Designed to help assess and mitigate the contribution of ground support equipment (GSE) to air quality impacts at airports.

The report presents an inventory of GSE at airports, identifies potential strategies to reduce emissions from powered GSE, and provides a tutorial that describes GSE operations and emission reduction technologies for use by GSE owners and operators.

The tutorial is a user-friendly, interactive, self-paced, stand-alone tool that is designed to provide a better understanding of GSE, its operations, applicable federal environmental regulations, and potential approaches to reduce GSE emissions.

The tutorial is also structured in three modules: GSE Basics, Emissions Reduction Approaches and Case Studies, and Converting to Cleaner GSE. The tutorial is on a CD-ROM that is included with the print version of the report.

Published: November 2012
Link: http://www.trb.org/ACRP/Blurbs/168172.aspx

ACRP Research Report 79 – Evaluating Airfield Capacity

Report Blurb: Designed to assist airport planners with airfield and airspace capacity evaluations at a wide range of airports.

The report describes available methods to evaluate existing and future airfield capacity; provides guidance on selecting an appropriate capacity analysis method; offers best practices in assessing airfield capacity and applying modeling techniques; and outlines specifications for new models, tools, and enhancements.

The print version of the report includes a CD-ROM with prototype capacity spreadsheet models designed as a preliminary planning tool (similar to the airfield capacity model but with more flexibility), that allows for changing input assumptions to represent site-specific conditions from the most simple to moderate airfield configurations.

Published: December 2012
Link: http://www.trb.org/ACRP/Blurbs/168260.aspx

ACRP Research Report 80 – Guidebook for Incorporating Sustainability into Traditional Airport Projects

Report Blurb: Describes sustainability and its potential benefits, and identifies different applications of sustainable initiatives in traditional airport construction and everyday maintenance projects.

The printed version of the report includes a CD-ROM that includes an airport sustainability assessment tool that complements the guidebook and may be used to assist in identifying

sustainability initiatives that might be most applicable to an airport project. Through case studies, the tool also allows users to obtain more information about specific strategies and learn about sustainability initiatives that have been implemented in other airports.

The case studies are also available for download in PDF format.

Download the Excel file here.

Published: November 2012
Link: http://www.trb.org/ACRP/Blurbs/168044.aspx

ACRP Research Report 81 – Winter Design Storm Factor Determination for Airports

Report Blurb: Identifies the relevant factors in defining a winter design storm for use in sizing airport deicing runoff management systems and components. The guidebook also provides a decision support tool for identifying an appropriate winter design storm for an airport-specific project; a review of regulations as they pertain to deicing runoff; and suggestions for target levels of service, including the acceptable level of risk of the designed system not meeting performance standards.

Published: November 2012
Link: http://www.trb.org/ACRP/Blurbs/168117.aspx

ACRP Research Report 82 – Preparing Peak Period and Operational Profiles—Guidebook

Report Blurb: Describes a process and includes software for converting annual airport activity forecasts into forecasts of daily or hourly peak period activity. The two Excel-based software modules are designed to help estimate current and future design day aircraft and passenger operation levels based on user-defined design day parameters.

The two modules are included with the print version of the guidebook in the CD-ROM format.

A final report documenting the entire research effort that produced this report was published under a separate cover as *Web-Only Document 14: Guidelines for Preparing Peak Period and Operational Profiles*.

Published: February 2013
Link: http://www.trb.org/ACRP/Blurbs/168509.aspx

ACRP Research Report 83 – Assessing Opportunities for Alternative Fuel Distribution Programs

Report Blurb: Consists of a guidebook and toolkit designed to help airports introduce and market alternative fuels to their airport community that includes tenants and consumers off-airport.

Alternative fuels considered include alternative jet fuel, green diesel, biodiesel, ethanol, compressed natural gas (CNG), liquefied petroleum gas (LPG), and electricity. The guidebook includes a systematic process to evaluate opportunities and constraints for alternative fuel distribution programs.

The toolkit consists of two spreadsheets that help airport decision-makers evaluate alternative fuels marketing and distribution programs. The toolkit is provided in CD-ROM format with the print version of the report.

Published: April 2013
Link: http://www.trb.org/ACRP/Blurbs/168378.aspx

ACRP Research Report 84 – Guidebook for Preparing Airport Emissions Inventories for State Implementation Plans

Report Blurb: Designed to assist in the preparation of airport emissions inventory component of a State Implementation Plan.

The Guidebook offers a basic, intermediate, and advanced approach for the preparation of an airport emissions inventory. Each approach is progressively more complex, requiring increasingly detailed input data that generates greater airport specificity and accuracy. The choice of a particular approach is up to the user as a function of the level of response appropriate to a specific airport, the demands of the facility and the surrounding community, and data availability.

A CD-ROM, which is included with the print version of the report, contains an Airport Emissions Estimator Tool that applies to the basic approach. Also, the CD-ROM includes the appendixes that accompany this report as well as other project-specific material.

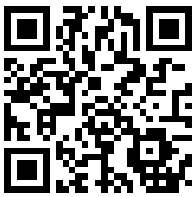
Published: May 2013
Link: http://www.trb.org/ACRP/Blurbs/168865.aspx

ACRP Research Report 85 – Developing and Maintaining Support for Your Airport Capacity Project

Report Blurb: Designed to help airport sponsors respond to the many challenges they face when undertaking a significant capacity improvement project.

The report outlines a typical project life cycle and describes project process activities and organizational activities that support and complement the technical process. The report also offers guidance for identifying, understanding, and working with various stakeholders.

Published: July 2013
Link: http://www.trb.org/ACRP/Blurbs/169213.aspx



ACRP Research Report 86 – Environmental Optimization of Aircraft Departures: Fuel Burn, Emissions, and Noise

Report Blurb: Explores a protocol for evaluating and optimizing aircraft departure procedures in terms of noise exposure, emissions, and fuel burn.

Included with the print version of the report is a CD-ROM that contains a spreadsheet-based Departure Optimization Investigation Tool (DOIT) that allows users to understand and test tradeoffs among various impact measures, including noise levels, the rate of fuel consumption, and emissions.

Published: June 2013
Link: http://www.trb.org/ACRP/Blurbs/169059.aspx

ACRP Research Report 87 – Procuring and Managing Professional Services for Airports

Report Blurb: Provides guidance for procuring and managing professional services at airports for use by airport owners and operators.

For the purposes of this report, professional services include planning, environmental, architectural and engineering, information technology, financial, and legal.

The report covers the procurement process, including scoping, pre-selection process, selection criteria, evaluation, and contract negotiations. Also, it covers processes for managing professional services contracts.

Published: June 2013
Link: http://www.trb.org/ACRP/Blurbs/169112.aspx

ACRP Research Report 88 – Guidebook on Integrating GIS in Emergency Management at Airports

Report Blurb: Designed to help airports identify needs and assess current capabilities concerning using geographical information systems (GIS) in emergency management (EM).

The report discusses GIS and emergency management and provides a roadmap for airports to move from their current state of GIS implementation (even if they do not yet have any form of GIS) to the point of integrating into emergency management and coordinating with mutual aid partners.

The guidebook contains a CD-ROM with case studies and key lessons learned from airports that have integrated GIS into EM. The guidance concludes with a checklist of how to maintain and keep EM plans relevant and current.

The project that developed the report also produced a PowerPoint presentation that outlines the benefits of integrating GIS into EM, which is also available on the CD-ROM.

Published: August 2013
Link: http://www.trb.org/ACRP/Blurbs/169302.aspx

ACRP Research Report 89 – Guidelines for Airport Sound Insulation Programs

Report Blurb: Provides updated guidelines for sound insulation of residential and other noise-sensitive buildings. The report is designed to help airports and others develop and effectively manage aircraft noise insulation projects.

In February 2014 TRB released *ACRP Research Report 105: Guidelines for Ensuring Longevity in Airport Sound Insulation Programs*, which complements the report.

Published: August 2013
Link: http://www.trb.org/ACRP/Blurbs/169358.aspx

ACRP Research Report 90 – Impact of Regulatory Compliance Costs on Small Airports

Report Blurb: Explores the cumulative costs of complying with regulatory and other federal requirements at the small hub and non-hub airports.

Web-Only Document 15: Data Supporting the Impact of Regulatory Compliance Costs on Small Airports, Volume 1: Appendixes to ACRP Report 90 includes summaries of federal actions and published cost data, survey results, and case studies. *Web-Only Document 15: Data Supporting the Impact of Regulatory Compliance Costs on Small Airports, Volume 2: Technical Appendixes to ACRP Report 90* includes 6 technical appendixes that provide the research methodology; analysis of aviation transportation, environmental, security, and occupational safety and health requirements; and an estimate of industry costs.

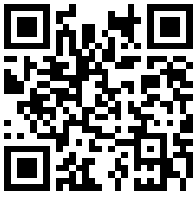
A presentation that summarizes this research is also available for download. The presentation is designed to be used as a template by individual airports in discussion with federal agencies.

Published: July 2013
Link: http://www.trb.org/ACRP/Blurbs/168945.aspx

ACRP Research Report 91 – Infectious Disease Mitigation in Airports and on Aircraft

Report Blurb: Offers guidance for mitigating the risk of disease spread via droplet, airborne, and contact at airports and aboard aircraft.

Published: September 2013
Link: http://www.trb.org/ACRP/Blurbs/169466.aspx



ACRP Research Report 92 – Guidebook to Creating a Collaborative Environment Between Airport Operations and Maintenance

Report Blurb: Provides tools and strategies that are designed to help potentially increase and improve collaboration between operations and maintenance staff at airports.

The contractor's executive summary and final report, which documents the research related to the development of ACRP Report 92, are also available online.

Published: October 2013
Link: http://www.trb.org/ACRP/Blurbs/169739.aspx

ACRP Research Report 93 – Operational and Business Continuity Planning for Prolonged Airport Disruptions

Report Blurb: Provides a guidebook and software tool for airport operators to assist, plan, and prepare for disruptive and catastrophic events that have the potential for causing prolonged airport closure resulting in adverse impacts to the airport and the local, regional, and national economy.

The software tool is available in a CD-ROM format and is intended to help develop and document airport business continuity plans or revise current plans in light of this guidance.

Published: November 2013
Link: http://www.trb.org/ACRP/Blurbs/169246.aspx

ACRP Research Report 94 – Integrating Web-Based Emergency Management Collaboration Software into Airport Operations--A Primer

Report Blurb: Provides information on how to evaluate and implement web-based collaboration tools that are designed to provide a common operating picture for both day-to-day operations and full emergency response management.

The primer explores the functions of web-based emergency management systems and is designed to aid airports in establishing requirements, procuring and installing systems, and implementing training.

Published: December 2013
Link: http://www.trb.org/ACRP/Blurbs/170032.aspx

ACRP Research Report 95 – Integrating Community Emergency Response Teams (A-CERTs) at Airports

Report Blurb: Provides guidance and tools designed to help organize and operate a citizen volunteer program to assist airport staff in emergency events or disasters.

The report, produced as a three-part set, consists of the following:

- Part 1-What is a CERT and How Do I Use It? explains what a community emergency response team (CERT) program is and how it can be used in the airport environment
- Part 2-Basic Training Instructor Guide includes a detailed curriculum designed to train volunteers to potentially assist at an airport during emergency events or disasters
- Part 3-Basic Training Student Guide is based on the instructor's guide and is a resource for students as well as a takeaway from the training

Also produced as part of this report are customizable presentations—for use by the instructor during training—and a video that can be used to educate the community and solicit volunteers.

View the *Impacts on Practice – Improving Emergency Response at Airports* for this report.

Published: January 2014
Link: http://www.trb.org/ACRP/Blurbs/169905.aspx

ACRP Research Report 96 – Apron Planning and Design Guidebook

Report Blurb: Addresses best practices for planning, designing, and marking apron areas for all sizes and types of airports in the U.S.

The apron planning and design considerations include facility geometrics, aircraft maneuvering, apron/airfield access points, operational characteristics, markings, lighting, and aircraft fleets. Also, the types of aprons include terminal area, deicing, general aviation, cargo, maintenance, and remote aprons and helipads.

A presentation, which summarized the research and best practices described in the guidebook, is available online.

Published: December 2013
Link: http://www.trb.org/ACRP/Blurbs/169964.aspx

ACRP Research Report 97 – Measuring PM Emissions from Aircraft Auxiliary Power Units, Tires, and Brakes

Report Blurb: Presents the results of a comprehensive test program designed to measure particulate matter (PM) emissions from auxiliary power units and tires and brakes during the landing phase of operations of in-service commercial aircraft.

The research results are designed to provide a significant contribution to the characterization of emissions from these sources to help airports improve the accuracy of their PM emissions inventories.

Published: December 2013
Link: http://www.trb.org/Publications/Blurbs/170030.aspx

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

Report Blurb: Examines the business models airlines use to establish service in regions with multiple airports and explores how passengers select an airport within a multi-airport region.

Published: January 2014
Link: http://www.trb.org/Publications/Blurbs/170194.aspx

ACRP Research Report 99 – Guidance for Treatment of Airport Stormwater Containing Deicers

Report Blurb: Offers a process to help airports identify, select, and implement technologies to treat stormwater that has been affected by deicing materials. The guidance also includes suggestions for the design, operation, and maintenance of different treatment technologies.

11 ACRP Fact Sheets that address the treatment technologies referenced in ACRP Report 99 are available for download. The fact sheets cover activated sludge; aerated gravel beds; aerated lagoons; anaerobic fluidized bed reactors; distillation; mechanical vapor recompression; moving bed biofilm reactors; passive facultative treatment systems; public wastewater treatment systems; private recycling systems; and reverse osmosis.

Published: January 2014
Link: http://www.trb.org/Publications/Blurbs/170197.aspx

ACRP Research Report 100 – Recycling Best Practices—A Guidebook for Advancing Recycling from Aircraft Cabins

Report Blurb: Describes procedures for recycling airport, airline, and flight kitchen waste and includes action plans designed to improve recycling and reduce waste disposal costs for airports of varying sizes and characteristics.

The best practices summary sheets for airlines, large and medium airport hubs, small-hub and non-hub airports, and flight kitchens included in Appendix B of ACRP Report 100 are also available for download.

Published: December 2013
Link: http://www.trb.org/ACRP/Blurbs/169528.aspx

ACRP Research Report 101 – Best Practices Manual for Working In or Near Airport Movement Areas

Report Blurb: Consists of a best practices database; training tools, aids, and checklists; and a 45-minute video that provides guidance on best practices for a myriad of airport activities.

The guidance is designed to help introduce new employees, tenants, or contractors to the airport environment.

The Staying Safe on the Airfield video follows an airport operations supervisor training a new employee by discussing hazards and the appropriate best practices for eliminating or mitigating risks while working in or near the airport movement area. The database, video, and training

tools, and aids and checklists are provided on a CD-ROM that is included with the print version of the report.

Published: May 2014
Link: http://www.trb.org/ACRP/Blurbs/170760.aspx

ACRP Research Report 102 – Guidance for Estimating Airport Construction Emissions

Report Blurb: Provides guidance and an interactive electronic tool—the Airport Construction Emissions Inventory Tool—to assist airports and other stakeholders in developing airport construction emissions inventories.

The Airport Construction Emissions Inventory Tool (ACEIT) is included in the CD-ROM format with the printed version of the report.

Published: February 2014
Link: http://www.trb.org/ACRP/Blurbs/170234.aspx

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

Report Blurb: Provides guidance for the integration of the National Incident Management System (NIMS) into airport response plans for incidents, accidents, and events.

The guidebook address common NIMS and incident command terminology; outlines incident command structures for various situations relative to their complexity; and includes sample plans from airports and training outlines.

Also, a matrix of suggested training for airport staff was developed as part of the project that developed the guidebook. The Excel-based matrix is available for download from this site.

View the *Impacts on Practice – Standardizing Airport Incident Management Practices* for this report.

Published: February 2014
Link: http://www.trb.org/ACRP/Blurbs/169840.aspx

ACRP Research Report 104 – Defining and Measuring Aircraft Delay and Airport Capacity Thresholds

Report Blurb: Offers guidance to help airports understand, select, calculate, and report measures of delay and capacity. The report describes common metrics, identifies data sources, recommends metrics based on an airport's needs, and suggests ways to potentially improve metrics.

Published: March 2014
Link: http://www.trb.org/ACRP/Blurbs/170348.aspx

ACRP Research Report 105 – Guidelines for Ensuring Longevity in Airport Sound Insulation Programs

Report Blurb: Provides best practices in all phases of a sound insulation program to reduce or eliminate future deterioration issues.

This report complements *ACRP Research Report 89: Guidelines for Airport Sound Insulation Programs*.

The contractor's final report, which assesses sound insulation treatments as part of the first phase of the project that developed the report, is available for download.

The contractor's final report, which assesses sound insulation treatments as part of the first phase of the project that developed this report, is available for download.

Published: February 2014
Link: http://www.trb.org/ACRP/Blurbs/170231.aspx

ACRP Research Report 106 – Being Prepared for IROPS: A Business-Planning and Decision-Making Approach

Report Blurb: Describes a process to help justify airport planning and funding decisions (capital, and operations and maintenance) related to supporting irregular operations (IROPS) contingency planning.

The report presents a structured approach to quantifying the lifecycle economic value of proposed IROPS mitigation alternatives through a spreadsheet-based business planning and decision support tool. The IROPS Investment Support Tool (IRIS) is included with the print version of the report in CD-ROM format.

Published**:** March 2014
Link: http://www.trb.org/ACRP/Blurbs/170432.aspx

ACRP Research Report 107 – Development of a Runway Veer-Off Location Distribution Risk Assessment and Reporting Template

Report Blurb: Explores a method to assess the risk of lateral runway excursions, also known as veer-offs, and suggests ways to improve veer-off incident/accident reporting.

In addition to the report, this project also developed the Lateral Runway Safety Area Risk Analysis (LRSARA) tool that can be used to help determine the probability of runway veer-offs

in specific areas at particular airports. The LRSARA tool is available in CD-ROM format that is included with the print version of the report.

Published**:** April 2014
Link: http://www.trb.org/ACRP/Blurbs/170535.aspx

ACRP Research Report 108 – Guidebook for Energy Facilities Compatibility with Airports and Airspace

Report Blurb: Describes processes to plan, develop, and construct energy production and transmission technologies at and around airports. The guidebook emphasizes aviation safety practices to help ensure a safe and efficient national air system while still helping to meet U.S. domestic energy production needs.

Published**:** April 2014
Link: http://www.trb.org/ACRP/Blurbs/170609.aspx

ACRP Research Report 109 – Improving Terminal Design to Increase Revenue Generation Related to Customer Satisfaction

Report Blurb: Explores innovative airport planning and terminal design that promotes profitable revenue generation and customer satisfaction at a variety of airport sizes and types. The handbook includes consideration of how to potentially improve the airport customer experience through the use of technology and other resources.

Published: June 2014
Link: http://www.trb.org/ACRP/Blurbs/170867.aspx

ACRP Research Report 110 – Evaluating Impacts of Sustainability Practices on Airport Operations and Maintenance

Report Blurb: Provides guidance on using an evaluation process and cost-benefit tool to evaluate lifecycle costs of sustainability practices being considered by airport operators.

Accompanying the report, CD-149: Evaluation Process and Cost-Benefit Tool contains spreadsheet tools and an instructional video that demonstrates how to use data from an example project.

Watch the Evaluation Process & Cost-Benefit Tool for Airport Sustainability Practices video.

Published**:** July 2014
Link: http://www.trb.org/ACRP/Blurbs/170580.aspx

ACRP Research Report 111 – A Guidebook for Airport-Airline Consortiums

Report Blurb: Provides decision-making guidance for airport operators and airline representatives who are responsible for agreements related to facilities, equipment, systems, and services and who may be interested in evaluating, advocating, or forming consortiums to provide needed services.

Published: August 2014
Link: http://www.trb.org/ACRP/Blurbs/171247.aspx

ACRP Research Report 112 – Airport Terminal Incident Response Planning

Report Blurb: Summarizes the development and use of a tool that creates and maintains integrated incident response plans that address hazards in and around airport terminals.

The Airport Terminal Incident Response Plan (TIRP) tool, available on the CD-ROM that accompanies the report, assists in the development of a response plan to help mitigate the impact of events on terminal users. In addition to the TIRP tool, the report contains a user's guide that provides a systematic process of generating incident response plans.

The report also contains an output example that demonstrates completed terminal incident response plans using the TIRP tool.

Published: August 2014
Link: http://www.trb.org/ACRP/Blurbs/171121.aspx

ACRP Research Report 113 – Guidebook on General Aviation Facility Planning

Report Blurb: Provides guidance for planning airport facilities that accommodate general aviation aircraft. The guidance is designed to help airport practitioners plan flexible and cost-effective facilities that are responsive to industry needs.

Published: September 2014
Link: http://www.trb.org/ACRP/Blurbs/171315.aspx

ACRP Research Report 114 – Guidebook for Through-the-Fence Operations

Report Blurb: Examines the financial, operational, regulatory, legal, and other issues associated with through-the-fence (TTF) operations. The report includes supplemental worksheets for assessing TTF operations, discussed in Chapter 5, and a PowerPoint template for TTF operations.

Published: September 2014
Link: http://www.trb.org/ACRP/Blurbs/170955.aspx

ACRP Research Report 115 – Understanding Microbial Biofilms in Receiving Waters Impacted by Airport Deicing Activities

Report Blurb: Provides an introduction to the factors that can affect biofilm growth sometimes observed in streams that receive airport runoff containing deicers.

Published: November 2014
Link: http://www.trb.org/ACRP/Blurbs/171576.aspx

ACRP Research Report 116 – Guidebook for Successfully Assessing and Managing Risks for Airport Capital and Maintenance Projects

Report Blurb: Establishes a systematic process for evaluating and managing risk for capital and maintenance projects that can be scaled depending on the complexity of the project. Chapter 8 is structured to be a quick user's guide.

Published: October 2014
Link: http://www.trb.org/ACRP/Blurbs/171447.aspx

ACRP Research Report 117 – Airport Escalators and Moving Walkways—Cost-Savings and Energy Reduction Technologies

Report Blurb: Provides a systematic approach to identifying, evaluating, and selecting cost-saving and energy reduction technologies for airport escalators and moving walkways. A spreadsheet tool that supplements the report is bound in the hardcopy of the report as CRP-CD-156.

Published: November 2014
Link: http://www.trb.org/ACRP/Blurbs/171719.aspx

ACRP Research Report 118 – Integrating Aviation and Passenger Rail Planning

Report Blurb: Explores planning options, funding challenges, and potential actions to improve the integration of rail services with airports, particularly in congested corridors.

The report has an accompanying CD-ROM that includes an Air/Rail Diversion model. A User Guide provides direction in applying the model to evaluate different scenarios and a Technical Appendix provides supplemental information for the model.

Published: April 2015
Link: http://www.trb.org/ACRP/Blurbs/172409.aspx

ACRP Research Report 119 – Prototype Airport Sustainability Rating System—Characteristics, Viability, and Implementation Options

Report Blurb: Identifies the features of an airport sustainability rating system, identifies options for implementing the rating system and a certification program and evaluates the viability of their implementation and adoption.

Published: December 2014
Link: http://www.trb.org/ACRP/Blurbs/171840.aspx

ACRP Research Report 120 – Airport Capital Improvements: A Business Planning and Decision-Making Approach

Report Blurb: Consists of a guidebook and a spreadsheet-based cost-estimating model to assist practitioners with estimating the cost of construction projects regularly proposed in an airport's capital improvement plan. The spreadsheet model requires 32-bit Microsoft Excel 2007 or later. *Web-Only Document 18: Airport Capital Improvements: Developing a Cost-Estimating Model and Database* describes the research process to develop and test the model.

Published: November 2014
Link: http://www.trb.org/ACRP/Blurbs/171584.aspx

ACRP Research Report 121 – Innovative Revenue Strategies – An Airport Guide

Report Blurb: Describes a broad range of tools and techniques to improve airport revenue streams, recover costs, and achieve operational efficiencies. The report identifies customer needs; airport-provided services and shared services, facilities, and equipment; revenue participation in real estate and natural resource development; value capture and other financing opportunities; and improvements to existing airport businesses.

Published: November 2014
Link: http://www.trb.org/ACRP/Blurbs/172699.aspx

ACRP Research Report 122 – Innovative Airport Responses to Threatened and Endangered Species

Report Blurb: Provides solutions to help airport industry practitioners address the presence of federally listed species at or near airports.

Accompanying the primer is Airport Toolbox for ACRP Report 122, which is designed to help facilitate understanding among airports and agencies. The toolbox is available online as a PDF document and available as CRP-CD-ROM 160 in the hard copy of the report.

Published: January 2015
Link: http://www.trb.org/ACRP/Blurbs/171975.aspx

ACRP Research Report 123 – A Guidebook for Airport Winter Operations

Report Blurb: Provides direction to airport facilities as they prepare for, operate during, and recover from disruptive winter events. The report also provides tips for managing the overall passenger experience and guides the levels of investment needed to implement an effective winter operations program.

Published: January 2015
Link: http://www.trb.org/ACRP/Blurbs/171976.aspx

ACRP Research Report 124 – Airport Parking Garage Lighting Solutions

Report Blurb: Provides guidance to help airport industry practitioners select the most appropriate lighting technologies for their unique parking garage conditions.

Published: March 2015
Link: http://www.trb.org/ACRP/Blurbs/172338.aspx

ACRP Research Report 125 – Balancing Airport Stormwater and Bird Hazard Management

Report Blurb: Help airports identify and evaluate stormwater management and bird mitigation practices. An accompanying CD-ROM tool is aimed to assist airports with evaluating bird strike risks and stormwater management decisions.

Published: January 2015
Link: http://www.trb.org/ACRP/Blurbs/172035.aspx

ACRP Research Report 126 – A Guidebook for Increasing Diverse and Small Business Participation in Airport Business Opportunities

Report Blurb: A compilation of industry best practices and other measures airports can use to attract and enhance participation in their contract opportunities.

Published: January 2015
Link: http://www.trb.org/ACRP/Blurbs/171977.aspx

ACRP Research Report 127 – A Guidebook for Mitigating Disruptive WiFi Interference at Airports

Report Blurb: Describes the Wi-Fi interference problems at airports and offers potential solutions to mitigate disruptions. Interference is addressed in the context of the business and regulatory structure within which airports operate.

The guidebook is designed to provide practical assistance for improving Wi-Fi performance by enhancing the ability of airport authorities to identify when radio frequency interference is occurring and then how to eliminate, reduce, or at least minimize its impact.

The guidebook addresses the following:

- Quantification of the extent and magnitude of the interference problems
- Best technical and business practices to provide accessible, secure service with adaptable bandwidth to meet the needs of all stakeholders
- Communication and collaboration efforts among parties to maximize the benefits of a cooperative approach
- Reference designs that are adaptable to different airport environments (i.e., small, medium, large, dominant carrier, no dominant carrier, and another tenant mix), including security requirements for all stakeholders
- Techniques for identifying and resolving interference issues outside reference designs
- The strategic vision that addresses potential impacts due to increasing demand, rapidly evolving technologies, and new uses (e.g., 802.11 ac, HD video, 4G backhaul)
- The total cost of ownership and return on investment, including intangibles

Published: March 2015
Link: http://www.trb.org/ACRP/Blurbs/172272.aspx

ACRP Research Report 128 – Alternative IT Delivery Methods and Best Practices for Small Airports

Report Blurb: Provides guidance and templates to help airport staff understand the appropriate IT delivery methods and best practices based on their unique strategic goals, requirements, and overall airport goals.

Published: March 2015
Link: http://www.trb.org/ACRP/Blurbs/172180.aspx

ACRP Research Report 129 – Evaluating Methods for Counting Aircraft Operations at Non-Towered Airports

Report Blurb: Reviews techniques and technologies applied at airports without air traffic control towers to estimate aircraft operations.

Published: March 2015
Link: http://www.trb.org/ACRP/Blurbs/172335.aspx

ACRP Research Report 130 – Guidebook for Airport Terminal Restroom Planning and Design

Report Blurb: Explores a process to help airport practitioners plan, design, and implement terminal restroom projects.

The guidebook's printed appendixes include a discussion of the restroom of the future. Appendixes A, C-H include case studies, focus group summaries, and a bibliography. Appendix B includes editable restroom evaluation forms. These appendixes are available online and on the CD-ROM accompanying the print version of the report.

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172507.aspx

ACRP Research Report 131 – A Guidebook for Safety Risk Management for Airports

Report Blurb: Provides tools, examples, and guidance to help airports manage safety risks using the safety risk management (SRM) process. The guidebook includes scalable features of the SRM processes so that it may be useful to smaller airports with limited resources.

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172635.aspx

ACRP Research Report 132 – The Role of U.S. Airports in the National Economy

Report Blurb: Examines the economic role of U.S. airports and the national airport system to help communicate the national aggregate value of airports to communities and aviation stakeholders.

A presentation and brochure supplement the report. Appendices 1 through 5 of the contractor's final report are available online and provide the related data associated with this research effort:

- Appendix 1-Multifactor Productivity
- Appendix 2-Consumer Surplus
- Appendix 2A-Calculations for Consumer Surplus
- Appendix 3-Economic Role of U.S. Airports
- Appendix 3A-NPIAS Database
- Appendix 4-Qualitative Research
- Appendix 5-Literature Review

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172595.aspx

ACRP Research Report 133 – Best Practices Guidebook for Preparing Lead Emission Inventories from Piston-Powered Aircraft with the Emission Inventory Analysis Tool

Report Blurb: Examines a methodology and tool to assist airports in quantifying aircraft lead emissions at airports.

The accompanying Emission Inventory Analysis Tool allows users to select airport-specific data. The tool also allows for the use of default data from the U.S. Federal Aviation Administration and the U.S. Environmental Protection Agency.

Information on how the project was conducted can be found in the contractor's research report as a part of *ACRP Web-Only Document 21: Quantifying Aircraft Lead Emissions at Airports.*

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172598.aspx

ACRP Research Report 134 – Applying Whole Effluent Toxicity Testing to Aircraft Deicing Runoff

Report Blurb: Describes the unique characteristics of stormwater toxicity testing at airports. It also provides guidance for developing sound whole effluent toxicity (WET) testing programs in an airport setting.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172751.aspx

ACRP Research Report 135 – Understanding Airport Air Quality and Public Health Studies Related to Airports

Report Blurb: Explores the following air quality issues: the literature regarding standards and regulations; issues at airports; health impacts and risks; and the industry's current understanding of its health impacts.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172802.aspx

ACRP Research Report 136 – Implementing Integrated Self-Service at Airports

Report Blurb: Provides guidelines for implementing and optimizing a comprehensive passenger self-service experience for a variety of sizes of U.S. airports. Accompanying the report is a CD containing tools to assist the user in developing an integrated passenger self-service program.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172884.aspx

ACRP Research Report 137 – Guidebook for Advancing Collaborative Decision Making (CDM) at Airports

Report Blurb: Provides background and historical context for the use of CDM in the United States and Europe. The guidebook provides tools that can be used to help airports of all sizes integrate CDM into airport operations and more effectively work with stakeholders.

Airport collaborative decision making is a process that enables airports, airlines, other stakeholders, and the air navigation service provider to share data that may help these entities make operational decisions. CDM activities may assist airports with achieving efficiencies in daily operations and improve the effectiveness of irregular operations activities.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172799.aspx

ACRP Research Report 138 – Preventive Maintenance at General Aviation Airports Volume 1: Primer

Report Blurb: Explores the value of airports to communities and the national airspace system.

The primer also reviews the various infrastructure assets at airports and outlines the value of planning and prioritizing preventive maintenance into the budgeting process and the impacts on operations if an airport fails to conduct preventive maintenance. Also, it identifies basic principles for establishing and implementing a preventive maintenance program.

The primer is part of a two-volume set. *Preventive Maintenance at General Aviation Airports Volume 2: Guidebook* is a guidebook on how to plan, prioritize, and conduct preventive maintenance for physical infrastructure assets.

Published: July 2015
Link: http://www.trb.org/ACRP/Blurbs/172852.aspx

ACRP Research Report 138 – Preventive Maintenance at General Aviation Airports Volume 2: Guidebook

Report Blurb: Designed to assists airport and maintenance management and all staff responsible for the maintenance and repair of the airport's physical infrastructure assets in understanding preventive maintenance programs.

The guidebook is part of a two-volume set. *Preventive Maintenance at General Aviation Airports Volume 1: Primer* explores the value of airports to communities and the national airspace system. It reviews the various infrastructure assets at airports and outlines the value of planning and prioritizing preventive maintenance into the budgeting process and the impacts on operations if an airport fails to conduct preventive maintenance. Also, it identifies basic principles for establishing and implementing a preventive maintenance program.

The guidebook (Volume 2) includes guidance on conducting preventive maintenance for typical airport physical infrastructure assets. The report also contains a CD-ROM that includes system checklists that airport staff can customize for their use, as well as a PowerPoint presentation that can be shown to governing boards or communities on the importance of budgeting for preventive maintenance.

Published: July 2015
Link: http://www.trb.org/ACRP/Blurbs/172853.aspx

ACRP Research Report 139 – Optimizing Airport Building Operations and Maintenance Through Retrocommissioning: A Whole-Systems Approach

Report Blurb: Explores ways to optimize operations and maintenance costs and improve overall building system performance through retro-commissioning. The report is accompanied by a CD that contains additional appendices and a spreadsheet tool to help practitioners evaluate and select appropriate facility optimization measures based on cost, savings, complexity, visibility, and greenhouse gas savings.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172739.aspx

ACRP Research Report 140 – Guidebook on Best Practices for Airport Cybersecurity

Report Blurb: Provides information designed to help reduce or mitigate the inherent risks of cyberattacks on technology-based systems.

Traditional IT infrastructure such as servers, desktops, and network devices are covered along with increasingly sophisticated and interconnected industrial control systems, such as baggage handling, temperature control, and airfield lighting systems.

The guidebook also includes a CD-ROM of multimedia material that may be used to educate all staff at airports about the need, and how, to be diligent against cybersecurity threats.

Published: July 2015
Link: http://www.trb.org/ACRP/Blurbs/172854.aspx

ACRP Research Report 141 – Renewable Energy as an Airport Revenue Source

Report Blurb: Explores challenges airports may anticipate when considering renewable energy as a revenue source. These considerations include the airport's geography and terrain, infrastructure, real estate, energy costs, public policy, regulatory and compliance requirements, tax credits, sponsor assurances, ownership, impacts to navigation and safety, security, staffing issues, and many others. The guidebook also includes detailed financial information on the cost and performance of projects that have been implemented by airports.

The guidebook also includes an appendix available online that provides sample a request for proposals.

Published: August 2015
Link: http://www.trb.org/ACRP/Blurbs/172634.aspx

ACRP Research Report 142 – Effects of Airline Industry Changes on Small- and Non-Hub Airports

Report Blurb: Describes policy and planning options for small- and non-hub airport operators and managers as they respond to changing conditions in the airline industry. Airport marketing and development programs are highly individualized, but common issues exist over which airports exert varying levels of control. With this context in mind, this report describes the forces that affect airline operations and airport planning and development and presents a structured approach for planning and development strategies. The report reviews airline industry trends, documents patterns of airline industry change, and assesses current programs that airports are using to respond to changes.

Data analysis from the report showing detailed airport-specific data from 2001 through 2013 is available separately as a Data Appendix.

Published: September 2015
Link: http://www.trb.org/ACRP/Blurbs/173167.aspx

ACRP Research Report 143 – Guidebook for Air Cargo Facility Planning and Development

Report Blurb: Explores tools and techniques for sizing air cargo facilities, including data and updated metrics for forecasting future facility requirements as a function of changing market and economic conditions. The procedures included in the report may help airport operators develop effective business plans and make decisions that meet the industry's current and future technological, operational, and security challenges in a cost-effective, efficient, and environmentally-sensitive manner.

In addition to the report, a CD-ROM contains the Air Cargo Facility Planning Model in a spreadsheet format. This model includes procedures for planning, developing, and implementing air cargo facilities that can be adapted and applied by users to reflect local requirements and development conditions for cargo facilities serving a wide variety of markets, including international gateways, national cargo hubs, domestic airports, and others.

Published: October 2015
Link: http://www.trb.org/ACRP/Blurbs/173274.aspx

ACRP Research Report 144 – Unmanned Aircraft Systems (UAS) at Airports: A Primer

Report Blurb: Provides airports of all sizes with information about unmanned aircraft systems (UAS) and their potential use and impact on airports. The report includes a glossary of key terms, a background on the current state of UAS operations, UAS costs and benefits to airports, regulatory and community considerations, UAS infrastructure and operational considerations, UAS safety and security issues, and more.

Published: September 2015
Link: http://www.trb.org/ACRP/Blurbs/173263.aspx

ACRP Research Report 145 – Applying an SMS Approach to Wildlife Hazard Management

Report Blurb: Introduces and guides the application of a risk-based approach to wildlife hazard management (WHM) programs and outlines additional steps for integrating programs into an airport's Safety Management System (SMS).

This report also provides a customizable tool, which is available as a CD-ROM. The tool includes:

- A summary of existing database wildlife hazard descriptions
- Numerical values for hazard severity and likelihood by species, derived from the FAA Wildlife Strike Database
- An electronic or manual risk analysis template, which includes the incorporation of variables on or off the airport

Published: October 2015
Link: http://www.trb.org/ACRP/Blurbs/173318.aspx

ACRP Research Report 146 – Commercial Ground Transportation at Airports: Best Practices

Report Blurb: Covers best management practices to ensure the provision of safe, comfortable, easy-to-use, and efficient commercial ground transportation services. Commercial ground transportation services include taxicabs, limousines, shared-ride services, transportation network companies, courtesy vehicles, buses, and vans. The guidebook reviews the ground transportation industry, potential solutions to challenges airport operators frequently face, how to select a solution, and how to implement the selected best practice.

Web-Only Document 25: Commercial Ground Transportation at Airports: Best Practices-Appendices C to H includes an annotated bibliography, a list of airports participating in this

study, sample requests for proposals, and requests of qualifications to manage ground transportation, sample contracts, and sample Transportation Network Company permits.

Published: October 2015
Link: http://www.trb.org/ACRP/Blurbs/173350.aspx

ACRP Research Report 147 – Climate Change Adaptation Planning: Risk Assessment for Airports

Report Blurb: Provides guidance for practitioners to understand the specific impacts climate change may have on their airports. The guidebook may help practitioners develop adaptation actions and incorporate those actions into the airport's planning processes.

Accompanying the guidebook, an electronic assessment tool called Airport Climate Risk Operational Screening (ACROS) is enclosed as a CD-ROM. The tool uses a formula to compute an estimated level of risk for assets and operations at the airport. These airport-specific risks are then ranked to provide an enterprise-level estimate of the relative risk posed by each asset and operation.

Published: November 2015
Link: http://www.trb.org/ACRP/Blurbs/173554.aspx

ACRP Research Report 148 – LED Airfield Lighting System Operation and Maintenance

Report Blurb: Provides guidance for operating and maintaining light-emitting diode (LED) airfield ground lighting systems, including taxi guidance signs, elevated light fixtures, and in-pavement light fixtures.

Published: December 2015
Link: http://www.trb.org/ACRP/Blurbs/173717.aspx

ACRP Research Report 149 – Improving Ground Support Equipment Operational Data for Airport Emissions Modeling

Report Blurb: Provides a potential update to the current data set of default ground support equipment (GSE) fleet and activity used for passenger and cargo aircraft. The report includes a protocol to improve the accuracy and consistency of data collection for airport GSE activity compatible with the Emissions and Dispersion Modeling System (EDMS) and the Aviation Environmental Design Tool (AEDT).

Published: December 2015
Link: http://www.trb.org/ACRP/Blurbs/173715.aspx

ACRP Research Report 150 – NextGen for Airports, Volume I: Understanding the Airport's Role in Performance-Based Navigation: Resource Guide

Report Blurb: The first report in this series provides comprehensive information to practitioners concerning all aspects of Performance-Based Navigation (PBN) and how implementation affects overall airport operations. This Resource Guide encompasses background information, description of effects on short- and long-term airport development, impacts on safety and performance measures, and other critical factors affecting future airport operations. In addition to providing guidance to users on available resources for additional assistance, this volume also includes lessons learned and best practices based on findings from case studies that examined the airport operator's role in PBN implementation.

The Next Generation Air Transportation System (NextGen) refers to the federal programs (predominately airspace, air traffic, or avionics related) that are designed to modernize the National Airspace System (NAS). ACRP's NextGen initiative aims to inform airport operators about some of these programs and how the enabling practices, data, and technologies resulting from them will affect airports and change how they operate.

View the suite of materials related to ACRP Report 150: NextGen for Airports:

- Volume 1-Understanding the Airport's Role in Performance-Based Navigation: Resource Guide
- Volume 2-Engaging Airport Stakeholders: Guidebook
- Volume 3-Resources for Airports
- Volume 4-Leveraging NextGen Spatial Data to Benefit Airports: Guidebook
- Volume 5-Airport Planning and Development
- NextGen Outreach Toolkit
- *ACRP WebResource 5: Tools and Case Studies for NextGen for Airports*
- *NextGen for Airports: A Primer*

Published: July 2016
Link: http://www.trb.org/ACRP/Blurbs/174588.aspx

ACRP Research Report 150 – NextGen for Airports, Volume 2: Engaging Airport Stakeholders: Guidebook

Report Blurb: Helps airports engage the U.S. Federal Aviation Administration (FAA), aircraft operators, community representatives, and other airport stakeholders during the planning, environmental review, design, deployment, and monitoring phases of NextGen implementation.

The guidance references a NextGen Outreach Toolkit, which contains videos, an interactive flow chart, and links to additional resources. The NextGen Outreach Toolkit, which will be available for download from a forthcoming website, the report. The Toolkit also incorporates material

created in conjunction with the other projects in the ACRP 150 (NextGen) series. These materials may help airports establish a continuous engagement strategy to balance stakeholder needs as well as efficient NextGen implementation.

View the suite of materials related to ACRP Report 150: NextGen for Airports:

- Volume 1-Understanding the Airport's Role in Performance-Based Navigation: Resource Guide
- Volume 2-Engaging Airport Stakeholders: Guidebook
- Volume 3-Resources for Airports
- Volume 4-Leveraging NextGen Spatial Data to Benefit Airports: Guidebook
- Volume 5-Airport Planning and Development
- NextGen Outreach Toolkit
- *ACRP WebResource 5: Tools and Case Studies for NextGen for Airports*
- *NextGen for Airports: A Primer*

Published: October 2016
Link: http://www.trb.org/Publications/Blurbs/175117.aspx

ACRP Research Report 150 – NextGen for Airports, Volume 3: Resources for Airports

Report Blurb: Presents an overview of the many elements of NextGen, in terms and context that are relevant, familiar, and understandable to airport operators. This guide and associated primer broadly address potential airport impacts and include background information so that airport personnel can discern which NextGen programs will impact them and how. The report includes a list of NextGen technologies and initiatives as well as a likely timeline for implementation. Appendices include a glossary of terms and a Public Information Toolkit for communicating about the NextGen initiative to the broad spectrum of external stakeholders.

Published: December 2016
Link: http://www.trb.org/ACRP/Blurbs/175473.aspx

ACRP Research Report 150 – NextGen for Airports, Volume 4: Leveraging NextGen Spatial Data to Benefit Airports: Guidebook

Report Blurb: Provides information for airport operators on the benefits to airports associated with the creation, maintenance, and use of spatial data that is generated in conjunction with NextGen initiatives. The guidebook also describes costs and financial and legal considerations of this data.

In addition to the guidebook, a presentation template provides an overview of the research study, addresses the findings and conclusions of the study, and provides suggestions for continued

research and documentation of these issues.

Published: November 2016
Link: http://www.trb.org/Main/Blurbs/175223.aspx

ACRP Research Report 150 – NextGen for Airports, Volume 5: Airport Planning and Development

Report Blurb: Provides guidance to help airports of all sizes plan for and incorporate NextGen capabilities. The document will help airports accommodate Next Generation Air Transportation System (NextGen) requirements while also taking advantage of the potential benefits of these federal programs designed to modernize the National Airspace System.

ACRP's NextGen initiative aims to inform airport operators about some of these programs and how the enabling practices, data, and technologies resulting from them will affect airports and change how they operate.

View the suite of materials related to ACRP Report 150: NextGen for Airports:

- Volume 1-Understanding the Airport's Role in Performance-Based Navigation: Resource Guide
- Volume 2-Engaging Airport Stakeholders: Guidebook
- Volume 3-Resources for Airports
- Volume 4-Leveraging NextGen Spatial Data to Benefit Airports: Guidebook
- Volume 5-Airport Planning and Development
- NextGen Outreach Toolkit
- *ACRP WebResource 5: Tools and Case Studies for NextGen for Airports*
- *NextGen for Airports: A Primer*

Published: May 2017
Link: http://www.trb.org/ACRP/Blurbs/176008.aspx

ACRP Research Report 151 – Developing a Business Case for Renewable Energy at Airports

Report Blurb: Provides instructions and tools to evaluate proposed renewable energy projects and their alternatives. The guidance may assist airports with making informed energy decisions that maximize financial, self-sustainability, environmental, and social benefits.

In addition to the report, a decision-making matrix contains criteria that can be used to evaluate a renewable energy project with a system for weighting each factor based on an airport's particular objectives. A sample request for proposal and a power purchase agreement is provided for project implementation.

Published: March 2016
Link: http://www.trb.org/ACRP/Blurbs/173592.aspx

ACRP Research Report 152 – Evaluating Methods for Determining Interior Noise Levels Used in Airport Sound Insulation Programs

Report Blurb: Provides guidance for selecting and implementing methods for measuring noise level reduction in dwellings associated with airport noise insulation programs. The report complements the results of *ACRP Report 89: Guidelines for Airport Sound Insulation Programs*.

Published: March 2016
Link: http://www.trb.org/ACRP/Blurbs/174142.aspx

ACRP Research Report 153 – Guidebook for IROPS Stakeholder Communication & Coordination

Report Blurb: Provides details on strategies and tools for reducing IROPs impacts on passengers. This guidebook will assist communication and coordination as airports and airlines implement IROPS contingency plans. A spreadsheet tool accompanying the report includes a response plan for stakeholders' involvement in assessing the likelihood and severity of reoccurrence of IROPS impacts, data sources to help alert an airport when an IROPS event is likely to occur, and the ability to work with stakeholders to create reports on IROPS risk levels. The case studies and tabletop exercises also serve as training materials and can be customized for any airport.

Published: April 2016
Link: http://www.trb.org/ACRP/Blurbs/174234.aspx

ACRP Research Report 154 – Water Efficiency Management Strategies for Airports

Report Blurb: Provides a guidebook and tools that airport operators can use to design and institute a water efficiency management program specific to their facility. The report enables airport operators to understand water uses and usage at airports to generate a baseline water use profile specific to their airport activities and to define appropriate water use targets. It will also help operators evaluate appropriate water efficiency measures, including their direct and indirect costs and benefits that can be used to develop a water efficiency management action plan. The report addresses water management tools and practices used worldwide within and outside of the airport industry; methods for

collection, management, and analysis of data relevant to airport water management; collaboration and communication with the public and stakeholders, including water providers; program implementation strategies, including motivation for decision-makers; infrastructure operation and maintenance considerations; and drought planning considerations.

Additional materials that accompany the report include the End-Use Water Audit Tool, which can be used to estimate an airport's baseline water footprint, and a presentation, which provides an overview of the guidebook and the toolbox.

Published: June 2016
Link: http://www.trb.org/ACRP/Blurbs/174444.aspx

ACRP Research Report 155– Guidance on Successful Computer Maintenance Management System (CMMS) Selection and Practices

Report Blurb: Provides guidance with selecting a CMMS that is most compatible with an airport's individual needs. Airports use CMMS to help manage airport assets. The report explores ways to integrate a CMMS into airport processes, procedures, and other information technology systems.

This guidebook is accompanied by an evaluation tool, which may help airports with defining their requirements for a CMMS program.

Published: August 2015
Link: http://www.trb.org/ACRP/Blurbs/172991.aspx

ACRP Research Report 156 – Guidebook for Managing Compliance with Federal Regulations: An Integrated Approach

Report Blurb: Provides guidance on managing compliance with federal regulations about the operation and management of airports.

Accompanying the guidebook is the Regulation Compliance Management (RCM) Tool, an index of the applicable statutes, federal regulations, executive orders, OMB Circulars, and other documents with compliance requirements. Additionally, the RCM Tool is designed to track compliance and allow the addition of state and local regulations and requirements.

Published: May 2016
Link: http://www.trb.org/ACRP/Blurbs/174389.aspx

ACRP Research Report 157 – Improving the Airport Customer Experience

Report Blurb: Documents notable and emerging practices in airport customer service management that increase customer satisfaction, recognizing the different types of customers (such as passengers, meters and greeters, and employees) and types and sizes of airports. It also identifies potential improvements that airports could make for their customers.

Published: July 2016
Link: http://www.trb.org/ACRP/Blurbs/174127.aspx

ACRP Research Report 158 – Deriving Benefits from Alternative Aircraft-Taxi Systems

Report Blurb: Explores approaches that may reduce fuel use, emissions, and costs while aircraft is on the ground. This report explores how alternative approaches to taxiing aircraft in movement areas have the potential to provide an overall net benefit for both the airport and aircraft operator. These systems include, among other alternative systems, an electric motor permanently fixed to the aircraft or an electric tug. While many of these alternatives may provide energy and environmental benefits, their use may introduce potential challenges to aircraft operators and air traffic control, as well as place new demands on airport infrastructure. This report helps to address those challenges.

The project also developed an Alternative Taxiing Assessment Matrix (ATAM) tool, which provides a matrix of the various benefits and issues associated with each of the five types of alternative aircraft-taxiing systems. In the tool, benefits are highlighted in green, neutral issues in amber, and concerns in red. The ATAM tool allows the user to enter different aircraft fleet mixes and taxiing times to assess potential overall fuel and emissions changes from ground-level fuel consumption for the three primary alternative aircraft-taxiing systems.

Published: August 2016
Link: http://www.trb.org/ACRP/Blurbs/174896.aspx

ACRP Research Report 159 – Pavement Maintenance Guidelines for General Aviation Airport Management

Report Blurb: Provides guidance to general aviation airport managers in determining the most cost-efficient and appropriate preventative maintenance solution to common pavement issues. In addition to the guidebook, two additional products were developed. The Airport Pavement Maintenance Recommendation Tool is an interactive tool that will assist the user in identifying pavement issues. The Field Guide for the Airport Pavement Maintenance Recommendation Tool is intended to assist in identifying the specific pavement issues while in the field.

Published: September 2016
Link: http://www.trb.org/ACRP/Blurbs/175058.aspx

ACRP Research Report 160 – Addressing Significant Weather Impacts on Airports: Quick Start Guide and Toolkit

Report Blurb: Provides a web toolkit that raises airport operator awareness about vulnerabilities caused by significant weather events. The toolkit helps airports develop more robust contingency and recovery plans, in addition to their airport emergency plans. This toolkit focuses on events that are "rare but plausible"; that is, events that may have happened in the distant past, or adjacent geographic areas but are not common event types at the airport itself, and therefore may not be in the forefront of the airport managers' minds. The Quick Start Guide provides guidance for using the toolkit.

Published: September 2016
Link: http://www.trb.org/ACRP/Blurbs/174950.aspx

ACRP Research Report 161 – Guidelines for Improving Airport Services for International Customers

Report Blurb: Assists airport practitioners in implementing departure and arrival processes, passenger services, and wayfinding techniques for international travelers navigating through U.S. airports. The report covers processing international passengers from origin through gateway airports to their ultimate destination; identifies key elements of the international customer experience that can influence satisfaction in light of the customers' diverse backgrounds; defines acceptable service levels that an international passenger experiences; and provides service metrics for passenger processing at airports, based upon internationally acceptable wait times.

Published: October 2016
Link: http://www.trb.org/ACRP/Blurbs/175168.aspx

ACRP Research Report 162 – Guidebook for Assessing Airport Lead Impacts

Report Blurb: Explores two strategies that airport operators can potentially implement to minimize the impacts of lead emissions from piston-engine aircraft. The guidebook also provides a history of lead in aviation gasoline and EPA regulations. The strategies examine how the impact of lead emissions may be minimized. The report includes a Frequently Asked Questions document about aviation and lead, and the Contractor's Final Report.

Published: October 2016
Link: http://www.trb.org/ACRP/Blurbs/174934.aspx

ACRP Research Report 163 – Guidebook for Preparing and Using Airport Design Day Flight Schedules

Report Blurb: Explores the preparation and use of airport design day flight schedules (DDFS) for operations, planning, and development. The guidebook is geared towards airport leaders to help provide an understanding of DDFS and their uses and provides detailed information for airport staff and consultants on how to prepare one.

Published: November 2016
Link: http://www.trb.org/ACRP/Blurbs/175210.aspx

ACRP Research Report 164 – Exhaust Emissions from In-Use General Aviation Aircraft

Report Blurb: Provides emissions data to better understand and estimate general aviation (GA) aircraft emissions. Aircraft emissions data for smaller aircraft such as a piston and small turbine-powered aircraft either do not exist or have not been independently verified. The emissions data obtained as a part of this project can be added to the U.S. Federal Aviation Administration's (FAA's) Aviation Environmental Design Tool (AEDT) database of aircraft engines. A presentation provides an overview of the findings.

Published: November 2016
Link: http://www.trb.org/ACRP/Blurbs/175323.aspx

ACRP Research Report 165 – Tracking Alternative Jet Fuel

Report Blurb: Provides guidance to airports on ways to track alternative jet fuels. As alternative jet fuels start to enter the supply chain, there may be a need to keep track of such fuel for technical, regulatory, and commercial reasons. In addition to the guidance, a greenhouse gas calculator and an alternative fuels inventory tracking spreadsheet compare different types of tracking mechanisms and evaluate their advantages and disadvantages, impediments to implementation, and potential impacts.

Published: November 2016
Link: http://www.trb.org/ACRP/Blurbs/175241.aspx

ACRP Research Report 166 – Interpreting the Results of Airport Water Monitoring

Report Blurb: Provides comprehensive guidance and a set of tools that operators of airports of varying sizes can use to understand, diagnose, and interpret airport water quality. The report addresses water leaving the airport that does not go to an off-site treatment facility. Accompanying the report are the following tools to assist practitioners in diagnosing root causes and possible sources of specific problems that may require attention or mitigation:

- An editable Appendix A, Field Data Collection Form
- A water quality data analysis tool
- A customizable parameter fact sheet database
- An implementation presentation geared towards stakeholders

Published: March 2017
Link: http://www.trb.org/Main/Blurbs/175862.aspx

ACRP Research Report 167 – Guidebook for Developing Ramp Control Facilities

Report Blurb: Provides guidance to airport operators considering providing ramp control services. An accompanying Ramp Control Decision Support Tool assists users through most considerations before providing ramp control services, including facility requirements, staffing, training, and technology, and other factors, allowing the user to determine the best way to move forward.

Published: January 2017
Link: http://www.trb.org/ACRP/Blurbs/175172.aspx

ACRP Research Report 168 – Runway Protection Zones (RPZs) Risk Assessment Tool Users' Guide

Report Blurb: Helps airport operators evaluate the risk of an aircraft accident within an RPZ. Although runway protection zones (RPZs) are supposed to be clear of structures and people, it is still common for activities to occur within an RPZ for many reasons, and these reasons can be beyond the control of the airport operator.

The report is accompanied by a tool used to assess the risk of an aircraft accident within the RPZ, and, based on that output, assess the risk to people and property, considering the population density and land use. The tool can be used to run scenarios for planning around an RPZ or if changes are being considered, for example, a change in the threshold, extending a runway, removing a hazard, and planning for a new runway. Ideally, the Users' Guide should be read before starting to use the tool.Chapter 4 has instructions for installing the tool, including how to

download SQL, which is required to run the RPZ_RAT tool. For background on the development of the tool, see the Contractor's Final Report.

Published: January 2017
Link: http://www.trb.org/ACRP/Blurbs/174951.aspx

ACRP Research Report 169 – Clean Water Act Requirements for Airports

Report Blurb: Describes the environmental regulations and permitting programs to which airports may be subject to their management of stormwater and other types of water resources. It covers governing federal programs; stormwater discharges associated with industrial activities, construction activities, and municipal separate storm sewer systems; process water or wastewater treatment discharges; industrial wastewater pretreatment discharges; and other relevant permit programs.

Published: January 2017
Link: http://www.trb.org/ACRP/Blurbs/175472.aspx

ACRP Research Report 170 – Guidebook for Preparing Public Notification Programs at Airports

Report Blurb: Offers standards and practices to help airport industry practitioners develop and implement effective programs for delivering both routine notifications as well as incident and emergency-related notifications. The guidance provides readers with the ability to customize their programs to match their unique circumstances.

Published: April 2017
Link: http://www.trb.org/ACRP/Blurbs/175904.aspx

ACRP Research Report 171 – Establishing a Coordinated Local Family Assistance Program for Airports

Report Blurb: Provides guidance to airport personnel when assisting victims and families affected by an aviation disaster. This guidebook incorporates practices for planning an effective response while coordinating with different partners. The guidance is adaptable to both general aviation and commercial service airports of any size. The guidebook includes a description of key terminology, federal regulatory and statutory requirements, history and background of the Aviation Disaster Family Assistance Act, and development of a strategic plan for creating and implementing a local airport victim and family assistance program.

View the toolkit that includes customizable checklists and forms airports can use to support their Family Assistance Program, training courses that provide an overview of the guidebook, and a Homeland Security Exercise and Evaluation Program-compliant materials.

Published: April 2017
Link: http://www.trb.org/ACRP/Blurbs/175605.aspx

ACRP Research Report 172 – Guidebook for Considering Life-Cycle Costs in Airport Asset Procurement

Report Blurb: Explores how other industries use the total cost of ownership (TCO) approach for initial procurement, and how to integrate this into future airport procurement practices. A TCO Tool and five instructional videos on how to use the TCO Tool accompany the report.

Airports, as well as other governmental entities, usually are required to take the lowest bid when procuring assets. This approach tends not to take into consideration the life-cycle costs, such as the operation and maintenance (O&M) costs, which can result in higher than anticipated costs from the O&M budget. Since the purchase of assets is allocated from capital funds that are managed by a person typically different than the person responsible for the day-to-day management of O&M funds, there can be a disconnect on what is considered "better" when considering two bids. Taking a life cycle, also known as a TCO approach, to the initial procurement may ensure more fiscally responsible use of funds.

Published: April 2017
Link: http://www.trb.org/ACRP/Blurbs/175867.aspx

ACRP Research Report 173 – Use and Potential Impacts of AFFF Containing PFASs at Airports

Report Blurb: Explores the potential environmental and health impacts of per- and polyfluoroalkyl substances (PFASs) typically found in aqueous film-forming foams (AFFFs). The report describes methods that can be used to identify areas of potential concern at an airport and ways to implement management and remediation practices.

To help airports identify areas of potential environmental concern, the research team developed the Managing AFFF and PFASs at the Airports (MAPA) Screening Tool. The MAPA Screening Tool is available in two versions: one for running in Microsoft Excel 2010 and the other, a version called the compatibility version that can be run in Microsoft Excel 97 to 2003, or 2007.

Published: May 2017
Link: http://www.trb.org/ACRP/Blurbs/175866.aspx

ACRP Research Report 174 – Green Stormwater Infrastructure - Volume 1: Primer

Report Blurb: Defines and discusses green stormwater infrastructure (GSI) management strategies, a relatively new approach to regulatory compliance. As more airports are proactively incorporating sustainable practices in all aspects of their operations, federal and state regulatory agencies are also promoting GSI strategies to comply with water regulations and requirements. The report is written for the airport manager, planner, and engineer seeking to understand stormwater management and how GSI can comply with regulatory standards and requirements along with other benefits. *Green Stormwater Infrastructure - Volume 2: Guidebook* assists airport staff in evaluating the applicability of a GSI strategy and how to select an appropriate GSI strategy.

Published: June 2017
Link: http://www.trb.org/ACRP/Blurbs/176182.aspx

ACRP Research Report 174 – Green Stormwater Infrastructure - Volume 2: Guidebook

Report Blurb: Defines and discusses green stormwater infrastructure (GSI) management strategies, a relatively new approach to regulatory compliance. As more airports are proactively incorporating sustainable practices in all aspects of their operations, federal and state regulatory agencies are also promoting GSI strategies to comply with water regulations and requirements. The report assists airport staff in evaluating the applicability of a GSI strategy and how to select an appropriate GSI strategy. *Green Stormwater Infrastructure - Volume 1: Primer* is written for the airport manager, planner, and engineer seeking to understand stormwater management and how GSI can comply with regulatory standards and requirements along with other benefits.

Published: June 2017
Link: http://www.trb.org/ACRP/Blurbs/176183.aspx

ACRP Research Report 175 – Improving Intelligibility of Airport Terminal Public Address Systems

Report Blurb: Provides design guidelines to improve public address systems for all types and sizes of airport terminal environments. The guidelines include a summary of data on public address systems, terminal finishes, and background noise levels in a variety of airport terminals, identification of acoustical shortcomings, and the results of impacts on existing public address systems. The report provides options for enhancing intelligibility in existing airport terminals as well as ensuring intelligibility in new terminal designs.

Published: July 2017
Link: http://www.trb.org/ACRP/Blurbs/176329.aspx

ACRP Research Report 176 – Generating Revenue from Commercial Development On or Adjacent to Airports

Report Blurb: Provides guidance for developing or redeveloping on-airport and adjacent properties so that development can contribute to overall airport revenue.

The report explores methods and considerations and provides specific checklists to assist airports in preparing and implementing a commercial development plan. It addresses the advantages and disadvantages of on-airport versus off-airport land development opportunities, as well as marketing and legal issues.

The report also includes case study information that highlights successful and unsuccessful examples of commercial development on and around airports. A customizable MSWord file containing the checklists is available for download.

Published: August 2017
Link: http://www.trb.org/ACRP/Blurbs/176413.aspx

ACRP Research Report 177 – Enhancing Airport Wayfinding for Aging Travelers and Persons with Disabilities

Report Blurb: Provides guidance to assist aging travelers and persons with disabilities to travel independently within airports using pedestrian wayfinding systems. The guidebook addresses travel by people with cognitive, sensory, and other mobility challenges.

The Wayfinding Accessibility Audit Checklist documents issues that should be considered in a baseline airport wayfinding accessibility audit; it is provided in Word format so that users can check items off the list. The research team collected ratings of airport wayfinding applications from users of those applications on the Application Review Criteria testing and comment form. A presentation provides an overview of the ACRP research produced as a part of this report.

Published: October 2017
Link: http://www.trb.org/ACRP/Blurbs/176718.aspx

ACRP Research Report 178 – Guidance for Usage of Permeable Pavement at Airports

Report Blurb: Provides guidance on the advantages and disadvantages of permeable pavement at a variety of types and sizes of airports. The guidance includes potential installation locations such as airside and landside applications; environmental, operational, and economic considerations; and a decision matrix to examine the applicability of installations. Final guidance appendices accompany the report.

Published: August 2017
Link: http://www.trb.org/ACRP/Blurbs/176396.aspx

ACRP Research Report 179 – Dispersion Modeling Guidance for Airports Addressing Local Air Quality Health Concerns

Report Blurb: Provides guidance for selecting and applying dispersion models to study local air quality health impacts resulting from airport-related emissions. The report explores challenges associated with modeling emissions in an airport setting to understand their potential impacts on human health.

Published: September 2017
Link: http://www.trb.org/ACRP/Blurbs/176412.aspx

ACRP Research Report 180 – Guidebook for Quantifying Airport Ground Access Vehicle Activity for Emissions Modeling

Report Blurb: Reviews the regulatory framework and significance of ground access vehicle (GAV) emissions in an airport setting. GAVs, such as private vehicles, taxis, shuttles, rental cars, and delivery vehicles, can be significant contributors to airport emissions and are often included in airport air quality studies. This report develops guidance for quantifying airport GAV activity for the purposes of emissions modeling.

The report is accompanied by a tutorial, provided as a PowerPoint slide presentation, to aid in the application of the information and processes discussed in the guidebook. To ensure that the links within the tutorial function properly, view the presentation as an open slide show.

Published: November 2017
Link: http://www.trb.org/ACRP/Blurbs/176779.aspx

ACRP Research Report 181 – Assessing Community Annoyance of Helicopter Noise

Report Blurb: Describes a protocol for conducting a large-scale community survey to quantify annoyance due to civil helicopter noise and presents the results of a test of the protocol, which also helped improve understanding of the roles of acoustic and non-acoustic factors that influence community annoyance to civil helicopter noise. The report provides a better understanding of the factors affecting community annoyance with helicopter noise and possible differences between helicopter noise impacts and fixed-wing aircraft noise impacts.

Published: November 2017
Link: http://www.trb.org/ACRP/Blurbs/176822.aspx

ACRP Research Report 182 – Guidance for Planning, Design, and Operations of Airport Communications Centers

Report Blurb: Helps airports of all sizes determine which type of airport communications center best meets their operational needs. Various functions include dispatch of police, emergency response, maintenance requests, and monitoring of airport systems. In some cases, individual departments have "siloed" these functions into separate call centers. Myriad factors need to be addressed in considering the best approach to providing necessary airport services for employees and the public.

Published: January 2018
Link: http://www.trb.org/ACRP/Blurbs/177052.aspx

ACRP Research Report 183 – User Guides for Noise Modeling of Commercial Space Operations—RUMBLE and PCBoom

Report Blurb: Provides guidance on using RUMBLE 2.0, which predicts rocket noise, and PCBoom4, which has been modified to predict sonic booms from commercial space operations. As commercial space launch vehicle activities increase, many noise issues, as well as the effects of sonic booms, will need to be evaluated. The Aviation Environmental Design Tool (AEDT) is designed to evaluate the effects of noise and emissions from aircraft but can't predict noise and sonic boom effects from commercial space operations. This project develops two tools to predict noise and sonic boom to be used in the noise modeling evaluation process. Download software for PCBoom and RUMBLE. *Web-Only Document 33: Commercial Space Operations Noise and Sonic Boom Modeling and Analysis* is the contractor's final report on the methodology and development of these tools.

Published: April 2018
Link: http://www.trb.org/ACRP/Blurbs/177510.aspx

ACRP Research Report 184 – Executive Summary for the Guidebook on Understanding FAA Grant Assurance Obligations

Report Blurb: This report is the executive summary of the Guidebook on Understanding FAA Grant Assurance Obligations (published as ACRP Web-Only Document 44, Volume 1) and explains each of the 39 grant assurances. This summary includes a matrix that outlines major aspects of the program such as duration and applicability, and it provides a list of related assurances. The matrix is included in ACRP Web-Only Document 44, Volume 1, where it includes links to specific sections of the Guidebook that discuss each grant assurance in more detail. The detailed discussions, which include lists of

required practices, prohibited practices, permitted practices, and exceptions, are available in additional volumes of ACRP Web-Only Document 44.

Published: May 2018
Link: https://www.trb.org/Main/Blurbs/177621.aspx

ACRP Research Report 185 – Airport Air Quality Management 101

Report Blurb: This report introduces airport employees who are not environmental specialists to airport air quality issues. Airport air quality management is highly complex and technical, with many different stakeholders, including the local community and local, state, and federal regulators.Larger airports have dedicated environmental experts; however, at most airports, environmental management is carried out by employees who are engaged in other aspects of airport operations or provide oversight of external environmental consultants who are executing the work.

This report is accompanied by ACRP WebResource 4: Airport Air Quality Resource Library.

Published: May 2018
Link: https://www.trb.org/Main/Blurbs/177823.aspx

ACRP Research Report 186 – Guidebook on Building Airport Workforce Capacity

Report Blurb: This report Phase 1, previously published as ACRP Web-Only Document 28, gathered information to analyze current and future airport job requirements and identify mission-critical airport occupations; assess the potential of current airport education, training, and resources to address workforce gaps; and project airport workforce capacity needs over the next 5 to 10 years.

ACRP Research Report 186, which is the product of Phase II, builds on that preliminary analysis to identify optimal workforce planning and development strategies and best practices designed to help airports prepare their workforce for emerging industry changes.

Published: June 2018
Link: https://www.trb.org/Main/Blurbs/178144.aspx

ACRP Research Report 187 – Transportation Emergency Response Application (TERA) Support Materials for Airport EOC Exercises

Report Blurb: Provides tools for airport staff tasked with planning, coordinating, and facilitating a functional Emergency Operations Center (EOC) exercise. The report guides airport staff in using the TERA software to facilitate

or enhance federally mandated tabletop exercises. TERA is available online, but is not a website hosted or supported by TRB or the National Academies; however, users may register without a fee to use the site. Templates for the exercise player briefing, exercise plan, controller/facilitator handbook, and evaluator handbook are available for download through a zipped file.
The contractor's final report is available for download separately.

Published: September 2018
Link: http://www.trb.org/ACRP/Blurbs/178084.aspx

ACRP Research Report 188 – Using Existing Airport Management Systems to Manage Climate Risk

Report Blurb: Integrates current and projected climate change-related risks into airport management systems and planning. The handbook identifies ways to reduce airport vulnerabilities to current and projected impacts of climate change, including extreme weather events. It also explores ways to minimize long-term costs to airport facilities and operations. This handbook provides a detailed guide for integration, as well as a self-assessment tool for determining the applicable systems for climate-related decision-making within the airport.

Published: November 2018
Link: http://www.trb.org/ACRP/Blurbs/178312.aspx

ACRP Research Report 189 – Design Considerations for Airport EOCs

Report Blurb: Will guide airport staff in the planning and design of an airport emergency operations center (EOC). This report provides EOC design considerations in the areas of physical space, technology, function, operations, and governance. The guidance includes lessons learned, a Concept and Development Planning Decision Tree flow chart, and several useful checklists to help airport staff work through all of the considerations involved in establishing or enhancing an EOC.

Published: October 2018
Link: http://www.trb.org/ACRP/Blurbs/178150.aspx

ACRP Research Report 190 – Common Performance Metrics for Airport Infrastructure and Operational Planning

Report Blurb: Serves as a reference guide and introduces common performance metrics for airport infrastructure and operational planning. The reference guide includes information on how to interpret performance metrics that can be used for analysis among airports, airlines, and air traffic control. Accompanying the

report, a Microsoft Excel-based Smart Guide serves as an interactive tool that permits rapid access to information about a specific performance metric through search functions.

Published: November 2018
Link: http://www.trb.org/ACRP/Blurbs/178366.aspx

ACRP Research Report 191 – A Primer to Prepare for the Connected Airport and the Internet of Things

Report Blurb: Introduces the concept of the Internet of Things (IoT) within the airport environment to leverage current and emerging technologies. IoT can be used to provide information and services to airport passengers with current and evolving technologies. Airports, airlines, and other stakeholders can use these innovative technologies and data to enhance the user experience and add value. Airport operators and their stakeholders can use this primer to understand the IoT environment and plan for implementation.

Published: October 2018
Link: http://www.trb.org/ACRP/Blurbs/178306.aspx

ACRP Research Report 192 – Airport Management Guide for Providing Aircraft Fueling Services

Report Blurb: Designed to assist airports that are considering or are currently self-providing fueling services directly to their customers.

The management guide includes a methodology to help evaluate whether an airport should or should not provide fuel service, a checklist of action items required for providing fuel service, and a sample request for proposal to solicit bids from fuel suppliers.

This report addresses a wide range of topics including feasibility evaluations for new or improved fueling facilities, fuel pricing and marketing strategies, and organizational considerations when starting or expanding a fueling service. Also, there are introductions to how aviation fuels are produced and to the components of an airport fueling system, which can be used to brief municipal decision-makers or airport employees.

This report also offers useful information about branded and unbranded fuel products, setting the price, inventory controls, customer service, staffing levels, regulatory requirements, capital investment, and operating and maintenance costs associated with the fueling services.

There are three online appendices related to the guide.

- Appendix A-contains case studies of the fueling operations of 16 airports
- Appendix B-contains Microsoft Excel worksheets (that can be downloaded and customized by airports to keep track of inventories, sales, operating expenses, and profit

and loss) and a Microsoft PowerPoint presentation (to help airports produce their PowerPoint presentations for their sponsors)
- Appendix C-contains a detailed bibliography

Published: March 2019
Link: https://www.trb.org/ACRP/Blurbs/178816.aspx

ACRP Research Report 193 – Strategies for Airports to Reduce Local Stormwater Utility Fees

Report Blurb: Offers the airport guidance in managing the stormwater-related utility fees that many local governments charge to help finance their capital and operating expenses. U.S. airports are experiencing a trend of local governments charging and increasing fees to operate and maintain stormwater infrastructure. These trends are having a growing impact on airport budgets. The report identifies, evaluates, and implements strategies for managing stormwater fees based on each agency's unique situation.

Published: December 2018
Link: http://www.trb.org/ACRP/Blurbs/178436.aspx

ACRP Research Report 194 – Using Disaggregated Socioeconomic Data in Air Passenger Demand Studies

Report Blurb: Explores the potential benefits of using disaggregated socio-economic data, such as regional household income distributions and air passenger and travel survey data, for air passenger demand studies.

Aviation demand is strongly correlated to socioeconomic activity, and analysts typically use aggregate socioeconomic data, such as gross regional product or average regional household income, to better understand current and potential future aviation demand.

Since the U.S. is experiencing significant and ongoing demographic trends there is a question as to whether traditional methods and data sources will adequately capture these trends or would more detail, disaggregated socio-economic data or even nontraditional data provide more accurate results.

This report summarizes long-term socioeconomic trends, attempts to understand their potential impact, and guides incorporating disaggregated socio-economic data into air passenger demand studies.

The following appendices to this report are available online:

- Appendix A-Detailed Survey of Past Analyses of Air Passenger Demand
- Appendix B-Airport Industry Use of Socioeconomic Data for Air Passenger Demand Studies

- Appendix C-Additional Material on Sources of Disaggregated Socioeconomic Data
- Appendix D-Detailed Case Study Analysis Results
- Appendix E-Background on Other Analytic Approaches

Published: March 2019
Link: http://www.trb.org/Main/Blurbs/178904.aspx

ACRP Research Report 195 – Best Practices for Airport Obstruction Management Guidebook

Report Blurb: Designed to assist airport operators in developing and implementing an obstruction management program to protect the airport airspace from encroachment by tall objects.

The guidance will help airport staff in developing an obstruction management plan by understanding the regulatory environment, identifying obstructions, and in developing a strategy for communication with surrounding communities that will ensure airport involvement in any development issues that could result in an obstruction around the airport.

The guidebook is supplemented by *ACRP WebResource 7: Best Practices for Airport Obstruction Management Library*, which provides reference documents, model documents, and presentation materials for obstruction management outreach. A methodology for creating a composite map of all applicable airspace surfaces is also provided, as well as examples of interactive airspace composite surface maps for small and large airports.

Published: March 2019
Link: http://www.trb.org/ACRP/Blurbs/178568.aspx

ACRP Research Report 196 – Guidebook for Integrating Collaborative Partnering into Traditional Airport Practices

Report Blurb: Provides guidance for using collaborative partnering for airport construction projects. Collaborative partnering is a structured process to bring owners, designers, and construction teams face-to-face throughout the life of the project and often is facilitated by a neutral third party. This report explores how airport staff involved with the design, construction, operation, and maintenance phases of constructing new airport assets may use collaborative partnering to potentially enhance tasks during the process.

Published: February 2019
Link: http://www.trb.org/ACRP/Blurbs/178785.aspx
Link: http://www.trb.org/ACRP/Blurbs/178816.aspx

ACRP Research Report 197 – Guidebook for Developing a Comprehensive Renewable Resources Strategy

Report Blurb: Highlights renewable energy sources, includes steps for developing a renewable energy strategy, and identifies metrics for measuring success. The report also highlights real-world examples of successful renewable resource projects at airports.

Renewable resources to reduce emissions from airports and climate impacts have been discussed for several years. Technological advancements have allowed organizations, specifically airports, to begin integrating renewable resources into their overall energy plans. To address climate impacts and achieve neutral carbon growth by 2020, a coalition of aviation stakeholders has adopted emission reduction targets.

Airports are also seeking to become energy independent, and using renewable resources as a strategy to get there. Further, as the costs for conventional energy sources increases, renewable resources become more financially attractive. Those airports who have implemented renewable resources have been able to do so at a minimal cost.

While a business case can be made for the integration of anyone particular renewable resource, an airport can be more strategic by adopting an overall renewable resource strategy. The renewable resources strategy can then become an input to other airport planning documents (e.g., airport master plan, strategic plan). The success of developing the plan as well as implementation requires all internal and external stakeholders are involved in the process.

Published: April 2019
Link: http://www.trb.org/ACRP/Blurbs/179031.aspx

ACRP Research Report 198 – Wetland Mitigation, Volume 2, A Guidebook for Airports

Report Blurb: Explores how to mitigate potential impacts to wetlands from airport construction, expansion, and safety improvements.

The report addresses a broad range of issues, including:

- Concerns over the creation of potential wildlife hazards
- Existing requirements, which may or may not be conflicting
- Impact on existing and future airport development
- Airport considerations of cost and logistics in developing mitigation and related life-cycle obligations
- Environmental benefits

Published: June 2019
Link: http://www.trb.org/ACRP/Blurbs/179214.aspx

ACRP Research Report 199 – Climate Resilience and Benefit-Cost Analysis: A Handbook for Airports

Report Blurb: Provides information on how to apply for benefit-cost analysis tools and techniques to improve decision making affecting the resilience of airport infrastructure projects in response to potential long-term impacts of climate change and extreme weather events.

The handbook is designed to improve the process by which infrastructure investment strategies are evaluated, with an emphasis on ensuring climate-related resiliency.

Procedures for presenting assumptions and results transparently and for implementing the process are also included so that industry users and decision-makers can understand and communicate the outcome of the analytical process.

Based on data availability, the analytical methods included in the handbook focus on two specific areas of climate change likely to affect airports (although these methods can, in principle, be used more widely): (1) the potential for extreme flooding events resulting from storm surge and sea-level rise near coastal airports, and (2) the potential for rising temperatures that require weight restrictions on aircraft takeoffs (or possibly full flight delays) at airports with shorter runways in warm climates or high elevations.

The results available from the application of the suggested methodologies do not necessarily decide whether to invest in a mitigation project to combat climate change any easier but, rather, provide a full range of potential outcomes and possibilities for airport planners and managers to consider. Using this methodology, airport decision-makers can then determine how much risk from uncertain climate change and extreme weather events they are willing or able to accommodate. Implementation of the methods presented in the handbook can be used to obtain essential quantifiable estimates of those risks, which is of particular value to airport financial professionals.

The handbook is accompanied by a set of Microsoft Excel models to support the decision-making process (one for extreme water rise causing potential flooding events, and the other for high temperatures that may affect weight restrictions on aircraft takeoffs), a video tutorial, a report summary document, and an executive briefing to help decision-makers understand the process.

Published: June 2019
Link: http://www.trb.org/ACRP/Blurbs/179275.aspx

ACRP Research Report 200 – Using GIS for Collaborative Land Use Compatibility Planning Near Airports

Report Blurb: Offers guidance for using Geographic Information Systems (GIS) as a collaboration tool to encourage compatible land use around airports.

The report is designed to help the airport and community planners seeking to work together to protect existing and future airport development as well as maintain safety and improve the quality of life for those living and working near airports.

The report includes a description of the perspectives, goals, responsibilities, and concerns of the federal government, airports, and local communities to ensure that each has a good understanding of the others' missions and priorities. The report also examines potential benefits that GIS might have on fostering collaboration and offers guidance on initiating and maintaining collaboration, and for developing, sharing, and using data.

A key feature of the guidebook is examples of how GIS was used collaboratively to address various land use compatibility issues, including aircraft noise, obstructions, wildlife hazards, and solar glare. A set of appendices supplements the guide by summarizing the role of government, providing a brief history of FAA aeronautical surveys, case studies, and example data-sharing agreements.

Presentation templates for stakeholder outreach on noise and a sample outreach flier on the value of GIS in airport planning were produced as part of this project.

Published: May 2019
Link: http://www.trb.org/ACRP/Blurbs/179097.aspx

ACRP Research Report 201 – Airport Emergency Communications for People with Disabilities and Others with Access and Functional Needs

Report Blurb: Provides guidance and tools for airports to aid in effective communication with passengers and persons with disabilities, including those with cultural and language differences.

The report includes a primer that discusses issues, techniques, and the unique requirements and challenges of communicating with people with disabilities and others who have access or functional needs.

The report also explores the uses of technology and other methods that incorporate ADA considerations and communication challenges with airport stakeholders, and training programs for airport personnel, including templates for the development of curricula.

There are case study examples of methods of emergency communication at airports and in other industries, and for universal messaging for emergency communications.

The project that produced the report also produced templates in support of airport emergency plans specifically addressing individuals with limited English proficiency, step-by-step tools that include a needs assessment tool that airports can use to determine what steps must be taken to comply with ADA requirements concerning communications, and templates/worksheets/checklists for planning tabletop exercises that focus on communicating with people with disabilities and access or functional needs during emergency events. These resources are described and linked to below.

- The Inventory Checklists (from Appendix A)-list plans, reports, documents, programs, and services that are helpful in emergency communications for DAFN. The checklists make it easy to review what the airport has in place, what needs to be developed or updated, etc.
- The Accessibility Walkthrough Worksheet (from Appendix B)-is a tool to structure evaluations (ideally conducted by members of a DAFN Advisory Group, as discussed in the report) that identify and assign accessibility ratings to existing communications modes and resources from curbside through baggage claim, and identify modes or resources that can be added or improved
- The FAA Airport Accessibility Checklist (from Appendix C)-is reproduced online in PDF for convenience; a URL is provided that directs users to the FAA source
- The Accessibility Strategy Quick Reference Guide (from Appendix D)-summarizes key aspects of core, enhanced, and emerging strategies described in the report
- The CONOPS Template (from Appendix F)-provides a generic text for an Emergency Communications Concept of Operations document that airports can edit to meet their needs and those of the communities they serve
- The Disability Equity Training-document provides training content, including empathy exercises, from Appendix G in a format that can be adapted and customized for use by practitioners
- The 1-Minute Read Poster (from Appendix H)-provides a reproducible, one-page reference on how to offer and provide assistance respectfully to people with DAFN
- The Outreach Brochure (also from Appendix H)- is provided in a separate downloadable file for use and distribution by practitioners
- The Exercise Toolkit (from Appendix I)-with checklists and materials to support a discussion-based exercise and a full-scale, operational exercise, is reproduced in Word to facilitate adaptation and use by practitioners
- The Prepared Scenario Vignettes (from Appendix J)-which can be used to lay the foundation of a discussion-based or tabletop exercise

Published: July 2019
Link: http://www.trb.org/Publications/Blurbs/179335.aspx

ACRP Research Report 202 – Developing Innovative Strategies for Aviation Education and Participation

Report Blurb: Helps educators and aviation enthusiasts understand the need for encouraging interest in aviation, offers guidance on developing a program of activities to fit particular needs and provides activities for developing a program that can be scaled and tailored for various age groups and resource availability.

Published: July 2019
Link: http://www.trb.org/ACRP/Blurbs/179394.aspx

ACRP Research Report 203 – Guidelines for Collecting, Applying and Maintaining Pavement Condition Data at Airports

Report Blurb: "Pavement condition data" are essential inputs to the process of managing airport pavements and ensuring safe operations. The technology available today to collect pavement condition data is considerably different from that available even 20 years ago, and new technologies are being developed and introduced into practice at a rapid pace.

This report guides the collection, use, maintenance, and application of pavement condition data at airports. Such data include conditions that are visually observed as well as those that are obtained by mechanical measurement or other means. Visually observed distresses on a pavement surface (such as cracking, rutting, patching, and spalling) are widely used and accepted as indicators of pavement performance.

A key part of the background study leading to this report was the development of case studies of seven airports or airport agencies on their experiences with pavement data collection, use, and management. They include Houston Airport System (Houston, Texas), Salt Lake City Department of Airports (Salt Lake City, Utah), Dublin International (Dublin, Ireland), Columbus Regional Port Authority (Columbus, Ohio), Gerald R. Ford International Airport Authority (Grand Rapids, Michigan), North Dakota (statewide), and Missouri (statewide).

Additional Resources:

- An Appendix with case studies of airports and agencies based on responses to the project survey, the experience of the project team, and input from the ACRP project panel
- This presentation template is based on the content of ACRP Research Report 203. It provides information on airport pavement condition data collection, use, and storage that can be customized by a presenter to cover a subset of the overall ACRP report

Published: September 2019
Link: http://www.trb.org/ACRP/Blurbs/179612.aspx

ACRP Research Report 204 – Air Demand in a Dynamic Competitive Context with the Automobile

Report Blurb: Future demand for shorter-range airline trips is unstable, affected by changes in technology as well as consumer preferences. Through the application of new research tools that support scenario analysis, this ACRP report explores the potential effects of evolving automobile and aircraft technology and shifting consumer preferences on demand for shorter-range air trips.

While previous methods of demand forecasting have tended to see aviation in a vacuum relative to its key domestic competitor, the automobile, the analytic framework presented in this report facilitates comparison of the two competing modes under changing technology and demographic conditions as well as consumer choice.

This report is designed to help managers of smaller airports develop a better understanding of how consumers choose between flying out of a smaller hometown airport to connect to a flight at a larger airport and taking a long automobile drive, bypassing the smaller airport, to fly directly from a larger airport.

Also, see the accompanying *Web-Only Document 38: Technical Appendix to Air Demand in a Dynamic Competitive Context with the Automobile*.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179073.aspx

ACRP Research Report 205 – Revolving Funds for Sustainability Projects at Airports

Report Blurb: Airports continually balance demands to improve infrastructure within the realities of available budgets. Green revolving funds (GRFs) offer an alternative approach for investing in projects that generate operational savings. These funds work by tracking verified cost reductions from implemented actions and then transferring those savings to a reserve that provides capital for future qualified projects such as energy system upgrades.

A number of universities have managed GRFs for over a decade. Municipalities are starting to adopt them as well. This report includes several non-airport-related case examples that have managed GRFs and two airport-related case examples. Airports require a modified GRF approach because of financial structures, Federal Aviation Administration (FAA) regulatory requirements, airline agreements, and the wide range of tenant roles.

This ACRP report also provides guidance to determine whether this innovative funding approach is suitable for a particular airport and instructions on how to deploy it. Airports that have the ability and determination to launch a GRF will gain a robust method for advancing their

sustainability goals.

Published: September 2019
Link: http://www.trb.org/ACRP/Blurbs/179614.aspx

ACRP Research Report 206 – Guidebook on Effective Land Use Compatibility Planning Strategies for General Aviation Airports

Report Blurb: Incompatible land uses can threaten the safe utility of airports and expose people living and working nearby to potentially unacceptable levels of noise or safety risk.

At the state level, all 50 states have enacted some form of airport zoning legislation since the 1950s. The majority of states (90 percent) have enacted laws mandating or enabling local governments to adopt, administer, and enforce airport zoning regulations.

This report identifies that local adoption and implementation of airport land use compatibility regulations vary widely among local government agencies. While there is no one strategy that is effective for all airports, all airports need to be proactive about land use compatibility.

The guidebook will help airport operators understand the various tools for ensuring compatible land use and how best to communicate land use compatibility needs to government decision-makers and land use professionals (among other stakeholders). It includes Self-Assessment Checklists, an accompanying presentation, and a quick-reference Planning Brochure.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179905.aspx

ACRP Research Report 207 – Optimizing the Use of Electric Preconditioned Air (PCA) and Ground Power Systems for Airports

Report Blurb: As demand for air travel grows, airport-related emissions are increasing and airports are challenged to reduce associated environmental impacts. In response, expanded regulatory programs and global climate protection initiatives are being developed that require the aviation industry—including U.S. airports—to implement new, clean technologies and to modify operational practices to reduce emissions.

One effective option for reducing the emissions associated with aircraft auxiliary power units (APUs) and diesel-powered gate equipment is to convert to electric PCA and electric ground power systems, collectively referred to as "gate electrification systems."

This report guides in identifying and understanding factors that contribute to the use or non-use of gate electrification systems (electric preconditioned air or PCA and electric ground power

systems) and ways that airports and airlines can optimize the use of the systems.

This research includes case studies at a variety of types and sizes of airports in different climates; evaluation of how weather and climate impact utilization; the use and impact of other available ground power and PCA units; consideration of aircraft hardstand operations; and airport and airline practices for optimal equipment utilization.

The work includes additional resources: the *ACRP 02-76 Ground Power and PCA Example Utilization Tracking Methodology* and the Self-Assessment Checklist.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179851.aspx

ACRP Research Report 208 – Benefit-Cost Analyses Guidebook for Airport Stormwater

Report Blurb: Many airports undertake stormwater projects to accommodate facility expansion, address obsolescence, and respond to evolving regulatory requirements. Often, stormwater infrastructure is installed or upgraded on a project-by-project and piecemeal basis, resulting in mismatches of sizes, material types, ages, and conditions.

When airports are considering expanding or improving their stormwater facilities, the immediate need for stormwater infrastructure modification may not be clear, and benefit-cost analysis (BCA) is needed.

The report provides guidance on using BCAs to identify, evaluate, and select airport stormwater management projects. The guidance focuses on a triple bottom line approach that considers an airport's finances and environmental and societal impacts. The guidance will be particularly helpful for small airports that may not have BCA expertise or experience with innovative stormwater projects.

Published: October 2019
Link: http://www.trb.org/ACRP/Blurbs/179840.aspx

ACRP Research Report 209 – Integrating Sustainability Planning and the Environmental Review Process

Report Blurb: Environmental regulations have long required airports to undertake a review of many actions associated with planning and development. More recently, airports have embraced sustainability as a means for ensuring the long-term viability and community benefits of their facilities.

This report is designed for airport industry practitioners who are interested in gaining a better understanding of the benefits of integrating environmental review with sustainability planning,

and who would like strategies and tools to help them implement this integration.

While there remain challenges to integrating environmental review and sustainability, this report should help guide practitioners on the many opportunities for integration and alignment.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179934.aspx

ACRP Research Report 210 – Innovative Solutions to Facilitate Accessibility for Airport Travelers with Disabilities

Report Blurb: The airport industry has adopted specific design codes in response to state and federal regulatory requirements—including the Americans with Disabilities Act—to accommodate employees and travelers with disabilities. These design codes include general architectural guidelines and technology adapted for transportation facilities.

This report outlines innovative solutions to facilitate accessibility for passengers with a variety of physical, sensory, and/or cognitive challenges.

This report also includes additional materials, including case-study highlights in Appendix A, a user-needs survey in Appendix B, and a Wayfinding Accessibility Audit Checklist, which also includes a separate introduction.

Published: February 2020
Link: http://www.trb.org/ACRP/Blurbs/180345.aspx

ACRP Research Report 211 – Guidance for Using the Interactive Tool for Understanding NEPA at General Aviation Airports

Report Blurb: Most general aviation (GA) airports are minimally staffed and rarely employ environmental specialists, and the National Environmental Policy Act (NEPA) can be overwhelming to work through for those not familiar with the requirements.

This report, and the accompanying interactive tool that was developed, will help airport staff from GA airports understand the NEPA process. The report provides an overview of NEPA, when it is applied, and the three levels of NEPA review. The tool will be helpful in better understanding the level of effort that may be required to comply with NEPA.

There is also an annotated bibliography included in Appendix A to the Contractor's Final Report, is also available.

Published: March 2020
Link: http://www.trb.org/ACRP/Blurbs/180369.aspx

ACRP Research Report 212 – Airports and Unmanned Aircraft Systems, Volume 2: Incorporating UAS into Airport Infrastructure— Planning Guidebook

Report Blurb: The introduction of unmanned aircraft systems (UAS) has presented a wide range of new safety, economic, operational, regulatory, community, environmental, and infrastructure challenges to airports and the National Airspace System. These risks are further complicated by the dynamic and shifting nature of UAS technologies.

This report provides guidance for airports on UAS in the areas of managing UAS operations in the vicinity of an airport and engaging stakeholders (Volume 1), incorporating UAS into airport infrastructure and planning (Volume 2), and potential use of UAS by airport operators (Volume 3).

Volume 2: Incorporating UAS into Airport Infrastructure— Planning Guidebook provides suggested planning, operational, and infrastructure guidance to safely integrate existing and anticipated UAS operations into an airport environment. This guidebook is particularly applicable to smaller airports (non-hub and general aviation) without capacity issues. The planning approach could help these airports prepare for and attract UAS operations for additional revenue in the near term.

Volume 1: Managing and Engaging Stakeholders on UAS in the Vicinity of Airports provides guidance for airport operators and managers to interact with UAS operations in the vicinity of airports.

Volume 3: Potential Use of UAS by Airport Operators provides airports with resources to appropriately integrate UAS missions as part of their standard operations.

Supplemental resources to ACRP Research Report 212 are provided in *ACRP Web-Only Document 42: Toolkits and Resource Library for Airports and Unmanned Aircraft Systems*.

Published: June 2020
Link: http://www.trb.org/Publications/Blurbs/179781.aspx

ACRP Research Report 213 – Estimating Market Value and Establishing Market Rent at Small Airports

Report Blurb: Staff from smaller airports typically lack specialized expertise in the negotiation and development of airport property or the resources to hire consultants.

This report provides airport management, policymakers, and staff a resource for developing and leasing airport land and improvements, methodologies for determining market value and appropriate rents, and best practices for negotiating and re-evaluating current lease agreements.

Many factors go into the analysis, and this report reviews best practices in property development.

Published: February 2020
Link: http://www.trb.org/ACRP/Blurbs/180278.aspx

ACRP Research Report 214 – BIM Beyond Design Guidebook

Report Blurb: The complexity of airport management has grown dramatically in recent years, with increased security requirements, a focus on sustainability, increased competition, new technologies, and traffic growth.

The report gives airport owners the basic knowledge required to manage this complexity through building information modeling (BIM), a practice that has transformed the design and construction industry over the last decade and is now emerging as a key component to enhancing an asset life cycle management approach for many organizations.

Published: June 2020
Link: http://www.trb.org/ACRP/Blurbs/180804.aspx

ACRP Research Report 215 – Transportation Network Companies (TNCs): Impacts to Airport Revenues and Operations—Reference Guide

Report Blurb: Transportation network companies (TNCs) have become an increasingly popular form of transportation since initially permitted at some airports in 2014. While many airports receive significant revenue from TNCs, others have recorded declines in parking revenue and rental car transactions that are perceived to be a direct result of TNC operations.

This report identifies strategies and practical tools for adapting airport landside access programs to reflect the evolution of ground transportation modes such as TNCs and autonomous vehicles.

A searchable statistical database of the airport survey and the Airport Mode Choice and Ground Simulator Template (an Excel-based simulation template), which shows how the mode-choice model is applied to estimate revenue impact, supplement the report.

Published: December 2019
Link: http://www.trb.org/ACRP/Blurbs/180473.aspx

ACRP Research Report 216 – Guidebook for Assessing Collaborative Planning Efforts Among Airport and Public Planning Agencies

Report Blurb: Public-use airports, metropolitan planning organizations (MPOs), and local land-use/ transportation planning agencies all have independent yet interrelated planning processes bound by legal and policy requirements to ensure compatibility. This means that they should work cooperatively to solve joint transportation challenges in the most effective and efficient manner.

This report offers guidance for enhancing collaboration between airports and metropolitan surface transportation planning agencies.

An additional resource is the contractor's final report.

Published: April 2020
Link: http://www.trb.org/ACRP/Blurbs/180534.aspx

ACRP Research Report 217 – Guidance for Diversity in Airport Business Contracting and Workforce Programs

Report Blurb: Many airports are already taking active steps to address and unlock the benefits of a diverse and inclusive workforce. These programs provide benefits to the airport and surrounding communities, but there has not been a comprehensive benefit-cost analysis for diversity contracting programs and their impact on the workforce.

The report provides guidelines to assist airport operators and various stakeholders at airports of all types and sizes to identify and quantify the benefits, costs, and regional economic impact of diversity contracting for airport businesses.

As recipients of federal funds, airports are required to administer a federal program that seeks to provide equal access for participation in airport-related business opportunities. Likewise, many airports are also obligated to do so under state and local programs.

The report includes additional materials: an Airport Diversity Contracting Tool and a Tool Users Guide.

Published: August 2020
Link: http://www.trb.org/ACRP/Blurbs/181066.aspx

ACRP Research Report 218 – Building and Maintaining Air Service Through Incentive Programs

Report Blurb: Airports and the communities they serve to view robust air service as an important element for economic well-being and overall quality of life. Incentive programs are often used to encourage airlines to maintain or augment service to a community. Recent airline industry trends, including airline consolidation, use of larger aircraft, the rise of ultra-low-cost airlines, and challenges with pilot supply as well as regulatory and policy developments, have affected the significance of these programs.

This report is a guidebook offering advice for using incentive programs for growing and maintaining commercial air service. The development, execution, and monitoring of air service incentive programs can be complex, involve multiple stakeholders, and must address federal compliance issues.

An additional resource accompanying the report is Building and Maintaining Air Service through Incentive Programs: Contractor's Final Technical Report.

Published: March 2020
Link: http://www.trb.org/Main/Blurbs/180471.aspx

ACRP Research Report 219 – Advanced Ground Vehicle Technologies for Airside Operations

Report Blurb: Recent advancements in automated and advanced driving technologies have demonstrated improvements in safety, ease and accessibility, and efficiency in road transportation. There has also been a reduction in costs in these technologies that can now be adapted into the airport environment.

This report identifies potential advanced ground vehicle technologies (AGVT) for application on the airside.

Appendices B through S are online only. Appendix A, on enabling technologies, is included within the report.

Published: December 2020
Link: http://www.trb.org/ACRP/Blurbs/181552.aspx

ACRP Research Report 220 – Guidebook for Developing a Zero- or Low-Emissions Roadmap at Airports

Report Blurb: The TRB Airport Cooperative Research Program's ACRP Research Report 220: Guidebook for Developing a Zero- or Low-Emissions Roadmap at Airports covers all steps of roadmap development, from start to

finish, using conceptual diagrams, examples, best practices, and links to external tools and resources.

While the main focus of this Guidebook is airport-controlled greenhouse gas (GHG) emissions, this report provides discussion about airport-influenced emissions from airlines, concessionaires, and passengers.

Published: September 2021
Link: http://www.trb.org/Publications/Blurbs/180127.aspx

ACRP Research Report 221 – Measuring Quality of Life in Communities Surrounding Airports

Report Blurb: This report seeks to understand their impacts on neighboring towns, cities, and regions through economic impact analyses, employment studies, and environmental studies, such as those that focus on sustainability efforts or noise.

The TRB Airport Cooperative Research Program's *ACRP Research Report 221: Measuring Quality of Life in Communities Surrounding Airports* addresses an emerging need for airports to take a more holistic look at how they affect their neighbors and how they can build stronger community relationships. Airports can benefit from a more comprehensive understanding of the variables affecting their surrounding communities, over which they may have little to no control.

Supplemental materials to the report include a Quality of Life Assessment Survey Tool, a Dataset, and a Sample Quality of Life Assessment Introduction PowerPoint.

Published: September 2021
Link: https://www.trb.org/Publications/Blurbs/181139.aspx

ACRP Research Report 222 – Collecting and Sharing of Operations and Safety Data

Report Blurb: The collection and sharing of data are essential in an airport's risk management process. The data can allow the airport to benchmark against the industry, monitor performance, and proactively understand trends.

This report identifies data sources, best practices, and the challenges associated with collecting and sharing information with other stakeholders. It provides a potential roadmap to a future safety and operations national database.

Published: October 2020
Link: http://www.trb.org/ACRP/Blurbs/181368.aspx

ACRP Research Report 223 – Performance Measures for State Aviation Agencies

Report Blurb: Across the country, state transportation agencies of various modes have been required to incorporate performance measures (PMs) into their core business functions.

With this trend developing nationwide, this report develops PMs for the National Association of State Aviation Officials (NASAO) membership and their respective state aviation agencies.

Published: October 2020
Link: http://www.trb.org/ACRP/Blurbs/181395.aspx

ACRP Research Report 224 – Understanding Impacts to Airports From Temporary Flight Restrictions

Report Blurb: Temporary Flight Restrictions (TFRs) can be implemented for several reasons, including security, hazards, space operations, special events, and VIP travel. VIP TFRs, specifically presidential TFRs, have much greater impact than other types of TFRs because they encompass a larger geography, are longer in duration, and may have little advance notice.

This report identifies financial and other ramifications of TFRs on airports and aviation-related businesses.

Also included as part of the report is an electronic tool that will estimate the financial ramifications of a TFR for a specific airport or related business. Further, a video was created that shows how to use the spreadsheet, with instructional voiceovers explaining its features.

Published: September 2020
Link: http://www.trb.org/ACRP/Blurbs/181252.aspx

ACRP Research Report 225 – Rethinking Airport Parking Facilities to Protect and Enhance Non-Aeronautical Revenues

Report Blurb: Ongoing and emerging shifts in customer ground access behavior, resulting from the growing use of transportation network companies (TNCs) and the eventual adoption of emerging technologies, are posing a significant challenge to the reliance of airports on parking revenue.

This report is a guidance document that identifies near-term and long-term solutions to help airports of all types and sizes repurpose, renovate, or redevelop their parking facilities to address the loss of revenue from airport parking and other ground transportation services.

Published: February 2021
Link: http://www.trb.org/ACRP/Blurbs/181748.aspx

ACRP Research Report 226 – Planning and Design of Airport Terminal Restrooms and Ancillary Spaces

Report Blurb: Customer satisfaction has become one of the primary drivers for the success of an airport, and restrooms and ancillary facilities often provide the first and last impression of a destination. The real challenge for airports is to provide restrooms with enough space for people to move around in and offer secure, clean, and dry places for their belongings.

This report provides a thoughtful, step-by-step process to help airport industry practitioners plan, design, and implement terminal restroom and other ancillary amenity projects. It is an updated and expanded version of ACRP Report 130: Guidebook for Airport Terminal Restroom Planning and Design and reflects the latest thinking in this quickly evolving topic.

Supplemental materials to the report include:
Appendix A: Component Comparison Matrix
Appendix B: Existing Restroom Evaluation Forms
Appendix C.1: Case Studies—Restrooms
Appendix C.2: Case Studies—Amenities
Appendix D.1: Stakeholder Outreach—Restrooms
Appendix D.2: Stakeholder Outreach—Amenities
Appendix E: Surveys
Appendix F: Restroom Design Guidelines/Standards Sample
Appendix G: Restroom Standard Operating Procedures Sample
Appendix H: Bibliography
Appendix I: Glossary
Tables 4-1 & 4-2 Worksheets
Table 4-3 Worksheet

Published: January 2021
Link: http://www.trb.org/ACRP/Blurbs/181630.aspx

ACRP Research Report 227 – Evaluating and Implementing Airport Privatization and Public-Private Partnerships

Report Blurb: A public-private partnership (P3) can be a dynamic tool to help infrastructure owners achieve a range of objectives on projects, such as incorporating lifecycle project costs into decision-making, benefiting from innovation in design and construction techniques, or sharing certain performance risks.

This report expands upon research presented in *ACRP Report 66: Considering and Evaluating*

Airport Privatization.

Supplemental materials to the report include a Comparative Deal Matrix database, a website for the P3 Readiness Assessment, and a presentation that communicates research findings to key technical and non-technical industry stakeholders.

Published: March 2021
Link: http://www.trb.org/ACRP/Blurbs/181861.aspx

ACRP Research Report 228 – Airport Microgrid Implementation Toolkit

Report Blurb: Awareness of the vulnerability of the country's existing electrical system has increased with the frequency of short-term blackouts and long-term utility outages. Power outages impact airport operations by causing flight delays, extended layovers, disruptions in cargo operations, loss of revenue, and limitations in airports' ability to provide emergency support.

The report addresses site-specific criteria for airports of all types and sizes.

The implementation toolkit is a suite of reference materials, including an online tool that can be used to obtain an analysis and determine feasibility of a microgrid for your airport.

Published: March 2021
Link: http://www.trb.org/ACRP/Blurbs/181834.aspx

ACRP Research Report 229 – Airport Collaborative Decision Making (ACDM) to Manage Adverse Conditions

Report Blurb: Airport collaborative decision making (ACDM) is a process in which the stakeholders of operations—airport operators, the air traffic control tower staff, flight operators, ground handlers, fixed-base operators, and others—share information to improve policies, planning, real-time coordination, and decisions regarding operations.

This report proposes a step-by-step approach to achieve ACDM implementation, supported by templates and a workbook, to involve stakeholders, define common goals and objectives, appoint leadership for the initiative, tailor a vision that serves the local needs, and develop a roadmap of successful projects delivering practical improvements.

Of the airports surveyed as part of this project, 67 percent do not hold regular meetings with the flight operators. Interviews with staff at individual airports show a lack of real-time coordination between the stakeholders. However, nearly all the survey participants responded affirmatively that they would consider holding such meetings to improve collaboration because it is commonly understood that more cooperation can help address local issues and improve overall efficiency.

Supplemental materials to the report include a presentation with an overview of ACDM, a toolbox that provides guidance and resources for implementing ACDM, and a text file that contains the steps for opening the toolbox and other materials.

Published: March 2021
Link: http://www.trb.org/ACRP/Blurbs/181702.aspx

ACRP Research Report 230 – Enhancing Academic Programs to Prepare Future Airport Industry Professionals

Report Blurb: Airports and their support industries have changed significantly over the past several decades. It is imperative that academic programs continue to evolve with these changes to better prepare the next generation of airport industry professionals..

This reports provides guidance to assist academia in preparing graduates for careers as airport industry professionals.

A supplemental presentation is available.

Published: November 2021
Link: http://www.trb.org/ACRP/Blurbs/181835.aspx

ACRP Research Report 231 – Evaluating the Traveler's Perspective to Improve the Airport Customer Experience

Report Blurb: oday's airports have become much more than transportation hubs. They are increasingly becoming places where people dine, shop, relax, work, and interact. This expanded role comes with challenges as airports try to understand and address the needs of their diverse customer base.

The TRB Airport Cooperative Research Program's *ACRP Research Report 231: Evaluating the Traveler's Perspective to Improve the Airport Customer Experience* presents information and tools to better understand the traveler's perspective of the airport journey and how airports might respond to the evolving needs of their travelers.

Supplemental materials to the report include an executive summary, a multimedia tool that provides visuals to support the findings, and Appendices C through F (which include a social media and media analysis toolkit, a review of creative benchmarking, a sample data summary table for creative benchmarking, and a listing of social media and media analysis resources and guides).

Published: March 2021
Link: https://www.trb.org/ACRP/Blurbs/182037.aspx

ACRP Research Report 232 – *Playbook for Cultivating Talent in the Airport Environment*

Report Blurb: The airport environment is facing a shortage of individuals who can lead, guide, manage, and carry out airport-centric initiatives to support the aviation industry.

The TRB Airport Cooperative Research Program's *ACRP Research Report 232: Playbook for Cultivating Talent in the Airport Environment* provides inspiring, proven, and readily implementable techniques for airport leaders and managers to use to enhance talent cultivation and knowledge transfer within airport organizations.

Published: March 2021
Link: https://www.trb.org/Main/Blurbs/181964.aspx

ACRP Research Report 233 – Airport Biometrics: A Primer

Report Blurb: Biometrics is one of the most powerful, but misunderstood technologies used at airports today. The ability to increase the speed of individual processes, as well as offer a touch-free experience throughout an entire journey is a revolution that is decades in the making.

This report is designed to help aviation stakeholders, especially airport operators, to understand the range of issues and choices available when considering, and deciding on, a scalable and effective set of solutions using biometrics. These solutions may serve as a platform to accommodate growth as well as addressing the near-term focus regarding safe operations during the COVID-19 pandemic.

Published: March 2021
Link: http://www.trb.org/Main/Blurbs/182127.aspx

ACRP Research Report 234 – Rapid Slab Repair and Replacement of Airfield Concrete Pavement

Report Blurb: The airport environment is facing a shortage of individuals who can lead, guide, manage, and carry out airport-centric initiatives to support the aviation industry.

This report provides inspiring, proven, and readily implementable techniques for airport leaders and managers to use to enhance talent cultivation and knowledge transfer within airport organizations.

Published: August 2021
Link: http://www.trb.org/Publications/Blurbs/182298.aspx

ACRP Research Report 235 –Guidebook for Conducting Airport User Surveys and Other Customer Research

Report Blurb: Airport user surveys have traditionally been used to obtain information for facility planning. More recently, however, surveys are being used to measure satisfaction as a way to identify actions that could improve the customer experience and increase non-aeronautical revenues, particularly those from passenger terminal concessions.

This report provides airport managers and staff involved in customer research, as well as airport consultants and other stakeholders, with guidance on the effective use of airport user surveys and other customer research techniques.

Supplementary to the report is Appendices A through L

Published: December 2021
Link: https://www.trb.org/Main/Blurbs/182604.aspx

ACRP Research Report 236 –Preparing Your Airport for Electric Aircraft and Hydrogen Technologies

Report Blurb: Design innovation for electrically powered and hybrid-electric aircraft is accelerating rapidly. While there are many potential benefits of electric aircraft and hydrogen technologies, not all air service can be replaced by electrically powered aircraft in the near term.

This report offers an introduction to the emerging electric aircraft industry, gives estimates of potential market growth, and provides guidance to help airports estimate the potential impacts of electric aircraft on their facilities and to be prepared to accommodate them.

A series of appendices provides details on the assumptions and methods used in the research as well as helpful references for airport planning.

A toolkit includes a database of more than 100 electric aircraft and may be used by airports to estimate future electric power requirements at their airport based on local characteristics (such as climate, aviation activity levels, existing electrical demand)..

Published: February 2022
Link: https://www.trb.org/Main/Blurbs/182682.aspx

ACRP Research Report 237 – Primer and Framework for Considering an Airport Noise and Operations Monitoring System

Report Blurb: Airports use Noise and Operations Monitoring Systems (NOMSs) to collect, manage, analyze, and communicate data such as flight tracks and procedures, aircraft identification, noise measurements, noise abatement program performance, and weather. NOMSs are also used to respond to community noise complaints and provide stakeholders with information about aircraft activity and noise, thus fostering trust and transparency.

This is a comprehensive resource to help airport industry practitioners assess the potential benefits and costs of acquiring, maintaining, and updating a NOMS or flight tracking tools without permanent noise monitors.

Supplemental to the report are Appendices A though K.

Published: March 2022
Link: https://www.trb.org/Publications/Blurbs/182683.aspx

ACRP Research Report 238 – Airfield Design for Large Unmanned Aircraft Systems—A Guide

Report Blurb: Developments in unmanned aircraft systems (UAS) technology and the seemingly endless applications of this technology offer society a broad spectrum of enhancements and solutions to many problems..

This report provides a fundamental understanding of large UAS (L-UAS) and their typical supporting infrastructure needs, which will assist airport sponsors with determining potential enhancements to support L-UAS operations at their facilities..

Published: December 2022
Link: **https://www.trb.org/Main/Blurbs/182806.aspx**

ACRP Research Report 240 – Primer for Airport Organizational Redesign

Report Blurb: Periodically, airports want to redesign their workforce and organizational structure. They are seeking to be responsive to their current and emerging business needs, which can change over time.

Published: July 2022
Link: https://www.trb.org/Main/Blurbs/182682.aspx

ACRP Research Report 241 – Toward a Touchless Airport Journey

Report Blurb: As technology continues to evolve, airports are seeking opportunities to create a touchless experience along the passenger journey. The COVID-19 pandemic has accelerated the need to eliminate many common touchpoints, which are potential points of disease transmission.

This report provides solutions from emerging and existing technologies to nontechnological solutions. For each solution, the current level of readiness, barriers to expect in implementation, and specific tips on getting started are detailed. Also explored are technology gaps and the need for medium- and long-term solutions with further development opportunities that could minimize touchpoints.

Supplemental to the report is Attachment A: Solutions Worksheet.

Published: July 2022
Link: https://www.trb.org/Main/Blurbs/182682.aspx

ACRP Research Report 243 – Urban Air Mobility: An Airport Perspective

Report Blurb: Urban Air Mobility (UAM), or its generalized version, Advanced Air Mobility (AAM), is an emerging aerial transportation approach that involves the operation of highly automated aircraft for a safe and efficient system to transport passengers or cargo at lower altitudes of airspace within urban, suburban, and exurban areas. UAM initiatives are advancing in many communities and will likely bring many societal changes.

This report provides a comprehensive examination of the emerging UAM industry, with a particular focus on its impacts and opportunities for airports.

Supplemental to the report are an Airport AAM Preparation Checklist and a UAM Airport Assessment Toolkit

Published: February 2023
Link: https://www.trb.org/Main/Blurbs/182927.aspx

ACRP Research Report 244 – Advancing the Practice of State Aviation System Planning

Report Blurb: An aviation system is composed of airports that are publicly owned and open for public use within a defined geographic area—a region, a state, or multiple nearby states. For example, a metropolitan region may have an airport serving commercial airlines and several general aviation (GA) relievers or other GA airports that cater to nonairline traffic..

This report provides to serve as a companion to the existing Federal Aviation Administration guidance on system planning offered through Advisory Circular (AC) 150/5070-7, Change 1, The Airport System Planning Process.

Published: December 2022
Link: https://www.trb.org/Main/Blurbs/182861.aspx

ACRP Research Report 245 – Guide to Evaluating Airport Governance Structures

Report Blurb: Airports across the United States are owned and operated by a wide variety of governance structures, each with their own features and historical legacies. As the common refrain from airport professionals goes, if you've seen one airport, you've seen one airport. Similarly, if you've seen one airport's governance structure, you've seen one airport's governance structure

This report provides a valuable tools to help communities evaluate the effectiveness of their current governance structure and consider alternative governance structures at airports..

Published: November 2022
Link: https://www.trb.org/Main/Blurbs/182859.aspx

ACRP Research Report 246 – Airside Operations Safety: Understanding the Effects of Human Factors

Report Blurb: Despite dedicated efforts involving changes in technologies and procedures, the number of annual runway incursions in the United States has shown little to no improvement.

This report provides a review of the current state of human factors research and the related resources that are available to U.S. airport operations personnel.

Published: October 2022
Link: https://www.trb.org/Main/Blurbs/182858.aspx

ACRP Research Report 247 – Airfield Pavement Marketings: Effective Techniques for Removal and Temporary

Report Blurb: Airfield markings are critical visual cues and are vital for runways and taxiways. During airfield construction projects, it is often required to remove or obliterate the existing pavement markings and apply temporary markings. These methods can leave scarring that is visible on the irfield for years. Such traces of former markings can be mistaken for active airfield markings by pilots and ground personnel.

This report provides a airport operators with methods and procedures for removing old airfield markings as well as applying temporary markings.

Published: November 2022
Link: https://www.trb.org/Main/Blurbs/182860.aspx

ACRP Research Report 248 – Airport Insurance Requirements

Report Blurb: An airport's insurance program is just one component of its overall risk management program. An insurance program can be quite complex, addressing types of coverage, limits, retention amounts, and legal and contractual issues, among other factors.

This report provides best practices for airports developing an insurance program, including requirements for contracts with third parties doing business at the airport.

Supplemental to the report are a Brochure and Insurance Coverage Templates.

Published: February 2023
Link: https://www.trb.org/Main/Blurbs/182860.aspx

ACRP Research Report 249 – Developing an Airport Program to Address Human Trafficking

Report Blurb: Human trafficking has emerged as a critical public concern, with tens of millions of global victims who are moved across international borders and between states using various forms of transportation, including buses, trains, and airplanes, among others. Traffickers may be transporting victims through airports, or victims may be traveling of their own accord, unaware that the job opportunity at the end of their journey is not legitimate.

This report provides a comprehensive, yet scalable, process to help airports identify and respond to possible human trafficking activity at their facilities.

Supplemental to the report are Appendices and a Toolkit that offer a series of resources and references that airports can use to develop a tailored program.

Published: February 2023
Link: https://www.trb.org/Main/Blurbs/182860.aspx

ACRP Research Report 249 – Developing an Airport Program to Address Human Trafficking

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This report provides a comprehensive, yet scalable, process to help airports identify and respond to possible human trafficking activity at their facilities.
Supplemental to the report are Appendices and a Toolkit that offer a series of resources and references that airports can use to develop a tailored program.

Published: February 2023
Link: https://www.trb.org/Main/Blurbs/182860.aspx

ACRP Research Report 250: Program Evaluation Report Card Tool for Wildlife Hazard Management Plans: User Guide

Report Blurb: The threat of wildlife strikes with aircraft is increasing due to larger bird populations and quieter aircraft. The challenge of managing this risk has prompted the development of Wildlife Hazard Management Plans (WHMPs) by airport operators, which are required to be reviewed regularly. However, there is little guidance available to assess the effectiveness of these plans over time.

This report is designed to is designed to assess the effectiveness of these plans in reducing the risk of wildlife strikes with aircraft over time.

Supplemental to the report is a PERC Tool designed to determine the overall effectiveness of airport WHMPs.

Software disclaimer: Any software included is offered as is, without warranty or promise of support of any kind either expressed or implied. Under no circumstance will the National Academy of Sciences or the Transportation Research Board (collectively “TRB”) be liable for

any loss or damage caused by the installation or operation of this product. TRB makes no representation or warranty of any kind, expressed or implied, in fact or in law, including without limitation, the warranty of merchantability or the warranty of fitness for a particular purpose, and shall not in any case be liable for any consequential or special damages.

Published: May 2023
Link: https://www.trb.org/Main/Blurbs/182860.aspx

ACRP Research Report 251 – Digital Marketing to Enhance Customer Experience and Increase Airport Revenue

Report Blurb: Airports are facing increasing difficulty in meeting funding needs via traditional revenue sources. New digital tools can be used to generate new revenue opportunities and enhance existing relationships with stakeholders. However, there has been little research on identifying and applying these new synergistic revenue-generating opportunities at airports.

This report helps airports explore the use of digitalization to make a passenger's journey from curb to gate a more seamless experience and to leverage an inherent business advantage—passenger time spent at the airport—into potential revenue-generating opportunities.

Published: June 2023
Link: https://www.trb.org/Main/Blurbs/182860.aspx

ACRP Research Report 252 – Airport Baggage Handling System Decision-Making Based on Total Cost of Ownership

Report Blurb: Investments in baggage handling systems are crucial to airport operations and customer satisfaction, yet decisions are often made solely based on initial capital investment without considering the total cost of ownership (TCO). A TCO analysis could lead to cost savings and opportunities for innovation, energy efficiency, and automation.

This report is designed to help stakeholders understand current operation and maintenance costs, establish a comprehensive governance structure, and consider procurement options and equipment selection in the context of TCO factors.

Supplemental to the report are the Baggage Handling Systems TCO Decision Assist Toolkit and Appendices A–D, which present interview findings, case studies, and the baggage system design submittal process.

Published: May 2023

Link: https://www.trb.org/Main/Blurbs/182860.aspx

ACRP Research Report 253 – Airport Lessons Learned from the COVID-19 Pandemic

Report Blurb: During the COVID-19 pandemic, airports faced challenges such as implementing health protocols, accessing trusted information, accommodating social distancing, and using effective technologies to control the spread of the virus. Public health officials interviewed for this report acknowledged a potential conflict between sustaining airport operations and promoting travel on the one hand and the need to implement certain health protocols to prevent disease transmission on the other. This report is intended as a resource for continued response to COVID-19 and future communicable disease outbreaks. The report summarizes 124 interviews with representatives from 127 airports of all sizes and regions.

Published: June 2023
Link: https://www.trb.org/Main/Blurbs/182991.aspx

ACRP Research Report 254 – Strategies to Address Homelessness at Airports

Report Blurb: People experiencing homelessness have been increasingly seeking shelter in airports. Homelessness at airports is a complex issue with no easy solutions. Airports and local communities need to work together to provide support for people experiencing homelessness, while also ensuring the safety and security of airport operations.

This report provides airports and stakeholders with resources and suggested practices to respond, in a comprehensive and humane manner, to people experiencing homelessness.

Published: June 2023
Link: https://www.trb.org/Main/Blurbs/183025.aspx

ACRP Research Report 255 – Strategies to Address Homelessness at Airports

Report Blurb: Airports face increasing regulatory and technical challenges for addressing per- and polyfluoroalkyl substances (PFAS) found on or near their facilities. Sources of PFAS may be attributable to activities such as the use of aqueous film forming foam during aircraft rescue and firefighting activities or from airport neighbors who use products that contain PFAS. This report provides recommended practices for determining the source of PFAS

detected in soil and water on or near an airport. Supplemental to the report is an Excel tool that can be customized by the user to assist with PFAS source differentiation approaches.

Published: July 2023
Link: https://www.trb.org/Main/Blurbs/183046.aspx

ACRP Research Report 256 – Virtual Airport Ramp Control Opertaions Facilities: A Guide

Report Blurb: Virtual ramp control (VRC) implementations have increasingly been occurring at airports over the past 5 years. More airport operators are interested in potentially implementing a VRC system as the technology proves viable. This report aims to develop a guide that provides U.S. airport operators and their stakeholders with a roadmap and key information for implementing VRC systems at airports of all sizes.

Published: September 2023
Link: https://www.trb.org/Main/Blurbs/183083.aspx

ACRP Research Report 257 – Guide for Treatment of Airport Stormwater Containing Deicers: Update

Report Blurb: To support safe operations, airport operators and tenants apply a variety of deicing and anti-icing chemicals (collectively, "deicers") to aircraft and airport paved surfaces. This report provides a comprehensive guide for selecting appropriate technologies to treat stormwater containing deicers at airports.

Supplemental to the report are Appendix B: Deicer Treatment Technology Fact Sheets and Appendix C: Airport Deicer Treatment System Summaries (which are both updates to fact sheets previously published in 2013 as part of *ACRP Report 99: Guidance for Treatment of Airport Stormwater Containing Deicers*); and Appendix D: Technical Memo–Considerations for discharge fees.

Published: October 2023
Link: https://www.trb.org/Main/Blurbs/183086.aspx

Section 2: Syntheses of Practice

ACRP Synthesis Report 1 – Innovative Finance and Alternative Sources of Revenue for Airports

Report Blurb: Explores alternative financing options and revenue sources currently available or that could be available in the future to airport operators, stakeholders, and policymakers in the United States (U.S.). The report examines common capital funding sources used by airport operators; reviews capital financing mechanisms used by airports describes various revenue sources developed by airport operators, and reviews privatization options available to U.S. airport operators.

Published: March 2007
Link: http://www.trb.org/ACRP/Blurbs/158669.aspx

ACRP Synthesis Report 2 – Airport Aviation Activity Forecasting

Report Blurb: Examines how airport forecasts are used and identify common aviation metrics, aviation data sources, issues in data collection and preparation, and special data issues at nontowered airports. The report also explores available forecasting methods, including the primary statistical methods; market share analysis; econometric modeling; and time series modeling. Also, the report reviews forecast uncertainty, accuracy, issues of optimism bias, and options for resolving differences when multiple forecasts are available.

Published: March 2007
Link: http://www.trb.org/ACRP/Blurbs/158684.aspx

ACRP Synthesis Report 3 – General Aviation Safety and Security Practices

Report Blurb: Examines resources used by the general aviation community in the development of safety and security programs, explores funding sources and issues that determine the amount of money spent on such programs, and describes current practices that general aviation airports use to keep their facilities safe and secure.

Published: August 2007
Link: http://www.trb.org/ACRP/Blurbs/157793.aspx

ACRP Synthesis Report 4 – Counting Aircraft Operations at Non-Towered Airports

Report Blurb: Explores the different methods used by states, airports, and metropolitan planning organizations (MPOs) of counting and estimating aircraft operations at non-towered airports. The report also examines new technologies that can be used for these counts and estimates.

Published: August 2007
Link: http://www.trb.org/ACRP/Blurbs/157794.aspx

ACRP Synthesis Report 5 – Airport Ground Access Mode Choice Models

Report Blurb: Examines the characteristics of existing ground access mode choice models and explores the issues involved in the development and use of such models to improve the understanding and acceptance of their role in airport planning and management.

Published: April 2008
Link: http://www.trb.org/ACRP/Blurbs/159853.aspx

ACRP Synthesis Report 6 – Impact of Airport Pavement Deicing Products on Aircraft and Airfield Infrastructure

Report Blurb: Explores how airports chemically treat their airport pavements to mitigate snow and ice, and the chemicals used. The report also examines the effects of pavement deicing products on aircraft and airfield infrastructure and highlights knowledge gaps in the subject.

Published: April 2008
Link: http://www.trb.org/ACRP/Blurbs/157067.aspx

ACRP Synthesis Report 7 – Airport Economic Impact Methods and Models

Report Blurb: Explores how airport economic impact studies are currently conducted. The report examines the methods and models used to define and identify, evaluate, and measure, and communicate the different facets of the economic impact of airports. The report also highlights the various analysis methods, models, and tools that are available for local airport economic studies, as well as their applicability and tradeoffs, including limitations, trends, and recent developments.

Published: May 2008
Link: http://www.trb.org/ACRP/Blurbs/157070.aspx

ACRP Synthesis Report 8 – Common Use Facilities and Equipment at Airports

Report Blurb: Explores common use technology that enables an airport operator to take space that has previously been exclusive to a single airline and make it available for use by multiple airlines and their passengers.

View information about the TRB Webinar: Understanding Common Use and Passenger Self-Tagging, which featured this report.

Published: July 2008
Link: http://www.trb.org/ACRP/Blurbs/160094.aspx

ACRP Synthesis Report 9 – Effects of Aircraft Noise: Research Update on Select Topics

Report Blurb: Includes an annotated bibliography and summary of new research on the effects of aircraft noise. The report is designed to update and complement the U.S. Federal Highway Administration's 1985 Aviation Noise Effects report.

Published: September 2008
Link: http://www.trb.org/ACRP/Blurbs/160286.aspx

ACRP Synthesis Report 10 – Airport Sustainability Practices

Report Blurb: Explores airport sustainability practices across environmental, economic, and social issues.

Published: October 2008
Link: http://www.trb.org/ACRP/Blurbs/160369.aspx

ACRP Synthesis Report 11 – Impact of Airport Rubber Removal Techniques on Runways

Report Blurb: Explores the impacts of four common rubber removal methods on runways--water blasting, chemical removal, shot blasting, and mechanical means (including sandblasting, scraping, brooming, milling, and grinding).

Published: January 2009
Link: http://www.trb.org/ACRP/Blurbs/160656.aspx

ACRP Synthesis Report 12 – Preventing Vehicle-Aircraft Incidents During Winter Operations and Periods of Low Visibility

Report Blurb: Examines factors affecting safe winter operations and the prevention of runway incursions by airport snow removal equipment operators.

Published: December 2008
Link: http://www.trb.org/ACRP/Blurbs/160511.aspx

ACRP Synthesis Report 13 – Effective Practices for Preparing Airport Improvement Program Benefit-Cost Analysis

Report Blurb: Explores assessment techniques that can be used by airports in performing benefit-cost analysis for hard-to-quantify benefits from projects

needing more than $5 million in Airport Improvement Program discretionary funding.

Published: June 2009
Link: http://www.trb.org/ACRP/Blurbs/161751.aspx

ACRP Synthesis Report 14 – Airport System Planning Practices

Report Blurb: Explores the extent to which state aviation agencies and regional planning organizations are involved in airport system planning. The report also examines the type of studies these organizations perform and ho w successful their efforts have been in meeting the planning process objectives.

Published: June 2009
Link: http://www.trb.org/ACRP/Blurbs/161727.aspx

ACRP Synthesis Report 15 – Identification of the Requirements and Training to Obtain Driving Privileges on Airfields

Report Blurb: Explores information on the requirements and training required to obtain driving privileges on airport airfields, and the differences and similarities among the various airports throughout the country. The report also examines information on the types of training programs available to airport employees based on where the employees were authorized to drive.

Published: June 2009
Link: http://www.trb.org/ACRP/Blurbs/161890.aspx

ACRP Synthesis Report 16 – Compilation of Noise Programs in Areas Outside DNL 65

Report Blurb: Explores alternative actions currently used by airports to address noise outside the DNL (Day-Night Average Noise Level) 65 contour. An *Impacts on Practice- November 2010: San Diego's Efforts to Mitigate Noise Impacts for Community Stakeholders* related to the report is available online.

Published: August 2009
Link: http://www.trb.org/Main/Blurbs/162086.aspx

ACRP Research Report 16 – Guidebook for Managing Small Airports - Second Edition

Report Blurb: Designed to help airport practitioners, owners, operators, managers, and policymakers of small airports, who may have varying degrees of experience and backgrounds, to fulfill their responsibilities in such areas as

financial management, oversight of contracts and leases, safety, and security, noise impacts, community relations, compliance with federal and state obligations, facility maintenance, and capital improvements.

The first edition has been edited and reformatted for currency, relevance, and usability and updated with additional information and new subject areas (e.g., unmanned aircraft systems, geographic information systems, digital Notices to Airmen, social media, and federal and state obligations).

Since the publication of this report, a significant amount of research that could be of direct benefit to small airports has been completed, and the Federal Aviation Administration, state agencies, and trade and industry groups have developed and initiated new policies and guidance. Also, small airports are facing new industry challenges not addressed in the first edition (e.g., unmanned aerial systems). Therefore, an update was needed.

ACRP WebResource 6: Resources for Managing Small Airports is a companion to this report. The web resource serves as an electronic library delivering additional resources and tools to allow small airport managers to dig deeper into topics of interest frequently encountered in their airport manager roles. It also contains implementation resources and tools associated with recommendations in the guidebook.

Published: May 2019
Link: http://www.trb.org/ACRP/Blurbs/162145.aspx

ACRP Synthesis Report 17 – Approaches to Integrating Airport Development and Federal Environmental Review Processes

Report Blurb: Approaches to Integrating Airport Development and Federal Environmental Review Processes explores practices that airport sponsors and U.S. Federal Aviation Administration (FAA) planners and environmental specialists have used to integrate airport planning efforts and the FAA's environmental review processes.

Published: November 2009
Link: http://www.trb.org/ACRP/Blurbs/162542.aspx

ACRP Synthesis Report 18 – Aviation Workforce Development Practices

Report Blurb: Explores airport operating entity jobs and related skill sets needed to perform those jobs. The report also identifies potential ways to gain training on the skill sets needed to fulfill airport-related jobs and notes gaps where skill sets, and educational and advancement opportunities, may exist.

Errata

On page 13 of the report, the first paragraph under the heading Accredited Airport Executive (AAE) and Certified Member (CM) Programs was incomplete. The paragraph should read:

"The AAAE's accredited airport executive program is widely accepted in the industry as one of the standard programs for developing executive-level airport professionals. To satisfy the written requirement, a candidate may choose to write a research paper on an approved topic, take and pass a proctored essay examination, write a case study on an approved topic, or submit documentation of a completed master's degree. Candidates do have access to an AAAE staff member for support while completing the written requirement; however, the staff does not help candidates develop research for their written report. The Academic Relations Committee sponsors a mentor program pairing already accredited professionals with student members of the association. The South Central Chapter sponsors a weeklong Academy to help prepare candidates for the multiple-choice exam. There are three academies each year. Members of the AAAE Academic Relations Committee include AAAE members."

Published: April 2010
Link: http://www.trb.org/ACRP/Blurbs/163380.aspx

ACRP Synthesis Report 19 – Airport Revenue Diversification

Report Blurb: Explores the different sources of revenue for airports, separating core aeronautical revenue from ancillary revenues. The report also examines ways that airports have diversified activities and highlights the challenges that arise when non-aeronautical activity is proposed on land that is subject to Federal Aviation Administration grants obligations and assurances.

Published: June 2010
Link: http://www.trb.org/ACRP/Blurbs/163650.aspx

ACRP Synthesis Report 20 – Airport Terminal Facility Activation Techniques

Report Blurb: Explores lessons learned during terminal activations at 13 domestic and international airport facilities. The report is designed to help identify effective airport terminal facility activation practices.

Published: July 2010
Link: http://www.trb.org/ACRP/Blurbs/163782.aspx

ACRP Synthesis Report 21 – Airport Energy Efficiency and Cost Reduction

Report Blurb: Explores energy efficiency improvements being implemented at airports across the country that are low cost and short payback.

Published: September 2010
Link: http://www.trb.org/ACRP/Blurbs/164002.aspx

ACRP Synthesis Report 22 – Common Airport Pavement Maintenance Practices

Report Blurb: Explores how airports implement a pavement maintenance management program, including inspecting and tracking pavement conditions, scheduling maintenance, identifying necessary funds, and treating distresses in asphalt and concrete pavements.

Published: April 2011
Link: http://www.trb.org/Publications/Blurbs/165167.aspx

ACRP Synthesis Report 23 – Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports

Report Blurb: Reviews techniques for reducing bird collisions with aircraft and the relative effectiveness of the various techniques.

In October 2011, TRB produced a webinar related to *Synthesis 23: Wildlife vs. Aviation: Repelling and Deterring Techniques* on October 24, 2011.

In April 2013, TRB released *Synthesis 39: Airport Wildlife Population Management* to supplement the information contained in this report. ACRP Synthesis 39 focuses on direct wildlife population control techniques. The combined information from the two syntheses is designed to help airports develop an effective integrated wildlife population control strategy and program.

Published: August 2011
Link: http://www.trb.org/ACRP/Blurbs/165829.aspx

ACRP Synthesis Report 24 – Strategies and Financing Opportunities for Airport Environmental Programs

Report Blurb: Summarizes public and private funding opportunities and strategies available to airports to help accomplish their environmental programs and objectives.

Published: August 2011
Link: http://www.trb.org/ACRP/Blurbs/165852.aspx

ACRP Synthesis Report 25 – Strategies for Reuse of Underutilized or Vacant Airport Facilities

Report Blurb: Presents an overview of the issues surrounding the reuse of aeronautical facilities and terminals.

Published: October 2011
Link: http://www.trb.org/ACRP/Blurbs/166101.aspx

ACRP Synthesis Report 26 – Current Airport Inspection Practices Regarding FOD (Foreign Object Debris/Damage)

Report Blurb: Details the components of a comprehensive FOD management program, and compiles current practices, techniques, and lists of tools available for use or those currently being used by airports for FOD inspections.

Published: September 2011
Link: http://www.trb.org/ACRP/Blurbs/165911.aspx

ACRP Synthesis Report 27 – Airport Self-Inspection Practices

Report Blurb: Provides insight into common airport self-inspection practices. A comprehensive self-inspection program includes the components of training; inspecting; reporting discrepancies and findings; follow-up, resolution, and closeout; and quality control.

The report may be useful to airports in benchmarking their self-inspection programs to peer airports and practices considered successful by regional U.S. Federal Aviation Administration personnel.

Published: September 2011
Link: http://www.trb.org/ACRP/Blurbs/166012.aspx

ACRP Synthesis Report 28 – Investigating Safety Impacts of Energy Technologies on Airports and Aviation

Report Blurb: Explores physical, visual, and communications systems interference impacts from energy technologies on airports and aviation safety.

The energy technologies that are the focus of this report include the following:

- solar photovoltaic panels and farms
- concentrating solar power plants

- wind turbine generators and farms
- traditional power plants

Published: October 2011
Link: http://www.trb.org/ACRP/Blurbs/166099.aspx

ACRP Synthesis Report 29 – Ramp Safety Practices

Report Blurb: Addresses the current state of ground handling practices, focusing on safety measures and training.

Issues addressed in the report include ramp safety operations, staff roles and responsibilities, safety training, audit and inspection programs, safety violation programs, and collaborative safety initiatives, such as foreign object debris programs.

Published: November 2011
Link: http://www.trb.org/ACRP/Blurbs/166314.aspx

ACRP Synthesis Report 30 – Airport Insurance Coverage and Risk Management Practices

Report Blurb: Identifies both the variables that affect insurance purchasing for airport operators and the range of risk management practices that exist among U.S. airports. The report is designed to help airport officials confronted with risk-financing and insurance-purchasing decisions.

Published: December 2011
Link: http://www.trb.org/ACRP/Blurbs/166472.aspx

ACRP Synthesis Report 31 – Airline and Airline–Airport Consortiums to Manage Terminals and Equipment

Report Blurb: Discusses the current state of Airline-Airport consortiums in the United States.

Issued addressed in the report include the scope of responsibilities, consortium formation, membership, contractual agreements and insurance, organizational structures, performance standards, financial models, and organizing tips and lessons learned from existing consortiums.

Published: December 2011
Link: http://www.trb.org/ACRP/Blurbs/166364.aspx

ACRP Synthesis Report 32 – Managing Aerial Firefighting Activities on Airports

Report Blurb: Highlights current airport and agency--primarily the U.S. Forest Service--practices, policies, and procedures at airports called upon to support aerial wildland firefighting suppression efforts.

Published: June 2012
Link: http://www.trb.org/ACRP/Blurbs/167310.aspx

ACRP Synthesis Report 33 – Airport Climate Adaptation and Resilience

Report Blurb: Reviews the range of risks to airports from projected climate change and the emerging approaches for handling them.

Published: June 2012
Link: http://www.trb.org/ACRP/Blurbs/167238.aspx

ACRP Synthesis Report 34 – Subsurface Utility Engineering Information for Airports

Report Blurb: Examines ways in which information on subsurface utilities is collected, maintained, and used by airports, their consultants, and the U.S. Federal Aviation Administration to help increase the effectiveness of, and enhance safety during, infrastructure development programs at airports.

The report also compares the current state of technology and effective processes from other industry sectors with what airports do today.

Published: July 2012
Link: http://www.trb.org/ACRP/Blurbs/167502.aspx

ACRP Synthesis Report 35 – Issues With Use of Airfield LED Light Fixtures

Report Blurb: Documents the performance of light-emitting diode (LED) airfield lighting systems.

Published: July 2012
Link: http://www.trb.org/ACRP/Blurbs/167509.aspx

ACRP Synthesis Report 36 – Exploring Airport Employee Commute and Parking Strategies

Report Blurb: Analyzes what is known about airport employee commute patterns and commute modes.

The report addresses alternatives to the drive alone commute for airport employees, the effectiveness and challenges of airport employee commute options programs, and commute options programs offered by non-airport employers that might apply to the airport environment.

Published: September 2012
Link: http://www.trb.org/ACRP/Blurbs/167704.aspx

ACRP Synthesis Report 37 – Lessons Learned from Airport Safety Management Systems Pilot Studies

Report Blurb: Provides airport operators with data and experience from a safety management system (SMS) pilot study airports. The report addresses SMS pilot study program management; SMS components design, development, and deployment; and SMS challenges and benefits.

In simple terms, SMS is a proactive business approach to managing and mitigating potential hazards within the organization to improve safety performance. SMS is comprised of four components (or pillars), including safety policy, safety risk management, safety assurance, and safety promotion.

Published: August 2012
Link: http://www.trb.org/ACRP/Blurbs/167600.aspx

ACRP Synthesis Report 38 – Expediting Aircraft Recovery at Airports

Report Blurb: Includes suggested procedures to help airports expedite the recovery of disabled aircraft that are designed to avoid injury to personnel, damage to airport equipment, and secondary damage to the aircraft.

For the report, a disabled aircraft is defined as one that is unable to move using its power after an excursion from a runway or taxiway.

Published: November 2012
Link: http://www.trb.org/Publications/Blurbs/168131.aspx

ACRP Synthesis Report 39 – Airport Wildlife Population Management

Report Blurb: Provides direct wildlife population control techniques for reducing wildlife collisions with aircraft. Also, the report summarizes the ecological foundation of wildlife population control and management.

The report is designed to supplement *ACRP Synthesis 23: Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports* provide a synthesis of nonlethal wildlife control measures focusing on birds. The combined information from the two syntheses is designed to help airports develop an effective, integrated wildlife population control strategy and program.

Published: April 2013
Link: http://www.trb.org/ACRP/Blurbs/168836.aspx

ACRP Synthesis Report 40 – Issues with Airport Organization and Reorganization

Report Blurb: Examines organizational design and current trends and practices in airport management.

TR News May–June 2014: Changing Energy Outlook; King Coal Highway; Automated Vehicles—and More includes an article about the report.

Published: May 2013
Link: http://www.trb.org/ACRP/Blurbs/169008.aspx

ACRP Synthesis Report 41 – Conducting Aeronautical Special Events at Airports

Report Blurb: Consolidates available information and lessons learned on how to successfully plan, organize, and conduct an aeronautical special event and restore normal operations after the event.

For this report, aeronautical special events are defined as those events that involve aviation activities or aircraft.

The report can serve as a companion document to *ACRP Synthesis 57: Airport Response to Special Events* that explores issues related to planning, organizing, and applying lessons learned, as well as addressing potential surprises and impacts on operations and customer services related to a variety of non-aeronautical events that occur both on and off an airport.

Published: May 2013
Link: http://www.trb.org/ACRP/Blurbs/168988.aspx

ACRP Synthesis Report 42 – Integrating Environmental Sustainability into Airport Contracts

Report Blurb: Provides examples of how airports might help drive environmental sustainability performance improvements at their facilities by integrating environmental sustainability concepts into contracts with contractors, suppliers, and vendors.

Published: June 2013
Link: http://www.trb.org/ACRP/Blurbs/169023.aspx

ACRP Synthesis Report 43 – Environmental Assessment of Air and High-Speed Rail Corridors

Report Blurb: Explores where additional research can improve the ability to assess the environmental outcomes of these two systems.

Published: August 2013
Link: http://www.trb.org/ACRP/Blurbs/169411.aspx

ACRP Synthesis Report 44 – Environmental Management System Development Process

Report Blurb: Provides background on the framework of an environmental management system (EMS), explores similarities and differences of the various approaches to an EMS, explains the EMS development process, and highlights lessons learned by airports that have developed an EMS.

Published: May 2013
Link: http://www.trb.org/ACRP/Blurbs/168917.aspx

ACRP Synthesis Report 45 – Model Mutual Aid Agreements for Airports

Report Blurb: Presents information on mutual aid agreements, addressing nearly every type of emergency that could affect airports and require outside resources. The report is designed to assist airport operators in creating and sustaining effective emergency management mutual aid partnerships by documenting the specifics of existing agreements.

Published: July 2013
Link: http://www.trb.org/ACRP/Blurbs/169180.aspx

ACRP Synthesis Report 46 – Conducting Airport Peer Reviews

Report Blurb: Explores the range of peer review approaches being used by airport sponsors, identifies similar efforts outside the airport industry, and documents both effective practices and challenges in conducting peer review activities.

Published: June 2013
Link: http://www.trb.org/ACRP/Blurbs/169124.aspx

ACRP Synthesis Report 47 – Repairing and Maintaining Airport Parking Structures While in Use

Report Blurb: Provides information on developing and implementing successful maintenance and repair strategies for in-use airport parking structures that involve the least impact on the airport patrons, revenue stream, and facility operations.

Published: June 2013
Link: http://www.trb.org/ACRP/Blurbs/169084.aspx

ACRP Synthesis Report 48 – How Airports Measure Customer Service Performance

Report Blurb: Examines the strategic importance of customer service and how airports are measuring the quality of customer service.

Published: September 2013
Link: http://www.trb.org/ACRP/Blurbs/169468.aspx

ACRP Synthesis Report 49 – Helping New Maintenance Hires Adapt to the Airport Operating Environment

Report Blurb: Highlights comprehensive safety and security training resources, as well as successful practices for new maintenance, hires at general aviation airports.

Published: September 2013
Link: http://www.trb.org/ACRP/Blurbs/169521.aspx

ACRP Synthesis Report 50 – Effective Cooperation Among Airports and Local and Regional Emergency Management Agencies for Disaster Preparedness and Response

Report Blurb: Focuses on how airports and their emergency management partners establish and sustain effective working relationships and methods of identifying problems and rebuilding damaged relationships.

The report is designed to provide airports and their emergency response allies' access to a full range of policies, programs, practices, and relationships for establishing and sustaining good working relationships.

Published: March 2014
Link: http://www.trb.org/ACRP/Blurbs/170368.aspx

ACRP Synthesis Report 51 – Impacts of Aging Travelers on Airports

Report Blurb: Describes the challenges of wayfinding, fatigue, technology and equipment, and needed amenities, as well as the practices that airports are enacting to accommodate and improve the airport experience of aging travelers. The report is designed to help users better understand the aging demographic, and define issues and implement effective practices to accommodate aging travelers at airports.

View the *Impacts on Practice – Airports and Aging Travelers* related to this report.

Published: March 2014
Link: http://www.trb.org/ACRP/Blurbs/170493.aspx

ACRP Synthesis Report 52 – Habitat Management to Deter Wildlife at Airports

Report Blurb: Presents information on habitat management to deter wildlife at airports and manage risk to aviation. It is the third of three related syntheses of airport practice reports and completes the series wildlife risk management at airports.

The report builds on previous ACRP documents, including *ACRP Synthesis 23: Bird Harassment, Repellent, and Deterrent Techniques for Use on and Near Airports*, *ACRP Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports*, and *ACRP Synthesis 39: Airport Wildlife Population Management*, which address bird deterrence and harassment techniques, various wildlife hazards, and control techniques, and population management methods, respectively.

Published: May 2014
Link: http://www.trb.org/ACRP/Blurbs/170766.aspx

ACRP Synthesis Report 53 – Outcomes of Green Initiatives: Large Airport Experience

Report Blurb: Explores the drivers and outcomes of green initiatives at airports and identifies data that can be used to evaluate the effectiveness of various initiatives.

Airports are embracing green initiatives to address compliance issues, reduce their environmental footprint, and help achieve the airports' long-term prosperity and success.

Published: May 2014
Link: http://www.trb.org/ACRP/Blurbs/170655.aspx

ACRP Synthesis Report 54 – Electric Vehicle Charging Stations at Airport Parking Facilities

Report Blurb: Designed as a primer on electric vehicle (EV) charging and includes information on policy approaches, infrastructure needs, and funding mechanisms that airports have used in EV hosting.

The report summarizes the state of the EV industry; highlights the motivations for airport sponsors to provide EV charging stations; identifies current EV charging technologies; and describes practices for installing EV charging stations at airports in terms of finances, planning, implementation, and operation of the charging stations.

Errata: On pages 9 and 10, Figures 3 and 4 were reversed. The online version of the report has been corrected.

Published: May 2014
Link: http://www.trb.org/ACRP/Blurbs/170689.aspx

ACRP Synthesis Report 55 – Backcountry Airstrip Preservation

Report Blurb: Catalogues the uses, benefits, and threats to backcountry airstrips and identifies practices and strategies to manage these threats.

Published: June 2014
Link: http://www.trb.org/ACRP/Blurbs/170879.aspx

ACRP Synthesis Report 56 – Understanding the Value of Social Media at Airports for Customer Engagement

Report Blurb: Compiles current literature and practice on how airport operators utilize social media to enhance customer engagement.

Published: July 2014
Link: http://www.trb.org/ACRP/Blurbs/170977.aspx

ACRP Synthesis Report 57 – Airport Response to Special Events

Report Blurb: Explores how airports to plan, manage, and recover from special events to help minimize the event's effects on an airport's regular operations.

The synthesis explores issues related to planning, organizing, and applying lessons learned, as well as addressing potential surprises and impacts on operations and customer services related to a variety of non-aeronautical events that occur both on and off an airport. The report offers six case examples designed to help demonstrate how airports of all sizes plan, manage, and recover from special events.

The report can serve as a companion document to *ACRP Synthesis 41: Conducting Aeronautical Special Events at Airports*, which focuses on aeronautical events such as air shows, airport open houses, aircraft static displays, and fly-ins.

Published: July 2014
Link: http://www.trb.org/ACRP/Blurbs/170872.aspx

ACRP Synthesis Report 58 – Safety Reporting Systems at Airports

Report Blurb: Describes safety reporting methods and systems for airports certificated under Title 14 Code of Federal Regulations Part 139 by assessing current practices, processes, and systems used to collect and analyze safety data and information.

Published: July 2014
Link: http://www.trb.org/ACRP/Blurbs/170978.aspx

ACRP Synthesis Report 59 – Integrating Airport Geographic Information System (GIS) Data with Public Agency GIS

Report Blurb: Identifies effective and emerging data exchange practices that airports and public agencies can use to increase the data they have access to while reducing the cost of identifying, collecting, and maintaining these data. It synthesizes the need expressed by airports and public agencies to exchange geographic information and related resources, highlighting effective practices and industry trends.

Published: September 2014
Link: http://www.trb.org/ACRP/Blurbs/171387.aspx

ACRP Synthesis Report 60 – Airport Emergency Post-Event Recovery Practices

Report Blurb: Explores approaches to improving the overall resiliency of airports through planning for the recovery phase of the emergency response.

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172539.aspx

ACRP Synthesis Report 61 – Practices in Preserving and Developing Public-Use Seaplane Bases

Report Blurb: Reviews current practices in developing and preserving public-use seaplane bases throughout the United States. The report reviews and presents information on the planning process, design considerations, permits, regulatory requirements, and facility and service needs of seaplane bases.

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172567.aspx

ACRP Synthesis Report 62 – Cell Phone Lots at Airports

Report Blurb: Reviews the information about airport cell phone lots to help airports determine if benefits of the lot outweigh any operating and maintenance costs and foregone revenues. A cell phone lot is typically a free parking lot at an airport that allows temporary parking until a traveler is available for pickup.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172784.aspx

ACRP Synthesis Report 63 – Overview of Airport Fueling Operations

Report Blurb: Explores airport fueling system operations at all sizes of airports. The report describes fueling standards and regulations, common operations and components, and serves as a reference for several fueling processes and procedures. On-airport fueling systems and components are the main focus of the report.

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172631.aspx

ACRP Synthesis Report 64 – Issues Related to Accommodating Animals Traveling Through Airports

Report Blurb: Explores ways for airports to develop a coordinated approach in animal transportation to better accommodate the well-being of animals traveling through airports. The report identifies pertinent regulations; explores issues and ranges of accommodation requirements and strategies to respond to issues; and illustrates effective airport practices to help accommodate animals traveling through airports.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172800.aspx

ACRP Synthesis Report 65 – Practices to Develop Effective Stakeholder Relationships at Smaller Airports

Report Blurb: Describes practices, tools, communication techniques, feedback loops, and case examples that highlight how leaders at smaller airports proactively manage stakeholder relationships.

Published: July 2015
Link: http://www.trb.org/ACRP/Blurbs/172885.aspx

ACRP Synthesis Report 66 – Lessons Learned from Airport Sustainability Plans

Report Blurb: Explores sustainability initiatives at smaller U.S. airports. The synthesis presents an analysis of survey responses and provides information gained from the telephone interviews to help inform airport leadership and employees who are considering, developing, or implementing sustainability plans.

Published: July 2015

Link: http://www.trb.org/ACRP/Blurbs/172887.aspx

ACRP Synthesis Report 67 – Airside Snow Removal Practices for Small Airports with Limited Budgets

Report Blurb: Covers challenges and successful strategies that airport operators use at small airports with significant budgets and other constraints to coordinate and conduct snow removal operations.

Published: July 2015
Link: http://www.trb.org/ACRP/Blurbs/172978.aspx

ACRP Synthesis Report 68 – Strategies for Maintaining Air Service

Report Blurb: Explores practices that smaller airports use to maintain air service.

Published: September 2015
Link: http://www.trb.org/ACRP/Blurbs/173208.aspx

ACRP Synthesis Report 69 – Airport Sustainability Practices—Drivers and Outcomes for Small Commercial and General Aviation Airports

Report Blurb: Explores drivers and outcomes of green initiatives undertaken at small commercial and general aviation airports. Drivers could include financial viability, staffing considerations, or other social or environmental factors.

Published: April 2016
Link: http://www.trb.org/ACRP/Blurbs/174223.aspx

ACRP Synthesis Report 70 – Building Information Modeling for Airports

Report Blurb: Summarizes the current state of the art and practice for Building Information Modeling (BIM). BIM is a digital representation of a facility's physical and functional characteristics. BIM offers tools that allow airport decision-makers to understand all components of a facility—their location, and their attributes, both graphically and systematically—to minimize the total cost of owning and operating an airport facility.

The report provides a snapshot of experiences related to the emergence of BIM in North American airports. In addition to the report, a presentation details use-cases of BIM at airports.

Published: May 2016
Link: http://www.trb.org/ACRP/Blurbs/174386.aspx

ACRP Synthesis Report 71 – Airport Safety Risk Management Panel Activities and Outcomes

Report Blurb: Compiles information and tools that help Part 139 airports conduct Safety Risk Assessments (SRAs) effectively. This report enhances *ACRP Research Report 131: A Guidebook for Safety Risk Management for Airports* with additional tools and templates, and presents the conclusions from the survey and interviews as well as the main findings from the literature review. Several tools and templates, including a Quick Reference Guide and a template for the SRA briefing, are provided in the appendices of this report.

Published: May 2016
Link: http://www.trb.org/ACRP/Blurbs/174359.aspx

ACRP Synthesis Report 72 – Tabletop and Full-Scale Emergency Exercises for General Aviation, Non-Hub, and Small Hub Airports

Report Blurb: Provides small airports with the tools and practices needed to practice emergency response. The report provides sample exercise tools and plans, a checklist of effective practices for tabletop and full-scale emergency exercises, and a road map for developing an effective exercise program.

Published: July 2016
Link: http://www.trb.org/ACRP/Blurbs/174692.aspx

ACRP Synthesis Report 73 – Emergency Communications Planning for Airports

Report Blurb: Explores emergency communications planning and is specifically designed for use by airport senior management, public information officers, and first responders and emergency managers. The report includes sample communication plan tables of contents, field operations guides, and a checklist of effective communications plans.

Published: July 2016
Link: http://www.trb.org/ACRP/Blurbs/174757.aspx

ACRP Synthesis Report 74 – Combining Mixed-Use Flight Operations Safely at Airports

Report Blurb: Documents practices in safely accommodating mixed-use aeronautical activity at airports. Mixed-use aeronautical activity refers to the different categories of aircraft a public-use airport is intended to accommodate in compliance with FAA sponsor assurances. These categories include gliders, helicopters, ultralight vehicles, balloons, airships, blimps, skydiving, aerial applications for agriculture and firefighting, banner towing, aerobatic practice, and similar flight operations. Also discussed are unmanned aircraft systems and radio-controlled model aircraft activity that takes place on an airport and can become part of the mix of an airport's operation. Not discussed are seaplane operations; *Synthesis 61: Practices in Preserving and Developing Public-Use Seaplane Bases* covers this topic.

Published: June 2016
Link: http://www.trb.org/ACRP/Blurbs/174589.aspx

ACRP Synthesis Report 75 – Airport Advisories at Non-Towered Airports

Report Blurb: Documents how non-towered airports provide advisories to pilots regarding winds, traffic, and runways in use. Unlike with pilot advisories, there is little guidance available for airport operators in providing airport advisories. The objective of this report is to aggregate available guidance on this topic and document information from non-towered airports with at least 50,000 annual aircraft operations. The report includes a literature review and a telephone interview survey of 165 non-towered airports. Six case examples are included, documenting effective airport advisory programs in place at airports.

Published: August 2016
Link: http://www.trb.org/ACRP/Blurbs/174840.aspx

ACRP Synthesis Report 76 – Helicopter Noise Information for Airports and Communities

Report Blurb: Examines the results of a literature review and survey of ten airports to summarize the impact of outreach, helicopter noise management programs, technology, and abatement procedures in managing helicopter noise. The report is geared to assist both airports and communities with addressing helicopter noise and a description of the current state of effective practices for noise management.

Published: August 2016
Link: http://www.trb.org/ACRP/Blurbs/174859.aspx

ACRP Synthesis Report 77 – Airport Sustainability Practices

Report Blurb: Compiles information about airport sustainability practices and adds them to the Sustainable Aviation Guidance Alliance SAGA website. The SAGA website was developed to assist airport operators in developing sustainability programs and provide guidance to those who have new data to input. The website contains entries on more than 900 sustainability practices that were developed by SAGA's initial stakeholder group. However, a large percentage of these entries do not contain actual practice data.

Published: September 2016
Link: http://www.trb.org/ACRP/Blurbs/174993.aspx

ACRP Synthesis Report 78 – Continuity of Operations Planning for Small Airports

Report Blurb: Compiles information about current continuity planning practices at airports of different types and sizes and determine how they can be effectively applied to smaller airports to maintain resilient operational and business capacity during a disruption, regardless of cause.

Business continuity planning is the process of developing a plan for operating essential operational and business functions in the face of a disruption caused by any type of emergencies, incidents, or events. This study addresses business continuity planning for both emergency and non-emergency disruptions. This report is a companion to *ACRP Report 93: Operational and Business Continuity Planning for Prolonged Airport Disruptions*.

Published: October 2016
Link: http://www.trb.org/ACRP/Blurbs/175144.aspx

ACRP Synthesis Report 79 – Funding Industrial Aviation

Report Blurb: Explores how airports fund the infrastructure to support industrial aviation development. For this report, industrial aviation development includes but is not limited to:

- Aircraft maintenance, repair, and overhaul (MRO)
- Specialized aviation services such as paint and interior completion (single service operators, SSOs)
- Aircraft manufacturing and assembly
- Aircraft fabrication and development
- Aviation warehousing
- Cold ports
- Spaceports

- Unmanned aerial systems (UAS) platform development

Separate from the publication, *Appendix B: Survey Results* is available as a PDF document.

Published: July 2017
Link: http://www.trb.org/ACRP/Blurbs/176327.aspx

ACRP Synthesis Report 80 – Estimating Truck Trip Generation for Airport Air Cargo Activity

Report Blurb: Compiles existing information about air cargo truck trip generation studies. The existing literature and research regarding air cargo facility-related truck trip generation rates are limited in its scope and detail. Also, the complexity of the modern air cargo industry makes it difficult to obtain the data necessary to develop truck trip generation rates. Access to such information could conceivably help a community plan and invest appropriately by accounting for air cargo's impacts. Similarly, air cargo operators and airport officials could employ such data to help ensure cargo facility truck access and egress remains reliable and safe.

Published: August 2017
Link: http://www.trb.org/ACRP/Blurbs/176358.aspx

ACRP Synthesis Report 81 – Food and Beverage and Retail Operators: The Costs of Doing Business at Airports

Report Blurb: Explores ways to comprehend the complex airport terminal operating environment to understand and forecast operating costs and to judge the potential for success and profitability. The synthesis compiles practices of airports to improve the communication of cost data to better evaluate and make decisions based on the total cost of doing business at airports.

Published: August 2017
Link: http://www.trb.org/ACRP/Blurbs/176393.aspx

ACRP Synthesis Report 82 – Uses of Social Media to Inform Operational Response and Recovery During an Airport Emergency

Report Blurb: Summarizes airport practices and tools used by airport emergency managers. Using social media for emergency management, airports glean information and intelligence from the stream of posts and messages passing through social media and then apply this information to enhance situational awareness and resource allocation decisions by emergency managers. Such uses raise the stakes for

timeliness of data extraction and validation of the results, especially if the information is going to be used for resource allocation and other decision making.

Published: August 2017
Link: http://www.trb.org/ACRP/Blurbs/176496.aspx

ACRP Synthesis Report 83 – Preparing Airports for Communicable Diseases on Arriving Flights

Report Blurb: Examines current disease preparedness and response practices at U.S. and Canadian airports in coordination with public health officers and partners. While larger airports that receive international flights are most likely to experience the challenges associated with these events, the preparedness and response lessons are transferable to the aviation sector more widely. Smaller airports may be final destinations of those traveling with communicable diseases, so report findings are useful to all airport operators and local public health officers.

Published: September 2017
Link: http://www.trb.org/ACRP/Blurbs/176419.aspx

ACRP Synthesis Report 84 – Transportation Network Companies: Challenges and Opportunities for Airport Operators

Report Blurb: Compiles experiences and effective practices by airports in facilitating customer access to Transportation Network Companies (TNCs) like Uber and Lyft. This synthesis also summarizes the number of revenue airports receives from TNCs and how TNCs are affecting airport operations and other businesses. As of December 2016, TNCs are permitted to operate at more than 90 U.S. airports.

Published: August 2017
Link: http://www.trb.org/ACRP/Blurbs/176493.aspx

ACRP Synthesis Report 85 – Alternative Fuels in Airport Fleets

Report Blurb: Designed to assist airport operators in analyzing complex procurement, operational, and environmental decisions when considering alternative fuels in airport fleets.

Airports own and contract fleets to transport passengers, staff, and goods by on- and off-road vehicles. Although most transportation fuels are consumed by aircraft, using alternative fuels in airport fleets is one opportunity airports have to control emissions and fuel costs and potentially reduce maintenance.

The report compiles information on eight alternative fuels, including biodiesel, renewable diesel, compressed natural gas, renewable natural gas, liquefied natural gas, liquefied petroleum gas, hydrogen, and electricity.
Ethanol and hybrid-electric vehicles (HEVs) are not included in this report because the driving experience and refueling operations associated with ethanol and HEVs are well understood and documented elsewhere.

Published: August 2017
Link: http://www.trb.org/ACRP/Blurbs/176442.aspx

ACRP Synthesis Report 86 – Airport Operator Options for Delivery of FBO Services

Report Blurb: Explores the local considerations that go into deciding how fixed-base operator (FBO) airports provide fueling, flight continuation services, maintenance, and concierge services. This synthesis also explores the tools that airports use to evaluate which options work best for airports. Broadly speaking, an airport sponsor can deliver FBO services with traditional third-party leases or by engaging a contract manager, or the airport can self-operate the FBO. Decisions about which model is the appropriate hinge on an evaluation of an airport's unique local economic conditions, the details about the area's general aviation market, and the level of interest private FBOs express about operating at a particular airport.

Published: February 2018
Link: http://www.trb.org/ACRP/Blurbs/177266.aspx

ACRP Synthesis Report 87 – Airport Participation in Oil and Gas Development

Report Blurb: Provides airports with practical considerations and responses involving oil and gas extraction. The report documents lessons learned as energy prices went from their highest levels (in the mid-2000s) to some of their lowest (in 2015 and 2016). It includes a compilation of federal, state, and local regulatory frameworks; available airport oil and gas leases; municipal permits and ordinances; and case examples from targeted interviews with eight airports. As the price of oil and gas has a long history of volatility, a view of the full price cycle has a particular utility to airports.

Published: April 2018
Link: http://www.trb.org/ACRP/Blurbs/177511.aspx

ACRP Synthesis Report 88 – Airport Community, Water Quality Events, and the Aircraft Drinking Water Rule

Report Blurb: Explores how airports, airlines, ground service providers, and ice and food caterers, as well as other food service establishments, can take

measures to ensure that their operations have safe drinking water. Receiving prompt and accurate information about a drinking water quality event allows airport management and tenants to address and mitigate potential adverse effects. Airlines have reported that it is often difficult for them to obtain information about a drinking water quality event and determine if it affects an airport they serve. This report will provide airport management with the ability to distribute essential information and minimize the time it takes for notification of an event to reach the airport's tenants.

Published: January 2018
Link: http://www.trb.org/ACRP/Blurbs/177057.aspx

ACRP Synthesis Report 89 – Clean Vehicles, Fuels, and Practices for Airport Private Ground Transportation Providers

Report Blurb: Documents effective approaches and reviews best practices employed by airports to encourage different types of private ground transportation providers to run more environmentally friendly operations. The report summarizes the experiences of public-use airports with developing and implementing clean vehicle policies involving private ground transportation operators serving the airports.

Download the report appendices online:

- Appendix A: Survey Questionnaires
- Appendix B: List of Survey Respondents
- Appendix C: Survey Response Summaries
- Appendix D: Airport Resources
- Appendix E: Airports' Ground Transportation Mode Split
- Appendix F: Fleet and Ownership Model of Ground Transportation (GT) Providers
- Appendix G: Alternative Fuel Vehicles' Emission Comparison

Published: July 2018
Link: http://www.trb.org/ACRP/Blurbs/177868.aspx

ACRP Synthesis Report 90 – Incorporating ADA and Functional Needs in Emergency Exercises

Report Blurb: Explores how airports include persons with disabilities and others with access or functional needs (DAFN) into emergency exercises. Because not all functional needs are visually or readily apparent, airports find that including these community members in DAFN on emergency exercises improves the safety of passengers, airport visitors, and employees at airports. The report describes effective practices and provides additional resources and tools in the following report appendices:

- Appendix A-Script for Interviews
- Appendix B-Participants

- Appendix C-DAFN-Inclusive Exercise Scenario from MSP
- Appendix D-Sample DAFN-Inclusive Training Materials from LAX
- Appendix E-ADA-Inclusive Exercise Worksheet from JAX
- Appendix F-List of Resource Groups to Involve in DAFN-Inclusive Emergency Planning and Exercises
- Appendix G-Checklist for Integrating the DAFN Community in Emergency Exercises

Published: July 2018
Link: http://www.trb.org/ACRP/Blurbs/177917.aspx

ACRP/TCRP Synthesis Report 91 & 137 – Microgrids and Their Application for Airports and Public Transit

Report Blurb: ACRP and Transit Cooperative Research Program (TCRP) have released a joint report, how public transit agencies can implement to increase the resilience of their critical infrastructure. A microgrid is described as a collection of loads, on-site energy sources, local energy storage systems, and an overarching control system. Developments in control technologies have seen advanced microgrid controllers expand microgrid functionality to create new value streams and revenue opportunities, increasing microgrid viability to many more sectors. This synthesis describes the benefits, challenges, costs, revenue streams, and ownership structures relevant to airports and public transit entities.

Published: August 2018
Link: http://www.trb.org/ACRP/Blurbs/177928.aspx

ACRP Synthesis Report 92 – Airport Waste Management and Recycling Practices

Report Blurb: Focuses on airport waste management and recycling practices that reduce impacts and costs to airports and their surrounding communities. The information in this study was acquired through a literature review, survey results from 35 organizations representing 36 airports from a range of geographic locations and airport classifications, and interviews of a subset of 21 airport waste management experts. The results of the literature review and survey are presented in this short report. *Supporting Materials, Case Examples, and Toolkits for ACRP Synthesis 92* includes survey results, case examples representing in-depth interviews on specific airport waste management and recycling practices, and toolkits of existing effective practices to assist airports in implementing their waste management and recycling programs.

Published: September 2018
Link: http://www.trb.org/ACRP/Blurbs/177866.aspx

ACRP Synthesis Report 93 – Sustainability's Role in Enhancing Airport Capacity

Report Blurb: Focuses on information and examples that successfully demonstrate the value of building sustainability concepts into capacity-enhancing projects. The report describes additional resources and tools that provide guidance on how to select, apply, and communicate sustainability measures. The report explores how sustainability efforts often build on themselves; how lessons learned from one initiative are carried through to the next; and how this progressive learning process can enhance sustainability's role in capacity-enhancing projects over time.

Published: September 2018
Link: https://www.trb.org/Main/Blurbs/177706.aspx

ACRP Synthesis Report 94 – Attracting Investment at General Aviation Airports Through Public-Private Partnerships

Report Blurb: Although general aviation airports have historically been funded by federal, state, and local entities, the private sector is increasingly playing a larger role. This involvement has ranged on a continuum from service and management contracts to singular projects at airports that involve leasing mechanisms to long-term leases and the whole-scale private development of general aviation airports.

In an era of declining resources and increasingly scrutinized public expenditures, private-sector involvement is and will likely need to continue to play a larger role to fill an ongoing and increasing gap between the existing infrastructure and the infrastructure that is needed.

This report explores public-private partnerships (PPPs) at general aviation airports in the United States over the past five years.

For the synthesis, these PPPs are defined by the World Bank as long-term contracts between a private party and a government entity for providing a public asset or service, in which the private party bears significant risk and management responsibility, and remuneration is linked to performance.

Published: September 2019
Link: http://www.trb.org/ACRP/Blurbs/179539.aspx

ACRP Synthesis Report 95 – Airport Incident Reporting Practices

Report Blurb: Focuses on current practices for defining, collecting, aggregating, protecting, and reporting airport organizational incident information.

The report is designed to assist those airport operators seeking to understand the nature of airport incident reporting and its importance for organizational learning and effectiveness, risk management, operational safety, and worker safety.An incident reporting system can be utilized to flag or provide potential early warning of drifts in actions toward a stated goal or an adverse event or loss.When discussing incident reporting, reference is made to safety, hazards, indicators, performance, enterprise risk management, culture, climate, and other related terms. However, there does not exist universal agreement as to what constitutes an incident. For this reason, the report takes a broad approach to incident reporting in organizations. It views incident reporting as a means to improve airport organizations through the analysis of data. With data, better-informed and higher quality decision-making can be exercised.

Published: May 2019
Link: http://www.trb.org/ACRP/Blurbs/179098.aspx

ACRP Synthesis Report 96 – Practices to Mitigate Alkali-Silica Reaction (ASR) Affected Pavements at Airports

Report Blurb: Focuses on current practices for mitigating ASR in affected pavements at airports. Given the substantial initial investment required for pavement, airports are interested in using mitigations to slow the effects of ASR and prolong the life of airfield concrete pavements.

This synthesis identifies the current state of the practice regarding the mitigation measures used on existing ASR-affected airport pavements that service aircraft and summarize the experiences and practices of airports in dealing with the distress (including conventional treatments, but also any new or emerging technologies).

Published: August 2019
Link: http://www.trb.org/ACRP/Blurbs/179514.aspx

ACRP Synthesis Report 97 – How Airports Plan for Changing Aircraft Capacity: The Effects of Upgauging

Report Blurb: Focuses on is an airline industry technique enabling air carriers to increase capacity by adding seats to existing jets and replacing smaller planes with larger ones. While these practices are generally the result of airline network and system-wide strategies, their impacts are often experienced at the local level by the airport community.

Airport Cooperative Research Program (ACRP) Synthesis 97: How Airports Plan for Changing Aircraft Capacity: The Effects of Upgauging explores a broad concept of airline upgauging taking into account the principal drivers and techniques of upgauging, from both airline and airport perspectives.

This study is based on information acquired through a literature review, survey results from 18

airports participating in the study that experienced major variations in passenger enplanements over the previous 5 to 10 years, and interviews with representatives of five airports and four state transportation agencies.

The following appendices to the report are available online:
Appendix A: Survey Questionnaire
Appendix B: Responses from Survey Respondents
Appendix C: Follow-up Airport Interview Guides
Appendix D: State DOT/Bureau of Aeronautics Offices Interview Guide
Appendix E: Phoenix-Mesa Gateway Airport Authority—Air Service Incentive Program (Sample)

Published: August 2019
Link: https://www.trb.org/Publications/Blurbs/179536.aspx

ACRP Synthesis Report 98 – Simulation Options for Airport Planning

Report Blurb: Global business and tourism depend heavily on the efficient operation of airports and the movement of passengers, baggage, and cargo across many areas. With increasing demand and connectivity requirements for airports comes the need for more sophisticated simulation and modeling tools to validate design assumptions.

Furthermore, airport design and planning decisions have significant impacts on policy and major capital improvement decisions, which can be supported by simulation and modeling tools at many levels.

The report is the result of the collection and analysis of information on current industry practices and applications of simulation tools for airport planning and design. Credible simulation projects can help airport administrators, designers, engineers, and planners estimate the impact of planned changes on passenger traffic, aircraft traffic, roadway traffic, baggage movements, and other subsystems such as bus and train links and aircraft ground support operations.

The toolsets and processes used to analyze and simulate airport operations have changed significantly since the 1980s when analysis techniques were limited to general-purpose queuing and network analysis concepts or purpose-built simulation tools. These tools have become much more sophisticated and accurate in emulating real-world aircraft, passenger, and vehicle dynamics.

Published: September 2019
Link: http://www.trb.org/ACRP/Blurbs/179621.aspx

ACRP Synthesis Report 99 – Emergency Working Groups at Airports

Report Blurb: Airports—especially in the past two decades—have generally sought to promote and increase collaboration among the members of the airport community, particularly between an airport and its airlines. One metric of this trend has been the increase in the number of U.S. airports with full-time emergency managers, from fewer than 10 in 2007 to more than 120 today. Collaboration and increased professionalism in airport emergency management have gone hand in hand.

No matter whether the incident is aircraft-related or an incident in the terminal—such as an active shooter, a bomb threat, or other hazards—the goals of airports, airlines, and others in the airport community are to achieve safety, security, compassion, customer service, regulatory compliance, and reputation. Achieving these goals can contribute to resiliency and the protection of critical infrastructure and key resources.

Although air travel is one of the safest modes of travel, and airports are among the safest public spaces in the United States, air-travel incidents do occur. The report documents these working groups and how they assist victims and their families and friends in the weeks following an incident.

Published: September 2019
Link: http://www.trb.org/ACRP/Blurbs/179619.aspx

ACRP Synthesis Report 100 – Airport Greenhouse Gas Reduction Efforts

Report Blurb: Airports in the United States are responding to the demand for increased air travel with sustainable development that incorporates more energy-efficient and lower-emission technologies. Funding for greenhouse gas (GHG) emissions-reducing technologies, such as electrification, alternative fuels, and renewable energy, has also become more accessible as technologies are proven to be safe, reliable, and cost-effective.

Newer strategies and programs to reduce GHG emissions reach beyond airport operations to incorporate the traveling public. These are among the findings in this ACRP Synthesis report, which assesses (1) the state of practice of GHG emissions reduction initiatives at airports, and (2) the lessons learned to support the successful implementation of future GHG reduction projects.

The report also finds that large airports are taking the lead in moving beyond reduction strategies for their emissions and tackling those produced by tenants and the traveling public by supporting the use of alternative fuels and directing passengers to airport carbon offset platforms.

Airports regard energy-efficiency measures to be the most effective practice for reducing GHG emissions. Smaller airports, in particular, are adopting new technologies associated with more efficient heating and cooling infrastructure and lighting systems because they decrease energy consumption and make economic sense. GHG reduction projects are being implemented by different types of airports across the industry because of the cost savings and the environmental benefits of the new technology.

Airports are actively benchmarking emission-reduction progress in comparison with similar efforts at airports around the world by using frameworks employed by the industry globally, such as the Airport Carbon Accreditation Program and the airport carbon emissions reporting tool (ACERT), to measure their GHG emissions.

Innovative approaches are allowing airports to address rapidly changing consumer behaviors, like those presented in recent years by transportation network companies (TNCs) such as Uber and Lyft. These policy-based solutions offer the potential for wider adoption as they enable airports to act without significant capital expenditures.

Published: October 2019
Link: http://www.trb.org/ACRP/Blurbs/179808.aspx

ACRP Synthesis Report 101 – Communication Strategies for Airport Passenger Access and Mobility

Report Blurb: Access to relevant, precise, and timely information is crucial for a pleasant experience in air travel. Travelers with cognitive and sensory disabilities, aging travelers, and travelers with limited English proficiency need alternative approaches to those provided for general travelers for accessing and communicating air travel information.

The report details how airports and airlines are leading the way in developing new and creative services to provide information and thus enhance passenger access and mobility.

Among the report's findings are the following. Airports' current efforts to improve passenger access and mobility follow three key trends: commitment to seamless customer experience, development of a sense of place at airports, and improvement of efficiency and personalized service using technology such as biometrics, robotics, and artificial intelligence.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179954.aspx

ACRP Synthesis Report 102 – Value, Benefits, and Limitations of Qualifications-Based Selection for Airport Project Delivery

Report Blurb: About $1.5 trillion will be spent globally on airport infrastructure by 2030, according to the International Air Transport Association. Most of that enormous amount of money will be spent on projects that must be constructed without disrupting airport operations.

Given the focus on schedule and on the cost of failing to complete the construction during the periods of planned outages, the need for a highly qualified construction contractor with a proven record of timely and quality product is key to the success of airport projects across the globe.

The report aims to benchmark the state of the practice for the use of qualifications-based selection (QBS) to award construction projects.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179955.aspx

ACRP Synthesis Report 103 – Promoting Aviation Career Education in High Schools and Community Colleges

Report Blurb: More airport operations/management academic programs at both the high school and community college levels would help the airport industry. With baby boomers currently reaching retirement age at the rate of 10,000 each day, and later generations much smaller, new employees are not entering the workforce swiftly enough to replace those leaving because of retirement, illness, and other complicating factors.

As a result, the aviation industry, like others, is experiencing a significant labor shortage. With no end in sight, the industry has joined forces in many unique partnerships to not only enhance the quality of current aviation graduates, but also stimulate interest in aviation careers among college students, high school students, and even middle school and elementary school students.

The report points out the many characteristics of high school and community college aviation programs throughout the country, which could prove useful to airport management. By better understanding the academic programs producing the next generation of aviation professionals, airports can develop proactive efforts to promote the airport profession to aviation programs in their local area and influence young people to seriously consider airports as a viable career path, thus positively affecting the future of the airport industry.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179963.aspx

ACRP Synthesis Report 104 – Current Landscape of Unmanned Aircraft Systems at Airports

Report Blurb: The unmanned aircraft systems (UAS) industry is on the cutting edge of aviation innovation. Airports, including tenants and contractors, are discovering the benefits of UAS to their operations and bottom line. Yet, with the diversity of UAS applications at airports, there has been a lack of relevant industry data on this topic to inform the airport industry on current practices.

The report seeks to understand the degree of UAS use, including specific applications, by three groups: airports, airport contractors, and airport tenants.

Using responses from 130 airports, one of the report's findings is that approximately 9% of participating airports are actively using UAS for airport purposes.

Published: December 2019
Link: http://www.trb.org/ACRP/Blurbs/180032.aspx

ACRP Synthesis Report 105 – Airport Surface Weather Observation Options for General Aviation Airports

Report Blurb: The needs of airports may vary depending on the types of operations typically conducted at the airport, as well as the type of weather common to the airport.

The report aims to provide the operators of general aviation (GA) airports a comprehensive source of information about airport-based weather observation options so they may make informed decisions to support the specific operational needs of their airport.

Weather observations at airports can come from either FAA-approved (certified) or advisory (non-certified) sources. Weather reporting at a GA airport, whether certified or not, typically comes from automated sources, as human observers are increasingly being phased out or are stationed mainly at commercial service airports.

Published: December 2019
Link: http://www.trb.org/Main/Blurbs/180061.aspx

ACRP Synthesis Report 106 – Airport Risk Identification and Prioritization Practices

Report Blurb: Airports are using tools that help them identify risks within their environment. Most airports are providing a means to report risk. Smaller airports use low-cost options such as email, a 24/7 phone number, or a suggestion box. Larger airports have embraced safety management or enterprise risk management programs that include more expensive reporting and tracking systems.

The report provides information about the existing tools that airports use for identifying common hazards and the processes used for measuring, monitoring, and prioritizing the associated risks.

Published: February 2020
Link: http://www.trb.org/ACRP/Blurbs/180252.aspx

ACRP Synthesis Report 107 – Models for Law Enforcement at Airports

Report Blurb: Each airport and its law enforcement model have a unique set of relationships, operations, and resources.

The report provides a concise body of knowledge to assist airport management, operators, researchers, and users by detailing the varying types of law enforcement models available to them.

The types of airport law enforcement models include airport police, city police, county sheriffs, departments of public safety, and state police. Many airports operate by using layers of law enforcement responses composed of more than one law enforcement model.

Published: August 2020
Link: http://www.trb.org/ACRP/Blurbs/181062.aspx

ACRP Synthesis Report 108 – Characteristics of the FBO Industry 2018-2019

Report Blurb: The fixed-base operator (FBO) industry provides aeronautical services to a wide spectrum of aircraft operators at airports. The term FBO is defined by the FAA as "a business granted the right by the airport sponsor to operate on an airport and provide aeronautical services . . ." The most basic FBO offers its customers self-service fueling, as well as a set of core services such as the use of hangars, ground services, and, sometimes, aircraft maintenance.

The report profiles the FBO industry as of December 2018. This analysis of data provides a quantitative snapshot of the FBO industry intended to serve as a reliable baseline of information for tracking FBO trends in the future.

Published: June 2020
Link: http://www.trb.org/ACRP/Blurbs/180833.aspx

ACRP Synthesis Report 109 – Escalator Falls

Report Blurb: Escalator falls are a significant concern for risk management staff at airports and in mass transit systems. The major differences between the airport and transit environments are the amount of baggage carried onto the escalator and the level of unfamiliarity of people with the escalator environment in airports.

The report describes methods to mitigate risks associated with escalator usage.

Risk management professionals from both the airport and transit environments have expressed interest in developing common reporting schemes and more robust data analysis to identify common causes of escalator falls.

Published: August 2020
Link: http://www.trb.org/ACRP/Blurbs/181096.aspx

ACRP Synthesis Report 110 – Airport Renewable Energy Projects Inventory and Case Examples

Report Blurb: Airports have implemented a variety of renewable energy technologies since 1999—with the largest growth occurring over the past decade—in parallel with the evolution and maturation of renewable energy markets. Of the renewable energy options available to airports today, the prevailing technology is solar photovoltaic (PV), which accounts for 72% of all projects cataloged in the Renewable Energy Projects Inventory.

This report draws on existing literature and data to present the state of practice for airport renewable energy. It presents the integration of renewable energy projects—including solar PV, geothermal, bioenergy, solar thermal, and small wind projects—into airport development and operations and the drivers behind those efforts.

The Renewable Energy Projects Inventory in the report is also available online as a searchable database.

Published: September 2020
Link: http://www.trb.org/ACRP/Blurbs/181255.aspx

ACRP Synthesis Report 111 – Last Mile in General Aviation—Courtesy Vehicles and Other Forms of Ground Transportation

Report Blurb: Providing connectivity to the local community or region served by a general aviation airport is essential for providing a complete service to airport users and capturing economic benefit whether large or small.

This report compiles options, practices, and tools for airports to use to develop a sustainable last-mile strategy to connect users of general aviation airports to the communities that they serve.

Published: November 2020
Link: http://www.trb.org/Main/Blurbs/181448.aspx

ACRP Synthesis Report 112 – Airport Operations Training at Small Airports

Report Blurb: Managers of airports of all sizes face a perennial dilemma: how to efficiently train operations personnel to meet Title 14 Code of Federal Regulations Part 139 requirements and ensure a safe and secure airport environment.

This report focuses on airport operations employees and aims to better understand current training methods and programs in use by small airports in the United States (including nonhub, nonprimary commercial service, reliever, and general aviation) to initially and recurrently train

airport operations employees.

Supplemental material to the report includes several appendices, including Appendix H, Appendix I, Appendix J, Appendix K, and Appendix L.

Published: October 2020
Link: http://www.trb.org/ACRP/Blurbs/181307.aspx

ACRP Synthesis Report 113 – Airport Workforce Programs Supporting Employee Well-Being

Report Blurb: Airport employees face a variety of stressors in their daily work lives, and there are numerous and varied approaches that airports are currently taking to focus on employee well-being.

This report details the most commonly used well-being program offerings at airports.

Benefits of these programs to airports include reduced health care costs, improved productivity, decreased absenteeism, improved employee recruitment and retention, and camaraderie and teamwork among employees. By participating in well-being programs, employees can also experience personal benefits, such as improved physical health, increased job satisfaction, and other emotional benefits.

Published: August 2020
Link: http://www.trb.org/ACRP/Blurbs/181166.aspx

ACRP Synthesis Report 114 – Visual Arts Programs at Airports

Report Blurb: Every airport that aspires to high ratings must offer an engaging arts program because these are offered by all of the world's most highly rated airports. It is also now generally accepted that airport arts programs yield many additional benefits for airports, passengers, and the communities in which airports are located. Airport arts programs have become an amenity that airport passengers now expect, and they serve to tether an airport to its local community.

The TRB Airport Cooperative Research Program's *ACRP Synthesis 114: Visual Arts Programs at Airports* is an initial compilation of practices that airport arts professionals use for understanding the operations, management, and benefits of temporary visual arts programs at their airports.

Supplemental materials to the report include arts program case examples, arts program passenger surveys, and questions used for arts program manager interviews.

Published: November 2020
Link: http://www.trb.org/ACRP/Blurbs/181488.aspx

ACRP Synthesis Report 115 – Practices in Airport Emergency Plans

Report Blurb: An airport emergency plan (AEP) is meant to support airports in defining roles and responsibilities of stakeholders during emergencies, identifying specific threats that could affect airports, and establishing for parallelism communication protocols for the airport community.

This report gathers relevant data specific to AEP practices that can effectively be applied to other airports, including general aviation airports, whether required to maintain an AEP or not.

Published: February 2021
Link: http://www.trb.org/ACRP/Blurbs/181633.aspx

ACRP Synthesis Report 116 – Examples of Facility Space Provided for Community Use at Airports

Report Blurb: Airports make facilities available for non-commercial purposes, such as for community use by community or nonprofit groups.

This report provides the first body of literature to focus on the use of facilities that airports may provide in order to support local economic and social sustainability.

Published: March 2022
Link: http://www.trb.org/ACRP/Blurbs/181633.aspx

ACRP Synthesis Report 117 – Agricultural Operations on Airport Grounds

Report Blurb: The increasing need to use airport land for non-aeronautical revenue and decrease operating expenses may generate consideration of on-airport farming operations and agricultural leasing.

This report on Airport Grounds compiles literature and practices at airports to initiate and manage agricultural operations on airport grounds.

Published: March 2022

Link: http://www.trb.org/ACRP/Blurbs/181633.aspx

ACRP Synthesis Report 118 – Airport Parking Pricing Strategies

Report Blurb: Parking is important for airports. More than 70 percent of airline passengers and visitors at most airports use private vehicles to access the airport, and public parking is an important contributor to an airport's finances and revenues, frequently representing the largest source of non-aeronautical revenues at most airports.

This report provides information airport staff and others require to select and to implement a rate-making strategy that serves the airport's needs.

Published: July 2022

Link: https://www.trb.org/Main/Blurbs/182793.aspx

ACRP Synthesis Report 119 – Considerations for Establishing and Maintaining Successful Pollinator Programs on Airports

Report Blurb: Global reports of bee declines have fueled efforts to reduce threats to pollinators and raise public awareness of bees as pollinators of our food crops and native plants. Some airports have implemented pollinator-friendly practices and programs that restore habitat for bees and bring public awareness and appreciation to these fascinating insects.

This report summarizes experiences and best management practices of pollinator-friendly programs at airports, particularly beekeeping programs and pollinator habitat management programs

Published: August 2022

Link: https://www.trb.org/Main/Blurbs/182794.aspx

ACRP Synthesis Report 120 Airport Software Solutions and Services Sourcing

Report Blurb: The technology procurement process includes sourcing and acquiring software, hardware, and services. Systems and nuances of technology procurement vary within each airport, and navigating such variances at a pace that meets the airports' needs and technology evolution can be challenging.

This report summarizes identifies the efficient and innovative technology sourcing and procurement practices developed by airports.

Published: September 2022

Link: https://www.trb.org/Main/Blurbs/182795.aspx

ACRP Synthesis Report 121: Managing a Flight Diversion with an Emergency Repsonse at Small, Non-Hub, or General Aviation Airports

Report Blurb: This report compiles practices that small, non-hub, and general aviation airports use when planning for and responding to flight diversions that involve an incident or an emergency.

Published: February 2023

Link: https://www.trb.org/Main/Blurbs/182934.aspx

ACRP Synthesis Report 122: Airfield Apron and Ramp Surface Markings

Report Blurb: In the absence of comprehensive guidelines related to standards for surface apron and ramp markings, airports have worked with their specific stakeholder groups (such as airlines and ground crews) to develop unique apron and ramp marking practices that meet their operational needs. Consequently, variations are seen in apron and ramp markings at airports across the United States.

This report documents airport apron and ramp marking variations at U.S. airports.

Published: March 2023

Link: http://www.trb.org/Main/Blurbs/182933.aspx

ACRP Synthesis Report 123: State Aviation Funding: Project Prioritization and Selection Processes

Report Blurb: Most state agencies have a formal process in place to distribute aviation funds. Each process varies greatly from state to state.

This report documents the various state aviation agency project prioritizations, selections, and justifications for funding aviation under state grant programs.

Published: March 2023

Link: http://www.trb.org/Main/Blurbs/182936.aspx

ACRP Synthesis Report 124: Automated Pavement Condition Survey Practices at Airports

Report Blurb: Pavement condition data are a critical component of pavement management programs. The accuracy and validity of pavement condition data are the basis for many activities conducted by airports and local agencies.

This report documents airport practices, challenges, and lessons learned in conducting automated pavement condition surveys, which are not always common practices at airports.

Published: August 2023

Link: https://www.trb.org/Main/Blurbs/183071.aspx

ACRP Synthesis Report 125: Communication, Implementation, and Outcomes of Airport Economic Impact Studies

Report Blurb: Airport economic impact studies are used as an indicator of the growth and sustainability of the aviation industry. The collected data demonstrate the importance of an airport and the economic growth of regional, statewide, and national airports. It can be difficult to effectively leverage an airport's economic impact study by demonstrating how the airport contributes to economic growth.

This report provides information on how airport economic impact studies have been communicated to stakeholders, how the studies have been implemented to achieve objectives, and what the resulting effects were to the agencies and airports included in the studies.

Published: August 2023

Link: https://www.trb.org/Main/Blurbs/183071.aspx

ACRP Synthesis Report 126: Impacts of COVID-19 on Airport Work Models and Strategies

Report Blurb: Due to the COVID-19 pandemic, airport operators had to develop strategies that maintained operations while ensuring employee safety and public health. Though not all airport-related tasks can be performed from remote worksites, many airports identified tasks that could be performed remotely.

This report provides information on those airports that experimented in remote work, provides options for airports that did not participate in remote work, and identifies emerging trends.

Published: September 2023

Link: https://www.trb.org/Main/Blurbs/183071.aspx

ACRP Synthesis Report 127: Airport Programs That Reduce Landside Vehicle Carbon Emissions

Report Blurb: Emissions from surface traffic can be a substantial portion of carbon emissions at an airport.

This report provides information on the use of airport programs or initiatives that reduce carbon emissions from vehicles accessing the airport.

Published: September 2023

Link: https://www.trb.org/Main/Blurbs/183071.aspx

ACRP Synthesis Report 128: Airfield Turf and Vegetation Management Practices

Report Blurb: Turf and vegetation management practices differ at airports because of each airport's unique terrain, geography, and vegetation. Although there is some guidance from the Federal Aviation Administration on airside applications for artificial turf, information on the means, methods, techniques, and practices airports use to manage airfield turf and vegetation is sparse.

This report documents airfield practices for turf and vegetation management given the various constraints of staffing, equipment, safety, funding, climate, and regulations.

Published: September 2023

Link: https://www.trb.org/Main/Blurbs/183071.aspx

ACRP Synthesis Report 129: Landscape of the FBO Industry in 2022

Report Blurb: In 2020, *ACRP Synthesis 108: Characteristics of the FBO Industry 2018–2019* described the characteristics of the fixed-base operator (FBO) industry using data collected in 2018 and 2019. The objective of this synthesis was to follow up *ACRP Synthesis 108* by examining selected recent and current trends in the aviation industry and their impacts at FBOs.

This report investigates how general aviation fared during the COVID-19 pandemic and how FBOs, as the principal service agents for the industry, met pandemic challenges and addressed changes that predated COVID-19.

Published: October 2023

Link: https://www.trb.org/Main/Blurbs/183071.aspx

ACRP Synthesis Report 131: State of Airport Loyalty Programs

Report Blurb: In the early 1980s, airlines created loyalty programs to encourage passenger loyalty. Within the last decade, European airports followed suit, building their own loyalty programs by collaborating with airport vendors, such as restaurants, duty-free shops, and parking facilities, to provide value-added service to travelers. Airports in the United States have slowly started to embrace the trend by creating their own airport loyalty programs or collaborating with third-party loyalty program providers.

This report provides a comprehensive overview of the status of U.S. airport loyalty programs.

Published: October 2023

Link: https://www.trb.org/Main/Blurbs/183071.aspx

ACRP Synthesis Report 133: Identifying Military Resources and Strategies to Improve Civilian Airport Resiliency

Report Blurb: The U.S. military has established resilience practices for domestic installations, and a number of different military organizations, such as the Air National Guard, are co-located at civilian airports. This situation provides opportunities for airports to learn from military resilience practices.

This report documents resiliency practices and processes from the National Guard and other military services that airports can adapt and leverage for their own facilities and in partnerships with co-located military facilities.

Published: January 2024

Link: https://www.trb.org/Main/Blurbs/183071.aspx

Section 3: Legal Research Digests (LRDs)

ACRP Legal Research Digest 1 – Compilation of Airport Law Resources

Report Blurb: Identifies federal resources for conducting research on airport law topics and monitoring development within the area of airport law. The report also includes an index of airport law topics and federal sources of airport law information.

Published: February 2008
Link: http://www.trb.org/ACRP/Blurbs/156797.aspx

ACRP Legal Research Digest 2 – Theory and Law of Airport Revenue Diversion

Report Blurb: Explores the issue of airport revenue diversion, what prompted Congress to address it, how it has manifested itself, and how the prohibition against revenue diversion has been enforced.

Published: June 2008
Link: http://www.trb.org/Main/Blurbs/159962.aspx

ACRP Legal Research Digest 3 – Survey of Laws and Regulations of Airport Commercial Ground Transportation

Report Blurb: Explores guidance, including regulations, statutes, policies, and decisions about commercial ground transportation at U.S. airports. The report defines ground transportation as including public transit, door-to-door shuttle van service, charter buses, limousines, rental cars, taxicabs, hotel courtesy shuttles, wheelchair services, and courier operators.

Published: July 2008
Link: http://www.trb.org/ACRP/Blurbs/160035.aspx

ACRP Legal Research Digest 4 – Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 31, 2007

Report Blurb: Compilation of U.S. Department of Transportation (DOT) and U.S. Federal Aviation Administration (FAA) airport legal determinations and opinion letters through December 31, 2007.

In September 2013, TRB released an *ACRP Legal Research Digest 21: Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 2012*, which updated and superseded the report.

In March 2012, TRB released *Legal Research Digest 13: An Index and Digest of Decisions: Compilation of Airport Law Resources*, which complements *Legal Research Digest 12: Fair Disclosure and Airport Impact Statements in Real Estate Transfers*.

Published: November 2008
Link: http://www.trb.org/ACRP/Blurbs/160431.aspx

ACRP Legal Research Digest 5 – Responsibility for Implementation and Enforcement of Airport Land-Use Zoning Restrictions

Report Blurb: Explores federal, state, regional, and local laws and regulations of aviation land use and zoning and identifies the primary responsibilities of

each relevant legal body and how this responsibility is communicated and enforced.

Published: April 2009
Link: http://www.trb.org/Main/Blurbs/160863.aspx

ACRP Legal Research Digest 6 – The Impact of Airline Bankruptcies on Airports

Report Blurb: Examines legal issues presented by the filing of airline bankruptcies that are relevant to airports, and explores how airport lawyers and courts have responded to those issues. The report highlights the basics of bankruptcy theory and law relevant to airport operating agreements with airlines and identifies issues such as lease re-characterization and payment of stub period rent that particularly affect airports dealing with airlines in bankruptcy.

Published: June 2009
Link: http://www.trb.org/ACRP/Blurbs/161948.aspx

ACRP Legal Research Digest 7 – Airport Governance and Ownership

Report Blurb: Addresses the issue of essential powers to operate an airport; defines what airport governance includes; describes the advantages and disadvantages of the various governance structures; identifies and analyzes several projects where airports were transferred from one form of governance to another; and examines legal problems encountered during these transfers.

Published: September 2009
Link: http://www.trb.org/ACRP/Blurbs/162331.aspx

ACRP Legal Research Digest 8 – The Right to Self-Fuel

Report Blurb: Explores the meaning of and constraints involved with self-fueling at airports.

Published: December 2009
Link: http://www.trb.org/ACRP/Blurbs/162665.aspx

ACRP Legal Research Digest 9 – Case Studies on Community Challenges to Airport Development

Report Blurb: Explores judicial decisions related to challenges to airport expansion and development. The report examines the basis, defense strategies, and outcomes of cases, as well as the results of a survey of airports regarding litigation strategies.

Published: June 2010
Link: http://www.trb.org/ACRP/Blurbs/163599.aspx

ACRP Legal Research Digest 10 – Analysis of Federal Laws, Regulations, and Case Law Regarding Airport Proprietary Rights

Report Blurb: Analysis of Federal Laws, Regulations, and Case Law Regarding Airport Proprietary Rights explores airport proprietary rights, including regulation of noise, other environmental matters, safety restrictions, leasing practices, congestion management, and other airport access limitations. The report examines relevant statutes, regulations, and case decisions determining the scope of airport proprietary rights—the rights within the owner's purview and those which have been determined to exceed the owner's authority.

Published: October 2010
Link: http://www.trb.org/ACRP/Blurbs/164180.aspx

ACRP Legal Research Digest 11 – Survey of Minimum Standards: Commercial Aeronautical Activities at Airports

Report Blurb: Explores source material for adopting and enforcing minimum standards that airport owners and operators commonly impose on businesses that perform commercial aeronautical activities that occur at airports.

Examples of aeronautical activities include aircraft fueling, line (ground handling) services, maintenance and repair, storage, rental and flight training/instruction, sales, and charter and management. The report also explores current practices in the area of minimum standards and includes a compendium of comparative minimum standards.

Published: March 2011
Link: http://www.trb.org/ACRP/Blurbs/165017.aspx

ACRP Legal Research Digest 12 – Fair Disclosure and Airport Impact Statements in Real Estate Transfers

Report Blurb: Examines the effect of a state or locality having no real property disclosure laws, explores existing general state real property disclosure laws, and discusses existing state real property disclosure laws specifically requiring the disclosure of airports near the property being offered for sale.

The report also highlights annotated typical fair real property disclosure law provisions including provisions considered important for effective fair disclosure of airport-related impacts.

Published: November 2011
Link: http://www.trb.org/ACRP/Blurbs/166355.aspx

ACRP Legal Research Digest 13 – An Index and Digest of Decisions: Compilation of Airport Law Resources

Report Blurb: List of judicial decisions with summaries of relevant holdings and links to source documents.

- The report complements the information contained in *Legal Research Digest 21: Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 2012*
- This report provides comparable information to Digest 21 about adjudications that did not involve federal administrative determinations and about subsequent judicial determinations on administrative decisions that were challenged in court

Published: March 2012
Link: http://www.trb.org/ACRP/Blurbs/166869.aspx

ACRP Legal Research Digest 14 – Achieving Airport-Compatible Land Uses and Minimizing Hazardous Obstructions in Navigable Airspace

Report Blurb: Discusses airport-compatible land-use requirements, the legal issues related to achieving airport compatible land use, and legal issues particular to eliminating hazardous obstructions to airspace.

The report also includes a review of some of the major legal issues of concern in achieving airport-compatible land use.

Published: April 2012
Link: http://www.trb.org/ACRP/Blurbs/167127.aspx

ACRP Legal Research Digest 15 – Compilation of State Airport Authorizing Legislation

Report Blurb: Presents information on each state's airport-specific legislation, including laws establishing, developing, operating, expanding, and funding airports.

The compilation focuses on legislation expressly applicable to public airports rather than legislation applicable to local governments generally. It compares and contrasts zoning and land use; purchasing authority; commercial operations; ground transportation, funding, and taxing authority; law enforcement; and sovereign immunity.

Published: August 2012
Link: http://www.trb.org/ACRP/Blurbs/167625.aspx

ACRP Legal Research Digest 16 – Procurement of Airport Development and Planning Contracts

Report Blurb: Provides guidance on how to determine which requirements apply to any given procurement process.

The report also includes an overview of the consequences for non-compliance with procurement laws or regulations to help airports better understand the inherent risks associated with various funding sources.

Published: September 2012
Link: http://www.trb.org/ACRP/Blurbs/167768.aspx

ACRP Legal Research Digest 17 – State and Federal Regulations That May Affect Initiatives to Reduce Airports' GHG Emissions

Report Blurb: Addresses issues that are relevant to implementing greenhouse gas (GHG) mitigation measures at airports.

The report also provides a compilation of carbon reduction initiatives at airports that categorizes the efforts in terms of distinguishing between green building requirements and other building code directives, and efforts directed at reducing aircraft GHG emissions. The report also identifies and discusses the range of federal, state, and local legal issues that may be associated with the implementation of these types of measures.

Published: November 2012
Link: http://www.trb.org/ACRP/Blurbs/168308.aspx

ACRP Legal Research Digest 18 – Buy America Requirements for Federally Funded Airports

Report Blurb: Discusses the legislative history of Buy America, the applicable federal regulations, and how it has been applied at airports. The report includes suggested guidance that airport counsel may find useful as it pertains to airport construction and equipment purchases to help ensure compliance with U.S. Federal Aviation Administration regulations.

Published: February 2013
Link: http://www.trb.org/ACRP/Blurbs/168630.aspx

ACRP Legal Research Digest 19 – Legal Issues Related to Developing Safety Management Systems and Safety Risk Management at U.S. Airports

Report Blurb: Explores the basics of a "just culture;" highlights efforts to implement SMS at airports and in other industries such as maritime, patient safety, and oil and gas; examines theories under which SMS could lead to

increased liability for airports; and provides a review of select state sunshine laws and the federal Freedom of Information Act.

The digest also discusses certain available means of protecting SMS data from disclosure or discovery and suggests potential strategies for managing legal issues that may arise due to the implementation of SMS.

According to the report, Safety Management System (SMS) has been defined as a systematic approach to managing safety not only by proactively conducting safety assessments before there is an incident or accident, but also by having the necessary policies, procedures, organization structure, and accountabilities in place. The four key elements of an SMS are safety policy, risk management, assurance, and promotion.

Published: January 2013
Link: http://www.trb.org/ACRP/Blurbs/168405.aspx

ACRP Legal Research Digest 20 – Airport Responsibility for Wildlife Management

Report Blurb: Compiles the laws and regulations about wildlife hazard management and discusses mitigation techniques applicable to airport operators.

Published: August 2013
Link: http://www.trb.org/ACRP/Blurbs/169414.aspx

ACRP Legal Research Digest 21 – Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 2012

Report Blurb: A compilation of the U.S. Department of Transportation (DOT) and U.S. Federal Aviation Administration (FAA) airport legal determinations and opinion letters through December 31, 2012. This tool has recently been converted into a WebResource.

The report updates and supersedes *Legal Research Digest 4: Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 31, 2007*. Download *Legal Research Digest 13: An Index and Digest of Decisions: Compilation of Airport Law Resources*, which complements this report.

Published: September 2013
Link: http://www.trb.org/ACRP/Blurbs/169525.aspx

ACRP Legal Research Digest 21 – Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters as of December 31, 2018

Report Blurb: U.S. airports that receive assistance from the federal government are required to comply with a number of obligations imposed by federal law.

This report covers legal matters that include the reasonableness of contractual terms, leasing practices, airport rules and regulations, airport charges imposed on aeronautical users, including airlines, and the standards for determining airport sponsor compliance with other federal obligations.

Some of these documents discuss procedural matters applicable to particular agency proceedings. This compilation contains 341 documents, including 285 agency determinations covering 221 distinct administrative cases brought against large and small airports throughout the United States, and 51 DOT and FAA opinion letters, memoranda, and related documents.

Published: December 2020
Link: http://www.trb.org/ACRP/Blurbs/181596.aspx

ACRP Legal Research Digest 21 – Compilation of DOT and FAA Legal Determinations and Opinion Letters as of December 31, 2019

Report Blurb: U.S. airports that receive assistance from the federal government are required to comply with a number of obligations imposed by federal law.

This report covers legal matters that include the reasonableness of contractual terms, leasing practices, airport rules and regulations, airport charges imposed on aeronautical users, including airlines, and the standards for determining airport sponsor compliance with other federal obligations. Some of these documents discuss procedural matters applicable to particular agency proceedings.

This compilation contains 348 documents, including 292 agency determinations covering 228 distinct administrative cases brought against large and small airports throughout the United States, and 51 DOT and FAA opinion letters, memoranda, and related documents.

Published: May 2021
Link: http://www.trb.org/Publications/Blurbs/182197.aspx

ACRP Legal Research Digest 22 – 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

Report Blurb: Provides a summary of relevant federal and state environmental review statutes and regulations, the different stages of the NEPA environmental review and actions, "special-purpose" environmental laws, and the roles and responsibilities of the various stakeholders.

Interspersed throughout the digest are specific project survey results relating to the specific topic being addressed.

Published: May 2014
Link: http://www.trb.org/ACRP/Blurbs/170718.aspx

ACRP Legal Research Digest 23 – A Guide for Compliance with Grant Agreement Obligations to Provide Reasonable Access to an AIP-Funded Public Use General Aviation Airport

Report Blurb: Describes the assurances made by airport sponsors that receive grants from the U.S. Federal Aviation Administration, and how these assurances limit the sponsor from unreasonably restricting access for aeronautical activity at general aviation airports.

Published: February 2015
Link: http://www.trb.org/ACRP/Blurbs/172078.aspx

ACRP Legal Research Digest 24 – Sovereign Immunity for Public Airport Operations

Report Blurb: Examines sovereign immunity as it applies to public airports that are owned and operated by units of local government or regional governmental authorities. This report summarizes the extent of sovereign immunity granted to airports from state to state. Appendix A provides a table of cases, and Appendix B contains a chart of authorities.

Published: April 2015
Link: http://www.trb.org/Main/Blurbs/172457.aspx

ACRP Legal Research Digest 25 – Analysis of Federal Laws, Regulations, Case Law, and Survey of Existing Airport NPDES Permits Regarding Tenant-Operator Responsibilities under NPDES and Stormwater Management BMPS under Owner/Airport's Operating Permits

Report Blurb: Clarifies responsibility for implementation and liability for enforcement of alleged violations of the National Pollutant Discharge Elimination System (NPDES) and the State Pollutant Discharge Elimination System (SPDES).

The digest summarizes state and federal stormwater regulations and jurisdictional authority for taking enforcement action against and imposing liability directly on airport owners related to tenant non-compliance issues. Also, the digest provides guidance for airport operators in enforcing tenant compliance with stormwater permit requirements.

Published: August 2015
Link: http://www.trb.org/ACRP/Blurbs/173023.aspx

ACRP Legal Research Digest 26 – Regulations Affecting the Exercise of First Amendment Activities at Airports

Report Blurb: Provides an overview of the different First Amendment activities that occur at airports, the issues that generally affect them, and the legal challenges to airport policies, while laying out the history of case law.

Published: August 2015
Link: http://www.trb.org/ACRP/Blurbs/173064.aspx

ACRP Legal Research Digest 27 – The Fourth Amendment and Airports

Report Blurb: Discusses the Fourth Amendment generally, as it pertains to its application to people, houses, papers, and effects. The digest focuses on the application at airports and respective court decisions. It specifically discusses expectations of privacy at airports, airport administrative inspection actions, and law enforcement actions. This digest will assist airport operators by providing the background and application of the Fourth Amendment as they review their procedures with their attorneys.

Published: April 2016
Link: http://www.trb.org/ACRP/Blurbs/174240.aspx

ACRP Legal Research Digest 28 – Operational and Legal Issues with Fuel Farms

Report Blurb: Provides guidance to assist airport sponsors and their legal counselors in understanding the basic legal and operational issues of fuel farms to provide the storage and dispensing of aviation fuels to multiple users at an airport. The report will assist airports in evaluating the appropriate ownership and operating model for use at airports.

Published: June 2016
Link: http://www.trb.org/ACRP/Blurbs/174587.aspx

ACRP Legal Research Digest 29 – Impact of Firearms Laws on Airports

Report Blurb: Analyzes recent court cases on federal and state laws that have been challenged for restricting or prohibiting the carrying of firearms in public and other places.

The right to carry guns at airports is subject to the U.S. Constitution, federal and state legislation, and judicial decisions. Some state laws allow guns to be carried openly in public places. Most state laws regulate how guns are to be carried in a vehicle or left in a public or an employer's parking lot. These and other state laws also have ramifications for commercial airports in the U.S.

Accompanying the report are appendices available online:

- Appendix A-Survey Questions
- Appendix B-List of Airports and Airport Authorities Responding to the Survey
- Appendix C-Summary of Responses by Airports and Airport Authorities to the Survey
- Appendix D-*ACRP Web Only Document 29: Compendium of State and Federal Laws Affecting the Possession of Firearms at Airports*
- Appendix E-Airport Ordinances, Policies, and Rules and Regulations Provided by Airports Responding to the Survey

Published: August 2016
Link: http://www.trb.org/ACRP/Blurbs/174765.aspx

ACRP Legal Research Digest 30 – Contract Risk Management for Airport Agreements

Report Blurb: Provides a general overview of the types of agreements that are typically used by airports of all sizes. It identifies primary risks associated with each type of agreement, and the appendices provide sample language from four organizations illustrating how they manage and mitigate those risks.

Published: November 2016
Link: http://www.trb.org/ACRP/Blurbs/175240.aspx

ACRP Legal Research Digest 31 – Preemption of Worker-Retention and Labor-Peace Agreements at Airports

Report Blurb: Serves as an overview of issues related to labor-harmony or labor-peace agreements for airport management personnel and other interested personnel, including airport authority board members or elected officials. These agreements generally require that, as a condition of operating on-airport property, an organization must become a signatory to some form of an agreement with a labor organization. These matters are usually injected into the conduct of on-airport business by the sponsor, including certain contractual language in the agreements between the sponsor and the business. The implications of involving the airport in such matters may be dramatic, far-reaching, and fraught with legal entanglements. This is especially true to labor-harmony or labor-peace agreements.

Published: February 2017
Link: http://www.trb.org/ACRP/Blurbs/175654.aspx

ACRP Legal Research Digest 32 – Evolving Law on Airport Implications by Unmanned Aerial Systems

Report Blurb: Provides guidance to enhance understanding of the basic legal and operational issues presented by civil unmanned aerial systems (UAS), and evaluates best practices for managing these issues. The digest covers background on UAS uses, applications, regulations, and definitions, leading to operations within the National Airspace System (NAS), the issues of federalism as it relates to local and state laws, tort law implications, operations at airports, and best practices for airport operators. Appendix B—Guidance and Policy Documents and Appendix I—Summary of Interviews and Poll Results are available online.

Published: October 2017
Link: http://www.trb.org/ACRP/Blurbs/176738.aspx

ACRP Legal Research Digest 33 – Overview of Airport Duties and Standards of Care in Airfield Accident Cases

Report Blurb: Provides an overview of the legal duties and standards of care that may create liability when operating a public airfield. It discusses negligence principles and reviews duties and standards of care in an airfield accident context, including the extent to which federal preemption may apply. The digest concludes with a section discussing many types of airfield conditions that have allegedly contributed to an accident or liability concerns in past cases.

Published: October 2017
Link: http://www.trb.org/ACRP/Blurbs/176739.aspx

ACRP Legal Research Digest 34 – Airport Public Health Preparedness and Response: Legal Rights, Powers, and Duties

Report Blurb: Addresses the legal issues concerning the measures to detect communicable diseases, regulations to control communicable diseases, methods for decontamination, emergency legal preparedness, privacy, and potential sources of liability. This digest provides a checklist that airport attorneys and other staff can use to help prepare, plan, and coordinate with their partners in response to a threat of a communicable disease.

Published: August 2018
Link: http://www.trb.org/ACRP/Blurbs/177931.aspx

ACRP Legal Research Digest 35 – Legal Considerations in the Funding and Development of Intermodal Facilities at Airports

Report Blurb: Provides background on multimodal or intermodal facilities, funding challenges, and a review of the guidance and decisions the Federal Aviation Administration has made about intermodal facility development at airports.

As surface transportation congestion increases, cities have looked to intermodal facilities at airports to ameliorate ground access crowding. With that, airports are under pressure to site and fund multimodal projects to connect passengers to the road, transit, rail, and other transportation systems. Funding for on-airport and airport-adjacent projects involves a complex interplay of federal programs and federal requirements for use of airport land and airport funds.

Published: September 2018
Link: http://www.trb.org/ACRP/Blurbs/178082.aspx

ACRP Legal Research Digest 36 – Legal Issues Related to Implementation and Operation of SMS for Airports

Report Blurb: Provides a review of potential legal issues, an in-depth analysis of identified issues, and the benefits experienced by airports that develop and operate a Safety Management Systems (SMS).

Implementation of SMS in the airport and aviation sector has been an ongoing process since the early 2000s in the United States. As of 2018, few airports have implemented SMS and even fewer have reported legal problems with early adoption. The report relies upon data from airports that have voluntarily implemented an SMS program.

Published: December 2018
Link: http://www.trb.org/ACRP/Blurbs/178443.aspx

ACRP Legal Research Digest 37 – Legal Issues Relating to Airports Promoting Competition

Report Blurb: Explores permissible means and methods of encouraging and accommodating competition at U.S. airports. It discusses the history of how competition has been addressed by government and airports and provides the context of the concentration of air carriers and fixed-base operators (FBOs), the accommodation of air carriers with differing business models, and avoiding the grant of exclusive rights when aeronautical service providers merge.

Competition among airlines and FBOs at U.S. airports presents a myriad of issues for the airport sponsor, its executives, and local elected officials—all of whom themselves often face multidimensional challenges and needs. U.S. airports, and especially those which have used federal airport improvement funds, operate within a unique atmosphere.

Congress, through the enactment of airport funding legislation, created a broad and general framework within which airport sponsors must operate. Much of this general framework has been supplemented by the United States Department of Transportation / Federal Aviation Administration and provides airport sponsors with some further guidelines within which airports must operate. This framework/guidance, however, relies largely upon general standards such as dealing with airlines and FBOs in a "reasonable" and "not unjustly discriminatory" manner. Given this fact, the resolution of competition issues at any particular airport is necessarily highly dependent upon the locally derived factual context and, therefore, requires locally derived solutions.

Published: June 2019
Link: http://www.trb.org/ACRP/Blurbs/179188.aspx

ACRP Legal Research Digest 38 – Legal Issues Related to Large-Scale Airport Construction Projects

Report Blurb: Large-scale, complex airport construction projects have the same issues as construction projects on a smaller scale, but they present a series of specialized legal issues.

This report focuses on those legal issues causing the most significant risks during planning, design, permitting, procurement, and construction.

Published: February 2020
Link: http://www.trb.org/ACRP/Blurbs/180321.aspx

ACRP Legal Research Digest 39 – Updated Survey of Laws and Regulations Applicable to Airport Commercial Ground Transportation

Report Blurb: Commercial ground transportation at U.S. airports includes public transit, door-to-door shuttle van service, charter buses, limousines, rental cars, taxicabs, hotel courtesy shuttles, wheel chair services, and courier operators. Technological developments, such as transportation network companies, car-sharing operations, and driverless cars, have added more options and challenges for airport ground transportation operations.

This report builds on *ACRP LRD 3: Survey of Laws and Regulations of Airport Commercial Ground Transportation* from 2008 and synthesizes available guidance, including regulations, statutes, policies, and case decisions (administrative or court) pertaining to commercial ground transportation.

Published: November 2020
Link: http://www.trb.org/ACRP/Blurbs/181489.aspx

ACRP Legal Research Digest 40 – Permissible Uses of Airport Property and Revenue

Report Blurb: Understanding the permissible use of airport revenue is one of the most common legal issues faced by airport management. While there are some clear lines, there are several categories (such as utility fees) of potential expenditures of airport revenue that are not as clearly defined.

This report updates the background of economic and legal information presented in *ACRP Legal Research Digest 2: Theory and Law of Airport Revenue Diversion*. It focuses on the application of federal law and policy to specific categories of expenditures and uses and includes discussion of statutory law, policy, case law, and informal and formal guidance from the Federal Aviation Administration.

Published: December 2020
Link: http://www.trb.org/ACRP/Blurbs/181529.aspx

ACRP Legal Research Digest 41 – Legal Issues Relating to Airport Commercial Contracts

Report Blurb: Airport attorneys spend considerable time drafting and negotiating airport contracts that involve specialized legal and business issues. Some are general commercial issues, while others are unique to airports. As governmental entities, airports are subject to a variety of governmental law principles that can affect their contracts for commercial services.

This report complements other ACRP publications that deal with other legal aspects of airport operations and provides a general overview of the types of agreements airports use and includes other government law principles that also can affect government contracts for commercial services.

Published: February 2021
Link: http://www.trb.org/ACRP/Blurbs/181703.aspx

ACRP Legal Research Digest 42 – Legal Implications of Data Collection at Airports

Report Blurb: As technology evolves, airports and their partners collect more data from passengers, employees, tenants, concessionaires, airlines, and others. This data is used in many ways, including for facility management, security, ground transportation, marketing, understanding passenger preferences, and enhancing the travel experience.

This report provides a survey of applicable law; considerations for the collection and safekeeping of data; and a review of the issues that arise related to data collection among airports, their tenants, and other users. It also offers an understanding of the expansion in law around data collection and use.

Published: May 2021
Link: http://www.trb.org/ACRP/Blurbs/182059.aspx

ACRP Legal Research Digest 43 – Legal Considerations for Telecommunications at Airports

Report Blurb: The deployment of telecommunication systems, management of networks, and dealings with telecommunication or information service providers, airlines, other tenants, concessionaires, and passengers create multiple legal issues for airport operators.

This report examines federal requirements for various aspects of telecommunications at airports, including both current issues and those implicated by emerging trends.

Published: October 2021
Link: http://www.trb.org/Publications/Blurbs/182555.aspx

ACRP Legal Research Digest 44 – Airports Responding to Public Health Emergencies: Legal Considerations

Report Blurb: The collapse in U.S. air traffic during the start of the COVID-19 pandemic illustrates the speed with which a severe public health emergency can devastate the air travel industry. It further illustrates how quickly an airport operator may have to react to a public health crisis.

This report is designed to help airport sponsors and other stakeholders in the airport industry consider potential legal questions that they could confront as they address a future public health emergency.

Published: March 2023
Link: https://www.trb.org/Main/Blurbs/182953.aspx

ACRP Legal Research Digest 45 – Airport Customer Facility Charges: Analysis of Laws, Regulations, and Case Law

Report Blurb: Customer facility charges (CFCs) are imposed by airport proprietors on customers of rental car companies at airports to pay for capital and operating costs of rental car facilities. CFCs have relatively little federal regulatory oversight, and most are implemented through local municipal acts and/or contractual arrangements. Recently, challenges to the imposition and use of CFCs and other airport fees and charges have been mounted in several states.

ACRP Legal Research Digest 45: Airport Customer Facility Charges: Analysis of Laws,

Regulations, and Case Law, from TRB's Airport Cooperative Research Program, examines legal issues arising under state and federal law from the imposition and use of CFCs. The digest includes an inventory of state-level authorizing legislation in jurisdictions that regulate CFCs. Judicial decisions regarding the collection and use of CFCs and related issues are also analyzed.

Published: May 2023
Link: https://www.trb.org/Main/Blurbs/182992.aspx

Section 4: Web-Only Documents

ACRP Web-Only Document 1 – Analysis and Recommendations for Developing Integrated Airport Information Systems

Report Blurb: A summary of the efforts associated with the development of *ACRP Research Report 13: Integrating Airport Information Systems,* which is designed to help airport managers and information technology professionals address issues associated with integrating airport information systems.

Published: April 2009
Link: http://www.trb.org/ACRP/Blurbs/161614.aspx

ACRP Web-Only Document 2 – Appendices to ACRP Report 11: Guidebook on Preparing Airport GHG Emissions Inventories

Report Blurb: Contains appendices A through F to this report.

The appendices titles are as follows:

- Appendix A - Reasons for Developing GHG Inventories
- Appendix B - Emissions and Sources
- Appendix C - Methods for Calculating GHG Emissions
- Appendix D - Methods for Calculating CO2 Equivalencies
- Appendix E - Inventory Development Protocols
- Appendix F - Approaches Used in Airport Inventories Prepared to Date

Published: April 2009
Link: http://www.trb.org/ACRP/Blurbs/160740.aspx

ACRP Web-Only Document 3 – Formulations for Aircraft and Airfield Deicing and Anti-Icing: Aquatic Toxicity and Biochemical Oxygen Demand

Report Blurb: An interim report on a project that is exploring the environmental characteristics of aircraft and pavement deicers and anti-icers.

Published: March 2009
Link: http://www.trb.org/ACRP/Blurbs/155765.aspx

ACRP Web-Only Document 4 – Contractor's Final Report for ACRP RRD 6: Guidance for Identifying and Mitigating Approach Lighting System Hazards

Report Blurb: Provides additional information on the project that developed *Research Results Digest 6*, which explores the results of the research on approach lighting system (ALS) hazard identification and mitigation techniques.

Published: May 2009
Link: http://www.trb.org/Publications/Blurbs/162283.aspx

ACRP Web-Only Document 5 – Development of a Guidebook for Managing Small Airports

Report Blurb: Describes the research process related to the development of *ACRP Research Report 16: Guidebook for Managing Small Airports*.

Published: August 2009
Link: http://www.trb.org/ACRP/Blurbs/162146.aspx

ACRP Web-Only Document 6 – Evaluation and Selection of Airport Capital Project Delivery Methods

Report Blurb: Reviews pertinent literature and research findings related to various project delivery methods for airport projects. It contains definitions of project delivery methods and discusses the existing selection approaches commonly used by airports. The report is a companion document to *ACRP Research Report 21: A Guidebook for Selecting Airport Capital Project Delivery Methods*.

Published: October 2009
Link: http://www.trb.org/ACRP/Blurbs/162450.aspx

ACRP Web-Only Document 7 – How Proposed ARFF Standards Would Impact Airports

Report Blurb: Explores the potential cost implications for airports of implementing proposed airport rescue and firefighting (ARFF) regulations that would be more closely aligned with voluntary consensus standards promulgated by the International Civil Aviation Organization and the National Fire Protection Association. Section 311 of H.R. 915 EH, the FAA Reauthorization Act of 2009, calls for more closely aligning ARFF regulations under part 139 of title 14, Code of Federal Regulations, Certification of Airports, with voluntary consensus standards.

A summary of this report was published online as *ACRP Research Results Digest 7: A Summary of How Proposed Firefighting Standards Would Impact Airports*.

Published: June 2009
Link: http://www.trb.org/ACRP/Blurbs/161853.aspx

ACRP Web-Only Document 8 – Alternative Aircraft Anti-Icing Formulations with Reduced Aquatic Toxicity and Biochemical Oxygen Demand

Report Blurb: Explores the aquatic toxicity and biological oxygen demand state of the art, components, and promising alternative formulations of deicing and anti-icing products. The report also examines the performance; efficiency; material compatibility; and environmental, operational, and safety impacts of alternative formulations and components as well as the fate and transport of deicing and anti-icing formulation components and their degradation products.

A summary of this report was produced as *Research Results Digest 9: Alternative Aircraft and Pavement Deicers and Anti-Icing Formulations with Improved Environmental Characteristics*.

Published: July 2010
Link: http://www.trb.org/ACRP/Blurbs/163310.aspx

ACRP Web-Only Document 9 – Enhanced Modeling of Aircraft Taxiway Noise, Volume 1—Scoping

Report Blurb: Explores ways to model airport noise from aircraft taxi operations and examines a plan for implementation of a taxi noise prediction capability into the Federal Aviation Administration's integrated noise model in the short term and its aviation environmental design tool in the longer term.

Web-Only Document 9: Enhanced Modeling of Aircraft Taxiway Noise, Volume 2: Aircraft Taxi Noise Database and Development Process documents the procedures developed and employed in the creation of a taxi noise database for the U.S. Federal Aviation Administration's Integrated Noise Model and Aviation Environmental Design Tool (AEDT). The AEDT is currently under development.

Published: November 2009
Link: http://www.trb.org/Publications/Blurbs/162509.aspx

ACRP Web-Only Document 9 – Enhanced Modeling of Aircraft Taxiway Noise, Volume 2—Aircraft Taxi Noise Database and Development Process

Report Blurb: Documents the procedures developed and employed in the creation of a taxi noise database for the U.S. Federal Aviation Administration's Integrated Noise Model and Aviation Environmental Design Tool (AEDT). The AEDT is currently under development.

Web-Only Document 9: Enhanced Modeling of Aircraft Taxiway Noise, Volume 1: Scoping explores ways to model airport noise from aircraft taxi operations and examines a plan for implementation of a taxi noise prediction capability into the U.S. Federal Aviation

Administration's integrated noise model in the short term and into its aviation environmental design tool in the long-term.

Published: April 2013
Link: http://www.trb.org/ACRP/Blurbs/168805.aspx

ACRP Web-Only Document 10 – Appendix A: Research Documentation for ACRP Report 41

Report Blurb: Is Appendix A: Research Documentation to *ACRP Research Report 41: Guide to the Decision-Making Tool for Evaluating Passenger Self-Tagging*, which provides the information and tools, included on an accompanying CD-ROM, necessary for an airport or airline to determine the appropriateness of pursuing passenger self-tagging should it be allowed in the United States in the future.

Published: January 2011
Link: http://www.trb.org/ACRP/Blurbs/164162.aspx

ACRP Web-Only Document 11 – A Comprehensive Development Plan for a Multimodal Noise and Emissions Model

Report Blurb: Explores the development of a tool that would allow for the assessment of the noise and air quality impacts on the population from multiple transportation sources, assess the total costs and impacts, and assist in the design and implementation of mitigation strategies. The availability of a multimodal noise and emissions model could help inform airport and policymakers charged with evaluating and making decisions on expanding transportation facilities.

Published: December 2010
Link: http://www.trb.org/ACRP/Blurbs/164543.aspx

ACRP Web-Only Document 12 – Risk Assessment of Proposed ARFF Standards

Report Blurb: Explores air carrier passenger aircraft accidents to help determine if changes to Aircraft Rescue and Fire Fighting (ARFF) standards would have reduced the number of fatalities or serious injuries that resulted from past accidents.

The report compares standards set forth by the Federal Aviation Administration in 14 Code of Federal Regulations (CFR), Part 139, Certification of Airports with the standards of the International Civil Aviation Organization in Annex 14 and standards set forth by the National Fire Protection Association in making determinations of reducing the number of fatalities and serious injuries associated with each accident.

In the United States ARFF is only required at airports subject to 14 CFR Part 139 and may not exist at non-Part 139 airports including general aviation airports. Generally, airports serving scheduled air carrier passenger operations with more than nine passenger seats and unscheduled air carrier passenger service with more than 30 seats are required to have a Part 139 certificate.

Published: April 2011
Link: http://www.trb.org/ACRP/Blurbs/165120.aspx

ACRP Web-Only Document 13 – Alternative Fuels as a Means to Reduce PM2.5 Emissions at Airports

Report Blurb: Explores the potential impact that alternative fuel use could have on emissions and ambient air pollution concentrations of fine particulate matter (PM2.5) at airports.

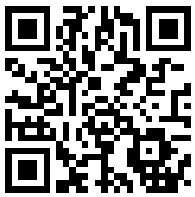
The project that developed this report also created a spreadsheet-based tool that combines the results from the five case study airports analyzed during the project in a format that allows the user to combine the emission impacts of different alternative fuel scenarios at those airports.

Published: June 2012
Link: http://www.trb.org/ACRP/Blurbs/167308.aspx

ACRP Web-Only Document 14 – Guidelines for Preparing Peak Period and Operational Profiles

Report Blurb: Documents the research effort that produced *ACRP Research Report 82: Preparing Peak Period and Operational Profiles—Guidebook*, which describes a process and includes software for converting annual airport activity forecasts into forecasts of daily or hourly peak-period activity.

Published: February 2013
Link: http://www.trb.org/ACRP/Blurbs/168510.aspx



ACRP Web-Only Document 15 – Data Supporting the Impact of Regulatory Compliance Costs on Small Airports, Volume 2: Technical Appendixes to ACRP Report 90

Report Blurb: Includes 6 technical appendixes that provide the research methodology; analysis of aviation transportation, environmental, security, and occupational safety and health requirements; and an estimate of industry costs.

- *ACRP Research Report 90: Impact of Regulatory Compliance Costs on Small Airports* explores the cumulative costs of complying with regulatory and other federal requirements at the small hub and non-hub airports
- *Web-Only Document 15: Data Supporting the Impact of Regulatory Compliance Costs on Small Airports, Volume 1: Appendixes to ACRP Report 90* includes summaries of federal actions and published cost data, survey results, and case studies

Published: July 2013
Link: http://www.trb.org/ACRP/Blurbs/168947.aspx

ACRP Web-Only Document 16 – Assessing Aircraft Noise Conditions Affecting Student Learning, Volume 1: Final Report

Report Blurb: Explores conditions under which aircraft noise affects student learning and evaluates alternative noise metrics that best define those conditions.

Appendices A through G for the report was published separately as *Web-Only Document 16: Assessing Aircraft Noise Conditions Affecting Student Learning, Volume 2: Appendices*.

Published: February 2014
Link: http://www.trb.org/ACRP/Blurbs/170328.aspx

ACRP Web-Only Document 16 – Assessing Aircraft Noise Conditions Affecting Student Learning, Volume 2: Appendices

Report Blurb: Includes appendices A through G for *Web-Only Document 16: Assessing Aircraft Noise Conditions Affecting Student Learning, Volume 1: Final Report*, which explores conditions under which aircraft noise affects student learning and evaluates alternative noise metrics that best define those conditions.

Published: February 2014
Link: http://www.trb.org/ACRP/Blurbs/170329.aspx

ACRP Web-Only Document 17 – Research Methods for Understanding Aircraft Noise Annoyances and Sleep Disturbance

Report Blurb: This report explores the development and validation of a research protocol for a large-scale study of aircraft noise exposure-annoyance response relationships across the U.S. The report also highlights alternative research methods for field studies to assess the relationship between aircraft noise and sleep disturbance for U.S. airports..

Published: February 2014
Link: https://www.trb.org/Publications/Blurbs/170979.aspx

ACRP Web Only Document 18 – Airport Capital Improvements: Developing a Cost-Estimating Model and Database

Report Blurb: Describes the research process to develop and test a cost estimating model and database intended for use during airport capital planning. The guidebook and spreadsheet tool are available online.

Published: November 2014
Link: http://www.trb.org/ACRP/Blurbs/171329.aspx

ACRP Web-Only Document 19 – Integrated Noise Model Accuracy for General Aviation Aircraft

Report Blurb: Assesses the predictive accuracy of the Integrated Noise Model, identifies causes for deviations between actual and predicted values, identifies potential solutions to improve the model's accuracy and describes the steps needed for implementation.

Published: October 2014
Link: http://www.trb.org/ACRP/Blurbs/171516.aspx

ACRP Web-Only Document 20 – Estimating the Economic Impact of Air Cargo Operations at Airports, Part 1: User's Guidebook and Part 2: Research Report

Report Blurb: Provides guidance and tools to practitioners who estimate the economic value of air cargo facilities and operations to their communities and regions.

Published: December 2014
Link: http://www.trb.org/ACRP/Blurbs/171800.aspx

ACRP Web-Only Document 21 – Quantifying Aircraft Lead Emissions at Airports

Report Blurb: Reviews methods for quantifying aircraft-related lead emissions.

ACRP Research Report 133: Best Practices Guidebook for Preparing Lead Emission Inventories from Piston-Powered Aircraft with the Emission Inventory Analysis Tool provides guidance for quantifying airport lead emissions so that airports may assess aircraft-related lead emissions at their facilities.

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172599.aspx

ACRP Web-Only Document 22 – Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 1: Guidebook for Valuing User Time Savings in Airport Capital Investment Decision Analysis

Report Blurb: Provides a method for airport owners and operators to determine how their customers value the travel time impacts of efficiency improvements.

The purpose of this research is to provide an up-to-date understanding of how recent airport developments, such as changes in security measures since 9/11, the proliferation of airside passenger amenities, and the adoption of new technology, have changed the way travelers value-efficient air travel.

The report is accompanied by *Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 2: Final Report* that summarizes the data collection methodology and *Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 3: Appendix A Background Research and Appendix B Stated Preference Survey*.

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172472.aspx

ACRP Web-Only Document 22 – Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 2: Final Report

Report Blurb: Summarizes the data collection methodology to produce a method for airport owners and operators to determine how their customers value the travel time impacts of efficiency improvements.

The purpose of this research is to provide an up-to-date understanding of how recent airport developments, such as changes in security measures since 9/11, the proliferation of airside passenger amenities, and the adoption of new technology, have changed the way travelers value-efficient air travel.

The report is accompanied by *Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 1: Guidebook for Valuing User Time Savings in Airport Capital Investment Decision Analysis*, which summarizes the data collection methodology and *Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 3: Appendix A Background Research and Appendix B Stated Preference Survey.*

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172473.aspx

ACRP Web-Only Document 22 – Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 3: Appendix A Background Research and Appendix B Stated Preference Survey

Report Blurb: Includes data and information used to produce a method for airport owners and operators to determine how their customers value the travel time impacts of efficiency improvements.

The purpose of this research is to provide an up-to-date understanding of how recent airport developments, such as changes in security measures since 9/11, the proliferation of airside passenger amenities, and the adoption of new technology, have changed the way travelers value-efficient air travel.

The report is accompanied by *Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 1: Guidebook for Valuing User Time Savings in Airport Capital Investment Decision Analysis*, which summarizes the data collection methodology and *Passenger Value of Time, Benefit-Cost Analysis and Airport Capital Investment Decisions, Volume 2: Final Report*, which summarizes the data collection methodology.

Published: May 2015
Link: http://www.trb.org/ACRP/Blurbs/172474.aspx

ACRP Web-Only Document 23 – Guidance on Successful Computer Maintenance Management System (CMMS) Selection and Practices

Report Blurb: Provides guidance with selecting a CMMS that is most compatible with an airport's individual needs. Airports use CMMS to help manage airport assets. The report explores ways to integrate a CMMS into airport processes, procedures, and other information technology systems.

This guidebook is accompanied by an evaluation tool, which may help airports with defining their requirements for a CMMS program.

Published: August 2015
Link: http://www.trb.org/ACRP/Blurbs/172991.aspx

ACRP Web-Only Document 24 – Air Cargo Facility Planning and Development—Final Report

Report Blurb: Reviews the process and information used in preparing *ACRP Research Report 143: Guidebook for Air Cargo Facility Planning and Development*. The guidebook explores tools and techniques for sizing air cargo facilities, including data and updated metrics for forecasting future facility requirements as a function of changing market and economic conditions.

Published: October 2015
Link: http://www.trb.org/ACRP/Blurbs/173275.aspx

ACRP Web-Only Document 25 – Commercial Ground Transportation at Airports: Best Practices-Appendices C to H

Report Blurb: Covers supplementary materials for *ACRP Research Report 146: Commercial Ground Transportation at Airports: Best Practices.* The appendices include an annotated bibliography, a list of airports participating in this study, sample requests for proposals and requests of qualifications to manage ground transportation, sample contracts, and sample Transportation Network Company permits.

ACRP Report 146 covers best management practices to ensure the provision of safe, comfortable, easy-to-use, and efficient commercial ground transportation service. Commercial ground transportation services include taxicabs, limousines, shared-ride services, transportation network companies, courtesy vehicles, buses, and vans. The guidebook reviews the ground transportation industry, potential solutions to challenges airport operators frequently face, how to select a solution, and how to implement the selected best practice transportation Network Company permits.

Published: October 2015
Link: http://www.trb.org/ACRP/Blurbs/173351.aspx

ACRP Web-Only Document 26 – Methodology to Improve AEDT Quantification of Aircraft Taxi/Idle Emissions

Report Blurb: Explores potential improvements to the U.S. Federal Aviation Administration (FAA) Aviation Environmental Design Tool (AEDT). AEDT produces emissions estimates based on aircraft activity at an airport, including an estimate of the emissions that would result under these low-thrust conditions. Presently, the model defines the standard thrust setting for this operational mode at seven percent of full thrust, based on the International Civil Aviation Organization (ICAO) engine test conditions. This report provides a prioritized list of potential improvements to AEDT to help with the predictive accuracy for estimating jet aircraft emissions during the taxi/idle phase of operation. The report also provides detailed documentation of select near-term, high-priority improvements to AEDT.

Published: March 2016
Link: http://www.trb.org/ACRP/Blurbs/174126.aspx

ACRP Web-Only Document 27 – Methodology to Develop the Airport Terminal Building Energy Use Intensity (ATB-EUI), Benchmarking Tool

Report Blurb: Complements CD-ROM 178: Airport Terminal Building Energy Use Intensity (ATB-EUI) Benchmarking Tool. The report outlines the overall data collection and analysis process for developing an airport terminal building benchmarks.

Published: April 2016
Link: http://www.trb.org/ACRP/Blurbs/174291.aspx

ACRP Web-Only Document 28 – Identifying and Evaluating Airport Workforce Requirements

Report Blurb: Gathers information that will help identify and evaluate the current and future airport job requirements and associated workforce capacity needs; assess the potential of current airport education, training, and resources to address workforce gaps; and provide a practical guidebook that presents effective workforce planning and development strategies. The report summarizes the information gathered in the first phase of the project.

Published: December 2016
Link: http://www.trb.org/ACRP/Blurbs/175503.aspx

ACRP Web-Only Document 29 – Compendium of State and Federal Laws Affecting the Possession of Firearms at Airports

Report Blurb: Contains an index and text of federal and state statutes as well the United States Code and federal regulations affecting the possession of firearms at airports. The document accompanies *Legal Research Digest 29: Impact of Firearms Laws on Airports* that analyzes recent court cases on federal and state laws that have been challenged for restricting or prohibiting the carrying of firearms in public and other places. The digest also includes a compendium of federal and state laws that are relevant to the carrying of guns at airports and elsewhere.

Published: August 2016
Link: http://www.trb.org/ACRP/Blurbs/174766.aspx

ACRP Web-Only Document 30 – Development of a Nox Chemistry Module for EDMS/AEDT to Predict NO2 Concentrations

Report Blurb: Explores the methods available for predicting NO2 concentrations at airports. The research project includes a final report, a preferred method for employing a module, and a computer model code for the preferred method.

Published: March 2017
Link: http://www.trb.org/ACRP/Blurbs/175744.aspx

ACRP Web-Only Document 31– Improving Stakeholder Engagement in Aircraft Accident Response Planning

Report Blurb: Provides guidance to assist airport personnel who seek to engage with accident response stakeholders beyond the boundaries of the airport and outside of those typically engaged for mutual aid agreements in support of the airport.

A customizable Aircraft Accident Management and Guidance (AAMG) Tool accompanies the report.

Published: April 2017
Link: http://www.trb.org/ACRP/Blurbs/175818.aspx

ACRP Web-Only Document 32 – Improving AEDT Noise Modeling of Mixed Ground Surfaces

Report Blurb: Develops a method to model the effects of single- and mixed-impedance surfaces on the propagation of aircraft noise in a manner suitable for model implementation to improve the noise prediction accuracy of the Federal Aviation Administration's (FAA) Aviation Environmental Design Tool (AEDT). AEDT is an integrated noise model, which currently includes a lateral attenuation adjustment to account for the effects of lateral aircraft directivity and acoustic propagation over soft ground. This research includes an investigation of additional methods to supplement the lateral attenuation adjustment to allow for modeling noise propagation over hard and mixed ground types in AEDT.

Published: June 2017
Link: http://www.trb.org/ACRP/Blurbs/176228.aspx

ACRP Web-Only Document 33 – Commercial Space Operations Noise and Sonic Boom Modeling and Analysis

Report Blurb: s the contractor's final report on the methodology and development for ACRP Research Report 183: User Guides for Noise Modeling of Commercial Space Operations—RUMBLE and PCBoom. ACRP Research Report 183 provides guidance on using RUMBLE 2.0, which predicts rocket noise, and PCBoom4, which has been modified to predict sonic booms from commercial space operations.

As commercial space launch vehicle activities increase, many noise issues, as well as the effects of sonic booms, will need to be evaluated. The Aviation Environmental Design Tool (AEDT) is designed to evaluate the effects of noise and emissions from aircraft but doesn't have the ability to predict noise and sonic boom effects from commercial space operations. This project develops two tools to predict noise and sonic boom to be used in the noise modeling evaluation process.

Download software for PCBoom4 and RUMBLE 2.0.

Published: June 2017
Link: https://www.trb.org/Main/Blurbs/177515.aspx

ACRP Web-Only Document 34 – Assessing Aircraft Noise Conditions Affecting Student Learning–Case Studies

Report Blurb: Attempts to determine how the behaviors of students and teachers are affected by aircraft noise exposure. The report identifies metrics that define the level and characteristics of aircraft noise that impacts student achievement. It also develops guidance for use by decision-makers on how to reduce the impact of aircraft noise on student achievement. The report is accompanied by a brochure on the Effects of Aircraft Noise on Student Learning.

Published: November 2017
Link: http://www.trb.org/ACRP/Blurbs/176782.aspx

ACRP Web-Only Document 35 – State of the Industry Report on Air Quality Emissions from Sustainable Alternative Jet Fuels

Report Blurb: Captures the current status of knowledge regarding emissions from the use of sustainable alternative jet fuels (SAJF). While the primary purpose for airlines to use SAJF is to reduce carbon dioxide emissions, emissions of other pollutants may also be reduced, which could be significantly beneficial to airports. However, these reductions are not yet well defined, leaving airports unable to realize what may be substantial benefits. The research team analyzed the published technical literature to validate that SAJF use reduces air pollutant emissions and does not cause any air pollutant emissions to increase.

Published: April 2018
Link: http://www.trb.org/ACRP/Blurbs/177509.aspx

ACRP Web-Only Document 36 – Enhanced AEDT Modeling of Aircraft Arrival and Departure Profiles, Volume 1: Guidance

Report Blurb: Supplements the Aviation Environmental Design Tool (AEDT), which computes noise, emissions, and fuel burn as a result of aircraft operations. The guidance document provides users of AEDT with information about varying approaches to profile modeling.

Accompanying the guidance, *Web Only Document 36: Enhanced AEDT Modeling of Aircraft Arrival and Departure Profiles, Volume 2: Research Report* documents the approaches used to

develop the AEDT guidance outlined in this report. Appendices A-E of volume 2 are available on a microsite: *Supporting Materials for ACRP Web-Only Document 36: Enhanced AEDT Modeling of Aircraft Arrival and Departure Profiles, Volume 2: Research Report*.

Published: September 2018
Link: http://www.trb.org/Main/Blurbs/178074.aspx

ACRP Web-Only Document 36 – Enhanced AEDT Modeling of Aircraft Arrival and Departure Profiles, Volume 2: Research Report

Report Blurb: Documents the approaches used to develop the Aviation Environmental Design Tool (AEDT) guidance outlined in *Web-Only Document 36: Enhanced AEDT Modeling of Aircraft Arrival and Departure Profiles, Volume 1: Guidance*. AEDT computes noise, emissions, and fuel burn as a result of aircraft operations. Appendices A-E of the report are available on a microsite: *Supporting Materials for ACRP Web-Only Document 36: Enhanced AEDT Modeling of Aircraft Arrival and Departure Profiles, Volume 2: Research Report*.

Published: September 2018
Link: http://www.trb.org/Publications/Blurbs/178075.aspx

ACRP Web-Only Document 37 – Research Roadmap in the Area of Airport Operations and Maintenance

Report Blurb: Outlines the key research gaps and areas of interest for airports in the field of operations and maintenance (O&M) over the next five years. Based on the result of the outreach and literature review, forty-two research ideas were generated and categorized into nine high-level themes, including:

- Continuity of Operations
- Financial Resources and Procurement
- Facility and Operational Modernization
- General Asset Management and Maintenance
- Integrating Advanced and/or Disruptive Technologies
- Safety and Security
- Sustainability and Resiliency
- Unmanned Aerial Systems / Vehicles
- O&M Workforce

The completed Report consists of the following products:

- An interactive version of Appendix B
- Appendix C - Research Ideas Database, which is a searchable Excel file containing all forty-two ideas generated during the project. The Idea Database includes relevant Idea Hub tags for each research idea to further demonstrate the multi-dimensional nature of the knowledge gaps

- Narrated PowerPoint - The presentation provides readers with an overview of the project, the roadmap development process, and instructions for how to read the Visual Research Roadmap

Published: February 2019
Link: http://www.trb.org/ACRP/Blurbs/178751.aspx

ACRP Web-Only Document 38 – Technical Appendix to Air Demand in a Dynamic Competitive Context with the Automobile

Report Blurb: This technical appendix supplements *ACRP Research Report 204: Air Demand in a Dynamic Competitive Context with the Automobile* with more detailed documentation of the research effort, including greater technical detail on the analytical models created for the research and their application.

Published: November 2019
Link: http://www.trb.org/Main/Blurbs/179508.aspx

ACRP Web-Only Document 39 – Policy and Planning Issues Roadmap Report

Report Blurb: Major technological and security changes in the aviation industry over the past 20 years have forced airport leaders and aviation stakeholders to think of new research ideas that will improve the planning and development of policies and new models that foster the growth of air service, incorporate new airport and customer technology, revise airport business models, and better interact with neighboring communities.

The report is one of several Research Roadmap Reports that the ACRP commissioned to generate the research ideas that will help airports solve common problems, learn about new technologies, and assess innovations in services and operations.

Planning and policy together represent one of 10 identified categories of research that directly involves and benefits the airport industry. Policy and planning issues are especially sensitive to developments in the aviation industry. For example, airport boards and executives may adopt new commercial strategies to raise additional airport revenues (an internal decision), while the FAA may change the criteria or funding levels for airport programs (an external decision).

These Research Roadmaps augment the continuous ACRP solicitation process to airport industry practitioners for research ideas and problem statements.

Published: October 2019
Link: http://www.trb.org/ACRP/Blurbs/179757.aspx

ACRP Web-Only Document 40 – Airport Design and Construction Narrative Research Roadmap

Report Blurb: Outlines the key research gaps and areas of interest for airports in the design and construction field over the next five years.

The research ideas generated as part of this project are organized into seven high-level themes that represent the main areas and challenges of interest to airports in design and construction.

While design and construction are designated as their research areas within the ACRP program, the roadmap takes a consolidated approach and combines the two in both the report and the visual representation.

The roadmap includes 40 research ideas that are categorized into seven high-level themes: Customer Service; Integrating Advanced and/or Disruptive Technologies; Project Management, Delivery and Finance Models; Safety and Security; Sustainability and Resiliency; General Design and Construction; and Workforce Development.

The research ideas are further categorized into twelve subtopics: 1) Passenger Experience; 2) Integrating Technology and Data; 3) Finance and Revenue Development; 4) Alternative Approaches to Project Delivery Mechanisms; 5) Sustainable Design and Construction; 6) Innovative Approaches to Security / TSA Operations; 7) Construction Best Practices / Guidance and Tools; 8) Modernizing and Retrofitting Airport Facilities; 9) Construction Materials; 10) Accommodating Changing Demographics; 11) Curbside, Roadways, and Vehicles; and 12) Unmanned Aerial Systems.

The completed Research Roadmap in the Area of Design and Construction of Airport Facilities includes the following products:

- An interactive version of Appendix B: Visual Research Roadmap.
- Appendix C: Research Ideas Database, which is a searchable Excel file containing ideas generated during the project.
- A PowerPoint presentation: Summary of Airport Design and Construction Research Roadmap, which describes the roadmap and related products.

Published: July 2019
Link: http://www.trb.org/ACRP/Blurbs/179363.aspx

ACRP Web-Only Document 41– Alternative Jet Fuels Emissions: Quantification Methods Creation and Validation Report

Report Blurb: One of the most challenging environmental issues facing the aviation industry today is the impact of jet fuel emissions on the global climate. The use of sustainable alternative jet fuels (SAJF) to reduce aircraft emissions will become significantly more important in the coming years. Capturing the air quality benefits in a way that is useful to airports requires understanding how SAJF reduces pollutant emissions,

quantifying the reduction, and demonstrating the impact through an easy-to-use tool that airports can apply to their emissions inventories.

The report represents the second phase of this ACRP work. The *Web-Only Document 35: First Phase: State of the Industry Report on Air Quality Emissions from Sustainable Alternative Jet Fuels* provided an understanding of how SAJF impacts aircraft emissions. This phase analyzes the data compiled in the report to quantify SAJF emission impacts.
Results of this analysis were subsequently used to develop a simplified tool that will allow airports to easily estimate emission reductions from use of SAJF at their airport. The Alternative Jet Fuel Assessment Tool and the Sustainable Alternative Jet Fuels and Emissions Reduction Fact Sheet are the two key products from ACRP 02-80.

Published: August 2019
Link: http://www.trb.org/ACRP/Blurbs/179509.aspx

ACRP Web-Only Document 42 – Toolkits and Resource Library for Airports and Unmanned Aircraft Systems

Report Blurb: Provides supplemental material to Volumes 1, 2, and 3 of *ACRP Research Report 212: Airports and Unmanned Aircraft Systems*.

Published: July 2020
Link: http://www.trb.org/ACRP/Blurbs/181011.aspx

ACRP Web-Only Document 43 – Improving AEDT Modeling for Aircraft Noise Reflection and Diffraction from Terrain and Manmade Structures

Report Blurb: Barriers, berms, buildings, and natural terrain may affect the propagation of aircraft noise by shielding or reflecting sound energy. If terrain and manmade structures obstruct the line-of-sight between the source and the receiver, then sound energy will be attenuated at the receiver. This attenuation increases with the terrain and structures' size and proximity to either the source or the receiver. If gaps exist in the terrain or structures, then the potential benefits of acoustical shielding will be substantially reduced. Even when the line-of-sight is not obstructed, the terrain can reflect the sound and create multiple pathways affecting the sound arriving at the receiver.

The report seeks to develop and evaluate noise propagation methods that account for aircraft noise reflection and diffraction from terrain and manmade structures. It also recommends methods for inclusion into the AEDT (Aviation Environmental Design Tool) integrated noise modeling framework and provides updated AEDT user guidance on the influence terrain and man-made structures have on aircraft noise and the applications these new methods have for airport noise analyses.

Published: December 2019
Link: http://www.trb.org/ACRP/Blurbs/180058.aspx

ACRP Web-Only Document 44 – Understanding FAA Grant Assurance Obligations Volume 2: Technical Appendices

Report Blurb: Airports must maintain a safe and efficient facility while considering environmental impacts. Though traditional environmental challenges such as noise and water quality remain, several new themes are emerging, including energy management, sustainability, resiliency, and wildlife management. Airports will need guidelines and practices to help them address these pressing issues, and the first step in the process is to identify knowledge gaps and research needs.

The report presents a five-year prioritized listing of research needs in the area of airport environmental management. The description of these needs can be used to develop research problem statements for funding consideration.

Additional resources included with the report include a research-idea dataset and a Visual Research Roadmap.

Published: February 2020
Link: https://www.trb.org/Main/Blurbs/177624.aspx

ACRP Web-Only Document 45 – Airport Environmental Research Roadmap Narrative Report

Report Blurb: Airports must maintain a safe and efficient facility while considering environmental impacts. Though traditional environmental challenges such as noise and water quality remain, several new themes are emerging, including energy management, sustainability, resiliency, and wildlife management. Airports will need guidelines and practices to help them address these pressing issues, and the first step in the process is to identify knowledge gaps and research needs.

The report presents a five-year prioritized listing of research needs in the area of airport environmental management. The description of these needs can be used to develop research problem statements for funding consideration.

Additional resources included with the report include a research-idea dataset and a Visual Research Roadmap.

Published: February 2020
Link: http://www.trb.org/Main/Blurbs/180348.aspx

ACRP Web-Only Document 46 – Recovering International Recyclables from In-Flight Service

Report Blurb: When exposed to certain foods or fluids, recyclables arriving on international flights are required to be quarantined due to potential contaminants. As a result, almost every country worldwide prescribes sterilization, incineration, or other disposal methods for these contaminated recyclables.

The report finds that supply chains, advanced stakeholder engagement, value chain collaboration, and a globally standardized and adopted approach may be needed to increase and better monetize the recovery of Non-Contaminated Recyclable Materials (NCRM).

With a multi-stakeholder approach, airports, airlines, and flight kitchens, along with support partners, can affect the recovery efficiency of NCRM. Through these collaborative efforts, gaps in supply and collection chains can be addressed.

Published: May 2020
Link: http://www.trb.org/ACRP/Blurbs/180655.aspx

ACRP Web-Only Document 47– Commercial Space Operations Noise and Sonic Boom Measurements

Report Blurb: As the frequency of commercial space operations and the number of licensed launch sites in the United States continue to grow rapidly, accurately assessing the impacts of propulsion noise and sonic booms on surrounding communities will become even more critical.

The report develops a well documented, high-fidelity database of acoustic measurements acquired using a consistent data collection and analysis protocol.

Ultimately, the acoustic database developed during this effort will enable future researchers to validate and enhance the models used to predict community noise exposure from space transportation activities.

A database is included as part of the publication.

Published: June 2020
Link: http://www.trb.org/ACRP/Blurbs/180769.aspx

ACRP Web-Only Document 48 – Evaluating the Use of Spatially Precise Diurnal Population Data in Aviation Noise Studies

Report Blurb: Knowing where people are at different times of the day potentially enables the design of airspace routes that minimize the environmental impact to a shifting population on the ground.

The report examines the potential role of spatiotemporal population data in aviation noise studies.

Aviation noise analysis has traditionally focused on modeling the noise from an average day of operations. There is potential to move from this static approach to identifying high-aircraft-noise areas to a dynamic method of assessing aircraft noise experienced by people where they are as they move about the day and night.

Published: July 2020
Link: http://www.trb.org/ACRP/Blurbs/180987.aspx

ACRP Web-Only Document 49 – Research Roadmap on Airport Administration & Human Resource Issues

Report Blurb: The administration and human resources functions within an airport can experience great challenges as airports grow, diversify, experience changing priorities, bring in new technologies, or change in other ways.

The report recommends priorities and timing, sets a research strategy, and provides a rationale for the research recommendations.

Supplemental materials with this report include a Visual Research Roadmap and a Microsoft Excel-based Research Idea Database.

Published: July 2020
Link: http://www.trb.org/ACRP/Blurbs/180928.aspx

ACRP Web-Only Document 50 – Research Roadmap on Safety Issues

Report Blurb: With the airport industry's introduction and early adoption of safety management systems (SMS), safety processes are taking on a more proactive way of doing the business while continuously improving safety. This shift in approach will drive safety research in the near and long-term future.

This report reveals evidence of this shift, with input from the industry clearly indicating that more detailed guidance on, and the sharing of lessons learned regarding the elements and processes falling under the SMS umbrella, is needed.

Two supplemental files accompany this web-only document, including a Safety Research Topics Database and a Visual Research Roadmap.

Published: October 2020
Link: http://www.trb.org/ACRP/Blurbs/181330.aspx

ACRP Web-Only Document 51 – Commercial Space Vehicle Emissions Modeling

Report Blurb: Federal Aviation Administration (FAA) regulations require the licensing of spaceports and launch vehicles, which includes the assessment of environmental impacts.

This report presents a user-friendly tool for practitioners to estimate the emissions associated with commercial space vehicle activity.

Supplementary materials to the document include an Emissions Example Information & Users Guide, the RUMBLE application, and a RUMBLE User Guide.

Published: March 2021
Link: http://www.trb.org/ACRP/Blurbs/181750.aspx

ACRP Web-Only Document 52 – Command-Level Decision Making for Transportation Emergency Managers

Report Blurb: Command-level decision making is a critical factor in successfully managing and mitigating critical incidents.

This report is a document done in collaboration with TRB's National Cooperative Highway Research Program (NCHRP) and Transit Cooperative Research Program (ACRP). The work is designed to assist public transportation agencies, state departments of transportation (DOTs), and airports to develop training and exercises as they prepare for natural or manmade disaster incidents. It can also be used by organizations as they prepare to meet training and exercise requirements.

Supplemental to the document are artifacts and scenario outlines and narratives.

Published: May 2022
Link: https://www.trb.org/Main/Blurbs/182746.aspx

ACRP Web-Only Document 53 – Measuring and Understanding the Relationship Between Air Service and Regional Economic Development

Report Blurb: Airport economic impact studies may accurately measure the activity that occurs on airport properties or is tied directly to airport operations (such as off-site parking and hotels that accommodate airline crew who overnight in a location), but they do not capture how air service supports business and employment throughout the region.

This report provides airports and major regional stakeholders concerned with economic

development with the information and tools necessary to understand and communicate the nexus between air service and regional employment.

The Web-Only Document is supplemental to *ACRP WebResource 12: Air Service Development and Regional Economic Activity*. Supplemental to the Web-Only Document is a Case Study Compilation with the full versions of the 14 case studies performed as part of the project.

Published: August 2022
Link: https://www.trb.org/Main/Blurbs/182800.aspx

ACRP Web-Only Document 54 – Development of a Small Aircraft Runway Length Analysis Tool

Report Blurb: An important operational characteristic of an airport is the length of its longest runway. The longest runway determines the types of aircraft that can use the airport and dictates the operational limitations at the airport..

This report provides a user-friendly computer tool to help airport planners and designers estimate runway length requirements for a variety of aircraft and design conditions.

Supplemental to the report are the SARLAT (for Windows and Mac) and the SARLAT Users Guide.

Published: Septermber 2022
Link: https://www.trb.org/Main/Blurbs/182838.aspx

ACRP Web-Only Document 55 – Prioritization of Policy and Planning Products

Report Blurb: ACRP has provided more than $169 million in funding for 690 research projects since its inception in 2005. In those 20 years, publications and products have undoubtedly gone out-of-date. In FY2021, the ACRP Oversight Committee, along with ACRP staff, recognized the need to review past products and make updates where appropriate.

This report reviews past products and make updates to them where appropriate.

Supplemental to the document is Appendix A – Product Update Screening Spreadsheet.

Published: August 2023
Link: https://www.trb.org/Main/Blurbs/183093.aspx

Section 5: Research Results Digest (RRDs)

ACRP Research Results Digest 1 – Synthesis of Information Related to Airport Practices

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: February 2007
Link: http://www.trb.org/ACRP/Blurbs/158471.aspx

ACRP Research Results Digest 2 – Model for Improving Energy Use in U.S. Airport Facilities

Report Blurb: Provides data on U.S. airports' utilization of 11 major energy management practices, offers a set of best practices for reducing energy use, and summarizes three case studies of recent recommissioning projects that resulted in significant reductions in energy use, and summarizes three case studies of recent recommissioning projects that resulted in significant reductions in energy use.

- Appendix A-Study of Terminals B and D at Dallas/Fort Worth International Airport
- Appendix B-Airport Rental Car Facility Case Study
- Appendix C-Continuous Commissioning of the Matheson Courthouse in Salt Lake City, Utah
- Appendix D-Airport Survey Questionnaire

A brochure on *Research Results Digest 2* is also available online.

Published: January 2008
Link: http://www.trb.org/ACRP/Blurbs/159312.aspx

ACRP Research Results Digest 3 – Synthesis of Information Related to Airport Practices

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: February 2008
Link: http://www.trb.org/ACRP/Blurbs/159637.aspx

ACRP Research Results Digest 4 – Synthesis of Information Related to Airport Practices: 2009

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: February 2009
Link: http://www.trb.org/ACRP/Blurbs/160661.aspx

ACRP Research Results Digest 5 – Current and Emerging Issues Facing the Airport Industry

Report Blurb: Summarizes the program and the process for identifying strategic research areas for use with the FY 2010 ACRP problem statement solicitation process and beyond.

In January 2014, this report was updated with the release of *RRD 20: Taking Inventory of ACRP Research and the Net Challenges Facing the Airport Industry*.

Published: January 2009
Link: http://www.trb.org/ACRP/Blurbs/160631.aspx

ACRP Research Results Digest 6 – Guidance for Identifying and Mitigating Approach Lighting System Hazards

Report Blurb: Designed to assist with defining response procedures to mitigate or reduce the hazards associated with aircraft and approach lighting system incidents.

Additional information on the project that developed the report was published as Contractor's Final Report for ACRP RRD 6: Guidance for Identifying and Mitigating Approach Lighting System Hazards, which explores the results of the research on approach lighting system (ALS) hazard identification and mitigation techniques.

Published: May 2009
Link: http://www.trb.org/ACRP/Blurbs/161718.aspx

ACRP Research Results Digest 7 – A Summary of How Proposed Firefighting Standards Would Impact Airports

Report Blurb: Explores the potential cost implications for airports of implementing proposed airport rescue and firefighting (ARFF) regulations that would be more closely aligned with voluntary consensus standards promulgated by the International Civil Aviation Organization and the National Fire Protection Association. Section 311 of H.R. 915 EH, the FAA Reauthorization Act of 2009, calls for more closely aligning ARFF regulations under part 139 of title 14, Code of Federal Regulations, Certification of Airports, with voluntary consensus standards.

The full report was published online as *Web-Only Document 7: How Proposed ARFF Standards Would Impact Airports*.

Published: October 2009
Link: http://www.trb.org/Main/Blurbs/162490.aspx

ACRP Research Results Digest 8 – Synthesis of Information Related to Airport Practices: 2010

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: January 2010
Link: http://www.trb.org/ACRP/Blurbs/162859.aspx

ACRP Research Results Digest 9 – Alternative Aircraft and Pavement Deicers and Anti-Icing Formulations with Improved Environmental Characteristics

Report Blurb: Explores the aquatic toxicity and biological oxygen demand state of the art, components, and promising alternative formulations of deicing and anti-icing products. The report also examines the performance; efficiency; material compatibility; and environmental, operational, and safety impacts of alternative formulations and components as well as the fate and transport of deicing and anti-icing formulation components and their degradation products.

A full report on this issue was published by TRB as *Web-Only Document 8: Alternative Aircraft Anti-Icing Formulations with Reduced Aquatic Toxicity and Biochemical Oxygen Demand*.

Published: May 2010
Link: http://www.trb.org/ACRP/Blurbs/163408.aspx

ACRP Research Results Digest 10 – Light Detection and Ranging (LIDAR) Deployment for Airport Obstruction Surveys

Report Blurb: Explores the readiness of LIDAR technology as a cost-effective alternative to the traditional methods for collecting the data required to prepare airport obstruction surveys that meet government requirements. The report also examines a sample specification that responsible agencies might use to procure LIDAR-based aerial survey services to produce an airport obstruction survey.

Published: July 2010
Link: http://www.trb.org/ACRP/Blurbs/163789.aspx

ACRP Research Results Digest 11 – Helping Airports Understand the Payment Card Industry Data Security Standard (PCI DSS)

Report Blurb: Explores PCI DSS and the impacts that an airport needs to consider when reviewing its credit data retention policies and systems that process credit card payment transactions.

Published: October 2010
Link: http://www.trb.org/ACRP/Blurbs/164245.aspx

ACRP Research Results Digest 12 – Synthesis of Information Related to Airport Practices: 2011

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: February 2011
Link: http://www.trb.org/ACRP/Blurbs/164765.aspx

ACRP Research Results Digest 13 – Synthesis of Information Related to Airport Practices: 2012

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: January 2012
Link: http://www.trb.org/ACRP/Blurbs/166610.aspx

ACRP Research Results Digest 14 – Graduate Research Award Program on Public-Sector Aviation Issues: 2012

Report Blurb: Summarizes the results of the initial four years of the Graduate Research Award Program on Public-Sector Aviation Issues (ACRP Project 11-04).

The program is managed by TRB's Airport Cooperative Research Program and sponsored by the Federal Aviation Administration and designed to encourage applied research on airport and related aviation system issues and to foster the next generation of aviation community leaders.

Under the program, up to ten awards of $10,000 each are made to full-time graduate students for successful completion of a research paper on public-sector airport-related aviation issues during the academic year. Candidates must be full-time students enrolled in a graduate degree program at an accredited institution of higher learning during the academic year.

Successful papers are presented at the TRB Annual Meeting following completion of the program; exceptional papers have been published in subsequent volumes of the *Transportation Research Record: Journal of the Transportation Research Board*.

In January 2014, ACRP published *Research Results Digest 19: Graduate Research Award Program on Public-Sector Aviation Issues Update: 2008–2013,* which supplements information in this report.

Published: February 2012
Link: http://www.trb.org/ACRP/Blurbs/166611.aspx

ACRP Research Results Digest 15 – Use of Towbarless Tractors at Airports—Best Practices

Report Blurb: Includes broad guidance designed to help enhance the safe operation of towbarless tractors (TBLTs) at airports.

This report is designed to assist airports and aircraft operators in gaining a basic understanding of the training and operational issues associated with TBLT operations.

TBLTs, also known as towbarless tow vehicles (TLTVs), are used to tow aircraft at the airport. TBLTs, as the name implies, do not use a tow bar but instead use a pick-up device located in the center of the vehicle to cradle the nose gear tires to provide direct maneuvering of the aircraft.

Published: March 2012
Link: http://www.trb.org/ACRP/Blurbs/166829.aspx

ACRP Research Results Digest 16 – Legal Aspects of Airport Programs: 2012

Report Blurb: A digest of the background and status of ACRP Project 11-01, Legal Aspects of Airport Programs.

Published: January 2013
Link: http://www.trb.org/ACRP/Blurbs/168371.aspx

ACRP Research Results Digest 17 – Synthesis of Information Related to Airport Practices: 2013

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: February 2013
Link: http://www.trb.org/ACRP/Blurbs/168448.aspx

ACRP Research Results Digest 18 – Synthesis of Information Related to Airport Practices: 2014

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: February 2014
Link: http://www.trb.org/ACRP/Blurbs/170232.aspx

ACRP Research Results Digest 19 – Graduate Research Award Program on Public-Sector Aviation Issues Update: 2008–2013

Report Blurb: Provides initial information for the 2013–2014 academic year of the Graduate Research Award Program on Public-Sector Aviation Issues (ACRP Project 11-04).

The report also includes abstracts for student papers from the 2012–2013 and 2011–2012 academic years, and lists papers from prior academic years beginning in 2008–2009. Abstracts for the earlier papers are available in *Research Results Digest 14: Graduate Research Award Program on Public-Sector Aviation Issues: 2012*.

The program, sponsored by the U.S. Federal Aviation Administration and administered by the ACRP, is designed to encourage applied research on airport-related aviation system issues and to foster the next generation of aviation community leaders. Under the program, up to ten awards of

$10,000 each are made to full-time graduate students for successful completion of a research paper on public-sector airport-related aviation issues during the academic year.

Candidates must be full-time students enrolled in a graduate degree program at a North American accredited institution of higher learning during the academic year. Successful papers are presented at the TRB Annual Meeting following completion of the program, and exceptional papers have been published in subsequent volumes of the *Transportation Research Record: Journal of the Transportation Research Board*.

Published: January 2014
Link: http://www.trb.org/ACRP/Blurbs/170152.aspx

ACRP Research Results Digest 20 – Taking Inventory of ACRP Research and the Next Challenges Facing the Airport Industry

Report Blurb: Explores the ACRP's processes, guidance, and research results. The report examines ACRP's outreach to the airport industry.

This report also updates *Research Results Digest 5: Current and Emerging Issues Facing the Airport Industry* and is designed to represent the program's strategy of matching research initiatives to current and emerging airport challenges.

Published: January 2014
Link: http://www.trb.org/ACRP/Blurbs/170068.aspx

ACRP Research Results Digest 21 – Best Practices for General Aviation Aircraft Fuel-Tank Sampling

Report Blurb: Estimates the discard amounts from fuel testing samples that are entering the stormwater run-off system, and develops best practices for proper disposal of the fuel-tank samples.

Published: July 2014
Link: http://www.trb.org/ACRP/Blurbs/171076.aspx

ACRP Research Results Digest 22 – Synthesis of Information Related to Airport Practices: 2015

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: January 2015
Link: http://www.trb.org/ACRP/Blurbs/171931.aspx

ACRP Research Results Digest 23 – Synthesis of Information Related to Airport Practices: 2016

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: January 2016
Link: http://www.trb.org/ACRP/Blurbs/173831.aspx

ACRP Research Results Digest 24 – Recommended Community Noise Model Enhancements to Improve Prediction of Helicopter Activity Impacts

Report Blurb: Provides an overview of research conducted to identify improvements to the most common methods for predicting helicopter community noise, including the research tasks, findings, conclusions, and next steps. While the research did not attempt to identify which noise metric best predicts annoyance, it offers a computational methodology from which suggested metrics may be accurately determined.

The contractor's final report is available online.

Published: January 2016
Link: http://www.trb.org/ACRP/Blurbs/173719.aspx

ACRP Research Results Digest 25 – Graduate Research Award Program on Public-Sector Aviation Issues Update: 2008–2017

Report Blurb: This report provides initial information for the 2016–2017 academic year of the Graduate Research Award Program on Public-Sector Aviation Issues (ACRP Project 11-04).

The report also includes abstracts for student papers from the 2015–2016, 2014-2015, and 2013–2014 academic years, and lists papers from prior academic years beginning in 2008–2009. Abstracts for the earlier papers are available in ACRP RRD 14 and ACRP RRD 19.

The program, sponsored by the U.S. Federal Aviation Administration and administered by the ACRP, is designed to encourage applied research on airport-related aviation system issues and to foster the next generation of aviation community leaders. Under the program, up to ten awards of $10,000 each are made to full-time graduate students for successful completion of a research paper on public-sector airport-related aviation issues during the academic year.

Candidates must be full-time students enrolled in a graduate degree program at a North American accredited institution of higher learning during the academic year. Successful papers are presented at the TRB Annual Meeting following completion of the program, and exceptional papers have been published in subsequent volumes of the Transportation Research Record: Journal of the Transportation Research Board.

Published: January 2016
Link: https://www.trb.org/Main/Blurbs/175502.aspx

ACRP Research Results Digest 26 – Synthesis of Information Related to Airport Practices: 2017

Report Blurb: A digest of the progress and status of ACRP Project 11-03, Synthesis of Information Related to Airport Practices.

Published: January 2017
Link: http://www.trb.org/ACRP/Blurbs/175530.aspx

ACRP Research Results Digest 27 – Legal Aspects of Airport Programs - An Update

Report Blurb: Digest of the background and status of ACRP Project 11-01, Legal Aspects of Airport Programs. During the first 11 years of ACRP Project 11-01, there have been almost 50 topics selected for legal research in broad areas of interest to the airport legal community. Thirty-three ACRP Legal Research Digests have been published to date and are available through the TRB website.

Published: January 2018
Link: http://www.trb.org/ACRP/Blurbs/177056.aspx

ACRP Research Results Digest 28 – Thought Leader Forum Summary—Emerging Issues for ACRP

Report Blurb: Summarizes January 30, 2019, forum to identify the most important issues facing the airport industry within the next 5 to 10 years.

The goal of this exercise was to engage the ACRP's Airport Operations Committee (AOC) directly with other thought leaders in the industry to identify and define high-level emerging critical issues that impact, or will soon affect the airport industry.

The digest describes the results of a pre-Forum survey designed to help shape the Forum discussion, summarizes the results of the forum itself, and explores potential next steps.

Published: April 2019
Link: http://www.trb.org/ACRP/Blurbs/179050.aspx

Section 6: Miscellaneous

Airport Cooperative Research Program Brochure

Report Blurb: Explores various aspects of the program and provides information on the different ways individuals can become involved in ACRP, an industry-driven, applied research program that develops near-term, practical solutions to problems faced by airport operators.

Published: March 2010
Link: http://www.trb.org/ACRP/Blurbs/163450.aspx

ACRP Annual Report of Progress 2010

Report Blurb: TRB's ACRP has released its annual report that highlights the progress the program has made over the last year, as well as accomplishments since the program began in 2005. Also, the report provides general background on the program and information on program participants, the research selection process, program management, project panels, contractor selection, funding, recently completed products, and the status of research activities.

Published: January 2011
Link: http://www.trb.org/ACRP/Blurbs/164686.aspx

ACRP Annual Report of Progress 2011

Report Blurb: TRB's ACRP has released its annual report that provides background on the program, a listing of products developed under the program over the last 6 years, a summary of the status of projects in progress or completed, and more.

Published: January 2012
Link: http://www.trb.org/ACRP/Blurbs/166614.aspx

ACRP Annual Report of Progress 2012

Report Blurb: TRB's ACRP has released its annual report that provides background on the program, a listing of products developed under the program over the last 7 years, a summary of the status of projects in progress or completed, and more.

Published: January 2013
Link: http://www.trb.org/ACRP/blurbs/168343.aspx

TRB Aviation Group Brochure

Report Blurb: TRB's Aviation Group has released a brochure that highlights why and how to get involved in TRB aviation-related technical committee activities. The technical committees are communities of individuals who share a common interest and expertise. Each committee proposes to research, share research findings sponsors a broad range of activities and provides a forum for professionals to discuss today's and tomorrow's aviation and airport issues.

The report consists of nine technical committees that address intergovernmental relations in aviation; aviation system planning; environmental impacts of aviation; aviation economics and forecasting; airport terminals and ground access; airfield and airspace capacity and delay; aircraft and airfield compatibility; light commercial and general aviation; and aviation security and emergency management.

Together, the nine committees and the group's executive board foster and support aviation and airport research designed to help inform and benefit both users and the profession, and provide an open and unparalleled forum to disseminate and examine the results of this research.

Published: April 2013
Link: http://www.trb.org/ACRP/Blurbs/168807.aspx

ACRP Annual Report of Progress 2013

Report Blurb: TRB's ACRP has released its annual report that provides background on the program, a listing of products developed under the program over the last 8 years, a summary of the status of projects in progress or completed, and more.

Published: January 2014
Link: http://www.trb.org/ACRP/Blurbs/170108.aspx

ACRP Annual Report of Progress 2014

Report Blurb: TRB's ACRP has released its annual report that provides background on the program, a listing of products developed under the program over the last 9 years, a summary of the status of projects in progress or completed, and more.

Published: January 2015
Link: http://www.trb.org/ACRP/Blurbs/171966.aspx

ACRP CD-161: Estimating Takeoff Thrust Settings for Airport Emissions Inventories

Report Blurb: Offers guidance designed to help airport practitioners include the effects of reduced takeoff thrust in their emissions inventory calculations. When calculating air quality emissions inventories for airports, modelers frequently assume that aircraft takeoff uses maximum engine thrust. However, many airlines routinely use lower takeoff thrust levels to prolong the lives of the engines.

This report includes the Takeoff Thrust-Setting Estimator Tool (TTREAT), which calculates takeoff thrust for departures from an airport and produces outputs suitable for use with the Federal Aviation Administration Aviation Environmental Design Tool (AEDT). Validation of TTREAT has shown that it successfully captures the distributions of thrust seen in the airline data and that the takeoff flight profiles calculated by AEDT are closer matched to those from the airline data than are calculations assuming a maxim thrust takeoffs.

The report includes the TTREAT tool, a practitioner guidebook, and a final technical report.

Published: March 2015
Link: http://www.trb.org/ACRP/Blurbs/172265.aspx

Airport Cooperative Research Program Brochure

Report Blurb: TRB's ACRP has produced an updated brochure that explores various aspects of the program and provides information on the different ways individuals can become involved in ACRP, an industry-driven, applied research program that develops near-term, practical solutions to problems faced by airport operators.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/163450.aspx

ACRP Annual Report of Progress 2015

Report Blurb: TRB's ACRP has released its annual report that reflects on the achievements of the past 10 years, as well as ACRP's strategic outlook on the next 10 years of providing responsive, relevant, and innovative solutions to the challenges and opportunities within the airport industry.

Published: January 2016
Link: http://www.trb.org/ACRP/Blurbs/173790.aspx

Airport Terminal Building Energy Use Intensity (ATB-EUI) Benchmarking Tool

Report Blurb: Provides assistance to airports to help benchmark and profile airport terminal energy end uses. The CD includes the raw data that was used to develop the tool. The tool helps users complete a form on their energy uses to develop an energy use intensity profile to benchmark against other terminals. *Web-Only Document 27: Methodology to Develop the Airport Terminal Building Energy Use Intensity (ATB-EUI) Benchmarking Tool* complements CD-ROM 178. It outlines the overall data collection and analysis process for developing an airport terminal building benchmarks.

The data and tools are publicly available for download on this website.

Published: January 2016
Link: http://www.trb.org/ACRP/Blurbs/173795.aspx

ACRP Annual Report of Progress 2016

Report Blurb: TRB's ACRP has released its annual report that reflects on the achievements of the past 11 years, as well as ACRP's strategic outlook of providing responsive, relevant, and innovative solutions to the challenges and opportunities within the airport industry.

Published: January 2017
Link: http://www.trb.org/ACRP/Blurbs/175533.aspx

The Vector-Borne Disease Airport Importation Risk Tool

Report Blurb: TRB has made enhancements to its Airport Cooperative Research Program (ACRP) CRP-CD-137: The Vector-Borne Disease Airport Importation Risk Tool. The tool is a CD-ROM-based interactive tool designed to help define the roles of airports and airlines in the transmission and spread of insect-borne human diseases.

The tool relies on the assumption that the levels of imported vector and vector-borne disease risk via air travel are related to the presence of flight routes connected to endemic regions, the level of traffic between the origin and destination cities, and the monthly climatic similarity between origin and destination.

The tool focuses on four vector-borne diseases—malaria, dengue, yellow fever, and chikungunya; describes the relative importation risk for the selected airport, and provides suggestions for mitigation.

Published: June 2017
Link: http://www.trb.org/ACRP/Blurbs/169301.aspx

Airport Passenger Terminal Design Library

Report Blurb: This electronic resources library houses searchable information on, and links to, existing ACRP, federal, and other industry documents related to airport passenger terminal planning and design.

Published: September 2017
Link: http://www.trb.org/ACRP/Blurbs/176507.aspx

ACRP Annual Report of Progress 2017

Report Blurb: TRB's ACRP has released its annual report on its 2017 achievements and includes initiating 44 new research and special projects and publishing 19 research reports. New approaches to sharing research ideas, convening experts on emerging and rapidly evolving issues, and implementing research are highlighted in the 2017 report.

Published: January 2018
Link: http://www.trb.org/ACRP/Blurbs/177109.aspx

ACRP Annual Report of Progress 2018

Report Blurb: TRB's ACRP has released its annual report that reflects on its 2018 achievements and includes initiating 55 new research and special projects and publishing 29 research reports. New approaches to sharing research ideas, convening experts on emerging and rapidly evolving issues, and implementing research are highlighted in the 2018 report.

Published: January 2019
Link: http://www.trb.org/ACRP/Blurbs/178611.aspx

ACRP Annual Report of Progress 2019

Report Blurb: Describes the program's activities and accomplishments and how they encourage collaboration to address emerging challenges and foster professional networking across miles and generations. By presenting program metrics and practitioner feedback, the report describes ACRP's highlights and accomplishments.

Since its establishment in 2005, the ACRP has helped foster and sustain these benefits by conducting applied research to help the airport industry address day-to-day challenges. In 2019, ACRP continued conducting high-quality, industry-driven research, disseminating the research to airport practitioners and other stakeholders, and engaging industry members in new and meaningful ways.

Published: January 2020
Link: http://www.trb.org/ACRP/Blurbs/180125.aspx

ACRP 2020 Annual Report of Progress

Report Blurb: This report describes the TRB Airport Cooperative Research Program's activities and accomplishments and how they encourage collaboration to address emerging challenges and foster professional networking across miles and generations. By presenting program metrics and practitioner feedback, the report describes ACRP's highlights and accomplishments.

Since its establishment in 2005, the Airport Cooperative Research Program (ACRP) has helped foster and sustain these benefits by conducting applied research to help the airport industry address day-to-day challenges. In 2020, ACRP continued conducting high-quality, industry-driven research, disseminating the research to airport practitioners and other stakeholders, and engaging industry members in new and meaningful ways.

Published: January 2021
Link: http://www.trb.org/ACRP/Blurbs/181697.aspx

ACRP 2021 Annual Report of Progress

Report Blurb: This report describes the TRB Airport Cooperative Research Program's activities and accomplishments and how they encourage collaboration to address emerging challenges and foster professional networking across miles and generations. By presenting program metrics and practitioner feedback, the report describes ACRP's highlights and accomplishments.

Since its establishment in 2005, the Airport Cooperative Research Program has helped foster and sustain these benefits by conducting applied research to help the airport industry address day-to-

day challenges. In 2021, ACRP continued conducting high-quality, industry-driven research, disseminating the research to airport practitioners and other stakeholders, and engaging industry members in new and meaningful ways.

Published: December 2021
Link: https://www.trb.org/Main/Blurbs/182645.aspx

ACRP 2022 Annual Report of Progress

Report Blurb: This report describes the TRB Airport Cooperative Research Program's activities and accomplishments over the past year. The annual details how ACRP encourages collaboration to address emerging challenges and fosters professional networking across miles and generations. Program metrics and practitioner feedback are presented to highlight ACRP's accomplishments.

Since its establishment in 2005, the Airport Cooperative Research Program has helped foster and sustain these benefits by conducting applied research to help the airport industry address day-to-day challenges. In 2022, ACRP continued conducting high-quality, industry-driven research, disseminating the research to airport practitioners and other stakeholders, and engaging industry members in new and meaningful ways.

Published: December 2022
Link: https://www.trb.org/Main/Blurbs/182899.aspx

Section 7: Impacts on Practice

ACRP Impacts on Practice – October 2010: Guidebook Informs Nation's Smaller Airports

Report Blurb: In February 2010, TRB's Airport Cooperative Research Program (ACRP) released *ACRP Research Report 16: Guidebook for Managing Small Airports - Second Edition*, which is designed to help operators and managers of small airports find resources and identify techniques that they may apply to meet their responsibilities. Since its release, the report has quickly become a valuable reference on the myriad of responsibilities and challenges that the nation's small airport operators and managers face every day. ACRP's first issue of its new Impacts on Practice series highlights the value of ACRP Report 16 to airports, their communities, and the traveling public.

ACRP's *Impacts on Practice* series is designed to provide examples of how airport industry practitioners are using ACRP research results to assist them in their work. The goal of the Airport Cooperative Research Program is to provide well-researched, useful publications that can contribute to the growth and development of the nation's airport industry. ACRP publications can help improve airport administrative practices, develop safer and more effective operational techniques, and increase performance efficiency.

Published: October 2010
Link: http://www.trb.org/ACRP/Blurbs/164327.aspx

ACRP Impacts on Practice – November 2010: San Diego's Efforts to Mitigate Noise Impacts for Community Stakeholders

Report Blurb: Explores how officials at San Diego International Airport (SAN) have used two ACRP publications: *ACRP Research Report 15: Aircraft Noise: A Toolkit for Managing Community Expectations* and *ACRP Synthesis 16: Compilation of Noise Programs in Areas Outside DNL 65* to gain insights, ideas, perspectives, and tools that have contributed to the effectiveness of SAN's efforts to mitigate the impacts of noise.

Published: November 2010
Link: http://www.trb.org/ACRP/Blurbs/164371.aspx

ACRP Impacts on Practice – December 2010: Strategic Planning at Toronto Pearson International Airport

Report Blurb: Explores the use of *ACRP Research Report 20: Strategic Planning in the Airport Industry* by board members of the Greater Toronto Airports Authority (GTAA) in posing the appropriate strategic questions to help move GTAA and the Lester B. Pearson International Airport forward to the desired future.

Published: December 2010
Link: http://www.trb.org/ACRP/Blurbs/164385.aspx

ACRP Impacts on Practice – September 2011: Protecting Airport Personnel from Lightning Strikes

Report Blurb: Describes how *ACRP Research Report 8: Lightning-Warning Systems for Use by Airports* was instrumental in helping Austin-Bergstrom International Airport identify and select a visual system to alert ramp workers when lightning is in the vicinity.

Published: September 2011
Link: http://www.trb.org/ACRP/Blurbs/166246.aspx

ACRP Impacts on Practice – October 2011: Estimating Airport Greenhouse Gas (GHG) Emissions

Report Blurb: Describes how officials at the Dallas/Fort Worth International Airport (DFW) used *ACRP Research Report 11: Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories* to develop a GHG emissions inventory for DFW.

Published: October 2011
Link: http://www.trb.org/ACRP/Blurbs/166247.aspx

ACRP Impacts on Practice – November 2011: Traumatic Event Assistance for Aviation Employees

Report Blurb: Highlights information included in *ACRP Research Report 22: Helping Airport and Air Carrier Employees Cope with Traumatic Events* that are described as "critical" by Hilary Fletcher, former County Manager for Pitkin County, Colorado.

Ms. Fletcher is the founder of the Colorado Aviation Recovery Support Team that helps communities in Colorado recover from aviation incidents and was instrumental in the effort responding to a 2001 crash of a chartered flight on final approach at Aspen-Pitkin County Airport.

Published: November 2011
Link: http://www.trb.org/ACRP/Blurbs/166248.aspx

ACRP Impacts on Practice – Development of Airport Property: Policy Guidance and Workforce Training

Report Blurb: Describes how information included in *ACRP Research Report 47: Guidebook for Developing and Leasing Airport Property* was used by the Houston Airport System to complete its due diligence of identifying stakeholders and impacts in allowing Hobby Airport to offer international flights.

The report also highlights how Texas Southern University students in the Aviation Property and Leasing Management course working towards a degree in Aviation Science and Technology used the report as the primary reference for the course.

ACRP Report 47 was released in March 2011 and explores issues associated with developing and leasing available airport land and summarizes best practices from the perspective of the airport sponsor.

Published: November 2012
Link: http://www.trb.org/ACRP/Blurbs/168059.aspx

ACRP Impacts on Practice – ACRP Disseminates Solutions-Based Research Projects Through Ambassadors

Report Blurb: Describes the Ambassador program, one of several dissemination initiatives that are strengthening ACRP's connection to the airport industry.

In their first year, ACRP Ambassadors engaged the aviation community through 11 presentations; 13 exhibitions; and the distribution of more than 600 ACRP reports, 500 ACRP brochures, 160 ACRP synthesis reports, and 130 Impacts on Practice.

Published: January 2013
Link: http://www.trb.org/ACRP/Blurbs/168398.aspx

ACRP Impacts on Practice – Contingency Planning for Unexpected Passenger Delays

Report Blurb: Describes how Fort Wayne International Airport (FWA) and Buffalo Niagara International Airport (BNIA) have developed and implemented IROPS plans based on *ACRP Research Report 65: Guidebook for Airport Irregular Operations (IROPS) Contingency Planning*, a resource to assist airports in the development of irregular operations contingency plans in close collaboration with all service providers. ACRP Report 65 features numerous resources that can be customized to the user's specific airport.

Daniel Rak, the terminal services supervisor for FWA, noted that the value of ACRP Report 65 is that it enables diverse airport stakeholders to document their plans and develop a cohesive, comprehensive plan for the airport that would allow for a quick response when an event occurs. According to Tom Dames, airfield superintendent at BNIA, "before the plan, many of our associates were not well prepared for irregular operations. The contingency plan has eliminated the fear of having to support an IROP activity alone and with little experience."

ACRP Research Report 65: Guidebook for Airport Irregular Operations (IROPS) Contingency Planning is a resource to assist airports in the development of irregular operations contingency plans in close collaboration with all service providers. *ACRP Report 65* features numerous resources that can be customized to the user's specific airport.

Published: April 2013
Link: http://www.trb.org/ACRP/Blurbs/168756.aspx

ACRP Impacts on Practice – Maximizing Airport Facility Utilization and Efficiency with Common-Use Resources

Report Blurb: Explores how the San Diego County Regional Airport Authority applied *ACRP Research Report 30: Reference Guide on Understanding Common Use at Airports* to develop new business models for common use systems at its airport.

Published: October 2013
Link: http://www.trb.org/ACRP/Blurbs/169730.aspx

ACRP Impacts on Practice – Implementing Effective Airport Marketing Approaches to Tenants and the Community

Report Blurb: Highlights how the Fort Wayne International Airport in Indiana used *ACRP Research Report 28: Marketing Guidebook for Small Airports* to create a marketing plan.

Published: November 2013
Link: http://www.trb.org/ACRP/Blurbs/169732.aspx

ACRP Impacts on Practice – Evaluating Terminal Renewal and Replacement Options

Report Blurb: Explores how airport personnel from the Port Authority of New York and New Jersey utilized *ACRP Research Report 68: Guidebook for Evaluating Terminal Renewal Versus Replacement Options* for the redevelopment planning of Terminal A at Newark Liberty International Airport.

Published: December 2013
Link: http://www.trb.org/ACRP/Blurbs/169733.aspx

ACRP Impacts on Practice – Identifying Practices for Controlling Aircraft and Airfield Deicing Runoff

Report Blurb: Examines how the Gerald R. Ford International Airport (GRR) in Grand Rapids, Michigan utilized *ACRP Research Report 14: Deicing Planning Guidelines and Practices for Stormwater Management Systems* to develop long-term stormwater and deicing program that would maintain airport safety and comply with environmental regulations.

The report's guidelines eliminated the need for identifying best management practices and helped the airport clearly define and engineer a stormwater management system that fit GRR's specific needs. As a result, the airport was able to produce a plan that met timely approval by the Michigan Department of Environmental Quality.

Published: June 2014
Link: http://www.trb.org/ACRP/Blurbs/170964.aspx

ACRP Impacts on Practice – Improving Airport Curbside and Roadway Operations

Report Blurb: Explores how the planning staff at Ottawa Macdonald-Cartier International Airport (YOW) applied analytical tools presented in *ACRP Research Report 40: Airport Curbside and Terminal Area Roadway Operations* to help improve airport operations and travelers' experiences.

Using the tools presented in this report, planning staff at YOW identified the optimal combination of improvements to increase the airport's ability to process the vehicular traffic demand. The airport has implemented one of the improvements and is planning to deploy other recommendations in coordination with additional terminal area improvement strategies.

Published: September 2014
Link: http://www.trb.org/ACRP/Blurbs/171272.aspx

ACRP Impacts on Practice – Planning for Recovery of Disabled Aircraft

Report Blurb: Highlights the value of *ACRP Synthesis 38: Expediting Aircraft Recovery at Airports*, a report that details guidance for expediting the recovery of disabled aircraft. Specifically, officials at John Wayne Airport (SNA) in Orange County, California applied ACRP Synthesis 38 to help plan for aircraft recovery operations.

Published: October 2014
Link: http://www.trb.org/ACRP/Blurbs/171513.aspx

ACRP Impacts on Practice – Airports and Aging Travelers

Report Blurb: Explores how Southwest Florida International Airport (RSW) provides aging passengers with an easier, safer, and more enjoyable experience in its terminals. Upon publication of *ACRP Synthesis 51: Impacts of Aging Travelers on Airports*, employees at RSW met to review its current projects and identified potential projects and service improvements to make traveling through the airport more enjoyable for the aging traveler.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172742.aspx

ACRP Impacts on Practice – Improving Emergency Response at Airports

Report Blurb: Highlights how airports like Grand Forks International Airport (GFK) in North Dakota have applied the findings from *ACRP Research Report 95: Integrating Community Emergency Response Teams (A-CERTs) at Airports*. Officials at GFK credit the direction provided in ACRP Report 95 with enabling the airport to build, implement, and maintain a successful response team.

Published: June 2015
Link: http://www.trb.org/ACRP/Blurbs/172743.aspx

ACRP Impacts on Practice – Improving the Safety of Runway Safety Areas

Report Blurb: Explores how San Francisco International Airport applied guidance from *ACRP Research Report 50: Improved Models for Risk Assessment of Runway Safety Areas* and *ACRP Research Report 3: Analysis of Aircraft Overruns and Undershoots for Runway Safety Areas* as alternatives and develop cost-effective alternatives to meet federal safety requirements.

Published: January 2016
Link: http://www.trb.org/ACRP/Blurbs/173761.aspx

ACRP Impacts on Practice – Wayfinding and Signing Guidelines for Airports

Report Blurb: explores how Philadelphia International Airport, Fort Lauderdale-Hollywood International Airport, and Changi Airport in Singapore applied guidance from *ACRP Research Report 52: Wayfinding and Signing Guidelines for Airport Terminals and Landside* to help passengers find their way in and around an airport.

Published: January 2016
Link: http://www.trb.org/ACRP/Blurbs/173760.aspx

ACRP Impacts on Practice – Preparing the Next Generation of Airport Leaders

Report Blurb: Focuses on preparing the next generation of airport leaders. It explores how *ACRP Research Report 75: Airport Leadership Development Program* influenced a collaborative effort in Florida to develop a three-and-a-half-day program to develop and train future leaders. Since its inception, 150 professionals from 40 different Florida airports have completed the program. The impact of the training is perhaps best demonstrated by the fact that 33 of the graduates have moved their careers forward either through a promotion or by accepting a new position in the aviation field.

Published: August 2016
Link: http://www.trb.org/ACRP/Blurbs/174818.aspx

ACRP Impacts on Practice – ACRP Ambassadors: Sharing Research Peer-To-Peer

Report Blurb: Explores the ACRP Ambassadors Program; one of ACRP's dissemination initiatives helping to strengthen its connection to the airport industry. The Ambassadors Program seeks new volunteers who are passionate about improving the airport industry. Ambassadors will benefit from networking opportunities connecting practitioners to the research they need to do their jobs.

Published: October 2016
Link: http://www.trb.org/ACRP/Blurbs/175212.aspx

ACRP Impacts on Practice – Improving Customer Experience at Airport Restroom Facilities

Report Blurb: Explores how Austin–Bergstrom International Airport (ABIA) is using *ACRP Research Report 130: Guidebook for Airport Terminal Restroom Planning and Design* to help guide remodeling plans for restrooms at the airport. The report addresses topics like cleanliness and customer safety for passengers; traffic flow; maintenance; and improved visual aspects of the restroom environment.

Published: November 2016
Link: http://www.trb.org/ACRP/Blurbs/175363.aspx

ACRP Impacts on Practice – Using Airfield LED Lighting to Save Energy and Costs

Report Blurb: Explores how New Hampshire's Manchester-Boston Regional Airport (MHT) and King County International Airport (BFI) in Seattle, Washington used *ACRP Synthesis 35: Issues with Use of Airfield LED Light Fixtures* to guide the decision to replace its airfield taxiway incandescent lighting with a light-emitting diode (LED) system. MHT airport officials found that there were no extraordinary issues with removing snow around LED lights, and discovered that maintenance activities have been reduced. BFI has witnessed a reduction in energy use by seven percent over the previous year due in part to the new LED lighting.

Published: November 2016
Link: http://www.trb.org/ACRP/Blurbs/175371.aspx

ACRP Impacts on Practice – Integrating Airport Research and Decision-making: A Case Study

Report Blurb: Explores integrating research into decision-making at Jacksonville Aviation Authority through using reports produced by ACRP. Topics like emergency management, development of cooperative agreements, risk management, safety, communications, and operational efficiency are examined. In particular, the reports' case studies provide illustrative examples and tools to save money, operate more efficiently, or maintain a safer environment.

Published: February 2017
Link: http://www.trb.org/ACRP/Blurbs/175652.aspx

ACRP Impacts on Practice – ACRP and Higher Education: Building the Next Generation of Airport Professionals

Report Blurb: Explores how educators have incorporated ACRP tools and reports into their curriculum. Professors and students at Kansas State Polytechnic (KSP) University in Salina, Kansas use ACRP reports to provide foundational knowledge about the airport industry, and students find the reports practical resources as they transition from students to professionals.

Published: February 2017
Link: http://www.trb.org/ACRP/Blurbs/175653.aspx

ACRP Impacts on Practice – Finding Solutions to Information Technology Issues at Airports

Report Blurb: Explores a resource that helps airports view information technology from a strategic level. *ACRP Research Report 59: Information Technology Systems at Airports--A Primer* helped officials from Los Angeles World Airports codify best practices. Additionally, the use of the report's assessment tools by Tulsa International Airport has helped produce several benefits that range from annual savings of $235,000 in phone services to improved efficiency in planning, budgeting, and purchasing for information technology.

Published: December 2017
Link: http://www.trb.org/ACRP/Blurbs/176967.aspx

ACRP Impacts on Practice – Guidebook to Creating a Collaborative Environment Between Airport Operations and Maintenance

Report Blurb: Provides tools and strategies that are designed to help potentially increase and improve collaboration between operations and maintenance staffs at airports.

The contractor's executive summary and final report, which documents the research related to the development of *ACRP Research Report 92: Guidebook to Creating a Collaborative Environment Between Airport Operations and Maintenance*, are also available online.

Published: December 2017
Link: http://www.trb.org/ACRP/Blurbs/169739.aspx

ACRP Impacts on Practice – Learning to Negotiate Airport / Airline Agreements

Report Blurb: Examines how an aviation consulting firm applied the findings of *ACRP Research Report 36: Airport/Airline Agreements—Practices and Characteristics* for use in training its clients on lease negotiation, rates, and charges. The report clarifies the impacts of residual and compensatory rate structures on airports and airlines. This, in turn, assists with negotiating fair agreements between airlines and airport operators.

Published: December 2017
Link: http://www.trb.org/ACRP/Blurbs/176969.aspx

ACRP Impacts on Practice – Preparing for the Big Game in 2018 with the Minneapolis-St. Paul Metropolitan Airports Commission

Report Blurb: Explores how Minneapolis-St. Paul Metropolitan Airports Commission turned to *ACRP Synthesis Report 57: Airport Response to Special Events* to develop management plans to better accommodate the influx of spectators and corporate sponsors during the 2018 Super Bowl.

Published: March 2018
Link: http://www.trb.org/ACRP/Blurbs/177332.aspx

ACRP Impacts on Practice – A New Framework for Ground Transportation at Phoenix Sky Harbor Airport

Report Blurb: Explores *ACRP Research Report 146: Commercial Ground Transportation at Airports: Best Practices* has had on ground transportation policy at Phoenix Sky Harbor airport. The document helped airport officials incorporate the use of ride-hailing services like Uber and Lyft into ground transportation operations while ensuring that strict Americans with Disabilities Act (ADA) requirements are in place for all providers.

Published: March 2018
Link: http://www.trb.org/ACRP/Blurbs/177361.aspx

ACRP Impacts on Practice – Implementing Aircraft Rescue and Firefighting Training at Fresno Yosemite International Airport

Report Blurb: Examines how Fresno Yosemite International Airport officials used *ACRP Research Report 103: A Guidebook for Integrating NIMS for Personnel and Resources at Airports*. The report guided the creation of a

training program for Fresno Fire Department firefighters contracted to serve at the on-airport aircraft rescue and firefighting (ARFF) station 24 hours a day, seven days a week. Airport officials used the report's customizable, Excel-based matrix of suggested training for airport staff to identify specific gaps in training and new areas to address. The training program developed using the report helps the airport reinforce the differences between ARFF and traditional firefighting to municipal firefighters and provides fire department leadership and firefighters a better understanding of airport procedures in general.

Published: November 2018
Link: http://www.trb.org/ACRP/Blurbs/178391.aspx

ACRP Impacts on Practice – Mitigating Cattle Egret Strikes at Orlando International Airport

Report Blurb: Explores the impact *ACRP Synthesis 39: Airport Wildlife Population Management* has had on integrated wildlife management plans at airports. A wildlife biologist at Orlando International Airport utilized this report to develop a holistic approach to mitigating bird strikes with a specific species of heron that thrives in the Florida wetlands. This document also provides guidance for dealing with threatened and endangered species, along with high-risk species around airports.

Published: November 2018
Link: http://www.trb.org/ACRP/Blurbs/178394.aspx

ACRP Impacts on Practice – Building an Asset Management Framework at Cincinnati/Northern Kentucky International Airport

Report Blurb: Explores the impact *ACRP Research Report 69: Asset and Infrastructure Management for Airports—Primer and Guidebook* have had on managing airport assets. An asset management director at Cincinnati/Northern Kentucky International Airport (CVG) utilized this report to incorporate and directly correlate asset management with CVG's overall strategic plan. This report explains how to holistically develop an asset management policy as well as asset management strategies, objectives, and plans to achieve the airport's overall strategic goals. It also provides a roadmap for how to assess and improve an airport's asset management initiatives.

Published: November 2018
Link: http://www.trb.org/ACRP/Blurbs/178450.aspx

ACRP 5 Year Research Impact Report

Report Blurb: Analyzes the research ACRP conducted between 2013-2017 and explores the impact of this research on the airport industry. It begins with an introduction to the publications that ACRP produced over the past 5 years and the topic areas on which these publications focus. This report also focuses on the instances in which people have engaged with ACRP research and for what purpose.

Published: January 2019
Link: http://www.trb.org/ACRP/Blurbs/178667.aspx

ACRP Impacts on Practice – Defining Leadership Roles at the Athens-Ben Epps Airport

Report Blurb: Explores the impact *ACRP Research Report 58: Airport Industry Familiarization and Training for Part-Time Airport Policy Makers* has helped airport policy leaders, stakeholders, and policy-related decision-makers understand airport administrative and operational requirements to assist them in making more informed policy decisions.

According to an Airport Authority Board Member and Chair of the Air Service Development Committee at Athens-Ben Epps Airport, the report provides a clear direction as the board began developing its roles and procedures. The report also provided the airport guidance on how to potentially modify its board, help the board establish a training system for newly appointed members, and provide a useful checklist to help new members understand their roles and gain the knowledge necessary to effectively oversee the airport.

Published: April 2019
Link: http://www.trb.org/ACRP/Blurbs/178977.aspx

ACRP Impacts on Practice – New International Arrivals Facility Will Enhance Customer Experience at Seattle–Tacoma International Airport

Report Blurb: In 2017, when leadership at Seattle–Tacoma International Airport (Sea-Tac) decided to build a new International Arrivals Facility (IAF), they knew they had to leverage airport resources cost-effectively to enhance the customer experience. At nearly 50 years old, the existing facility could no longer accommodate Sea-Tac's demand for international travel, which grew 107 percent from 2007 to 2017.

The latest issue of ACRP's *Impacts on Practice* series explores how the research was used to get real-world results, with the design team at Sea-Tac creating a streamlined design with a focus on the positive passenger experience.

From the onset, Sea-Tac decision-makers envisioned an IAF that would significantly improve

the arrival process for international passengers. Nevertheless, before construction could begin, an independent review panel had to approve the project. To strengthen the new IAF design, Innovations and Systems Manager Todd VanGerpen, a contributing member of Sea-Tac's design team, turned to *ACRP Research Report 161: Guidelines for Improving Airport Services for International Customers* and *ACRP Research Report 175: Improving Intelligibility of Airport Terminal Public Address Systems*.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179849.aspx

ACRP Impacts on Practice – Redesigning the Communications Center at Phoenix-Mesa Gateway Airport

Report Blurb: As a reliever airport for the Phoenix Sky Harbor International Airport, Phoenix-Mesa Gateway Airport must keep track of information for nearly 300,000 aircraft operations and 1.4 million passengers a year. To meet this challenge, the airport developed an innovative, digitally connected solution with the help of *ACRP Research Report 182: Guidance for Planning, Design, and Operations of Airport Communications Centers*.

The report details this example of research into practice.

Subsequent changes to the airport's communications center (ACC) have minimized staff stress and ensured they can perform their duties efficiently and without distraction. With help from this report, Phoenix-Mesa has created an ACC that not only allows its staff to perform their jobs in an effective and well-organized space, but that also enhances their physical comfort and sense of purpose.

Published: November 2019
Link: http://www.trb.org/ACRP/Blurbs/179941.aspx

ACRP Impacts on Practice – Measuring Success at Raleigh–Durham International Airport

Report Blurb: As an East Coast tech hub, Raleigh, North Carolina, is one of the fastest-growing metropolitan areas in the United States. Leaders there used the knowledge gained from two reports by TRB's Airport Cooperative Research Program to develop a draft Balanced Scorecard, which was then refined, approved, and implemented.

The report summarizes how RDU now better connects its strategic goals to its practices, tracks the right metrics, and develops baseline data for self-performance measurements, as well as for measuring performance against peer airports.

Published: March 2020
Link: http://www.trb.org/ACRP/Blurbs/180427.aspx

ACRP Impacts on Practice – ACRP in the Classroom: Reimagining the Textbook at the University of North Dakota Department of Aviation

Report Blurb: Within the academic aviation world, good textbooks can be hard to come by. Not only do few aviation textbook publishers exist, but the aviation industry is constantly changing.

The brief details how Dr. Kim Kenville uses *ACRP Research Report 16, Second Edition: Guidebook for Managing Small Airports*, in her classes.

"This publication is just so consumable, useable, and the information is in chunks that fit perfectly into hourly type lectures. [The] students ... can learn more and find things easily," Dr. Kenville said.

See all of *Impacts on Practice* briefs here.

Published: April 2020
Link: http://www.trb.org/ACRP/Blurbs/180509.aspx

Section 8: WebResources

Aligning Community Expectations with Airport Roles

Report Blurb: TRB's Airport Cooperative Research Program (ACRP) has released WebResource 1: Aligning Community Expectations with Airport Roles. This website provides guidance to help airports manage airport communications and public relations proactively. The primary objective of this research addresses possible misunderstandings about realities faced by airport management related to community expectations for air service or other airport-related services and resulting economic benefits. Three "toolkits" help communicate the many roles an airport can play in a community (Role of the Airport), general ways to engage effectively with the local community (Media Toolkit), and information and communication strategies to enhance understanding specific aviation-related topics (Aviation Toolkit).

Published: August 2017
Link: http://www.trb.org/ACRP/Blurbs/175747.aspx

Airport Passenger Terminal Design Library

Report Blurb: TRB's Airport Cooperative Research Program has released WebResource 2: Airport Passenger Terminal Design Library. This electronic resources library houses searchable information on, and links to, existing ACRP, federal, and other industry documents related to airport passenger terminal planning and design.

Published: September 2017
Link: http://www.trb.org/ACRP/Blurbs/176507.aspx

Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 2012

Report Blurb: TRB's *Legal Research Digest 21: Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 2012* is a compilation of U.S. Department of Transportation (DOT) and U.S. Federal Aviation Administration (FAA) airport legal determinations and opinion letters through December 31, 2012. This tool has recently been converted into a WebResource.

LRD 21 updates and supersedes *Legal Research Digest 4: Compilation of DOT and FAA Airport Legal Determinations and Opinion Letters Through December 31, 2007*. Download *Legal Research Digest 13: An Index and Digest of Decisions: Compilation of Airport Law Resources*, which complements the LRD 21.

Published: September 2017
Link: http://www.trb.org/ACRP/Blurbs/177960.aspx

Airport Stormwater Management Library and Training Materials

Report Blurb: Provides searchable, single-point access to all ACRP stormwater-related resources, many non-ACRP resources, web-based training, and materials to develop training programs tailored to individual airports. Topics for which resources are available include: regulations and permits, pollutants and sources, best management practices (BMPs), and compliance. The web-based training offers five courses ranging from an introductory overview, to BMPs for stormwater management, sampling, and monitoring. Customizable training materials, including facilitator guides, handouts, quizzes, and certificates, are also provided.

Published: November 2017
Link: http://www.trb.org/ACRP/Blurbs/176798.aspx

Airport Air Quality Resource Library

Report Blurb: TRB's Airport Cooperative Research Program (ACRP) WebResource 4: Airport Air Quality Resource Library, together with its companion product, *ACRP Research Report 185: Airport Air Quality Management 101*, introduces airport employees who are not environmental specialists to airport air quality issues.

The library compiles the vast array of published research studies, resources, tools, standards, and advisory circulars pertaining to airport air quality—as well as four short videos demonstrating how to use some air quality tools—into one searchable and easy-to-access resource.

Each entry in the list includes basic information about the resource, including a brief summary, as well as a hyperlink to the original material.

Published: July 2018
Link: http://www.trb.org/ACRP/Blurbs/177822.aspx

ACRP WebResource 5: Tools and Case Studies for NextGen for Airports

Report Blurb: A companion to the five-volume ACRP Report 150: NextGen for Airports. It provides downloadable engagement materials from the NextGen Outreach Toolkit, discussed in Volume 2: Engaging Airport Stakeholders, and the Public Information Toolkit, discussed in Volume 3: Resources for Airports. A table that identifies the volume and page number of all case studies discussed in the five volumes is also provided.

ACRP's NextGen initiative aims to inform airport operators about some of these programs and how the enabling practices, data, and technologies resulting from them will affect airports and change how they operate.

View the suite of materials related to ACRP Report 150: NextGen for Airports:

- Volume 1: Understanding the Airport's Role in Performance-Based Navigation: Resource Guide
- Volume 2: Engaging Airport Stakeholders: Guidebook
- Volume 3: Resources for Airports
- Volume 4: Leveraging NextGen Spatial Data to Benefit Airports: Guidebook
- Volume 5: Airport Planning and Development
- NextGen Outreach Toolkit
- ACRP WebResource 5: Tools and Case Studies for NextGen for Airports
- *NextGen for Airports: A Primer*

Published: October 2018
Link: http://www.trb.org/ACRP/Blurbs/178201.aspx

ACRP WebResource 6: Resources for Managing Small Airports

Report Blurb: Provides links to publications, websites, sample documents, checklists, and other tools that airport owners, operators, managers, and policy makers of small airports may find useful in meeting their responsibilities. It is a companion to the soon-to-be-published ACRP Research Report 16: Guidebook for Managing Small Airports, 2nd Edition.

Published: February 2019
Link: http://www.trb.org/ACRP/Blurbs/178701.aspx

ACRP WebResource 7: Best Practices for Airport Obstruction Management Library

Report Blurb: Supplements *ACRP Research Report 195: Best Practices for Airport Obstruction Management Guidebook* by providing reference documents, model documents, and presentation materials for obstruction management outreach.

In addition, ACRP WebResource 7 includes a methodology for creating a composite map of all applicable airspace surfaces, as well as examples of interactive airspace composite surface maps for small and large airports.

ACRP Research Report 195 is designed to assist airport operators in developing and implementing an obstruction management program to protect the airport airspace from encroachment by tall objects.

Published: March 2019
Link: http://www.trb.org/ACRP/Blurbs/178815.aspx

Airport Emergency Plan Development Tool

Report Blurb: An online tool that produces airport-specific airport emergency plans (AEPs) in a format consistent with the Federal Aviation Administration's Advisory Circular 150/5200-31C.

The tool provides a user-friendly, sequential, and interactive format to create the plan, and includes introductory videos and question-specific help to enable accurate responses

Published: November 2020
Link: http://www.trb.org/ACRP/Blurbs/181447.aspx

Periodic Publication on Transformative Technologies at Airports

Report Blurb: New and emerging technologies have the potential to revolutionize the aviation industry, particularly in the fields of customer service, safety, and operational efficiency on the ground and in-flight. However, these technologies bring disruptions that can be difficult for airports to prepare for.

This report aims to help by posting periodic articles on transformative technologies anticipated to be the most impactful, including relevant definitions and background for each, plus compendious descriptions of timeline, cost, impact on affected populations, and degree of airport control.

Published: October 2021
Link: http://www.trb.org/Publications/Blurbs/182568.aspx

The Future of Aviation

Report Blurb: TRB's Airport Cooperative Research Program held an ACRP Insight Event in March 2022 in Washington, DC, to discuss the future of aviation across multiple perspectives. Major topics included passengers and customers, workforce, new entrants, technology, and sustainability.

This report aims to is a compilation of the presentations and a factual summary of the ensuing discussions at the event.

Published: November 2022
Link: https://www.trb.org/Main/Blurbs/182879.aspx

Section 9: Graduate Research Award Program

Transportation Research Record – Public-Sector Aviation: Graduate Research Award Papers, 2009-2010

Report Blurb: TRB's *Transportation Research Record: Journal of the Transportation Research Board*, No. 2206 contains 11 graduate research award papers that examine blunt impact on composite panels; air traffic flow management; reactive chemistry in aircraft exhaust; multiairport choice models; modeling emergency evacuation of individuals with disabilities in an airport; the rolling dynamic deflectometer device for evaluating rigid airfield pavements; single airport delay impact on the National Airspace System; sustainability evaluation of selected airport pavement treatments; public policy model of delays in major airports; air connectivity for residents of federally designated essential air service communities; and legal challenges to airport expansion.

The Graduate Research Award Program on Public-Sector Aviation Issues is managed by TRB's Airport Cooperative Research Program and sponsored by the Federal Aviation Administration. The program is designed to encourage applied research on airport and related aviation system issues and to foster the next generation of aviation community leaders.

Published: June 2011
Link: http://www.trb.org/main/blurbs/166362.aspx

Transportation Research Record – Public-Sector Aviation: Graduate Research Award Papers, 2010-2011

Report Blurb: TRB's *Transportation Research Record: Journal of the Transportation Research Board* No. 2266 consists of 10 graduate research award papers that examine the interaction of high-speed rail and aviation; prediction of potential cracking of airfield rigid pavements; predictors of home-based trips for the Atlanta, Georgia airport; and dynamic airspace configuration.

This issue of the *TRR* also explores transitioning the U.S. air transportation system to higher fuel costs; transportation systems planning for high-speed rail; sustainable paving material for airfields; airline frequency competition in airport congestion pricing; risk assessment of bird–aircraft strikes at the commercial airport; and analysis of taxiway aircraft traffic.

The Graduate Research Award Program on Public-Sector Aviation Issues is managed by TRB's Airport Cooperative Research Program and sponsored by the Federal Aviation Administration. The program is designed to encourage applied research on airport and related aviation system issues and to foster the next generation of aviation community leaders.

Published: June 2012
Link: http://www.trb.org/ACRP/Blurbs/167513.aspx

Transportation Research Record - Public-Sector Aviation: Graduate Research Award Papers, 2011-2012

Report Blurb: TRB's *Transportation Research Record: Journal of the Transportation Research Board,* No. 2325 consists of 10 papers selected for awards in a nationwide competition under the 2011 to 2012 Graduate Research Award Program on Public-Sector Aviation Issues.

Topics explored by the papers include the effect of market entry by Southwest Airlines on market fares; mammal incidents with civil aircraft; the potential benefits of and alternatives to the continuous descent approach in normal conditions; dispersion modeling of lead emissions from piston engine aircraft; and depeaking schedules.

This issue of the *TRR* also examines conflict alerts on airport surfaces enabled by automatic dependent surveillance-broadcast; security checkpoint wait times; social media and airports; setting service expectations in air traffic flow management; and resource allocation when airspace capacity is reduced.

The Graduate Research Award Program on Public-Sector Aviation Issues is managed by TRB's Airport Cooperative Research Program and sponsored by the Federal Aviation Administration. The program is designed to encourage applied research on airport and related aviation system issues and to foster the next generation of aviation community leaders.

Published: June 2013
Link: http://www.trb.org/Main/Blurbs/169159.aspx

ACRP Research Results Digest 19 – Graduate Research Award Program on Public-Sector Aviation Issues Update: 2008–2013

Report Blurb: Provides initial information for the 2013–2014 academic year of the Graduate Research Award Program on Public-Sector Aviation Issues (ACRP Project 11-04).

The report also includes abstracts for student papers from the 2012–2013 and 2011–2012 academic years, and lists papers from prior academic years beginning in 2008–2009. Abstracts for the earlier papers are available in *Research Results Digest 14: Graduate Research Award Program on Public-Sector Aviation Issues: 2012*.

The program, sponsored by the U.S. Federal Aviation Administration and administered by the ACRP, is designed to encourage applied research on airport-related aviation system issues and to foster the next generation of aviation community leaders. Under the program, up to ten awards of $10,000 each are made to full-time graduate students for successful completion of a research paper on public-sector airport-related aviation issues during the academic year.

Candidates must be full-time students enrolled in a graduate degree program at a North American accredited institution of higher learning during the academic year. Successful papers

are presented at the TRB Annual Meeting following completion of the program, and exceptional papers have been published in subsequent volumes of the *Transportation Research Record: Journal of the Transportation Research Board*.

Published: January 2014
Link: http://www.trb.org/ACRP/Blurbs/170152.aspx

Transportation Research Record – Public-Sector Aviation: Graduate Research Award Papers, 2012-2013

Report Blurb: TRB's *Transportation Research Record: Journal of the Transportation Research Board*, No. 2400 consists of 10 papers selected for awards in a nationwide competition under the 2012 to 2013 Graduate Research Award Program on Public-Sector Aviation Issues.

Topics explored by the papers include screening times at airport security checkpoints; runway incursion risks; the role of competitor pricing in multiairport choice; congestion mitigation at John F. Kennedy International Airport; and ground delay programs.

This issue of this report also examines terminal-area weather penetration; fuel burn and emission reduction from taxiing aircraft; characterization of individual air travel behavior using social network data, and airport capacity enhancement and flight predictability.

The Graduate Research Award Program on Public-Sector Aviation Issues is managed by TRB's Airport Cooperative Research Program and sponsored by the Federal Aviation Administration. The program is designed to encourage applied research on airport and related aviation system issues and to foster the next generation of aviation community leaders.

Published: June 2014
Link: http://www.trb.org/ACRP/Blurbs/170937.aspx

Transportation Research Record – Public-Sector Aviation: Graduate Research Award Papers, 2013-2014

Report Blurb: TRB's *Transportation Research Record: Journal of the Transportation Research Board,* No. 2471 consists of 9 papers selected for awards in a nationwide competition under the 2014 to 2015 Graduate Research Award Program on Public-Sector Aviation Issues.

Topics explored by the papers include U.S. civil air show crashes, 1993 to 2013; identifying and analyzing atypical flights; spatiotemporal dynamics in identification of aircraft–bird strikes; airport infrastructure investment; quantifying the performance of warm-mix asphalt and reclaimed asphalt pavement in flexible airfield pavements; and airfield pavement response caused by heavy aircraft takeoff.

This issue also explores the impact of heavy aircraft takeoffs on airfield pavement; an evaluation

of pavement preservation and maintenance activities at general aviation airports in Texas; airport traffic and metropolitan economies; and an analysis of the timing of flight delay announcements by U.S. airlines.

The Graduate Research Award Program on Public-Sector Aviation Issues is managed by TRB's Airport Cooperative Research Program and sponsored by the Federal Aviation Administration. The program is designed to encourage applied research on airport and related aviation system issues and to foster the next generation of aviation community leaders.

Published: June 2015
Link: http://www.trb.org/Main/Blurbs/172645.aspx

ACRP Research Results Digest 25 – Graduate Research Award Program on Public-Sector Aviation Issues Update: 2008–2017

Report Blurb: Provides initial information for the 2016–2017 academic year of the Graduate Research Award Program on Public-Sector Aviation Issues (ACRP Project 11-04).

This report also includes abstracts for student papers from the 2015–2016, 2014-2015, and 2013–2014 academic years, and lists papers from prior academic years beginning in 2008–2009. Abstracts for the earlier papers are available in *Research Results Digest 14: Graduate Research Award Program on Public-Sector Aviation Issues: 2012* and *Research Results Digest 19: Graduate Research Award Program on Public-Sector Aviation Issues Update: 2008–2013*.

The program, sponsored by the U.S. Federal Aviation Administration and administered by the ACRP, is designed to encourage applied research on airport-related aviation system issues and to foster the next generation of aviation community leaders. Under the program, up to ten awards of $10,000 each are made to full-time graduate students for successful completion of a research paper on public-sector airport-related aviation issues during the academic year.

Candidates must be full-time students enrolled in a graduate degree program at a North American accredited institution of higher learning during the academic year. Successful papers are presented at the TRB Annual Meeting following completion of the program, and exceptional papers have been published in subsequent volumes of the *Transportation Research Record: Journal of the Transportation Research Board*.

Published: December 2016
Link: http://www.trb.org/ACRP/Blurbs/175502.aspx

Transportation Research Record – Public-Sector Aviation: Graduate Research Award Papers, 2016

Report Blurb: TRB's *Transportation Research Record: Journal of the Transportation Research Board*, No. 2600 consists of 11 papers selected for awards in a nationwide competition under the 2016 Graduate Research Award Program on Public-Sector Aviation Issues.

- Data-Driven Modeling and Prediction of the Process for Selecting Runway Configurations
- Typology of Travelers Based on Their Annual Intercity Travel Patterns Developed from 2013 Longitudinal Survey of Overnight Travel
- Demonstration of the Possibilities of Using a Phased Microphone Array as the Next-Generation Airport Noise Monitoring System
- Value of Extended Time-Based Metering for Optimized Profile Descent–Based Arrival Operations
- Resilience Analytics of a Future Supply Chain for Aviation Biofuels
- Synthesis of Remote Air Traffic Control System and Air Traffic Controllers' Perceptions
- Leveraging Worker Safety Perceptions to Promote Safe Performance in Airports: Investigating the Framing of Safety Standards and Worker Safety Construal
- Unaffordable Fare: Cost of Public Transportation for Low-Income Commuters Working at Chicago, Illinois, Midway International Airport
- Opinion Survey to Reduce Uncertainty in Public and Stakeholder Perception of Unmanned Aircraft
- Quantifying the Effects of Uncertainty in a Decentralized National Airspace System
- Examining Aviation Navigation Display Symbology in Visual Search

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Published: June 2017
Link: http://www.trb.org/Main/Blurbs/174355.aspx

Transportation Research Record – Public-Sector Aviation: Graduate Research Award Papers, 2017

Report Blurb: TRB's *Transportation Research Record: Journal of the Transportation Research Board*, No. 2603 consists of 10 papers that explore aviation, including:

- Enhancing Safety Risk Management with Quantitative Measures
- Data-Driven Planning for Ground Delay Programs
- Representative Weather Profiles in Airport Planning
- Forecasting Airport Building Electricity Demand on the Basis of Flight Schedule Information for Demand Response Applications
- Time-Lapse Photography of Runway Reconstruction for Education and Training
- Reduction of Aircraft Gas Turbine Noise with New Synthetic Fuels and Sound Insulation Materials
- Frameworks for Adaptive Airport Planning and Techniques for a New Era of Planning
- Coordinated Airport Facility Development Under Uncertainty
- Development of a Life-Cycle Assessment Tool to Quantify the Environmental Impacts of Airport Pavement Construction
- Effects of Mergers and Divestitures on Airline Fares

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Published: June 2018
Link: http://www.trb.org/Publications/Blurbs/175941.aspx

Transportation Research Record – Public-Sector Aviation: Graduate Research Award Papers, 2010- 2020

Report Blurb: TRB's *Transportation Research Record: Journal of the Transportation Research Board*, consists of papers that explore aviation, including:

- Enhancing Safety Risk Management with Quantitative Measures
- Data-Driven Planning for Ground Delay Programs
- Representative Weather Profiles in Airport Planning

- Forecasting Airport Building Electricity Demand on the Basis of Flight Schedule Information for Demand Response Applications
- Time-Lapse Photography of Runway Reconstruction for Education and Training
- Reduction of Aircraft Gas Turbine Noise with New Synthetic Fuels and Sound Insulation Materials
- Frameworks for Adaptive Airport Planning and Techniques for a New Era of Planning
- Coordinated Airport Facility Development Under Uncertainty
- Development of a Life-Cycle Assessment Tool to Quantify the Environmental Impacts of Airport Pavement Construction
- Effects of Mergers and Divestitures on Airline Fares

The ACRP (Airport Cooperative Research Program) Graduate Research Award (GRA) is intended to stimulate thought, discussion, and research by those who may become the future airport managers, operators, designers, and policymakers in aviation. The focus of this graduate student research program is on applied research on airport and related aviation system issues to help the public sector continue to improve the quality, reliability, safety, and security of the U.S. civil aviation system well into the foreseeable future.

Airports are vital national resources. They serve key roles in the 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 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. The need for ACRP was identified in TRB Special Report 272: Airport Research Needs: Cooperative Solutions (March 2003), based on a study sponsored by the Federal Aviation Administration (FAA). The ACRP undertakes research and other technical activities in a variety of airport subject areas, including design, construction, maintenance, operations, safety, security, policy, planning, human resources, and administration.

The Graduate Research Award offers a stipend as well as the opportunity for the student's final research paper to be published in the Transportation Research Record and to present their work at the Transportation Research Board's Annual Meeting. In addition to the faculty research advisor at the students' institutions, students benefit from expert advisors assigned by the ACRP to mentor the student during the research process. The ACRP GRA Program is sponsored by the FAA through the ACRP and managed by the Virginia Space Grant Consortium.

Published: March 2021
Link: https://journals.sagepub.com/topic/collections-trr/trr-1-trb_graduate_research_award_program/trr?pageSize=20&startPage=4

Section 8: ACRP WebResources

ACRP WebResource 1 – Aligning Community Expectations with Airport Roles

Report Blurb: This website provides guidance to help airports manage airport communications and public relations proactively. The primary objective of this research addresses possible misunderstandings about realities faced by airport management related to community expectations for air service or other airport-related services and resulting economic benefits. Three "toolkits" help communicate the many roles an airport can play in a community (Role of the Airport), general ways to engage effectively with the local community (Media Toolkit), and information and communication strategies to enhance understanding specific aviation-related topics (Aviation Toolkit).

Published: February 2017
Link: https://www.trb.org/ACRP/Blurbs/175747.aspx

ACRP WebResource 2 – Airport Passenger Terminal Design Library

Report Blurb: This report has released an update to WebResource 2: Airport Passenger Terminal Design Library. This electronic resources library houses searchable information on, and links to, existing ACRP, federal, and other industry documents related to airport passenger terminal planning and design.

Published: August 2017
Link: https://crp.trb.org/acrpwebresource2/

ACRP WebResource 3 – Airport Stormwater Management Library and Training Materials

Report Blurb: This report provides searchable, single-point access to all ACRP stormwater-related resources, many non-ACRP resources, web-based training, and materials to develop training programs tailored to individual airports. Topics for which resources are available include: regulations and permits, pollutants and sources, best management practices (BMPs), and compliance. The web-based training offers five courses ranging from an introductory overview, to BMPs for stormwater management, sampling, and monitoring. Customizable training materials, including facilitator guides, handouts, quizzes, and certificates, are also provided.

Published: September 2020
Link: https://crp.trb.org/acrpwebresource3/

ACRP WebResource 4 – Airport Air Quality Resource Library

Report Blurb: This report together with its companion product, ACRP Research Report 185: Airport Air Quality Management 101, introduces airport employees who are not environmental specialists to airport air quality issues.

The library compiles the vast array of published research studies, resources, tools, standards, and advisory circulars pertaining to airport air quality—as well as four short videos demonstrating how to use some air quality tools—into one searchable and easy-to-access resource

Published: June 2018
Link: https://crp.trb.org/acrpwebresource4/

ACRP WebResource 5 – Tools and Case Studies for NextGen for Airports

Report Blurb: TRB's Airport Cooperative Research Program (ACRP) WebResource 5: Tools and Case Studies for NextGen for Airports is a companion to the five-volume ACRP Report 150: NextGen for Airports. It provides downloadable engagement materials from the NextGen Outreach Toolkit, discussed in Volume 2: Engaging Airport Stakeholders, and the Public Information Toolkit, discussed in Volume 3: Resources for Airports. A table that identifies the volume and page number of all case studies discussed in the five volumes is also provided.

This initiative aims to inform airport operators about some of these programs and how the enabling practices, data, and technologies resulting from them will affect airports and change how they operate.

Published: September 2018
Link: https://crp.trb.org/acrpwebresource5/

ACRP WebResource 6 – Resources for Managing Small Airports

Report Blurb: This report provides links to publications, websites, sample documents, checklists, and other tools that airport owners, operators, managers, and policy makers of small airports may find useful in meeting their responsibilities. It is a companion to the soon-to-be-published ACRP Research Report 16: Guidebook for Managing Small Airports, 2nd Edition.

Published: December 2018
Link: https://crp.trb.org/acrpwebresource6/

ACRP WebResource 7 – Best Practices for Airport Obstruction Management Library

Report Blurb: TRB's Airport Cooperative Research Program (ACRP) WebResource 7: Best Practices for Airport Obstruction Management Library supplements ACRP Research Report 195 by providing reference documents, model documents, and presentation materials for obstruction management outreach.

In addition, ACRP WebResource 7 includes a methodology for creating a composite map of all applicable airspace surfaces, as well as examples of interactive airspace composite surface maps for small and large airports.

ACRP Research Report 195: Best Practices for Airport Obstruction Management Guidebook is designed to assist airport operators in developing and implementing an obstruction management program to protect the airport airspace from encroachment by tall objects.

Published: March 2019
Link: https://crp.trb.org/acrpwebresource7/

ACRP WebResource 8 – Integrating Social Media with Emergency Management at Airports

Report Blurb: Social media is an important, if not crucial, tool for sharing information among individuals and for connecting organizations with their customers. For this reason, social-media managers at airports are critical to emergency management for information gathering and sharing.

This report provides guides airport operators on integrating social media into emergency management (SMEM) for the purposes of information gathering and sharing during incidents, emergencies, and irregular operations.

The process for developing an SMEM program is presented as a series of steps; users can work through the steps in sequence or concentrate only on those that address their airport's particular needs. This guide is supplemented by various tools and resources, which include a Self-Assessment Tool to determine an airport's current level of SMEM integration and a discussion of social media tool options and how to select and implement them.

Published: August 2020
Link: https://crp.trb.org/acrpwebresource8/

ACRP WebResource 9 – Airport Emergency Plan Development Tool

Report Blurb: The TRB Airport Cooperative Research Program's ACRP WebResource 9: Airport Emergency Plan Development Tool is an online tool that produces airport-specific airport emergency plans (AEPs) in a format consistent with the Federal Aviation Administration's Advisory Circular 150/5200-31C.

The tool provides a user-friendly, sequential, and interactive format to create the plan, and includes introductory videos and question-specific help to enable accurate responses.

Published: October 2020
Link: https://crp.trb.org/acrpwebresource9/

ACRP WebResource 10 – Periodic Publication on Transformative Technologies at Airports

Report Blurb: New and emerging technologies have the potential to revolutionize the aviation industry, particularly in the fields of customer service, safety, and operational efficiency on the ground and in-flight. However, these technologies bring disruptions that can be difficult for airports to prepare for. This report aims to help by posting periodic articles on transformative technologies anticipated to be the most impactful, including relevant definitions and background for each, plus compendious descriptions of timeline, cost, impact on affected populations, and degree of airport control.

Published: October 2021
Link: https://crp.trb.org/acrpwebresource8/

ACRP WebResource 11 – Construction Safety and Phasing Plans

Report Blurb: This report provides airport personnel, consulting engineers/designers, and contractors with a detailed process to improve the development, implementation, and management of construction safety and phasing plans (CSPPs) and safety plan compliance documents (SPCDs) for airport construction projects.

Published: May 2022
Link: https://www.trb.org/Main/Blurbs/182759.aspx

ACRP WebResource 15 – Transformation in Wireless Connectivity: Guide to Prepare Airports

Report Blurb: The main wireless applications at airports—passenger connectivity and airport staff communications—are imposing increasing demands on wireless capacity. Demand for passenger mobile connectivity is skyrocketing as high-speed-capable devices proliferate, and passengers require enhanced connectivity either for work or entertainment during dwell times, including location-based services for a custom travel experience.

This report is intended as a resource for airports as they navigate through the existing taxonomy of wireless technologies and their use cases.

This report is an assessment tool that supports the methodology outlined in the report. It provides a dynamic interface to input the current status of the wireless technology implementation at an airport and to input the intended goals regarding the development of the airport's wireless infrastructure/use cases and generates a report that comprehensively compares the indicated current and target statuses.

Supplemental to the report is a PowerPoint presentation that can be used by airport decisionmakers on proposed solutions

Published: June 2023
Link: https://www.trb.org/Main/Blurbs/182931.aspx

Section 9: ACRP Transportation Insights

Transportation Insights 1: Systemic Inequality in the Airport Industry: Exploring the Racial Divide

Report Blurb: For years, transportation systems, including aviation, have operated within a framework that has resulted in systemic inequality and even overt racism. To address this, airports have begun implementing new organizational dynamics and approaches.

This report provides a summary of an in-person TRB Airport Cooperative Research Program (ACRP) Insight Event. The event identified common manifestations of systemic inequality in an airport setting and the unique challenges airports face as they strive to be more diverse, equitable, and inclusive. Examples of practices undertaken by airports and similar industries are also included. The report will be helpful in fostering communication and collaboration on the topic and help identify areas of future interest and research.

Published: Feb 2023
Link: https://www.trb.org/Main/Blurbs/182913.aspx