

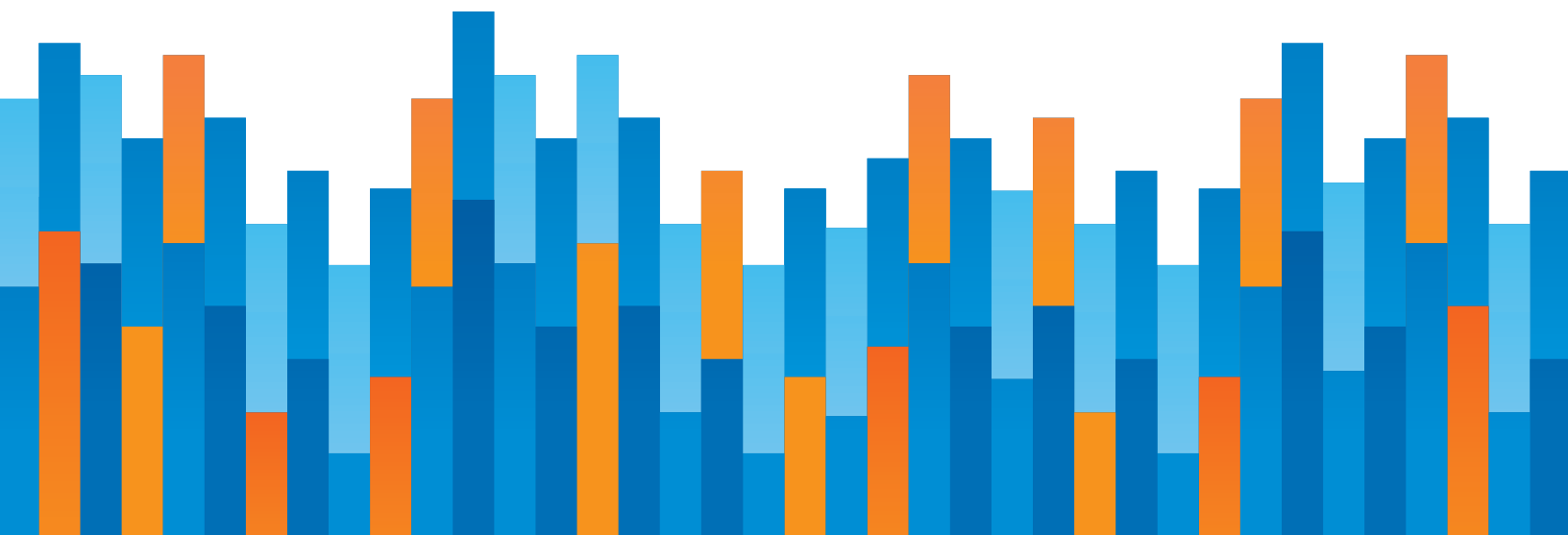


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SHOULD GOVERNMENTS LEASE THEIR AIRPORTS?

by Robert W. Poole, Jr.

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EXECUTIVE SUMMARY

The Covid-19 recession has put new fiscal stress on state and local governments. One tool that may help them cope is called “asset monetization,” sometimes referred to as “infrastructure asset recycling.” As practiced by Australia and a handful of U.S. jurisdictions, the concept is for a government to sell or lease revenue-producing assets, unlocking their asset values to be used for other high-priority public purposes.

This study focuses on the potential of large and medium hub airports as candidates for this kind of monetization. Under federal airport regulations, governmental airport owners are not allowed to receive any of an airport’s net revenue; all such revenues must be kept on the airport and used for airport purposes. Overseas, there are no such restrictions. Over the past 30 years, numerous governments have corporatized or privatized large and medium airports and received direct financial benefits from doing so.

In 2018, as part of legislation reauthorizing the Federal Aviation Administration, Congress created an important exception to the long-standing restriction. The new Airport Investment Partnership Program (AIPP) enables governmental airport owners to enter into long-term public-private partnership (P3) leases—and use the net lease proceeds for general governmental purposes.

This study explores the potential of airport P3 leases for 31 large and medium hub airports owned by city, county, and state governments. It draws on data from dozens of overseas

airport P3 lease transactions in recent years to estimate what each of the 31 airports might be worth to investors. The gross valuation is what the airport might be worth in the global marketplace. The net valuation takes into account a U.S. tax code provision that requires existing airport bonds to be paid off in the event of a change of control, such as a long-term lease. Hence, the net value estimate is the gross value minus the value of outstanding airport bonds.

Since P3 leases of airports are uncommon in the United States (the only existing example is the San Juan, Puerto Rico airport), the study explains three categories of likely investors in U.S. airports. First is a growing universe of global airport companies, including the world's five largest airport groups, which operate a growing share of the world's largest airports by annual revenue. The second is numerous infrastructure investment funds, which have raised hundreds of billions of dollars to invest as equity in privatized and P3-leased infrastructure facilities worldwide. The third category is public pension funds, which are gradually expanding their investments in infrastructure in an effort to reverse declines in their overall rate of return on investments. All three types of investors have long time horizons and are comfortable investing in and further developing these kinds of assets.

The study explains that proceeds from the lease of a major infrastructure asset such as an airport should be used to strengthen the jurisdiction's balance sheet, rather than using such a windfall for short-term operating budget needs. It explains and provides examples of three potential uses:

- Invest the proceeds in needed but unbudgeted infrastructure;
- Use the proceeds to pay down existing jurisdictional debt; and/or
- Use the proceeds to reduce the jurisdiction's unfunded pension system liabilities.

On the latter point, the study compares the net airport P3 lease proceeds with each jurisdiction's unfunded pension system liabilities. It identifies several jurisdictions where the estimated net airport lease proceeds exceed total pension system liabilities, a number of others where the proceeds could significantly reduce those liabilities, some where the liabilities are so large that airport lease proceeds would have only a modest impact, and a handful where there would not likely be an airport lease, unless investors valued those airports higher than the conservative numbers used in this study.

The relative attractiveness of using lease proceeds for each of these purposes will likely depend on specifics of the city, county, or state in question. A government with a pressing need for a major unfunded infrastructure facility may find that use the most attractive, while a jurisdiction where unfunded pension liabilities threaten either large tax increases or something akin to bankruptcy may prefer using an airport windfall to shore up its pension system.

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PART 1

INTRODUCTION

Across the United States, many airports are owned and operated as departments of city, county, or state governments. Airports are highly valuable business enterprises, linking cities to other cities across the country and, directly or indirectly, around the world. Airports serve passengers but also move a vast amount of high-value cargo.

In many countries, governments have restructured airports as commercial real estate assets, enabling airports to attract investment capital on their own economic merit. These changes have enabled larger airports to generate net revenues for their government owners, in addition to the economic benefits they create for their state and metro area.

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But that is not the case in the United States. All commercial airports in this country receive federal Airport Improvement Program (AIP) grants. One condition of these grants is that all airport revenues must remain on the airport and be used only for airport purposes.

Therefore, the governmental owner of a U.S. commercial airport cannot receive any *direct* financial benefit from that airport. In financial terms, the government owner's return on the airport's equity is zero.

Actually, there are two little-known exceptions to the above restriction. When Congress first authorized AIP grants, it “grandfathered” a handful of airports that had a long history of diverting net airport revenues to their government owners. Of the 12 that were originally grandfathered, only nine airport sponsors (including the Port Authority of New York and New Jersey) are still covered by this exception.¹ On the other hand, all commercial airports were given a new option in 2018, when Congress enacted the most recent reauthorization of the Federal Aviation Administration (FAA). A new section of that legislation—the Airport Investment Partnership Program (AIPP)—permits governmental airport owners to enter into long-term public-private partnership (P3) leases of their airports. The net lease proceeds can be retained by the governmental airport owner and used for general governmental purposes.



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Many city, county, and state governments are not familiar with this recent development. It is also unlikely that they know the *market-based asset value* of the airport or airports they own—and could potentially lease under the provisions of the new AIPP. Yet this concept has been used overseas for several decades, as countries have changed their governance models for large and medium commercial airports.

¹ Miller, Benjamin M., et al. “U.S. Airport Infrastructure Funding and Financing.” RAND Corporation, 2020. Chapter 3. 36.

Leasing revenue-producing assets (such as airports) and using the lease proceeds for other governmental purposes is sometimes known as “asset monetization” or alternatively as “infrastructure asset recycling.” In many such cases the net present value of a long-term (e.g. 50 years) stream of lease payments is paid to the government up-front. Wise policy calls for such sums to be used for balance-sheet purposes, rather than for short-term budget balancing. Well-run governments invest a one-time windfall such as this in paying down outstanding debt, shoring up under-funded pension systems, or on large-scale (and otherwise unfunded) infrastructure.

This report explores the potential of long-term P3 leasing of airports owned directly by city, county, and state governments in the United States. Subsequent sections discuss how airport governance has changed worldwide over the past three decades, the emergence of global airport companies, how airports and other revenue-producing infrastructure are valued by investors, what 31 large and medium U.S. airports might be worth, what kinds of entities are interested in bidding on airport P3 leases (including the emerging role of public pension funds), and some further thoughts on wise use of the proceeds.

PART 2

CHANGED AIRPORT GOVERNANCE SINCE 1987

2.1

THE EVOLUTION OF AIRPORT GOVERNANCE MODELS

Prior to 1987, nearly all the world's commercial airports were organized as departments of government, in many cases (e.g., Canada and the U.K.) as departments of the national government. That changed dramatically in the U.K. in 1987 as part of the Thatcher government's wide-ranging privatization of state-owned enterprises. Utilities such as electricity, water, natural gas, and telephone systems were sold to investors, with shares traded on stock exchanges. The same process was applied to the British Airports Authority (BAA), which owned and operated the three major London airports (Heathrow, Gatwick, and Stansted) and several Scottish airports. In 2009, to promote competition, the government required privatized BAA to sell off Gatwick, Stansted, and the Scottish airports, which are all now owned and operated by other investor-owned companies.

In the decades since then, most other large European airports have also undergone changes in governance. A few others were sold outright, à la BAA (e.g. Brussels, Copenhagen), but more common has been the sale of part of the equity to investors with governments

retaining the balance. This is the model used in France for Aeroports de Paris and in Germany for airports including Frankfurt, Düsseldorf, Hamburg, and several others.

A different model has emerged in Australia, Asia, other parts of Europe, and Latin America. Countries in these regions have embraced the long-term public-private partnership (P3) lease model. Australia applied this to nearly all its major airports around the turn of the century, offering 50-year leases with 49-year renewal options. Major countries in Latin America followed suit, with Argentina taking the lead, followed by Brazil, Chile, Colombia, Mexico, and Peru, among others. In Asia, the governments of India, Japan, Malaysia, and the Philippines are among those opting for the long-term P3 lease model.

In 2018, Airports Council International, the global airports trade association, published a detailed study on private investment in airports.² ACI's research found that in several regions more than half of all airline passengers were being served by airports with majority private-sector investment. The regional totals were as follows:

Africa	11% of passengers
Asia-Pacific	47%
Europe	75%
Latin America/Caribbean	66%
Middle East	18%
North America	1%

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The change to significant investor involvement in airport management and governance has led to more-robust financing.

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The change to significant investor involvement in airport management and governance has led to more-robust financing. The ACI report noted that the changed governance model has enabled large increases in airport capital improvements. These include new terminals at all

² Airports Council International. “Policy Brief: Creating Fertile Grounds for Private Investment in Airports.” January 2018.

three major London airports (Gatwick, Heathrow, Stansted), Frankfurt, Lisbon, Paris, Lima, Santiago, Sydney, Melbourne, etc. Private capital has also been invested in runway additions at airports including Bogotá, Frankfurt, Vienna—and potentially London Heathrow (approved by Parliament but being opposed by local and environmental litigation).

ACI also compared traditional and investor-financed airports during 2012–2016 and found that capital expenditure per workload unit was \$4.76 at traditional airports vs. \$5.40 at investor-financed airports. This is noteworthy because it shows that private investors with a long time horizon are willing to continue investing in their airports' further development even after the initial capital outlay to lease the airport.

2.2 EMERGENCE OF A GLOBAL AIRPORTS INDUSTRY

The change in government policies that facilitated large-scale investor involvement has led to the emergence of a global industry of airport companies. Many of these companies evolved from airports that were partially or wholly divested from governments, such as Fraport (begun with Frankfurt), Aeroports de Paris (begun with the three Paris airports), Aena Aeropuertos (begun with the main airports of Spain), and Heathrow Airport Holdings. Others have been created either by infrastructure development companies (e.g., Vinci Airports) or by infrastructure investment funds.

The change in government policies that facilitated large-scale investor involvement has led to the emergence of a global industry of airport companies.

Table 1 lists the 38 global airport companies that are among the top 100 airport operators (by revenue) in 2018.³ The five largest airport groups worldwide are all partially or wholly owned by investors, with the largest—Aeroports de Paris—still 50.6% government-owned, with its planned 2020 privatization deferred until after the Covid-19 recession. The total

³ “Airport Group Financials.” *Flight Airline Business*. November 2019.

2018 revenue of all 100 top airports was \$98.5 billion, and the 38 with significant investor ownership accounted for nearly 49% of the total, at \$48 billion. This is a sizable industry that has grown from zero in 1986. Few Americans have been aware of this new industry as it has emerged over the past 34 years.

TABLE 1: THE LARGEST INVESTOR-OWNED AIRPORT COMPANIES

Airport Company	Global Rank	HQ Country	Main Airport(s)	2018 Revenue (\$M)	Privatiz. Status	2019 Skytrax Rank
Aéroports de Paris	1	France	Paris-DeGaulle	5,270	Partial	30
Aena Aeropuertos	2	Spain	Madrid	5,088	Partial	35
Fraport	3	Germany	Frankfort, Lima	4,093	Partial	12 & 47
Heathrow Airport Holdings	4	UK	Heathrow	3,945	Full	8
Vinci Airports*	5	France	Gatwick, Lisbon	2,860	Full	55 & 60
New Kansai Intl. Airport	12	Japan	Kansai	1,985	Full	11
Airports of Thailand	13	Thailand	Bangkok	1,924	Partial	46
Beijing Capital Airport	17	China	Beijing	1,698	Partial	72
TAV Airports	20	Turkey	Istanbul	1,430	Full	
Atlantia	24	Italy	Rome	1,208	Full	82
Malaysia Airport Holdings	25	Malaysia	Kuala Lumpur	1,202	Partial	54
Flughafen Zürich	26	Switzerland	Zürich	1,180	Partial	
Sydney Airport	27	Australia	Sydney	1,178	Full	21
Guangzhou Baiyun	28	China	Guangzhou	1,167	Partial	39
Manchester Airports	29	UK	Manchester	1,163	Partial	
Flughafen Wien	36	Austria	Vienna	941	Full	19
SEA Group	39	Italy	Milan	839	Partial	
Corporación Americas	41	Argentina	Buenos Aires	822	Full	
ASUR	43	Mexico	Cancún	800	Full	
Australia Pacific Airports	44	Australia	Melbourne	782	Full	23

Airport Company	Global Rank	HQ Country	Main Airport(s)	2018 Revenue (\$M)	Privatiz. Status	2019 Skytrax Rank
GMR Airports	47	India	Delhi	755	Partial	59
GAP	48	Mexico	Guadalajara	733	Full	
Brussels Airport Co.	51	Belgium	Brussels	701	Full	
Copenhagen Airports	53	Denmark	Copenhagen	689	Partial	15
Brisbane Airport Corp.	55	Australia	Brisbane	600	Partial	18
Athens Intl. Airport	58	Greece	Athens	563	Partial	42
Düsseldorf Airport	60	Germany	Düsseldorf	558	Partial	31
Airports Co. S. Africa	65	South Africa	Cape Town	517	Partial	22
Auckland Intl. Airport	70	New Zealand	Auckland	486	Partial	27
Budapest Liszt Airport	71	Hungary	Budapest	450	Full	89
Perth Airport	77	Australia	Perth	404	Full	52
OMA	82	Mexico	Acapulco	351	Full	
Aéroports de la Côte d'Azur	84	France	Nice	329	Partial	93
Hamburg Airport	88	Germany	Hamburg	317	Partial	28
AGS Airports	90	UK	Glasgow	283	Full	
Edinburgh Airport	92	UK	Edinburgh	271	Full	
SAVE Group	95	Italy	Venice	250	Partial	
Birmingham Airport Holdings	100	UK	Birmingham	210	Partial	98
TOTAL				\$48,042		

Source: Flight Airline Business

In the right-hand column, Table 1 also notes which airport companies manage airports that made the 2019 Skytrax passenger survey of the world's 100 best airports. Twenty-six of the 38 companies had at least one airport in that top-100 list. The Skytrax top-100 airports list includes only 12 U.S. airports, with the highest-ranked being: Denver (#32), followed by Atlanta (#36), Cincinnati (#37), Houston Intercontinental (#38), and San Francisco (#38).

2.3

HOW DO INVESTOR-FINANCED AIRPORTS DIFFER FROM GOVERNMENT-RUN AIRPORTS?

There are many ways in which airports operated as commercial businesses differ from traditional, government-operated airports. Here are six such differences.

2.3.1 CAREER AIRPORT MANAGEMENT

In many, but not all, government-run airports and other infrastructure, the senior executives are political appointees, often from the ranks of existing administrative staff. Their terms in office often coincide with the tenure of the mayor, county executive, or governor. When this is not the case, long-term airport administrators may fully understand the government's way of operating, but may lack the aviation career experience of having managed a number of airports.

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... investor-financed airports generally hire and retain experienced career airport managers, who are long-term hires, with professional airport management skills and experience (often at several different airports).

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By contrast, investor-financed airports generally hire and retain experienced career airport managers, who are long-term hires, with professional airport management skills and experience (often at several different airports). Such people not only have more airport-specific experience; they are also more likely to make and implement long-term plans. Moreover, an airport company can pay market rates of compensation, since it is not constrained by civil service regulations.

2.3.2 TYPE OF REGULATORY OVERSIGHT

In the majority of cases, there is only one commercial service airport in a metro area; when this is the case, the airport operates as a monopoly in terms of air travelers who live in that metro area. If the airport is operated by the relevant government agency (city, county, or

state), the presumption is that it is operated in a way that does not exploit either its airline customers or its passengers. But with some airports still allowing airport retailers to charge very high prices, or giving incumbent airlines favored treatment, this premise is not always accurate. Some economic regulation is also imposed by the FAA via its many “grant assurances” that airports which receive federal AIP grants must comply with (including the ban on revenue diversion mentioned previously).

A long-term P3 lease is a contractual framework that regulates and governs how the airport is run. The lease agreement offers a wide range of parameters to be negotiated and agreed upon between the government owner and the private investor group, but generally would include at a high level:

- The payment made to the owner for the long-term lease;
- The further investment in and development of the airport that the private partner commits to;
- The key performance indicators that the private partner is committed to delivering;
- The rates that can be charged to passengers and airlines (usually linked to inflation); and,
- The revenue to be shared with the owner during the duration of the lease.

2.3.3 RELATIONSHIP WITH AIRLINES

In the decades before the 1978 airline deregulation law, airports were still viewed as a kind of infant industry that needed stability in order to be able to sell long-term revenue bonds for airport improvements such as runways and terminals. Consequently, airport owners signed long-term lease-and-use agreements with anchor-tenant airlines. In exchange for long terms, the airlines got a form of veto power over additions of terminal space that would allow for the entry of competing airlines, especially ones that would charge lower fares. Since airline deregulation became law, as these old leases expire, they are increasingly being replaced by leases with shorter terms and in some cases without the traditional exclusive-use gates and facilities that were formerly standard practice.

But in the U.S. these changes have not gone as far toward full airport control of gates and facilities that we observe in most European airports and most investor-financed airports. Those airports generally have common-use gates and other facilities that can be dynamically assigned to specific airlines as needs change during the 24-hour day, and from

season to season as airline schedules are adjusted. This policy also maximizes the use of each gate, which is a costly resource. Airlines with significant international service are familiar with operating in this kind of common-use environment.

2.3.4 FINANCING VIA EQUITY IN ADDITION TO DEBT

Government-run airports finance major capital projects solely via selling tax-exempt revenue bonds to financially conservative investors. Those bond buyers put a premium on low risk, so airports maintain large amounts of reserve funds and pledge large amounts of revenue to ensure a high debt-service coverage ratio (e.g., 1.8 times annual debt service payments). City, county, and state airport financial officers are accustomed to operating in this financially conservative way.



Airport companies and the infrastructure funds that partner with them to finance long-term P3 leases use a mix of equity and long-term bonds to finance the acquisition and their capital programs.



Airport companies and the infrastructure funds that partner with them to finance long-term P3 leases use a mix of *equity* and long-term bonds to finance the acquisition and their capital programs. In an airport with strong growth prospects, they are willing to accept somewhat greater financial risk in order to make needed facility improvements *sooner*. A mix of equity and debt can withstand the reduced airport revenues that occur in times of recession better than 100% debt financing. That is because only the bondholders must be paid every year; in times of lower revenues, equity holders can wait (and by law, bondholders have first priority to be paid). Equity investors seek returns on equity in the low double digits to compensate them for the risks they take on. These include cost overruns and late completion of new facilities, such as terminals and runways, as well as reduced airport revenues during recessions or emergencies that disrupt air travel. By contrast, at government-run airports, variable charges mean that airlines and passengers bear the full risk of a recession or disruption because fees must be increased proportionately to match revenues with costs. With a P3 lease, this risk can be transferred to the equity investor by contractually agreeing to fixed charges, protecting airlines and passengers from increased charges in times of difficulty.

The evidence that this model works is documented in the ACI report noted previously: a growing array of new terminals and a small number of new runways that have been financed via equity and debt around the world.



A mix of equity and debt can withstand the reduced airport revenues that occur in times of recession better than 100% debt financing.



2.3.5 INCREASED ECONOMIC PRODUCTIVITY

It turns out that this kind of governance regime significantly affects the economic productivity of an airport. One of the most detailed studies of this subject was published more than a decade ago in the *Journal of Urban Economics*. A research team led by Tae Oum of the University of British Columbia used a data set of 109 airports worldwide.⁴ Of the sample, 27 were owned and operated by a department of government, 25 by a U.S. airport authority, 16 had majority investor participation, 12 were public-sector corporations, seven were operated by U.S. multi-purpose port authorities, and the remainder had mixed ownership. The researchers used an econometric technique that assesses the potential airport outputs compared with its inputs to measure how much “bang for the buck” is associated with each organizational form.

Overall, the researchers found that airports with majority investor control, as well as airports operated as quasi-businesses (e.g., as government corporations or airport authorities) are more economically productive than airports operated as departments of government or by multi-purpose port authorities. This was measured in terms of factors such as higher runway utilization and higher non-aeronautical revenue compared with airport costs. The authors recommended that governments seeking a change in airport governance should maximize investor involvement and should avoid multi-purpose port authorities (which tend to use airport revenues for non-airport purposes, leaving the airports with less-than-adequate facilities).

⁴ Oum, Tae, Jia Yan, and Chunyun Yu. “Ownership Forms Matter for Airport Efficiency: A Stochastic Frontier Investigation of Worldwide Airports.” *Journal of Urban Economics*. Vol. 64, Issue 2. September 2008.



Overall, the researchers found that airports with majority investor control, as well as airports operated as quasi-businesses (e.g., as government corporations or airport authorities) are more economically productive than airports operated as departments of government or by multi-purpose port authorities.



2.3.6 INCREASED PASSENGER-FRIENDLINESS

The earliest study on the passenger-friendliness of airports dates back to the first decade of airport privatization. Researcher Asheesh Advani did his PhD dissertation at Oxford University on this subject. He created a 50-item survey that was administered to airport managers worldwide, aimed at measuring the extent of policies and features conducive to passenger-friendliness. (Examples include conducting regular passenger surveys, having a publicized way for passengers to file complaints, and adjusting staffing levels based on passenger flow data.) Advani analyzed responses received from 201 airports in 67 countries, including 54 airports in the United States. The airports that responded included 14 with largely or entirely private ownership (in Austria, Denmark, and the U.K.) and 15 others operated under either lease or private contract management (in Cambodia, Canada, France, Hungary, the U.K., and the United States). Advani's main finding was that airports with private-sector involvement had significantly higher passenger-responsiveness than government-operated airports.⁵

Far more recent are the ongoing results generated by Skytrax's annual passenger surveys to identify the world's top 100 airports, as judged by airline passengers. As noted in the rankings of airport companies in Table 1, the large majority of commercial airport companies have airports in the 2019 Skytrax top-100 list, and that has been true for many years. Those taking part in the Skytrax surveys tend to be international travelers, who are likely to be more-frequent flyers than the average airline passenger. Hence, they have a larger base of airport experience with which to make such judgments.

⁵ Advani, Asheesh. "Passenger-Friendly Airports." Reason Foundation. March 1999. (Note: this report is Advani's summary of his PhD dissertation.)



Advani's main finding was that airports with private-sector involvement had significantly higher passenger-responsiveness than government-operated airports.



A somewhat extreme example of a passenger-unfriendly U.S. airport was San Juan International, as described in the excerpt (section 2.4 below) from an article by former *New York Times* reporter John Tierney. His piece described how the long-term P3 lease of this airport has addressed numerous problems that had plagued this airport.

2.4

P3 TRANSFORMATION OF SAN JUAN INTERNATIONAL AIRPORT

In his article, “Making New York’s Airports Great Again,” John Tierney examines how a public-private partnership transformed Puerto Rico’s San Juan International Airport:⁶

Until four years ago, the Luis Muñoz Marín International Airport in San Juan had lots in common with LaGuardia. It was run by an unwieldy bureaucracy, the Puerto Rico Ports Authority, which neglected the airport while running up bills on its other unprofitable projects in the island’s ports. The terminal was a confusing jumble of dim corridors, with passengers enduring long waits to get through security or to pick up luggage. The stores were tacky and the restaurants greasy spoons, often rented at bargain prices to politicians’ friends or relatives.

On rainy days, the ceilings leaked; on hot days, the air conditioning faltered. The floors of the boarding bridges from the gates to the planes were riddled with holes. The bathrooms were grimy, and it often took days or weeks to repair a broken toilet. ... Some crucial tasks didn’t get done at all such as maintaining the instrument landing system used to guide a plane descending during bad weather. For years, pilots had to land their planes visually, without positional guidance from radio signals, because the system’s antennae were blocked by trees—and no one in the bureaucracy wanted to take responsibility for cutting them

⁶ Tierney, John. “Making New York’s Airports Great Again.” *City Journal*. Winter 2017.

down. Airlines, unsurprisingly, switched operations to other Caribbean hubs, leaving the airport with less revenue to pay bills, much less make capital improvements. ...

The Ports Authority leased the airport in 2013 for 40 years to Aerostar, a partnership of investors and a company [ASUR] operating airports in Cancún and other Mexican cities. The new managers agreed to make capital improvements and to pay the Ports Authority \$1.2 billion—half up-front and half over the course of the lease. They also promised to reduce landing fees and keep them low in the future.

The result, just three years later, is an airport that nobody would call Third World. The redesigned concourses are sleek and airy and easy to navigate. Passengers get through security faster, thanks to a state-of-the-art system for screening bags. New boarding bridges stand at gates. The duty-free shop now looks like an upscale department store, and revenue from the new stores and restaurants has more than doubled. The renovated facilities and the reduced landing fees have attracted more airlines to San Juan, and they have no trouble getting access to gates—now controlled by the airport’s manager, not other airlines. The new arrangements took some getting used to for the dominant airlines, but they’re reaping other benefits. ...

Under the Ports Authority regime, inexperienced political appointees directed the airport; their jobs and plans lasted only as long as their party stayed in power. Now, the airport is run by industry veterans, who take the long view because of their company’s 40-year lease. The Aerostar executive in charge of the airport, Augustin Arellano, a former pilot with the Mexican air force, is an aviation engineer with decades of experience overseeing airlines and airports. “A knowledgeable professional like Augustin makes so much difference,” [Delta’s] Luciano says. “With political appointees, you have to teach each new one how the airport works, and it can take so long to get anything done. Now when there’s a problem with a taxiway or a gate or a checkpoint, Augustin understands it and takes care of it right away.”

That’s exactly what Arellano did with the trees blocking the antennae needed to guide planes landing in bad weather. Airport officials had been waiting eight years for bureaucrats in Puerto Rico and Washington to decide which agency had the authority to remove them. Arellano promptly resolved the impasse. “We went out there and cut down the trees ourselves,” he says. “I knew we’d have to pay a fine, and we did—they made us plant two trees nearby for each one we cut down. But we couldn’t wait any longer. We had to make sure planes could land safely.”

“We’re trying to change the whole culture of the airport to focus on customer service,” Arellano says. That’s brought more customers. The volume of passengers in San Juan has been growing at four percent annually, well above the industry average. That increase is good for Aerostar’s bottom line, of course, but it’s also a boon to Puerto Rico.

PART 3

WHAT ARE MAJOR U.S. AIRPORTS WORTH?

3.1

HOW INVESTORS VALUE INFRASTRUCTURE SUCH AS AIRPORTS

Infrastructure investors consider many factors when they assess possible investments in revenue-producing infrastructure, whether this be railroads, pipelines, or electric and natural gas utilities. In the United States, most of those entities are already in the private sector and function fully as businesses. When investors consider a long-term P3 lease of a facility that is currently owned and operated by a government, which they plan to make operate more as a business, they assess both its current operations and financial conditions, and also its potential for improvement as a commercial business.

For this kind of infrastructure acquisition, a widely used metric for assessing current value is **e**arnings **b**efore **i**nterest, **t**axes, **d**epreciation and **a**mortization (EBITDA). It provides a measure of near-term operational performance as measured by operational cash flow. Interest payments on existing debt are a significant factor in that cash flow, but government-owned enterprises such as U.S. airports are generally exempt from taxation. Depreciation and amortization are non-cash expenses.



When investors consider a long-term P3 lease of a facility that is currently owned and operated by a government, which they plan to make operate more as a business, they assess both its current operations and financial conditions, and also its potential for improvement as a commercial business.



Acquirers of airports, seaports, toll roads, and other infrastructure use the facility's current financial statements to calculate its EBITDA. They develop valuation rules of thumb, based on recent transactions for the type of facility, of what multiple of EBITDA investors that won competitions agreed to pay. Thus, if a decade's worth of seaport purchases or long-term P3 leases averaged 10 times each facility's EBITDA (written as 10X), then that would be a good way to *estimate* such a facility's acquisition price. (And for *long-term* leases, the price would be about the same for a 50-year P3 lease and an outright purchase.) On the other hand, an actual offer to lease the airport would be based on a more detailed study of the specific airport and its potential under private management.

In a recent Reason Foundation study on infrastructure asset recycling, data assembled from such transactions in the recent decade yielded the following average EBITDA multiples:⁷

Airports	16X
Seaports	14X
Toll roads	26X
Parking facilities	22X
Water/wastewater	12X

Those numbers are averages across a set of transactions, with a range of values on either side of the average, depending on the specifics of the facility in question. It should also be noted that the short-term effects of the Covid-19 recession may reduce EBITDA multiples in the short term, despite airports being long-term investments.

⁷ Poole, Robert W., Jr. "Asset Recycling to Rebuild America's Infrastructure." Reason Foundation. October 2018.

3.2

SELECTED U.S. AIRPORTS AND THEIR ESTIMATED VALUATIONS

For this study, 31 large and medium hub airports (as defined by FAA based on their annual passenger volumes) were selected. Table 2 lists those airports and identifies the owner of each. Fifteen are large hubs and 16 are medium hubs. Ownership breaks down as follows:

City government	19
County government	6
Joint city/county	2
State government	4

TABLE 2: 31 U.S. LARGE AND MEDIUM HUB AIRPORTS

Name	Code	Hub Size	City Owner	County Owner	State Owner
Albuquerque	ABQ	Med	Albuquerque		
Anchorage	ANC	Med			Alaska
Atlanta	ATL	Large	Atlanta		
Austin	AUS	Med	Austin		
Baltimore/Washington	BWI	Large			Maryland
Charlotte	CLT	Large	Charlotte		
Dallas/Ft. Worth	DFW	Large	Dallas & Ft. Worth		
Denver	DEN	Large	Denver	Denver Co.	
Hobby Airport	HOU	Med	Houston		
Honolulu	HNL	Large			Hawaii
Houston Intercontinental	IAH	Large	Houston		
John Wayne	SNA	Med		Orange Co.	
Kahului	OGG	Med			Hawaii
Kansas City	MCI	Med	Kansas City		
Lambert Field	STL	Med	St. Louis		
Las Vegas	LAS	Large		Clark Co.	

Name	Code	Hub Size	City Owner	County Owner	State Owner
Los Angeles	LAX	Large	Los Angeles		
Love Field	DAL	Med	Dallas		
Miami	MIA	Large		Miami-Dade Co.	
Midway	MDW	Large	Chicago		
Mitchell Field	MKE	Med		Milwaukee Co.	
New Orleans	MSY	Med	New Orleans		
O'Hare	ORD	Large	Chicago		
Palm Beach	PBI	Med		Palm Beach Co.	
Philadelphia	PHL	Large	Philadelphia		
Sacramento	SMF	Med		Sacramento Co.	
Salt Lake City	SLC	Large	Salt Lake City		
San Antonio	SAT	Med	San Antonio		
San Francisco	SFO	Large	San Francisco	San Francisco Co.	
San José	SJC	Med	San José		
Sky Harbor	PHX	Large	Phoenix		

Source: Airports Council International-North America

To estimate the possible acquisition value of each airport, financial statement data were obtained from a database maintained by the FAA's Certification Activity Tracking System.⁸ The most-recent data reported for each airport (either 2018 or 2019) were used in the analysis. Table 3A shows the EBITDA number derived from each airport's financial data, including its revenue from Passenger Facility Charges (PFCs). The EBITDA multiples used here are based on data for 30 overseas commercial airport transactions from 2008 through 2013, assembled by Macquarie and provided to the author for the previously noted 2018 study on infrastructure asset recycling.⁹ Those numbers ranged from a low of 10X to a high of 35X. To be conservative, this analysis used 14X for the low-value estimate and 20X for the high-value estimate.

⁸ FAA. (CATS) Certification Activity Tracking System. <https://cats.airports.faa.gov>.

⁹ Poole. "Asset Recycling to Rebuild America's Infrastructure."

TABLE 3A: DATA USED TO ESTIMATE AIRPORT'S VALUE (\$USD)

Airport Name	Airport ID	EBITDA	(+) PFC	EBITDA inc PFC	Outstanding Debt
Albuquerque	ABQ	\$18,343,987	\$10,002,444	\$28,346,431	\$13,795,000
Anchorage*	ANC	\$71,566,866	\$5,174,021	\$76,740,887	\$389,592,782
Atlanta	ATL	\$252,317,662	\$209,320,489	\$461,638,151	\$3,148,792,609
Austin*	AUS	\$49,157,600	\$30,141,757	\$79,299,357	\$789,221,779
Baltimore/ Washington	BWI	\$62,459,807	\$51,356,227	\$113,816,034	\$641,876,865
Charlotte	CLT	\$103,692,002	\$63,161,000	\$166,853,002	\$981,879,000
Dallas/ Ft. Worth	DFW	\$452,009,556	\$141,855,941	\$593,865,497	\$6,512,199,000
Denver*	DEN	\$334,047,138	\$123,907,063	\$457,954,201	\$6,414,792,843
Hobby Airport	HOU	\$25,811,887	\$25,987,660	\$51,799,547	\$485,599,641
Honolulu	HNL	\$101,620,220	\$31,770,131	\$133,390,351	\$2,553,500,454
Houston Intercontinental	IAH	\$139,585,069	\$85,166,841	\$224,751,910	\$1,692,806,144
John Wayne	SNA	\$40,823,290	\$20,676,598	\$61,499,888	\$98,078,955
Kahului	OGG	\$36,931,305	\$9,827,794	\$46,759,099	n/a
Kansas City	MCI	\$41,567,033	\$22,733,307	\$64,300,340	\$319,676,338
Lambert Field	STL	\$56,415,271	\$29,539,295	\$85,954,566	\$758,895,535
Las Vegas*	LAS	\$267,580,542	\$94,596,711	\$362,177,253	\$3,882,145,000
Los Angeles	LAX	\$719,356,964	\$173,100,256	\$892,457,220	\$7,239,791,000
Love Field	DAL	\$67,879,080	\$29,406,898	\$97,285,978	\$710,654,000
Miami*	MIA	\$347,161,456	\$82,242,134	\$429,403,590	\$5,943,190,000
Midway*	MDW	\$25,121,647	\$39,469,294	\$64,590,941	\$1,819,048,275
Mitchell Field*	MKE	\$19,042,636	\$14,717,876	\$33,760,512	\$161,055,000
New Orleans*	MSY	\$22,915,743	\$26,409,514	\$49,325,257	\$1,283,319,454
O'Hare*	ORD	\$351,646,856	\$163,221,017	\$514,867,873	\$10,930,487,352
Palm Beach*	PBI	\$23,792,374	\$13,268,476	\$37,060,850	\$76,940,482
Philadelphia	PHL	\$124,965,289	\$64,031,965	\$188,997,254	\$1,676,652,000
Sacramento	SMF	\$82,004,887	\$25,587,275	\$107,592,162	\$969,021,002
Salt Lake City	SLC	\$75,028,339	\$49,720,539	\$124,748,878	\$2,047,343,494
San Antonio*	SAT	\$47,858,206	\$19,031,976	\$66,890,182	\$470,225,000
San Francisco	SFO	\$485,221,232	\$110,898,881	\$596,120,113	\$7,304,400,000
San José	SJC	\$93,925,876	\$29,735,049	\$123,660,925	\$1,210,946,000
Sky Harbor	PHX	\$141,731,183	\$86,090,890	\$227,822,073	\$1,668,770,000

The asterisk (*) indicates that 2018 financial data were the most recent figures in the FAA database for those airports.

Source: FAA airport financial data and author calculations

Multiplying the EBITDA number by the relevant multiple yields a low and a high estimate of each airport's *gross* value. Los Angeles International (LAX), for example, has an estimated *gross* value ranging from a low of \$12.5 billion (at 14X) to a high of \$17.8 billion (at 20X). For much-smaller John Wayne Airport (SNA), the gross value estimates range from \$861 million to \$1.2 billion.

However, the gross value is not the end of the story. Under federal tax law, facilities financed via federally tax-exempt bonds cannot be transferred to P3 investors unless those bonds are paid off or refinanced. Table 3A also lists the outstanding debt of each airport. Because the airport owner must pay off the existing debt, that amount is subtracted from the estimated gross value to get the estimated *net* value of proceeds to the city, county, or state government that owns the airport. For most of the airports in Table 3B, that is still a sizable number.

TABLE 3B: ESTIMATED AIRPORTS' GROSS AND NET VALUES (\$USD)

Airport Name	Low Mult	High Mult	Low Value	High Value	Low Net	High Net
Albuquerque	14	20	\$396,850,034	\$566,928,620	\$383,055,034	\$553,133,620
Anchorage*	14	20	\$1,074,372,418	\$1,534,817,740	\$684,779,636	\$1,145,224,958
Atlanta	14	20	\$6,462,934,114	\$9,232,763,020	\$3,314,141,505	\$6,083,970,411
Austin*	14	20	\$1,110,190,998	\$1,585,987,140	\$320,969,219	\$796,765,361
Baltimore/ Washington	14	20	\$1,593,424,476	\$2,276,320,680	\$951,547,611	\$1,634,443,815
Charlotte	14	20	\$2,335,942,028	\$3,337,060,040	\$1,354,063,028	\$2,355,181,040
Dallas/ Ft. Worth	14	20	\$8,314,116,958	\$11,877,309,940	\$1,801,917,958	\$5,365,110,940
Denver*	14	20	\$6,411,358,814	\$9,159,084,020	\$(3,434,029)	\$2,744,291,177
Hobby Airport	14	20	\$725,193,658	\$1,035,990,940	\$239,594,017	\$550,391,299
Honolulu	14	20	\$1,867,464,914	\$2,667,807,020	\$(686,035,540)	\$114,306,566
Houston Intercontinental	14	20	\$3,146,526,740	\$4,495,038,200	\$1,453,720,596	\$2,802,232,056
John Wayne	14	20	\$860,998,432	\$1,229,997,760	\$762,919,477	\$1,131,918,805
Kahului	14	20	\$654,627,386	\$935,181,980	\$654,627,386	\$935,181,980
Kansas City	14	20	\$900,204,760	\$1,286,006,800	\$580,528,422	\$966,330,462
Lambert Field	14	20	\$1,203,363,924	\$1,719,091,320	\$444,468,389	\$960,195,785
Las Vegas*	14	20	\$5,070,481,542	\$7,243,545,060	\$1,188,336,542	\$3,361,400,060
Los Angeles	14	20	\$12,494,401,080	\$17,849,144,400	\$5,254,610,080	\$10,609,353,400
Love Field	14	20	\$1,362,003,692	\$1,945,719,560	\$651,349,692	\$1,235,065,560
Miami*	14	20	\$6,011,650,260	\$8,588,071,800	\$68,460,260	\$2,644,881,800
Midway*	14	20	\$904,273,174	\$1,291,818,820	\$(914,775,101)	\$(527,229,455)
Mitchell Field*	14	20	\$472,647,168	\$675,210,240	\$311,592,168	\$514,155,240
New Orleans*	14	20	\$690,553,598	\$986,505,140	\$(592,765,856)	\$(296,814,314)
O'Hare*	14	20	\$7,208,150,222	\$10,297,357,460	\$(3,722,337,130)	\$(633,129,892)
Palm Beach*	14	20	\$518,851,900	\$741,217,000	\$441,911,418	\$664,276,518
Philadelphia	14	20	\$2,645,961,556	\$3,779,945,080	\$969,309,556	\$2,103,293,080
Sacramento	14	20	\$1,506,290,268	\$2,151,843,240	\$537,269,266	\$1,182,822,238
Salt Lake City	14	20	\$1,746,484,292	\$2,494,977,560	\$(300,859,202)	\$447,634,066
San Antonio*	14	20	\$936,462,548	\$1,337,803,640	\$466,237,548	\$867,578,640
San Francisco	14	20	\$8,345,681,582	\$11,922,402,260	\$1,041,281,582	\$4,618,002,260
San José	14	20	\$1,731,252,950	\$2,473,218,500	\$520,306,950	\$1,262,272,500
Sky Harbor	14	20	\$3,189,509,022	\$4,556,441,460	\$1,520,739,022	\$2,887,671,460

The asterisk (*) indicates that 2018 financial data were the most recent figures in the FAA database for those airports.

Source: FAA airport financial data and author calculations



The most dramatic example is Chicago O’Hare, whose low valuation goes from \$7.2 billion pre-debt payoff to minus \$3.7 billion after debt payoff.



Six of the airports in Table 3 have such a large outstanding debt (due to recent expansion projects) that if their gross value is calculated using the low (14X) multiple, the net value is negative. The most dramatic example is Chicago O’Hare, whose low valuation goes from \$7.2 billion pre-debt payoff to *minus* \$3.7 billion after debt payoff. That would make this an unattractive investment. If the gross proceeds turn out to be closer to the high (20X) multiple, only three airports would have a negative net value: Chicago Midway (MDW), New Orleans (MSY), and Chicago O’Hare (ORD). Those airports might still be of interest to investors if the airport market shifts toward higher EBITDA multiples (e.g., 25X or 30X) after the Covid-19 recession.

There are differences of opinion about airport EBITDA multiples going forward. In November 2019, *Inframation News* reported that its study of airport valuations from 2010 through 2018 found “a steady increase in multiples over the eight-year timeframe,” based on 31 European transactions involving single airports.¹⁰ Three months later, *Infrastructure Investor* raised a caution flag based on two adverse actions in the U.K.—a local government (North Somerset) blocking a planned expansion of investor-owned Bristol Airport and a ruling by the Court of Appeal against the previously authorized third runway project at London Heathrow.¹¹ Both actions stemmed from concerns over climate change and the 2016 Paris Agreement. Another warning flag was raised by *Inspiratia*, another infrastructure analysis service. While reporting very recent airport transactions early in 2020, it cited the coronavirus and Brexit as potentially reducing airline and airport passenger volume in 2020—and hence, near-term airport value.¹²

¹⁰ Martinez, Pablo and Jenisa Patel. “The Story in Numbers: European Airport Valuations High and Rising.” *Inframation News*. Nov. 19, 2019.

¹¹ Week in Review. “Should Airport Valuations Prepare for a Hard Landing?” *Infrastructure Investor*. Feb. 27, 2020.

¹² Coker, Omolola. “Covid-19, ESG, and Brexit Effect All Threatening 2020 Airport Activity.” *Inspiratia*. March 5, 2020.



To the extent that investors are more cautious about airports in 2021 and beyond, valuations may end up being closer to our low estimates (based on 14X) than on our high estimates (based on 20X).



To the extent that investors are more cautious about airports in 2021 and beyond, valuations may end up being closer to our low estimates (based on 14X) than on our high estimates (based on 20X). Fitch Ratings estimates a two-year recovery period for air traffic, and points out that the airports it rates “are generally in strong financial positions, with an average of 500 days’ cash on hand and a debt service coverage ratio of 1.8.”¹³ On the positive side, since only one U.S. airport is currently operating under a long-term P3 lease (San Juan), there are indications of a pent-up investor demand for U.S. airports that could lead to multiples at or above the high end of the valuation estimates. For example, when the city of St. Louis issued its request for qualifications for a potential P3 lease of its Lambert Field airport in 2019, there was great surprise that *18 teams* submitted qualifications.¹⁴

3.3

THE 31 AIRPORTS, IN BRIEF

- **Albuquerque (ABQ)** is a medium hub serving New Mexico’s largest city, which owns the airport. ABQ has extensive service by Southwest; other carriers include American, Delta, and United. With modest debt of \$13.8 million, its gross and net valuations are not dramatically different, with the high net valuation at \$553 million.
- **Anchorage (ANC)** is also a medium hub, owned by the state of Alaska and located in Alaska’s largest city. Its dominant carrier is Alaska Airlines, and it is also served by a number of local airlines, plus a small amount of service from Delta and United. ANC

¹³ Broderick, Sean. “Fitch Ratings Eyes Two-Year U.S. Traffic Recovery Period.” *Aviation Daily*, March 25, 2020.

¹⁴ Siemers, Erik. “City Attracts 18 Firms Interested in Privately Operating Lambert Airport.” *St. Louis Business Journal*. Nov. 4, 2019.

has also served as a refueling stop for some flights between the United States and Asia. Its relatively high debt (\$390 million) reduces its high value estimate from a gross of \$1.5 billion to a net \$1.1 billion.

- **Atlanta (ATL)** is a large hub owned by the city of Atlanta. It serves as the largest hub for Delta Air Lines, which handles 73% of ATL passengers (not including those handled by its regional airline partners). Despite over \$3 billion in debt, ATL's high *net* valuation estimate is \$6.1 billion. Delta is assumed to be opposed to any change from city ownership, but a P3 lease by the city might be seen as a less-bad alternative to legislation that would transfer ownership to a state airport authority, as has been proposed by legislators in 2019 and again in 2020.
- **Austin (AUS)** is a fast-growing medium hub owned by the city of Austin. It is well-served by American, Delta, Southwest, and United. Its projected growth makes another terminal a likely need, and its already high debt of \$789 million reduces its high valuation from \$1.59 billion to \$797 million. AUS made use of a P3 agreement to finance the refurbishment and operation of a former terminal that is now used by low-cost carriers.
- **Baltimore-Washington International (BWI)** is a large hub owned by the state of Maryland. It is a major focus city for Southwest, which handles 57% of BWI's passengers. It also has service from American, Delta, and United. With \$642 million in debt, its high valuation is reduced from a gross \$2.28 billion to a net \$1.63 billion.
- **Charlotte (CLT)** is a large hub owned by the city of Charlotte. It is the site of a major hub for American (91% of all passengers) with other service by Delta, JetBlue, Southwest, and United. With nearly \$982 million in debt, its high gross valuation of \$3.3 billion is reduced to a net value of \$2.4 billion.
- **Dallas/Ft. Worth International (DFW)** is a large hub owned jointly by the cities of Dallas and Ft. Worth. It is the largest hub for American airlines, which accounts for 84% of its passengers (including regional affiliates Envoy Air and Mesa). Spirit accounts for 4.37% and Delta for 3.95%, with an array of other carriers accounting for the remaining 7.6%. With its outstanding debt of \$6.5 billion, its high net valuation is \$5.36 billion and its low net value is \$1.8 billion. Since the city of Dallas owns 64% of DFW, it would be entitled to 64% of the net proceeds.
- **Denver (DEN)** is owned by the city and county of Denver. It has a large presence of Frontier, Southwest, and United, and is also served by American and Delta. Its growth in recent years has led to large-scale terminal expansion projects. Its \$6.4

billion debt makes it one of six airports in the table whose low net valuation is negative, but its high gross valuation is reduced from \$9.2 billion to a net of \$2.7 billion. DEN terminated a major terminal P3 project in 2019 after being unable to agree with the concession company on a number of construction issues.

- **Hobby Airport (HOU)** is a medium hub owned by the city of Houston and is a major focus city for Southwest, with 93% of all HOU passengers. There is minor service from Delta, JetBlue, and a few others. Its outstanding debt of \$486 million reduces its high valuation from \$1.04 billion to a net \$550 million.
- **Honolulu (HNL)** is owned by the state of Hawaii as part of a group of 15 airports, most of them small. The state issues and reports its debt on a consolidated basis, so the debt listed in Table 3 is for the entire airport system. Though most of its airports are very small, several, including Kahului (OGG), have considerable scheduled service. The reported debt of \$2.55 billion leads to a negative net valuation using the low EBITDA multiple and reduces the high value from \$2.67 billion gross to just \$114 million net. Several legislative attempts, supported by its major carriers, to replace state ownership with an airports authority have failed.
- **Houston Intercontinental (IAH)** is a large hub also owned by the city of Houston, as part of its Houston Airport System. It is a major hub for United (53% of passengers), and has additional service from American, Spirit, and regional carriers. Its affiliate, HAS Development Corporation, has been involved with multiple airport privatizations and P3 projects, primarily in Central and South America. IAH's debt of \$1.69 billion reduces its high gross valuation from \$4.5 billion to \$2.8 billion net.
- **John Wayne Airport (SNA)** is a medium hub owned by the Orange County, California government. Southwest accounts for 35% of passengers, with additional service by American, United, Alaska, and Delta. It has little room for further expansion due to land and noise constraints. SNA's debt is \$98 million. With a high gross value of \$1.23 billion, its net valuation is \$1.13 billion.
- **Kahului Airport (OGG)** is a medium hub owned by the state of Hawaii and located on Maui. It is served by Alaska, American, Delta, Southwest, and United from the mainland as well as inter-island carriers. As noted under Honolulu (HNL), no debt is listed for OGG, so the calculations in Table 3 may be misleading. They show a gross and net high valuation of \$935 million.
- **Kansas City (MCI)** is a medium hub, owned by the city of Kansas City, Missouri. Its largest carrier is Southwest (49%), with additional service by American, Delta, and

United. Conservatively managed, it has outstanding debt of \$320 million. With a high gross valuation of \$1.29 billion, its net value would be \$966 million.

- **Lambert Field (STL)** is a medium hub owned by the city of St. Louis. Southwest is its largest carrier, with 62% of total passenger volume, followed by American, Delta, and Frontier. The city government in December 2019 abruptly terminated a P3 lease procurement¹⁵ shortly after receiving responses to its RFQ from 18 teams of companies. The airport debt totals \$759 million; its high gross valuation is \$1.7 billion, which reduces to \$960 million after debt retirement.
- **Las Vegas (LAS)** is a large hub owned by Clark County, Nevada. Its largest carrier is Southwest, but it is also served by Allegiant, American, Delta, Spirit, and United. Its outstanding debt of \$3.88 billion reduces its high gross valuation estimate from \$7.24 billion to \$3.36 billion net.
- **Los Angeles International (LAX)** is a large hub owned by the city of Los Angeles, with service from all the major U.S. carriers and numerous overseas airlines. It is continuing a large terminals expansion effort to accommodate growing passenger numbers, with its total debt now at \$7.24 billion. But its high gross valuation at \$17.85 billion yields a still very large \$10.6 billion net value, the highest in the table. In the 1990s, LAX was proposed by then-Mayor Richard Riordan as a candidate for privatization.
- **Love Field (DAL)**, owned by the city of Dallas, is the home base of Southwest, which provides nearly all the airline service there. Its debt of \$675 million reduces its high valuation from \$2 billion to \$1.235 billion net.
- **Miami International (MIA)** is a large hub owned by Miami-Dade County. It hosts one of American's largest hubs, accounting for 68% of MIA's passengers. Delta and United are also significant carriers, and the airport has extensive international service to Europe and Latin America. Thanks to large-scale terminal expansions which are still being paid for, MIA's debt totals \$5.94 billion. Its high gross valuation is \$8.59 billion, which yields a net valuation of \$2.65 billion.
- **Midway (MDW)** is a large hub owned by the city of Chicago. It is dominated by Southwest, with 95% of the passenger traffic. Midway's debt is \$1.82 billion. That reduces its high gross value of \$1.29 billion to a net *negative \$527 million*, making it

¹⁵ Schlinkmann, Mark. "St. Louis Airport Privatization Is Dead, Krewson Says." *St. Louis Post-Dispatch*. Dec. 23, 2019.

an unattractive candidate for a P3 lease, unless EBITDA multiples significantly exceed 20X in future years. The city made two previous efforts to lease MDW, neither of which succeeded.

- **Mitchell Field (MKE)** is a medium hub owned by Milwaukee County, Wisconsin. Its largest carrier is Southwest (43%), with significant service also by American, Delta, and Frontier. Its debt is a modest \$161 million; hence, its high gross valuation of \$675 million yields a still-high net value of \$514 million.
- **New Orleans (MSY)** is a medium hub owned by the city of New Orleans. It has a well-balanced set of carriers with Southwest as largest (36%), followed by Delta, American, United, and Spirit. Having just replaced its old terminal with a new, larger one, its debt is \$1.28 billion. With a high gross valuation of \$986 million, its net value is negative.
- **O'Hare (ORD)** is a large hub also owned by the city of Chicago. It hosts airline hubs for both American and United, and is served by many overseas airlines. The airport is continuing massive modernization efforts, which included realigning and adding runways, plus major terminal expansions that are under way. As a result, its debt is now \$10.9 billion, which exceeds its high gross value of \$10.3 billion, making it an unlikely P3 lease candidate, unless EBITDA multiples exceed 20X in future years.
- **Palm Beach International (PBI)** is a medium hub owned by Palm Beach County, Florida. Its largest carrier is JetBlue (28%) with significant additional service by Delta, American, Southwest, and United. Conservatively managed, its debt is \$76.9 million. With a high gross valuation of \$741 million, its net value is \$664 million.
- **Philadelphia International (PHL)** is a large hub owned by the city of Philadelphia. It hosts a hub for American (47% of passengers) and has other service from Southwest, Delta, Frontier, and United. Its debt is \$1.68 billion, and its high gross valuation is \$3.78 billion, yielding a net value of \$2.1 billion.
- **Sacramento (SMF)** is a fast-growing medium hub owned by Sacramento County, California. Southwest is its largest carrier, with 55% of passenger traffic, followed by American, United, and Delta. Its current debt is \$969 million, which reduces the high gross valuation of \$2.15 billion to a net valuation of \$1.18 billion.
- **Salt Lake City (SLC)** is a large hub owned by Salt Lake City. Delta operates a hub at SLC and handles 52% of all passengers, followed by Delta partner SkyWest, Southwest, American, and JetBlue. With a major terminal replacement under way, its outstanding debt is \$2.05 billion. Its low gross valuation is \$1.75 billion, which is

less than its debt. With the high gross valuation of \$2.5 billion, the net valuation would be \$448 million.

- **San Antonio (SAT)** is a medium hub owned by the city of San Antonio. Southwest is its largest carrier, with 40% of all passengers, followed by American, United, Delta, and Frontier. Its debt is \$470 million, and its high gross valuation is \$1.34 billion, making its net valuation \$868 million.
- **San Francisco International (SFO)** is a large hub owned by the city and county of San Francisco. United operates a hub there and handles 41% of all passengers, followed by Alaska, Delta, Skywest, and American. Due to recent terminal expansion projects, its debt totals \$7.3 billion. However, its high gross valuation is \$11.9 billion, for a net valuation of \$4.6 billion.
- **San José (SJC)** is a fast-growing medium hub owned by the city of San José, California, serving the Silicon Valley region. Its largest carrier is Southwest, handling 51% of its passengers, followed by Alaska, American, Delta, and Skywest. Its debt totals \$1.2 billion. With a high gross valuation of \$2.47 billion, its net valuation is \$1.26 billion.
- **Sky Harbor (PHX)** is a large hub owned by the city of Phoenix. Its two largest carriers are American and Southwest, each with 36%–37% of passenger traffic. Mesa, Delta, and United provide additional service. The city recently terminated two proposed facility P3 projects, one for a hotel and the other for a parking structure. After a number of expansion projects, its debt is \$1.67 billion. That reduces its high gross valuation of \$4.56 billion to \$2.89 billion net.

Six of the airports in Tables 2 and 3 have “grandfathered” status, as explained previously. They are BWI, DEN, HNL, MDW, STL, and SFO. Some might ask why any of these airport owners would consider applying to the Airport Investment Partnership Program in order to derive net financial benefits from their airport when they already can divert airport revenue to their general fund budgets. The answer to this question is that the amount of annual revenue diversion allowed to these airport owners is limited by an FAA formula.

The RAND Corporation study cited previously (footnote 1) provides a listing of grandfathered payments for fiscal years 1995 to 2015. Table 4 provides the annual average payment for each airport owner.

TABLE 4: AIRPORTS GRANDFATHERED TO DIVERT SOME REVENUE

Airport Owner	Airport(s)	Annual Average Revenue Diverted
State of Maryland	BWI	\$155 million
City of Chicago	MDW, ORD	\$ 26.5 million
City & County of San Francisco	SFO	\$ 26 million
State of Hawaii	HNL, OGG	\$ 10 million
City & County of Denver	DEN	\$ 7 million
City of St. Louis	STL	\$ 5.6 million

Source: Miller, Benjamin M., et al. "U.S. Airport Infrastructure Funding and Financing." RAND Corporation, 2020.

Except for BWI, those numbers are miniscule compared with the likely net asset value of the airports, per Table 3.

3.4

NEGOTIATING A P3 LEASE WITH AIRLINES

Airports are valuable assets, and the major airlines that use them understand this, thanks to operating at numerous investor-controlled airports in Europe and elsewhere. When a major change in the governance of a U.S. airport is on offer, the airlines that operate there are important stakeholders. The airport owner will need to take their interests into account in planning the transition.

As noted elsewhere in this report, airlines in the United States play a stronger role in airport governance than airlines in Europe and other countries, where airlines are simply tenants in what are increasingly corporatized or privatized commercial airport businesses. There is a long history of U.S. airports signing long-term use and lease agreements with anchor-tenant airlines that gave airlines the power to approve or reject capital improvement projects via majority-in-interest (MII) clauses. Under that provision, the "signatory" airlines (those with long-term agreements) got the right to approve or deny projects such as terminal and gate expansions. While the trend in the post-airline-deregulation era has been toward shorter airline agreements, fewer exclusive-use gates,

and more common-use infrastructure, U.S. airlines still expect to be treated more as partners than as tenants.

This history explains airline lobbying that took place in 1996 when Congress enacted the initial Airport Privatization Pilot Program (APPP) that permitted five airports to be long-term leased to for-profit companies. Airlines lobbied for and obtained a provision requiring a double super-majority of airlines to approve an airport lease under this program; specifically, the deal must be approved by 65% of the airlines serving the airport and by airlines accounting for 65% of the annual landed weight at the airport.

The APPP was later expanded to 10 airports, before being replaced in 2018 by the current Airport Investment Partnership Program (AIPP), which allows any air-carrier airport to be leased under a long-term P3 agreement. The double-majority airline approval requirement remains as part of AIPP.

In practice, this means that negotiation with the airlines is a priority for the airport owner as part of the process of preparing for a P3 lease. Essentially the same process has been carried out for the two attempts to lease Chicago's Midway Airport, the successful P3 lease of the San Juan Airport, and the recently-terminated effort to lease Lambert St. Louis Airport.

Airport owners need to understand the amount of leverage Congress has given airlines, thanks to the double 65% airline approval requirement in the AIPP legislation. Despite the benefits to airlines from fixed airport fees and charges (with downside risks transferred to equity investors), airlines have the right to use their veto power to enhance their benefits from a P3 lease. Airport owners should go into the negotiation process aware that airlines may hold out for additional benefits, such as a portion of the lease proceeds that would otherwise go to the airport owner.

Prior to sending out a request for qualifications (RFQ) inviting prospective teams to assemble and submit their experience and qualifications to finance, improve, operate, and manage the airport, the airport owner (city, county, or state government) should convene meetings with airline representatives to review the owner's analyses and the possible contours of the P3 lease agreement. As for-profit businesses with a potential veto power, the airlines seek terms and conditions that will be economically beneficial for them. Advisors generally recommend that a basic agreement with the airlines be achieved prior to issuing the request for proposals (RFP), since this will affect the basic financial calculations that potential teams will need to carry out in preparing their proposals.

The basic terms that airlines agreed to in both of the Midway efforts and the successful San Juan lease involved a near-term freeze on landing fees, followed by annual rate increases limited by the consumer price index (CPI). This gave airlines quantifiable long-term savings in exchange for their accepting a new form of governance for the airport. The St. Louis agreement with airlines was different, because landing fees there were already projected to decrease after 2031.¹⁶ While this agreement still included caps on landing fee revenue, the expected savings were small, so the city agreed that the airlines would receive \$130 million in cash up-front on a lease agreement of up to \$1.63 billion, which would amount to about 20% of the net lease proceeds, leaving the city with 80%.¹⁷

Airlines that have agreed to previous P3 deals include the following:

- American (San Juan, St. Louis)
- Delta (Midway, San Juan, St. Louis)
- Fedex (San Juan, St. Louis)
- JetBlue (San Juan)
- Southwest (Midway, San Juan, St. Louis)
- United (San Juan, St. Louis)
- UPS (San Juan, St. Louis)

In addition, for a proposed P3 lease of the Westchester County, New York airport in 2016, as part of its unsolicited proposal Oaktree Capital gained support from American, JetBlue, and United. Hence, we can see that all major U.S. airlines have been open to long-term airport P3 lease agreements.

It is also important to note that, despite statements to the contrary by St. Louis Mayor Krewson, the carriers at STL had signed off on the tentative agreement discussed above. In addition, they participated in four days of invited presentations by 11 bidding teams in December 2019 and were reported by one observer to be “totally on board and positive about moving forward with the lease.”¹⁸

¹⁶ “Confidential Information Presentation.” St. Louis Lambert International Airport. December 2019 (<https://fly314.com/transparency-portal>, accessed March 26, 2020)

¹⁷ Note 15, Sections 2.5 and 2.6.

¹⁸ Poole, Robert W. Jr. Telephone interview with John Schmidt of Mayer Brown, legal counsel to the City of St. Louis for the Lambert P3 lease process. March 25, 2020.

PART 4

WHAT KINDS OF TEAMS WOULD BID?

4.1

OVERVIEW

Suppose a city, county, or state government wanted to change the governance of an airport that it owns, opting for a long-term P3 lease of the kind previously discussed. After sufficient study to assess the pros and cons, as well as defining objectives for such a change, the first external step in the process would be to issue a request for qualifications (RFQ). This document would provide basic information about the airport and explain the government's interest in pursuing a long-term P3 lease.

For a project of this kind, most of those submitting qualifications (as observed globally as well as in the recent case of Lambert St. Louis) would form teams and document their bona-fides. The teams would typically involve an experienced airport developer/operator and one or more equity investors. The latter would generally be either an infrastructure investment fund or a public-sector pension fund or both. This section explains the roles and motivations of these potential team members. As an illustration, Table 5 lists the principal members of the 12 teams St. Louis invited to give presentations, out of the 18 teams that responded to its 2019 RFQ.

TABLE 5: TEAMS INVITED TO GIVE ST. LOUIS AIRPORT PRESENTATIONS

Airport Company	Global Rank	Infrastructure Fund	Pension Fund	Other
AENA	2			
Leeds Airport	+	AMP Capital		
London Gatwick	5*	Global Infrastructure Partners**		
Manchester Airports Group	29		IFM Investors	
Aéroports de Paris	1	Blackstone Infrastructure Fund	PSEERS, Missouri	
ASUR	43	Partners Group		AECOM
Fraport	3		OMERS	
Copenhagen Airports	53		OTPP	
AviAlliance	+		PSP Investment Board	
Royal Schiphol Airport	13			
Vinci Airports	5	Oaktree Capital	Ullico	
Vantage Airport Group	+	Corsair Vantage Infrastructure Partners		

*partially owned by Vinci Airports, #5

**invited but declined to attend

+not in top 100

4.2

AIRPORT COMPANIES

Table 1 listed the largest (by revenue) airport companies in operation today; all those were among the world's 100 largest airport groups, some of which are government entities (such as Royal Schiphol Airport). Some of the commercial airport companies are truly global while others tend to be focused on specific geographic regions or smaller airports. Here are brief descriptions of the airport companies of the teams that gave presentations in St. Louis, along with one that did not.

- **AENA** is the world's second-largest airport operator by revenue. It was originally a government corporation that operated all of Spain's commercial airports, including Madrid and Barcelona. It was privatized in 2014 (though the government still owns a bit over 50% of its shares). Given its size, it would be able to finance an airport the size of STL on its own.
- **Leeds Airport** is a well-run U.K. airport owned by its partner, Australian infrastructure fund AMP Capital, which also owns stakes in various Australian airports.

- **Manchester Airports Group** owns both Manchester and London Stansted airports, and is ranked as the world's 29th-largest airport operator, by revenue. MAG's U.S. subsidiary carries out various airport contract management functions. MAG is 35.5% owned by IFM Investors.
- **Aéroports de Paris** is the world's largest airport operator, by revenue. It owns and operates all three Paris airports and has invested in other airports in France and worldwide. The current French government still owns just over 50% of ADP, but its plan to offer those shares to the public in 2020 has been postponed due to the Covid-19 recession.
- **ASUR** operates about one-third of the commercial airports in Mexico, the largest of which is Cancún. It also holds 60% of the P3 concession for the San Juan, Puerto Rico airport. It is the world's 43rd largest airport group by revenue.
- **Fraport** is the world's third-largest airport group by revenue. It evolved out of Frankfurt airport, which was part-privatized in 2001. Fraport holds stakes in major airports in Greece and Latin America and has led efforts to expand and modernize many of those airports.
- **Copenhagen Airports**, 53rd-largest by revenue, owns and operates its namesake airport and holds stakes in a number of other airports. It is part-owned by pension fund OTPP.
- **AviAlliance**, formerly Hochtief Airports, has stakes in and operates the Athens, Budapest, Düsseldorf, and Hamburg airports in Europe and now holds 40% of the San Juan airport P3.
- **Royal Schipol Group**, the world's 13th largest by revenue, owns and operates Amsterdam Schipol and other Dutch airports and is mostly owned by the Dutch government. It did not include partners, on grounds of being able to finance a medium-hub P3 on its own.
- **Vinci Airports** is the world's fifth-largest airport company, by revenue. It owns majority interests in London Gatwick, Lisbon, Santiago (Chile), and Osaka airports, among others. The French company also owns former U.S. airport company TBI,

which manages terminals at airports including Atlanta, Burbank, and Orlando Sanford.

- **Vantage Airport Group** began as an affiliate of the Vancouver, B.C. airport, but is now owned by Corsair Capital. It is a major player in the P3 replacement of the Central Terminal at New York's LaGuardia Airport and is also part of the team selected by JetBlue to redevelop its terminals at New York's Kennedy Airport.
- **Ferrovial Airports** is a leading investor in and developer of airports. It owns and operates London Heathrow Airport (industrial shareholder at 25%), Europe's busiest hub, and Glasgow, Aberdeen, and Southampton Airports (50%) in the U.K.

Global Infrastructure Partners owns major stakes in London Gatwick and Edinburgh airports and had stakes in London City Airport. As the world's second-largest infrastructure fund, it did not need partners for STL. It ended up deciding not to proceed with this project, and therefore did not accept the invitation to present.

4.3

INFRASTRUCTURE INVESTMENT FUNDS

During the past 15 years, a new phenomenon has emerged in the financial field: funds specializing in investing in infrastructure. Many focus primarily or exclusively on acquiring existing government-owned infrastructure, such as airports, seaports, toll roads, water and wastewater systems, etc. Some invest in projects to develop entirely new infrastructure, such as new toll roads or energy facilities.

These funds seek sophisticated investors, who generally take part as limited partners. The majority of the infrastructure funds are "closed-end," meaning that they are set up for a specific period, such as 10 years, though there is a growing trend toward open-end funds more focused on long-term investments. Large infrastructure endeavors, whether to improve and operate existing facilities or to develop and operate new ones, require financing. The funds exist to invest equity, with the majority of most project costs being financed via long-term revenue bonds. Equity returns are higher than the interest rate on bonds, because the equity providers are willing to take higher risks than bond buyers, and hope to receive a reward for taking those risks.

The publication *Infrastructure Investor* covers this field and reported that such funds raised a near-record \$97.3 billion in 2019.¹⁹ That publication also creates an annual index of the largest 50 funds based on the total they have raised over the most recent five-year period. Its 2020 report found that the current top 50 have raised \$496 billion over the previous five years.²⁰ The top-10 funds from that table are listed below in Table 6.

TABLE 6: WORLD'S 10 LARGEST INFRASTRUCTURE INVESTMENT FUNDS, 2019

Rank	Fund Name	Headquarters	5-Year Total (\$B)
1	Macquarie Infrastructure & Real Assets	London	\$60.77
2	Global Infrastructure Partners	New York	\$57.42
3	Brookfield Asset Management	Toronto	\$38.69
4	KKR	New York	\$20.19
5	AMP Capital	Sydney	\$18.25
6	EQT Partners	Stockholm	\$17.85
7	IFM Investors	Melbourne	\$17.70
8	Stonepeak Infrastructure Partners	New York	\$14.95
9	Blackstone Infrastructure Fund	New York	\$14.00
10	BlackRock	New York	\$10.50

Source: *Infrastructure Investor*

Partners Group, another of the funds in Table 5, was ranked 24th of the top-50 funds, at \$5.71 billion. And Oaktree Capital Management ranked 44th, at \$3.0 billion raised.

As should be clear from this discussion, there is no shortage of equity capital available to invest in revenue-generating infrastructure. Funds such as these have taken part in many airport privatizations and P3 leases in recent years, and they are motivated to add U.S. airports to their growing portfolios of infrastructure. In short, for an airport with sound financials and reasonable growth prospects, financing long-term P3 leases should not be a problem.

¹⁹ PEI Staff. "2019 Is Infra's Second-Best Fund-Raising Year." *Infrastructure Investor.com*. Jan. 21, 2020.

²⁰ "The Infrastructure Investor 50." *Infrastructure Investor*. November 2019.

4.4

PUBLIC PENSION FUNDS

Public pension funds have traditionally invested a small portion of their investment portfolio in investor-owned infrastructure such as railroads and utilities. But until recently, they did not invest in airports, seaports, toll roads, or most water and wastewater systems, because in the United States and most of the world these were all government-owned and operated. The U.S. facilities' large capital projects were financed 100% via tax-exempt municipal bonds. But pension funds invest in taxable bonds and *equity*—i.e., they buy shares in investor-owned freight railroads and utilities. It was not until governments in Europe began privatizing (selling shares in) airports and other government-owned utilities that pension funds became able to invest equity in these additional categories of infrastructure.

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In the airport sector, as noted in Part 2, some airports in Europe have been sold to investors and in some cases their shares trade on stock markets. More commonly worldwide, governments engage in long-term P3 leases. The winning team (such as the teams shown in Table 5) creates a special-purpose vehicle (SPV) to finance, construct or modernize, and operate the airport for the duration of the lease agreement. Pension funds can invest equity in such SPVs, just as infrastructure investment funds do.

Australian and Canadian public pension funds were among the first to see the potential of diversifying their portfolios by investing equity in privatized and P3 infrastructure such as airports. In both countries, a handful of pension funds have built in-house staffs with expertise in privatized and P3 infrastructure. They create diversified infrastructure portfolios partly by investing in individual projects. The vast majority of pension funds do not have that kind of expertise, so they invest by placing allocations of equity with one or more of the major infrastructure funds discussed in the previous section.

One of the top-10 funds in Table 6 is an Australian firm that specializes in investing in infrastructure on behalf of pension funds—IFM Investors. It has grown to become the world’s seventh largest infrastructure investment fund. Other pension funds with deep knowledge and expertise in infrastructure include the following:

- Australian Super (Australia)
- Queensland Investment Corporation, QIC (Australia)
- Caisse de depot et placement du Quebec, CDPQ (Canada)
- Canada Pension Plan Investment Board, CPPIB (Canada)
- Ontario Teachers Pension Plan, OTPP (Canada)
- Ontario Municipal Employees Retirement System, OMERS (Canada)
- Public Service Plan Investment Board, PSP (Canada).

OTPP, for example, is an active investor in airports. Along with OMERS, it owns a significant stake in privatized London City Airport. It is also part-owner of the Birmingham (U.K.) Airport, Brussels (Belgium) Airport, and the Copenhagen (Denmark) Airport.

One of the few U.S. public pension funds that is developing direct-investment expertise is the largest: the California Public Employees’ Retirement System (CalPERS). It was one of the first American pension funds to begin investing in privatized and P3 infrastructure, with an investment early on in London Gatwick Airport, and others in the Port of Melbourne and the Indiana Toll Road SPV. But even with its growing expertise, the majority of CalPERS’ infrastructure investments are being made via placing funds with large infrastructure investment vehicles, such as GIP Strategic Alliance and J.P. Morgan Infrastructure Investments Fund.²¹

²¹ “Inframation Deals—California Public Employees’ Retirement System.” <https://www.inframationnews.com/investors/institutional-profiles>, accessed Jan. 9, 2020.

PART 5

PENSION FUNDS AS AIRPORT INVESTORS

In the competition for the potential lease of the Lambert St. Louis Airport, it is notable that four pension funds (PSEERS, OMERS, OTPP, and PSP) were members of various teams, as was IFM Investors (which invests solely on behalf of pension funds) and Ullico (which invests on behalf of union pension funds). Thus, more than half of the 11 teams that made presentations in St. Louis included a team member representing the interests of public employees. This section takes a deeper look at the implications of pension funds as part of the would-be SPV for a long-term airport P3 lease.

5.1

THE TWO-FOR-ONE ASPECT OF PENSION FUNDS AND INFRASTRUCTURE P3S

Two trillion-dollar scale U.S. problems are crying out for fresh approaches. One is under-investment in refurbishing and modernizing critically important infrastructure, such as airports, highways, water and wastewater systems, etc. Airports and toll roads are generally in better shape than other U.S. infrastructure, but there is a large need for over \$100 billion in airport investment in coming decades, and much larger sums to refurbish and/or replace aging highways, water and sewer systems, pipelines, and other vital infrastructure.

The other massive problem is the under-funding of U.S. public pension systems. Many state and municipal pension systems failed to recover from the losses they experienced in the wake of the 2008 financial crisis. Many therefore entered 2020 significantly under-funded and at risk of further deterioration during the impending recession. Even prior to the onset of the Covid-19 pandemic, state and local governments had \$1.43 trillion in unfunded liabilities (fiscal year 2018) in their public employee pension systems.²² On average, these systems had only 72.8% of the assets needed to remain on track to pay all promised pension obligations in the future—and the economic impacts of the Covid-19 recession will significantly worsen their situations. Moreover, the Federal Reserve has lowered interest rates further, which will make it even more difficult for pension funds to recover.²³



Over the past decade, U.S. pension funds have been sought to increase their overall return on investments by diversifying into alternative investments, including infrastructure. CalPERS, a leader of this trend, currently allocates 1.3% of its \$370 billion portfolio to infrastructure. Inframation reports that its five-year return on infrastructure investment was 12.7%, well above its overall rate of return.



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²² Aubry, Jean-Pierre and Caroline V. Crawford. “Update on the Funded Status of State and Local Pension Plans—FY 2018.” Center for Retirement Research. October 2018.

²³ “U.S. Pensions Take Big Coronavirus Hit.” *Pension Pulse*. April 3, 2020.

²⁴ “Inframation Deals—California Employees’ Retirement System.”

Therefore, a policy of increasing investment by U.S. pension funds in U.S. infrastructure would require a greater use of P3 leases than is the case today. Were Congress, a state government, or a city or county government to embrace this approach, it would stimulate new investment to refurbish or expand existing infrastructure while helping secure the retirements of public employees. Beyond providing financial benefits for the government owner of the leased asset, addressing *two* major problems via a single policy change would be a broader justification for P3 leases of existing facilities such as airports.

5.2

PENSION FUNDS AND THE POLITICS OF AIRPORT P3 LEASES

The P3 lease of a large or medium hub airport in the United States will likely be controversial, at least until the practice becomes as familiar as it now is in much of Asia, Australia, Europe, and Latin America. It would be a significant departure from the status quo that has prevailed for more than 75 years. That status quo is familiar to the legislative and executive branches of city, state, and county governments, and it is also familiar to U.S. airlines (although those that fly internationally have gotten used to operating at the more than 100 large and medium airports with substantial private investment and management).

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Significant departures from the status quo are difficult, unless a large problem with the status quo is understood and appreciated.

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Significant departures from the status quo are difficult, unless a large problem with the status quo is understood and appreciated. That was the case in San Juan, where the government was in dire financial straits and the airport was poorly managed from the standpoint of both airlines and passengers. Most other U.S. airports are not nearly as poorly managed as San Juan was. Still, many airports are subjected to political micromanagement by legislative bodies, which get involved in many details that should be the province of airport management. And as noted earlier, many airports that are operated as departments of a city, county, or state government have relatively short-term political appointees as managers, rather than career airport professionals. And with Congress' repeated failures to give airports increased local self-help tools (such as allowing them to charge higher PFCs

to fund debt service on new bonds for the next round of terminal expansion), the need for additional ways to finance major projects is becoming evident.

But will those factual arguments prevail over emotional arguments defending the status quo? These include:

- “We don’t want foreign companies managing our airport.”
- “No one should make a profit from providing a vital public service like airports.”
- “Wall Street (or London) financiers—the 1%—will make airports and air travel unaffordable for ordinary people.”
- “Airlines should not have to pay for super-profits of airport companies.”

There are sensible answers to these kinds of statements, but in political decisions, emotionally laden claims can be very powerful.

But consider the difference if increasing the viability of public employee pension funds is inherent in the P3 lease of an airport. A decade ago, American public employee unions objected vociferously to their pension funds investing in privatized and P3 infrastructure. But CalPERS is no longer being criticized for the 12.7% return on its infrastructure portfolio, helping to increase the fund’s overall rate of return from its current 6.7% return on investment.²⁵ Public pension funds deliberately joining airport P3 lease competing teams—and being vocal about why they are doing so—could have an important impact on public opinion.

5.3

ADDRESSING THE JURISDICTION’S OWN PENSION SYSTEM SHORTFALLS

All the governments that own and operate the 30 large and medium hub airports analyzed in this report have partially unfunded public employee pension systems. Table 7 provides a summary of the situation. For each jurisdiction, the table lists both the total unfunded liability (in dollars) and the percentage shortfall in needed assets.

²⁵ Wiley, Hannah. “CalPERS Narrowly Misses Its Annual Investment Target.” *The Sacramento Bee*. July 11, 2019.

TABLE 7: AIRPORT NET VALUE VS. JURISDICTION UNFUNDED PENSION LIABILITY

Airport Name	Jurisdiction	Type	2019 Unfunded Pension Liability (from Muni CAFR)	High Net Airport	2019 % of Unfunded	Airport Name
Anchorage	Alaska	State	4,223,324,000	\$1,145,224,958	27%	Anchorage
Albuquerque	Albuquerque	City	681,086,868	\$553,133,620	81%	Albuquerque
Atlanta Hartsfield-Jackson	Atlanta	City	1,100,188,000	\$6,083,970,411	553%	Atlanta Hartsfield-Jackson
Austin Bergstrom	Austin	City	2,898,672,000	\$796,765,361	27%	Austin Bergstrom
Charlotte	Charlotte	City	438,706,000	\$2,355,181,040	537%	Charlotte
Chicago Midway	Chicago	City	31,787,657,000	(\$527,229,455)	-2%	Chicago Midway
Chicago O'Hare	Chicago	City	31,787,657,000	(\$633,129,892)	-2%	Chicago O'Hare
Las Vegas	Clark Co.	County	2,933,245,295	\$3,361,400,060	115%	Las Vegas
Love Field	Dallas	City	4,738,920,000	\$1,235,065,560	26%	Love Field
Dallas/ Ft.Worth	Dallas (64%)	City	4,738,920,000	\$3,433,670,400	72%	Dallas/ Ft.Worth
Denver	Denver Co.	City/County	1,513,903,000	\$2,744,291,177	181%	Denver
Dallas/ Ft.Worth	Ft. Worth (36%)	City	3,098,278,000	\$1,931,439,600	62%	Dallas/ Ft.Worth
Honolulu	Hawaii	State	6,837,450,000	\$114,306,566	2%	Honolulu
Kahului	Hawaii	State	6,837,450,000	\$935,181,980	14%	Kahului
Houston Hobby	Houston	City	4,072,151,000	\$550,391,299	14%	Houston Hobby
Houston Intercontinental	Houston	City	4,072,151,000	\$2,802,232,056	69%	Houston Intercontinental
Kansas City	Kansas City	City	783,661,000	\$966,330,462	123%	Kansas City
Los Angeles	Los Angeles	City	7,874,521,000	\$10,609,353,400	135%	Los Angeles
Baltimore/ Washington	Maryland	State	19,137,354,000	\$1,634,443,815	9%	Baltimore/ Washington
Miami	Miami-Dade Co.	County	4,432,677,000	\$2,644,881,800	60%	Miami
Mitchell Field	Milwaukee Co.	County	755,515,000	\$514,155,240	68%	Mitchell Field
New Orleans*	New Orleans	City	951,130,000	(\$296,814,314)	-31%	New Orleans*
John Wayne	Orange Co.	County	4,921,057,000	\$1,131,918,805	23%	John Wayne
Palm Beach	Palm Beach Co.	County	1,496,526,203	\$664,276,518	44%	Palm Beach
Philadelphia	Philadelphia	City	5,955,375,000	\$2,103,293,080	35%	Philadelphia
Sky Harbor	Phoenix	City	4,777,073,000	\$2,887,671,460	60%	Sky Harbor
Sacramento	Sacramento Co.	County	1,733,444,000	\$1,182,822,238	68%	Sacramento
Salt Lake City	Salt Lake City	City	194,258,686	\$447,634,066	230%	Salt Lake City
San Antonio	San Antonio	City	1,323,043,000	\$867,578,640	66%	San Antonio

Airport Name	Jurisdiction	Type	2019 Unfunded Pension Liability (from Muni CAFR)	High Net Airport	2019 % of Unfunded	Airport Name
San Francisco	San Francisco	City/County	4,429,115,000	\$4,618,002,260	104%	San Francisco
San José	San José	City	3,129,095,000	\$1,262,272,500	40%	San José
Lambert Field	St. Louis	City	397,666,000	\$960,195,785	241%	Lambert Field

Source: Author's calculations based on data provided by Reason Foundation Pension Integrity Project

Note *At the time of this writing, New Orleans was the only jurisdiction without an audited FY2019 pension liability figure; hence, FY2018 data are used in this one case.

One possible use of proceeds from the P3 lease of an airport (or any other revenue-producing infrastructure facility) is to pay down the unfunded liability of the pension system. Sooner or later, the system must pay all promised benefits. The available alternatives are (1) politically difficult reforms to adjust the rules under which the system operates, (2) increasing taxes on the jurisdiction's citizens, (3) crowding out other areas of public spending in order to increase the amount devoted to pension systems, or (4) devoting any unexpected windfalls to increasing the pension system's assets. If some or all of the airport's net asset value is paid up-front in a lump sum, that could be considered an unexpected windfall.

There are several different ways in which P3 lease proceeds can be disbursed. Some further discussion of the alternatives is provided in Part 6.

PART 6

WISE USE OF P3 LEASE PROCEEDS

6.1

OVERVIEW

There are several ways in which the SPV that wins the bidding and negotiates the long-term lease of an airport could make the lease payments. Worldwide, for revenue-producing assets such as airports and toll roads, the most common approach is for the SPV to pay the entire amount up-front. But there is also a trend in which the winner pays a portion of the total up-front and then pays a fixed or variable amount each year of the lease term. In the airport sector, the latter type of structure may configure the annual payments as some fraction of gross or net airport revenue.

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A key concept is that a one-time windfall should not be used to avert a short-term operating budget problem. It is a contribution of capital and should be used to improve the government's balance sheet, rather than its income statement.

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Since nearly all such P3 lease agreements include a large up-front payment of some sort, this section discusses how the government in question should deal with such a windfall. A key concept is that a one-time windfall should not be used to avert a short-term operating budget problem. It is a contribution of capital and should be used to improve the government's balance sheet, rather than its income statement. There are three principal ways to do this, discussed in the paragraphs below.

6.2 INVESTING IN OTHER NEEDED INFRASTRUCTURE

In other countries, including Australia and India, a policy known as “infrastructure asset recycling” is explicit government policy. The best-known approach was a federal program in Australia several years ago. The federal government sought to encourage state governments to sell or lease revenue-producing facilities (such as seaports and state-owned utilities) and use the proceeds to invest in other needed infrastructure that was currently unbudgeted. In 2014, Australia's federal government created a formal asset recycling policy to encourage state governments by offering them grants equal to 15% of the value of the net proceeds from the sale or P3 lease of state assets. Importantly, the policy stipulated that the proceeds were to be invested in new infrastructure only. Over a several-year period, this program led to A\$20 billion in new infrastructure investment, primarily in New South Wales and in the Australian Capital Territory.²⁶

“*In the United States, the long-term P3 lease of the Indiana Toll Road (ITR) in 2006 is a good example of asset recycling. The winning bidder paid \$3.8 billion, all of it up-front.*”

More recently, the National Highways Authority of India has been auctioning long-term P3 leases of toll roads under its Toll-Operate-Transfer (TOT) program, with the proceeds used to invest in upgrading lower-level roads.²⁷ Pension funds CDPQ and CPPIB have been among the bidders.

²⁶ Poole, Robert W., Jr. “Asset Recycling to Rebuild America's Infrastructure.” Reason Foundation. October 2018. Part 3.

²⁷ Srivastava, Vikas. “NAHI Plans Fifth TOT Auction in Feb to Raise Rs 3,000 Crore.” *Financial Express*. Jan. 22, 2020.

In the United States, the long-term P3 lease of the Indiana Toll Road (ITR) in 2006 is a good example of asset recycling. The winning bidder paid \$3.8 billion, all of it up-front. After paying off the \$200 million in ITR debt, the state created a 10-year, \$2.6 billion statewide highway improvement program called Major Moves. It also put \$500 million into a Next Generation Trust Fund to provide long-term maintenance for the new highway infrastructure created by Major Moves.²⁸ In this case, it turned out to be fortunate that the state of Indiana received 100% of the lease payments up-front, because the original SPV was so highly leveraged that it was unable to make scheduled debt service payments during the Great Recession, and ended up filing for Chapter 11 bankruptcy in 2014. A consortium of pension funds, organized by IFM Investors, then paid \$5.7 billion for the remaining years of the 75-year lease, which paid off the former SPV's creditors.²⁹

In the San Juan airport P3 lease discussed in Part 2, of the \$1.2 billion total lease payment, the Aerostar SPV paid \$615 million up-front and agreed to pay the balance over the 40-year term of the lease. It also agreed to make large-scale capital investments in the airport, which freed up funds for the Ports Authority to use on its other airports.



The United States faces a large shortfall in infrastructure investment, as chronicled every two years by the American Society of Civil Engineers.



The United States faces a large shortfall in infrastructure investment, as chronicled every two years by the American Society of Civil Engineers. Its series of Report Cards estimates needed refurbishment and modernization of existing infrastructure and addition of new infrastructure in the categories of transportation (airport, highways, transit, etc.), energy and environmental facilities, and other public facilities.³⁰ ASCE's latest estimate of 10-year investment needs is \$2.6 trillion. A city, county, or state policy of infrastructure asset recycling would first define assets that could be sold (such as real estate) and revenue-producing infrastructure that could be P3 leased to competent companies, financed by

²⁸ Poole, "Asset Recycling to Rebuild America's Infrastructure." 22–24.

²⁹ "IFM Investors Completes Acquisition of Indiana Toll Road Concession Company." *Businesswire.com*. May 27, 2015.

³⁰ "2021 Report Card for America's Infrastructure," American Society of Civil Engineers, 3 March 2021.

infrastructure investment funds and/or pension funds. Airports could be one of the assets identified under such a policy.

6.3

PAYING DOWN GOVERNMENT DEBT

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Another way to improve a government's balance sheet would be to pay off portions of the jurisdiction's bonds, avoiding future debt service costs and improving the jurisdiction's overall bond rating.

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Another way to improve a government's balance sheet would be to pay off portions of the jurisdiction's bonds, avoiding future debt service costs and improving the jurisdiction's overall bond rating. Such a policy would, in effect, add some reserve bonding capacity for times in the future when that may be required.

When the city of Chicago leased the Chicago Skyway via a 99-year P3 lease in 2005, it used most of the \$1.8 billion proceeds for balance-sheet improvements.³¹ They included:

- Retire its existing Skyway bonds: \$463 million
- Pay down long-term city debt: \$134 million
- Eliminate short-term debt obligations: \$258 million
- Establish a long-term reserve: \$500 million
- Establish a mid-term reserve: \$375 million
- Create a neighborhood investment fund: \$100 million.

In another Chicago example, the city leased four underground parking garages, owned by the city and the Chicago Parks District. They constituted the country's largest underground parking system and garnered considerable interest from investors and parking companies. The 99-year P3 lease generated \$563 million for the city and the District. The city used most of its share to pay off debt, and the District paid off debt and established three funds for different park improvements.³²

³¹ “Infrastructure Case Study: Chicago Skyway Bridge.” Bipartisan Policy Center. October 2016.

³² “The Chicago Parking Garage Leases.” The Civic Federation. Dec. 15, 2010.

6.4

REDUCING UNFUNDED PENSION SYSTEM LIABILITIES

Unfunded public employee pension obligations are a very large component of the liabilities on many city, county, and state balance sheets. So, as mentioned briefly in Part 5, another prudent use of P3 lease proceeds would be to reduce unfunded liabilities by transferring some or all of the airport lease proceeds to the jurisdiction's pension system.



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The extent to which the estimated high valuation of each airport could reduce the jurisdiction's unfunded pension liability varies enormously, as Table 7 revealed. The largest ratio of lease proceeds to pension fund liabilities is that of Atlanta, where the \$6 billion net proceeds greatly exceed the city's \$1.1 billion unfunded liability. Other jurisdictions where the high net value exceeds the unfunded liability are:

- Atlanta 553% of the unfunded liabilities
- Charlotte 537%
- St. Louis 241%
- Salt Lake City 230%
- Denver 181%
- Los Angeles 135%
- Kansas City 123%
- Clark Co., NV 115%
- San Francisco 104%

At the other end of the scale, since the estimated net airport value is negative in two jurisdictions—Chicago and New Orleans—there would likely be no net lease proceeds available for the large unfunded liabilities of their pension systems (unless the EBITDA multiples were higher than 20X, as some have been in recent years). The three states that

own airports in this study—Alaska, Hawaii, and Maryland—have such large unfunded pension liabilities that lease proceeds would have only a modest impact on reducing those liabilities.

Cases in which net lease proceeds are between 60% and 98% of the unfunded pension system liabilities may be more promising candidates for using some or all of the proceeds toward pension fund solvency. These include:

- Dallas (both airports) 98% of the unfunded liabilities
- Houston (both airports) 83%
- Albuquerque 81%
- Milwaukee Co. 68%
- Sacramento Co. 68%
- San Antonio 66%
- Ft. Worth 62%
- Miami-Dade Co. 60%
- Phoenix 60%

Several cautions should be noted in considering this use of airport P3 lease proceeds. Pension liabilities have accumulated over decades, due to an array of decisions made by legislative bodies (city or county councils, state legislators) to provide retirement benefits with insufficient concern for where the resources would come from to fully pay for the resulting benefits to future retirees. Often, elected officials voted for these rules and provisions while aware that by the time the pension system reached the point where promised benefits vastly exceeded the resources needed to pay them, those elected officials would be retired or dead and not able to be held accountable. A one-time infusion of a windfall from lease proceeds would improve the near-term solvency of the pension system, but if rules and provisions remained in place that create more promised benefits than projected revenues could cover, the problem would have been postponed rather than being solved.

The city, county, or state government responsible for each of the airports discussed in this report will have to weigh the alternative uses of the lease revenues from any transaction such as the P3 lease of an airport. Whether investing those proceeds in needed infrastructure, in debt reduction, or in pension fund solvency is the best use will be a decision specific to each governmental entity.

Pension System Unfunded Liability Calculations

The analysis of the unfunded pension system liabilities of the jurisdictions that own the 31 airports in this study was carried out by the Pension Integrity Team of Reason Foundation (<https://reason.org/pension-integrity-project>).

For purposes of this study, pension figures include all public pension plans under the responsibility of each jurisdiction, including retirement plans for police, fire, teachers, transit authorities, and other types of public workers. For city and county jurisdictions, the accounting of liabilities also includes their share of responsibility for state-level plans.

The accounting of liabilities and assets comes from public financial reports, usually directly from the city or county. In some cases of city or county share of state-level obligations, the accounting of liabilities includes their share of responsibility of state-level plans.

This study uses combined actuarially accrued liabilities (AAL) to represent the total amount in pension obligations that have been promised to the jurisdiction's public workers. Combined plan actuarial value of assets (AVA) is used to determine the amount the city, county, or state has on hand to uphold its pension promises. Subtracting the combined assets from the combined liabilities gives the jurisdiction's total unfunded pension liability—the amount it is short on pension obligations. Dividing these same components gives the funding ratio.

Notably, this analysis uses the most recently reported data from these jurisdictions, which in all but one case is for FY 2019. In the nearly inevitable occurrence of another few years of low returns on investment assets, liabilities will grow to be larger than previously expected, meaning the unfunded liabilities are set to become much higher than they are currently being reported.

PART 7

CONCLUSIONS

This study has explained that governmental owners of U.S. commercial airports were given a new option by Congress in 2018 legislation: leasing airports via a long-term public-private partnership (P3) agreement, under which the owner can legally receive the lease proceeds and use them for general governmental purposes.

This study found that, based on valuation of overseas airports in recent privatization and P3 transactions, the large majority of the 31 airports owned by city, county, and state governments would have significant net proceeds after paying off outstanding airport bonds, as required by U.S. tax law. Only a handful may not be candidates for lease, unless EBITDA multiples are higher than assumed here, since their estimated net value (after bond payoff) is negative.

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... the large majority of the 31 airports owned by city, county, and state governments would have significant net proceeds after paying off outstanding airport bonds, as required by U.S. tax law.
”

On the other hand, nine airports (including Atlanta, Charlotte, Los Angeles, and San Francisco) have estimated net proceeds sufficient to eliminate their current pension system unfunded liabilities, if the jurisdiction decided on that use of the proceeds. Another nine could have enough lease proceeds to cover between 60% and 98% of their pension system's unfunded liabilities, including Dallas, Houston, Miami, and Phoenix.

Governments that contemplate P3 leases of any infrastructure assets need to weigh alternative uses of the net proceeds against their pension fund needs, their overall jurisdictional indebtedness, and their currently unbudgeted infrastructure needs. Those would each be worthwhile uses of lease proceeds, as opposed to using such proceeds for short-term budget-balancing.

PART 8

APPENDIX: AIRPORT FACTORS AFFECTING P3 POTENTIAL

The 31 airports discussed in this study vary considerably in the mix of passengers served and in their track record in generating revenue from various non-aeronautical sources—such as parking, car rental, and retail sales in terminals. Also, the COVID-19 pandemic devastated airline traffic in 2020 and the early months of 2021. International travel remains depressed, and recovery in that portion of the airline business is not expected to begin in serious numbers until 2022. However, domestic U.S. air travel is already recovering, and many airlines are scheduling summer 2021 flights at close to pre-pandemic levels.

First, of the 31 airports in this study, those that primarily serve domestic travel are likely to be the most promising near-term candidates for P3 leases. To assess the differences among these airports on this dimension, 2019 data on domestic and international passenger boardings at the 31 airports were obtained from Airports Council International. Table A-1 presents the results, listed in order of the fraction of domestic passengers for each airport. As can be seen, the results vary from essentially 100% for Albuquerque (ABQ) at the top of the list to 51% for Miami (MIA) at the bottom. On this metric, the top 10 airports would potentially attract the most near-term investor interest, since all 10 have domestic

passenger fractions between 97% and 100%. On a longer term basis, as international travel recovers in 2022-23, the other airports in the table would become more attractive than they would be in 2021.

TABLE A-1: AIRPORTS RANKED BY 2019 DOMESTIC PASSENGER SHARE

City	Airport Code	2019 Int'l. Passengers	2019 Domestic Passengers	2019 Total Passengers	Fraction Domestic
Albuquerque NM	ABQ	2,286	5,404,025	5,406,311	1.000
Kansas City MO	MCI	79,946	11,715,689	11,795,635	0.993
Milwaukee WI	MKE	108,399	6,718,751	6,827,150	0.984
New Orleans LA	MSY	218,035	13,426,631	13,644,666	0.984
Santa Ana CA	SNA	174,267	10,482,719	10,656,986	0.984
West Palm Beach FL	PBI	124,723	6,770,662	6,895,385	0.982
St Louis MO	STL	312,396	15,566,131	15,878,527	0.980
Dallas TX	DAL	334,604	16,445,554	16,780,158	0.980
Anchorage AK	ANC	85,636	5,640,523	5,761,552	0.979
Sacramento CA	SMF	340,645	12,832,195	13,172,840	0.974
Austin TX	AUS	530,387	16,813,342	17,343,729	0.969
Chicago IL	MDW	798,736	20,046,124	20,844,860	0.962
Salt Lake City UT	SLC	1,115,861	25,692,153	26,808,014	0.958
San Antonio TX	SAT	467,475	9,895,565	10,363,040	0.955
Baltimore MD	BWI	1,227,419	25,765,440	26,992,859	0.955
Phoenix AZ	PHX	2,112,167	44,175,623	46,287,790	0.954
Denver CO	DEN	3,175,199	65,840,504	69,015,703	0.954
Kahului HI	OGG	375,860	7,602,733	7,978,593	0.953
San Jose CA	SJC	864,260	14,786,184	15,650,444	0.945
Houston TX	HOU	850,804	13,604,503	14,455,307	0.941
Charlotte NC	CLT	3,564,266	46,604,517	50,168,783	0.929
Las Vegas NV	LAS	3,806,241	47,731,397	51,691,066	0.923
Atlanta GA	ATL	12,655,294	97,876,006	110,531,300	0.886
Philadelphia PA	PHL	4,082,374	28,936,512	33,018,886	0.876
Dallas/Fort Worth TX	DFW	9,578,478	65,488,478	75,066,956	0.872
Chicago IL	ORD	14,198,789	70,450,326	84,649,115	0.832
Houston TX	IAH	11,122,035	34,154,560	45,276,595	0.754
San Francisco CA	SFO	15,240,135	42,108,990	57,418,574	0.733
Honolulu HI	HNL	5,799,643	15,800,782	21,735,558	0.727
Los Angeles CA	LAX	25,098,811	60,595,693	88,068,013	0.688
Miami FL	MIA	22,383,751	23,540,715	45,924,466	0.513

Source: Airports Council International

A second factor will likely be of interest to both potential investors and the airlines serving the airport. This is the fraction of total airport operating revenue that is generated by “non-aeronautical” sources. The way these figures are compiled by the Federal Aviation Administration, aeronautical revenues include landing fees and various terminal charges to airlines, while non-aero revenues include car parking charges, rental car fees, and retail sales in airport terminals. From an airline’s perspective, an airport that fails to maximize non-aero revenue places more of the burden on airlines to cover the airport’s operating costs. And to investors, a low share of non-aero revenue suggests significant upside potential, making the airport relatively more attractive to lease.

Table A-2 shows the results, based on data in FAA’s Certification Activity Tracking System (CATS), which was also the source for this report’s Table 3A. Table A-2 lists the airports from the lowest non-aero revenue share to the highest. The first five airports range from a low of 16% (Anchorage) to 35% (Miami and Chicago Midway), suggesting large improvement potential and stronger interest from investors and airlines. The six airports at the bottom of the table all have non-aero revenue shares above 60%, which is in the vicinity of privately managed (privatized or P3-leased) airports overseas.

TABLE A-2: AIRPORTS RANKED BY 2019 NON-AERONAUTICAL REVENUE

City	Airport Code	Non-Aero. Revenues (\$M)	Total Revenues (\$M)	Fraction Non-Aero
Anchorage AK	ANC	\$21,821,431	\$135,020,999	0.16
Chicago IL	ORD	\$287,428,049	\$1,061,913,580	0.27
Philadelphia PA	PHL	\$135,473,999	\$427,578,254	0.32
Miami FL	MIA	\$291,593,743	\$821,509,743	0.35
Chicago IL	MDW	\$73,313,495	\$206,532,791	0.35
Los Angeles CA	LAX	\$570,722,513	\$1,517,730,998	0.38
Houston TX	IAH	\$159,276,884	\$391,142,603	0.41
St Louis MO	STL	\$59,220,641	\$141,651,739	0.42
Honolulu HI	HNL	\$124,467,206	\$290,421,824	0.43
San Francisco CA	SFO	\$421,622,548	\$980,444,000	0.43
Baltimore MD	BWI	\$106,813,960	\$247,642,203	0.43
Las Vegas NV	LAS	\$251,741,720	\$537,780,891	0.47
Dallas TX	DAL	\$70,816,882	\$147,557,523	0.48
Dallas/Fort Worth TX	DFW	\$506,502,925	\$1,023,927,252	0.49
Denver CO	DEN	\$424,307,567	\$808,360,832	0.52
Santa Ana CA	SNA	\$72,688,007	\$136,836,377	0.53
Charlotte NC	CLT	\$142,218,391	\$267,318,001	0.53
Austin TX	AUS	\$89,505,253	\$167,283,587	0.54
Houston TX	HOU	\$56,528,440	\$105,404,998	0.54
Sacramento CA	SMF	\$104,570,404	\$185,926,590	0.56

City	Airport Code	Non-Aero. Revenues (\$M)	Total Revenues (\$M)	Fraction Non-Aero
San Jose CA	SJC	\$110,418,663	\$194,690,769	0.57
New Orleans LA	MSY	\$43,774,869	\$76,882,817	0.57
San Antonio TX	SAT	\$65,070,042	\$113,489,751	0.57
Kahului HI	OGG	\$42,206,519	\$73,580,297	0.57
Albuquerque NM	ABQ	\$32,848,846	\$56,771,184	0.58
Salt Lake City UT	SLC	\$105,673,660	\$173,462,863	0.61
Phoenix AZ	PHX	\$263,101,816	\$429,012,982	0.61
Kansas City MO	MCI	\$82,954,239	\$129,597,996	0.64
Milwaukee WI	MKE	\$51,931,474	\$80,049,473	0.65
West Palm Beach FL	PBI	\$47,809,581	\$71,199,409	0.67
Atlanta GA	ATL	\$387,801,842	\$568,506,652	0.68

Source: FAA CATS database (<https://cats.airports.faa.gov>)

A third consideration is how rapidly (or not) airlines are resuming service at various airports. A May 2021 report from Steer North American Aviation compiled figures from the Official Airline Guide for 19 of the airports in this study, and the study's author provided us with data for the remainder of our 31 airports. Those data compare scheduled airline seat capacity in May 2019 with the comparable figures for May 2021, as an estimate of the recovery of air travel at these airports. Note that these figures represent airline-offered seats, rather than actual passengers carried, but they do indicate airlines' judgments about which airline markets are recovering most rapidly. Airports making a faster recovery would be more likely to have higher market value as of 2021 than airports making slower recoveries. Table A-3 presents this data, in the form of the percentage change between 2019 and 2021 for each airport.

TABLE A-3: SELECTED AIRPORTS RANKED BY AIRLINES CAPACITY RECOVERY

City	Airport Code	Percent May 2021 vs May 2019 Capacity
Salt Lake City	SLC	104
Miami	MIA	100
Anchorage	ANC	94
Phoenix	PHX	94
Charlotte	CLT	93
West Palm Beach	PBI	92
Denver	DEN	90
Dallas & Ft. Worth	DFW	87
Dallas Love Field	DAL	82
Houston Hobby	HOU	80
Las Vegas	LAS	79
San Antonio	SAT	79

City	Airport Code	Percent May 2021 vs May 2019 Capacity
Austin	AUS	77
Chicago	MDW	76
Atlanta	ATL	76
Houston	IAH	75
Santa Ana/John Wayne	SNA	73
Baltimore	BWI	72
Sacramento	SMT	72
Honolulu	HNL	67
Milwaukee	MKE	65
Kansas City	MCI	62
Chicago	ORD	61
St. Louis/Lambert	STL	61
New Orleans	MSY	61
Los Angeles	LAX	60
Albuquerque	ABQ	55
Philadelphia	PHL	55
San José	SJC	44
San Francisco	SFO	38

Source: Stephen Van Beek, "Tracking COVID-19 Aviation Recovery in the United States," Steer North American Aviation, May 2021

ABOUT THE AUTHOR

Robert W. Poole, Jr. is director of transportation policy and the Searle Freedom Trust Transportation Fellow at Reason Foundation, a public policy think tank based in Los Angeles and Washington, D.C.

He was among the first to propose the commercialization of the U.S. air traffic control system, and his work in this field has helped shape proposals for a U.S. ATC corporation. A version of his nonprofit corporation concept was implemented in Canada in 1996. He has advised the Office of the Secretary of Transportation, the White House Office of Policy Development, the National Performance Review, the National Economic Council, and the National Civil Aviation Review Commission on ATC commercialization. He is a member of the Air Traffic Control Association and of the GAO's National Aviation Studies Advisory Panel. In 2012-13 he was a member of the Business Roundtable task force on ATC reform, and in 2014-15 he was part of the Eno Center for Transportation working group on ATC reform. In 2018 he received the Eno Center's Thought Leader Award for his work on ATC corporatization.

Poole's Reason studies helped launch a national debate on airport privatization in the United States. He advised both the FAA and local officials during the 1989-90 controversy over the proposed privatization of Albany (NY) Airport. His policy research on this issue helped inspire the privatization of Indianapolis airport management under Mayor Steve Goldsmith and Congress' 1996 enactment of the Airport Privatization Pilot Program.

In aviation security, Poole advised the White House and House Republican leaders on what became the Aviation & Transportation Security Act of 2001, enacted in response to the 9/11 attacks. He has authored a number of Reason policy studies on aviation security and is the author of a paper on risk-based aviation security for the OECD's International Transport Forum.

Poole has testified on airports, aviation security, and air traffic control on a number of occasions before House and Senate aviation and homeland security subcommittees, and he has spoken on these subjects before numerous conferences. He has also done consulting work on several airport privatization feasibility studies. Poole also edits a monthly Reason Foundation e-newsletter on aviation policy issues. He received his B.S. and M.S. in mechanical engineering at MIT and did graduate work in operations research at NYU.

