



2019-2023

TERMINALLY CHALLENGED:

Addressing the Infrastructure Funding Shortfall of America's Airports



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\$128,131,000,000

Infrastructure needs across America's airport system through 2023.

Executive Summary

Airports are Terminally Challenged

America's airports are a fundamental component of our nation's transportation infrastructure. In 2017, 1.7 billion passengers and 31.7 million metric tons of cargo traveled through U.S. airports. With a national economic impact of \$1.4 trillion, airports contribute more than seven percent to the U.S. gross domestic product and support over 11.5 million jobs around the country. To meet the capacity demands of the future with safe, efficient, and modern facilities that passengers and cargo shippers expect, airports need to make new investments to maintain and modernize our nation's airport infrastructure.



1.7 billion passengers



31.7 million metric tons of cargo



\$1.4 trillion economic impact



11.5 million jobs

While passenger and cargo traffic through airport facilities continues to grow at a record pace, our outdated aviation infrastructure is not keeping up with demand. As a result, far too many airports around the country are overcrowded and cramped. This survey shows that America's airports require more than \$128 billion in infrastructure upgrades by 2023, with more than 56 percent of the needs inside our aging terminals.

Inadequate airport infrastructure that fails to meet the growing needs of local businesses and tourists puts in jeopardy the continued economic growth of American cities, states, and regions. From established metropolitan areas to burgeoning growth regions to small communities, sustained economic growth depends on the expansion of, and investment in, local airports. As the U.S. economy recovered from the significant economic downturn experienced during the Great Recession, the national unemployment rate has decreased and personal discretionary spending has increased. As such, enplanements nationwide have dramatically improved, growing at a compound annual growth rate of 3.8 percent between 2013 and 2017, putting further pressure on our already overloaded airport facilities.

Airport investment also promotes much-needed competition in the airline industry. New investments in airports can be valuable tools in helping local communities attract new air carriers, which increases competition and leads to lower fares for passengers. Airports need additional resources to build the terminals, gates, and ramps necessary to attract new air carriers and allow existing ones

to expand service. The traveling public gets more choices and lower airfares when airports can build the facilities that provide more airline options and more service alternatives.

In addition to the impact on local economies, deferred airport investment over the past two decades has challenged the ability of airports to deal with the evolving threats posed to aviation security. We live in vastly different times than when most U.S. airports were built, and the airports we have today simply were not designed and outfitted for a post-9/11 world that requires us to maximize both efficiency and security.

Airports call on Congress to modernize the outdated federal cap on the Passenger Facility Charge (PFC) in order to give airports more flexibility to self-finance and leverage private investment without the need for additional taxpayer dollars. Air travelers and shippers would greatly benefit from airports having the ability to generate more local revenue for terminals, gates, runways, and taxiways that would increase capacity, stimulate competition, enhance safety and security, and improve the overall passenger experience.

Addressing the Infrastructure Funding Shortfall

With America's airports facing more than \$128 billion in new infrastructure needs across the system and a debt burden of \$91.6 billion from past projects, it is time to find the means to rebuild our nation's aviation infrastructure and improve the passenger experience for millions of travelers.

It is a common misconception that airports are funded with taxpayer dollars or a general tax on all citizens. In reality infrastructure projects at U.S. airports are funded primarily with federal grants through the FAA's Airport Improvement Program (AIP), a local user-fee called the Passenger Facility Charge (PFC), and airport-generated revenue from tenant rents and fees. Airports often turn to capital markets to debt-finance projects, using both PFC-revenue and airport-generated revenue to repay the bonds. Traditionally AIP grants – which prioritize safety improvements – have been used on airfield projects, while PFC user fees – with greater funding flexibility – have gone towards terminal, ground-access, and major-runway projects. In the case of PFCs, airports often have committed this revenue-stream for years or decades into the future to repay past projects, meaning they have no new money coming into the system to fund future projects.

Thus, under the industry's current financing-funding model airports lack stable, predictable funding sources that keep pace with travel growth, rising construction costs, and inflation for these intensive capital projects. The PFC cap – last adjusted in 2000 – has seen its purchasing power eroded by 50 percent in the past two decades. And federal airport grants through the AIP have been stagnant for nearly a decade, and will remain so for another five years under the recently enacted FAA reauthorization legislation. Moreover, many airports – even those with sterling credit ratings – have reached their debt capacity and either cannot finance new projects or have had to phase in their projects over a longer timeframe, increasing the costs and delaying the benefits for passengers.

Fortunately, we can rebuild America's airports without raising taxes or adding to deficit spending by modernizing the federal cap on the PFC. Modestly adjusting the federal cap on local PFCs would allow airports to take control of their own investment decisions and become more financially self-sufficient. Airports could build the appropriate facilities – terminals, gates, baggage systems, security checkpoints, roadways, and runways – to meet the travel demands and customer expectations of their community.



With America's airports facing more than **\$128 billion** in new infrastructure needs across the system and a debt burden of **\$91.6 billion** from past projects, it is time to find the means to rebuild our nation's transportation infrastructure and improve the passenger experience for millions of travelers.



It is important to note that PFCs are not taxes – they are local user fees determined locally and used locally to help pay the costs of building airport infrastructure that benefits customers by improving the passenger experience and spurring airline competition. PFCs are imposed by states or units of local government that own or operate airports; so they are not collected by the federal government, not spent by the federal government, and not deposited into the U.S. Treasury. Instead, PFCs go directly to fund local airport projects approved by the FAA with input from airlines and local communities.

At a time of mounting pressure to reduce federal spending, modernizing the federal government’s PFC cap is the simplest and most free-market option for providing airports with the locally controlled self-help they need to finance vital infrastructure projects. It would allow airports of all sizes to reduce costs and start building essential infrastructure projects more quickly to meet the travel demands of today and challenges of tomorrow.

Inadequate airport infrastructure

that fails to meet the growing needs of local businesses and tourists puts in jeopardy the continued economic growth of American cities, states and regions.







Top 10 Projects in 2019-2023

AIRPORT CODE	HUB SIZE	PROJECT NAME	PROJECT COSTS IN BILLIONS IN 2018 DOLLARS
LAX	L	Automated People Mover A 2.25 mile elevated guideway with 6 stations to solve the traffic congestion around the airport, part of LAX's Landside Access Modernization Program (LAMP)	\$ 2.60
LAX	L	North Terminal Program Renovations to Terminal 2, and the demolition and reconstruction of Terminal 3 after Delta Air Lines relocated to Terminal 2-3 from Terminal 5-6.	\$ 1.81
MCO	L	South Terminal Complex - Phase 1 Terminal C Phase 1 of the new terminal project, adding 19 gates capable of accommodating 24 more aircraft	\$ 1.72
EWR	L	Terminal A Redevelopment - Terminal Building a 33-gate terminal to replace the existing Terminal A to accommodate an anticipated 13.6M annual passengers by 2027	\$ 1.70
LAX	L	Midfield Satellite Concourse A new 1.6-billion concourse addition to the Tom Bradley International Terminal (TBIT) featuring 12 aircraft gates as well as a Baggage Optimization Project	\$ 1.55

AIRPORT CODE	HUB SIZE	PROJECT NAME	PROJECT COSTS IN BILLIONS IN 2018 DOLLARS
EWR	L	Rehabilitation of Taxiway W And Portions Of Taxiways A and B Renewing and maintaining the Taxiways in a state of good repair and ensuring efficient, safe and secure operations	\$ 1.47
LGA	L	Construction of Air Train A 1.5-mile-long people mover system and elevated railway to connect LGA with the NYC's subway and Long Island Rail Road (LIRR)	\$ 1.40
SFO	L	Terminal 1 Program The redevelopment of the 50-year-old Harvey B. Milk Terminal (Terminal 1) to meet the needs of modern travelers and revolutionize the guest experience	\$ 1.36
SLC	L	SLC Terminal Redevelopment Program North Concourse Adding 30 gates to replace the aging facility and accommodate the traffic that is more than double its design capacity	\$ 1.36
LAX	L	LAMP-Consolidated Rent-A-Car (ConRAC) A P3 project to relocate over 20 existing rental car locations scattered around the airport area to a 5.3-million-sqaure-feet facility, part of the LAMP	\$1.30

RESULTS IN BRIEF

The ACI-NA total estimate of airports' infrastructure needs for 2019 through 2023, adjusted for inflation¹, is \$128.1 billion or \$25.6 billion annualized.² About 65.9 percent of the development is intended to accommodate growth in passenger and cargo activity, and 27.8 percent is intended to rehabilitate existing infrastructure, maintain a state of good repair, and keep airports up to standards for the aircraft that use them.

This estimate is a 28.3 percent increase over the 2017 estimate of \$99.9 billion or \$20 billion annualized for 2017 through 2021. The estimate for large, medium and small hubs only³ is a 34.0 percent increase over the last estimate. For non-hub, non-primary commercial service, reliever and general aviation airports, ACI-NA relied on the FAA National Plan of Integrated Airport System (NPIAS) 2017 estimate for development costs, which are expected to increase by 4.3 percent from the last report completed in 2016.

The \$25.6 billion in average annual funding needs for U.S. airports is significantly higher than the funding available through annual AIP grants, PFC collection, and airport generated net income. It is clear that the existing funding system cannot meet U.S. airport infrastructure needs for modernizing and expanding airport capacity which is critical for a safe, efficient and globally competitive aviation system.

ACI-NA attributes the increase in airport infrastructure needs to several factors, including the need to upgrade aging infrastructure,

the healthy U.S. economy and increasing traffic demand, and airline consolidation and concentration on hub operations.

The ACI-NA total estimate includes all airport improvements that are planned within the next five years including those not eligible for AIP grants. Commercial-service airports⁴, which accounted for 99.8 percent of passenger enplanements in 2017, account for \$113.7 billion (88.7 percent) of the total \$128.1 billion for planned investments, while non-commercial-service airports with 0.2 percent of the 2017 enplanements account for \$14.5 billion (11.3 percent) of the total \$128.1 billion. Within the commercial-service airports:

→ large hub airports

72.0% of all enplanements, **\$81.1 billion** of all total needs

→ medium hub airports

16.2% of all enplanements, **\$17.5 billion** of all total needs

→ small hub airports

8.3% of all enplanements, **\$9.4 billion** of all total needs

→ non-hub airports

3.4% of all enplanements, **\$5.7 billion** of all total needs

Commercial service airports reported a significant increase in infrastructure needs, with an overall increase of 34.0 percent while non-commercial service airports had a 4.9 percent increase. All airport categories showed growth from the previous estimate. Medium hubs reported the most significant increase at 49.5 percent followed by large hubs with a 34.3 percent increase.

Medium hubs reported an increase of 49.5 percent, from \$11.7 billion to \$17.5 billion, and increased their share of total development by 2 percent from the 2016/17 survey. Significant development was identified at Burbank, Pittsburgh, San Jose, Austin, Indianapolis, Omaha, Southwest Florida, Jacksonville, Milwaukee and Dallas Love Field, with more than a 50 percent increase as these airports undertake major infrastructure improvement programs.

Large hubs reported an increase of 34.4 percent, from \$60.4 billion to \$81.1 billion, and increased their share of total development needs by close to 3 percent. Significant development was identified at New York John F. Kennedy, Newark Liberty and LaGuardia, Denver, Washington Dulles, Tampa, Las Vegas, Baltimore/Washington, Orlando, and Charlotte with more than a 50 percent increase as these airports undertake major infrastructure improvement programs. In addition, Los Angeles International Airport alone reported over \$13 billion in infrastructure needs between 2019 and 2023, primarily for terminal and concourse redevelopment and renovation, landside access modernization, and intermodal transportation and consolidated rental car facilities.

Most small hubs reported moderate increases in infrastructure needs. Major developments at Albany, Huntsville, Reno, Madison, Fresno, Sarasota, Palm Springs and Savannah resulted in an increase of over 50 percent in their infrastructure improvement programs.

The overall increase shows that, as a result of the healthy economy and increasing traffic demand, coupled with airline consolidation and their strategic shift to focus on hub operations, large and medium hub airports have a particular need to invest in major infrastructure improvement projects. Despite a decrease in flights at many small airports, additional funding is still needed at these airports for upgrading aging infrastructure, meeting federal mandates, and improving the passenger experience.

1 ACI-NA used a 1.5 percent inflation adjustment.

2 The ACI-NA total estimate of airports' infrastructure development needs for the period 2019 through 2023, in 2018 constant dollars, not adjusted for inflation, is \$122.5 billion or \$24.5 billion annualized.

3 Development costs for large, medium and small hubs are based on ACI-NA Survey data. Development costs for non-hub, non-primary commercial service, reliever and general aviation airports are based on FAA 2019-2023 NPIAS report.

4 ACI-NA used the FAA definitions for categories of airports. See Appendix 4.



Top 5 Terminal Projects in 2019 - 2023

AIRPORT CODE	HUB SIZE	PROJECT NAME	PROJECT COSTS IN BILLIONS IN 2018 DOLLARS
LAX	L	North Terminal Program Renovations to Terminal 2, and the demolition and reconstruction of Terminal 3 after Delta Air Lines relocated to Terminal 2-3 from Terminal 5-6.	\$ 1.81
MCO	L	South Terminal Complex - Phase 1 Terminal C Phase 1 of the new terminal project, adding 19 gates capable of accommodating 24 more aircraft	\$ 1.72
EWR	L	Terminal A Redevelopment Building a 33-gate terminal to replace the existing Terminal A to accommodate an anticipated 13.6 million annual passengers by 2027	\$ 1.70
LAX	L	Midfield Satellite Concourse A new 1.6-billion concourse addition to the Tom Bradley International Terminal (TBIT) featuring 12 aircraft gates as well as a Baggage Optimization Project	\$ 1.55
SFO	L	Terminal 1 Program The redevelopment of the 50-year-old Harvey B. Milk Terminal (Terminal 1) to meet the needs of modern travelers and revolutionize the guest experience	\$1.36



Top 5 Airside Projects in 2019 - 2023

AIRPORT CODE	HUB SIZE	PROJECT NAME	PROJECT COSTS IN MILLIONS IN 2018 DOLLARS
EWR	L	Rehabilitation of Taxiway W (From Rm To U) And Portions Of Taxiways A and B Renewing and maintaining the Taxiways in a state of good repair and ensuring efficient, safe and secure operations	\$ 1,473
BWI	L	Airfield Reconstruction Airfield improvements on runways and taxiways, aircraft maintenance and support facilities to meet FAA standards, enhance airfield safety and efficiency, and accommodate existing and anticipated demand	\$ 524
ORD	L	Taxiway G Relocation Part of the massive runway relocation project to increase the airside capacity	\$ 478
CLT	L	Fourth Parallel Runway Part of the master plan to enhance the airfield capacity, including two end around taxiways and the relocation of portions of West Boulevard and Old Dowd Road	\$ 357
EWR	L	Terminal A Redevelopment – Airside Demolition and redevelopment of the existing Terminal A satellites, adjacent airfield system and all associated infrastructure	\$ 277



Top 5 Access To Terminal Projects in 2019 - 2023

AIRPORT CODE	HUB SIZE	PROJECT NAME	PROJECT COSTS IN BILLIONS IN 2018 DOLLARS
LAX	L	Automated People Mover: A 2.25 mile elevated guideway with 6 stations to solve the traffic congestion around the airport, part of LAX's Landside Access Modernization Program (LAMP)	\$ 2.56
LGA	L	Construction of Air Train: A proposed 1.5-mile-long people mover system and elevated railway to connect LGA with the NYC's subway and Long Island Rail Road (LIRR)	\$ 1.40
LAX	L	LAMP-Consolidated Rent-A-Car (ConRAC): A P3 project to relocate over 20 existing rental car locations scattered around the airport area to a 5.3 million-sqaure-feet facility, part of the LAMP	\$ 1.30
JFK	L	JFK Redevelopment: Infrastructural improvements to enhance the roadways on and off the airport	\$ 0.75
SAN	L	Airport Development Plan – Landside: A duel-level roadway and curbfront separating the departing and arriving traffic and a new on-airport entry roadway to divert traffic from the east	\$ 0.57



ACI-NA ESTIMATE OF AIRPORT INFRASTRUCTURE NEEDS

Table 1: Airport Infrastructure Cost Estimates by Year and Airport Category

Millions of Current Year Dollars

Airport Category	2019	2020	2021	2022	2023	2019-2023	Percent
Large hub	\$20,129	\$16,776	\$16,549	\$13,982	\$13,630	81,066	63.3%
Medium hub	\$3,142	\$2,705	\$3,313	\$3,441	\$4,935	17,537	13.7%
Small hub	\$2,385	\$1,999	\$1,651	\$2,043	\$1,319	9,398	7.3%
Non-hub	\$1,099	\$1,115	\$1,132	\$1,149	\$1,166	5,660	4.4%
Other*	\$2,809	\$2,851	\$2,893	\$2,937	\$2,981	14,471	11.3%
Total	\$29,563	\$25,446	\$25,539	\$23,551	\$24,032	128,131	100.0%

Source: ACI-NA Survey and FAA NPIAS Report.

*Note: "Other" includes non-commercial service airports and 7 proposed airports based on FAA NPIAS report (2019-2023).

As shown in Table 1, total infrastructure needs for each year from 2019 through 2023 range from \$23.6 billion in 2022 to \$29.6 billion in 2019⁵, with average annual needs of \$25.6 billion as shown in Table 2.

⁵ See appendix 3 for an explanation of how ACI-NA calculated airports' infrastructure development costs.

Table 2: Average Annual Cost Estimate from Published ACI-NA Infrastructure Needs Reports

Millions of Current Year Dollars

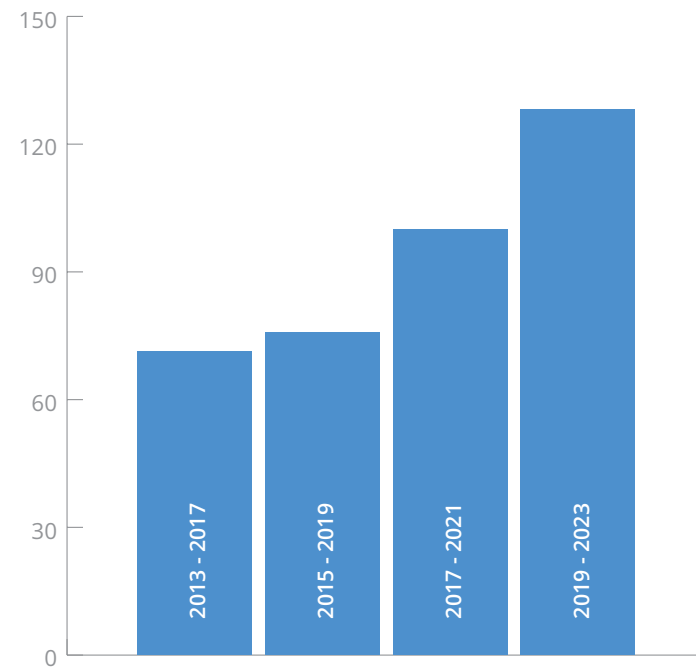
Estimate Period	Average Annual Infrastructure Needs	Percent Change from Previous Report
2019-23	\$25,626	28.3%
2017-21	\$19,974	31.9%
2015-19	\$15,148	6.3%
2013-17	\$14,254	-11.0%
2011-15	\$16,015	-15.1%

Source: ACI-NA Survey.

Table 2. Large hub airports account for the majority of these costs with 63.3 percent of the total followed by medium hub airports and non-commercial service/new airports.

Figure 1: 5-Year Total Airport Industry Infrastructure Needs Estimates from Published ACI-NA Infrastructure Needs Reports

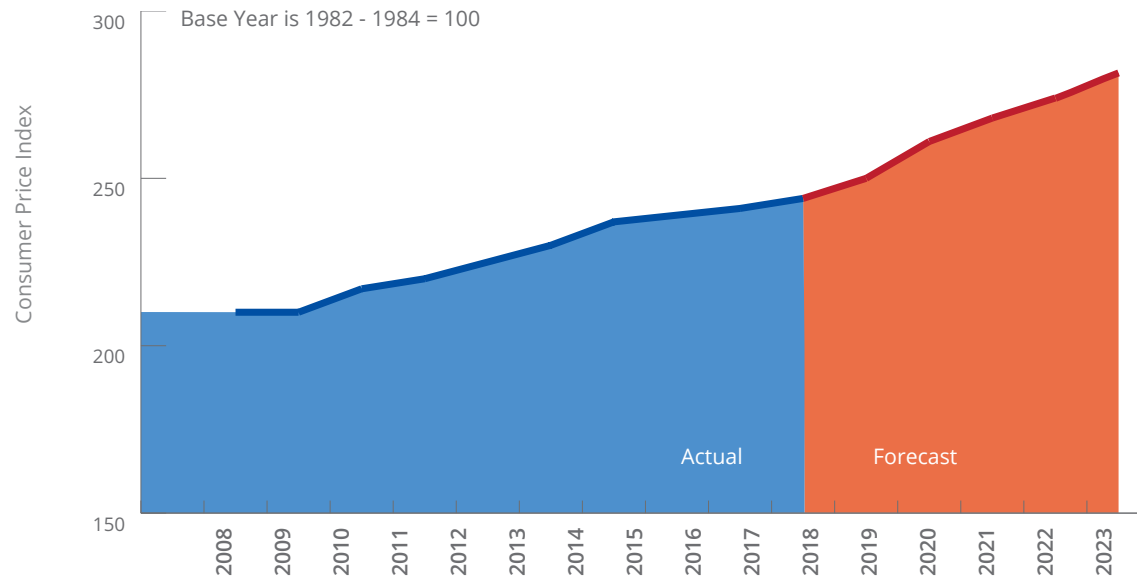
Billions of Current Year Dollars



Source: ACI-NA Survey.

Figure 1 shows a significant increase in airport infrastructure needs estimated for 2019-2023 in 2018, in response to the increasing travel demand and the need to upgrade aging infrastructure.

Figure 2: Consumer Price Index (CPI) Indicates Continued Inflation



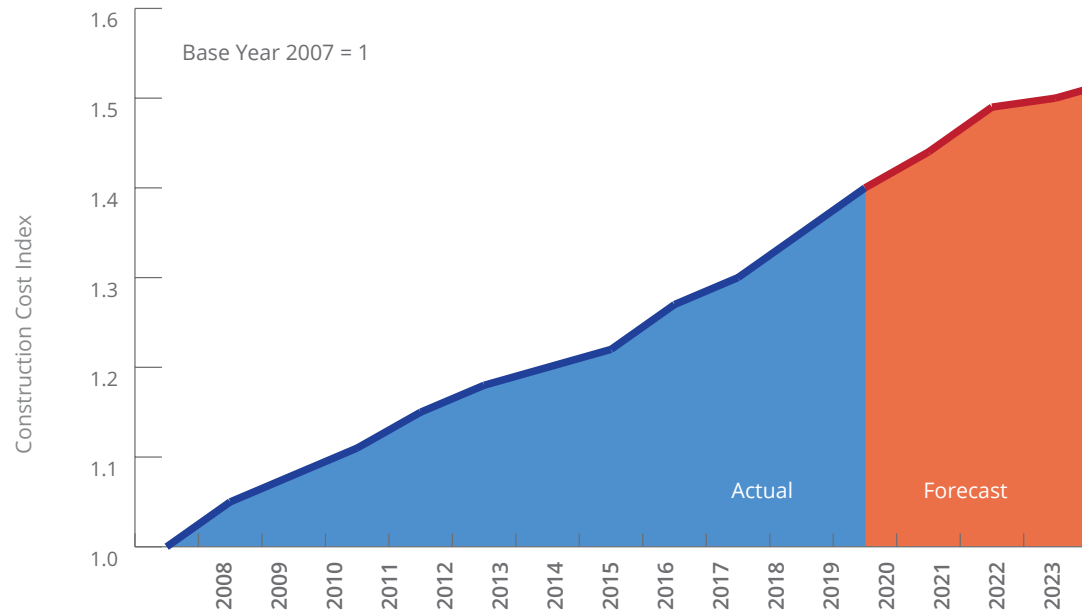
Year	Average Growth
2006-2011	1.8%
2012-2017	1.7%
FAA Forecast	
2017-2018	1.9%
2019-2023	2.2%
2018-2028	2.4%
2018-2038	2.4%

Source: Actual Consumer Price Index from the US Dept. of Labor, Bureau of Labor Statistics (All items in U.S. city average, all urban consumers, not seasonally adjusted). Forecast from the FAA 2018 Forecast Report, Table 2, based on IHS Global Insight 30-Year Forecast.

ACI-NA adjusted its infrastructure development cost estimate by 1.5 percent to account at least partially for inflation. As shown in Figure 2, inflation is projected to continue in the 2019 through 2023 development cost estimate period.

Compounding the general inflationary trend is the inflation rate for construction materials and components. As shown in Figure 3, the “ENR Construction Cost Index (CCI)”⁶ data shows significant construction cost escalation in recent years reaching above 4% in 2018. For the period 2019-2023, the predicted growth rate according to IHS Global Insight averages 2.0 percent.⁷

Figure 3: Construction Cost Experienced Significant Increase in Recent Years



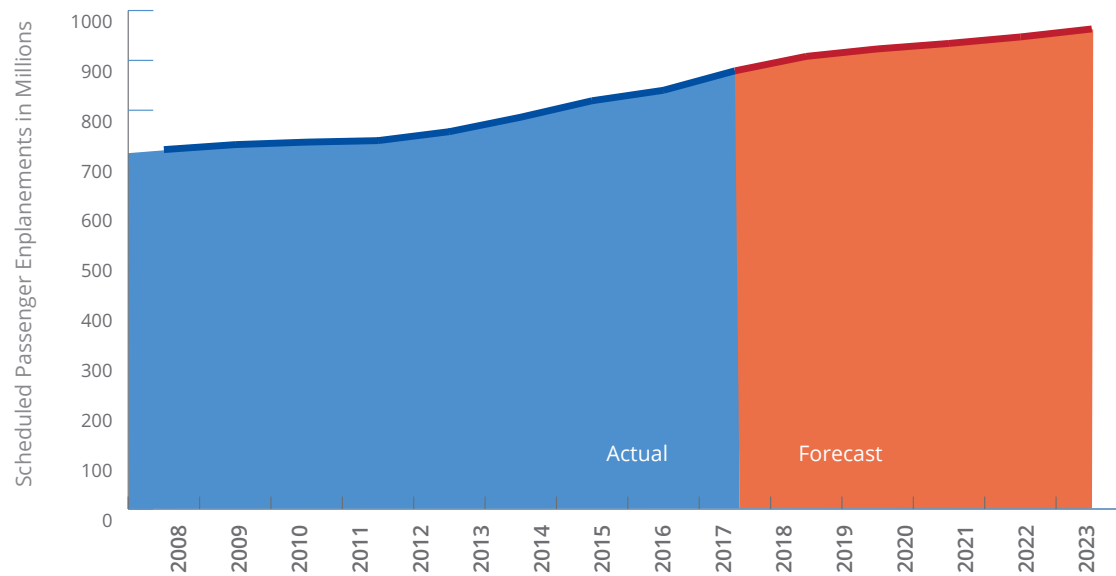
Source: Engineering News-Record/IHS Global Insight.

Year	% Change
2008	4.3
2009	3.1
2010	2.7
2011	3.1
2012	2.6
2013	2.6
2014	2.7
2015	2.3
2016	3.0
2017	3.9
Forecast	
2018	4.1
2019	2.8
2020	2.3
2021	1.8
2022	1.2
2023	1.8

As FAA points out in the 2019-2023 NPIAS report, airport infrastructure development needs are driven by current and forecasted traffic; use and age of facilities; and changing aircraft technology that requires airports to update or replace equipment and infrastructure.⁸

-
- 6 ENR Construction Cost Index, U.S. 20 City Average, Engineering News Record.
 - 7 IHS Global Insight Non-residential Construction Cost Index forecast as of March 2018.
 - 8 Executive Summary, FAA 2019-2023 NPIAS report.

Figure 4: FAA Forecasts Continued Strong Growth in Passengers

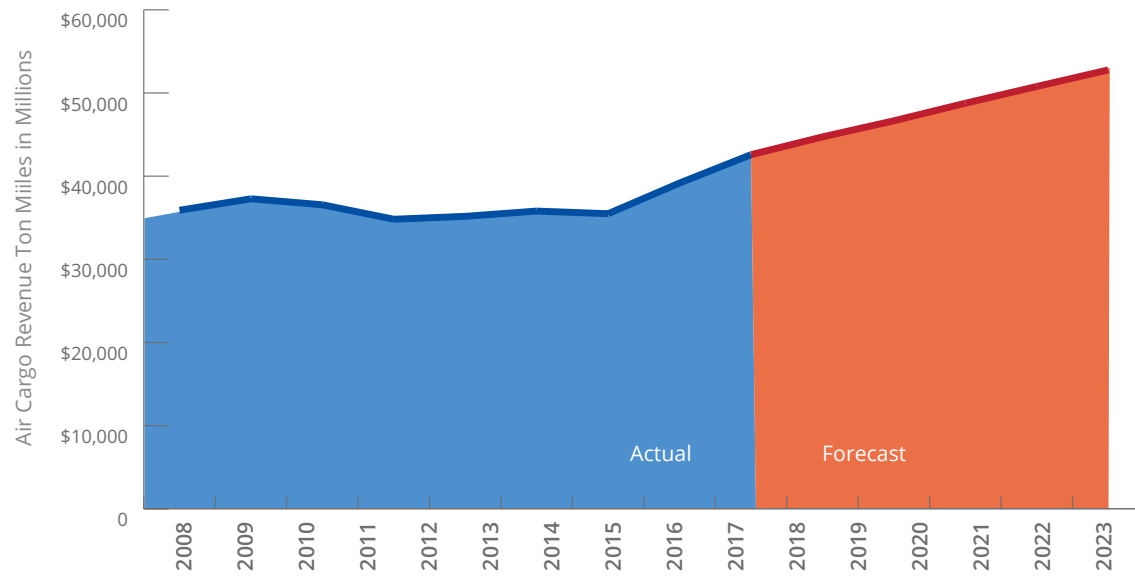


Source: FAA FY 2018-2038 Aerospace Forecasts, Table 5.

Year	Enplanements in Millions
2010	712.1
2011	731.1
2012	736.7
2013	739.5
2014	757.0
2015	786.5
2016	819.6
2017E	840.4
FAA Forecast	
2018	879.9
2019	908.7
2020	923.2
2021	934.1
2022	947.8
2023	963.5
2026	1,013.7
2038	1,283.7

The demand for passenger and cargo service will continue to grow, resulting in a corresponding increase in airport infrastructure development costs. The FAA’s Aerospace Forecast Fiscal Years 2018-2038 predicts that U.S. airlines will reach the one billion passengers-per-year mark by 2026. The industry is expected to grow from 840.4 million passengers in 2017 to 1.3 billion in 2038, as shown in Figure 4; and more than double the cargo traffic as measured by revenue ton miles, as shown in Figure 5.

Figure 5: FAA Forecasts Continued Growth in Air Cargo



Source: FAA FY 2018-2038 Aerospace Forecasts, Table 19.

Year	Revenue Ton Miles in Millions
2010	35,888
2011	37,277
2012	36,557
2013	34,818
2014	35,169
2015	35,801
2016	35,483
2017E	39,172
FAA Forecast	
2018	42,580
2019	44,722
2020	46,658
2021	48,768
2022	50,783
2023	52,774
2028	62,551
2033	75,065
2038	89,629



PROJECT DEVELOPMENT COSTS BY LOCATION AND TYPE

To help provide a broad perspective on the various infrastructure development projects that airports are considering for 2019 through 2023, ACI-NA asked respondents to provide information on project costs by location and type. Project location indicates whether projects are for the airside, terminal, or ground access areas of the airport. Project type indicates whether projects are for access to terminal, airfield capacity, airfield standards, terminal building development, environmental projects, airfield reconstruction, safety, security, or construction of a new airport.

Development Costs by Location⁹

As shown in Table 3, for 2019 through 2023, terminal projects represent 55.9 percent of the total infrastructure development costs for responding airports¹⁰, followed by airside projects that represent 22.2 percent of total costs and ground access projects that represent 22.0 percent of total costs. Compared to the 2016/17 estimates, terminal projects continue to represent over half of airports' infrastructure needs.

Table 3: Development Costs by Project Location

Project location	Percentage for all hub respondents	Percentage for large hub respondents	Percentage for medium hub respondents	Percentage for small hub respondents
Terminal	55.9%	58.2%	48.3%	44.9%
Airside	22.2%	20.2%	26.7%	38.6%
Ground Access	22.0%	21.6%	25.1%	16.5%
Total*	100%	78.7%	16.3%	5.0%

Source: ACI-NA Survey.

*Note: Summary excludes projects without a specified location code.

⁹ Includes all projects in this location. For example, projects located in terminal include all those in the terminal building including security projects.

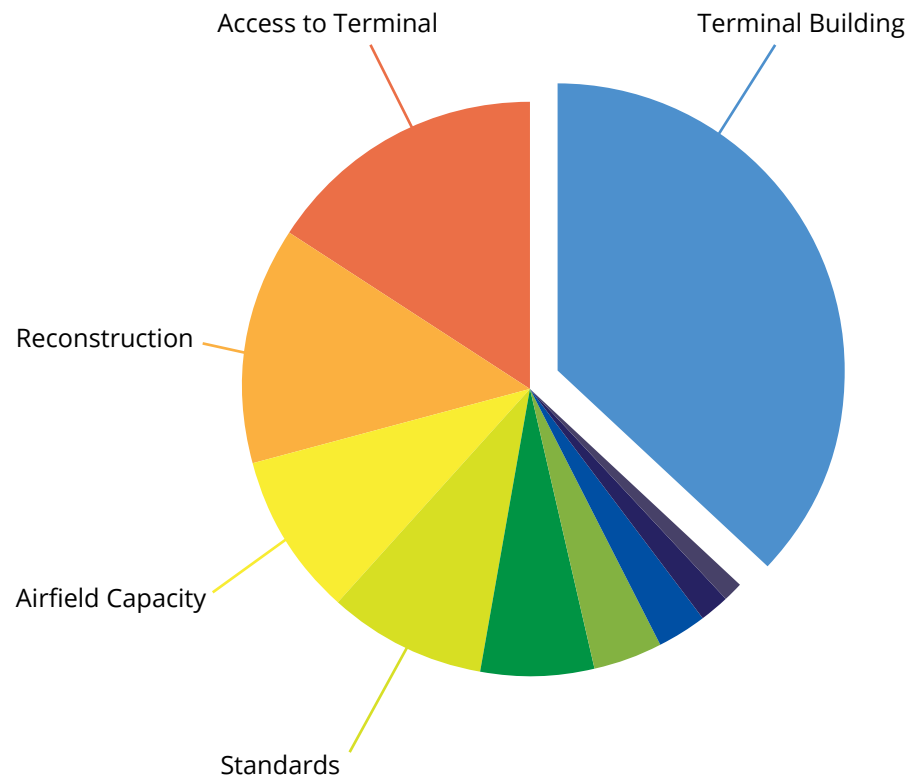
¹⁰ See Appendix 5 for a full list of airport respondents.

Development Costs by Project Type

Figure 6 shows that terminal building projects account for 37.1 percent of the total development needs of all airports for 2019 through 2023. Such projects are needed to accommodate more passengers and larger aircraft, implement new security requirements, facilitate increased competition among airlines, and enhance the passenger experience. Surface projects to improve access options and relieve ground access congestion make up 15.6 percent of all projected airport developments.

- Terminal Building 37.1%
- Access to Terminal 15.6%
- Reconstruction 13.5%
- Airfield Capacity 9.2%
- Standards 8.7%
- Other 6.4%
- New Airports 4.0%
- Safety 2.8%
- Environment 1.6%
- Security 1.2%

Figure 6: Airport Infrastructure Needs by Type of Development



Source: ACI-NA Survey.

As shown in Table 4, for 2019 through 2023 for large hub airports, terminal building projects are the dominant project type representing 46.1 percent of all projects, followed by access to terminal projects at 21.0 percent and capacity projects at 9.4 percent. Additionally, Salt Lake City reported having a terminal redevelopment program categorized as “new airport” to replace existing terminal facilities that were constructed 30 to 50 years ago and have reached the end of their useful life.

For medium hub airport respondents, terminal building projects are also the dominant project type, representing 33.1 percent of all projects followed by reconstruction projects at 16.7 percent. New Orleans and Burbank reported having a long-term infrastructure development plan that includes airport redevelopment categorized as “new airport”. Small hub airport respondents reported that their dominant project type is terminal building projects at 36.3 percent, followed by capacity projects at 16.9 percent.

Table 4: Development Costs by Project Type

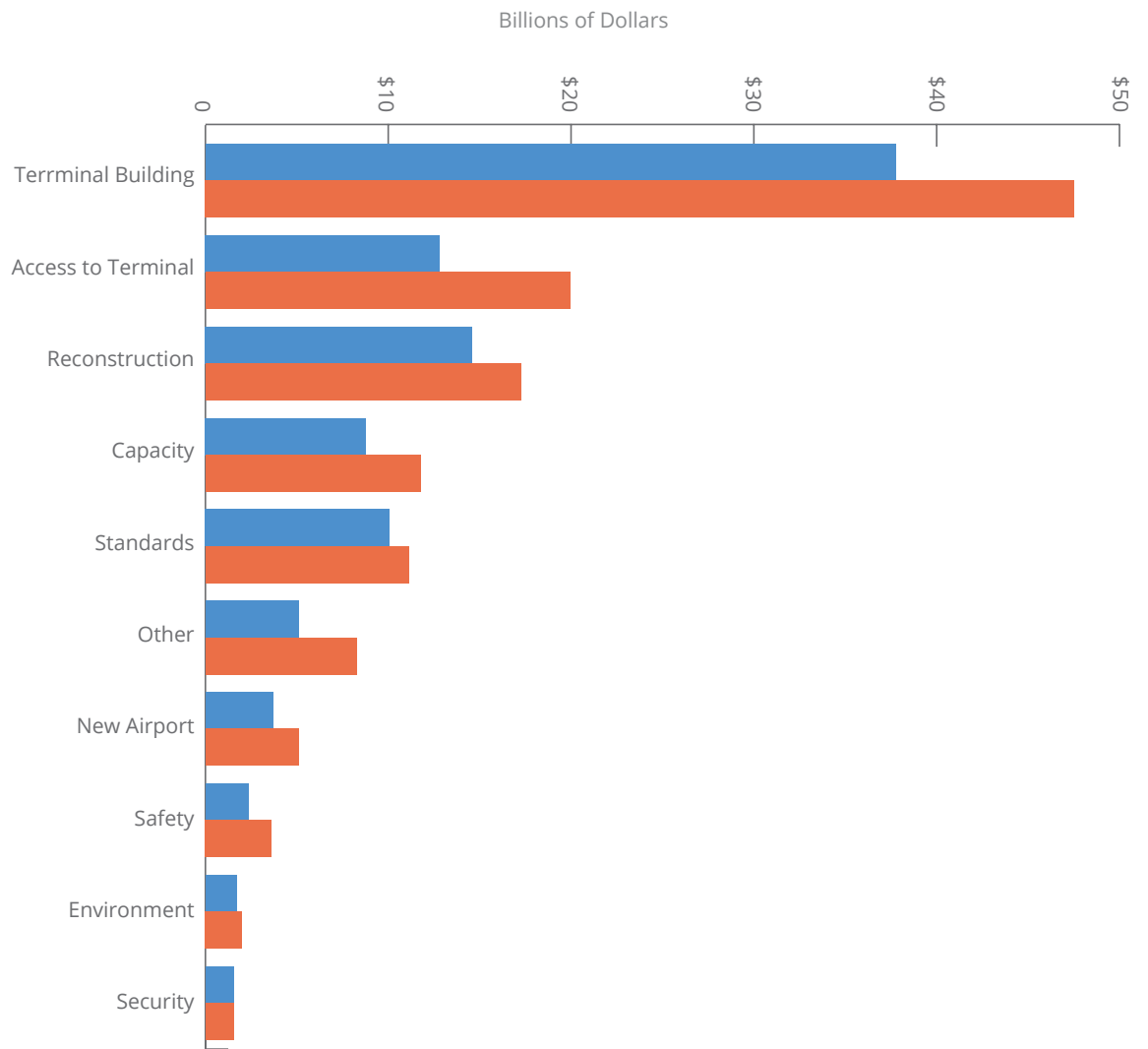
Airport Category	Safety	Security	Reconstruction	Standards	Environment	Capacity	Terminal Building	Access to Terminal	New Airports	Other	Total
Large hub	1.9%	1.3%	6.6%	1.9%	1.3%	9.4%	46.1%	21.0%	4.4%	6.1%	100%
Medium hub	6.0%	0.8%	16.7%	2.0%	0.9%	9.5%	33.1%	10.1%	7.1%	13.7%	100%
Small hub	3.7%	3.2%	14.8%	3.2%	6.0%	16.9%	36.3%	8.1%	0.0%	7.7%	100%
Non-hub	6.1%	0.4%	34.7%	38.2%	2.2%	3.2%	11.7%	2.7%	0.0%	0.8%	100%
Other	2.3%	0.2%	38.8%	47.0%	0.8%	5.0%	1.5%	1.5%	2.1%	0.8%	100%
Total	2.8%	1.2%	13.5%	8.7%	1.6%	9.2%	37.1%	15.6%	4.0%	6.4%	100%

Sources: Large, Medium and Small- ACI-NA Survey and Non-hub and Others-FAA NPIAS.

Figure 7: Change in Development Cost from 2016/2017 ACI-NA Report

Figure 7 shows that all projects except security have increased. Additionally, the FAA 2019-2023 NPIAS report identifies seven proposed airports that are anticipated to be developed over the five-year period, including two new primary airports and five non-primary airports.

- 2017 -2021
- 2019 - 2023



Project Spotlight:

SAN FRANCISCO INTERNATIONAL AIRPORT



IATA Code: SFO

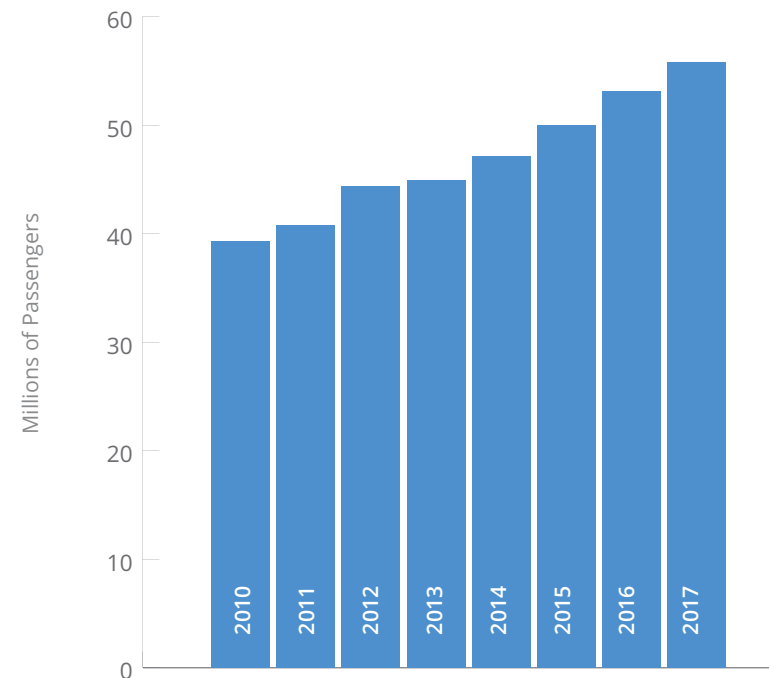
2017 Enplanements: 55,822,129

Hub Size: Large

San Francisco International Airport (California)

San Francisco International Airport is redeveloping Terminal 1, The Harvey B. Milk Terminal, one of its oldest terminals, to expand capacity to meet the needs of modern travelers and revolutionize the guest experience. Terminal 1 was built in the early 1960s and over time has become less able to accommodate the millions of passengers that it handles each year. The \$2.4 billion project includes design and construction of the pre-security concourse; post-security concourse improvements with better passenger circulation and integrated technology to facilitate the passenger journey; new boarding areas and passenger loading bridges; new concessions; new mezzanine with connections to the AirTrain, public transit, and the Central Parking Garage; and new post-security corridors connecting to other terminals at the airport.

Passenger Growth



Project Spotlight:

JOHN GLENN COLUMBUS INTERNATIONAL AIRPORT

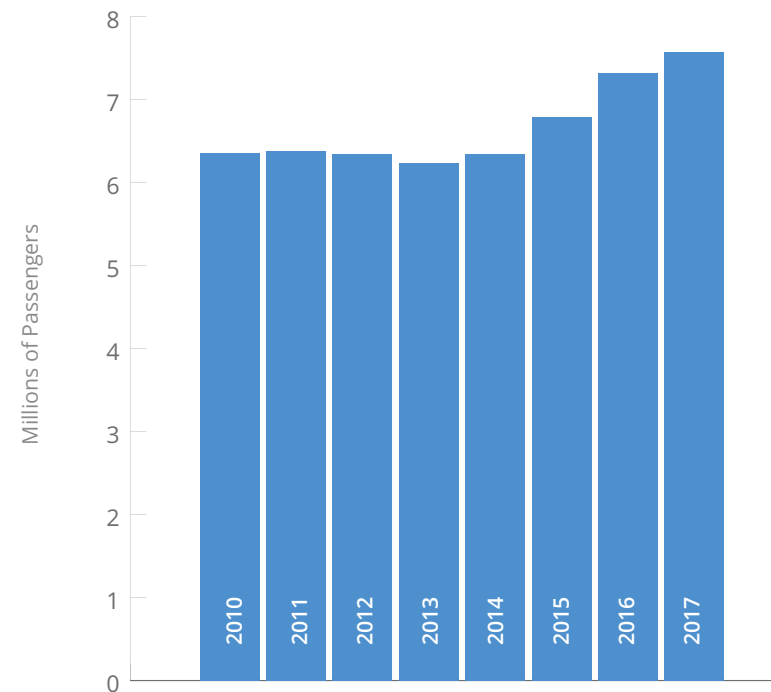


IATA Code: CMH
2017 Enplanements: 7,576,592
Hub Size: Medium

John Glenn Columbus International Airport (Ohio)

The John Glenn Columbus International Airport has developed a multibillion dollar redevelopment program – dubbed the “One International Gateway” project – that includes a new terminal, a new rental car facility, and increased airport parking. These key elements will greatly improve the overall traveler experience. The project also marks a bold new chapter in the region’s future as it will fuel new economic growth and solidify the region’s position as a key global gateway for Ohio. A year ago airport officials said they hoped a new terminal could be built in 15 to 18 years, but the current lack of available funding has pushed that date further back. The current terminal turned 60 earlier this year.

Passenger Growth



Project Spotlight:

DES MOINES INTERNATIONAL AIRPORT



IATA Code: DSM

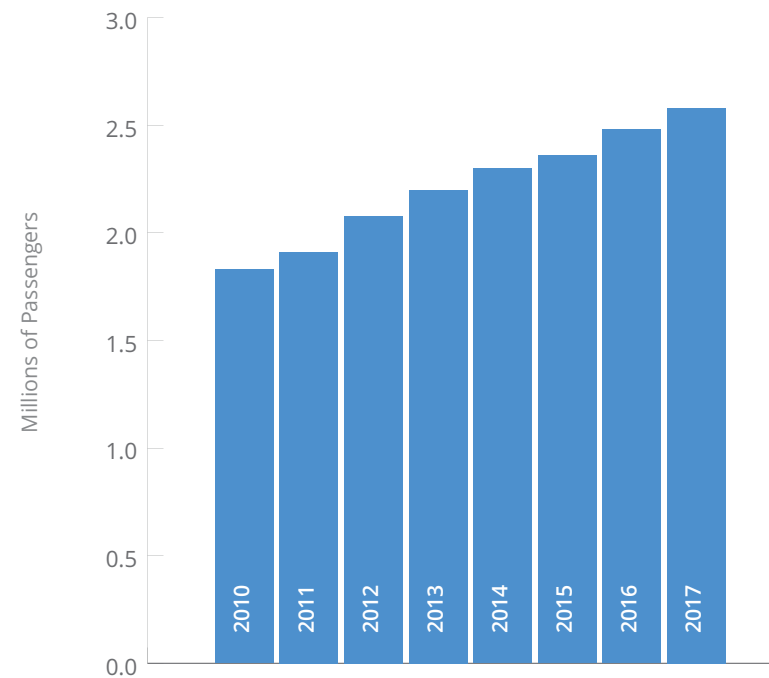
2017 Enplanements: 2,578,308

Hub Size: Small

Des Moines International Airport (Iowa)

The Des Moines International Airport has prepared a Terminal Area Concept Plan in support of needed improvements to its aging and overcrowded airport-terminal complex. The existing terminal building was first built in 1948, and although it has been subject to upgrades and improvements over the years to keep up with demand, it has reached the end of its useful economic life. The overall program calls for a new terminal with expanded ticketing, security checkpoints, and gates, as well as improvements to the airfield and ground-access to the airport. The airside improvements include runway and taxiway modifications, relocation of general aviation facilities, and expanding cargo and aircraft-maintenance facilities. The landside improvements include a complete overhaul of the roadway loop, modifications to existing parking and rental car facilities, and a new parking structure to better connect the new terminal to the remaining parking area.

Passenger Growth





COMPARISON OF ACI-NA AND FAA ESTIMATES

The ACI-NA Infrastructure Needs Survey is far more comprehensive than the FAA NPIAS survey, which is also issued every two years. It is critical to understand the differences between the ACI-NA and FAA estimates because of the importance of the data in both surveys in developing federal policy for funding airport development.

The ACI-NA estimate of \$128.1 billion is greater than the FAA NPIAS estimate of \$35.1 billion for several reasons:¹¹

- First, the ACI-NA estimate includes all future projects, while the FAA estimate includes only future AIP-eligible projects. Thus, the ACI-NA estimate captures projects not included in the NPIAS report, such as:
 - Development eligible under the PFC program but ineligible under the AIP grant program, such as terminal areas related to the movement of passengers and their baggage, but leased by airlines (holdrooms, baggage claim, baggage makeup, etc.);
 - AIP-ineligible projects, including parking facilities, hangars, cargo buildings, the revenue producing portions of passenger terminals, and certain improvements to highway and transit airport access systems;
 - AIP-eligible projects that airports did not report to the FAA because the airport believes there is a low probability of obtaining additional AIP discretionary grants; and
- Airport-funded air traffic control facilities and airport or TSA-funded security projects such as the in-line checked baggage screening system;
- Second, the FAA estimate includes only those projects that do not yet have an identified funding source, whereas the ACI-NA estimate includes all projects, whether or not they have an identified funding source. This results in current projects with approved PFC collections not being included in the NPIAS report;¹²
- Third, the ACI-NA estimate uses more recent data than that used by the FAA;
- Fourth, the ACI-NA estimate is adjusted for inflation, while the FAA estimate is not;¹³ and
- Fifth, the ACI-NA estimate includes contingency costs (the common practice of provisioning for increases in costs based on changes in design or construction uncertainty) while the FAA estimate does not.¹⁴

For example, the cost for projects at large hub airports in the NPIAS totals \$8.3 billion while the ACI-NA estimate totals \$81.1 billion. Within this category, the NPIAS totals \$1.4 billion for terminal building type projects while the ACI-NA estimate totals \$37.4 billion. The difference in this case is because the NPIAS generally does not include gates and related areas, or the

revenue generating portions of terminals such as development of facilities for non-aeronautical revenue. Additionally, even though FAA estimates that about 50 to 60 percent of the overall costs of terminal projects are eligible for AIP grants, airports do not typically report terminal projects to FAA due to the low probability of getting federal grants for such projects.

The ACI-NA and FAA estimates are the two main sources for Congress and other stakeholders to review in considering the funding necessary for airport infrastructure development going forward. As in the past, decisions on funding reach well beyond the actual authorization period and impact the infrastructure improvements that can be achieved to address aviation demand. Additionally, these decisions have a direct and long-term bearing on the ability of communities to generate jobs and commerce as well as ensure our nation's competitive position in the global economy.

11 Both the ACI-NA and the FAA estimates are for 2019 through 2023. The ACI-NA survey was completed in 2018 and stated in current year dollars and the FAA estimate is based on airport master and state system planning documents available through FY2017 in 2017 constant dollars.

12 See page iv of the FAA NPIAS Report 2019-2023 and page vii of the FAA NPIAS Report 2015-2019.

13 See page iv of the FAA NPIAS Report 2019-2023.

14 See page iv of the FAA NPIAS Report 2019-2023.

CONCLUSION

The infrastructure development cost estimate for 2019-2023 shows an increase of 34.0 percent from the estimate for 2017-2021 for large, medium, and small hub airports combined, and a 4.3 percent increase for non-hubs and non-commercial service airports. The improving economic environment, increasing passenger travel, and aging infrastructure have caused airports to plan or begin additional infrastructure projects that were previously postponed or canceled.

Airport infrastructure development needs are driven by current and forecasted aviation activity; use and age of airport facilities and the need to modernize aging infrastructure; and changing aircraft technology that requires airports to update or replace equipment and infrastructure. Airport infrastructure needs are not only correlated with passenger and cargo activity levels, but are also affected by how airlines use airport infrastructure. Airport operators have a responsibility to make needed investments in modernizing aging airport facilities so that they can ensure efficient, safe and secure operations for aeronautical users and the traveling public as well as facilitate airline competition. Failure to make adequate investments in infrastructure will diminish the ability of airports to fully serve as growth engines for the public and communities across the United States.

It is important to understand that the existing funding system fails to meet U.S. airport infrastructure needs for modernizing and expanding airport capacity. Failure to meet the future infrastructure needs of airports will impair the ability of the U.S. economy to grow and compete globally.



The existing funding system **fails to meet** U.S. airport infrastructure needs for modernizing and expanding airport capacity.



Infrastructure Needs 2019 - 2023

Top 10 Airports by Infrastructure Needs

Airport Code	Total Need 2019-2023 In Billions
LAX	\$ 13.02
EWJ	\$ 5.46
JFK	\$ 5.34
SFO	\$ 4.68
MCO	\$ 3.66
LGA	\$ 3.50
ORD	\$ 3.32
SLC	\$ 3.05
ATL	\$ 2.67
BWI	\$ 2.57



Top 5 Large Hubs by Infrastructure Needs

Airport Code	Total Need 2019-2023 In Billions
LAX	\$ 13.02
EWJ	\$ 5.46
JFK	\$ 5.34
SFO	\$ 4.68
MCO	\$ 3.66



Top 5 Medium Hubs by Infrastructure Needs

Airport Code	Total Need 2019-2023 In Billions
AUS	\$ 2.10
SJC	\$ 2.09
BNA	\$ 1.61
PIT	\$ 1.39
BUR	\$ 1.21



Top 5 Small Hubs by Infrastructure Needs

Airport Code	Total Need 2019-2023 In Millions
MEM	\$ 584
DSM	\$ 428
RNO	\$ 380
CHS	\$ 366
GEG	\$ 272

APPENDIX 1: SCOPE AND METHODOLOGY

The 2018 ACI-NA Survey was based on the 2016/17 survey instrument that was developed with input from the FAA and the GAO. This included the various definitions in the survey, such as project type codes.

ACI-NA surveyed all of its airport members in the United States. Eighty-six (86) airports responded. ACI-NA staff followed up with respondents as necessary to answer questions about the survey and ensure the accuracy of respondents' answers.

Respondents were asked to identify all infrastructure development projects and associated costs for calendar years 2019 through 2023, and to report these costs in 2018 constant year dollars. Costs included interest, construction and management costs, architectural and engineering costs, and contingency costs. Costs for multi-year projects were listed in the year when the money was expected to be spent.

Information on costs for infrastructure development projects were divided into two sections: committed and uncommitted. For each section, airports were requested to list the ten largest projects in terms of costs and list the rest of the project costs as "all other projects."

Committed projects included those projects for which financing was secured or was expected to be secured, and environmental and other required approvals had been obtained or were expected to be obtained. These are projects that airlines supported or will not block through such actions as Majority in Interest (MII) veto/disapproval.

Uncommitted projects included projects in airport master, layout, or capital plans that are essential to meet current or future air traffic growth and facility demand, but that could not proceed due to inadequate funding. Respondents were specifically asked to include only projects they expected the airlines would support or would not block through such actions as MII disapproval, and for which they expected to obtain all environmental and other approvals.

For both committed and uncommitted projects, respondents were asked to identify projects by location and type. Location codes included whether a project was airside, terminal, or ground access. Type codes included whether a project was access to terminal, airfield capacity, airfield standards, environment, new airport, airfield reconstruction, safety, terminal, or security. To ensure the ACI-NA data was fully comparable with the FAA, ACI-NA used the same definitions for project type as the FAA uses in its NPIAS. In cases where multiple codes applied for either project location or type, respondents were asked to provide the cost percentage for each code.

APPENDIX 2: BACKGROUND

Airports Council International-North America (ACI-NA) regularly updates its estimate of infrastructure development needs for the airports that comprise the national airport system of the United States, as defined by the Federal Aviation Administration (FAA).

The national airport system is composed of 3,328 airports, ranging from the largest commercial service airports to small general aviation airports. Development projects at these airports generally fall within five categories: (1) expanding an airport's capacity beyond its current design to meet growth in demand for aviation services; (2) upgrading infrastructure to accommodate the introduction of different aircraft types; (3) reconstructing aging airport infrastructure; (4) bringing an airport up to FAA-mandated design standards to achieve full productivity of aircraft using the airport; and (5) addressing safety, security, and environmental concerns.

ACI-NA conducts its assessment using the FAA's airport classifications. Definitions of the FAA's airport classifications used in this report are included in Appendix 4.



APPENDIX 3: HOW ACI-NA CALCULATED INFRASTRUCTURE DEVELOPMENT COSTS

ACI-NA calculated airports' infrastructure development needs using the ACI-NA survey and the FAA NPIAS. Specifically, ACI-NA used its survey data to calculate costs for large, medium, and small hub airports and used the FAA NPIAS data to calculate costs for non-hub, commercial service, reliever, and general aviation airports. ACI-NA also used FAA 2017 enplanement data, which is the latest available information, to make calculations.

The total infrastructure development costs for large, medium, and small hub airports were based on responses from 30 large hub, 26 medium hub, and 30 small hub airports. As shown in Table 5, this represents 100 percent of all passengers enplaned at large hubs, 87.3 percent of all passengers enplaned at medium hubs, and 51 percent of all passengers enplaned at small hubs in 2017.

Table 5: ACI-NA Sample Compared to Industry

Airport Category	Number of Respondents	Total Number of Airports in the Category	Respondents Percentage of all Airports in the Category	Respondents Percentage of Total 2017 Enplanements in the Category	Respondents Percentage of Total 2017 Enplanements
Large hub	30	30	100%	100%	72.0%
Medium hub	26	31	83.8%	87.3%	14.1%
Small hub	30	72	41.6%	50.5%	4.2%
Non-Hub	2	247	-	-	-
Other	-	2,941	-	-	-
Total	86	3,321*	-	-	90.3

*Note: From FAA NPIAS Report.

Table 6: ACI-NA Sample Infrastructure Development Costs Per Enplanement

Airport Category	Total Costs for 2019-2023 in Millions of 2018 Constant Dollars	Total 2017 Enplanement by Category	Cost per Enplanement in 2018 Constant Dollars
Large hub	77,767	617,598,283	125.9
Medium hub	14,596	121,346,294	120.3
Small hub	4,556	35,852,306	127.1

Source: ACI-NA Survey.

As shown in **Table 6**, ACI-NA then calculated the total infrastructure development costs per 2017 enplanement for the respondent large, medium, and small hub airports.

Table 7: Total Infrastructure Development Costs Estimate for Large, Medium, and Small Hub Airports

Airport Category	Total Number of Airports by Category in National Airport System	Total 2019 - 2023 Infrastructure Development Costs in Millions of 2018 Constant Dollars	Percentage of Total
Large hub	30	77,767	63.5%
Medium hub	31	16,713	13.6%
Small hub	72	9,019	7.4%
Non-hub	247	5,332*	4.4%
Other	2941	13,631*	11.1%
Total	3,321	122,462	100.0%

Source: ACI-NA Survey.

As shown in **Table 7**, this cost per enplanement in 2018 constant dollars was then used as the unit cost to estimate the infrastructure development costs for all medium and small hub airports. No estimate was needed for large hubs with 100 percent response rate.

Table 8: Total Infrastructure Development Costs Estimate (In 2018 Constant Dollars)

Airport Category	Total Number of Airports by Category in National Airport System	Total 2019-2023 Infrastructure Development Costs in Millions of 2018 Constant Dollars	Percentage of Total
Large hub	30	77,767	63.5%
Medium hub	31	16,713	13.6%
Small hub	72	9,019	7.4%
Non-hub	247	5,332*	4.4%
Other	2941	13,631*	11.1%
Total	3,321	122,462	100.0%

*Note: From FAA NPIAS Report

Table 8 shows the total infrastructure development costs for all airports in the national airport system in 2018 constant dollars using the ACI-NA estimate for large, medium, and small hub airports and the FAA NPIAS data for non-hub, commercial service, reliever, and general aviation airports. ACI-NA used the NPIAS data due to the small number of non-hub, commercial service, reliever, and general aviation airports in the ACI-NA survey sample.

Taking the escalation of construction costs into consideration, ACI-NA made a 1.5 percent inflation adjustment to the total estimate in 2018 constant dollars to reflect total infrastructure needs in current year dollars. As shown in Table 1, total industry infrastructure needs are estimated to be \$128.1 billion in current year dollars. Average annual infrastructure needs for the years 2019 through 2023 as shown in Table 2 are 28.3 percent higher than for the years 2017-2021 estimated in the ACI-NA survey done almost two years ago.

Besides calculating the total developments costs, ACI-NA also calculated development costs by project type. To do this ACI-NA first determined the percentage distribution by project type using ACI-NA survey results for large, medium, and small hub airports and using the NPIAS data for non-hub and all other airports. As shown in Table 9, the project type percentage distribution was then multiplied by the total industry estimate for each category of airport to determine the total costs by project type.

Table 9: ACI-NA Total Costs by Project Type

Airport Category	Safety	Security	Reconstruction	Standards	Environment	Capacity	Terminal Building	Access	New Airports	Other	Total	Percent
Large Hub	1,549	1,075	5,359	1,523	1,045	7,601	37,377	17,040	3,541	4,956	81,066	63.3%
Med. Hub	1,037	130	2,940	334	148	1,669	5,852	1,778	1,241	2,408	17,537	13.7%
Small Hub	349	303	1,387	304	567	1,588	3,413	758	2	727	9,398	7.3%
Non-hub	346	20	1,962	2,164	122	183	663	155	-	46	5,660	4.4%
Other	335	24	5,612	6,805	117	718	224	218	299	119	14,471	11.3%
Total	3,615	1,552	17,260	11,130	1,999	11,758	47,530	19,948	5,083	8,256	128,131	100.0%
Percent	2.8%	1.2%	13.5%	8.7%	1.6%	9.2%	37.1%	15.6%	4.0%	6.4%	100.0%	

Millions of Current Year Dollars

Source: ACI-NA Survey and FAA NPIAS Report.

APPENDIX 4: FAA DEFINITIONS OF AIRPORT CATEGORIES

FAA defines airports by categories of airport activities, including commercial service, primary, reliever, and general aviation airports:

Airport Classifications		Hub Type: Percentage of Annual Passenger Boardings	Common Name
Commercial Service: Publicly owned airports that have at least 2,500 passenger boardings each calendar year and receive scheduled passenger service §47102(7)	Primary: Have more than 10,000 passenger boardings each year §47102(11)	Large: 1% or more	Large Hub
		Medium: At least 0.25%, but less than 1%	Medium Hub
		Small: At least 0.05%, but less than 0.25%	Small Hub
		Non-hub: More than 10,000, but less than 0.05%	Non-hub Primary
	Nonprimary	Non-hub: At least 2,500 and no more than 10,000	Nonprimary Commercial Service
Nonprimary (Except Commercial Service)		Not Applicable	Reliever §47102(18)

Definition of Airport Categories

1 Commercial Service Airports

Commercial Service Airports are publicly owned airports that have at least 2,500 passenger boardings each calendar year and receive scheduled passenger service. Passenger boardings refer to revenue passenger boardings on an aircraft in service in air commerce whether or not in scheduled service. The definition also includes passengers who continue on an aircraft in international flight that stops at an airport in any of the 50 States for a non-traffic purpose, such as refueling or aircraft maintenance rather than passenger activity. Passenger boardings at airports that receive scheduled passenger service are also referred to as Enplanements.

1. **Nonprimary Commercial Service Airports** are Commercial Service Airports that have at least 2,500 and no more than 10,000 passenger boardings each year.
2. **Primary Airports are Commercial Service Airports** that have more than 10,000 passenger boardings each year. Hub categories for Primary Airports are defined as a percentage of total passenger boardings within the United States in the most current calendar year ending before the start of the current fiscal year. For example,

calendar year 2001 data are used for fiscal year 2003 since the fiscal year began 9 months after the end of that calendar year. The table below depicts the formulae used for the definition of airport categories based on statutory provisions cited within the table, including Hub Type described in 49 USC 47102.

2 Reliever Airports

Reliever Airports are airports designated by the FAA to relieve congestion at Commercial Service Airports and to provide improved general aviation access to the overall community. These may be publicly or privately-owned.

3 General Aviation Airports

General Aviation Airports are the largest single group of airports in the U.S. system. The category also includes privately owned, public use airports that enplane 2500 or more passengers annually and receive scheduled airline service.

Please note that in this report, ACI-NA defines airport category based on FAA calendar year 2017 enplanements, while the latest FAA NPIAS report for 2019-2023 categorized airports based on FAA Calendar Year 2016 enplanements.

Number of Airports for Each Airport Category for CY 2017 and 2016

Airport Category	2017	2016
Large Hub	30	30
Medium Hub	31	31
Small Hub	70	72
Non-hub	255	247
Non-primary Commercial Service	126	126
Reliever	261	261
General Aviation	2,554	2,554
Subtotal	3,327	3,321



APPENDIX 5: ABOUT THIS REPORT

ACI-NA thanks its member airports for their contribution and input to this report. Without their participation, ACI-NA would not have been able to create this report and the important information on the airport development costs required for the national airport system of the United States.

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