



# Appendix C

## Bibliography

This bibliography represents a survey of published literature that is available through research channels including the TRB/TRID database, NTIS, Google Scholar, Library of Congress, the MIT Library and similar referencing systems. The project bibliography contains pertinent reference material (e.g., author, date, publication/conference, etc.) and, either the exact abstract as provided the authors or early quotes from the summary or elsewhere in the cases where abstracts were not available. The results are set forth below in an annotated bibliography that will allow the panel to sample the results of the research in the words of the original authors.

In addition to the more global referencing systems, important discussions and data about the provision of aircraft fueling services have taken place at industry meetings and in professional journals, blogs, and white papers. AAAE, ACI-na, A4A, AOPA, NATA, NBAA, and NASAO are among the leading organizations contributing to the discussion. The research team will review documents from the following sources:

- AC-U-KWIK
- Aircraft Owners and Pilots Association (AOPA)
- Aviation Business Journal (NATA)
- Aviation International News (AIN)
- Aviation Resource Group International (ARGI)
- Aviation Week & Space Technology
- Aviation Week publications
- AviationPros.com
- Business Airport International
- Business Aviation Insider (NBAA)
- Centerline Products (ACI-na)
- GlobalAir.com
- Ground Support Worldwide
- International Airport Review
- Journal of Airport Management
- Piston Aviation Fuels Initiative (PAFI)
- Professional Pilot.com

Below are documents included in the annotated bibliography. Listings are organized alphabetically and include key word identifiers to highlight topics discussed. The annotated bibliography and references in Appendix C together build a library of subject matter relevant to the Management Guide.

**ACRP.** “Legal Aspects of Airport Programs. Topic 09-03. Permitted Airport Involvement in Economic Development Efforts.”

Airports are governed by federal laws defining their financial and economic parameters, particularly regarding revenue diversion. At the same time, airports are prominent members of their local communities. Airports are viewed as economic engines, and as a result, local communities expect airport operators to participate in airport-related economic efforts that benefit the wider community. Additionally, airport operators need economic development entities and community partners to develop air service. The objective of this digest is to conduct a review of federal laws, Federal Aviation Administration (FAA) Orders, policies, guidance, and any case law on the permitted extent of airport involvement in economic development efforts with respect to off-airport, general community economic development and/or air service development. This digest will answer questions such as: what may airports do? What may they not do? How can airports balance compliance with their legal obligations with their communities’ desire for their active participation in economic development? What is the airport’s proper role in such efforts, and how can the airport best participate in such efforts?

Key Words: *Airport Economic Development and Legal Obligations*

**Aiken, P.** (2014). “Installation and Advantages of Self-Service 100LL Fuel Station,” South Carolina Aviation Association.

Case study of Johns Island, SC where Atlantic Aviation installed 100LL Self-Service Station. Before the installation, many based and transient pilots fueled at other airports where fuel prices were lower. A self-service station was the only way Atlantic Aviation could compete on price. This presentation describes the FBO's initial concerns with a self-service station, the timeline for installation and steps involved, maintenance, operation of the station, customer response and 3-year history of sales.

Key Words: *Airport Self-Service Station*

**Aviation Management Consulting Group.** (2012). “Guidebook for Developing General Aviation Airport Business Plans,” Transportation Research Board: 173p.

This report consists of a Guidebook and a CD-ROM, CRP-CD-119 that are designed to help airports develop and implement an airport business plan and maximize financial self-sufficiency. The Guidebook begins by identifying the role, the value, and the compelling reasons for having an airport business plan as it applies to all size airports. The report discusses the elements of an airport business plan and walks users through each step of the development and implementation process, allowing users to focus on those areas in which they need additional information. The resource chapters of the Guidebook do not have to be read sequentially, but can be referred to as necessary, based on the user's knowledge and interest. The accompanying CD-ROM, which provides the user the option of learning the material by watching a series

of presentations, can be used to jumpstart the process. In addition, the CD-ROM also provides worksheets that are helpful in gathering the information necessary for developing and implementing an airport business plan. Ultimately, the completed worksheets can be integrated into and become part of the airport business plan. This Guidebook and CD-ROM are useful for airport managers and staff at all size general aviation airports.

**Key Words:** *Airport Business Plans*

**Carrithers, J. A.** (2014). "Method and System for Fuel Route Planning." Google Patents.

A method for fuel route planning is implemented on a system including: a dispatch computer for interfacing with a fuel route plan user; and a central server computer in communication with the dispatch computer through a network. The central server computer is for: receiving an origin airport and a destination airport for a flight of an aircraft; determining a flight trajectory between the origin airport and the destination airport; retrieving a plurality of refueling airports located adjacent to the flight trajectory; retrieving fuel price information associated with a plurality of FBOs located at the plurality of refueling airports; presenting the flight trajectory and the plurality of refueling airports on an aeronautical/geospatial map; and displaying the fuel price information associated with the plurality of FBOs located at the plurality of refueling airports for use in compiling a fuel route plan.

**Key Words:** *Fuel Route Planning*

**Connelly, E. B., and J. H. Lambert.** (2016). "Resilience Analytics of a Future Supply Chain for Aviation Biofuels." Transportation Research Record: Journal of the Transportation Research Board.

Capacity-building plans for transportation systems must be resilient to disruptions and erroneous assumptions to protect performance outcomes as well as schedule and cost. An example is the future supply chain of aviation biofuels for industry, government, and military applications. The challenges include balancing the aims and assumptions of diverse stakeholders, including regulators, agencies, manufacturers, airlines, fuel companies, and agricultural and husbandry producers. Resilience analytics of the strategic plans should characterize both the influential trends and stressors and the robust initiatives. This paper demonstrates resilience analytics to address varied, evolving, and potentially conflicting stakeholder preferences in the life cycle of supply chains for aviation biofuels. Heterogeneous feedstocks can be converted to aviation biofuel, although several are more attractive across technological, environmental, and economic criteria. The choice of feedstocks for conversion to biofuel depends on balancing desired outcomes, including life-cycle costs, availabilities, proximities, environmental impacts, and the like. Resilience analytics enables prioritization of feedstocks and other supply chain initiatives, with prioritization that varies by scenario. A technology road map for near- and midterm investment horizons to establish aviation biofuels is described. Poultry waste products are explored by using the above methods for a particular region in the mid-Atlantic area of the United States.

**Key Words:** *Aviation Biofuels and Resilience Planning*

**Crider, R., et al.** (2011). "Guidebook for Developing and Leasing Airport Property." Washington, D.C., Transportation Research Board.

ACRP Report 47 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.

Key Words: *Airport Development and Leases*

**Desrosier, W. G., et al.** (2015). "PAFI, Piston Aviation Fuels Initiative, Future Unleaded Aviation Gasoline." EAA AirVenture 2015.

With challenges to the long-term availability of leaded fuel and environmental concerns, PAFI was formed as a collaborative effort to evaluate candidate unleaded replacement fuels and identify those fuels best able to technically satisfy the needs of the existing aircraft fleet while also considering the production, distribution, cost, availability, environmental and health impacts of those fuels. This presentation summarizes the effort to date as of July 2015.

Key Words: *Alternative Fuel for 100LL, PAFI*

**Duchessi, P.** (2014). "In-Depth Comparisons of FBO Models." Aviation Business Journal.

This article describes three primary business models for the FBO industry: service chain, aggregator network, and independent operator. Each of the models has its own unique strategy, value propositions, and counter moves to competitive threats. The airport operated FBO is not discussed.

Key Words: *FBO Management Models – Private Operators*

**Durden, R.** (2013). "Self-Fueling: Legalities and Risks." Avweb.com.

This article focuses on aircraft owner self-fueling and discusses supplying your own fuel, vapor risks, grounding the aircraft properly, and wearing anti-static clothing.

Key Words: *Aircraft Owner Self-Fueling*

**Enticknap, J. L.** (2012). "Municipalities Competing with Private FBO's: Fair or Foul."

An early census of airport-operated versus private FBO's and a discussion of minimum thresholds of fuel sales to support private sector FBOs.

Key Words: *FBO Management Models*

**Enticknap, J. L., et al.** (2012). "A Changing FBO Business Model - You Can't Give it Away." NATA Safety 1st Toolkit.

A discussion of changes in operator fuel purchasing habits, reliance on fuel purchases for revenue, and fuel pricing.

Key Words: *FBO Management Model, Aviation Fuel Sales*

**Enticknap, J. L., et al.** (2015). "10 Critical Elements of an FBO Lease."

A discussion of the 10 critical elements to a long-term FBO lease including, term and option years, operating rights, payments, maintenance responsibilities, assignment clauses, improvements and investments required, insurance, environmental liability, and termination clauses.

Key Words: *FBO Leases*

**Epstein, C.** (2016). "The Changing Face of Business Aviation Finance." Aviation International News. AIN Publications.

GDP used to serve as a good bell weather gauge for business aircraft usage and sales. However, these days turnover of aircraft has extended out, coupled with a worldwide business aviation slowdown has caused an oversupply of business aircraft and a decline in used business jet values.

Key Words: *Aircraft Finance, Business Aviation Industry Trends*

**FAA.** (2016). "Business Jet Report."

This data set shows business aviation operations to U.S. airports and international airports.

Key Words: *Business Aviation Operating Statistics*

**FAA.** (2012). H-8083-310, "Aviation Maintenance Technician Handbook," Volume 2, Chapter 14, *Aircraft Fuel System*.

All powered aircraft require fuel on board to operate the engine(s). A fuel system consisting of storage tanks, pumps, filters, valves, fuel lines, metering devices, and monitoring devices is designed and certified under strict Title 14 of the Code of Federal Regulations (14 CFR) guidelines. Each system must provide an uninterrupted flow of contaminant-free fuel regardless of the aircraft's attitude. Since fuel load can be a significant portion of the aircraft's weight, a sufficiently strong airframe must be designed. Varying fuel loads and shifts in weight during maneuvers must not negatively affect control of the aircraft in flight. Chapter 14 of this handbook describes how aircraft fuel systems must be constructed and arranged to ensure fuel flow at a rate and pressure established for proper engine and auxiliary power unit (APU) functioning under each likely operating condition.

Key Words: *Aircraft Fueling Systems*

**Frye, W.** (2005). "Self Service Fueling: a Growing Trend among GA Airports." *Airport Magazine* 17(6): pp 30-32.

Self-service fuel facilities have become a common sight at many general aviation (GA) airports across the country. The availability of non-primary entitlement funds from the Federal Aviation Administration (FAA) means that the GA airports can afford this amenity to their aircraft owners and operators. The ease of installation of the self-fueling facility encourages many GA airports to invest in this potential moneymaker, complying with the seemingly endless slate of codes and regulations can be daunting. Because of the environmental and fire-safety concerns that fueling generates, self service facilities must comply with codes regarding aircraft fuel servicing, aircraft fueling ramp drainage, loading/unloading containments and a host of other site-specific codes. Additionally, airport managers must consider the relevant fire-safety, environmental, and security requirements before they decide to go ahead with plans to install the facility. Self-service fueling facilities can, however, be an economic boost for a GA airport. The key is to make sure the facility is installed properly and consistent with applicable codes.

Key Words: *Self-Service Fueling, Financing, and Environmental Regulations*

**GAMA.** (2016). "General Aviation Statistical Databook and 2016 Industry Outlook."

The 2015 General Aviation Statistical Databook & 2016 Industry Outlook contains detailed aircraft shipment and billing information. The U.S. fleet data in this Databook provides an overview of how the 204,000 active general aviation aircraft currently registered in the United States are operated: from personal and recreational flying to various types of business operations. The European data section contains aircraft registry data from 32 countries over 110,000 individual aircraft as well as data about Europe's aviation safety record. The Databook also includes information about other key general aviation markets: Australia, Brazil, Canada, China, New Zealand, and South Africa. In addition, the Databook provides historical data about general aviation safety in both Europe and the U.S.

Key Words: *General and Business Aviation Industry Trends*

**Gerber, G.** (2010). "Self-Serve Fuel Fills Special Needs at General Aviation Airports." *Airport Improvement Magazine*.

This article features a case study of a commercial self-service fueling station at Charles B. Wheeler Airport, Kansas City, MO.

Key Words: *Self-Service Fueling Facility*

**Hagerty, P.** (2014). "Best Practices for General Aviation Aircraft Fuel-Tank Sampling." 17p.

This report presents the results of Airport Cooperative Research Program (ACRP) Project 11-02, Task 22 "Best Practices for General Aviation Aircraft Fuel-Tank Sampling." As part of a typical general aviation (GA) internal combustion engine preflight inspection, the pilot normally takes fuel samples from fuel system drains and visually inspects them for color and contamination. Although these fuel samples can be returned to the fuel tank if they are uncontaminated, or disposed of in an approved container if

contamination is found, it is generally acknowledged that many pilots simply discard the fuel samples to the ground surface regardless of whether contamination was identified or not. This disposal practice is inconsistent with many airport pollution prevention procedures and environmental regulations and can lead to storm water runoff contamination and air pollution. ACRP Project 11-02, Task 22 was commissioned to evaluate this disposal practice, and specifically, to accomplish the following two objectives: 1) estimate the discard amounts from fuel testing samples that are entering the storm water runoff system; and 2) develop a variety of airport and aviation best practices of aircraft fuel-tank sampling to prevent contaminants from entering the storm water runoff system. Objective 1 was accomplished by conducting pilot surveys, field-based research, and mathematical calculations and Objective 2 was accomplished by performing literature reviews, inquiries and field-testing, and preparing this Digest.

Key Words: *Aviation Fuel Tank Sampling*

**Huber, M.** (2016). "New Biz Jets." Aviation International News. AIN Publications.

This report reviews new business jets in the market and summarizes aircraft deliveries tracked by the General Aviation Manufacturers Association (GAMA)

Key Words: *New Business Aircraft and Deliveries*

**Huber, M.** (2016). "Pre-Owned Market. Used Jets: Awash in Aluminum." Aviation International News. AIN Publications.

While the inventory for both used business jets and turboprops is well below the historical average of 13 percent, the prices asked for them are bargain basement, attributable largely four factors: anemic global economic growth; deep discounting of new aircraft by the OEMs; too many late-model aircraft for sale and the continuous backfilling of the inventory of those aircraft; and the costs associated with performing mandated upgrades to older aircraft. There is still pronounced softness in both the light and large-cabin jet segments, but signs are emerging in various surveys that market pessimism amongst aircraft owners is waning and the bottom might be right around the corner.

Key Words: *Used Market for Business Aircraft*

**Kramer, L. S., et al.** (2017). Upcoming Synthesis "Options for Delivery of FBO Services." Washington, D.C., Transportation Research Board.

The role of Fixed Base Operators (FBOs) at U.S. airports is changing with the times. FBOs, for their part, have been highly responsive to these shifts. Diminished general aviation (GA) activity at almost every U.S. airport, an aging demographic of participants inspired by a passion for flight, and large shifts in customer service preferences and fuel purchasing habits are each contributing catalysts to the change. In spite of and perhaps because of these challenges, the FBO industry is solution-driven and in that sense, a nimble participant in the evolution of delivery of aeronautical services at airports.

The Synthesis investigates airport experiences with independent FBO operators, network providers, and self-operation of FBO services. In addition, the Synthesis describes a process to evaluate which FBO model

is suitable for an airport, common recruitment practices for a third party FBO, and lease terms that airport sponsors can consider when drafting an FBO lease.

**Key Words:** *FBO Management Models, Assessment of FBO Requirements, Recruitment Process and Lease Terms*

**Kramer, L. S., et al.** (2015). "Innovative Revenue Strategies--An Airport Guide. ACRP Report 121." Washington, D.C., Transportation Research Board.

This report is a resource that describes a broad range of tools and techniques for airport operators to improve revenue streams, recover costs, or achieve operational efficiencies. The Airport Guide presents ways for airport operators to (1) develop new sources of revenue; (2) increase airport sponsor participation in tenant revenues; and (3) improve the planning, administrative process, and management of existing airport businesses. The Airport Guide is built on the premise that not only are changes in funding and financing demands and opportunities inevitable, but these changes are happening at an accelerated pace, requiring airport operators to be creative innovators at all times. The document offers a range of ideas for enhanced revenue generation, coupled with a framework that relates described strategies and techniques to functional areas of airport operation. The Guide addresses in detail opportunities that are grouped into five functional areas: (1) customer needs and wants; (2) airport-provided services/shared services, facilities, and equipment; (3) revenue participation in real estate and natural resource development; (4) value capture and other innovative financing opportunities; and (5) improvements to existing airport businesses. Each of these strategic areas is examined in detail. The Guide also presents comprehensive summaries of several case studies, indicating how and where innovative approaches to revenue generation might apply to the airport environment.

**Key Words:** *Revenue Development Strategies, Airport Operated Services and Facilities*

**Lowe, C. Atlantic Aviation.** (2012). "Facilitating Long-Term Private Investment in On-Airport Facilities." General Aviation Infrastructure Investment Coalition (GAIIIC; "GA2")

This Power Point presentation makes the case for lease and business terms that support an amortization schedule that allows for amortization of airport investments. If lease term is less than amortization schedule, then the group recommends a provision for a buy-out.

**Key Words:** *Lease Terms for Aviation Facilities*

**Miller, B., et al.** (2012). "Guidelines for Integrating Alternative Jet Fuel into the Airport Setting," Transportation Research Board: 135p.

This report is a handbook for airport operators and others associated with "drop-in" alternative jet fuel production and delivery that summarizes issues and opportunities associated with locating (on- or off-airport) an alternative jet fuel production facility, and its fuel storage and distribution requirements. The handbook identifies the types and characteristics of alternative 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.



Key Words: *Alternative Aviation Fuel*

**Misegades, K.** (2012). "Self-Service Fuel: Airport Money-Maker." AviationPros.com.

An in-depth look at the benefits of self-serve fueling systems for airports.

Key Words: *Commercial Self-Service Fueling Facilities*

**Misegades, K.** (2012). "Self-Service Saves." General Aviation News.

Approximately 1,200 airports offer self-service aviation fuel stations, catering primarily to sport aviators and smaller aircraft. This article describes the benefits of self-service for the consumer and operator.

Key Words: *Commercial Self-Service Fueling Facilities*

**NBAA.** (2013). "Business Aviation Fact Book."

The NBAA Business Aviation Fact Book offers a clear and thorough presentation of the broad scope and value of the business aviation industry, with real-world information and data about its value to citizens, companies and communities across the country. Presented in charts, tables and brief descriptions, the data in the publication is gathered from respected sources such as federal agencies and industry surveys. Also included are a number of NBAA Member Company profiles describing the types of companies and professionals that use business aircraft.

Key Words: *Business Aviation Industry Trends*

**NBAA.** (2016). "Aircraft Operating and Leasing Guide."

This NBAA Guide contains guidelines for suggest terms in aircraft support service agreements, dry lease agreements, interchange agreements, joint ownership agreements, and time sharing agreements.

Key Words: *Aircraft Operating Agreements*

**Nelson, J.** (2004). "Real-time FBO Management Method & System," Google Patents.

An apparatus, system and method is disclosed that provides an apparatus, method and system to accomplish transactions between aircraft customers (buyers) and FBO office (seller) to be sold, paid, billed and accounted in real-time, both remotely at the aircraft location on the airport by a remote operator and inside the FBO office by an inside operator.

Key Words: *FBO Transaction Systems*

**Pilsk, W. E., et al.** (2016). "Operational and Legal Issues with Fuel Farms," Transportation Research Board: 34p.

Airports need to provide a ready source of fuel for all of their users, including commercial airlines, general aviation, corporate aircraft operators, and other commercial operators. Fuel farms are an efficient way to provide the storage and dispensing of aviation fuels to multiple users at an airport. But there are different

ownership and operating models for achieving this objective. Some airports may choose to serve as the single source of fuel, while others retain commercial providers, and still larger airports may have an airline fuel consortium. Analyzing the most appropriate model includes understanding the legal issues, safety and operational standards, risk assignment, environmental liability and other risk management issues, and insurance limits and structures, in addition to the various state, federal, and local rules and regulations. This digest is a practical guide to assist airport sponsors and their legal counselors in 1) understanding the basic legal and operational issues, and 2) evaluating the appropriate ownership and operating model at the airport.

Key Words: Fuel Farms

**Prather, C. D.** (2009). "The Right to Self-Fuel," Transportation Research Board: 81p.

The fueling of aircraft at airports is a major business activity that can generate considerable income for airports and simultaneously constitute considerable expense for an aircraft owner/operator. The Airport and Airway Improvement Act of 1982 (The Act), 49 U.S.C. § 47101 et seq., and the Airport Improvement Program Sponsor Assurances require that the owner or operator of any airport that has been developed or improved with federal grant assistance operate the airport for the use and benefit of the public and make it available for all types, kinds, and classes of aeronautical activity, including the self-fueling of aircraft. The Federal Aviation Administration (FAA) issues Advisory Circulars that not only identify standards and procedures for compliance with this requirement, but also define and clarify the meaning of aviation terms, such as self-fueling, which generally means using fuel obtained by the aircraft owner from the source of his/her preference. The definition and meaning of self-fueling must be distinguished from that of commercial self-service fueling, which the FAA defines as, fueling of an aircraft by the pilot using commercial fuel pumps installed for that purpose. Notwithstanding the FAA Circular pertaining to self-fueling, airport attorneys and others continue to face questions concerning the denial of requests to self-fuel, limitations sponsors can impose on aircraft owners/operators, and prohibitions concerning the granting of exclusive rights leases and permits. Airport, government, environmental, and other interested attorneys; aircraft owner/operators; legislative and administrative personnel; airport developers; aviation managers; and researchers should find this digest useful to gain a thorough understanding of the meaning of and constraints involved with self-fueling. Appendix D, which provides abstracts of Director's Decisions pertaining to self-fueling, should be particularly helpful in showing what has been deemed acceptable and unacceptable.

Key Words: Aircraft Owner Self-Fueling

**Quilty, S. M.** (2015). "Overview of Airport Fueling Operations," Transportation Research Board: 119p.

Airport operators are responsible for the good working conditions of all airport facilities. In many cases, staff knows little about the complexity of the aircraft fueling infrastructure and processes because they may be managed by others. Aviation fuel is flammable, jet fuel is a combustible liquid, and avgas is a volatile flammable liquid. Safeguarding the entire fuel system from contaminants, flash point sparking, and leaks is important, and built-in safety features such as fuel level and leak monitoring systems, automatic fire suppression systems, and vehicle collision protections are typical features included as

integral parts of the airport fueling system. In many aspects of fueling, the airport operator is identified as the primary responsible party. Airports receive and distribute fuel by various means. Many large airports are served by one or more dedicated pipelines, have underground hydrant fueling systems, and are a part of fuel consortiums with professional managers and trained staff operating their systems. Smaller airports may have less complex systems, but are still responsible. Because aircraft fueling infrastructure is necessary for airport operations and requires specialized storage, handling, and dispensing, it is useful to airport operators to have a single document that describes common operations and serves as a reference for many fueling issues and practices. Information used in this study was acquired primarily through the literature search and verified through select interviews with airport and fueling personnel. Chapters highlight regulatory and environmental requirements, organizational roles, delivery and distribution processes, resources and training tools, and fueling safety practices. Special issues such as risk management, insurance and alternative fuels are addressed in brief.

Key Words: *Airport Fueling Operations*

**Reimer, D. S., and P. A. Meyers.** (2011). "Survey of Minimum Standards: Commercial Aeronautical Activities at Airports," Transportation Research Board: 60p.

This digest 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.

Key Words: *Minimum Standards*

**Sander, D. E., et al.** (2014). "Guidebook on General Aviation Facility Planning," Transportation Research Board: 148p.

This publication provides practical guidance for planning airport facilities designed to accommodate general aviation (GA) aircraft. Airport practitioners will find the Guidebook helpful for translating anticipated GA activity into facility requirements and layouts. The research for this guidebook included a review of FAA Advisory Circulars and Orders, as well as other relevant literature. This was followed by industry outreach to understand current GA planning practice and needs. The research team visited numerous airports and interviewed many stakeholders, including airport management, operations/maintenance staff, consultants, and service providers. Chapter 1 provides background and suggestions for using the Guidebook. A description of GA activity is provided in Chapter 2. The benefits of airport planning and its relevance to airport operations and long-term development are described in Chapter 3. Chapter 4 provides a framework for GA facility planning, discussing governing documents, grant assurances, financing, GA services, and the activity indicators that drive facility planning. Chapter 5 addresses planning for specific facilities, including terminals and fixed-base operator buildings, auto parking, aircraft parking aprons, hangars, fuel farms, wash racks, helicopter parking, and other facilities. A key feature of this guidance is adjacency considerations (i.e., how various facilities should be located relative to each other

based on function). The appendices consist of a list of abbreviations and terms, a discussion on how to size a parking area, a process for estimating the number of aircraft parking positions, and a bibliography of planning resources. Although the Guidebook is geared to airport industry practitioners, the lay reader will also benefit from the sections that provide background on GA aircraft and activities and the unique facility needs of this segment of the industry.

Key Words: *General Aviation Facilities Planning*

**Spitz, W., et. al.** (2011). "Impact of Jet Fuel Price Uncertainty on Airport Planning and Development," Transportation Research Board: 69p.

This report provides background research, a computer model (on an attached CD-ROM (CRP-CD-93)), and a user manual 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 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 in relation to periodic occurrence of recessions and how changing demand may result in changes in fleet composition and size.

Key Words: *Fuel Pricing and Uncertainty*

**Thurber, M.** (2015). "Tankering Benefits Tangible and Achievable." Aviation International News: pages 48-49.

Tankering fuel is an option for operators of long-range aircraft who want to ensure they are getting the best possible price. This article reviews different software options available and describes the factors considered when deciding whether to tanker fuel.

Key Words: *Fuel Route Planning and Tankering, Software Options*

**Wynbrandt, J.** (2016). AIN Business Aviation Fleet Analysis 2016. Aviation International News. AIN Publications.

AIN's Business Aviation Fleet Analysis surveys the fleets of the world's major fractional ownership programs, owned and operated charter providers, refreshment plans and impacts of refreshment on the pre-owned market.

Key Words: *Business Aviation Fleet Trends*

**Zenglein, M. J., et al.** (2007). "Non-Aviation Revenue in the Airport Business "Evaluating Performance Measurement for a Changing Value Proposition." Berlin: Berlin School of Economics.

Non-aviation activities have become increasingly important for airports. In recent years, the sector has become more complex and diverse. Consequently, measurements of non-aviation activities are an important indicator of an airport's performance. But lack of a common definition and variations in data availability as well as limited transparency make interpreting such performance problematic. Currently used definitions need to be revised to better reflect the complexity of non-aviation as well as the uniqueness of airports when performing benchmarking and strategic reviews.

Key Words: *Non-aviation Revenue, Performance Measurement, Benchmarks*