Credit Ratings and Cash Reserves: How They Influence the Borrowing Costs of Airports:

An Industry White Paper

ACI-NA Finance Committee

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This Industry White Paper was prepared by Ricondo & Associates, Inc., with assistance from Piper Jaffray &Co. and Morgan Keegan & Co., Inc., at the request of and in consultation with the Airports Council International – North America (ACI-NA) Finance Committee

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The views reflected in this paper are those of the authors, and do not represent professional or investment advice. Any airport that desires to issues bonds or undertake financing should seek its own independent investment advice.

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Executive Summary

Ricondo & Associates, Inc. (R&A) prepared this Industry White Paper regarding the influence of credit ratings and cash reserves on the borrowing costs of airports at the request of the Finance Committee of Airports Council International - North America (ACI-NA). The request for the White Paper stemmed from an airport – airline roundtable discussion at ACI-NA's 2009 Economic and Finance Conference regarding ways in which the two industries could work together to control airport costs. As part of the discussion a representative of Alaska Airlines introduced six "red flags" that, in the carrier's opinion, indicate an airport's interests may not be aligned with those of the airline. One of the elements the Alaska Airline representative cited was the difference between airport and airline credit ratings, which spurred a debate with audience members regarding the importance of high credit ratings to airports in order to reduce borrowing costs and maintain access to the municipal bond market. Central to this debate is the different viewpoints of airports and airlines regarding the level of cash reserves and debt service coverage required to maintain an airport's credit rating, and whether achieving such high ratings places costs on the airlines that outweigh the benefits.

The goal of both the Finance Committee and R&A in developing the White Paper is to present information to the industry regarding the difference in credit ratings between U.S. airports and airlines, review the relative importance of credit ratings to the two industries, and examine how lower interest costs achieved through higher credit ratings and the application of airport cash to a capital program influence the borrowing costs of airports. The paper is designed to promote discussion between airport sponsors and their airline tenants regarding these issues, and thus presents observations regarding the findings rather than drawing conclusions and recommending any particular actions.

The first part of this White Paper examines the basis for the difference between airport and airline credit ratings. Reviewing the criteria applied by the rating agencies in assessing the credit quality of airports and airlines reveals key fundamental differences in their business structures that leads to the present disparity in their respective ratings. These differences reflect the roles each entity plays in the air transportation system.

Airlines are subject to intense competition to attract passengers, directly exposed to fluctuations in the economy that can quickly erode their pricing

power and influenced by rapidly rising commodity prices that increase their operating expenses, all of which place significant pressure on their financial operations and credit quality. As such, the rating agencies tend to focus on industry risks such as cyclicality, capital intensity, economic influences, and the regulatory environment; market position and cost structure; and, cash flow, leverage and liquidity in determining an airline's rating.

Airports, on the other hand, face limited competition within a given market area due to significant barriers to the construction and operation of new facilities, and benefit from the critical nature of their services to the operation of an essential form of transportation within the United States. In addition, airports operate on a cost recovery basis with use and lease agreements that reduce their exposure to economic fluctuations. Furthermore, airports operate in a public environment, which brings heightened media scrutiny to their operations, and are limited to the municipal bond market as their primary means to raise external capital, which tends to increase attention on the opinions of the rating agencies as to the soundness of an airport's financial operations. All of these factors serve to promote sound financial operations and credit quality of the nation's airports.

The criteria used by rating agencies to evaluate the credit quality of an airport centers on several main elements, including: the economic underpinnings of an airport's service area and its capacity to create demand for air service; the market characteristics of the airlines serving an airport, including market share concentration and level of service; trends in enplaned passengers and how growth or declines may pressure the capital assets or financial operations of an airport; the capital investment needs of an airport and the existing debt burden placed on its resources; and the financial operations of an airport measured by key metrics such as operating revenue per passenger, non-airline revenue per passenger, the operating ratio, cost per enplaned passenger (CPE), days cash on hand, and the debt service coverage ratio.

These last three metrics have received increased attention as airports have migrated from the residual rate setting methodology, common prior to deregulation in 1978, to the compensatory and hybrid rate setting methodologies, which tend to expose airports to short-term economic volatility to a greater degree. However, as the rating agencies do not set specific guidelines regarding an appropriate level of cash at a certain rating level, though all things being equal, demonstrate a preference for a stronger balance

sheet, airports seek to bolster these measures as much as possible to maintain or improve their credit standing.

Airlines question whether airports need to maintain what they believe to be in certain cases excess levels of cash and debt service coverage to support a particular rating. Airports respond that by maintaining higher levels of reserves, maintaining favorable credit ratings, and applying cash to a capital program, they achieve lower borrowing costs that benefit their airline tenants. To gauge the airport's argument, R&A created two financial models, the first based on a pure residual-based rate setting methodology, the second a pure compensatory-based rate setting methodology, to measure the influence of interest rates (ratings) and the application of cash on a capital program. The output of the models demonstrate that interest rates and the use of cash can have a meaningful impact on the cost of a capital program, largely by reducing the additional costs associated with capitalized interest and the debt service reserve requirements. However, in the Compensatory Model, some of the savings achieved are offset by the inclusion of amortization – that is, a charge (return on investment) to the airlines for the use of the airport's cash to finance a project. The models and their output are detailed in Part 2 of the White Paper.

While airports appear to achieve the benefits sought through their cash reserves and favorable ratings, they should also be aware of the potential direct and opportunity costs should these reserves become excessive. Thus airports should weigh the potential return on investment against the potential detrimental effects to its credit standing in determining the best allocation of its resources. By undertaking such an analysis, airports should gain the ability to foster appropriate polices regarding the use of cash in a capital program, the maintenance of liquidity and the generation of coverage to assure the repayment of its obligations in the event of a downturn in its specific market, or in the overall industry. Factors that should be considered in developing such policies include, but are not limited to, the future capital needs of an airport, its reliance on a single or small group of airlines to generate a significant portion of operating revenue, seasonal variations in cash flow, and the ramifications of a substantial decline in passenger activity.

The Finance Committee and R&A released the White Paper in draft form on May 3, 2010, and invited comments from industry participants initially through May 21, 2010 and subsequently extended the period through June 18, 2010. In addition, the Finance Committee and R&A sought the input of the rating

agencies prior to the issuance of the draft report. Two of the agencies, Moody's Investor Service and Fitch Ratings provided comments which were incorporated into the draft release.

Based on the response received to date, it appears that this paper has achieved its goal of furthering the discussion of these important issues amongst industry leaders by providing information that allows all parties to better understand each other's interests and concerns. In response to our request for comments, R&A received written feedback from the Federal Aviation Administration (FAA), two investment bankers, and the Air Transport Association (ATA). The FAA comments were to correct specific items related to their oversight of the industry in the text of the report, while the comments from the investment bankers were more editorial in nature. The ATA's comments were more substantial and made in the spirit of developing the industry dialog desired by this paper, and are presented as Appendix D. All of the comments have been addressed as appropriate in this final version of the White Paper.

In addition to the written responses, representatives of the airline and airport industries have had opportunities to discuss the paper at industry events, including the "CFO Summit" sponsored by the Finance Committee. Through these discussions a consensus was reached to focus on the continued development of the communication between the airlines and airports regarding the appropriate use of cash reserves and level of coverage in a capital program, recognizing that each airport is unique in the demands placed upon it by the traveling public, the community it services, its capital needs and the lifecycle of its major assets, and its ability to generate capital resources. All sides agreed that the development of policies by airports regarding the use of cash reserves to finance a capital program, and the maintenance of an appropriate level of liquidity and debt service to sustain airport financial operations and promote stable airline rates during periods of economic disturbances, would be beneficial in enhancing this communication and provide a benchmark against which the rating agencies can evaluate the performance of airport management. As a result, it was decided that the information contained in the White Paper at this point was sufficient to aid this discussion and the further calculation of benefits and costs, as contemplated in the draft version, is not necessary at this time.

Part I

An Examination of the Difference in Credit Ratings of U.S. Airports and Airlines

Introduction

On the surface, airports and the passenger airlines that serve them appear to share a symbiotic relationship, as each is at least partially reliant on the other for their operational and financial success. However, beneath the surface lies a complex and dynamic relationship through which airports and airlines strive to address the demands of the traveling public on their respective services while recognizing the competitive and volatile nature of the industry in which they operate. The airlines, being directly engaged in competing for the business of the traveling public, tend to stress short-term concerns because of the tenuous nature of their financial operations, which reflect their narrow operating margins, limited control over significant expenses such as the cost of fuel, and sensitivity to local, regional, and national economic fluctuations. Airports, on the other hand, tend to have comparatively stable financial operations and thus emphasize the long-term needs of their facilities and customers because of their capital intensive nature and the highly regulated planning process required to implement significant capital development. While these financial and operating differences manifest themselves in a variety of ways, one prominent disparity is the relatively higher credit ratings achieved by domestic airports relative to the domestic passenger airlines.

The relatively high ratings of domestic airports relative to U.S. airlines, and whether or not maintaining these higher ratings imposes additional costs on the airlines, were discussed at an airport / airline roundtable session during the 2009 Airports Council International – North America (ACI-NA) Economics and Finance Conference held in Seattle. The renewed focus on this issue corresponds with the economic downturn that began in mid-2008, and the resultant decline in passenger numbers that distressed the financial operations of both airlines and airports. Facing a weakened revenue environment, the airlines sought to reduce their operating costs, including airport costs, wherever possible. In general, airports responded to the downturn and the plight of the airlines, as well as other tenants and users, by adjusting their

operating budgets and trimming capital programs where practical. Still, the tension between airports and airlines in regard to airport costs remains, and was evident during the roundtable discussion when a representative of Alaska Airlines, speaking on ways that airports can reduce airline costs, stated that airports need to "[face] the brutal facts" and listed six 'red flags' that, in the eyes of the speaker, indicate an airport's interests may not be aligned with those of the airlines.[1] Among the six items listed was the credit rating differential between airlines and airports, which sparked a debate with airport representatives in the audience, who countered that airports need to maintain high credit ratings to lower their borrowing costs and maintain access to the municipal bond market.

Similar to the airport-airline relationship, the reasons for the differential in their credit ratings are complex. Furthermore, because airlines and airports raise capital in different markets, they must account for the varying demands of investors with regard to ratings, interest rates, and debt structure. In this white paper, prepared at the request of the ACI-NA Finance Committee, we examine the reasons for the distinction between airport and airline ratings and how rating levels and the use of cash to support a capital program effects the borrowing requirements and financial operations of airports. The first section of this paper focuses on the differences between airline and airport credit ratings by reviewing the following items:

- The criteria applied by the rating agencies in determining their credit ratings;
- The operational differences between airlines and airports;
- The roles that capital and ownership structure play in creating the distinction in the ratings; and
- The risks to airports of lower ratings.

Credit Ratings

Both airports and airlines raise capital in the public markets; thus, they seek credit ratings from the major bond rating agencies – Fitch Ratings (Fitch), Moody's Investors Service (Moody's) and Standard & Poor's (S&P) – to provide the potential bond buyers with a measure of the risk that would be taken in investing in a particular security. Fitch states that ratings are designed to "...

[1] Ed White, Vice President, Corporate Real Estate, Alaska Airlines, presentation to Airports Council International-North America Economics and Finance Conference, Seattle, Washington, April 7, 2009.

reflect an issuer's willingness and ability to make full and timely payments on its obligations...."[2] Fitch's ratings are expressed on a scale ranging from AAA, indicating the lowest likelihood of default, to C, which indicates that a default is imminent.[3] Investors use the ratings as one element in determining the relative value of a security, which is expressed as the interest rate on a particular bond. Furthermore, the bond market is separated into two tiers, with bonds rated among the four highest categories (AAA, AA, A, and BBB) said to be "investment grade", and those below BBB are considered noninvestment grade, or "junk" bonds.

In determining ratings for an issuer or transaction, the rating agencies follow criteria that are published on their websites. At this time, Fitch and S&P have published criteria related specifically to U.S. airports, Moody's and S&P have published criteria specific to the airlines, and Fitch has also published general criteria for corporate issuers.

Airport Rating Criteria

Airports in the United States are generally owned (or "sponsored") and operated by public entities (city, county, state, or independent authority) that are able to issue tax-exempt (interest payments received by the bondholders are not subject to federal income tax) bonds in the municipal bond market.[4] Cities and counties issue general obligation bonds, backed by their ability to levy taxes, to fund most of their infrastructure needs. Some municipalities that own and operate a commercial airport will issue such general obligation bonds to finance airport improvements. While airport revenues may be used to repay the debt, these bonds are rated based on the financial strength of the entire governmental entity, including its taxing power, and not the financial

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2 Fitch Ratings, *Airports Rating Criteria Handbook for General Airport Revenue, Passenger Facility Charge, and Letter of Intent Bonds*, March 12, 2007 (referred to herein as "Fitch Airports Rating Criteria Handbook, March 2007").

3 Fitch and S&P share a common rating scale nomenclature, with long-term rating categories of AAA, AA, A, BBB, BB, B, CCC, C and C from highest to lowest, with a (+) or (-) added to differentiate within a category. Moody's uses a different, but comparable, nomenclature of Aaa, Aa, A, Baa, Ba, B, Caa, Ca and C, with a 1, 2 or 3 designating the relative rating within a category.

4 Certain bonds issued by airport sponsors may be deemed "private activity bonds" under federal statutes, and thus subject to the Alternative Minimum Tax. Also, the American Recovery and Reinvestment Act of 2009 created a new type of municipal bond referred to as "Build America Bonds," which are taxable instruments with interest payments subsidized by the federal government. Issuers select to either receive the subsidy as a refundable tax credit payable directly to the issuer or through tax credits to the bondholders.

operations of the airport. As a result, general obligation bonds are not covered by this report.

Large commercial airports generally issue revenue-backed debt, without recourse to the taxing powers of their sponsors, to finance major capital developments, such as terminals, runways, parking facilities, and roadways. While airports are able to pledge specific revenue streams as security to a bond transaction, such as passenger facility charge (PFC) or customer facility charge (CFC) revenues, the most common security structure used is the general airport revenue bond (GARB). GARBs are secured by the ability of an airport enterprise to generate the resources necessary to repay the debt from the operation of its facilities. Most GARBs carry a pledge of "net revenues," meaning that bondholders have a first lien on the revenues of the airport enterprise after operating and maintenance expenses are paid.[5] A few airports provide a pledge of "gross revenues," meaning that bondholders have a lien on the first dollar of airport revenues; however, the rating agencies still review such airports on a net revenue basis as these airports need to generate sufficient revenue to pay operating and maintenance expenses to remain financially viable. While airport bonds are sometimes portrayed as being "backed by the airlines," as many airport-airline use and lease agreements provide for the airlines to serve as a financial guarantor to ensure that bond requirements are met, it is important to note that airline resources are not pledged as security to holders of GARBs. S&P makes this point in its airport revenue bond criteria report, where the rating agency states that it has "...historically treated U.S. general airport revenue bonds as a special type of utility debt, instead of as lease obligations of the various carriers." [6]

The following is a summary of the main credit factors listed in the rating agency criteria regarding airport ratings:[7]

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[5] The resources of an airport enterprise included in the definition of "revenues" are set forth in the bond enabling legislation governing a particular transaction and may vary from airport to airport. Typically, the definition includes landing fees, terminal rents, parking revenues, and concession revenues. PFC revenues, CFC revenues, and revenues pledged to pay special facility debt are typically excluded from the definition of "revenues."

[6] Standard & Poor's, *Criteria: Governments: U.S. Public Finance: Airport Revenue Bonds*, June 13, 2007. (referred to herein as "S&P U.S. Airport Revenue Bond Criteria, June 2007").

[7] Based on S&P U.S. Airport Revenue Bond Criteria, June 2007 and Fitch Airports Rating Criteria Handbook, March 2007.

- **The airport's service area.** An airport's service area is typically defined as a multicounty or federally designated metropolitan statistical area (MSA) from which the airport draws the majority of its local passenger base. The rating agencies review the economic and demographic trends– including population growth, income levels, and employment levels, among other factors – to, as Fitch states, "... measure the strength of the economy and expectations for future demand of air service."[8] Both Fitch and S&P indicate that demand from the airport's service area is a critical element of their analyses because, as Fitch states, "... this demand ultimately results in the financial wherewithal of the facility."[9]
- **Traffic composition.** The influences of economic factors and airline routing decisions on an airport's financial performance are important to understand from a credit perspective, and are most visible in the traffic composition at the airport. Origin and destination (O&D) traffic is viewed as reflecting the underlying demand generated from the airport's service area, created either by the propensity of the population base to travel or the attractiveness of the market as a travel destination. Fitch comments that it "... views O&D traffic as intrinsic to the service area; a higher level of origination traffic usually results in significant service from multiple airlines, provides a strong indication of future demand, and indicates a higher likelihood of replacement or expanded service in the event of scheduling changes by an individual carrier."[10]

  In comparison, connecting traffic is viewed as being closely tied to the financial performance and scheduling decisions of an individual airline. S&P notes that: "substantial transfer traffic is usually [vulnerable] because the choice of connecting facility is not made by the passenger, but dictated by the airline and thus related more to a carrier's viability and route decisions."[11] Both Fitch and S&P indicate that, in terms of a connecting facility, they evaluate the geographic advantages of an airport, its importance to an airline's overall route network, and the underlying demand from the local market to assess the potential for the market to retain and/or replace service should the hubbing airline (i.e., the airline providing the connecting service) curtail such operations or

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8 Fitch Airports Rating Criteria Handbook, March 2007.

9 Fitch Airports Rating Criteria Handbook, March 2007.

10 Fitch Airports Rating Criteria Handbook, March 2007.

11 S&P U.S. Airport Revenue Bond Criteria, June 2007.

leave the market entirely. However, S&P notes that, with the declining number of viable airlines and the proliferation of hubs, if a hubbing airline were to retreat from a market that does not have favorable connecting fundamentals, it may not be easy for the airport to attract replacement service.[12]

Traffic composition is also reviewed in terms of the mix of business and leisure traffic. Leisure traffic is generally viewed as being more sensitive to price and economic factors, and thus more elastic, than business travel, although in the most recent downturn business traffic declined by a greater degree than leisure travel. For these reasons, as well as the penchant for airlines to generally focus on higher-margin business traffic rather than lower-fare leisure travel, business-oriented airports are viewed more favorably from a credit perspective. International service is viewed as being complementary to domestic service. However, where international service contributes a significant portion of airport passengers, the rating agencies review the importance of any one region of the world to total international passengers at the airport to determine how outside economic factors or unusual events, such as an outbreak of disease, may affect passenger activity at that airport.

- Airport competition. Most markets are served by one commercial airport, which generally limits competition for local O&D traffic. However, where a market is served by more than one airport, or a metropolitan area is in close proximity to a second metropolitan area with a commercial airport, the effect of competition does become a rating factor. As S&P notes, "passengers are often quite willing to travel further on the ground for less expensive fares, more frequent air service, or larger aircraft."[13] Fitch adds that it considers an airport's location near employment and/or population centers, accessibility to public transportation and the highway network, and service and fare levels in assessing an airport's competitive advantages.[14] Also, connecting hub airports compete with one another for such traffic; thus, an airport's ability to provide its hubbing carrier with a competitive advantage relative to other airports in terms of financial, operational, and geographic efficiency becomes a credit consideration.

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12 S&P U.S. Airport Revenue Bond Criteria, June 2007.

13 S&P US Airport Revenue Bond Criteria, June 2007.

14 Fitch Airports Rating Criteria Handbook, March 2007.

- **Passenger trends and air service levels.** The rating agencies look at how passenger activity at a particular airport correlates with underlying economic activity of both the market area and the nation, pricing activity of the airlines serving the market, and other factors. Airports that generate a relatively consistent level of demand through economic peaks and troughs are viewed more favorably than those that show significant volatility in passenger activity. The investment community also looks at the total number of flights, nonstop destinations, top markets, load factors, and airfares as a means of judging the level of service at an airport, what the airlines may perceive as the strengths and weaknesses of a particular market, the prospects for future service additions/reductions, and the importance of the gain or loss of a single daily flight to the overall operations of an airport.
- **Airline market share.** The rating agencies review the market shares of enplaned passengers of each airline serving a particular airport to measure the financial and economic dependence of an airport on any one airline. As the passenger share of a particular airline or small group of airlines at an airport increases, the airport's financial performance can be significantly affected by that airline's, or group of airlines', scheduling decisions, labor actions, and/or financial situation. Where market share is concentrated, the rating agencies evaluate the potential ramifications of a significant decline or complete loss of service by that airline on an airport's financial operations, as well as the potential for replacement service.
- **Use and lease provisions.** The rating agencies look at the airport-airline use and lease agreement – or the rate ordinance in the absence of an agreement – to understand the business arrangement of the airport enterprise. A key element of the agreement is the rate-setting methodology used at the airport, be it residual, compensatory, or a combination of the two (hybrid). In a residual agreement, all nonairline revenue (concessions, parking, etc.) at the airport is compared with operating expenses and the airlines are charged with or credited the difference. At the end of each year, the airport settles with the airlines by either (a) rebating or crediting back to the airlines in the following fiscal year any excess airline revenues generated, or (b) charging the airlines directly or including an additional requirement in the subsequent year's rates and charges to recover any shortfall in airline revenues. In a compensatory agreement, the airport sets airline rates and charges to

cover the costs of the facilities used and/or leased by the airlines without consideration of nonairline revenues. Excess revenues are generally either held by the airport enterprise, or split with the airlines in a revenue-sharing arrangement. Hybrid agreements generally are based on the compensatory rate-setting method for terminal facilities and the residual rate-setting method for the airfield. The rating agencies profess to having no preference regarding a residual, compensatory, or hybrid agreement, but evaluate the agreement in consideration of the economic and operating fundamentals of the airport enterprise.

Other credit considerations related to the use and lease agreement include whether or not the airlines have a decision-making role in the airport operator's ability to implement a capital program through (a) a majority-in-interest (MII) provision; (b) the length of the agreement, with shorter agreements slightly increasing an airport's exposure to volatility in the aviation industry in exchange for greater flexibility in operating the airport; and (c) the allocation of gates on an exclusive, preferential, or common-use basis. Preferential and common-use provisions are viewed as providing an airport operator greater control over its facilities and promoting greater efficiency in the use of terminal resources.

- Capital program. The rating agencies review the airport capital program to (a) assess the planning capabilities of airport management; (b) determine if the capital program is demand driven and can be supported by the passenger market; (c) understand the construction risks and the potential for cost escalation on a given project, and how management plans to mitigate those risks; and (d) review the financing plan for the capital program and the need for additional external borrowing.
- Debt. The rating agencies review the capital structure of an issuer in relation to the amount of leverage currently in place, as well as future needs (usually measured on a debt per passenger basis); the term of the debt and the pace of amortization; and the exposure to changes in interest rates through the use of variable rate and derivative instruments, such as swaps. The agencies also review the legal structure of the transaction, including the nature of the pledge securing the bonds, the definition of revenues and net revenues to determine the resources available to support repayment of the bonds, the rate covenant (typically 125 percent of annual debt service for senior lien bonds); the flow of

funds and lien structure, the additional bonds test, and the reserves established for the benefit of bondholders.

- **Finances.** The rating agencies review the financial performance of an airport enterprise to gauge its ability to generate the revenues necessary to repay its outstanding debt. The agencies look at both the balance sheet and income statement in their analyses. Key measures on the balance sheet relate to liquidity, measured by unrestricted cash and short-term investments; aging of accounts receivables; and debt. On the income statement, key measures include operating margin, debt service coverage, nonairline revenues as a percent of total revenues, and the average airline cost per enplaned passenger (CPE). S&P notes that the financial analysis varies based on the rate-setting approach in effect at the airport, commenting that:

> At a residual airport, the airlines collectively assume financial risk by ensuring payment of all airport costs not offset by nonairline revenue sources. This obligation effectively guarantees certain revenues, but is only sufficient to satisfy rate covenant coverage requirements. Therefore, unlike a compensatory airport, the total revenues collected in any given year [at a residual airport] do not represent an accurate measure of the airport's true earnings capacity. In general, a residual airport will have lower, but more stable debt service coverage than a compensatory airport, but the coverage level is less meaningful in a residual setting.[15]

Airline Rating Criteria

While airlines issue debt to finance their significant capital needs, they generally indicate that debt is issued for "general corporate purposes" rather than a specific project. Airline debt may be secured by a pledge of collateral through a mortgage, deed of trust, or a security agreement or be unsecured. A mortgage or deed of trust grants a lien on real property; a security agreement grants a security interest in personal property, such as inventory, accounts receivable, or equipment. In an unsecured transaction, bondholders do not

[15] S&P U.S. Airport Revenue Bond Criteria, June 2007.

have collateral and thus do not have any priority rights in any particular assets of the airline.[16]

Because of the differing pledges of security to individual airline-issued debt transactions, the rating agencies assign a corporate rating to a company's overall credit profile, and another rating to individual transactions.[17] Fitch indicates that:

> Ratings of individual debt issues incorporate additional information on priority of payment and likely recovery in the event of default. The rating of an individual debt security can be above, below, or equal to the IDR [Issuer Default Rating], depending on the security's priority among claims, the amount of collateral, and other aspects of the capital structure.[18]

This report references the corporate ratings of the airlines.

The following is a general summary of the rating criteria the three agencies apply to airline credits, which generally consist of two subsets: qualitative aspects, such as industry risk, market conditions, and management, and quantitative aspects, such as profitability, cash flow adequacy, leverage, and liquidity. [19]

- **Industry risks.** The analysis of industry risks includes reviewing the industry's fundamental characteristics, such as cyclicality, barriers to entry, competitiveness, and capital intensity. Other factors may include the regulatory environment, economic and demographic influences, and geographic diversity. S&P comments that "... the U.S. airline industry has weak industry risk characteristics compared to many other industries.

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16 Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C, *Advisory: Public Finance and Bankruptcy: Analyzing the Impact of an Airline Bankruptcy on Airport Special Facility Revenue Bonds*, December 2002.

17 The rating agencies have differing names for their corporate ratings; Fitch uses "Issuer Default Rating," Moody's uses "Corporate Family Rating," and S&P uses "Credit Rating," and

18 Fitch Ratings, *Corporate Rating Methodology*, June 13, 2006

19 Drawn from: Moody's Investors Service, *Rating Methodology, Global Passenger Airlines*, March 2009; Standard & Poor's, *Criteria: Corporates: Industrials: Key Credit Factors: Business and Financial Risks in the Airline Industry*, September 18, 2008 (referred to herein as S&P Airline Ratings Criteria, September 2008); Fitch Ratings, *Corporate Rating Methodology*, June 13, 2006.

Its cyclical and competitive characteristics present specific challenges to attaining high ratings."[20]

- **Market position and cost structure**. The rating agencies look at an airline's ability to withstand competitive pressures and review the airline's position in key markets, its route network, fleet age, capacity, pricing power, labor efficiency and contracts, fuel hedging programs, and customer service reputation. Moody's notes that: "many of the costs to which airlines are exposed are partially out of their control, such as fuel prices, landing slots and charges, or subject to legislation and safety requirements, e.g. maintenance schedules and mandated number of flight crew."[21] With such restraints on their cost structure, airlines become vulnerable to rapid changes in industry conditions, which could lead to overcapacity. Fitch notes that, for corporate credits in general: "industry overcapacity is a key issue, because it creates pricing pressure and, thus, can erode profitability."[22]
- **Cash flow**. The rating agencies look to the stability and continuity of cash flows from an airline's major business lines as a means to determine its ability to internally fund operations and capital expansion. The agencies also review the claims against cash to determine the ability of the airline to use cash for debt service or if additional borrowing will be necessary. In S&P's view: "for all corporate borrowers, cash flow analysis is the most critical element of all credit rating decisions."[23] A cash flow analysis is most important because of the need to understand how an entity generates cash and the claims it has against those resources. Fitch notes that "cash flow from operations provides an issuer with more secure credit protection than dependence on external sources of capital." Fitch continues to state that cash flow "... [affects] the maintenance of operating facilities, internal growth and expansion, access to capital and the ability to withstand downturns in the business environment."
- **Liquidity**. The rating agencies review assets on the balance sheet that are held in cash, or easily converted to cash, as a means to offset sudden declines in internal cash flow. Regarding liquidity, Moody's comments

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20 S&P Airline Ratings Criteria, September 2008.

21 Moody's, *Rating Methodology, Global Passenger Airlines*, March 2009.

22 Fitch Ratings, *Corporate Rating Methodology*, June 13, 2006.

23 S&P Airline Ratings Criteria, September 2008.

that: "the most critical factor is the availability of cash balances which is often substantial and an important source for handling sudden external shocks. A second source of funding is the ability to sell unencumbered assets such as terminals, aircraft and/or spare parts."[24] S&P adds that liquidity is especially important for speculative grade credits, including most of the airlines, as:

> The short-term horizon can be particularly critical in terms of liquidity, event risk, and susceptibility to changes in business conditions, all of which can lead to precipitous declines in earnings, cash flow and capital. For such companies, it is important to understand which sources of liquidity and capital are available beyond internal cash flow, the likely demands on those resources, and where relevant, the availability of implicit or explicit government support.[25]

S&P continues:

> Airlines often hold fairly large amounts of cash as a key source of liquidity. This reflects several factors: Some airlines are too weak to arrange general credit facilities. All face potential threats to liquidity from industry downturns, event risk (terrorism, epidemics), or strikes. Also, the credit card processors that handle most airline ticket purchases and advance funds to an airline before the flight occurs will typically demand cash collateral if an airline appears at the risk of insolvency.[26]

Current Ratings

Over the past 30 years, airports and airlines have markedly different histories regarding the repayment of their obligations, which has led to the differentiation in the ratings for their respective industries. Airports have long demonstrated their ability to repay their obligations on time and in full; default studies by the three major rating agencies indicate that there has never been a default on a GARB issued by a major commercial airport in the United States.[27]

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24 Moody's, *Rating Methodology, Global Passenger Airlines*, March 2009.

25 S&P Airline Ratings Criteria, September 2008.

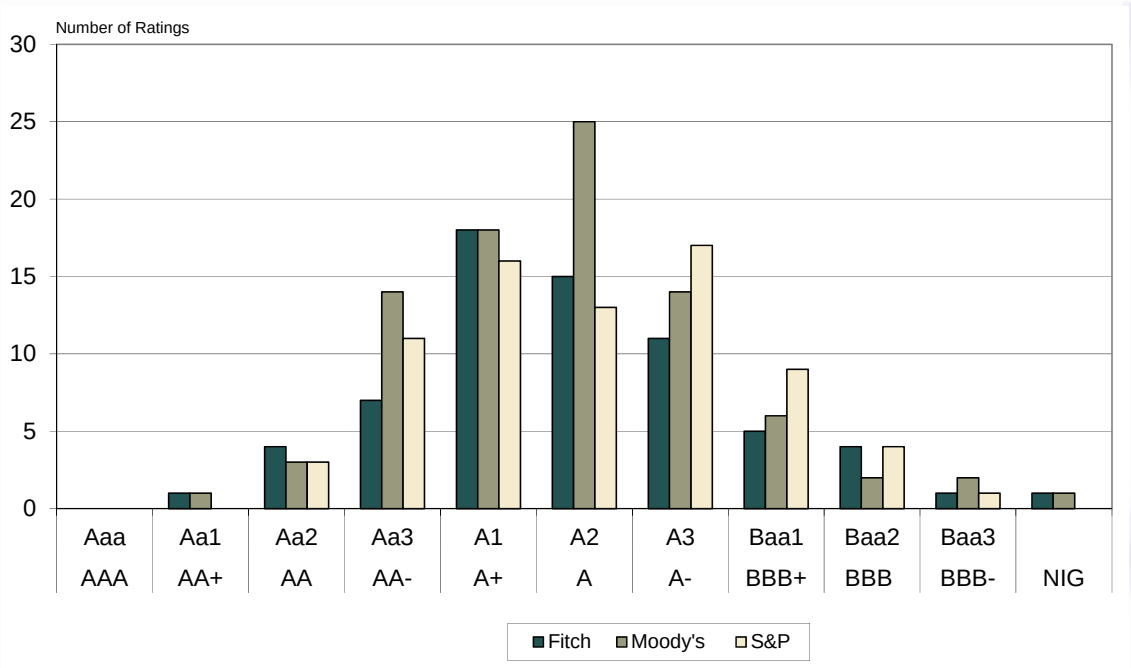
26 S&P Airline Ratings Criteria, September 2008.

27 Fitch Ratings, *Municipal Default Risk Revisited*, June 23, 2003; Moody's Investor Service, *Moody's US Municipal Bond Rating Scale,* November 2002; Standard & Poor's, *U.S. Public Finance Rating Characteristics,* March 7, 2008.

As a result, domestic airports have earned strong ratings from all three agencies, with the average rating being near 'A' at each.[28] **Exhibit 1** graphs the current senior lien airport ratings of the three agencies.

Exhibit 1

Senior Lien Airport Revenue Bond Rating Distribution, as of December 22, 2010



Note: NIG: Non Investment Grade

Source: Fitch Ratings, Moody's Investor Service, Standard & Poor's, December 2010
Prepared by: Ricondo & Associates, Inc. January 2011

[28] Ricondo & Associates, Inc. calculated the average rating by assigning a point value to each rating level and then taking the arithmetic average of the senior lien ratings for each agency.

In comparison, the airlines have experienced significant economic volatility and defaults in the period since airline deregulation in 1978. In fact, the Air Transport Association (ATA) maintains an unofficial list that indicates there have been approximately 185 airline bankruptcies since 1978.[29] The historically volatile nature of the airline industry, combined with highly competitive airline companies, limited barriers to entry, and limited control over major expenses – notably fuel – has led to the airlines' ratings generally falling below investment grade, with only Southwest Airlines currently rated above investment grade by the three major rating agencies. **Table 1** lists the ratings of the major domestic airlines.

Table 1

Domestic Airline Credit Ratings as of January 19, 2011

Holding Company (Airline)	Fitch Issuer Default Rating	Moody's Corporate Family Rating	S&P Credit Rating
AirTran Holdings Inc. (AirTran Airways)		Caa1	B-
Alaska Air Group (Alaska Airlines)		B1	B+
AMR Corporation (American Airlines)	CCC	Caa1	B-
Continental Airlines, Inc.	B-	B2	B
Delta Air Lines, Inc.	B-	B2	B
JetBlue Airways Corp.	B-	Caa1	B-
Southwest Airlines Co.	BBB	Baa3	BBB
United Airlines, Inc.	B-	B2	B
US Airways Group, Inc. (US Airways)	CCC	Caa1	B-

Sources: Fitch Ratings, Moody's Investor Service, Standard & Poor's, January 2011
Prepared by: Ricondo & Associates, Inc., January 2011

Airport Credit Strengths

Many factors underlie the strong credit performance of domestic airports relative to airlines. In its June 2007 Airport Revenue Bond Criteria report, S&P notes: "the strong business position of most airports, public sector ownership and essentially closed flow of funds, along with the existing regulatory

[29] Air Transport Association, *List of Airline Bankruptcies since 1978*, last modified November 18, 2008, accessed from www.ata.org on June 25, 2009. The ATA posts a notice containing the following regarding its list: "[The list] is a loose, *unofficial* compilation of research conducted by various individuals. Neither [the U.S. Department of Transportation] nor ATA maintains official records of airline bankruptcy filings and/or service cessations. As such, [ATA] cannot verify the accuracy of each individual entry. [The list] is provided as a service rather than an authoritative source. It is the only known source that is publicly available, free, and centralized." (italics in original).

environment that restricts the use of airport revenues to airport purposes have allowed strong investment grade ratings, relative to those of the airlines."[30] In its Airports Rating Criteria Handbook, Fitch adds that:

> Several factors explain why most U.S. airports remain financially stable. Principally, competition is limited, as their capital-intensive nature, combined with the regulatory hurdles of a utility-like industry, creates strong barriers to entry. Furthermore, the cost recovery aspect of most airport/airline operating leases allows airport operators significant flexibility to transfer operating and debt service costs to the tenant airlines, effectively softening the impacts of economic cycles. Diverse non-aeronautical revenues also provide credit stability.[31]

In previous publications, Fitch has also cited the essential nature of air travel to the economy and the relatively minor share of overall airline costs represented by airport fees and charges as factors in the high ratings of airports.[32]

The credit strength of airports cited by the rating agencies is a key difference that explains the significant ratings differential between the two types of businesses, and why airports are able to sustain their high ratings while the airlines are not. A key element in the credit strength of airports is their market-facilitating function, which developed as a result of the public sector acting to create the infrastructure necessary to facilitate the movement of goods and people via air transportation while leaving the private sector to accept the commercial risk associated with this enterprise. By accepting this role, the public sector allowed for the development of centralized facilities that are reasonably available to all airlines that wish to serve them.

A second key element supporting the credit quality of airports is the barriers to airport development that have developed over time and serve to limit the competition among facilities. The first such barrier is the expense of, and difficulty in assembling, the significant amount of land to required to accommodate modern airfields and to separate aircraft operations from

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30 S&P U.S. Airport Revenue Bond Criteria, June 2007.

31 Fitch Airports Rating Criteria Handbook, March 2007

32 Fitch Ratings, *Unexpected Turbulence: U.S. Airports Respond to a Changing Economic Environment*, January 29, 2002.

residential areas and other non-compatible land uses. A second barrier is the regulatory regime overarching the construction of, and/or improvements to, an airport, including the extended time horizon and costs necessary to complete the process. A third barrier is the significant upfront capital investment required for the construction of new airport facilities. Together, these barriers combine to create a fourth barrier—the difficult political environment to overcome before any plan to expand airport infrastructure may be undertaken.

These barriers to entry, combined with the need for an airline to access an airport in order to serve a given market, create the third strength of airport credit: a "utility-like" setting that requires governmental oversight of airport rate structures. The federal government, through the Department of Transportation (USDOT) and the Federal Aviation Administration (FAA), establishes rules governing how airport operators levy rates and charges to the airlines serving their airports. Most commercial airports in the U.S. accept grants for airport improvements from the FAA. By taking the grants, airports commit to charge airlines reasonable and not unjustly discriminatory fees and subject themselves to administrative procedures that allow the airlines to challenge airport rate-setting mechanisms that they believe are unfair. In addition, grants provided by the FAA restrict the use of airport-generated revenue to airport purposes, protecting the airlines from subsidizing general governmental functions and, coincidently, assuring bondholders that airport sponsors will not enter ancillary lines of business or use airport resources for non-airport governmental purposes that could dilute the security pledged to the repayment of their bonds.[33]

The federal restrictions contribute to a fourth strength of airport credit: the nonprofit, cost recovery structure of airport financial operations and the use and lease agreements that serve to insulate airports from the volatility of the airline industry. The use and lease agreement often allows airports to recover their costs at the end of the year through a settlement process, either through the residual rate setting mechanism or through an extraordinary coverage provision, which makes the airlines the ultimate support for an airport's financial operations. The agreements are essentially joint and several among the airlines, facilitating their uninterrupted access to vital airport facilities for their operations, knowing that even if one of their competitors leaves an

[33] There are a limited number of combined port authorities, such as The Port Authority of New York and New Jersey, that use airport revenues to support other activities prior to implementation of the revenue restrictions, which status was permitted to continue (or 'grandfathered') under the regulations.

airport, an individual airline's responsibilities are limited to its share of the costs of airport operations. These agreements provide an airport with a relatively secure and stable revenue flow derived from the ability of the market to generate demand and attract airline service, rather than the fate of any individual airline. As S&P points out in its Airport Revenue Bond Criteria report: "...the inherent demand in the air traffic market remains the ultimate security for the bondholder."[34]

The ability of airports to sustain the loss of a major carrier has been demonstrated several times, from the collapse of Eastern Airlines and Pan American World Airways to more recent actions of US Airways, Delta Air Lines, and American Airlines to significantly reduce service at key airports. In all of these cases, while the passenger and service levels were disrupted, the cost recovery mechanisms embedded in the airport operating agreements and the ability of alternative airlines to quickly add service and capture local demand allowed the airport operators to maintain sufficient cash flow while implementing appropriate budget and capital program adjustments to bring operations in line with the lowered activity levels. While these airports typically experienced a decline in their credit ratings, at no point were they in danger of defaulting on their obligations. Furthermore, these agreements have withstood the various airline reorganizations that have occurred under Chapter 11 of the United States Bankruptcy Code in the past decade, with the debtor airline generally assuming its lease obligations at its leading facilities.

A Changing Risk Profile

While these credit strengths provide the basis for the generally investment-grade ratings of airports, the amount of operating risk assumed by an airport enterprise, the means used to mitigate this risk, and the flexibility inherent in its financial operations are key considerations in determining where an airport falls on the investment-grade rating scale. The level of short-term operating risk assumed by airports has risen in the 30 years since airline deregulation through the increasing use of compensatory rate-setting in use and lease agreements, the trend toward shorter terms for these agreements, the acceptance of preferential and common use gate assignments, and rising debt

[34] S&P U.S. Airport Revenue Bond Criteria, June 2007.

levels.[35] In return for accepting this short-term risk, airports have gained greater control over their operations by the decrease in MII provisions and retention of nonairline revenues.

The growing use of compensatory-based use and lease agreements and the perceived increase in short-term operating risk alter the risk profile of airports and has led the rating agencies to focus more attention on measures such as an airport's cost per enplaned passenger assessed to the airlines, the ability to generate nonairline revenues, debt per enplaned passenger, cash reserves on hand, and debt service coverage in their rating decisions. The reason for this focus is that use of a compensatory rate-setting methodology exposes an airport enterprise to the volatility of the airline industry, at least in the short-term, as nonairline revenues diminish as numbers of enplaned passengers decline and may lead to operating losses. Moody's points out that compensatory agreements"...effectively create a cost-sharing requirement for the airport, forcing it to rely on passenger-related revenues to cover expenses. The airport must bear a greater risk from passenger declines as this will translate into lower revenues and leaner financial margins."[36] However, most compensatory agreements retain their cost recovery orientation by allowing airports to recover such losses over time through annual rate adjustments. Furthermore, some compensatory-based agreements contain an extraordinary coverage provision, allowing an end-of-year settlement should net revenues fall below the amount required to meet the rate covenant in the bond enabling legislation.

While not perfectly comparable airport to airport, the CPE metric is the most common measure of airline costs across airports. Higher-cost airports are viewed as placing a greater financial burden on the airlines which may lead to higher airfares, lower airline operating margins, or both, reducing the competitive position of the airport relative to other airports seeking additional service. The ability of an airport to generate nonairline revenues helps reduce the costs passed directly to the airlines, thereby improving the airport's relative competitive position. In light of the industry volatility over the past decade,

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[35] In their comments, ATA notes that if under a compensatory agreement, the airports take on short-term risk and thus require a greater level of liquidity, then perhaps airports should return to the residual model which lowers their short-term risk. The move by airports to compensatory and hybrid agreements reflects changes in the industry over the past 30 years which led them to conclude the acceptance of greater short-term risk was offset by the benefits and control over their facilities gained by using the compensatory methodology. The debate over the residual / compensatory agreement is beyond the scope of this paper.

[36] Moody's Investors Service, *2008 U.S. Airport Sector Outlook: Six Month Update*, August 2008.

airport operators have made significant efforts to improve nonairline revenues, expanding beyond traditional concession and parking sources and investigating such possibilities as airport-compatible development of excess land to diversify the revenue stream and reduce financial dependence on the airlines. Furthermore, under the compensatory rate-setting structure, airport operators are generally incentivized to enhance nonairline revenues as they retain at least a share of excess earnings on their balance sheets, providing for increased liquidity and an internal source of capital funds. Still, even with these efforts, Moody's, in its annual report, indicates that the median cost per enplaned passenger for all airports equaled $7.34 in 2009, up from $5.90 in 2003. The median CPE reported for compensatory-based airports ($6.64) was slightly lower than for residual-based airports ($8.16) in 2008.[37] While airport costs increased slightly during this period, U.S. airports maintain the lowest airline costs in the world, with the International Air Transport Association reporting that North American airports levied direct user charges equal to 3 percent of airline operating costs in 2007. In comparison, airlines paid direct user charges in excess of 10 percent of their operating costs at airports in Europe, Africa, and the Middle East, while the worldwide average was 6.7 percent.[38]

Another factor that gained importance in the rating considerations with the increasing use of compensatory agreements is an airport's debt burden, as measured by debt per enplaned passenger. A higher debt burden reflects a greater percentage of fixed costs in the overall budget of an airport, increased costs passed on to the airlines, and constrained ability of management to implement significant capital projects. Furthermore, as an airport's fixed costs increase, it becomes increasingly vulnerable to the consequences of a downturn in activity and revenues. Thus, the ability of an airport enterprise to generate internal funds to support its capital program and mitigate the need for external borrowing tends to reduce its exposure to industry volatility and enhance its credit quality. While outside sources of capital are available to airports, such as federal grants under the Airport Improvement Program (AIP) and passenger facility charge revenues that reduce borrowing needs, compensatory agreements usually allow an airport to generate higher levels of liquidity than a residual agreement and thus allow for a lower debt burden. This is demonstrated by Moody's 2009 airport medians, which show that

[37] Moody's Investors Service, *U.S. Airport Medians for FY 2009*, December 16, 2010.

[38] International Air Transport Association, *IATA Economic Briefing Infrastructure Costs*, July 2009.

compensatory-based airports have a median debt per enplaned passenger of $59.73, compared to $91.40 for residual-based airports.

The increased financial vulnerability of compensatory-based airports to downward changes in activity levels also led the rating agencies to emphasize the cash reserves held by an airport and its ability to generate annual debt service coverage in excess of the rate covenant. While the residual mechanism allows an airport to maintain coverage at the rate covenant level through the year-end settlement, compensatory airports may not be able to react as quickly. Thus, coverage above the rate covenant at a compensatory-based airport provides a cushion to absorb sudden declines in passenger numbers and nonairline revenues while continuing to sustain operations and meet debt obligations. Moody's medians prove this; compensatory airports achieved a median debt service coverage ratio (based on the bond enabling legislation provisions) of 2.02 times (x) annual debt service in 2009, compared to the residual airport median of 1.47x debt service.[39]

Liquidity also gains importance when an airport uses a compensatory rate-setting methodology compared to a residual rate-setting methodology because, as Moody's notes in its August 2008 outlook update, the financial strength of compensatory airports "...exists to allow these airports the flexibility to better manage through substantial revenue declines." By using these reserves in a period of declining numbers of enplaned passengers, compensatory airports are in a position to stabilize their charges to the airlines while adjusting their budgets. Liquidity is also seen as providing flexibility by offsetting operational risks (such as market share concentration) and financial risks (as a hedge for variable rate debt), reducing the need for debt, or allowing the pursuit of potential new revenue sources to reduce reliance on the airlines. Residual airports, on the other hand, are allowed to pass along the effects of reduced nonairline revenues to the airlines through their midyear rate adjustments and year-end settlements, resulting in higher costs to the airlines. To that end, compensatory airports tend to have higher levels of liquidity than residual airports, with Moody's 2009 U.S. airport medians showing compensatory airports having a median of 426 days cash on hand compared to 396 days of cash on hand for residual airports.[40]

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39 Moody's, *U.S. Airport Medians for FY 2009*, December 16, 2010.

40 Moody's, *U.S. Airport Medians for FY 2009*, December 16, 2010.

The Importance of Liquidity as a Rating Consideration

The operators of compensatory-based airports (and residual-based airports to a lesser degree) point to the increased emphasis the rating agencies have placed on liquidity and debt service coverage in their rating actions to justify the need to maintain these measures at high levels. While the rating agencies do not provide guidance regarding the appropriate levels of liquidity and coverage at specific rating levels,[41] they often cite the relationship of the levels at a particular airport to an industry benchmark for liquidity in their rating commentaries. Moody's annual medians report is perhaps the most widely followed report within the industry regarding such financial benchmarks and Moody's frequently cites an airport's relationship to the medians among other considerations in its rating commentaries. However, reliance on the medians for guidance poses issues as well, as the median tends to be a moving target. For 2009, Moody's found that the median for days cash on hand for the 94 airports in its rating portfolio was 416. This figure is down from 456 days in 2008, which represents the highest level in the past 10 years and was 37.1 percent above the lowest level during the period—332 days in 2003. Furthermore, the 2008 level was 11.5 percent above the next highest year's level—in 2005, the median was 408 days.[42] While not as volatile, the median for debt service coverage (based on the bond enabling legislation) for all airports also fluctuated over the 10-year period, ranging from a high of 2.10x in 2000 to a low of 1.69x in 2009.[43] In general, the medians track trends in passenger activity, although sometimes with a slight lag. **Exhibit 2** depicts the changes in Moody's medians since 1999 for the 5-year compounded annual growth rate in numbers of enplaned passengers, the year-over-year change in numbers of passengers, and days cash on hand. **Exhibit 3** presents a comparison of the same enplaned passenger data with debt service coverage measured on a bond enabling legislation basis.

While liquidity and coverage are important elements in the rating process, the rating agencies recognize that these metrics may fluctuate over short periods of

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41 On November 29, 2010, Fitch issued an update to the *Airports Rating Criteria Handbook* entitled *Rating Criteria for Airports* that included data labeled "Indicative 'A' Category Financial Performance for a Large Hub/Gateway" which indicated a range for days cash on hand of 250-350. Fitch noted that "a rating reflects a combination of the risk factors in the table and that weak volume and price can act to offset a less risky financial structure with low leverage. Likewise, strong volume and price characteristics can be offset by significant financial risk and/or leverage."

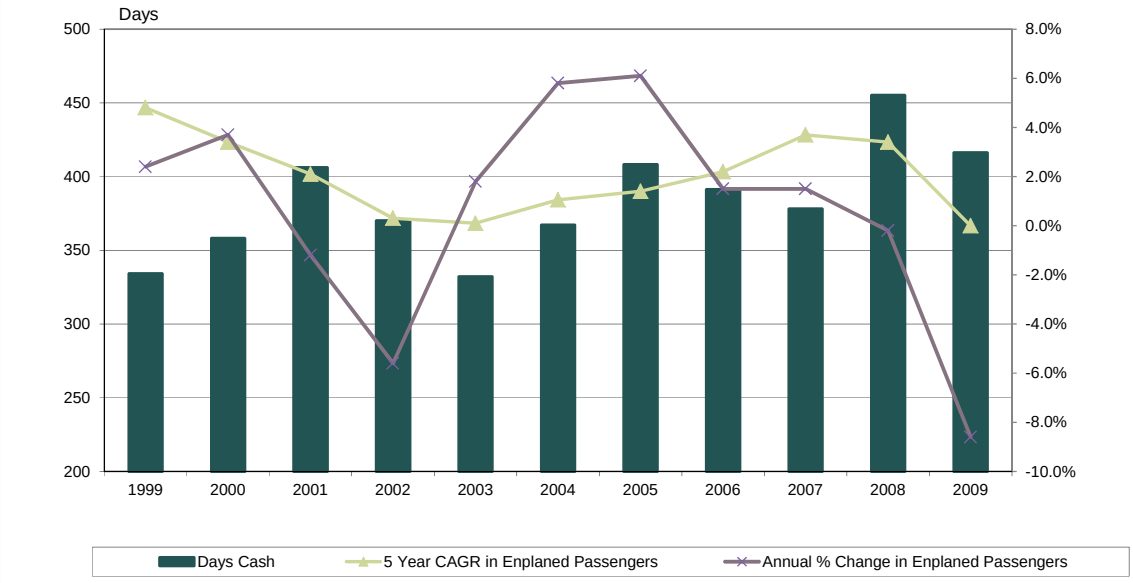
42 Moody's, *U.S. Airport Medians for FY 2009*, December 16, 2010.

43 Moody's ,*U.S. Airport Medians for FY 2009,* December 16, 2010.

time and are influenced by operations, thus they are not the sole determinants of an airport's rating. This is exemplified by the wide range of both cash and coverage levels within a rating category based on an analysis of Moody's Financial Ratio Analysis Database for airports rated 'A2' and 'Baa1'/'Baa2'. For the 27 airports in the 'A2' category, days cash on hand ranged from a high of 2,801 days to a low of 149 days, with a median of 444 days, while the debt service coverage ratio ranged from a high of 5.98x to a low of 1.30x, with a median of 1.94x. For the nine airports rated 'Baa1' and 'Baa2', cash on hand ranged from a high of 696 days to a low of 78 days, with a median of 325 days, and debt service coverage ratios ranged from a high of 8.04x to a low of 1.29x, with a median of 1.98x.[44] Still, although a variety of factors in addition to liquidity influence a rating decision, the rating agencies are likely to favor airports with larger cash reserves and coverage levels relative to their peers, while other credit factors, such as economic fundamentals, airline market shares, O&D percentages, and debt burden are more-or-less equal.

Exhibit 2

Moody's Airport Medians: Days Cash on Hand v. Five Year Compounded Annual Growth Rate and Annual percent Change in Enplaned Passengers



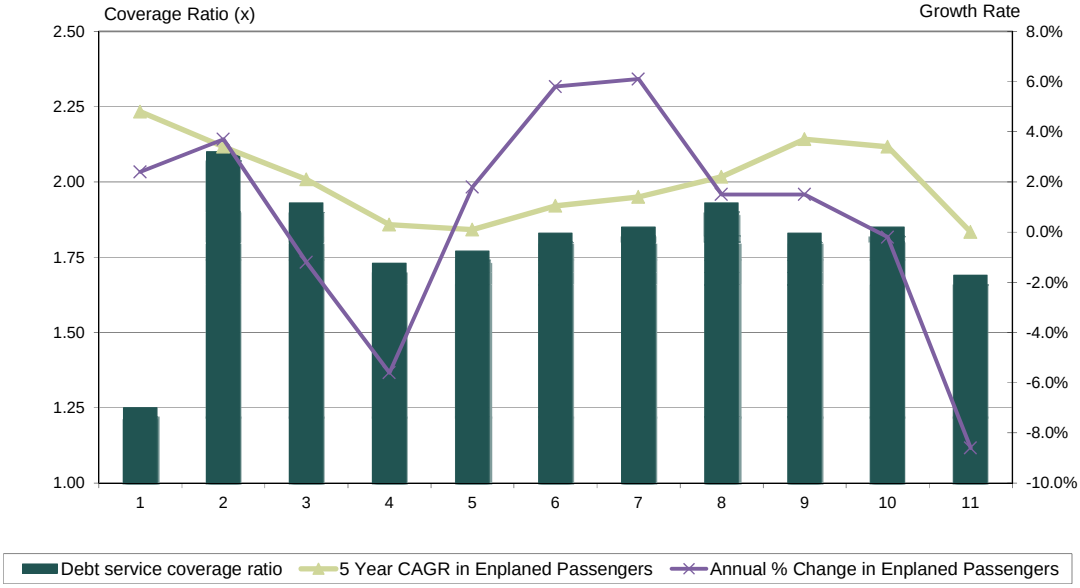
Note: CAGR = Compounded Annual Growth Rate

Source: Moody's Investor Service, *U.S. Airport Medians for FY 2009*, December 16, 2010
Prepared by: Ricondo & Associates, Inc., January 2011

[44] Piper Jaffray & Co., from Moody's *Financial Ratio Analysis Database,* accessed March 19, 2010.

Exhibit 3

Moody's Airport Medians: Debt Service Coverage (Bond Ordinance) v. Five Year Compounded Annual Growth Rate and Annual Percent Change in Enplaned Passengers



Note: CAGR = Compounded Annual Growth Rate

Source: Moody's Investor Service, *U.S. Airport Medians for FY 2009*, December 16, 2010
Prepared by: Ricondo & Associates, Inc., January 2011

The Effect of the Economic Downturn on Airport Credit Ratings

The economic conditions and drastic reductions in airline capacity and passenger demand that have affected the aviation industry since mid-2008 reinforced the importance of liquidity to airport operations. Passenger activity in the United States declined 9 percent in the first half of 2009 compared to the same period in 2008,[45] with some airports experiencing declines of more than 20 percent. This downturn affected all aspects of airport operations, including nonairline revenues. However, while most airport operators reduced operating budgets and curtailed capital programs to ease the financial burden on the airlines as much as possible, airport costs did not decline in line with enplaned passenger numbers and related revenue. This disparity occurred for several reasons, including the fixed nature of debt service and contractual

[45] United States Department of Transportation, Bureau of Transportation Statistics, *System Revenue Passenger Enplanements,* January – June 2008 and 2009.

obligations and the fact that the use of terminal space is not perfectly correlated with passenger numbers. As a result, many airport operators used their cash resources to offset the downturn in revenues and maintain stable airline rates and charges. Moody's recognized the importance of liquidity in this instance, commenting in its *2009 U.S. Airport Sector Outlook* that the:

> Short term credit strength in the U.S. airport sector resides primarily in the financial strength achieved during the solid growth years of 2003 through 2007. Airports that were able to develop robust operating margins and build substantial financial liquidity as the airlines expanded in recent years are well positioned with the financial flexibility to manage the current contraction in airline service.[46]

Still, the presence of liquidity did not completely eliminate downward pressure on airport credit ratings as a result of the economic downturn. The decline in the economy and the implications for airport credit led all three rating agencies to place negative outlooks on the U.S. airport industry in late 2008 and early 2009, which remained in place as of January 15, 2011. Furthermore, as presented in **Table 2**, the combined number of airport rating downgrades and lowered outlooks exceeded upward actions at all three agencies from January 2008 through December 2010. With all three agencies giving a historically high number of airports 'negative' rating outlooks as of January 2010, the potential for further downward rating actions remains. Still, for the most part, these downgrades have been minor, with most actions resulting in a one notch decrease on the rating scale. Thus, airport ratings remain solidly in the investment grade category, indicating that the resources held by airports provide sufficient financial flexibility to adjust to the current environment.

Table 2

Cumulative Rating Changes for U.S. Airport Senior Lien Bonds December 31, 2007 - December 22, 2010

	Fitch	Moody's	S&P
Rating Upgrades	1	5	7
Rating Downgrades	14	9	6
Outlook Revisions - Up	2	4	5
Outlook Revisions - Down	11	18	6

Sources: Fitch Ratings, Moody's Investor Service, Standard & Poor's; December 22, 2010
Prepared by: Ricondo & Associates, Inc. January 2011

[46] Moody's Investors Service, *2009 U.S. Airport Sector Outlook*, March 2009.

Why High Credit Ratings Are Important to Airport Operators

The desire of airport operators to maintain high credit ratings reflects the influence of the opinions of the rating agencies on their ability to raise capital by issuing debt, as well as in determining the interest rates applied to their transactions. The ability of airport operators, as public entities, to raise capital is limited to issuing debt, be it short-term or long-term debt. Furthermore, airport operators use debt to finance long-term capital projects, using short-term debt or commercial paper as bridge financing through the construction period and then issuing long-term fixed rate obligations with a stated amortization schedule matched to the useful life of the asset. This arrangement emphasizes the structure of debt service, with level or declining annual debt service considered less risky than increasing debt service. With a schedule of required amortization of the principal, airport operators significantly reduce their exposure to refinancing risk (i.e. the need to enter the market to refinance principal payments coming due). However, their limited ability to generate revenues from sources other than airport operations, plus fixed annual debt service obligations, results in the primary focus of credit analysts being on the resources held by the airport enterprise and its ability to generate sufficient cash flow to meet mandatory annual debt payments.

In comparison, corporate debt issuers have a variety of means to access external capital, including equity, bonds, the sale of unencumbered or nonstrategic assets, and support from outside vendors or lessors. Corporate issuers typically access the market to raise cash for general purposes rather than a specific project, with debt structured as annual interest payments and a single principal payment at maturity. This structure places more analytical emphasis on leverage ratios, cash flow, and liquidity than on debt service coverage, as airlines are exposed to market and refinance risk relating to the repayment of their obligations. As S&P explains in its September 2008 Airline Ratings Criteria report:

> A general rule is that the stronger a company's internally generated profitability, unencumbered short- and long-term assets, cash flow, and capital base, the better its access to external capital and liquidity. This is because these operating and financial strengths make the company an attractive 'credit' and equity investment candidate. Conversely, when a company's operating results and cash flow deteriorate, leading to a decline in liquidity, its need for access to external capital often increases. Yet, at such

> times of stress, its access to external capital is often markedly reduced because it has become a less attractive borrowing and investment candidate. Its financial flexibility is reduced.[47]

Risks of Lower Airport Ratings

With airport ratings moving down the scale in the current environment, the concern raised by Alaska Airlines at the (ACI-NA) Economics and Finance Conference roundtable discussion becomes increasingly practical rather than theoretical. However, airport operators face significant risks to their ability to raise capital, in addition to the effects of higher interest rates, should the rating differential between airlines and airports contract in a significant manner, with airport ratings approaching those of the airlines. Most of these risks center on the structure of the municipal bond market and the preponderance of investment grade municipal credits.

In comparison to the corporate bond market, where an established and deep market exists for noninvestment-grade credits, the municipal bond noninvestment-grade market is thin and illiquid. This leads to a dramatic increase in credit spreads as credit quality deteriorates, if the bonds can be placed in the market at all. The risks of a noninvestment-grade municipal bond rating were highlighted in 2009 as the State of California's budget crisis sparked concern that its rating could fall below investment grade. *The Bond Buyer* reported, citing market participants interviewed for the article, that:

> Some said big institutional holders would dump California bonds en masse in the event of a downgrade [of California] to junk status. Others said funds would try to ride the credit cycle out, pointing out that investment grade funds are sometimes allowed to hold junk bonds if they were investment grade when they bought them. But of the investors interviewed for this article, all agreed that rates on outstanding debt would rise significantly, and most agreed California would effectively lose access to capital markets if its ratings fell below investment grade.[48]

The lack of a noninvestment-grade municipal bond market reflects several factors. First, similar to airports, municipalities have a long history of repaying

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47 S&P Airline Ratings Criteria, September 2008.

48 Andrew Ward, "California on Junk Watch," *The Bond Buyer,* July 10, 2009.

their debt. In its 2003 default study, Fitch found that the overall default rate for municipal bonds issued between 1979 and 1997 equaled 0.84 percent, as measured in dollar volume.[49] In a subsequent study released in 2010, Fitch calculated the 10-year default rate (1999 – 2009) at 0.32 percent for investment grade credits and 0.58 percent for municipal bonds overall.[50] In comparison, the agency's similar study for global corporate issuers calculated the 10-year default rate at 2.24 percent for investment grade borrows and 4.14 percent for all corporate borrowers.[51] This strong history leads to the vast majority of general municipal credits attaining investment grade ratings, which in itself prevents the development of a sizable noninvestment grade bond market.

Second, individual investors held 70.7 percent of municipal bonds outstanding as of the second quarter of 2009, either directly or through mutual funds.[52] This class of investor is typically risk averse, seeking a consistent income stream and return of principal rather than capital gains. Reflecting the conservative nature of this group of investors, most mutual fund prospectuses limit the amount of noninvestment-grade bonds that can be held in a portfolio. This limit also reduces the number of investors in the noninvestment-grade market and, in some instances, can lead to the selling of investments should ratings decline below certain thresholds.

Third, while corporate investors have gained knowledge and experience in the bankruptcy process, allowing them to price bankruptcy risk and the potential for recovery of their investment through the bankruptcy process in the market, such is not the case with municipal debt. With municipal bankruptcies exceedingly rare, and the mechanisms under Chapter 9 of the U.S. Bankruptcy Code, which applies to municipalities, largely untested, the municipal marketplace has not developed the ability that exists in the corporate market to price the risk of bankruptcy and gauge the potential for recovery of an investment post default. Furthermore, many states prohibit their underlying municipalities from seeking protection under Chapter 9 without state approval. As investors in municipal bonds typically only have a security interest in the revenue stream, not the physical asset, should the revenue stream prove

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49 Fitch Ratings, *Municipal Default Risk Revisited*, June 23, 2003.

50 Fitch Ratings, *Fitch Ratings U.S. Public Finance Transition and Default Study 1999-2009*, March 25, 2010.

51 Fitch Ratings, *Fitch Ratings Global Corporate Finance 2009 Transition and Default Study*, March 18, 2009.

52 Board of Governors of the Federal Reserve System, *Flow of Funds Accounts of the United States, Flows and Outstandings, Second Quarter 2009*, September 17, 2009.

insufficient to make debt service payments, their only recourse may be to request a court to order rate increases, leading to a prolonged period before they recover any of their investment. This was demonstrated by the long-running default of the City of Chicago's Skyway Toll Bridge Revenue Bonds, which went into default in 1959; bondholders did not receive past due interest and penalties until 1989 despite nine court-mandated toll increases during the period.[53]

The lack of a noninvestment-grade market also reflects the political aspects of municipal bonds. Similar to investors in the municipal market, the public sector is traditionally risk averse and may view a noninvestment-grade rating of a transaction as an indication of a poor use of public funds. Thus, a decline in airport credit quality may result in reduced legislative support for future capital projects. Furthermore, credit ratings are often viewed by the media and others as proxies regarding the quality of an entity's financial management. Therefore, noninvestment-grade ratings could result in political ramifications and the loss of public support for the enterprise. This is particularly true if a self-supporting airport is viewed as potentially needing subsidies from general municipal taxes, although most revenue bond enabling legislation precludes bondholders from seeking such a solution.

Finally, the collapse of the municipal bond insurance industry presents additional considerations for airports regarding their ratings. Most airports utilized bond insurance as a means to reduce their borrowing costs as the premium charged was generally less than the difference in the interest rate spread between the insurer's rating and that of the airport. Also, the market benefited as insurance was seen as an enhancement that reduced the risk of default and allowed efficiencies because of the commoditization of the market. With the reduced presence of municipal bond insurers and the resultant loss of commoditization of the market, municipal borrowers are generally paying higher relative (i.e. the difference between an insured and uninsured bond) interest rates as their credit quality plays a direct role in the determination of the interest rate.

The introduction of the Build America Bond program in 2009, served to expand the market for the debt of municipalities, including airports, to taxable investors. By expanding the market, the legislation allowed municipal issuers to reach additional sources of capital, some of which were more tolerant of credit

[53] Fitch Ratings, *City of Chicago, Skyway Toll Bridge System, Illinois*, April 27, 2001.

risk, in an effort to provide borrowers more flexibility and to lower interest rates in the municipal bond market in general. However, as Build America Bonds were limited to projects categorized as being for a governmental purpose under the tax code, most airport projects did not qualify as they are deemed to be for private activities under the tax code. As a result, just a few airports issued Build America Bonds in 2009 and 2010. The Build America Bond program expired on January 1, 2011.

Part II

The Effects of Differing Credit Ratings and the Application of Cash to a Capital Project on Borrowing Costs, Airline Rates and Charges, and Airport Financial Performance

Part I of this Industry White Paper, *An Examination of the Difference in Credit Ratings of U.S. Airports and Airlines*, focused on the factors that create the difference between the credit ratings for U.S. airports and airlines and the reasons that airport operators strive to maintain their high ratings. In this Part II, we review how different ratings and the use of cash by an airport operator affects borrowing costs and financial performance.

As noted in Part I, the investment grade ratings achieved by the nation's airports allow them to maintain access to the municipal bond market, their primary source of external capital financing. Access to this source of capital has facilitated the airport industry's ability to undertake critical infrastructure projects that accommodated the 3.4 percent average annual growth in numbers of enplaned passengers and 2.6 percent average annual growth in the number of aircraft departures since airline deregulation in 1978.[54] With approximately $94.3 billion in airport improvement projects planned through 2013, based on a 2009 survey conducted by Airports Council International - North America (ACI-NA), airport managers continue to value their high ratings in order to achieve the lowest borrowing costs possible.[55]

While the airlines understand the desire of airport managers to achieve the lowest possible borrowing costs, as debt service is a component of airline rates and charges at airports, they often question whether the high levels of liquidity and coverage sought by airport operators are necessary to attain a higher bond rating and, if so, whether the savings achieved by lower borrowing costs outweigh the costs of higher coverage and carrying significant cash reserves. In other words, the airlines are concerned that the level of unrestricted cash on airport balance sheets and the level of debt service coverage generated by

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[54] Air Transport Association, *Annual Traffic and Ops: US Airlines*, **www.airlines.org,** accessed September 25, 2009; last modified July 13, 2009.

[55] Airports Council International - North America, *Airport Capital Development Costs 2009 – 2013*, February 2009

airports above the rate covenant result in higher than necessary airline rates and charges at airports, particularly in periods when the airlines are under severe financial stress.

To address these concerns, Ricondo & Associates, Inc. (R&A), with input from the ACI-NA Finance Committee and assistance from Piper Jaffray & Co. and Morgan Keegan & Co., Inc., developed a model capital program to quantify the effects of differing credit ratings, measured by a change in interest rate assumptions, and the application of cash to lower borrowing costs. In addition, R&A developed representative rate-setting models for a fully residual airport and a fully compensatory airport to foster an understanding of how the effects of differing credit ratings and the application of cash flowed through each rate-setting structure.

The Model Capital Program

The first part of this analysis was designed to simply measure how differing ratings and the use of cash influenced the borrowing costs of an airport enterprise, both on an absolute basis and a per enplaned passenger basis, assuming 4 million annual enplaned passengers. For the purposes of this analysis, R&A created the following hypothetical capital development program:

Purpose:	Terminal expansion
Cost of Project:	$600 million
Construction Period:	4 years
Construction begins:	January 1 of Year 1
Completion date:	December 31 of Year 4
Date of Beneficial Occupancy (DBO):	January 1 of Year 5
Capitalized interest:	Applied through the construction period
Debt service reserve:	Equal to maximum annual debt service

For cash flow purposes the airport is assumed to require $200 million of funds on hand at the beginning of each of the first 3 years of the program, financed

at least in part by the annual issuance of revenue bonds. The size of each of the three annual bond transactions reflects the amount of proceeds required for the capital program plus capitalized interest and debt service reserve requirements funded with bond proceeds. The transactions are assumed to be 30 year, fixed rate serial bonds with level annual debt service payments. Principal amortization begins one year after DBO.

R&A sought to first measure the effects of differing rating levels on the capital program by applying different interest rates to the three bond transactions. Based on market data provided by Piper Jaffray and Morgan Keegan, the assumed interest rate for Airport A, the higher rated airport, was 5.0 percent, while the interest rate for Airport B, the lower rated airport, was assumed to be 6.0 percent. This represents a 100 basis point (1.0 percentage point) credit spread between Airport A and Airport B, approximately equivalent to the current spread between an 'A' rated and 'BBB' rated revenue bond.[56]

At first, the effect of differing interest rates would appear to be straight forward, as the difference in annual debt service on $600 million borrowed for 30 years at a 5.0 percent rate and a 6.0 percent rate is approximately $4.6 million, as indicated in **Table 3.** However, the need to fund capitalized interest and the debt service reserve, as well as other factors, introduce additional costs into a transaction which serve to increase the amount borrowed and annual debt service expense. **Table 4,** which presents the sources and uses of funds for the annual bond transactions of Airports A and B required to finance the model capital program, highlights the influence of these costs on borrowing and annual debt service. To generate a total of $600 million in proceeds to finance the model capital program and fund the capitalized interest and debt service reserve requirements, Airport A needs to borrow a total of $753.8 million. In comparison, Airport B needs to borrow a total $790.9 million to generate the same $600 million in proceeds to finance the capital program because of the increased capitalized interest and debt

[56] In their comments, ATA questioned the use of the 100 basis point spread between the higher and lower rated airport, citing the data provided in Exhibit 4) which indicates a lower 10-year average spread. The 100 basis point spread was used for illustrative purposes to demonstrate the effect of a significant change in a rating (a full category, rather than a "notch"), which was implied by the comments made by the Alaska Airlines representative. Also, the data in Exhibit 4 reflects the spread for general obligation bonds (tax-supported) rather than revenue-supported bonds, which usually have a larger spread between rating categories. ATA is correct, and R&A recognizes, that the 100 basis point spread used in this example may overstate the savings/benefits that could accrue to an airport, as the actual spread between rating categories will be the result of market influences at the time of a particular bond sale.

service reserve requirements stemming from the higher interest rate. The difference in the par amount of each transaction reflects the reduced need for capitalized interest, and corresponding reductions in the debt service reserve and other costs of issuance, as the length of the capitalized interest period decreases.

Table 3

Annual Debt Service Comparison

	Transaction 1	Transaction 2
Amount Borrowed	$600,000,000	$ 600,000,000
Interest Rate	5.0%	6.0%
Annual Debt Service	$ 39,030,861	$ 43,589,347
Annual difference in debt service		$ 4,558,486

Source: Ricondo & Associates, Inc., April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Table 4

Sources & Uses of Funds - Airports A and B, (Dollars in Thousands)

	Transaction 1	Transaction 2	Transaction 3	Total
Airport A				
Sources of Funds				
Principal Amount of Bonds	$266,663	$250,798	$236,321	$753,782
Airport Funds	0	0	0	0
Interest Income	10,553	8,965	7,900	27,418
Total Sources	$277,216	$259,763	$244,221	$781,200
Uses of Funds				
Construction Costs	$200,000	$200,000	$200,000	$600,000
Capitalized Interest	53,333	37,620	23,632	114,584
Debt Service Reserve Fund Deposit	18,550	17,127	15,862	51,540
Issuance Costs	5,333	5,016	4,726	15,076
Total Uses	$277,216	$259,763	$244,221	$781,200
Airport B				
Sources of Funds				
Principal Amount of Bonds	$283,966	$262,831	$244,116	$790,913
Airport Funds	0	0	0	0
Interest Income	11,703	9,631	8,270	29,604
Total Sources	$295,669	$272,462	$252,385	$820,517
Uses of Funds				
Construction Costs	$200,000	$200,000	$200,000	$600,000
Capitalized Interest	68,152	47,310	29,294	144,755
Debt Service Reserve Fund Deposit	21,838	19,896	18,209	59,943
Issuance Costs	5,679	5,257	4,882	15,818
Total Uses	$295,669	$272,462	$252,385	$820,517

Notes: Totals may not add due to rounding.

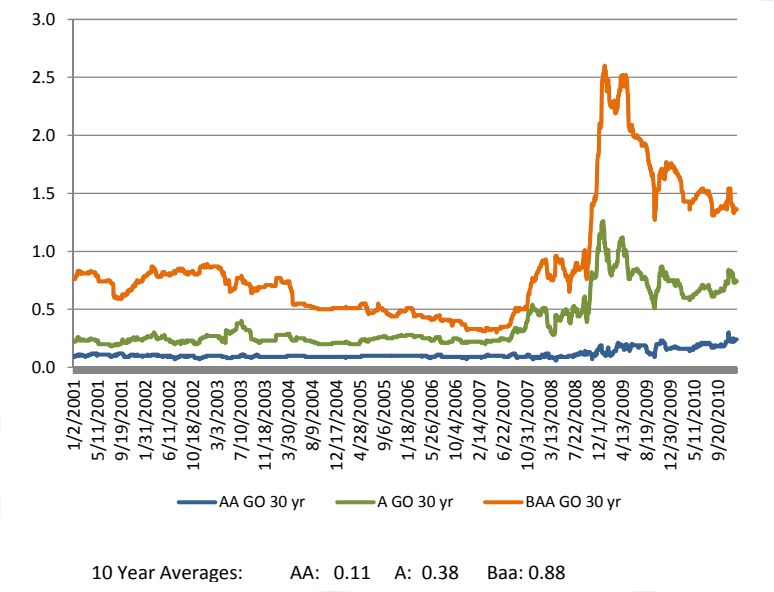
Source: Ricondo & Associates, Inc., April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Based on the total amount of borrowing, annual debt service equals $51.5 million for Airport A and $59.9 million for Airport B, a difference of $8.4 million annually or a total of $260 million over 30 years. At 4 million enplaned passengers, Airport A's annual cost per enplaned passenger (CPE) would be approximately $2.10 lower than that of Airport B. Additionally, the debt burden placed on Airport A by these three transactions would equal approximately $188 per passenger, compared to $198 per passenger for Airport B.

Exhibit 4 presents the interest rate relationship of 'AA', 'A' and 'BBB' general obligation bonds to a 'AAA' benchmark over time, as measured by Municipal Market Data. The exhibit demonstrates the fact that credit spreads fluctuate over time in response to a variety of forces in the marketplace. Therefore, a portion of the difference in annual debt service costs between rating levels is a function of the market and will vary depending on the prevailing rates at the time of a transaction. Thus the difference in annual debt service between transactions at differing rating levels will be influenced by prevailing market conditions. Also, it should be noted that credit spreads for revenue bonds tend to be wider than those for general obligation (GO) bonds at a given point in time.

Exhibit 4

MMD Credit Spreads as of May 2000 through January 3, 2011



Source: Municipal Market Data provided by Piper Jaffray & Co., January 2011
Prepared by: Ricondo & Associates, Inc., January 2011

The Application of Cash to Reduce Borrowing Needs

R&A next investigated how the use of cash affected total debt service for the same capital program. **Table 5** presents the sources and uses for the three transactions of Airport C, which applies a total of $103.7 million of cash to the program, representing 17 percent of total costs of the terminal project. Approximately $72 million (70 percent) of this amount is applied to the first transaction, approximately $15 million (14 percent) to the second transaction, and approximately $17 million (16 percent) applied to the third transaction. Airport C is assumed to borrow at a 5.0 percent rate, the same rate as Airport A.

Table 5

Sources & Uses of Funds - Airport C, (Dollars in Thousands)

	Transaction 1	Transaction 2	Transaction 3	Total
Airport C				
Sources of Funds				
Principal Amount of Bonds	$170,463	$232,115	$216,599	$619,178
Airport Funds	72,151	14,898	16,691	103,740
Interest Income	6,746	8,298	7,240	22,284
Total Sources	$249,360	$255,311	$240,531	$745,202
Uses of Funds				
Construction Costs	$200,000	$200,000	$200,000	$600,000
Capitalized Interest	34,093	34,817	21,660	90,570
Debt Service Reserve Fund Deposit	11,858	15,852	14,539	42,248
Issuance Costs	3,409	4,642	4,332	12,384
Total Uses	$249,360	$255,311	$240,531	$745,202

Notes: Totals may not add due to rounding.

Source: Ricondo & Associates, Inc., April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

By applying its internal resources to the capital program, Airport C limits its borrowing needs to a total of $619.2 million, compared to the total of $753.8 million borrowed by Airport A. Thus by applying $103.7 million of cash to the program, Airport C reduced its borrowing needs by $134.6 million. This represents a $30.9 million, or 30 percent, reduction in total resources committed to the capital program. As with the difference between interest rates, the additional reduction in the par amount beyond the cash applied is

primarily caused by lowered capitalized interest and debt service reserve requirements.

Based on the lower amount of borrowing required for the program, Airport C's annual debt service expense equals $42.2 million which is $9.3 million less than Airport A. This translates into a reduction of $270 million in total debt service over 30 years. Furthermore, based on 4 million enplaned passengers, Airport C's CPE would be $2.32 less that Airport A. Finally, by using its internal resources, Airport C reduced its debt burden to $154 per enplaned passenger from $188 for Airport A.

These basic calculations demonstrate the ability of airport enterprises to generate meaningful debt service savings by maintaining higher credit ratings or applying cash to reduce borrowing costs and leverage. Although simply reducing the par amount or the interest rate would generate lower borrowing costs, the savings were amplified by limiting the additional costs incurred in the transactions, particularly the requirements for capitalized interest and the debt service reserve.

How Debt Service Influences Airline Rates and Charges

Having determined that airport operators can reduce borrowing costs through the use of cash and maintaining a higher bond rating, the next step of the analysis focused on investigating how the differing rates and charges methodologies in effect at airports influence how these savings are incorporated in the airline rate base. For this purpose, R&A developed two financial models, the first incorporating a fully residual rate-setting mechanism and the second incorporating a fully compensatory rate-setting mechanism. The foundation of these financial models is an actual rates and charges model used at a small hub airport where a residual rate-setting methodology is in place. As R&A modified the model for the purposes of this analysis, it is important to emphasize that these models were designed specifically to analyze the implications of differing assumptions regarding the financing of a capital program and not to gauge the appropriateness of the use of the residual or compensatory rate-setting methodology for this fictional, or any other, airport.

R&A developed a consistent set of assumptions for both the residual and compensatory models regarding numbers of enplaned passengers, operating expenses, nonairline revenues, and other elements of airport financial operations, which are detailed in Appendix A. These assumptions were designed to isolate changes in annual debt service and analyze how any

differential in annual debt service expense resulting from a divergence in bond ratings and the use of cash for a capital program influenced the airport's CPE and its overall financial results. As a result, operating expenditures and nonairline revenues increase at a static rate of inflation except in the years when new facilities are opened. When new facilities are opened, space allocations, revenues, and expenses are adjusted proportionately. For example, the space allocations within the terminal project used in this analysis were assigned to the airlines, concessionaires, and public space in the same proportion before and after the expansion project. It is likely that, at an actual airport, space allocations in the new facilities would be adjusted to accommodate the needs of tenants, be they the airlines or concessionaires. As a result of the new allocations, the proportion of space allocated to each use would change and thus influence the financial performance of the airport.

Also, R&A did not attempt to determine an appropriate level of cash that should be held by an airport enterprise, although this analysis is designed to foster conversation between airline and airport representatives regarding this sensitive issue. An airport operator should evaluate a number of criteria when establishing a policy of how much reserve is appropriate to include in its cash flow needs, such as its reliance on a particular revenue source or customer, its future capital needs, and its experience during the recent downturn in activity.

Output from the Models

R&A ran four scenarios through both the residual and compensatory models to analyze the effects of a) different interest rate (rating) levels; b) the application of internal resources; and c) the phasing of a capital program on airline rates and charges as measured by CPE. **Table 6** outlines the parameters of the 8 scenarios run, while **Table 7** presents the two capital improvement program schedules used in the study. The construction schedule in CIP Schedule 1 is identical to that of the model capital program used in the examples for Airports A, B and C above except for the addition of a refurbishment program beginning in Year 10. The funding requirements for each of the three phases, as well the total funding requirement, under CIP Schedule 2 are higher as they incorporate the refurbishment program and the higher costs associated with a phased program. Appendices B and C present the financial metrics generated from the residual and compensatory models, respectively, for the entire 17-year study period.

Table 6

Model Parameters

Airport	Rates and Charges Model	CIP Schedule	Interest Rate
Airport D	Residual	CIP Schedule 1	5.0%
Airport E	Residual	CIP Schedule 1	6.0%
Airport F	Residual	CIP Schedule 2	5.0%
Airport G	Residual	CIP Schedule 2	6.0%
Airport H	Compensatory	CIP Schedule 1	5.0%
Airport I	Compensatory	CIP Schedule 1	6.0%
Airport J	Compensatory	CIP Schedule 2	5.0%
Airport K	Compensatory	CIP Schedule 2	6.0%

Source: Ricondo & Associates, Inc. April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Residual Model, CIP Schedule 1

R&A first ran the capital program through the residual model, as it would directly demonstrate the effects of a difference in interest rates on airline rates and charges. **Table 8** presents several common financial metrics at key points in the study period for Airports D and E, generated by incorporating CIP Schedule 1 into the residual model.

Days Cash on Hand

The airports are not assumed to apply cash to the capital program under the residual model. Both Airports D and E end Year 1 with 180 days cash on hand. For Airport D, cash on hand declines to a minimum of 134 days in Year 8 and remains in a range between 135 days and 154 days through the end of the study period. For Airport E, cash on hand declines to a minimum of 142 days in Year 7 and then steadily rebounds through the remainder of the study period to 229 days in Year 17.

Cost Per Enplaned Passenger

The modest amount of outstanding debt at the beginning of the study period allows a significant portion of non-airline revenues to offset airport costs. Thus the CPE for Airport D equals a low $5.50 in Year 1, while the CPE for Airport E is slightly higher at $5.90. The difference reflects the lower interest rate on the outstanding debt achieved by Airport D. The CPE for both airports declines through Year 7, as the amount of airport costs covered by non-airline revenues increases.

Table 7

Model Capital Improvement Program Schedules

CIP Schedule 1	
Terminal Expansion	
Construction Period	4 years
Construction begins	January 1, Year 4
Construction complete	December 31, Year 7
DBO	January 1, Year 8
Total funding requirement	$600 million
Refurbishment Program	
Construction Period	2 years
Construction begins	January 1, Year 10
Construction complete	December 31, Year 11
DBO	January 1, Year 12
Total funding requirement	$75 million
CIP Schedule 2	
Terminal Expansion - Phase 1	
Construction Period	2 Years
Construction begins	January 1, Year 4
Construction complete	December 31, Year 5
DBO	January 1, Year 6
Total funding requirement	$250 million
Terminal Expansion - Phase 2	
Construction Period	2 Years
Construction begins	January 1, Year 7
Construction complete	December 31, Year 8
DBO	January 1, Year 9
Total funding requirement	$250 million
Terminal Expansion - Phase 3	
Construction Period	2 Years
Construction begins	January 1, Year 10
Construction complete	December 31, Year 11
DBO	January 1, Year 12
Total funding requirement	$250 million

Source: Ricondo & Associates, Inc. April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Table 8

Summary Metrics for Airports D and E

		Terminal Expansion Program					Refurbishment Program			
	Year 1	Year 4	Year 5	Year 6	Year 7	Year 8	Year 10	Year 11	Year 12	Year 17
Common Elements										
Capital Program Event		Transaction 1	Transaction 2	Transaction 3		DBO	Transaction 4		DBO	
CIP Funding Requirement (thousands)		$ 200,000	$ 200,000	$ 200,000			$ 75,000			
Enplanements (thousands)	3,623	3,845	3,922	4,000	4,080	4,162	4,330	4,416	4,505	4,973
Airport D										
Par Amount of Bonds Issued		$266,663	$250,798	$236,321			$88,620			
Debt Per Enplaned Passenger	$ 51.13	$ 114.13	$ 176.61	$ 229.01	$ 223.21	$ 214.17	$ 216.66	$ 207.32	$ 197.67	$ 149.71
Days Cash on Hand (ending balance) (days)	180	160	154	148	142	134	146	147	152	137
CPE	$ 5.50	$ 5.43	$ 5.41	$ 5.39	$ 5.37	$ 17.57	$ 16.16	$ 15.75	$ 16.98	$ 15.14
Coverage Ratio (x)	1.27	1.27	1.27	1.27	1.27	1.28	1.26	1.26	1.26	1.26
Airport E										
Par Amount Borrowed		$283,966	$262,831	$244,116			$91,543			
Debt per enplaned passenger	$ 51.68	$ 119.51	$ 183.07	$ 239.34	$ 233.44	$ 224.61	$ 228.09	$ 218.85	$ 209.29	$ 161.09
Days cash on hand (Ending Balance) (days)	180	160	154	148	142	147	182	193	209	229
CPE	$ 5.90	$ 5.81	$ 5.78	$ 5.75	$ 5.73	$ 20.49	$ 18.90	$ 18.43	$ 19.83	$ 17.44
Coverage ratio (x)	1.27	1.27	1.27	1.27	1.27	1.28	1.26	1.26	1.26	1.26

Source: Ricondo & Associates, Inc. April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Reflecting the timing, scope and debt financing required under CIP Schedule 1, the CPE of both Airports D and E increases sharply in Year 8, the first year debt service is incorporated in airline rates and charges. The CPE of Airport D more than triples in Year 8 from Year 7, rising to $17.57 from $5.37. In comparison, the higher interest rate and borrowing needs of Airport E lead to its CPE nearly quadrupling to $20.49 in Year 8, from $5.37 in Year 7. The refurbishment program has a modest effect in Year 12, with the CPE of Airport D increasing by $1.25 and the CPE for Airport E rising by $1.40 from Year 11. The CPE for both Airports D and E slowly decreases after DBO of both the capital program and the refurbishment program as nonairline revenues account for a greater share of total revenues and serve to reduce the landing fee requirement in these subsequent years.

As in the earlier example, the lower interest rate achieved by Airport D resulted in reduced borrowing and annual debt service expense. As a result, the spread in CPE between Airport D and Airport E increased by $2.56, to $2.92 in Year 8 from $0.36 in Year 7. In addition to the inclusion of debt service, the spread in CPE between the two airports increases because airline rates and charges also include a 0.25x coverage factor to assure compliance with the rate covenant.

Debt Service Coverage

Reflecting the nature of a residual rates and charges model, debt service coverage remains near the presumed 1.25x rate covenant throughout the study period for both airports.

Debt Per Enplaned Passenger

The $753 million borrowed by Airport D for the capital program, added to its outstanding debt, results in its debt per enplaned passenger peaking at $229 in Year 6, the year of the final transaction for the capital program. In comparison, Airport E borrows a total of $791 million for the capital program, which brings its debt per enplaned passenger to a peak of $239 in Year 6 as well.

Residual Model, CIP Schedule 2

Table 9 presents the financial metrics for Airports F and G, which are assumed to implement CIP Schedule 2.

Table 9

Summary Metrics for Airports F and G

		Terminal Expansion - Phase 1			Terminal Expansion - Phase 2			Terminal Expansion - Phase 3			
	Year 1	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 17
Common Elements											
Capital Program Event		Transaction 1		DBO	Transaction 2		DBO	Transaction 3		DBO	
CIP Funding Requirement (thousands)		$ 250,000			$ 250,000			$ 250,000			
Enplanements (thousands)	3,623	3,845	3,922	4,000	4,080	4,162	4,245	4,330	4,416	4,505	4,973
Airport F											
Par Amount of Bonds Issued		$ 295,402			$ 295,402			$ 295,402			
Debt per enplaned passenger	$ 51.13	$ 121.60	$ 117.99	$ 113.15	$ 180.73	$ 174.50	$ 167.13	$ 228.01	$ 219.35	$ 209.61	$ 161.30
Days cash on hand (Ending Balance) (days)	180	160	154	141	136	131	120	115	111	115	113
CPE	$ 5.50	$ 5.43	$ 5.41	$ 10.12	$ 9.83	$ 9.72	$ 13.90	$ 13.51	$ 13.32	$ 17.52	$ 15.31
Coverage ratio (x)	1.27	1.27	1.28	1.27	1.26	1.26	1.27	1.26	1.26	1.27	1.26
Airport G											
Par Amount of Bonds Issued		$ 305,145			$ 305,145			$ 305,145			
Debt per enplaned passenger	$ 51.68	$ 125.02	$ 121.44	$ 116.79	$ 186.92	$ 180.80	$ 173.65	$ 236.98	$ 228.44	$ 218.93	$ 171.06
Days cash on hand (Ending Balance) (days)	180	160	154	141	136	131	128	127	124	139	179
CPE	$ 5.90	$ 5.81	$ 5.78	$ 11.21	$ 10.89	$ 10.75	$ 15.92	$ 15.35	$ 14.99	$ 20.29	$ 17.63
Coverage ratio (x)	1.27	1.27	1.27	1.27	1.26	1.26	1.27	1.26	1.26	1.26	1.26

Source: Ricondo & Associates, Inc. April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Days Cash on Hand

As with the other two residual-based airports, Airports F and G end Year 1 with cash reserves equal to 180 days cash on hand. For Airport F, days cash steadily declines through Year 11, to 111 days. Its cash reserves rise modestly through Year 15 before declining through Year 17 to end the study period at 113 days. Airport G sees its cash reserves decline to a minimum of 124 days in Year 11, after which its cash levels steadily increase to 179 days in Year 17.

Cost per Enplaned Passenger

The longer time frame of the alternative CIP schedule serves to spread the increase in CPE over an extended period, but results in a higher overall CPE at the conclusion of the program. The CPE of Airport F increases by a total of $12.11 over the course of the program, from $5.41 in Year 5 to $17.52 in Year 12. In comparison the CPE of Airport G rises by $14.86, from $5.78 in Year 5 to $20.29 in Year 12. The difference in CPE between the two airports increases by $2.40 over the course of the program, to $2.77 in Year 12 from $0.37 in Year 5. The CPE for both airports declines in the years following the DBO of each phase of the program.

Debt Service Coverage

Reflecting the residual rate model, debt service coverage for both airports remains near the rate covenant of 1.25x through the study period.

Debt Per Enplaned Passenger

Airport F borrows a total of $886 million to finance the three-phase capital program. Its debt per enplaned passenger peaks at $228 in Year 10. In comparison, Airport G borrows a total of $915 million, with its debt per enplaned passenger rising to $236 in Year 10.

Compensatory Model, CIP Schedule 1

R&A next investigated how both the difference in interest rates and the ability to apply cash to a capital program would influence airline rates and charges under the compensatory model. The compensatory model includes a charge for amortization – that is a return on investment to the airport for the use of its cash in the capital program included in airline rates and charges. For the purposes of the models, the amortization charge includes interest at the same rate assumed for the bonds and is amortized over the same period as the

bonds.[57] **Table 10** presents the financial metrics for Airports H and I generated by incorporating CIP Schedule 1 into the compensatory model.

Days Cash on Hand

Airport H is assumed to have been preparing for the capital program by increasing its cash reserves prior to the start of the study period and holds the equivalent of 524 days cash on hand at the end of Year 1. The airport's cash reserves increase through Year 3, when they peak at 655 days. The airport applies a total of $104 million in cash to the program in Years 4 through 6 as outlined in Table 10. This amount was determined by reducing the airport's cash on hand to 220 days in each of these years. The Airport's cash levels increase from Year 7 through Year 9 before the Airport again uses cash for the refurbishment project in Year 10, which brings its reserves back to the 220 day level. The cash balance then increases through the end of the analysis period, reaching 797 days in Year 17.

Airport I, which is presumed to have a lower credit rating than Airport H, holds less cash at the end of Year 1 in comparison to Airport H at 332 days, which increase to 453 days at the end of Year 3. Airport I applies a total of $78.4 million in cash to the capital program in Years 4 through 6, as indicated in Table 10, which is $26 million less than Airport H. Again, this amount was determined by reducing the airport's cash on hand to 180 days in each of Years 4, 5 and 6. Airport I's cash balances subsequently increase to 272 days in Year 9, then decline to 180 days in Year 10 as the airport applies its cash to the refurbishment program. Airport I's cash reserves then increase annually through the end of the study period, reaching 580 days in Year 17.

[57] In their comments, ATA rightly points out that R&A did not discretely acknowledge the presence of the amortization charge under the compensatory model in the draft document. As R&A did include amortization in the model used in the draft document, the results in the final version are unchanged from the draft version. Thus the model does accurately portray the benefits of using cash under the compensatory model, which are derived primarily by reducing the use of capitalized interest in a particular bond transaction.

Table 10

Summary Metrics for Airports H and I

		Terminal Expansion Program					Refurbishment Program			
	Year 1	Year 4	Year 5	Year 6	Year 7	Year 8	Year 10	Year 11	Year 12	Year 17
Common Elements										
Capital Program Event		Transaction 1		Transaction 2		Transaction 3		DBO	Transaction 4			DBO	
CIP Program Requirement (thousands)		$ 200,000	$ 200,000	$ 200,000			$ 75,000				
Enplanements (thousands)	3,623	3,845	3,922	4,000	4,080	4,162	4,330	4,416	4,505	4,973
Airport H										
Airport Cash Contribution to CIP		$ 72,151	$ 14,898	$ 16,691			$ 43,524			
Par Amount of Bonds Issued		$ 170,858	$ 232,115	$ 216,599			$ 37,192			
Debt per enplaned passenger	$ 51.13	$ 89.11	$ 145.32	$ 195.35	$ 190.22	$ 182.44	$ 175.56	$ 167.69	$ 159.71	$ 120.00
Days cash on hand (Ending Balance) days	524	220	220	220	333	319	220	291	362	797
CPE	$ 7.72	$ 8.94	$ 9.28	$ 9.63	$ 9.87	$ 16.42	$ 16.87	$ 17.05	$ 17.51	$ 18.26
Coverage ratio (x)	2.45	2.95	3.05	3.22	3.38	1.42	1.53	1.58	1.59	1.89
Airport I										
Airport Cash Contribution to CIP		$ 48,998	$ 13,764	$ 15,614			$ 26,638			
Par Amount of Bonds Issued		$ 214,397	$ 244,744	$ 225,058			$ 59,030			
Debt per enplaned passenger	$ 51.68	$ 101.41	$ 160.71	$ 212.66	$ 207.29	$ 199.38	$ 197.22	$ 189.04	$ 180.67	$ 138.37
Days cash on hand (Ending Balance) (days)	332	180	180	180	286	250	180	224	266	580
CPE	$ 7.87	$ 8.99	$ 9.35	$ 9.71	$ 9.96	$ 17.70	$ 18.04	$ 18.20	$ 18.87	$ 19.53
Coverage ratio (x)	2.20	2.64	2.75	2.91	3.06	1.27	1.35	1.39	1.38	1.62

Source: Ricondo & Associates, Inc. April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Cost Per Enplaned Passenger

With the use of its cash, Airport H borrowing needs equal $496.3 million to generate the $600 million of total funding required for the capital program. The related annual debt service of $42.3 million is first incorporated in airline rates and charges in Year 8, with the airport's CPE increasing by $6.55 to $16.42 from $9.87 in Year 7. In addition to the lower amount of annual debt service expense, the comparatively smaller increase in CPE relative to the residual model partly reflects the fact that only 85 percent of debt service costs flow into the airline rate base in the compensatory model, with the landside cost center accounting for the remaining 15 percent. The airport's CPE increases to $17.51 in Year 12, when the refurbishment project is completed, and increases at a modest annual rate through the end of the analysis period in Year 17.

Reflecting the lower amount of cash it has available to apply to the capital program, Airport I's borrowing needs total $521.6 million to provide the $600 million of total required funding. When the annual debt service of $51.8 million is incorporated into the rates and charges in Year 8 the airport's CPE rises by $7.74, to $17.70 from $9.96 in Year 7. The annual difference in CPE between Airport H and Airport I increases to $1.28 in Year 8 from $0.09 in Year 7, and remains at that level through the end of the analysis period. The CPE for Airport G increases steadily through the remainder of the study period, with a larger $0.67 increase in Year 12 at the completion of the refurbishment program.

Debt Service Coverage

The completion of the capital program has a marked effect on annual debt service coverage of Airport H, with the coverage ratio declining to 1.42x when the new debt service is incorporated in the financial operations of the airport in Year 8 from 3.38x of outstanding debt service in Year 7. Airport I experiences a similar decline in debt service coverage in Year 8, with its coverage ratio declining to 1.27x from 3.06x in Year 7. Debt service coverage for both Airports H and I improves in each subsequent year of the analysis period, except upon completion of the refurbishment program in Year 12, where the coverage ratio remains essentially unchanged from Year 11. The coverage ratios equal 1.89x and 1.62x for Airports H and I, respectively, at the end of the study period.

Debt per Enplaned Passenger

Reflecting the lower amount of required borrowing, the debt burden of Airport H increases to $195 in Year 6 compared the peak of $212 in Year 6 for Airport I.

Compensatory Model, CIP Schedule 2

Table 11 presents the metrics for Airports J and K, which utilize the compensatory model and are presumed to pursue CIP Schedule 2.

Days Cash on Hand

Like Airport H, Airport J ends Year 1 with 524 days cash on hand which increases to 655 days in Year 3. However, with the airport able to generate additional cash between each phase of the capital program, Airport J is able to apply a total of $150.3 million in cash to the capital program compared to the $104 million for Airport H. This level of funding was determined by reducing Airport J's cash on hand to 220 days in each year of borrowing under CIP Schedule 2. Following the final transaction in Year 10, Airport J's cash on hand steadily increases to 790 days at the end of the study period

Similarly, Airport K begins with the same level of cash as Airport I, but because of the phasing is able to put a total of $107.9 million toward the capital program compared to $78.4 million of Airport I. This level of funding was determined by lowering Airport K's cash on hand to 180 days in each year of borrowing under CIP Schedule 2. Airport K's cash reserves build following the completion of the capital program, reaching 583 days at the end of the study period.

Cost Per Enplaned Passenger

By applying cash, Airport J limits its borrowing needs for the capital program to $599.7 million, with total annual debt service associated with the program reaching $47.6 million after the third phase. Airport J's CPE increases in steps at the completion of each phase, with the CPE rising to $11.49 in Year 6 from $9.18 in Year 5, to $14.76 in Year 9 from $12.17 in Year 8, and finally to $17.83 in Year 12 from $15.34 in Year 11. Following the completion of the program the airport's CPE grows at a modest annual rate, reaching $18.48 in Year 17.

Table 11

Summary Metrics for Airports J and K

		Terminal Expansion - Phase 1			Terminal Expansion - Phase 2			Terminal Expansion - Phase 3			
	Year 1	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 17
Common Elements											
Capital Program Event		Transaction 1		DBO	Transaction 2		DBO	Transaction 3		DBO	
CIP Program Requirement (thousands)		$ 250,000			$ 250,000			$ 250,000			
Enplanements (thousands)	3,623	3,845	3,922	4,000	4,080	4,162	4,245	4,330	4,416	4,505	4,973
Airport J											
Airport Cash Contribution to CIP		$ 72,151			$ 37,555			$ 40,582			
Par Amount of Bonds Issued		$ 210,148			$ 251,027			$ 248,380			
Debt per enplaned passenger	$ 51.13	$ 99.43	$ 96.25	$ 92.20	$ 150.57	$ 146.23	$ 139.99	$ 191.14	$ 183.81	$ 175.59	$ 134.73
Days cash on hand (Ending Balance) (days)	524	220	317	368	220	308	354	220	303	356	790
CPE	$ 7.72	$ 8.94	$ 9.18	$ 11.49	$ 11.95	$ 12.17	$ 14.76	$ 15.15	$ 15.34	$ 17.83	$ 18.48
Coverage ratio (x)	2.45	2.95	3.03	1.91	2.02	2.09	1.63	1.70	1.75	1.55	1.84
Airport K											
Airport Cash Contribution to CIP		$ 48,998			$ 30,359			$ 28,519			
Par Amount of Bonds Issued		$ 245,339			$ 268,090			$ 270,335			
Debt per enplaned passenger	$ 51.68	$ 109.46	$ 106.19	$ 102.05	$ 164.50	$ 159.96	$ 153.60	$ 209.67	$ 202.06	$ 193.60	$ 150.98
Days cash on hand (Ending Balance) (days)	332	180	269	302	180	250	274	180	240	268	583
CPE	$ 7.87	$ 8.99	$ 9.24	$ 12.10	$ 12.54	$ 12.75	$ 15.72	$ 16.05	$ 16.24	$ 19.12	$ 19.70
Coverage ratio (x)	2.20	2.64	2.74	1.65	1.74	1.80	1.43	1.49	1.54	1.37	1.60

Source: Ricondo & Associates, Inc. April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Airport K requires a total of $642.1 million of borrowing for the capital program, with total annual debt service associated with the program equaling $58.4 million upon the completion of phase 3. Airport K's CPE rises to $12.10 in Year 6 from $9.24 in Year 5, to $15.72 in Year 9 from $12.75 in Year 8, and to $19.12 in Year 12 from $16.24 in Year 11. The airport's CPE ends the study period at $19.70 in Year 17.

Debt Service Coverage

Debt service coverage for Airport J decreases in each year of DBO for the three phases of the project, to 1.91x in Year 6 from 3.03 in Year 5, to 1.63x in Year 9 from 2.09x in Year 8, and to 1.55x in Year 12 1.75x in Year 11.

The debt service coverage ratio of Airport K follows a similar pattern, declining to 1.65x in Year 6 from 2.74x in Year 5, to $15.72 in Year 9 from $12.75 in Year 8, and to a low of 1.37x in Year 12 from 1.54x in Year 11

Debt per Enplaned Passenger

Debt per enplaned passenger for Airport J increases to a high of $191 in Year 10 from $46.88 in Year 3, the year prior to the commencement of the capital program. For Airport K, debt per enplaned passenger increases to $209 from 47.66 over the same period.

Observations

This paper was prepared to investigate the issues raised by the participants in the April 2009 roundtable discussion at the ACI-NA Economics and Finance Conference and to promote a dialogue between the airlines and airport operators regarding the relative importance of airport bond ratings and the use of cash in capital programs. The issues raised are complex, and have different implications for each airport and the airlines that serve them because of the nature of the individual business arrangements, the current capital needs of an airport, and the operating needs of the airlines serving that airport.

The credit rating differential between airlines and airports exists for many reasons, most of which reflect the level of risk each entity assumes as a result of the nature of its operations. Airlines exist in a highly competitive industry with low barriers to entry. They are directly exposed to fluctuations in the economy that can quickly erode their pricing power and rapidly rising commodity prices that increase their operating expenses, both of which place significant pressure on their financial operations. As a result, airline ratings

tend to be at the lower end of the rating spectrum, reflecting the sensitivity of their ability to pay debt service to conditions that are largely out of their control.

Airports, on the other hand, exist in an environment that creates several barriers to entry and limits competition, including the cost of land as well as the extensive regulatory regime, extended time horizon, and the significant financial resources required to implement a capital program. These barriers, combined with the public nature of airports, their market-facilitating function, and cost-recovery-based financial operations serve to limit their exposure to economic volatility. As a result, airport ratings are generally in the higher, investment grade spectrum of the rating scale.

While airports enjoy several inherent credit strengths, factors such as the increasing use of the compensatory rate-setting methodology and rising debt burdens associated with major capital programs has increased the sensitivity of airport financial operations to changes in economic conditions, as demonstrated by the downward trend in airport ratings through the recent recession. As a result of airport operators accepting increased short-term operating risks, the rating agencies have focused increased attention on factors such as debt service coverage and liquidity to assure that airports maintain the resources to absorb the financial implications of a sudden decline in activity without risking the payment of their debt service obligations.

In response to the increased rating agency focus on coverage and liquidity, airport operators strive to maintain these metrics at levels targeted to support their credit ratings. Keeping their strong credit ratings is important to airport operators for several reasons. First, strong credit ratings enable airport operators to borrow at favorable interest rates, lowering the cost of borrowing, which is passed on to the airlines. Second, their investment grade ratings further their ability to access the municipal bond market. Finally, they seek to maintain higher ratings to garner political and public support for airport investments.

However, as the rating agencies provide little guidance as to the levels of liquidity and coverage required to maintain a particular rating status and will generally favor airports with such metrics above those of their industry peers, airports and airlines struggle to balance the need for airports to maintain adequate resources to sustain their financial flexibility with the costs these reserves present to the airlines.

The output generated by the financial models demonstrates that higher ratings benefit airport sponsors by reducing borrowing costs and allowing them to access the municipal bond market to finance their capital needs. Most of the savings result from reducing the need for capitalized interest and debt service reserves, as higher ratings allow an airport to issue debt at favorable interest rates. As demonstrated in **Table 12**, which summarizes the results produced using the residual model, Airport D achieved 15 percent savings in annual debt service over Airport E, because of its lower interest rate, which reduced need for capitalized interest reduced the debt service reserve requirement. As a result, Airport D's CPE remained approximately $2.85 below that of Airport E in Year 12 and through the remainder of the study period. As a result of the lower interest rate, Airport D's total debt service costs are $64.6 million less than Airport E from Year 12 through Year 17. Airports F and G, which employ the residual rate making methodology but undertook the phased capital program, had similar results.

Table 13, which summarizes the results produced using the compensatory model, indicates that airport operators can gain further cost efficiencies by using cash to decrease the external borrowing requirements of a capital program. Without consideration of the rate setting mechanism, Airport H's total funding requirement (the total of cash plus borrowing) for the capital was $38.4 million less Airport D, with both airports having followed the same capital program schedule and received the same interest rate, through the application of its cash reserves. The combination of lower interest rates and greater use of cash held in the comparison of Airport H and Airport I, with the latter needing to devote 5.4 percent more total resources to the capital program. This resulted in a $1.29 annual difference in CPE for the two compensatory airports following the completion of the capital program.

While cash reserves and the ability to generate surplus revenue (coverage of annual debt service beyond the rate covenant) are significant factors in the rating process and allow airports to reduce borrowing costs, their importance should not be overstated. Cash reserves and coverage are just a few of the elements considered by rating agencies, with other factors such as the economic underpinnings of the service area, market concentration, and future capital needs being as, if not more, significant in assessing credit quality at certain points in the life cycle of an airport.

Table 12

Summary of Residual Model Output

	Airport D	Airport E	Difference
Total Par Amount of Bonds Issued (000)	$ 842,402	$ 882,456	$ 40,054
Annual Debt Service Year 8 (000)	$ 64,970	$ 74,863	$ 9,893
Annual Debt Service Year 12 onward (000)	$ 70,919	$ 81,691	$ 10,772
Max Debt per Enplaned Passenger	$ 229	$ 239	$ 10
CPE in Year 1	$ 5.50	$ 5.90	$ 0.40
CPE in Year 8	$ 17.57	$ 20.49	$ 2.92
CPE in Year 12	$ 16.98	$ 19.83	$ 2.85
Coverage Ratio in Year 1	1.27	1.27	
Coverage Ratio in Year 8	1.28	1.28	
Coverage Ratio in Year 12	1.26	1.26	

	Airport F	Airport G	Difference
Total Par Amount of Bonds Issued (000)	$ 886,206	$ 915,435	$ 29,229
Annual Debt Service Year 6 (000)	$ 33,248	$ 37,681	$ 4,433
Annual Debt Service Year 9 (000)	$ 53,086	$ 60,443	$ 7,357
Annual Debt Service Year 12 onward (000)	$ 72,094	$ 83,204	$ 11,110
Max Debt per Enplaned Passenger	$ 228	$ 236	$ 8
CPE in Year 1	$ 5.50	$ 5.90	$ 0.40
CPE in Year 6	$ 10.12	$ 11.21	$ 1.09
CPE in Year 9	$ 13.90	$ 15.92	$ 2.02
CPE in Year 12	$ 17.52	$ 20.29	$ 2.77
Coverage Ratio in Year 1	1.27	1.27	
Coverage Ratio in Year 6	1.27	1.27	
Coverage Ratio in Year 9	1.26	1.27	
Coverage Ratio in Year 12	1.27	1.26	

Source: Ricondo & Associates, Inc., April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Table 13

Summary of Compensatory Model Output

	Airport H	Airport I	Difference
Airport Cash Contribution to CIP (000)	$ 147,264	$ 105,014	$ 42,250
Total Par Amount of Bonds Issued (000)	$ 656,764	$ 743,229	$ 86,465
Annual Debt Service Year 8 (000)	$ 55,678	$ 66,722	$ 11,044
Annual Debt Service Year 12 onward (000)	$ 58,165	$ 71,125	$ 12,960
Max Debt per Enplaned Passenger	$ 195	$ 212	$ 17
CPE in Year 1	$ 7.72	$ 7.87	$ 0.15
CPE in Year 8	$ 16.42	$ 17.70	$ 1.28
CPE in Year 12	$ 17.51	$ 18.87	$ 1.36
Coverage Ratio in Year 1	2.45	2.20	0.25
Coverage Ratio in Year 8	1.42	1.27	0.15
Coverage Ratio in Year 12	1.59	1.38	0.21

	Airport J	Airport K	Difference
Total Par Amount of Bonds Issued (000)	$ 709,554	$ 783,763	$ 74,209
Annual Debt Service Year 6 (000)	$ 27,526	$ 33,220	$ 5,694
Annual Debt Service Year 9 (000)	$ 44,385	$ 53,217	$ 8,832
Annual Debt Service Year 12 onward (000)	$ 61,047	$ 73,383	$ 12,336
Max Debt per Enplaned Passenger	$ 191	$ 210	$ 19
CPE in Year 1	$ 7.72	$ 7.87	$ 0.15
CPE in Year 6	$ 11.49	$ 12.10	$ 0.61
CPE in Year 9	$ 14.76	$ 15.72	$ 0.96
CPE in Year 12	$ 17.83	$ 19.12	$ 1.29
Coverage Ratio in Year 1	2.45	2.20	0.25
Coverage Ratio in Year 6	1.91	1.65	0.26
Coverage Ratio in Year 9	1.63	1.43	0.20
Coverage Ratio in Year 12	1.55	1.37	0.18

Source: Ricondo & Associates, Inc., April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Airport operators should also recognize that maintaining significant cash reserves can impose both economic and opportunity costs on its operations and its tenants. Although addressing slightly different concerns, in a 2009 CNBC program taped at Columbia University's School of Business, Warren Buffet commented that "cash is a bad investment over time" but that "you always want to have enough that nobody else can determine your future."[58] The airlines recognize this factor, as their past difficulties have led most of them to maintain the amount of cash on their balance sheets that they deem necessary to sustain their operations through industry cycles and recognize that airports need to do the same.

As the economy begins to recover and the financial outlook for the aviation industry improves, airport operators should strive to develop polices for cash reserves that allow them to protect their financial operations through future uncertainties. Such policies will provide clarity for both the airlines and the rating agencies as to what levels of reserves an airport operator deems necessary and what purposes the reserves will serve, such as implementation of a capital program. Furthermore, such policies indicate to the rating agencies the airport operator's own benchmark on which to evaluate performance, requiring airport management to address deviations from the stated goals of the organization. In developing such policies, airport operators should take several factors into account, including: seasonal cash flow variances, the level of financial exposure relating to any one airline, the effect a 10 percent to 15 percent decline in enplaned passengers would have on financial performance, the amount of annual debt service due, the level of variable rate debt exposure and interest rate risk, and the pending capital needs of the airport. Additionally, airport operators should weigh the opportunity costs of holding cash, as well as the potential for a higher return on cash assets if otherwise invested. These factors should be evaluated against the rates and charges assessed to the airlines to meet the overall needs of the airport and maintain the liquidity target.

[58] CNBC, "Warren Buffett and Bill Gates: Keeping America Great," original air date November 12, 2009, accessed from www.CNBC.com, March 30, 2010.

Appendix A Assumptions Used in the Models

The following assumptions were applied to the model for each "airport" in the study:

Time Period

The models begin in Year 1 and extend through Year 17 (the analysis period).

Enplaned Passengers

The number of enplaned passengers was set at 3,622,923 in Year 1. At roughly 7.2 million passengers, the airport would be classified as a medium hub and rank as the 55th largest airport in North America based on ACI-NA's 2008 statistics, ahead of Port Columbus International Airport and behind Southwest Florida International Airport. The number of enplaned passengers is projected to increase 2.0 percent annually, reaching 4 million in Year 6 and approaching 5 million in Year 17.

Landed Weight

Total aircraft landed weight was set at 5.7 million 1,000 pound units in Year 1. Landed weight was assumed to increase 2.0 percent per year.

Cost Centers

Both the residual and compensatory models were based on three airport cost centers: Terminal, Airfield, and Landside.

Terminal Space

The existing terminal was assumed to encompass 800,000 square feet. The airlines are allocated a total of 240,000 square feet, of which 60,000 square feet are not leased. Concessionaires are allocated 160,000 square feet, with public space accounting for the remaining 400,000 square feet.

Capital Program

The capital program consists of an expansion program that would double the size of the terminal to 1.6 million square feet. At the end of the program, space would be allocated in the same proportions as in the original building, with the airlines allocated a total of 480,000 square feet, the concessionaires a total of 320,000 square feet, and public space the remaining 800,000 square feet.

R&A used two different time schedules to determine if phasing of a capital program had any influence on the ultimate cost of the program. Table A-1 presents CIP Schedule 1, in which the terminal expansion would be undertaken as a single, 4-year project beginning in Year 4, with the date of beneficial occupancy (DBO) in Year 8. The project was assumed to require $200 million of funding in each of Years 4 through 6. This schedule corresponds to the capital program used in Cases 1 and 2 above. In addition, under CIP Schedule 1, the airport operator undertakes a $75 million refurbishment of existing facilities in Year 10 with DBO in Year 12.

Table A-1

CIP Schedule 1

	Year 4	Year 5	Year 6	Year 10	Total
Project Costs by Cost Centers					
Terminal	$160,000,000	$160,000,000	$160,000,000	$60,000,000	$540,000,000
Airfield	10,000,000	10,000,000	10,000,000	3,750,000	$33,750,000
Landside	30,000,000	30,000,000	30,000,000	11,250,000	$101,250,000
Total	$200,000,000	$200,000,000	$200,000,000	$75,000,000	$675,000,000

Source: Ricondo & Associates, Inc. April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Table A-2 presents CIP Schedule 2, an alternative scenario in which the terminal expansion would be undertaken in phases over an 8-year period, with each phase consisting of a 267,000-square-foot expansion. The first phase would commence at the beginning of Year 4, with DBO at the beginning of Year 6; Phase 2 would commence at the beginning of Year 7, with DBO at the beginning of Year 9; and Phase 3 would commence at the beginning of Year 10, with DBO at the beginning of Year 12. The refurbishment of existing space is included within the phases rather than as a standalone project, as under CIP Schedule 1. The program was assumed to require $250 million of funding in each of Years 4, 7, and 9. The higher amounts each year reflect inclusion of the refurbishment in the main CIP and the additional costs of phasing and inflation over time.

Table A-2

CIP Schedule 2

	Year 4	Year 7	Year 10	Total
Project Costs by Cost Centers				
Terminal	$200,000,000	$200,000,000	$200,000,000	$600,000,000
Airfield	12,500,000	12,500,000	12,500,000	$37,500,000
Landside	37,500,000	37,500,000	37,500,000	$112,500,000
Total	$250,000,000	$250,000,000	$250,000,000	$750,000,000

Source: Ricondo & Associates, Inc. April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Under CIP Schedule 2, total airline space would increase by 80,000 square feet in each phase, or to 320,000 square feet in Year 6, to 400,000 square feet in Year 9, and to 480,000 square feet in Year 12. Concession space would increase by approximately 53,000 square feet in each phase, or to 213,000 square feet in Year 6, to 267,000 square feet in Year 9, and to 320,000 square feet in Year 12.

Sources of Capital Project Funding

For the purposes of this analysis, funding for the capital program was assumed to consist solely of airport cash contributions and the proceeds from the sale of general airport revenue bonds (GARBs). The amount of cash and debt required would vary depending on the use of a residual or compensatory rate-setting methodology, the assumed bond rating and resulting interest rate, and the amount of cash held by the airport at the time of each project.

Annual debt service expense related to the capital projects under CIP Schedules 1 and 2 would be allocated to airport cost centers as follows: 80 percent to the terminal, 5 percent to the airfield, and 15 percent to landside.

While other sources of funding, such as passenger facility charge revenue and Federal Aviation Administration Airport Improvement Program grants, are not considered in the financial models, such sources were assumed to be applied to capital projects on the airfield, limiting debt service in that cost center.

Cash

In the residual model the airport is not assumed to use its own cash in support of the capital program. In the compensatory model, each airport is estimated

to apply cash as outlined in each example. The airport is assumed to include amortization in its rates and charges to earn a return on its investment. For the purposes of the paper, the amortization period is assumed to match that of the bonds, as is the interest applied in the calculation.

Project Debt

The bond issues for the capital program were assumed to be fixed rated for a 30-year term and structured for level annual debt service through maturity. Interest would be capitalized for the period between issuance and DBO. Principal amortization begins, and debt service is first applied to airline rates and charges, in the year of DBO. Airline rates and charges were assumed to include debt service coverage of 0.25 percent annually. The transactions were assumed to include an industry standard debt service reserve funded at closing from bond proceeds.

Outstanding Debt

The airport was assumed to have $200 million in outstanding debt at the start of the study period. For the purposes of this analysis, the outstanding debt was assumed to consist of a single bond issue that would be amortized through the analysis period. The outstanding debt was assumed to have capitalized interest for a 2-year period, include a bond-funded debt service reserve fund, and be structured to provide level annual debt service through maturity. The outstanding debt was allocated as follows: 40 percent to the terminal cost center, 10 percent to the airfield cost center, and 50 percent to the landside cost center.

Bond Interest Rates

The bond interest rates are set at 5 percent for the assumed higher rated facility in each pair of examples run through the respective models, while the rate for the assumed lower rated facility was set at 6 percent. This reflects the approximately 100 basis point spread between an 'A' rated revenue bond and a 'BBB' rated revenue bond based on market data provided by Piper Jaffray and Morgan Keegan at the beginning April 2010. The outstanding debt attributed to the airports before the study period and the project debt issued for the model capital program are assumed to carry the same interest rate.

Ongoing Maintenance

It was assumed that an ongoing maintenance program would be established in Year 1 in the amount of $10 million. Routine capital maintenance expense

was assumed to increase at 4 percent per year through the analysis period. In the residual model, the previous year's coverage account was assumed to fund the maintenance account in the subsequent year. If this amount were insufficient to cover the ongoing maintenance requirement in any given year, the remainder would be included in airline rates and charges, with 50 percent allocated to the terminal cost center and 50 percent allocated to the airfield cost center. In the compensatory model, the annual maintenance expense was assumed to be funded from airport cash and amortized over a 30-year period at the airport's borrowing rate. The amortization expense was allocated 50 percent to the terminal cost center, 20 percent to the airfield cost center, and 30 percent to the other cost center.

Operating Expense

Operating and maintenance expense was set at $32 million in Year 1, and was assumed to increase 4 percent per year. Operating expenses were also increased each year in which DBO for a capital project occurs. For CIP Schedule 1, operating expenses were increased 30 percent in the terminal cost center, 2 percent in the airfield cost center, and 10 percent in the landside cost center in Year 8. For CIP Schedule 2, operating expenses were increased 10 percent in the terminal cost center, 1 percent in the airfield cost center, and 5 percent in the landside cost center in Years 6, 9, and 12. Operating expenses were allocated 50 percent to the terminal cost center, 20 percent to the airfield cost center, and 30 percent to the landside cost center.

Non-Airline Revenues

Nonairline revenues were set at $47.5 million in Year 1 and were assumed to increase 4 percent annually except in the years of DBO for a capital project. Nonairline revenues generated in the terminal cost center represent 15 percent of the total, nonairline revenues generated in the landside cost center (including parking) represent 80 percent of the total, and nonairline revenues generated in the airfield cost center represent 5 percent of the total. Under CIP Schedule 1, nonairline revenues in the terminal cost center increase by 100 percent, nonairline revenues in the landside cost center increase by 10 percent, and nonairline revenues in the airfield cost center increase by 2 percent in Year 8. Under CIP Schedule 2, nonairline revenues in the terminal cost center increase by 30 percent, nonairline revenues in the landside cost center increase by 2 percent, and nonairline revenues in the airfield cost center increase by 1 percent in each of Years 6, 9, and 12.

Cash on Hand

Cash on hand was established for Year 1 in both the compensatory and residual models based loosely on Moody's *U.S. Airport Medians for FY 2008* for the assumed rating levels. For the compensatory model, cash on hand at the end of Year 1 was set at 524 days for the assumed higher rated airport and 332 days for the assumed lower rated airport. For the residual model, cash on hand at the end of Year 1 was set at 180 days for both airports.

The Residual Model

In the residual model, the terminal rental rate (per square foot) equals the terminal revenue requirement divided by terminal rentable space. The terminal revenue requirement equals the sum of O&M expenses, the debt service fund requirement, debt service coverage, the O&M reserve fund requirement, and capital expenditures allocated to the terminal cost center.

The amount of airline revenue derived from terminal rentals is calculated by multiplying airline terminal leased space by the terminal rental rate per square foot. Thus, the airlines pay terminal rent in an amount that covers their share of rentable space.

For the airfield cost center, the landing fee (per 1,000 pound unit of landed weight) equals the airport revenue requirement divided by total landed weight. The airport revenue requirement equals the sum of O&M expenses, the debt service fund requirement, debt service coverage, the O&M reserve fund requirement and capital expenditures for the entire airport less the sum of terminal rentals, nonairline revenues, and investment earnings.

Airline landing fee revenue is calculated by multiplying airline landed weight by the landing fee. Thus, the airlines pay landing fees in an amount equal to the remainder of all airport expenses and requirements less airline terminal rentals and nonairline revenues.

The Compensatory Model

In the compensatory model, the terminal rental rate (per square foot) equals the terminal revenue requirement divided by terminal rentable space. The terminal revenue requirement equals the sum of O&M expenses, the debt service fund requirement, debt service coverage, the amortization requirement, and the O&M reserve fund requirement allocated to the terminal cost center. Airline terminal rental revenue is calculated by multiplying airline terminal

leased space by the terminal rental rate. Thus, the airlines pay terminal rent in an amount that covers their share of rentable space.

The landing fee (per 1,000 pound unit of landed weight) equals the airfield revenue requirement divided by total landed weight. The airfield revenue requirement equals the sum of O&M expenses, the debt service fund requirement, debt service coverage, the amortization requirement, and the O&M reserve fund requirement allocated to the airfield cost center.

Airline landing fee revenue is calculated by multiplying airline landed weight by the landing fee. Thus, the airlines pay landing fees in an amount that covers their share of the airfield cost.

The airport generates cash by implementing a profit margin in the landside cost center equal to other nonairline revenues less other expenses.

Appendix B The Residual Model

Airport D

Airport E

Airport F

Airport G

Financial Metrics

Table B-1

Summary Metrics for Airports D and E (Residual Model, CIP Schedule 1

				Terminal Expansion Program						Refurbishment Program							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17
Capital Program Event				Transaction 1	Transaction 2	Transaction 3		DBO		Transaction 4		DBO					
CIP Program Requirement (thousands)				$ 200,000	$ 200,000	$ 200,000				$ 75,000							
Airport D																	
Par Amount of Bonds Issued																	
Debt per enplaned passenger	$ 51.13	$ 49.00	$ 46.88	$ 114.13	$ 174.61	$ 229.01	$ 223.21	$ 214.17	$ 205.16	$ 216.66	$ 207.32	$ 197.67	$ 188.05	$ 178.45	$ 168.86	$ 159.29	$ 149.71
Days cash on hand																	
(Ending Balance) (days)	180	173	166	160	154	148	142	134	141	146	147	152	154	152	148	142	137
CPE	$ 5.50	$ 5.47	$ 5.45	$ 5.43	$ 5.41	$ 5.39	$ 5.37	$ 17.57	$ 16.58	$ 16.16	$ 15.75	$ 16.98	$ 16.54	$ 16.13	$ 15.72	$ 15.39	$ 15.14
Coverage ratio (x)	1.27	1.27	1.27	1.27	1.28	1.28	1.28	1.28	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26
Airport E																	
Par Amount of Bonds Issued																	
Debt per enplaned passenger	$ 51.68	$ 49.67	$ 47.66	$ 119.51	$ 183.07	$ 239.34	$ 233.44	$ 224.61	$ 215.78	$ 228.09	$ 218.85	$ 209.29	$ 199.72	$ 190.12	$ 180.49	$ 170.81	$ 161.09
Days cash on hand (Ending Balance) (days)	180	173	166	160	154	148	142	147	167	182	193	209	220	227	231	231	229
CPE	$ 5.90	$ 5.86	$ 5.83	$ 5.81	$ 5.78	$ 5.75	$ 5.73	$ 20.49	$ 19.39	$ 18.90	$ 18.43	$ 19.83	$ 19.31	$ 18.82	$ 18.35	$ 17.89	$ 17.44
Coverage ratio (x)	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.28	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26

Source: Ricondo & Associates, Inc., April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Table B-2

Summary Metrics for Airports F and G (Residual Model, CIP Schedule 2)

				Terminal Expansion - Phase 1			Terminal Expansion - Phase 2			Terminal Expansion - Phase 3							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17
Capital Program Event				Transaction 1		DBO	Transaction 2		DBO	Transaction 3		DBO					
CIP Program Requirement (thousands)				$250,000			$250,000			$250,000							
Airport F																	
Par Amount of bonds issued				$295,402			$295,402			$295,402							
Debt per enplaned passenger	$ 51.13	$ 49.00	$ 46.88	$ 121.60	$ 117.99	$ 113.15	$ 180.73	$ 174.50	$ 167.13	$ 228.01	$ 219.35	$ 209.61	$ 199.91	$ 190.23	$ 180.57	$ 170.93	$ 161.30
Days cash on hand (Ending Balance) days	180	173	166	160	154	141	136	131	120	115	111	115	120	122	121	117	113
CPE	$ 5.50	$ 5.47	$ 5.45	$ 5.43	$ 5.41	$ 10.12	$ 9.83	$ 9.72	$ 13.90	$ 13.51	$ 13.32	$ 17.52	$ 16.88	$ 16.44	$ 16.02	$ 15.61	$ 15.31
Coverage ratio	1.27	1.27	1.27	1.27	1.28	1.27	1.26	1.26	1.27	1.26	1.26	1.27	1.26	1.26	1.26	1.26	1.26
Airport G																	
Par Amount of bonds issued				$ 305,145			$ 305,145			$ 305,145							
Debt per enplaned passenger	$ 51.68	$ 49.67	$ 47.66	$ 125.02	$ 121.44	$ 116.79	$ 186.92	$ 180.80	$ 173.65	$ 236.98	$ 228.44	$ 218.93	$ 209.41	$ 199.87	$ 190.30	$ 180.70	$ 171.06
Days cash on hand (Ending Balance) days	180	173	166	160	154	141	136	131	128	127	124	139	154	166	174	178	179
CPE	$ 5.90	$ 5.86	$ 5.83	$ 5.81	$ 5.78	$ 11.21	$ 10.89	$ 10.75	$ 15.92	$ 15.35	$ 14.99	$ 20.29	$ 19.56	$ 19.06	$ 18.57	$ 18.10	$ 17.63
Coverage ratio	1.27	1.27	1.27	1.27	1.27	1.27	1.26	1.26	1.27	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Appendix C The Compensatory Model

Airport H

Airport I

Airport J

Airport K

Financial Metrics

Table C-1

Summary Metrics for Airports H and I (Compensatory Model, CIP Schedule 1)

				Terminal Expansion Program						Refurbishment Program							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12 [2/]	Year 13	Year 14	Year 15	Year 16	Year 17
Capital Program Event				Transaction 1	Transaction 2	Transaction 3		DBO		Transaction 4		DBO					
CIP Program Requirement (thousands)				$200,000	$200,000	$200,000				$75,000							
Airport H																	
Airport Cash Contribution to CIP				$ 72,151	$ 14,898	$ 16,691				$ 43,524							
Par Amount of Bonds Issued				$ 170,858	$ 232,115	$ 216,599				$ 37,192							
Debt per enplaned passenger	$ 51.13	$ 49.00	$ 46.88	$ 89.11	$ 145.32	$ 195.35	$ 190.22	$ 182.44	$ 174.69	$ 175.56	$ 167.69	$ 159.71	$ 151.75	$ 143.80	$ 135.86	$ 127.93	$ 120.00
Days cash on hand (Ending Balance) (days)	524	587	655	220	220	220	333	319	369	220	291	362	439	523	611	702	797
CPE	$ 7.72	$ 7.96	$ 8.20	$ 8.94	$ 9.28	$ 9.63	$ 9.87	$ 16.42	$ 16.44	$ 16.87	$ 17.05	$ 17.51	$ 17.69	$ 17.87	$ 18.06	$ 18.16	$ 18.26
Coverage ratio (x)	2.45	2.59	2.73	2.95	3.05	3.22	3.38	1.42	1.47	1.53	1.58	1.59	1.65	1.71	1.77	1.83	1.89
Airport I																	
Airport Cash Contribution to CIP				$ 48,998	$ 13,764	$ 15,614				$ 26,638							
Par Amount of Bonds Issud				$ 214,397	$ 244,744	$ 225,058				$ 59,030							
Debt per enplaned passenger	$ 51.68	$ 49.67	$ 47.66	$ 101.41	$ 160.71	$ 212.66	$ 207.29	$ 199.38	$ 191.49	$ 197.22	$ 189.04	$ 180.67	$ 172.27	$ 163.86	$ 155.40	$ 146.91	$ 138.37
Days cash on hand (Ending Balance) (days)	332	389	453	180	180	180	286	250	272	180	224	266	317	374	438	507	580
CPE	$ 7.87	$ 8.12	$ 8.37	$ 8.99	$ 9.35	$ 9.71	$ 9.96	$ 17.70	$ 17.70	$ 18.04	$ 18.20	$ 18.87	$ 19.03	$ 19.20	$ 19.38	$ 19.45	$ 19.53
Coverage ratio (x)	2.20	2.32	2.45	2.64	2.75	2.91	3.06	1.27	1.31	1.35	1.39	1.38	1.43	1.48	1.53	1.57	1.62

Source: Ricondo & Associates, Inc., April 2010
Prepared by: Ricondo & Associates, Inc., April 2010

Table C-2

Summary Metrics for Airports J and K (Compensatory Model, CIP Schedule 2

				Terminal Expansion - Phase 1			Terminal Expansion - Phase 2			Terminal Expansion - Phase 3							
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17
CIP Event				Transaction 1		DBO	Transaction 2		DBO	Transaction 3		DBO					
CIP Program Requirement (thousands)				$250,000			$250,000			$250,000							
Airport J																	
Airport Cash Contribution to CIP				$ 72,151			$ 37,555			$ 40,582							
Par Amount of Bonds Issued				$ 210,148			$ 251,027			$ 248,380							
Debt per Enplaned Passenger	$ 51.13	$ 49.00	$ 46.88	$ 99.43	$ 96.25	$ 92.20	$ 150.57	$ 146.23	$ 139.99	$ 191.14	$ 183.81	$ 175.59	$ 167.38	$ 159.20	$ 151.03	$ 142.88	$ 134.73
Days cash on hand (Ending Balance) (days)	524	587	655	220	317	368	220	308	354	220	303	356	433	515	604	695	790
CPE	$ 7.72	$ 7.96	$ 8.20	$ 8.94	$ 9.18	$ 11.49	$ 11.95	$ 12.17	$ 14.76	$ 15.15	$ 15.34	$ 17.83	$ 17.95	$ 18.12	$ 18.31	$ 18.39	$ 18.48
Coverage Ratio (x)	2.45	2.59	2.73	2.95	3.03	1.91	2.02	2.09	1.63	1.70	1.75	1.55	1.61	1.67	1.73	1.78	1.84
Airport K																	
Airport Cash Contribution to CIP				$ 48,998			$ 30,359			$ 28,519							
Par Amount of Bonds Issued				$ 245,339			$ 268,090			$ 270,335							
Debt per Enplaned Passenger	$ 51.68	$ 49.67	$ 47.66	$ 109.46	$ 106.19	$ 102.05	$ 164.50	$ 159.96	$ 153.60	$ 209.67	$ 202.06	$ 193.60	$ 185.13	$ 176.63	$ 168.12	$ 159.57	$ 150.98
Days cash on hand (Ending Balance) (days)	332	389	453	180	269	302	180	250	274	180	240	268	318	376	440	510	583
CPE	$ 7.87	$ 8.12	$ 8.37	$ 8.99	$ 9.24	$ 12.10	$ 12.54	$ 12.75	$ 15.72	$ 16.05	$ 16.24	$ 19.12	$ 19.22	$ 19.38	$ 19.56	$ 19.62	$ 19.70
Coverage Ratio (x)	2.20	2.32	2.45	2.64	2.74	1.65	1.74	1.80	1.43	1.49	1.54	1.37	1.41	1.46	1.51	1.55	1.60

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

Appendix D Comments Received from the Air Transport Association

Credit Ratings and Cash Reserves: How They Influence the Borrowing Costs of Airports
An Industry White Paper
Airline Comments to Draft Released May 3, 2010

ATA, and its member airlines, appreciate the opportunity to comment on the referenced draft document to address multiple questions that arose from a discussion at the 2009 ACI –NA Economics Conference. Overall, we found the draft to be well-written and informative and support the modeling approach to illustrate some of the text discussion.

With that background, the airlines have some concerns and comments on the draft. While it is worth discussing the difference in credit ratings between airports and airlines in Part I of the paper, the real substantive issues are identified in Part II on page 29:

"While the airlines understand the desire of airport managers to achieve the lowest possible borrowing costs, as debt service is a component of airline rates and charges at airports, they often cite whether the high levels of liquidity and coverage sought by airport operators are necessary to attain a higher bond rating, and if so, whether the savings achieved by lower borrowing costs outweigh the costs of higher coverage and carrying significant cash reserves. In other words, the airlines are concerned that the level of unrestricted cash on airport balance sheets and the level of debt service generated by airports above the rate covenant results in higher than necessary airline rates and charges at airports, particularly in periods when the airlines are under severe financial stress."

The draft fails to answer these fundamental questions. In fact, the author admits on page vi of the Executive Summary that "While the draft paper investigates and attempts to quantify the airport's position that favorable ratings and the application to cash to a capital program fosters lower borrowing costs, it does *not* address the airline's concerns that the means employed to gain the favorable ratings and cash reserves impose additional costs that outweigh the benefits received."

The airlines understand that lower interest rates equate to lower borrowing costs. However, there is no analysis regarding the *cost* to achieve this higher rating, or alternatively at what point does reducing cash reserves result in a lower bond rating. The paper identifies the list of various rating criteria which includes financial performance, of which cash reserves are one component, but also states that "while liquidity and coverage are important elements in the rating process…they are not the sole determinants of an airport rating". While the rating agencies would naturally favor higher levels of reserves and coverage, there is no indication higher levels are required to maintain these ratings. The desire for higher levels of reserves is self-serving, unnecessarily driving up the median average as demonstrated by the 2008 median average of 456 cash on hand– the highest level in 10 years, 37.1% higher than the lowest levels in 2003 of 332 days, and 11.5% above the next highest year in 2005 with 408 days. The data also illustrates the wide range of cash on hand within investment grade categories, and despite recent minor downgrades airport ratings have remained solidly in the investment grade category, supporting the airline suggestion that lowering cash levels would not result in lower ratings or at least not those below investment grade.

On a separate note, the paper also discusses compensatory versus residual lease agreements with airports accept greater "short-term risk" in a compensatory arrangement and therefore the need to generate higher levels of liquidity. If that is true, then the obvious solution would be a trend toward residual agreements, whereby airports would lower their risk and lower airline costs as well (the models result in lower CPEs in the residual scenarios).

With regard to the modeling, which again we support as an approach in the paper, the airlines have issues with the underlying assumptions. First, the 1.0% interest rate difference between an "A" rated revenue bond and a "BBB" rated revenue bond is overstated and therefore results in an overstatement of the benefits/savings. The 1.0% interest rate spread – or 100 basis points - was based on municipal market data provided by Piper Jaffray & Company (previously shown as Exhibit A). Despite the fact the data is shown over a 10-year period, the analysis applies the highest credit spread in 2009, arguably one of the most volatile economic periods since the Great Depression, rather than the historical data which would support a much lower interest rate difference of 0.2-0.5% - or 20 to 50 basis points. Also, the models only factor the benefits of applying cash as a funding source without factoring in any of the associated costs. In essence, the models treat this cash as free when in reality airports typically charge the airlines amortization for use of this cash –normally based on an internal rate of return. In addition, airports will need or want to replenish their cash reserves which will further impact airline rates and charges. As a result, the models illustrate only the benefits of cash reserves without accounting for any of the costs thereby never answering the main question of whether such benefits outweigh the costs of higher cash reserves.

To further our dialogue on these key issues, we suggest consideration of the following:

1) Provide further analysis of the data to determine if there is a correlation between lower cash reserves and lower ratings. Specific data is provided on pages 20-23 of the paper which could support a regression analysis. The document also notes on page 17 that many airport operators used cash resources to offset the downturn of revenues and maintain stable rates and rates. It would be interesting to note whether these airport had their ratings lowered as a result of doing so. Similarly, Table 2 on page 24 contains a list of airports with downgrades. It would be helpful to know the reasons for such downgrades, i.e. were they lowered due to lower cash reserves, coverage ratios, or other issues?
2) The analysis should be revised to reflect a lower interest rate spread based on the historical data. Since it is reasonable to assume that economic conditions change over time, it may be worthwhile to run a sensitivity analysis that compares the impact at different interest rate spreads versus an analysis at only one rate.
3) Account for the cost of *using* cash reserves in funding the hypothetical capital program.
4) Provide further analysis on the cost of *maintaining* higher cash reserves. As indicated, the paper cites a lot of cash reserve and coverage service data within rating categories. This data could be used to factor in some cost component into the models to analyze the impact on CPE (i.e. airports reduced cash from 444 days to 325 days to 180 days, etc).

From a broader policy perspective, we echo those comments that airports should develop cash reserve policies, and further that those policies be developed in conjunction with the airlines to reflect the operating and financial realities of its individual airport versus a requirement based on an abstract average median number. In addition, we suggest that both parties engage further with the rating agencies on this issue given their obvious preference to drive higher levels of cash reserves than may be necessary. To that end, it would be helpful if the document could i) provide a recommended process for doing so and ii) outline the types of data or information that might be helpful in convincing rating agencies that cash is only one of many factors in a bond rating (as their own list of criteria suggests).

We acknowledge and support the efforts by Ricondo and team to promote an industry discussion regarding these issues and their willingness to consider comments on how best to measure the costs associated with airport cash reserves and debt service coverage to foster a meaningful cost benefit analysis. We look forward to speaking with you in the near future on this important White Paper.