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AIRPORT COOPERATIVE RESEARCH PROGRAM

ACRP RESEARCH REPORT 218

Building and Maintaining Air Service Through Incentive Programs

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AIRPORT COOPERATIVE RESEARCH PROGRAM

Airports are vital national resources. They serve a key role in transportation of people and goods and in regional, national, and international commerce. They are where the nation's aviation system connects with other modes of transportation and where federal responsibility for managing and regulating air traffic operations intersects with the role of state and local governments that own and operate most airports. Research is necessary to solve common operating problems, to adapt appropriate new technologies from other industries, and to introduce innovations into the airport industry. The Airport Cooperative Research Program (ACRP) serves as one of the principal means by which the airport industry can develop innovative near-term solutions to meet demands placed on it.

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ACRP was authorized in December 2003 as part of the Vision 100—Century of Aviation Reauthorization Act. The primary participants in the ACRP are (1) an independent governing board, the ACRP Oversight Committee (AOC), appointed by the Secretary of the U.S. Department of Transportation with representation from airport operating agencies, other stakeholders, and relevant industry organizations such as the Airports Council International-North America (ACI-NA), the American Association of Airport Executives (AAAE), the National Association of State Aviation Officials (NASAO), Airlines for America (A4A), and the Airport Consultants Council (ACC) as vital links to the airport community; (2) TRB as program manager and secretariat for the governing board; and (3) the FAA as program sponsor. In October 2005, the FAA executed a contract with the National Academy of Sciences formally initiating the program.

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Primary emphasis is placed on disseminating ACRP results to the intended users of the research: airport operating agencies, service providers, and academic institutions. ACRP produces a series of research reports for use by airport operators, local agencies, the FAA, and other interested parties; industry associations may arrange for workshops, training aids, field visits, webinars, and other activities to ensure that results are implemented by airport industry practitioners.

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FOREWORD

By Joseph D. Navarrete
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ACRP Research Report 218: Building and Maintaining Air Service Through Incentive Programs (herein after referred as the Guidebook) offers advice for using incentive programs for growing and maintaining commercial air service. The development, execution, and monitoring of air service incentive programs can be complex, involve multiple stakeholders, and must address federal compliance issues. The Guidebook will help airports and communities gain a better understanding of the opportunities and limitations of air service incentive programs, assess potential benefits and risks, and develop a program that addresses their unique goals.

Airports and the communities they serve view robust air service as an important element for economic well-being and overall quality of life. Incentive programs are often used to encourage airlines to maintain or augment service to a community. Recent airline industry trends, including airline consolidation, use of larger aircraft, the rise of ultra-low-cost airlines, and challenges with pilot supply as well as regulatory and policy developments, have affected the significance of these programs. Research was needed to objectively evaluate patterns in the use of air service incentive programs and to provide advice for airports and communities considering their use.

The research, led by a team from GRA, Incorporated, began with a review of recent trends in air service, incentives, regulations, and policies. Next, the team developed a comprehensive database of airports, incentives, air service levels, and regional economic activity. The database was used to conduct statistical analyses to identify correlations between the use of incentives and changes to air service and a region's economy. The research also used case studies featuring a cross section of airport and community sizes, incentives [e.g., fee or rent waivers, baggage handling services, marketing assistance, minimum revenue guarantees (MRGs), and travel banks], incentive sponsorship strategies (airport-led, community-led, or partnerships), airline types (legacy or low-cost), and types of air service (domestic or international). To ensure a balance of perspectives, the research team obtained input from airport management, tourism and visitor bureaus, chambers of commerce, economic development officials, metropolitan planning organizations, business owners, airline route planners, and air service consultants. Based on the results of this research, the team developed the advice contained in this Guidebook.

The Guidebook begins with an overview of common air service incentives offered by airports and communities. It then summarizes how incentive programs have affected air service and economic activity. Because the FAA and airlines are closely involved in incentive programs, the Guidebook features a discussion of FAA compliance issues in a question and answer (Q&A) format and a summary of how airlines view incentives.

The Guidebook concludes with a valuable "lessons learned" section to help airports and communities decide if incentives might be appropriate, and, if so, which ones might be most effective. The accompanying Contractor's Final Technical Report, available on the TRB website (www.trb.org) by searching for "ACRP Research Report 218," provides detailed findings from the research, including the statistical analyses and the perspectives offered by the stakeholders contacted during the case studies. A geographic information system (GIS) database tool, available at https://arcg.is/vKmyr, is an interactive map based on the airport database previously described. Users can display the use of specific types of incentives by airport and select individual airports to display a callout box summarizing airport and community characteristics along with the types of incentive that have been used.

CONTENTS

Note: Photographs, figures, and tables in this report may have been converted from color to grayscale for printing. The electronic version of the report (posted on the web at www.trb.org) retains the color versions.

CHAPTER 1

Introduction

Background

The evolution of the U.S. commercial air passenger industry has included important changes in the service and business strategies used by the airline industry and equally important changes in the ways in which airports and the communities they serve have responded to an evolving air service environment. For airports, and especially for communities, the air service options available to residents and potential visitors are fundamental to their connectedness to the national and global economy. At the same time, airlines must choose between many alternative routes and markets within which their fleets can be deployed. Because of this, airports and the communities they serve have increasingly offered air service incentives to influence these airline decisions and encourage new services by mitigating some of the financial risks that new services can create for airlines.

One objective of the ACRP Project 03-44 research was to develop a guidebook to help decision-makers and practitioners from airports and communities make better use of air service incentives to maintain and build their commercial air service. The result is *ACRP Research Report 218: Building and Maintaining Air Service Through Incentive Programs* (herein after referred to as the Guidebook). Chapter 2 of this Guidebook focuses on the details of air service incentives and their use in the United States. The Guidebook also summarizes material contained in the Contractor's Final Technical Report and reproduces important sections of the Technical Report in full. The Technical Report can be found on the TRB website (www.trb.org) by searching for "*ACRP Research Report 218*." The Guidebook provides the following information:

- A summary of key current issues and emerging trends influencing air service in the United States, from evolving airline business models to economic and regulatory factors affecting airline fleets and labor issues
- Information and analysis of the recent use of air service incentives by U.S. airports and communities, including links to an online database (https://arcg.is/vKmyr) of air service incentive programs recently offered by airports and communities of all sizes
- Background on the FAA's regulatory guidelines and policies that should guide and inform the structure and use of incentive programs, particularly those funded by airports and airport sponsors
- Analysis and insights from airline senior managers with their perspectives on selecting and using incentives offered by airports and communities
- A summary of modeling results that quantify the links between the use of air service incentives and changes in airport activity, and the economic impacts that can be associated with these changes in airport activity
- The lessons learned from the research and interviews completed in this project

The work presented in this Guidebook, together with the accompanying online database, will enable airports and communities to better understand the ways in which incentive programs are being used at other airports that they might regard as competitors or peers. It will also allow airports and communities to better understand the perspectives of other aviation system stakeholders (i.e., the FAA and the airline community) vis-à-vis incentives.

Summary of Current and Emerging Trends Influencing Air Service in the United States

This section contains a summary of the current and emerging trends influencing air service in the United States. These data and trends are presented in greater detail in the Technical Report.

There were significant changes in the U.S. aviation industry, especially in the distribution of commercial passenger activity among airports over the 18 years between 2000 and 2018. These changes—driven by changes in airline economics, in the structure of the airline industry, and the composition and capabilities of airline fleets—led to new challenges for many airports. Widening use of air service incentives by airports and communities has been an important response to these changes.

- Total departing seats at U.S. airports in 2018 were only 0.5% lower compared with their number in 2000, but over those 18 years, the distribution of seats among airports changed significantly.
  - Seat departures from large hubs increased 8% from 2000 to 2018. (Large hub airports, as defined by the FAA, are those airports with more than 1% of total passenger boardings in a given year. In 2017, there were 30 large hub airports. The 31 medium hubs in 2017 were the airports with passenger boardings between 0.25% and 1% of the national total. Small hubs—71 in 2017—are those airports with between 0.05% and 0.25% of total annual passenger boardings. Finally, nonhub airports are the 249 airports in 2017 with between 10,000 passenger boardings and 0.05% of total passenger boardings.)
  - In contrast, at medium hubs, small, and nonhub airports, seat departures fell 17%, 13%, and 22%, respectively.
- Over these years, U.S. airlines came to operate larger aircraft on average. As a result, while departing seats were approximately flat in aggregate, the number of annual commercial passenger flights fell 18%, from 10.9 million in 2000 to 9 million in 2018; however, the magnitude of the reduction varied significantly by airport size.
  - Flight departures from large hubs fell only 7% from 2000 to 2018.
  - Between 2000 and 2018, flight departures from medium, small, and nonhubs fell 35%, 32%, and 47%, respectively.
- These changes meant there was much less flight activity at smaller airports than there had been at the start of the century.

Business and security challenges arising from the 9/11 attacks, fuel price volatility, industry turmoil, and the Great Recession led to equally significant changes in the airline industry. These changes have affected the types of service available to airports serving smaller markets.

- Upgauging to larger aircraft sizes within both the regional aircraft fleet and the narrowbody fleet between 2000 and 2018 resulted in increased average aircraft seat size on flights at all airport sizes, with aircraft at large hubs rising from an average of 117 seats in 2000 to 133 seats per aircraft in 2018. The size of aircraft using medium hubs rose from an average of 100 seats in 2000 to 123 seats in 2018, those serving small hubs rose from an average of 80 seats per aircraft to 98, and aircraft using nonhubs rose from an average of 40 seats per aircraft to 57 by 2018.

- Changes in the regional jet fleet in this 18-year period were especially noteworthy. In 2007, there were about 1,300 small regional jets (defined as those with 50 or fewer seats) in a total regional jet fleet of around 1,750 aircraft, or nearly three-quarters of the regional jet fleet. By 2018, there were only around 750 small regional jets remaining in a total regional jet fleet of around 1,650 aircraft, or less than half of the regional jet fleet. This drawdown of small regional jets from the regional fleet is projected to continue, with all small regional jets forecast to be removed from commercial passenger service by around 2030.

Since 2000, there have also been significant changes in the structure and competitive status of the airline industry. The major airlines in the United States have consolidated to the extent that while in 2000 there were 10 major airlines offering about 90% of domestic seat capacity, by 2018 these carriers had consolidated into only four carriers offering 81% of domestic seat capacity. This total includes Southwest Airlines, a major airline that is classified by the U.S. DOT as a low-cost carrier (LCC). The remaining 19% of domestic seat capacity is offered by other LCCs and a growing group of ultra-low-cost carriers (ULCC) that typically offer point-to-point services that may be seasonal or less than daily service. These ULCCs include such carriers as Spirit Airlines, Frontier Airlines, and Allegiant Air.

Another aspect of the passenger aviation industry that has affected the dynamics of service to some communities has been the regulatory treatment of pilot training and certification. In 2013, the FAA issued a final rule tightening the requirements that must be met by passenger and cargo airline first officers. This change has affected the availability of qualified pilots for airlines, which in turn affects the ability of airlines to provide service in smaller or less profitable markets. The impact of the changes on the industry as a whole is not yet fully known because the market continues to adjust, but they may create new cost pressures for airlines.

CHAPTER 2

Air Service Incentives and Their Use

Types of Air Service Incentives

Air service incentives are financial inducements offered to airlines to encourage new service to particular airports and to mitigate some of the financial risk that an airline takes when it starts service in a market that it did not previously serve. Generally speaking, there are two sources of air service incentives: airports themselves and community organizations that are interested in a region's air service scale and scope, such as state and local governments, private business or economic development organizations, and convention and visitors bureaus. A complete list of types of air service incentives and other relevant terms and examples can be found in the Glossary.

The types, duration, and other characteristics of incentives offered by airports (i.e., coming from airport funds) are limited by FAA policy and relevant statutes. Airports may offer **reductions or waivers of fees**, such as various airport rents, landing fees, and certain other airport facility fees as well as **marketing support or assistance**, in the form of funds to assist in marketing new air service. These offers are subject to certain restrictions, such as the duration of support or ensuring active competition among airlines at the airport. The general principles are that airports cannot offer subsidies, such as direct cash payments to carriers, and that airports may only offer incentives that are limited in duration (to a maximum of 1 or 2 years, depending on whether the incentives are offered only to new entrants or to both new entrants and incumbent airlines).

These airport incentives are now quite common in the United States, with a majority of airports offering fee waivers, marketing assistance, or both. In some ways, this widespread use means that these types of incentives are a cost of doing business for an airport, or a "door prize" for new airline service that is expected by airlines. That said, there remains some significant variation across airports in amount, structure, and duration for these incentives. These are examined in the summary cross-tabulations of incentive use among U.S. airports (Exhibits 7 through 13), and in greater detail in the Technical Report (Chapter 3, Section b).

With so many airports offering fee waivers and marketing assistance, community-sponsored incentives have become more significant as a potential differentiator among airports and their air service incentive programs, even though it is not the airport that is providing the differentiating incentives. These community incentives can take many forms and are not subject to FAA restrictions as long as they are not airport-directed, determined, or funded. Perhaps due to this greater freedom in designing incentives, communities tend to be the source of innovative air service incentive programs. Community incentives can be sponsored by state governments, local governments (in cases where an airport is part of local government, so long as the community incentives funding source is separate from airport funds), chambers of commerce, economic

development corporations, convention and visitors bureaus, and other business or governmental organizations. The types of air service incentives are identified in Exhibit 1.

Unlike airport-funded incentives, community incentives can be direct subsidies to airlines, and community incentives are not required to be time limited. These incentives can come in many forms, including **minimum revenue guarantees (MRGs), marketing assistance, loans, lodging discounts, or travel banks**, among others. Of these, MRGs and marketing assistance tend to be the most common forms of community incentives among the airports and communities studied. At small hub and nonhub airports, these types of incentives can be partially funded using Small Community Air Service Development Program (SCASDP) grants awarded annually by the U.S. DOT.

Based on the project team's research, community incentive programs tend to be more prevalent at smaller airports than at larger airports (e.g., medium hubs for international and long-haul domestic service, and small hubs and nonhubs for domestic service); this may be because the airports themselves have relatively small budgets, because of the availability of SCASDP grants, or because airlines believe that the financial risk is greater for new service to a small community than to a large community. It should be noted that while some airlines do seek revenue guarantees to mitigate risk, all airlines that the project team interviewed stated that they would not start service solely on the basis of an incentive offer. Instead, service decisions are based on a reasoned assessment showing that there are prospects for sustainable profitability in the new market once service has matured.

The right incentive approach for a particular airport of course depends on many factors, including the size of the airport, the types of routes sought, competition from other airports (and the incentives offered at those airports), and the level of engagement around air service in the local community and at the state level.

Exhibit 1. Types of air service incentive, by incentive sponsorship.

Sponsor of Incentive Program	Incentive	Areas of Impact or Application
Airport-Administered	Reduced/waived fees, rents, or other airport charges	Landing fees, fuel flowage fees, departure charges, overnight aircraft parking fees, and terminal rent fees (baggage handling fees, ticket counter fees, and gate and ramp services).
	Advertising or marketing assistance and support to inform local markets of service	Cash or in-kind resources for advertising new flights, airlines, or destinations.
	Offsetting start-up costs of new services	Provision of equipment, training, personnel, and other services.
Community	Minimum revenue guarantee to airline(s) providing services	Agreements establish a target revenue level the airline will receive for operating service on a route over a specified period of time. Revenue shortfalls covered by communities.
	Advertising or marketing assistance and support to promote airport service and the region as a destination	Cash or in-kind resources for advertising new flights, airlines, or destinations, or for advertising at other locations to promote the region as a destination.
	Travel bank	Local businesses or individuals dedicate funds to be used only for purchasing tickets on the new route over a given period of time.

6 Building and Maintaining Air Service Through Incentive Programs

How Are Air Service Incentives Used and What Kinds of Airports Are Using Them?

This section provides an assessment of the characteristics of the air service incentive programs used by airports and communities and the extent to which they are used by airports of different sizes. It includes the following:

- A description of a publicly available online database that the project team created for this project with the types and features of air service incentive programs that are in place at U.S. airports
- A snapshot (developed using incentive program data that populates the online database) of the ways in which these incentive programs are being used by U.S. airports of all sizes
- An overview of 14 case study interviews and analyses that were conducted as part of the project research

Together, these elements provide a comprehensive snapshot of the use of air service incentives by U.S. airports and communities. These topics are presented in greater detail in the Technical Report.

Online Global Information System Database of Air Service Incentive Programs in Use at U.S. Airports

A necessary piece for analyzing air service incentive programs by U.S. airports and their communities is information about the types of programs that are currently in use in the United States. With nearly 400 airports falling into one of the four hub size categories, this is not a trivial data-gathering exercise. Therefore, as part of the research, the project team, led by the Center for Regional Development of Bowling Green State University, developed an online GIS-based data tool using airport-specific incentive program data. Bowling Green State University is hosting this tool for approximately 2 years. It is available at https://arcg.is/vKmyr.

A GIS is a framework for gathering, managing, and analyzing data. Rooted in the science of geography, a GIS can be used to integrate many types of data into a format that features spatial or geographic locations, which are used to organize multiple layers of non-geographic information into visualizations such as maps or three-dimensional (3D) scenes. Visualizations in this GIS tool are limited to geographic locations on maps.

The base data for the tool are the 382 large hub, medium hub, small hub, and nonhub airports identified by FAA in the 2017 Terminal Area Forecast (TAF), their geographic locations, and data on recent population and labor force size in the metropolitan or micropolitan area surrounding the airport. The database includes, for each airport, a detailed record of the types of air service incentives offered in the recent past by the airport, the characteristics of each offering (such as the dollar amounts associated with the incentive, and the length of time it may be used by an airline), and the sources for this information. This information is provided for both airport-directed and funded incentive programs and for community-directed and funded programs. The database also identifies any relevant community organizations for each airport, such as chambers of commerce, economic development offices, and visitors or tourism bureaus.

There are five GIS database tools, one for each of the four FAA hub size categories and a fifth database that includes the entire set of U.S. airports. Exhibit 2 shows the data elements included in the GIS database for each airport. There are 65 total data categories used in the GIS database, 12 data items for the airport and the community it serves, including the geospatial location of the airport; 25 data items detailing the types and characteristics of the airport-directed incentives in use by the airport (including URL links to stories and reports documenting these incentive

Exhibit 2. Data elements in the air service incentives GIS database tool.

Airport and Community Data		
LOCID	LATITUDE	MSA Population 2015
AIRPORT NAME	LONGITUDE	Total Enplanements 2014
STATE	GEO ID	Total Enplanements 2015
CITY	MSA Population 2014	Hub Size
Airport-Directed Incentives Data		
Airport Incentives - Any	Airport Marketing Assistance - Duration (note)	Airport Terminal Rent Rebate - Any
Airport Incentives - Domestic	Airport Fee Waiver - Any	Airport Terminal Rent Rebate - Amount
Airport Incentives - International	Airport Fee Waiver - Type	Airport Terminal Rent Rebate - Amount (note)
Airport Marketing Assistance - Any	Airport Fee Waiver - Amount	Airport Terminal Rent Rebate - Duration
Airport Marketing Assistance - Maximum Amount	Airport Fee Waiver - Amount (note)	Airport Terminal Rent Rebate - Duration (note)
Airport Marketing Assistance - Maximum Amount (note)	Airport Fee Waiver - Maximum Duration	Airport Ground Handling
Airport Marketing Assistance - Maximum Duration	Airport Fee Waiver - Duration (note)	Common-Use Airport Ticket Space Waiver
URL Links to Stories and Sources for Airport-Directed Incentives		
Community-Directed Incentives Data		
Air Service Committee - Any	Local Government Incentives	Minimum Revenue Guarantee - Amount + Route
Air Service Committee Name	Local Government Name	SCASDP Grant - Any
Involvement of Community Organizations in Incentives	Local Government Incentive-Amount	SCASDP Grant - Amount + Route
Chamber Incentives - Any	State Government Incentive	Travel Bank - Any
Chamber of Commerce Name	State Agency Name	Travel Bank - Amount + Route
EDC Incentives - Any	State Tourism Incentives	Community Marketing Assistance - Any
EDC Name	State Agency Minimum Revenue Guarantee - Any	Community Marketing Amount
CVB Incentives - Any	Minimum Revenue Guarantee-Any	Community Marketing Assistance - Amount + Route
CVB Name	Minimum Revenue Guarantee Amount	
URL Links to Stories and Sources for Community-Directed Incentives		

CVB: Convention and visitors bureau.
EDC: Economic development council.
MSA: Metropolitan statistical area.
SCASDP: Small Community Air Service Development Program.

8 Building and Maintaining Air Service Through Incentive Programs

offerings); and 28 data items detailing the types and characteristics of the community-directed incentives in use in support of the air services operating at the airport (including information about the community organizations operating near the airport and URL links to stories and reports that document these community-directed incentive offerings). When the user clicks on the location of an airport, the database tool opens a callout box that contains this data for that airport.

The first 12 data elements reported in Exhibit 2 provide airport and community characteristics, including identification data for the airport, the airport's geographic location (which enables the GIS software to place the airport on the U.S. map), and recent information on the population of the metropolitan statistical area (MSA) served by the airport and the airport's enplanement activity.

The second section of Exhibit 2 contains information about the types of air service incentives that have been made available to airlines in the recent past. To be able to respond to a range of queries from database users, this information includes both general aspects of an airport's incentive offerings (e.g., Does the airport offer any incentives at all? Are they domestic incentives or international service incentives?) and more detailed information about the types of incentives included in the airport's program. These include specific types of incentives that may be funded with airport-generated funds, such as marketing assistance to airlines, waivers and rebates of different types of airport fees and rents, and assistance with specific airport services, such as ground handling and terminal space. In most cases, the information collected in the database includes data about the dollar amounts associated with the incentive and the time span (up to 2 years) that the incentive could remain in effect. For each airport there is also a record of the URL links to news stories and airport press releases that were used as sources for each airport's incentive data.

The third section of Exhibit 2 provides similar detail for community-directed incentives. Among the 28 data elements for community-directed incentives, there is information about the presence or absence in the airport's community of the types of organizations that typically provide air service incentives, such as air service committees, chambers of commerce, economic development councils (EDCs), convention and visitors bureaus (CVBs), and any state or local governmental organizations. There is also data about the types of community-directed incentives that these organizations might fund and offer to airlines, such as MRGs, marketing assistance, and travel banks. There is also information about SCASDP grant funding that may be provided by the U.S. DOT to small hub and nonhub airports. Among the small hub and nonhub airports, those that have received a SCASDP grant anytime since 2012 are designated as SCASDP airports. Finally, for each airport there is a list of the URLs leading to the online sources that provided the information about the airport's community-directed incentives.

The purpose of the database is to enable the user to identify the airports offering one or more of these types of air service incentive. The airports are then displayed on a U.S. map, and indications are provided to show which airports offer the incentive of interest and which do not. The tool is intuitive and easy to use. Exhibits 3 through 6 are screenshots that provide a brief introduction to the software and its contents. Note that these exhibits have been converted from color to grayscale for printing. The electronic version of the report (posted on the web at www.trb.org) retains the color version.

Exhibit 3 uses the large hub version of the GIS tool to illustrate some of the functions in the software. As can be seen, all 30 large hub airports are shown on the map. At the label *A* is the "Contents" button, which toggles the information sidebar at the left of the screen on and off. Toggled off, the software displays only the GIS map, and toggling on opens the sidebar into the display. At the label *B* is the "Basemap" button, which allows the user to select one of 12 base maps for the display, from the plain light gray map used in the Exhibit 3 screenshot to more complex maps that include roads or topographical details.

Exhibit 3. Air service incentives GIS database tool screenshot, showing display options for choosing map appearance and individual incentives.

Also illustrated in Exhibit 3 is the way in which information about airport uses of air service incentive programs is retrieved from the underlying airport database. Retrieving the data on the use of a particular type of incentive is done by checking the appropriate "Content" box from the list of incentive types on the left side of the screen. In this example, two boxes are checked (these are emphasized by the ovals use to highlight these examples)—the marketing assistance by amount box and the "minimum revenue guarantee" button. It is these selections that result in the "dots" appearing at each of the large hub airports shown on the map.

Exhibit 4 (also taken from the large hub airport GIS database) shows the way in which the air service incentive information requested by a user is displayed on the map and in the legend for the map. As seen in Exhibit 3, the "Details" button, identified as *A*, toggles the left-hand sidebar into and out of the map, and the "Basemap" button, identified as *B*, allows the user to choose from 12 map formats. To show the map legend for the types of air service incentives selected using the "Content" button illustrated in Exhibit 3, the user can click the "Legend" button, shown circled in Exhibit 4. Using the Legend displays the symbols and symbol colors used to indicate a variety of incentive characteristics for the type of incentive selected.

Exhibit 5 provides a fuller explanation of the incentive plan details shown in the map in Exhibit 4. This figure shows a screenshot from the large hub GIS database for air service incentive programs. Based on example selections from the "Content" window, the map shows the 30 large hub airports and labels (through the color and size of the airport's "dot") whether or not the airport has an airport-directed marketing assistance incentive, the dollar amount of the marketing assistance incentive (if the airport has one in place), and (based on a separate category selection from the "Content" window) whether or not the airport has a MRG incentive of any kind in place. These two selections are those shown as selection examples in Exhibit 3, with Exhibit 5 reporting the results from that selection. For example, the label *A1* indicates the large

Exhibit 4. Screenshot from air service incentives GIS database tool, showing access to the map "Legend" function.

Exhibit 5. Screenshot from air service incentives GIS database tool, showing examples of how large hub airport data is displayed.

hub Denver (DEN), which has a marketing assistance incentive with a $2 million upper limit, while Houston Bush Intercontinental (IAH) (label *A2*) has a marketing assistance incentive with an $800,000 upper limit. Example *B* shows Sky Harbor Phoenix (PHX), and the GIS map indicates that PHX does not have a marketing assistance incentive (the inner dot) and also has no minimum revenue guarantee incentive (the outer dot). In contrast, at Minneapolis-St. Paul (MSP) (example *C*), there is a marketing assistance incentive with a $100,000 limit, shown by the orange smaller inner dot, but MSP does not have a minimum revenue guarantee of any sort. Finally, example *D* indicates the callout box that will open if the dot for any airport on the map is clicked. This scrollable callout box contains all the database values for the associated airport, in this case Detroit Metropolitan Wayne County (DTW). The data elements that are shown in the airport callout boxes are those identified in Exhibit 2.

When more than one incentive type or characteristic is selected for display (as is the case in the example illustrating the incentive selection process shown in Exhibit 3), the "dots" indicating the features of the incentive being displayed stack atop each other. For this reason, an airport's incentive feature that generates a large dot may obscure the display of the other incentive features chosen by the user. For example, in Exhibit 5, the large dots that reflect the relatively large marketing assistance incentive budgets at DEN and IAH (examples *A1* and *A2*) result in large "dots" for that incentive feature that completely obscure the information about the presence or absence of minimum revenue guarantees at those airports. Because the positioning of the "dots" is determined by the airport latitude and longitude coordinates (which are among the database elements), this stacking can be avoided by selecting incentive characteristics for display one at a time.

Finally, Exhibit 6 shows similar information taken from the GIS database tool for nonhub airports. For this example, two types of incentive characteristics were selected for display, the time

Exhibit 6. Screenshot from air service incentives GIS database tool, showing examples of how nonhub airport data is displayed.

12 Building and Maintaining Air Service Through Incentive Programs

duration of any marketing assistance incentives offered by the airport (12 months, 24 months, or none for airports that do not offer incentives of this type), and whether or not the local government offered incentives of any kind for use of the airport. Since there are many more nonhub airports than large hubs, the map is more densely packed with airport dots, and clearly some have incentives of these types and some do not.

Four example airports are shown in Exhibit 6 as explanations of the GIS tool's output. Example *A* shows Bismarck Airport (BIS), North Dakota, represented by the light blue dot to the left of the label. The light blue dot indicates that BIS offered a 12-month duration marketing assistance incentive. A smaller dot indicating whether or not the Bismarck local government has offered any kinds of incentives is obscured by the marketing assistance indicator. Example *B* shows Laramie Regional Airport (LAR), Wyoming, represented by the dot just to the left of the label. This indicates that LAR does not offer a marketing assistance incentive (indicated by the white dot in the middle), and the Laramie local government does offer an incentive of some kind (indicated by the orange ring surrounding the white dot). Example *C* is Lea County Regional Airport (HOB), New Mexico (represented by the dot to the left of the label), which does not offer marketing assistance incentives, and where the local government does not offer any community-directed incentives. Finally, Example *D* shows the callout box that appears when the user clicks on the dot for Newport News/Williamsburg International Airport (PHF), Virginia. The scrollable callout box contains the data for PHF used by the GIS database tool.

There are five GIS database tools available to users, four that contain data for one of the four hub size groups and one that contains data for the entire set of airports. While it is relatively straightforward to keep these data up to date, doing so does require the dedication of some resources. These URLs are currently managed by the Center for Regional Development of Bowling Green State University, and there is no program currently in place to bring these data up to date periodically. The five GIS database tools can be accessed at the following URLs:

- All airports: https://arcg.is/1jm5fD
- Large hubs: https://arcg.is/0jWKfv
- Medium hubs: https://arcg.is/0XryLS
- Small hubs: https://arcg.is/1ue1nz
- Nonhubs: https://arcg.is/LXDL0

Characteristics of Air Service Incentive Programs in Use at U.S. Airports

The project team uses the airport incentive program data that is resident in the GIS air service incentives databases to create a snapshot of the use of air service incentives of various types at U.S. airports, sponsored either by airports or by communities served by airports. Patterns of use are presented for numerous program characteristics by large hub, medium hub, small hub, and nonhub airports (based on the 2017 FAA distribution of passenger airports into these size categories). The Technical Report presents these data and cross-tabulations in greater detail.

Exhibit 7 reports the use of marketing assistance by these airports. At present, marketing assistance is more frequently used by medium hub (73%) and small hub (67%) airports than by large hub and nonhub airports, where only around half of those airports offer some form of marketing assistance.

As indicated in Exhibit 8, most large, medium, and small hub airports offer fee waivers as an incentive to airlines, with the most sizable majorities among medium and small hub airports. However, a majority of nonhub airports do not offer fee waivers as incentives.

Exhibit 7. Use of marketing assistance incentive programs by U.S. airports.

	Large Hubs		Medium Hubs		Small Hubs		Nonhubs		Total	
Yes	15	50%	22	73%	48	67%	119	48%	204	53%
No	14	47%	8	27%	21	29%	116	46%	159	42%
No data/Unknown	1	3%	0	0%	3	4%	15	6%	19	5%
Total	30		30		72		250		382	

As shown in Exhibit 9, terminal rent rebates are offered to airlines as parts of air service incentive programs more frequently at medium and small hub airports than they are at large hubs and at nonhub airports. Just over half of medium and small hubs are known to offer incentives in this form, compared with around one-quarter of large hubs and around one-fifth of nonhub airports.

As shown in Exhibit 10, the majority of large hub and medium hub airports are not in regions or communities that feature incentive programs directed by community organizations such as chambers of commerce, EDCs, or CVBs. At small hub airports, however, nearly half of the airports serve communities that provide incentive programs involving one or more of these community organizations, and this is also true for just over half of the communities served by nonhub airports.

Exhibit 11 summarizes the involvement of local governments in offering funding for air service incentives. While only a minority of incentive programs include financial participation by local governments, the practice is more frequent at medium hub (17%), small hub (17%), and nonhub airports (26%) than at large hub airports, with only one such airport out of 30, or 3%, including them.

Exhibit 12 summarizes the involvement of state governments in offering funding for air service incentives. As with participation by local governments, only a minority of air service incentive programs include financial participation by state governments. However, in this case, the practice is more frequent for large hub airports (23%) than at medium hubs (13%), small hubs (11%), or nonhubs (5%). The greater role of state governments in supporting air service incentives at large hub airports may reflect the fact that large hub airports are more likely to be international gateway airports, offering a type of exposure to world markets that may be of especial interest to state authorities.

Finally, Exhibit 13 summarizes the extent to which small hub and nonhub airports have been recent recipients (since 2012) of SCASDP support for new air service (which in some cases has not yet been successfully disbursed). Since 2012, about 35% of small hub airports received and made use of an SCASDP grant (25 of the 72 small hubs), while over half of nonhub airports (141 of 250, or 56%) have received SCASDP grants in that time. Large and medium hub airports are not eligible for SCASDP grants.

Exhibit 8. Fee waivers offered as part of air service incentive programs.

	Large Hubs		Medium Hubs		Small Hubs		Nonhubs		Total	
Yes	19	63%	25	83%	54	75%	101	40%	199	52%
No	11	37%	5	17%	15	21%	135	54%	166	43%
No data/Unknown	0	0%	0	0%	3	4%	14	6%	17	4%
Total	30		30		72		250		382	

Exhibit 9. Terminal rent rebate incentives offered as part of air service incentive programs.

	Large Hubs		Medium Hubs		Small Hubs		Nonhubs		Total	
Yes	7	23%	16	53%	37	51%	50	20%	110	29%
No	22	73%	14	47%	30	42%	186	74%	252	66%
No data/Unknown	1	3%	0	0%	5	7%	14	6%	20	5%
Total	30		30		72		250		382	

Exhibit 10. Involvement of community organizations in air service incentive programs.

	Large Hubs		Medium Hubs		Small Hubs		Nonhubs		Total	
Yes	7	23%	8	27%	33	46%	132	53%	180	47%
No	23	77%	22	73%	39	54%	105	42%	189	49%
No data/Unknown	0	0%	0	0%	0	0%	13	5%	13	3%
Total	30		30		72		250		382	

Exhibit 11. Involvement of local governments in funding or supporting air service incentive programs.

	Large Hubs		Medium Hubs		Small Hubs		Nonhubs		Total	
Yes	1	3%	5	17%	12	17%	64	26%	82	21%
No	29	97%	25	83%	60	83%	183	73%	297	78%
No data/Unknown	0	0%	0	0%	0	0%	3	1%	3	0%
Total	30		30		72		250		382	

Exhibit 12. Involvement of state governments in supporting air service incentive programs.

	Large Hubs		Medium Hubs		Small Hubs		Nonhubs		Total	
Yes	7	23%	4	13%	8	11%	12	5%	31	8%
No	23	77%	26	87%	64	89%	238	95%	351	92%
No data/Unknown	0	0%	0	0%	0	0%	0	0%	0	0%
Total	30		30		72		250		382	

Exhibit 13. Small and nonhub airport use of SCASDP funding.

	Large Hubs	Medium Hubs	Small Hubs		Nonhubs		Total	
Yes	Not Eligible for SCASDP	Not Eligible for SCASDP	25	35%	141	56%	166	52%
No			47	65%	109	44%	156	48%
No data/Unknown			0	0%	0	0%	0	0%
Total			72		250		322	

Case Studies of Airports, Communities, and Air Service Incentive Programs

Objectives of the Case Study Analysis

While the GIS database of air service incentive program characteristics for programs in use by U.S. airports makes recent airport and program data available for nearly all U.S. commercial service airports, it is not feasible to conduct detailed program examinations and interviews for all these airports. For the case study analysis, the project team identified a representative group of U.S. airports and communities for more detailed investigation and analysis.

These case study examples provide insights—across a wide range of airports and communities—into the approaches that have been taken to use incentives for air service and to assess their effectiveness and impact for communities and regions.

The following sections describe the process used to identify this group of airports and communities (using input from the ACRP Project 03-44 panel) and then present a summary of the incentives at these airports.

Airport Selection Method

To select the case study candidates and ensure that these airports were representative of U.S. airport and community use of air service incentive programs, the project team relied on several primary and secondary selection criteria. The following criteria were used by the project team with input and feedback from the project panel.

Primary Criteria

FAA Hub Classification. The FAA hub classification was used to ensure that perspectives from airports of all sizes were represented in the case studies, because the size of the airport can influence the type of incentives offered to air carriers.

In recognition of these factors, the project team selected cases from large hub, medium hub, small hub, and nonhub airports to account for the different considerations airports of different sizes face in deciding how to develop incentive programs.

Airport-Directed Versus Community-Directed Air Service Incentive Programs. The collection of data on incentive programs showed the wide range of arrangements used by airports to build and maintain air service. Despite significant differences in the specific types of incentives and amounts used, the incentives all fall into two distinct categories: airport-directed and community-directed incentives.

Airport-directed incentive programs are paid from airport funds and directed by airport officials; they typically rely on fee waivers, terminal rent waivers, and marketing assistance to air carriers within the limitations of FAA grant assurances and revenue use policy.

Community-directed incentive programs are coordinated and funded by a community organization other than the airport and can provide direct subsidies through MRGs, guaranteed ticket purchases, marketing assistance, start-up cost offsets directly to air carriers, or other forms of subsidy.

Type of Air Service Being Retained or Attracted (Domestic versus International). In addition to the size of the airport and the type of incentive program, the kind of air service an airport or community is trying to attract is an important criterion for assessing incentive programs. Often, airports and communities have different incentive packages for domestic and

international service. For example, many airports and communities seeking international service focus on providing marketing assistance to promote the new service both in the community and abroad. In addition, international service may be significantly different from domestic service in terms of the potential economic impact on the community, which may justify incentive packages of a different magnitude.

Secondary Criteria

Specific Types of Incentive Mechanisms Being Offered. Across the United States, airports and communities rely on a wide range of incentive mechanisms to attract and retain air service. Common incentive approaches include fee waivers, terminal rent waivers, baggage handling services, marketing assistance, MRGs, and travel banks. Different airports and different communities often offer similar types of incentives, but they vary quite drastically on the amount and duration of the incentives they offer to air carriers. Many airports and communities are innovative not only in the types of incentives employed, but also in the way they bundle incentives. The cases selected by the project team include a variety of incentive packages that vary by type, duration, amount, and bundling with other incentives.

Types of Carriers Being Recruited. In addition to selecting cases representing different types of service (domestic or international) that an airport or community is trying to attract, it is important to include a variety of cases that capture the wide range of air carriers and airline business models most likely to be responsive to airport incentives and targeted by community incentive efforts.

SCASDP Grant Success (for Small and Nonhubs). Many small hub and nonhub airports rely on community-directed incentive programs to attract air service. Often, small communities simply cannot raise the amount of money needed to sufficiently offset the risk to air carriers of starting service to a new, unproven market. The SCASDP provides federal funds to supplement community-directed incentive programs at small hub and nonhub airports.

Geographic Location of Airport. The project team also selected a geographically diverse set of airports and communities to determine if the type and effectiveness of incentives offered by airports varied regionally.

Case Study Airports

After working with the ACRP Project 03-44 panel and assessing the interest in project participation from a larger set of candidate case study airports, the project team identified a final set of 14 case study airports for in-person interviews and focus groups. Exhibit 14 summarizes these case study airports by hub size, the organization sponsoring the airport's incentive program, and the geographic scope involved in the program (domestic or international).

The geographic distribution of the case study airports is shown in Exhibit 15.

Conducting the Case Study Interviews and Focus Groups

Airport-Directed Air Service Incentive Programs

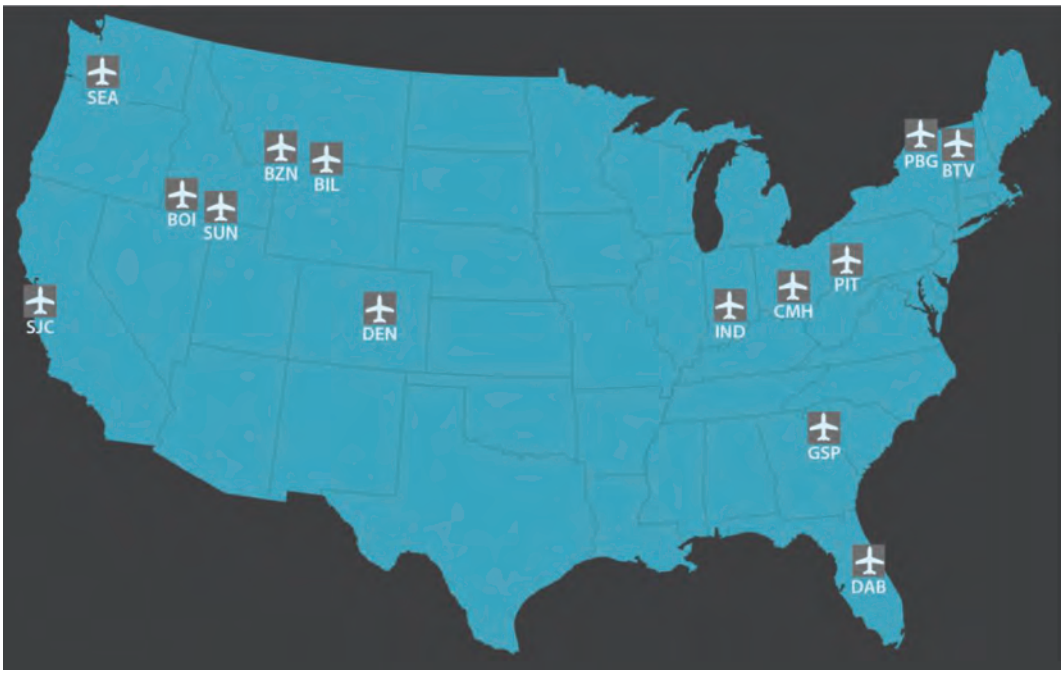
These are the general questions that the project team asked of staff at each case study airport; however, each interview protocol was also tailored for that airport's characteristics and air service incentive program (ASIP). The questions provided a framework for initiating discussion with individual airports, but they were not intended to limit the flow of discussion. The areas

Exhibit 14. Case study airports by selection criteria.

Geographic Scope	Incentive Sponsor	Hub Size: *Large*	*Medium*	*Small*	*Nonhub*
Domestic Service Incentives Only	*Airport-Directed*				
	Community-Directed	Team research did not identify any airports that had ONLY Community-Directed Incentive Programs			
	Airport/Community			BOI BZN GSP	BIL SUN
International Service Incentives Only	*Airport-Directed*				
	Community-Directed	Team research did not identify any airports that had ONLY Community-Directed Incentive Programs			
	Airport/Community				
Domestic and International Service Incentives	*Airport-Directed*	SEA	SJC		
	Community-Directed	Team research did not identify any airports that had ONLY Community-Directed Incentive Programs			
	Airport/Community	DEN	IND CMH PIT	BTV	DAB PBG

Note: Shaded cells indicate categories where the project team's research did not identify any airports with incentives that fit that combination of service type, incentive type, and hub size.

Exhibit 15. Map of case study airports.



18 Building and Maintaining Air Service Through Incentive Programs

and topics probed by these questions are among those an airport should consider when designing or revising its own incentive offerings.

- Please describe your current air service incentive program.
- What was the impetus for creating the ASIP, and how has it evolved over time?
- Please describe the process involved in deciding which incentives, amounts, duration would constitute the ASIP.
- What type of service is your community currently pursuing, and how was that decision made?
- *For airports providing marketing assistance:* For your marketing incentive, do you rely on an outside firm or your own expertise to assist in marketing the new service? Do you work cooperatively with the air carrier on marketing? Have there been instances where carriers have declined marketing assistance?
- What is the source of funds to support the ASIP? Have you found it difficult to sustain the ASIP given this funding source?
- Have other air carriers without incentivized routes at your airport complained about the ASIP?
- What successes have you had related to attracting or retaining service with your ASIP? Any examples of instances when the ASIP was a contributing factor in losing out on existing or potential new service?
- What challenges have you faced with your ASIP? Have you considered changing or dropping your ASIP?
- Does your airport routinely benchmark its ASIP against other airports within your region, state, hub classification, or other peer group? If so, how do you obtain this information?
- Have you received feedback on your ASIP from air carriers during air service development conferences, etc.?
- *For small hubs and nonhubs:* Have you leveraged your existing ASIP to apply for a SCASDP grant?

Community-Directed Air Service Incentive Programs

These are the general questions that the project team asked of community organizations that have designed or sponsored air service incentives at one of the case study airports (some case study airports did not have any community input to their incentive offerings). As with the airport interviews, each interview protocol was also tailored for each community's unique circumstances and its community-directed air service incentive program. These questions provided a framework for initiating discussion with community organizations but were not intended to limit the flow of discussion. The areas and topics probed by these questions are among those that community organizations and state or local governments should consider when designing or revising their own incentive offerings to support airport service patterns.

- Please describe your current air service incentive program.
- What was the impetus for creating the ASIP, and how has it evolved over time?
- What type of service is your community currently pursuing, and how was that decision made?
- How was the decision made to engage the broader community in establishing an ASIP? When did this decision occur?
- What organization or individual was most responsible for organizing the community's effort to develop an ASIP?
- How involved is the airport manager or air service director in coordinating or assisting in your community ASD effort?
- Does your community have an air service task force or other dedicated group to coordinate your air service efforts?
- Was there a community conversation about the type of incentives (marketing, MRG, travel bank, etc.) that would be offered? Were there divergent opinions on the types of incentives to be offered?

- How has your community tried to manage the perception that incentives, particularly MRGs, represent a "handout" to air carriers?
- What successes have you had related to attracting or retaining service with your ASIP? Any examples of instances when the ASIP was a contributing factor in losing out on existing or potential new service?
- What challenges have you faced with your ASIP? Have you considered changing or dropping your ASIP?
- *For small hubs and nonhubs:* Has your community leveraged its resources to apply for a SCASDP grant?
- Does your community routinely benchmark its ASIP against other communities within your region, state, hub classification, or other peer group? If so, how do you obtain this information?
- Have you received feedback on your ASIP from air carriers during air service development conferences, etc.?

Key Attributes of Case Study Airports and Their Air Service Incentive Programs

In this subsection, the important features of the incentive offerings by each case study airport are presented. Exhibits 16 and 17 show these program features for the 14 case study airports. As can be seen in the exhibits, the large and medium hub airport programs, reported in Exhibit 16, have more facets and higher budgets than do those of the smaller airports, shown in Exhibit 17. There are exceptions. For example, the incentive program in place for a small destination airport, Daytona Beach International Airport (DAB), has a wide variety of elements, reflecting the high significance of leisure travel to the area for the region.

The exhibits are a summary of the detailed case study narratives contained in the Technical Report.

FAA Role and Perspectives Regarding Air Service Incentives

FAA Air Carrier Incentive Program Guidebook

In its Air Carrier Incentive Program Guidebook, the FAA provides four steps that airports can take when establishing an incentive program (FAA 2010). They are as follows:

- Understand the relevant FAA policies
- Identify the goals of the program
- Establish a program timeline
- Structure the program effectively

In the United States, federally obligated airports must comply with the FAA's Policy and Procedures Concerning the Use of Airport Revenue (Revenue Use Policy), FAA's Policy Regarding Airport Rates and Charges (Rates and Charges Policy), Airport Improvement Program (AIP) grant assurances, and 49 U.S.C. § 41713 (Preemption over Prices, Routes, and Service) when administering an incentive program (FAA 1999). In addition, public sponsors of these airports must comply with airport grant assurances (FAA 2014).

The FAA notes that the 2010 Air Carrier Incentive Program Guidebook was intended as general guidance on air service incentives and does not necessarily represent statements of regulation or law and may be subject to legal interpretation. The approach taken by FAA in the development and interpretation of these guidelines was based on policies as expressed

Exhibit 16. Incentive program elements at large and medium hub case study airports.

Large or Medium Hub Airport	Hub Size	Airport-Directed Incentives Offered		Community-Directed Incentives Offered	
		Incentive Type	Details	Incentive Type	Details
Denver (DEN)	Large	Domestic Air Service Refund	Refund of $5 per enplanement for service to unserved destinations (to $250k)	Varies by individual route	
		Domestic Air Service Marketing	Varying amounts depending on weekly frequency of new service to unserved destinations		
		International Air Service Refund	North and Central America: $20 per enplaned pax (to $2M) Other regions: $30 per enplaned pax (to $4M)		
		International Air Service Marketing	Varying amounts by destination and frequency		
Seattle (SEA)	Large	International Air Service Marketing	Varying amounts by route distance	n/a	
		Landing Fee Waivers	Full waivers (2 years) for international service to unserved destinations and service to nearby states		
		Terminal Rent and Use Waivers	Full terminal and int'l facilities fee waivers (1-2 years) for above services		
Columbus (CMH)	Medium	Domestic Marketing Assistance	>100Px PDEW, $100K year 1, $75K Year 2; 50-99 PDEW, $75K year 1	Domestic Revenue Guarantee	To Southwest Airlines for service to OAK (from City of Columbus and Franklin County)
		International Marketing Assistance	Transatlantic and transpacific flights; $300K over 2 years		
		Landing Fee Waivers	All flights for first year		
Indianapolis (IND)	Medium	Landing Fee/Terminal Rent Waivers	All landing fees and some terminal rent for 2 years for new flights	Domestic Minimum Revenue Guarantees	$1.5M from state over 2 years for service to SFO
		International Marketing Assistance	up to $400K for 2 years, depending on frequency	International Minimum Revenue Guarantees	$5.5M from state over 2 years for service to Paris
Pittsburgh (PIT)	Medium	Domestic Marketing Assistance	For service to Seattle and other markets	Loans for domestic services	For service in 10 regional markets (state and county)
		Domestic Subsidies (from non-aero revenues)	For service in 10 regional markets	International MRG	$9M over 2 years for service to Paris, $560K for service to Shanghai
		Landing Fee and Terminal Service Fee waivers	Up to 2 years	International Subsidy	$3M over 2 years for service to London
		International Minimum Revenue Guarantee (from non-aero revenues)	$560K for service to Shanghai (2 flights)	International Marketing Assistance	$300K for service to Shanghai (2 flights)
		International Marketing Assistance	$500K for flight to Frankfurt, $800K for service to Reykjavik		
San Jose (SJC)	Medium	Domestic Marketing Assistance	$25K for new unserved short haul, $75K for new or added long haul domestic	n/a	
		International Marketing Assistance	$100K for new inside N. America; $500K for new outside N. America		
		Landing Fee Waivers	Complete waiver (12 to 18 months) for new unserved routes		

PAX: Passengers.
PDEW: Passengers Daily Each Way.

Exhibit 17. Incentive program elements at small and nonhub case study airports.

Small or Nonhub Airport	Hub Size	Airport-Directed Incentives Offered		Community-Directed Incentives Offered	
		Incentive Type	Details	Incentive Type	Details
Boise (BOI)	Small	Marketing Assistance	Up to $50K for year round service and up to $25K for seasonal service, depending on frequency	Domestic Minimum Revenue Guarantees	SCASDP ($700K) and local ($138K) support of service to Atlanta
		Partial Landing Fee and Terminal Fee Credits	Partial credits for fees during first year of new service	Domestic Marketing Assistance	$100K in local support for service to Atlanta
Bozeman (BZN)	Small	Landing Fee Waivers	Full waiver for 1 year, up to $30,000	Marketing Assistance	SCASDP and local funding (total $310K) for seasonal service to DFW
				Revenue Guarantees	$1.6M (SCASDP and local) for service to Newark; $1.3M (SCASDP and local) for service to DFW
				Travel Bank	$800K for service to DFW
Burlington (BTV)	Small	Domestic Marketing Assistance	Up to $50K in marketing support	Domestic Minimum Revenue Guarantees	$550K (SCASDP and state) for service to Denver
		Landing and Other Fee Waivers	Landing, common use, and boarding bridge fees are waived for first two years (domestic) or four years (international)		
		International Marketing Assistance	Up to $50K in marketing support		
Greenville-Spartanburg (GSP)	Small	Domestic Marketing Support	$250K for marketing support in top O&D markets	Marketing Assistance	Local and community organizations provided over $1.2M to Southwest Airlines
		Fee Waivers for landing and other Airport Services	12 month full waiver for top O&D markets		
		Provision of Terminal Amenities	Fueling services and jet bridge services		
Billings (BIL)	Nonhub	Landing Fee Waivers	Full waiver on new flights for 1 year	Marketing Assistance	Community and SCASDP funding of $200K support for service to DFW ($100K from local sources and $100K from SCASDP grant)
				Minimum Revenue Guarantees	Community and SCASDP funding of $1.25M to support service to DFW
Daytona Beach (DAB)	Nonhub	Credits for Airport Services for Daily and other Frequencies	Various waivers and per passenger credits, depending on service frequency and duration	Revenue Guarantees for Daily Frequencies	$300K support from county
				Marketing Assistance for Daily Frequencies	$600K from local and CVB sources for local and new destination marketing
Plattsburgh (PBG)	Nonhub	Landing Fee waivers	Full waiver for 6 months	Marketing Assistance	$250K in SCASDP and local funds for Boston service
Friedman Sun Valley (SUN)	Nonhub	Landing Fee waivers	Full waiver for first 12 months of new service (used as SCASDP match component)	Minimum Revenue Guarantees	SCASDP and local funding for revenue support for several destinations
				Marketing Assistance	SCASDP and community support for destination marketing, multiple locations

O&D: Origin and destination.
SCASDP: Small Community Air Service Development Program.
DFW: Dallas/Fort Worth International Airport.
CVB: Convention and visitors bureau.

22 Building and Maintaining Air Service Through Incentive Programs

in FAA's Policy and Procedures Concerning the Use of Airport Revenue, February 16, 1999, (64 Federal Register 7696) and Airport Sponsor Grant Assurances. For further clarification contact FAA's Office of Airport Compliance and Management Analysis. Of particular importance are grant assurances 22 and 23, which respectively address the requirements for economic nondiscrimination with regard to access to the airport and its facilities by potential users, and the granting of exclusive rights to individual airport users or types of user, and grant assurance 25, which limits the uses of airport aeronautical revenues.

According to the FAA Guidebook, airports must adhere to the following requirements when offering incentives to airlines:

- Airport revenue may be used for incentive programs that are designed to do the following:
  - Promote competition through a new entrant
  - Increase air service to a destination currently served, through increased flight frequency or through upgauging (subject to restrictions)
  - Raise public and industry awareness of airport facilities and services
  - Pay for a share of promotional expenses designed to increase travel using the airport
- Airport revenue may not be used for the following:
  - Destination or tourism marketing
  - General economic development/marketing not related to the airport
  - Direct subsidies to airlines
  - Guarantees of passenger revenue, ticket sales, or seats filled
  - Influencing ticket prices

Airport-administered incentive programs must be nondiscriminatory and available to all "similarly situated" airlines that provide the specified service, although being similarly situated may not always be easily defined. Programs must only target a new service, although they may provide different incentives for proposed service to different destinations. Airports may not do the following:

- Target certain types of airlines (e.g., low-cost airlines) or particular airlines
- Target certain aircraft types (e.g., aircraft with a certain number of seats)
- Target upgauging as the specific goal of the program

Incentive levels may vary based on the category of new service offered but are subject to maximum time limits. The program itself must have a time limit when established (i.e., may not be an indefinite incentive for any airline interested in testing a given market) in addition to the time limit for the incentive for each new entrant. Entrants may be staggered within the longer program time period and programs may include time limits lower than the FAA's allowed limit. Time limits are imposed because the purpose of the incentive program is to test the viability of discrete markets, not to serve as a continuing subsidy for air service. The time limits are as follows:

- Up to 1 year, if the incentive is restricted to new entrants
- Up to 2 years, if the incentive is offered to both incumbents and new entrants

Acceptable incentives that use airport revenues include waiving or reducing landing fees, rental fees, or fuel flowage fees, and advertising the new service provided the airport is featured prominently in the advertising. Reductions in the costs of fuel, interest, taxes, or passenger facility charges (PFCs) are all considered subsidies and are forbidden. However, the airport sponsor or other taxing authority may have special taxes in the taxing district whose revenues do not directly go to the airport, and these may be used for subsidies providing that they cannot be considered airport revenue and that any subsidies are applied in a nondiscriminatory way. Independent groups are also allowed to offer nondiscriminatory subsidies as long as the airport

itself is not a party to the agreement, although being a party to the agreement is not sufficient for determining whether an offering of subsidy is nondiscriminatory.

The cost of providing incentives may not be included in the rate base for airlines not participating in the incentive program without their express permission. Similarly, airports cannot tie incentive levels to ticket price, number of seats, or passenger revenue.

FAA Airport Compliance Office Perspectives on Air Service Incentive Programs

As part of the research for this project, the team interviewed senior compliance managers in the FAA Office of Airport Compliance and Management Analysis (ACO) and senior members of the FAA Office of the Chief Council about air service incentives and incentive programs. The following is a record of this interview. The format is based on the questionnaire used to guide the discussion with the project team.

General Questions and Issues Regarding Air Service Incentives and Incentive Programs

What are the general principles that guide or serve as the foundation for FAA's perspective on the design and use of air service incentives by airports?

The FAA determines its perspective on air service incentives using a few specific principles and policies. These principles include that airports must not discriminate among air carriers, and that airport revenue must be used in a sustainable fashion, and in a fashion consistent with FAA revenue use policies. In general, airport incentive programs can only be used to support new service, which FAA defines as nonstop service to a new destination, a new entrant carrier to the airport, or additional frequencies to a destination that is already served (FAA 2010). However, since 2011, the FAA has also permitted incentive provisions that would encourage aircraft upgauging.

What would be the best way to explain or characterize to an airport (or to community representatives who are interested in promoting air service at their local airport) the reasons behind FAA's approach to assessing airport uses of air service incentive programs?

The FAA's approach to air service development incentive programs is based on statutes and existing policies. Air service incentives should help an airport initiate new service over a limited time frame and should not support existing air service at the airport or subsidize any service. As a result, subsidies (such as revenue guarantee agreements) are not permitted as a part of air service development incentives that are supported by airport funds.

The U.S. DOT administers two air service subsidy programs: the Essential Air Service (EAS) program and the SCASDP. The EAS program exists to guarantee that small communities that were served by certificated air carriers before airline deregulation to maintain a minimal level of scheduled air service. The U.S. DOT is mandated to provide eligible EAS communities with access to the National Air Transportation System. This is generally accomplished by subsidizing two round trips a day with 30- to 50-seat aircraft, or additional frequencies with aircraft with nine seats or fewer, usually to a large- or medium-hub airport (https://www.transportation.gov/policy/aviation-policy/small-community-rural-air-service/essential-air-service). The SCASDP is a U.S. DOT-administered grant program designed to help small communities address air service and airfare issues (https://www.transportation.gov/policy/aviation-policy/small-community-rural-air-service/SCASDP). These differ from community-led air service incentive programs and fall under separate guidance from the U.S. DOT, although SCASDP grants may provide funding for community-directed support of specific new routes.

How has the use and design of incentive programs by airports changed since the publication of the FAA Guidebook?

Since the publication of the FAA Guidebook in 2010, air service incentive programs have become more widespread among U.S. airports. Concurrent with this trend, issues have arisen within certain programs. Some programs have not been fully transparent to the FAA, and may involve preferential treatment toward some operators, violating the statutory nondiscrimination requirements and FAA policy.

The FAA answers questions and provides guidance to airports and communities around air service incentives, and the FAA may provide guidance or comments on legal concerns surrounding a new incentive program, but it does not formally approve or reject an incentive program.

Has the airport community made effective use of the FAA Guidebook?

Use of the FAA Guidebook may vary among airports. Some airports and industry stakeholders have requested specific changes to the Guidebook or regulatory reform to change FAA regulations around incentive programs, but as of 2019, the 2010 iteration continues to be an accurate and up-to-date source for FAA guidance on incentives. Since 2010, FAA guidance has been extended to include approval of incentives that encourage "upgauging," or the use of larger aircraft at an airport. This is based on FAA's agreement that under certain conditions enabling additional passenger travel by using larger aircraft is a form of "new service" that can be supported through permissible air service incentives (Policy and Procedures Concerning the Use of Airport Revenue: Petition of the Clark County Department of Aviation to Use a Weight-Based Air Service Incentive Program. 77 Fed. Reg. 68 (April 9, 2012). *Federal Register: The Daily Journal of the United States*. Web. 9 April 2012).

FAA's Oversight Process for Air Service Incentives

When should airports contact FAA about planned features of a new incentive program or offering? (That is, in what circumstances? What aspects of a new program or offering could merit a review or "going over" by FAA?)

Airports are welcome to discuss specific questions on incentive programs with the FAA, and the FAA is open to considering new approaches to air service incentives. New approaches to incentive programs may lead to specific FAA guidance around those approaches, as occurred when an airport approached FAA regarding incentives related to aircraft upgauging. The FAA will point out aspects of an incentive program that are not in compliance with its policies and the governing statutes. However, the FAA does not approve specific programs or types of programs.

How should airports contact FAA with questions about planned features of a new incentive program or offering or other air service incentive program concerns?

Airports may call the FAA Office of Airport Compliance at (202) 267-3085 or use the email contacts available at the Office of Airport Compliance webpages at https://www.faa.gov/airports/airport_compliance/.

How long should airports allow for FAA to reply to an airport inquiry about the features of a new incentive program or offering?

Each program is different, so the FAA does not have a standard review time. A more complex program will take longer to review than a common or straightforward program.

Under what circumstances would an FAA audit of an airport's incentive program or incentive program features arise (e.g., as a self-contained audit, or as part of a broader FAA audit of an

airport's finances or revenues)? And what would prompt such an audit (e.g., a formal complaint by an air carrier, or would FAA undertake such an audit on its own based on press reports, etc.)?

Per congressional mandate, the FAA conducts financial audits of two to four airports a year. This involves a large and multifaceted financial audit of which incentive programs, including marketing expenses, are generally a component. The selection of airports for financial audits is driven by FAA internal criteria. The FAA does not generally perform standalone audits of an airport's incentive program.

If FAA audits an airport's incentive program (as part of a broader financial audit), does the agency also consider the incentive programs at airports with whom the audited airport may be competing for air service?

No; an FAA audit of an airport is separate from the relationship between that and other airports.

Does FAA maintain a database or list of enforcement cases or audits of air service incentives programs and the results of those cases?

Yes; the FAA keeps track of airport financial audits, which include examinations of any incentive programs.

Compliance Issues Related to Community Support for and Involvement in Air Service Incentives

How should airports sponsored by municipalities manage potential conflicts between provisions of airport-funded incentives to airlines and the incentive programs that the municipality itself may support with funds from the consolidated municipal budget? Are there acceptable ways by which such programs can be coordinated between the airport and its sponsoring municipality?

Airports must keep a clear distinction between airport-led and municipal programs. This includes separating municipal revenues from airport revenues as well as not participating in municipal decision-making around granting incentives to airlines. Airports may work with municipal governments to discuss needs and provide expertise but must remain separate from both finances and decision-making.

Municipal and community funds used to support airport incentive programs must follow the FAA nondiscrimination policy.

What is the role of communities (or interested parties within a community) for air service incentive programs (a) acting as stand-alone sponsors of incentives, or (b) acting in collaboration with an airport to design or negotiate incentives? Are these roles/restrictions any different in the case of SCASDP grants than any other form of air service incentive?

The rules that apply to municipal governments also apply to community-led air service incentive programs: airports may work with community organizations to discuss needs and provide expertise, but airports and airport managers may contribute to funding and decision-making for community-sponsored incentive programs.

Airports may not use airport funds to support community activities, including activities that ultimately benefit the airport. Airports may not use their funds to market a destination, but they may use them to market the airport itself.

What is the role of the FAA in terms of oversight of air service incentive programs that are sponsored by community (non-airport) organizations?

While the FAA has no oversight role for community-run and community-funded air service development incentive activities, there are limits on the ways in which airport management and staff can take part in these community activities, as previously described.

Oversight and Incentive Program Features

What flexibility do airports have under the FAA guidelines to design incentives for less than daily service or to target particular destinations (understanding they cannot target specific airlines) with their incentive programs?

Airports may create targeted incentives to promote certain types of service as long as they do not target (explicitly or implicitly) specific airlines or last for more than 2 years. In such examples the potential for unjust discrimination among airport users remains a risk because identifying particular destinations brings the perspective of individual airlines into play, and declining to provide incentives for an airline's new service to (say) New York because it is not the desired target—"Boston"—could be unjustly discriminatory.

Are there areas or aspects of air service incentives in which you have found airports most likely to push the boundaries (perhaps unintentionally)? What are the risks you see in these tendencies?

Airports must be clear about maintaining a 2-year limit on air service incentives and must ensure that they do not provide subsidies to airlines.

Are there opportunities for innovation or modification in the area of air service incentives that could arise from, or be helped by, the current project?

The FAA is always working to better understand airport use of service incentives and hopes to learn more about recent developments in this area from the project research. In particular, the FAA is looking into MRGs to evaluate their design, use, funding, and management.

A prominent topic in the discussion with FAA managers was the constraints affecting airport managers and the use of airport funds for air service incentives. These constraints, described in the FAA Guidebook, stem from the grant assurances that limit the uses of airport funds for incentives and other purposes. These constraints are in contrast to the greater freedom and range of action available to community organizations that may wish to design and fund air service incentives to promote their community's air passenger services. Airport managers may work with community organizations by providing information that can contribute to these community air service incentive efforts, but airport managers may not be involved in community organization decision-making and funding for these incentive offerings. Exhibit 18 provides a figurative depiction of these ranges of action for various incentive program sponsors.

Airline Perspectives on Airports and Air Service Incentives

Introduction to Airline Interviews

Given that the ultimate purpose of an airport's air service incentive program is to attract or encourage new service from airlines, the project team conducted interviews with senior managers from seven airlines representing a range of network, low-cost, and ultra-low-cost airlines from the United States and Europe providing domestic and international service in U.S. markets. The characteristics of these seven airlines are provided in Exhibit 19. To protect the confidentiality of the airlines interviewed, reference numbers are used instead of their actual names. The large network and low-cost airlines interviewed were more likely to serve large markets with frequent air service (i.e., at least one daily flight). Conversely, smaller low-cost and ultra-low-cost airlines were more likely to serve smaller markets with less than daily flights. Some of these smaller markets exhibit a strong seasonal component and are only served part of the year.

Exhibit 18. Permitted incentives based on sponsor and funding source.

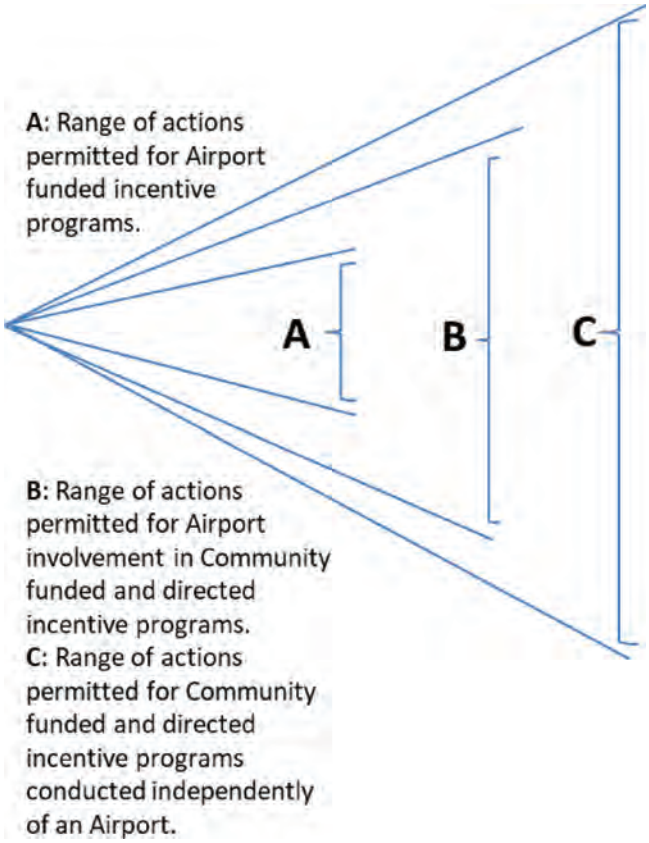


Exhibit 19. Characteristics of airline interview subjects.

Airline Number	Airline Type	Airline Headquarters	Typical Flight Frequencies
1	Network	U.S.	Daily
2	Network	Europe	Daily
3	Low-cost	U.S.	Daily
4	Ultra-low-cost	U.S.	Less than daily
5	Ultra-low-cost	U.S.	Less than daily, often during peak seasons only
6	Low-cost	Europe	Less than daily
7	Low-cost	Europe	Less than daily, often during peak seasons only

28 Building and Maintaining Air Service Through Incentive Programs

As part of each interview, the project team asked questions that addressed issues and information about the following:

- How the airline evaluates airport incentives
  - Which incentives are most valuable
  - Whether incentives are included in the airlines' route profitability models
  - Whether the value of incentives varies by the size of airport, source of funding, and whether the airline already has service at the airport
- How the airline interacts with airports regarding incentives and discussions around potential new service
  - How the airline initially makes contacts with airports about incentive programs
  - How the airline interacts with airports in terms of proposing ideas for incentives
  - Whether there is a standard incentive package the airline expects from any airport seeking new service
  - What the airline looks for when airports are promoting new service
  - What the airline wishes airports would do differently when promoting new service
- Any challenges associated with designing incentive programs for airlines that want to provide less than daily service
- How incentive programs offered by non-U.S. airports differ from those offered by U.S. airports and whether there are incentives airlines wish could be offered in the United States.
- Whether the importance of incentives for the airline has increased or decreased over time

Examples of the interview scripts used to gather this information can be seen in the Technical Report.

Interview Results

From the interviews, the project team determined that airlines valued incentives differently. In general, the incentives that were most valuable to a particular airline were those that aligned with the airline's business model and growth strategy.

The majority of airlines valued marketing dollars, although the international network airline (Airline 2) noted that the type of marketing dollars matters: "Best are unrestricted funds, then matching dollars; then in-kind services and support; the [worst] are banners around the airport." One of the U.S. ultra-low-cost airlines (Airline 4) also noted that additional marketing funds would be part of its wish list, because the funds would "help us get over the hurdle of establishing our brand in new geographies. Even matching marketing money is great, although that requires a marketing budget on our end." The other ultra-low-cost U.S. airline (Airline 5) was less positive about marketing funds for smaller airports, in part because "word of mouth has been pretty powerful," particularly when the airline was the only one providing nonstop service market. This airline did view marketing dollars as more valuable for "more important, larger markets."

The majority of airlines also valued cost-reduction incentives [e.g., landing fee waivers (although these and other cost-reduction incentives were often viewed "as the cost of admission") as characterized by Airline 1], for all but the most in-demand markets (such as major U.S. international gateway airports). Multiple airlines (Airlines 2, 5, and 7) mentioned the value of and/or desire to have incentives that lowered ground-handling costs.

Cost-reduction incentives are typically "not the primary driver" in whether an airline offers a new route but are often a "tie-breaker" (as noted by Airlines 1, 3, and 7). The majority of airlines noted that when they are deciding where to offer or expand service, they do not include incentives in their network profitability forecasting models or they run two scenarios: one with

the incentives in years 1 and 2 and one without the incentives in the initial years. According to Airline 1, this approach helps the airline ensure that the route is likely to be profitable when the incentives go away, that is, the "longevity of market is a key factor; we're not interested in putting something in a market for one to two years."

Cost-reduction measures were most important for one of the ultra-low-cost U.S. airlines (Airline 5), which places a high value on the long-term rate structure and less emphasis on marketing support. This airline has historically been successful in negotiating reductions in operating costs for more than 2 years with airports. The focus on cost-reduction incentives can be seen as one of the items on the wish list of incentives Airline 5 would like to see offered by airports:

> *We would ask that an airport **pay** us to fly there. That could be accomplished through revenue sharing or a separate incentives account they create for this purpose. Some of the thought process and justification behind this: Even if an airport incentive plan waives certain airport costs for up to two years, the airport is still receiving additional revenue from our incremental, new passengers via concessions, parking, rental cars, PFC collections, etc. Would it be so bad for them to share in the incremental, new passenger-generated revenues if it led to more flights, more passengers, more aeronautical and non-aeronautical revenues? The other request would be that the airport cover the airline's ground-handling costs for a given period of time or even indefinitely.*

Revenue guarantees were viewed with caution by some airlines and considered very positively by other airlines. The domestic U.S. network airline (Airline 1) noted that "Given the option of having revenue guarantees/sharing versus marketing dollars, I'd rather have marketing dollars. Risk-sharing protects a carrier in year one, but if you don't tell customers about the new service, years two and three (and beyond) are not very successful." Similarly, one of the ultra-low-cost U.S. airlines (Airline 5) noted that "we're also not big fans of revenue guarantees. We have entered into some agreements over the past few years . . . [but] when the funds run out, service goes away, and that is not good for image/the community/anyone. If the route could be viable let's serve it for the right reason, not because there is a lot of money on table." The other ultra-low-cost U.S. airline (Airline 4) also noted that "we haven't done minimum revenue guarantees—whether SCASDP or otherwise—in a while. When we did, we wanted to see the business community behind it. It's very easy for a carrier [like us] to drop fares in a market, and competitors may or may not match. So we're wary of going into a market where we deliver benefits of lower fares and the business community with miles on other carriers enjoys lower fares on a legacy carrier. When legacy carriers don't match, it makes it easier for us to do business; but when they do match we want to make sure people support us and have an incentive to book on our carrier vs. enjoy the newly reduced fares on the existing incumbent."

Conversely, the domestic low-cost airline (Airline 3) noted that "revenue guarantees help our decision if it takes risk off the table and you promise the first two years that we will get the same kind of returns we'd get from a different location and give [the small airport] time to get customers in the city to know they can fly [our brand]." Similarly, one of the low-cost European airlines (Airline 7) noted that "It would be good if someone else could take risk . . . and can guarantee a certain level of revenue." Finally, the European network airline (Airline 2) ranked revenue guarantees as their most preferred incentive.

> *From a network planning perspective, risk-sharing agreements are the most beneficial because by nature they help mitigate some of the risk we have. We are deploying big assets into markets that are not rock solid winners for us. Cost abatement programs are very helpful but typically, user charges are a small portion of the costs that we incur on flying routes. So while it is helpful to have cost abatement, it's a small proportion of our costs and ultimately [the cost abatements] are not going to make a difference as to whether or not we fly; however, risk sharing might.*

Some airlines noted that there are different approaches and restrictions related to incentives outside the United States, but there were different assessments of the relative value of the different approaches. For example, one of the European low-cost airlines (Airline 6) stated that

"Europe is a more business-minded environment" and that European airports generally have more flexibility than U.S. airports to customize incentives for particular airline business models. In contrast, the European network carrier (Airline 2) stated, "Typically in the rest of world it's much more about us having to find a way into these places and gain access to airports in places like Asia . . . airports in the U.S. and cities and convention and visitors bureaus in the U.S. and businesses around them are all very conscious of the value a nonstop connection . . . brings to their city and they are willing to pay for that connection. This is not the case in the rest of world. Typically I haven't seen anything in the rest of world that is more helpful than what we get with U.S. airports."

Incentives that were most popular among airlines, and that stimulated new traffic, were incentives tied to new enplanements. As described by one of the U.S. ultra-low-cost airlines (Airline 4):

> *The incentives we like the most are incentive agreements . . . that recognize that new entrants stimulate traffic and that incentives should target that stimulated traffic. A great example is [an airport in the mid-Atlantic states]. . . . They start with a baseline of enplanements. Those carriers that generate year-over-year increases in enplanements get money back. [The airport] no longer has that incentive program, but it was in place for two years. . . . Very few incentives are like that; our point is that incentives ought to recognize who is generating incremental traffic and find ways to reward carriers—incentives can't be biased towards one carrier, but a carrier that generates new traffic ought to be favored over an airline that doesn't.*

One of the international low-cost airlines (Airline 6) also noted this type of incentive aligns well with its business model:

> *[Another airport] gives a refund tied to cost per enplanement (CPE) that applies for international routes [regardless] of whether they are currently served or not served (prior to a new carrier's entry). [The airport] will refund a CPE up to $X and ours is [about 70 percent of that] . . . so this is a very attractive incentive for us.*

The project team also asked the airlines about their experiences with airport staff and consultants when airports were making their initial pitches for the new services that incentive programs would help support. In particular, the project team asked whether the airports provide the airlines with useful information and data about proposed new markets and types of service, such as estimates of market demand and potential for future airline revenues. In most cases, the airlines said that while they expected airports to present data on regional demographics and economics that would drive projected demand, they observed that this type of data was readily available to their own market and network analysts.

What some airlines said was more valuable was the more qualitative regional information that an airport or community could provide about its markets. These might include coming changes and developments in the airport's community or region of service that could also affect demand such as the courting of a new business prospect.

While airlines monitor regional developments to the extent they can, an airport's more intimate understanding of regional factors could add further value to the standard mutually understood quantitative data and analyses. This type of local insight and its value was of particular interest to the smaller airlines interviewed.

In summary, the airline interviews revealed that incentives are valued differently across airlines, and that the incentives most valuable to a particular airline are those that support the airline's business model.

Marketing funds and cost-reduction incentives, such as waivers of rents and landing fees, were generally viewed positively by airlines, although the degree of interest in these incentives did vary somewhat. Based on the interviews, ULCCs particularly seem to value cost-reduction incentives, although the overall long-term cost of operating at an airport may play an even more

significant role. In general, marketing funds and rent/landing fee waivers appear to be expected and part of the "price of admission."

The assessment of revenue guarantees by airlines was more divided, with several airlines (of varying business models) ranking these as unimportant, while other carriers were more positive toward revenue guarantees as a form of risk reduction or risk sharing. However, an area in which the airlines interviewed were fairly consistent is that they need to believe that a route can succeed without a revenue guarantee in order to start service. For the airline, the revenue guarantee is there to reduce financial risk, given the inherent uncertainty in forecasts.

In all cases, airlines noted that they were open with airports about what incentives the airline would need to provide or expand service. In some cases, negotiations could focus on published incentive terms, although in the case of airlines with less than daily frequencies, as Airline 5 noted, "we had to [work with] the airports on the overall rate structures to accommodate an airline that offers less than daily service . . . and these airports would offer us unique incentives to help us get established there."

How Do Air Service Incentives Affect Airport Activity and Regional Economies?

Introduction

Air service incentives are offered by airports and the communities served by airports to increase the volume and scope of the air travel to and from their region. The objective of these incentive programs is ultimately to improve the performance and level of opportunity in the local economy. An important part of the research project was devoted to modeling these relationships linking the use of incentives with changes in aviation metrics and in regional economic performance. For the interested readers, these modeling results are reported in detail in the Technical Report. In this Guidebook, the conclusions from this effort are reported, describing in a broad way the statistical analysis that was used.

Approach to Modeling the Impact of Incentive Programs on Airport Activity

As may be concluded from the varied characteristics of the incentive offerings used by airports shown in Exhibit 1, and the equally extensive range of airport and air service characteristics that went into developing the list of case study airports, modeling the influence of air service incentives on airport activity is challenging. In order to keep this analysis tractable, the econometric modeling was structured in the following way:

- Airports were analyzed according to their hub size, sometimes as one of the four hub size groups, sometimes using the large and medium hub airports combined into a single larger group, and other times dividing the large group of nonhub airports into three equally divided subgroups according to their size within the nonhub airport category.
- Three variables for airport activity were used as dependent variables in the analysis: the log of the change in annual airport commercial passenger flights between 2012 and 2017, the log of the change in annual airport seat departures between 2012 and 2017, and the log of the change in a Quality of (Airport) Service Index (QSI) measure of airport service quality between 2012 and 2017.
- The modeling was generally done as logarithmic modeling of (a) the effect of changes in regional economic and demographic variables between the years 2016 and 2012, (b) the degree of competition among airlines using an airport, (c) whether an airport was offering

32 Building and Maintaining Air Service Through Incentive Programs

incentives, and (d) whether the incentives were airport-directed or community-directed. (Although the variables of airport activity were based on the difference between 2017 and 2012, at the time of the analysis, the most recent available regional demographic and economic variables were those for 2016.) In subsequent refinements, a dummy variable was added for whether an airport had service by Allegiant Air, an ultra-low-cost-carrier that sometimes provides seasonal or less than daily service at small airports.

- Numerous regressions were estimated for the many possible combinations of these factors.

In most cases the regression estimates were not statistically significant, or produced counter intuitive signs on model parameters. This was especially true for regressions for large and medium hub airports, which may reflect the fact that most of these larger airports do offer incentives of one kind or another, resulting in very little variability in the large and medium hub data going into the modeling. The results may also have been affected by the fact that at these more active airports the share of flights or seats that may be affected by the absence or presence of incentives represents a smaller part of the overall airport activity.

There were, however, some statistically significant (or near significant) estimates among the small hub and nonhub airport groups, most notably for regressions that used the change in annual departing seats as the dependent variable. These results are reported in Exhibit 20.

What do these results mean in terms of additional annual departing seats for airports in these two size groups? Because the models were structured as logarithmic regressions, the parameter estimates represent percentage changes in the dependent variable, and in these regressions the parameter estimates indicated that other things being equal, the presence of incentives (of any type) was associated with an increase in annual departing seats of 10.2% at small hubs and 8.9% at nonhub airports (which are roughly comparable in magnitude). The project team used these estimates to extrapolate the significance of the use of incentives in some form by airports and communities for airport activity and the regional economic impacts of that activity.

Exhibit 20. Multiple regression results for small hub and nonhub airports (using departing seats as the dependent variable and incentives from the airport or the community as an independent variable).

	Small Hubs (No Outliers)	NonHubs (No Outliers)
DEPENDENT VARIABLE	Log(Annual Departing Seats)	Log(Annual Departing Seats)
Airport or Community Incentive	0.102	0.089
	-0.078	-0.08
Level change in HHI	-0.112	-0.339
	-0.405	(0.114)***
Log change in Per-Capita Income	1.739	1.81
	(0.900)*	(0.792)**
Constant	-0.119	-0.094
	-0.091	-0.078
N	59	108
R^2	0.078	0.133
Adjusted R^2	0.028	0.107
F Statistic	1.556	5.295***
*Notes: Parameter estimate (standard error). *p<0.1; **p<0.05; ***p<0.01.*		

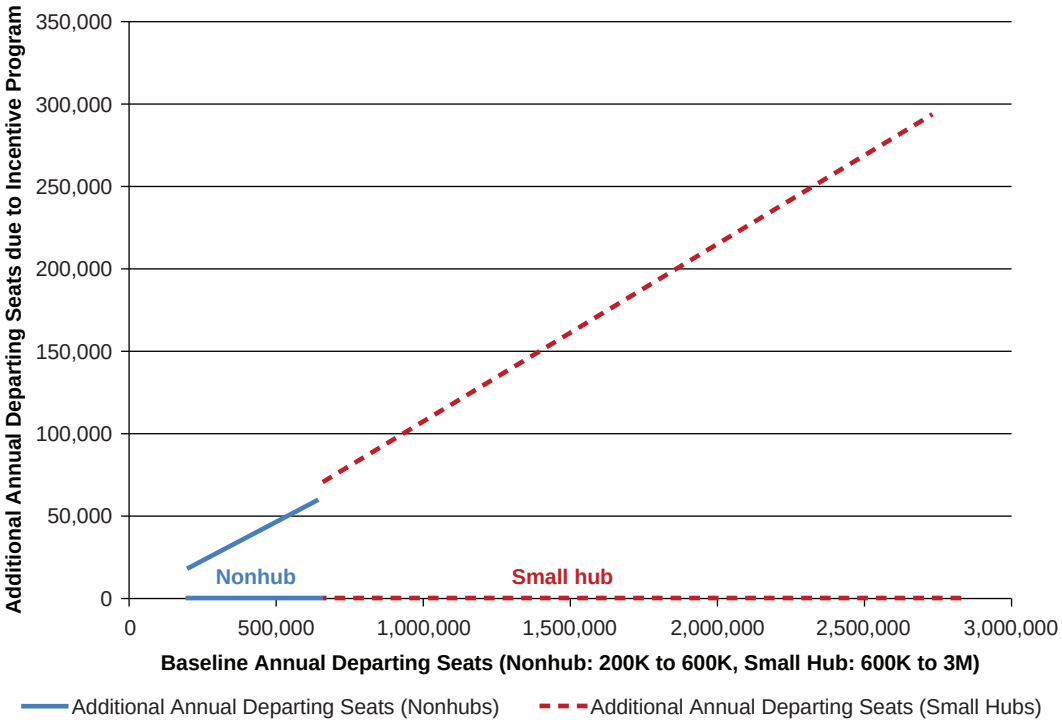
N: number of observations (airports).
R^2: coefficient of determination, representing the percentage of variation in the airport data that is explained by the model.

Impacts of Air Service Incentive Programs on Airport Activity and Regional Economic Variables—Jobs

The comprehensive regression analysis presented in the Technical Report examines the effects of air service incentive programs and other airport characteristics on airport activity and airport quality of service as measured by annual commercial flights, annual departing seats, and QSI scores. This analysis indicates that there are few strong statistical links between the presence of incentive programs at airports—whether airport-directed or community-directed—and these service variables, especially for large and medium hub airports. There are, however, more clear-cut estimates, expressed as percentage changes in annual departing seats, for the impacts of incentive use at small hub and nonhub airports, as shown in Exhibit 20.

Exhibit 21 shows how these estimated percentage changes in annual departing seats vary with the size of the airport (measured in departing seats). The parameter estimates show that nonhub airports, with between approximately 200,000 and 600,000 annual departing seats, increase annual departing seats by between 17,800 and 53,400 as a result of the offering of incentives, which on average increase departing seats by about 8.9%. The FAA definition of a nonhub passenger service airport is one with more than 10,000 annual enplanements and less than 0.05% of total U.S. annual enplanements. In the most recent TAF, the largest nonhub airport is Chattanooga (CHA) with 472,248 passenger enplanements in 2017. Using the average load factor of 0.8 for regional airlines reported in the 2018 FAA Aerospace Forecast (FAA 2018), CHA's annual enplanements correspond to 590,310 (or approximately 600,000) annual departing seats. For nonhubs, rather than using the defined minimum of 10,000 annual enplanements, for this analysis, the project team uses the minimum value of 160,000 annual enplanements, which corresponds, at the 0.8 load factor, to 200,000 annual seat departures. For nonhub airports, this range of 200,000 to 600,000 annual departing seats is used to define

Exhibit 21. Impact of the presence of incentive programs on annual departing seats for small and nonhub airports, by scale of baseline airport activity.



the range of airport activity in this analysis. For small hubs, ranging between approximately 600,000 and 3,000,000 annual departing seats, offering incentives is associated by the small hub model in Exhibit 21 with between approximately 61,200 and 306,000 additional annual departing seats, because the incentive offers are associated on average with an increase in departing seats of about 10.2%. While there is some overlap between the smallest small hub airports and the largest nonhubs, 600,000 annual departing seats is used for the lower bound of small hub activity. The largest small hub airport in the most recent TAF is Burbank (BUR) with 2,304,625 annual enplanements. Again, using the 0.8 load factor, this implies annual departing seats of 2,880,781, or approximately 3,000,000. (Using an average load factor of 0.85, closer to the average load factor estimated by FAA in the Aerospace Forecast for mainline carriers, implies 2,711,324 annual departing seats.) Thus, for analyzing small hub airports, a range of 600,000 to 3,000,000 annual departing seats is used.

It is important to note that these estimated impacts for small hub and nonhub airports are averages for airports that offer incentives, and there is a wide range of types of incentive programs and program scales among the airports that are offering incentives. It may be that the effect of incentives for nonhub airports is stronger in percentage terms because of the relatively small base of airport activity to which incentives of one sort or another are "boosting." It may also be useful to provide some scale for these potential impacts. For example, strictly defined, the addition of a daily flight by a 100-seat aircraft would add 365 flights and 36,500 annual seat departures to an airport's level of activity.

To connect these impacts of air service incentives on airport activity to regional economic impacts, the project team examined a number of airport economic impact studies conducted between 2004 and 2016. Airport economic impact analyses estimate the share of a region's economic activity—economic and business transactions, regional income, and regional jobs—that can be attributed to the airport's operations and presence in the region. In particular, the project team examined the relationship between annual departing seats at the airports in the sample of economic impact studies and the number of regional jobs that could be associated with this activity as one of the airport economic impacts. Regional jobs are an important metric for community organizations, and this is a measure that does not need to be adjusted for price-level changes.

Exhibits 22 and 23 show the small hub and nonhub airports in the sample of economic impact studies. For each airport, annual departing seats are reported along with measures of economic impact, including the number of regional jobs identified by the economic impact analysis to be supported by the airport's aviation and economic activity. These quantities can be used to estimate the regional jobs per airport departing seat as well as the reciprocal of that number, the number of annual departing seats associated with a regional job.

For these two ratios, the project team calculated the overall average for small hub airports and nonhub airports. The team also calculated a trimmed average, based on the exclusion of the two highest values and the two lowest values from the calculation, which are shown in Exhibits 22 and 23 in boxes at the top and bottom of the rightmost columns. For small hubs and nonhub airports, the team used the trimmed averages for further calculations.

The sample of economic impact results for small hub airports is shown in Exhibit 22. For small hub airports, there are on average about 200 annual departing seats associated with each regional job for the seven individual airports used to calculate the trimmed small hub average for this ratio. Note that for small hubs, the overall average ratio of airport-associated jobs to annual seat departures is similar for the seven airports in the trimmed sample.

In Exhibit 23, similar factors and calculations are reported for a sample of 19 nonhub airports. The trimmed average for the middle 15 of these nonhub airports results in an estimate of

Exhibit 22. Economic impacts and annual departing seats at a sample of small hub airports.

Small Hub Airport		Econ Impact ($M)	Income ($M)	Jobs	Annual Departing Seats	Jobs/ Seat	Seats/ Job
Norfolk	ORF	$791.4	$275.7	9,696	3,095,564	0.003	319.3
Charleston	CHS	$710.9	$243.9	6,725	2,024,202	0.003	301.0
Wilmington	ILM	$1,630.8	$83.4	4,910	599,492	0.003	296.6
Burbank	BUR	$1,766.5	$662.9	12,440	3,215,298	0.004	258.5
Lexington	LEX	$370.3	$104.3	3,478	763,860	0.005	160.7
Huntsville	HSV	$0.0	$66.0	6,075	1,250,178	0.005	205.8
Piedmont	GSO	$1,953.3	$229.7	8,410	1,717,330	0.005	160.7
Spokane	GEG	$895.5	$319.0	12,243	2,454,904	0.005	200.5
Boise	BOI	$1,344.6	$510.7	15,559	2,491,006	0.006	160.1
Greenville	GSP	$817.1	$170.5	9,528	1,440,136	0.007	151.1
Guam	GUM	$1,722.0	$628.0	20,440	2,117,579	0.010	103.6
					Overall Average	**0.005**	**198.2**
					Trimmed Average	**0.005**	**213.5**

0.0114 jobs per departing seat, or about 88 seats per regional job associated with the airport's activity. This is an average regional impact or relationship that is over twice as strong as that shown for small hub airports, in that, at a nonhub airport, it takes fewer than half the annual departing seats to "result" in a regional job, compared with the small hub relationship.

To estimate the scale of effects that an average incentive program might have for regional economies, the two relationships presented in this subsection can be linked. First, the relationship

Exhibit 23. Economic impacts and annual departing seats at a sample of nonhub airports.

Nonhub Airport		Econ Impact ($M)	Income ($M)	Jobs	Annual Departing Seats	Jobs/ Seat	Seats/ Job
Fayetteville	FAY	$312.5	$18.7	610	313,129	0.002	513.3
Chattanooga	CHA	$122.7	$44.1	1,440	647,942	0.002	450.0
Central Wisconsin	CWA	$61.9	$14.8	457	198,617	0.002	434.6
Asheville	AVL	$473.8	$41.5	1,700	568,889	0.003	334.6
Coastal Carolina	EWN	$179.1	$13.3	560	166,087	0.003	296.6
Green Bay	GRB	$242.9	$68.8	1,633	440,796	0.004	269.9
La Crosse	LSE	$49.1	$47.5	802	146,147	0.005	182.2
Hickory Regional	HKY	$25.1	$5.1	160	24,430	0.007	152.7
Grand Junction	GJT	$380.0	$130.8	2,871	411,435	0.007	143.1
Concord Regional	JQF	$160.9	$43.0	1,940	205,858	0.009	106.1
Pueblo	PUB	$85.0	$22.5	828	74,554	0.011	90.0
Lake Charles	LCH	$224.0	$52.5	1,612	128,557	0.013	79.8
Ocala	OCF	$73.6	$23.2	634	49,422	0.013	78.0
Eagle County	EGE	$635.9	$217.5	6,294	347,125	0.018	55.2
Cheyenne	CYS	$192.7	$50.0	2,043	93,209	0.022	45.6
Front Range	FTG	$75.5	$31.6	489	18,525	0.026	37.9
Rocky Mountain Metro	BJC	$460.5	$153.9	2,670	100,329	0.027	37.6
Daytona Beach	DAB	$1,105.1	$314.0	11,316	421,749	0.027	37.3
Kinston Regional	ISO	$452.3	$48.3	1,350	20,129	0.067	14.9
					Overall Average	**0.0141**	**70.8**
					Trimmed Average	**0.0114**	**88.1**

36 Building and Maintaining Air Service Through Incentive Programs

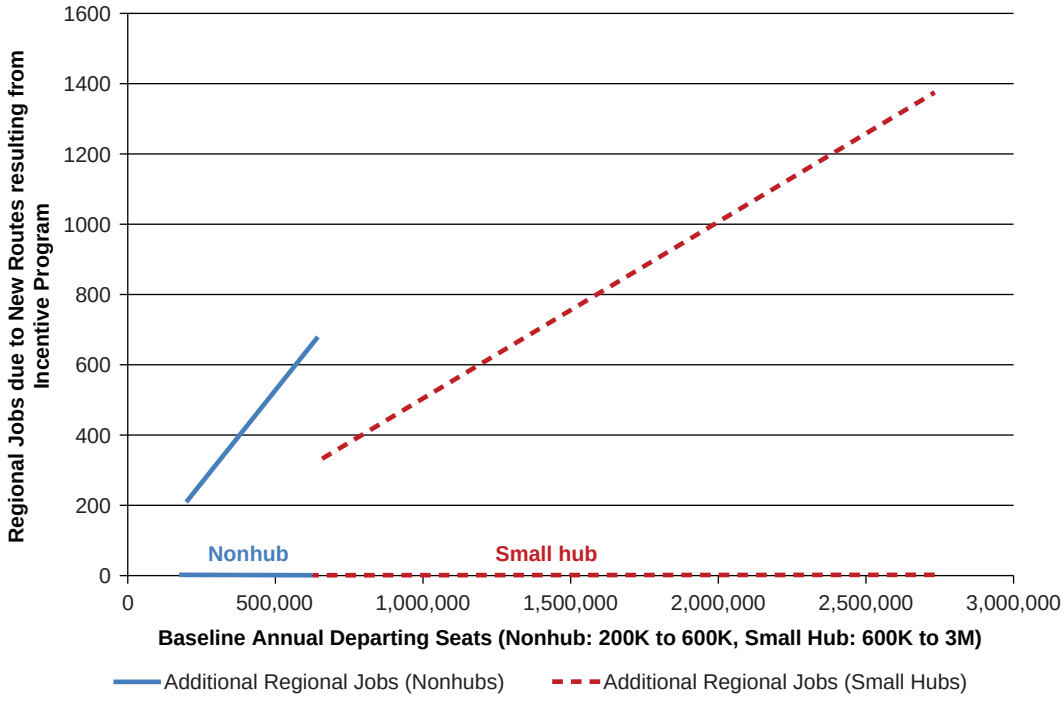
between the presence of incentives of any type at small hub and nonhub airports and annual seat departures that was developed in the econometric modeling shows how incentives affect airport activity on average.

Second, the estimates for the average relationship between regional jobs and airport seat departures show how the seats associated with an incentive program at a small hub or nonhub airport may be associated with changes in regional economies. Linking these two associations provides a rough idea of how an incentive program may affect regional economic activity, expressed as the number of regional jobs that could be associated with the additional seat departures that an incentive program might induce, on average. This implied relationship is shown graphically in Exhibit 24.

Because the estimates indicate that both the effect of an incentive program on airport seat departure activity and the impact of a marginal departing seat on regional job creation are stronger at nonhub airports compared with small hubs, the slope of the line linking the presence of an incentive program to growth in regional jobs as the airport's baseline annual seat departures increases is markedly steeper for the nonhub airports.

Depending on the baseline annual seat departures at a nonhub airport, the use of incentives is associated in the data with between approximately 200 and 700 annual airport-associated jobs. These airport-associated jobs are not only jobs located at the region's nonhub airport; they are also jobs connected with the increase in regional economic activity that would be associated with an increase in activity at the airport. Similarly, a small hub airport's incentive program may also be associated with between approximately 350 and 1,400 regional jobs, depending on the airport's annual departing seats, which range between approximately 600,000 and 3,000,000 per year (a much wider range than nonhubs).

Exhibit 24. Economic implications of the presence of incentives at small and nonhub airports (increase in regional jobs due to increases in airport annual departing seats for different levels of baseline annual seat departures).



This analysis of the regional economic effects of an airport's decision to offer air service incentives is based on the association between two different types of analysis and relationship. The first is the link between an airport's use of an incentive program (of any type and scale) and the annual activity at the airport, measured as departing seats, based on the results of econometric modeling. The second is the average link between an airport's seat departure activity—its scale—and the airport's economic impact within the region it serves, as measured in the regional jobs that can be associated directly or indirectly with the airport's operations. These results can be taken to point to high level trends, and the results for a given airport will depend on many factors that are not considered in this high level analysis, such as the structure of the incentives offered by a particular airport, the types of airlines and passengers making use of the airport, the overall local and national economic environment, and many other factors.

CHAPTER 3

Lessons Learned

In the course of the research conducted for this project, the project team interviewed a comprehensive range of stakeholders and participants from the evolving world of air service incentives in the United States. These included the airports and communities who offer, fund, and manage air service incentives; airlines that make use of incentives to develop their air transportation networks; and the regulators who ensure that airport-sponsored incentive programs represent appropriate and fair uses of airport generated funds. Consequently, several lessons about the current use of air service incentives were synthesized and are presented in this chapter.

1. In concert with the evolution and changes in the airline industry in recent years, the use of air service incentives by airports and communities has become much more commonplace, and incentives are now in much wider use by U.S. airports and their communities. While the importance of the sustainability of a new service remains fundamental for airlines evaluating new markets and opportunities, the use of some type of incentive for financial risk sharing and as a "deal sweetener" is increasingly becoming an airline expectation, especially for LCCs and ULCCs.
   a. Because of the constraints placed on airport-funded and airport-directed incentives, they may be less complex and will sometimes be of shorter duration than incentives developed and funded by communities. Because of this, community-directed incentives may be the more likely source of innovation in U.S. air service incentive programs and offerings.
   b. Most large and medium hub airports have incentives of some type in place, and those that do not offer them are likely to be slot constrained airports of national prominence that serve markets that are in high demand. They may not need to offer incentives. This is consistent with what was heard in the airline interviews—airlines do not look for incentives from LaGuardia Airport (LGA) or John F. Kennedy International Airport (JFK), for example.
   c. The importance and amount of air service incentives depend on a variety of factors, including the stage length of a potential route, the aircraft being used, the market's history with similar service, the business model of the air carrier, and the likelihood of a competitive response from another carrier.
   d. Increasingly, large and medium hub airports are focusing their incentive programs on attracting international air service and service to point-to-point markets with business demand, while small hubs and nonhubs have focused their efforts on increased connectivity through routes to domestic hubs.
   e. This evolution or spread of the use of incentives by airports and communities, and their increased frequency, which reduces the variability in the datasets especially for large and medium hub airports, makes the mixed regression results (which show only modest

differences in the performance of airports with and without incentive programs) in effect unsurprising. Increasingly, the use of incentives sponsored by airport stakeholders, including the airports themselves, to support new markets is becoming the norm.

2. There is increasing importance for community-funded and managed incentives. This growing prominence may lead to new kinds of problems or challenges for both communities and their airports.
   a. Community organizations interested in providing incentives may be less well informed about commercial aviation, airline economics, and the requirements from the FAA that may constrain the freedom with which airport managers can be involved with community incentive efforts.
   b. Community organizations could benefit from a better understanding of airline economics and the opportunity costs for an airline when it assigns aircraft to service in specific locations and knowing more about what drives airline choices and their willingness to enter markets (or decide to leave them).
      i. Encouraging this better understanding of airlines may be increasingly important because community-funded and community-managed incentives are the likely source of innovation in U.S. air service incentives, including the adoption of the kinds of incentive approaches seen at non-U.S. airports.
   c. Sponsors of community incentives also need to understand the limitations on the extent to which airport directors, managers, and staff can be involved in the offering and implementation of community-directed incentives—this may be especially challenging for small hub and nonhub airports that are operated as departments of municipal governments, with airport directors reporting to city managers and councils.
   d. The diversity of public and private entities providing air service incentives has increased in recent years. For example, 19 states either have established air service incentive programs or have participated in community air service incentive programs.
3. What should airports and communities know about the incentives they might introduce?
   a. Is the proposed program comparable to offerings by nearby or by similar airports and communities? How can incentive programs be put side by side and compared?
   b. What markets can airport-directed incentives plausibly encourage service to? How would service in those markets interact with the markets currently served by the airport, or by nearby competitor airports? How will these factors and interactions influence airline thinking about potential routes?
   c. What kinds of returns do the airport and the community think about as contributing to the return on investment (ROI) for an incentive offering? For airports, does ROI refer strictly to financial returns, or operational changes and developments? Do the community organizations and state and local governments that are sponsoring more and more air service incentive programs have the same understanding of the regional benefits of improved air service as airports do?
   d. What should airports and airport managers do to stay compliant with the FAA requirements regarding incentive programs and their provisions and structure?
      i. FAA has stated that it does not approve incentive programs, and audits of incentive programs typically come about as part of overall audits of airport finances and programs.
      ii. FAA interest or concern regarding incentive programs and incentive provisions may sometimes be initiated by airline complaints that an incentive program is structured to fit or benefit a particular type of carrier.
      iii. FAA oversight and guidance of U.S. airport-directed incentive programs may be of particular interest for state, local, and community policymakers interested in the

differences between U.S. restrictions on airport-funded air service incentives and those that can be offered by non-U.S. airports.

1. To what extent can this innovation gap be made up by the greater flexibility available to community-directed programs?

4. Airports can be very different from one another with respect to these factors and lessons identified in this report, and understanding an airport's features and the ways in which the airport may differ from other airports is very important for creating effective air service incentives by both airports and communities.

Acronyms and Glossary

ACO:	Office of Airport Compliance and Management Analysis
AIP:	Airport Improvement Program
ASD:	Air Service Development
ASIP:	Air Service Incentive Program
BIL:	Billings Logan International Airport
BOI:	Boise Air Terminal
BTV:	Burlington International Airport
BZN:	Bozeman Yellowstone International Airport
CMH:	John Glenn Columbus International Airport
CPE:	Cost per Enplanement or per Enplaned Passenger
CVB:	Convention and Visitors Bureau
DAB:	Daytona Beach International Airport
DEN:	Denver International Airport
EAS:	Essential Air Service
EDC:	Economic Development Council
FIS:	Federal Inspection Service
GIS:	Global Information System
GSP:	Greenville–Spartanburg International Airport
HHI:	Herfindahl–Hirschman Index (measure for industry concentration)
IND:	Indianapolis International Airport
LCC:	Low-Cost Carrier
MRG:	Minimum Revenue Guarantee
MSA:	Metropolitan Statistical Area
O&D:	Origin and Destination
PBG:	Plattsburgh International Airport
PDEW:	Passengers Daily Each Way
PFC:	Passenger Facility Charge
PIT:	Pittsburgh International Airport
QSI:	Quality of (Airport) Service Index
ROI:	Return on Investment
SCASDP:	Small Community Air Service Development Program
SEA:	Seattle–Tacoma International Airport
SJC:	Norman Y. Mineta San Jose International Airport
SUN:	Friedman Memorial Airport
TAF:	Terminal Area Forecast
ULCC:	Ultra-Low-Cost Carrier

Airport Fee Waiver: *An incentive in which an airport waives specific fees charged to airlines (landing fees, terminal rents, ground handling, or any other fee that the airport would normally charge an airline for use of an airport and its facilities).*

Marketing Support: *Financial support provided by an airport or community for the marketing of a new airline service. Within limits, airports can provide marketing support incentives, and communities can do so in a wider variety of ways.*

Airline Revenue or Minimum Revenue Guarantee: *A guarantee (which cannot be funded by airports using aeronautical revenue sources) to an airline that a new service will generate a specified amount of revenue from ticket sales, with the incentive guarantee making up the difference.*

Travel Bank: *A fund created by local businesses for use to purchase tickets on a target airline.*

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Abbreviations and acronyms used without definitions in TRB publications:

A4A	Airlines for America
AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAST	Fixing America's Surface Transportation Act (2015)
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
MAP-21	Moving Ahead for Progress in the 21st Century Act (2012)
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TDC	Transit Development Corporation
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S. DOT	United States Department of Transportation

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