OPPORTUNITIES AND OBSTACLES IN OBTAINING AIR CONNECTIVITY
FOR THE RESIDENTS OF FEDERALLY DESIGNATED ESSENTIAL AIR
SERVICE COMMUNITIES

BY

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THESIS

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Abstract

    The Essential Air Service (EAS) program was established in 1978 to guarantee air connectivity for residents of small communities to the national air transportation system. Currently, over half of EAS communities are within 70 highway-miles of another airport leading to passenger leakage at EAS airports and rising program costs. However, communities have shown no interest in accessing federal funds for creative alternatives to air service to connect their residents to the national air transportation system. This paper presents five case studies of EAS communities to understand the reasons why local proponents support air service that is rarely used. The case studies present three main findings: the EAS program is a gateway to federal airport infrastructure funds of the Airport Improvement Program; there is an information gap between the US DOT and the EAS communities regarding existing alternate programs; and local politics and airport administrators' personal professional concern sustains support for local air service. These dynamics lead communities to ignore better alternatives to air service that currently exist or are potentially viable in many EAS communities. The findings of this study have important policy implications: the Congress and the DOT need to define the purpose of the EAS program to target federal funds more efficiently. Further studies on decoupling the impact of general aviation and commercial air service at small airports can help structure an effective federal response to address local concerns regarding the adoption of alternatives to air service with a loss of AIP funds.

To Andy

Acknowledgements

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Chapter 1: Introduction

The Essential Air Service (EAS) program subsidizes commercial airlines to provide daily air service to over 150 small communities throughout the United States. In 2009, the EAS subsidies helped airlines connect 105 communities in the contiguous US with minimum of three daily round-trips to nearby medium-or-large hub airports. Passenger interest for small community air service has declined and the EAS flights have become less popular for the public and more expensive for the federal government. Program costs have increased over threefold in the past decade and a half from $37 million in 1995 ($53 million in 2010 dollars) to $175 million in 2010 and passenger traffic has dropped significantly on EAS flights. People prefer to drive or take public surface transportation to better-served airports.

Creative alternatives to air service already exist or are possible in most EAS communities. Moreover, communities have access to funds that can support these alternatives. In 2003, Congress passed alternatives to the traditional EAS program, providing eligible communities with flexibility to connect to the national air transportation system, including possible van or bus service to nearby airports. Nevertheless, local proponents of the EAS program support traditional air service that is rarely used and no community has opted for obtaining air connectivity under alternative programs.

Why don't more communities pursue these alternative programs? This thesis investigates why alternatives to the traditional EAS program are not attractive to the communities it serves. The research presents case studies of five diverse communities in multi-airport regions, providing a local account of the struggle to sustain passenger interest in EAS flights. The study sheds light on the importance of small airports for local economies. In the pursuit to sustain small airports, proponents see the EAS program as a gateway to federal airport infrastructure

funds. Alternatives to air service under program provisions are not only unknown to communities, but they would also require further incentives to attract communities to opt out of the traditional program. Finally, alternatives are not attractive to local decision makers for two main reasons: airport administrators are concerned that foregoing local air service may negatively impact their careers, and local politicians see the EAS program as an air-service entitlement for their community. This thesis presents the above three findings and connects them to suggestions that can help policy makers decide the future of the program.

The research focus is on EAS airports in multi-airport regions having non-hub and small-hub alternate airports within 70 highway miles. The research design employed includes primary and secondary research of federal funding programs, airport functions, and the small community air service literature, as well as case study analysis. After conducting background research on the EAS program and small community air service, tasks included defining the proponents of local air service who cling to the EAS subsidies, and hypothesizing their reasons for doing so. Also studied are certain incentives of the EAS program which inhibit air service alternatives such as regional airports and ground transportation to nearby airports.

Alternatives to local air service may exist already in EAS communities within multi-airport regions or they may have been considered, but the program does not formally take advantage of such opportunities to connect EAS community residents to the national air service network. The case studies seek to understand the context and dynamics of local decision-making and the opportunities and obstacles for improving connectivity beyond that provided under the current program provisions.

The outline of this thesis includes chapter 2 that defines the problem investigated in this thesis, by using the context of airport functions and financing, the Essential Air Service program

and its history, and existing studies on small community air service post-airline deregulation and the EAS program. Chapter 3 outlines the methodology of a case study analysis and chapter 4 provides a detailed account of five diverse cases representing EAS communities in multi-airport regions: Decatur, Illinois, Lebanon, New Hampshire, Rutland, Vermont, and Clarksburg and Morgantown, West Virginia. Chapter 5 goes beyond individual case studies to present findings across communities. It presents support or counter-evidence for each hypothesis considered. Finally, chapter 6 concludes by providing policy suggestions and identifying strengths and weaknesses of this study.

Chapter 2: The purpose of the EAS program

The purpose of the EAS program is to support local air service to small communities so they are accessible from the national air transportation system. In this chapter, it is first shown that the EAS program has not seen much success in doing so in the past decades and small community air service literature provides some insight into why that would be case. Then, airport functions and financing are explained to understand why air service may not be economically important to small communities, but it may be fiscally important to small airports. Some hypotheses for why proponents cling to subsidized air service already become apparent in this discussion.

Local air service at small airports: the Essential Air Service program

Prior to the deregulation of the US airline industry in 1978, the Civil Aeronautics Board (CAB) directly or indirectly compensated local airlines such as Piedmont and Ozark to operate unprofitable routes to small communities. The CAB either provided airlines with subsidies to operate some unpopular routes or allowed them to serve more profitable routes to recover the loss (TRB, 1991). The Essential Air Service (EAS) program as Section 419 of the 1978 Airline Deregulation Act replaced this practice and became a single program that would ensure air connectivity of eligible communities to the national air transportation system. The program emphasized the importance of local air service at small airports. In 1978, 150 communities with subsidized air service became eligible for the new EAS program. Airlines competitively bid for program subsidies from the DOT every two years to provide a minimum of three weekly and two weekend round trips from a small community to its designated hub(s).

Initially, the EAS program was intended to operate for a decade to help communities transition through the deregulation. The program was extended for ten more years to continue to support small community access to the national airline system. Finally, in 1998, the program

became permanent and continues to fund airlines to serve small communities. However, the extension or the establishment of the program did not mean its success: the subsidies have become more expensive for the federal government and its long-term viability has been questioned as program costs have increased significantly while passenger traffic on EAS flights has dropped. EAS airports enplaned a median of fewer than four people per flight in 2002, a 20 percent decrease from 1995. During this period, subsidies increased by over 200 percent, from $37 million to $113 million. Passenger utilization of EAS airports has fallen for various reasons discussed in detail later in this chapter.

Most recent issues with the EAS program include increased security standards post 9/11. On the supply side, carrier costs and airport costs have increased this decade to meet small airplane safety standards. First, airlines switched operations to either all-jet or very small plane-operations because turboprops with more than 31 seats were required to increase their safety standards. Moreover, airports were also required to increase standards if they were served by aircraft with more than 31 seats. Since 2004, federal regulation Part 139 "established certification requirements for airports serving scheduled air carrier operations in aircraft designed for more than nine passenger seats but less than 31 passenger seats" (FAA, 2010).

Therefore, since the change of regulations, EAS airports are primarily served by small turboprop aircraft perceived as unsafe to many passengers because they operate with a single engine and one pilot. Moreover, these planes are inconvenient for longer distance flights as there are no restrooms and there is limited room for baggage. With no opportunities for future jet-service, and the improvements in the highway network, most people from EAS communities travel by car or other surface transport to nearby better-served airports, contributing to falling enplanements at EAS airports.

Changes in the program

During the late 1980s and early 1990s, DOT restricted communities within 70 miles from a medium or a large hub airport from the program and in 1995 Congress officially changed that eligibility criteria. A community eligible in the 1978 legislation was no longer authorized to receive essential air service if it was within 70 highway miles of a medium or a large hub airport or exceeded a per-passenger subsidy entitlement of $200. Communities over 210 miles from a hub were exempt from this change. However, it has become more difficult for the DOT to exercise these criteria post-9/11 as many communities cite the need for more time to rebound their traffic to previous level. Moreover, the recent hike in fuel prices in 2008 led to service interruptions in one-third of EAS communities. Declining air service contributed to an increase in the number of EAS communities in the program from 78 in 2002 to 109 in 2010 and many airports exceed the $200 cap but continue to receive subsidized air service (GAO, 2009).

Additionally, the above-mentioned changes in eligibility criteria did not address passenger leakage beyond 70 miles or to small hub and non-hub regional airports that have gained direct flights in recent years due to the growth in low-cost and vacation destination carriers. Direct flights to more destinations from small hub airports located an hour's drive from EAS communities provide significant time and cost savings to residents, especially if the two communities are connected by an interstate. Local air connectivity in many communities was not attractive under the program where people have alternative transportation infrastructure and service options challenging the effectiveness of the program.

Increased criticism of the program and its lack of efficiency triggered Congress to approve several additional options to traditional air service in the Wendell Ford Aviation Reform Act of 2000, but availability of funding restricted their implementation until 2003, and only two

of the original options survived. The *Community Flexibility Pilot Program* allows ten communities to receive a grant equal to two years' worth of subsidy in exchange for foregoing EAS funding for ten years. The funds could be used for a project on the airport property or to improve general aviation facilities. Second, the *Alternate EAS Program* can provide EAS funds to a community every year instead of every two years. This option is very flexible as the funds can be used for "smaller aircraft but more frequent service, for on-demand taxi service, for on-demand surface transportation, for regionalized service, or to purchase an aircraft to be used to serve the community" (10). Communities can rejoin the traditional program if their alternate plans are unsuccessful. Yet no community has formally taken advantage of these options. This raises the question of what reasons explain communities' clinging to the traditional EAS program.

The administrative structure of the EAS program

The administrative process of EAS contracts provides a venue for small communities to influence the federal funding process. Moreover, the DOT is required to consider official views of the EAS communities seriously and has funded more expensive contracts in the past if the local officials have shown support for such a bid. Hence, communities can work closely with the DOT on their EAS contracts meaning that officials interested in the alternate programs would have done so, but they have not. However, the process hints at two problems related to the alternate programs: First, local comments are dominated by airport owners and managers who may not look at ground transportation access as an interesting option. A healthy community debate on whether air service is important to the residents requires local motivation as it is not federally mandated. Second, if alternate EAS programs do not show in DOT bids since their inception, then the reasons for their absence may also have do with a lack of communication between the DOT and the community stakeholders regarding the program.

Decline of small-community air service

Many small airports have suffered their market's waning interest in local air service. Existing research on small community air service and reports on the EAS program have utilized econometric analyses to determine factors linked to decreased passenger interest in small airports. However, limitations to such analyses include small sample sizes of EAS or non-hub airports, and many independent variables that affect the observed passenger-traffic. Moreover, few case studies are presented and fewer aim to generalize their findings to a larger set of airports or communities. This section summarizes small community air service literature, including congressional reports on the EAS program to help situate the thesis in a larger context. Findings and limitations of this literature provide further justification for this research and the methodology employed in this thesis.

Small community air service has declined since the end of regulation, both in passenger demand and in number of flights, raising questions about its future (Eads, 1972; MacAvoy and Snow, 1977). The causes of decreasing number of flights and destinations lie beyond local control and are based on airline decision-making to serve profitable routes and not number of passengers. On the demand side, local consumers prefer jet aircraft, flights that fit their schedule and offer low airfare, and availability of nearby airports (Vowles, 1999). Studies of particular relevance include Kanafani and Abbas, 1987, which analyzed three cases in California to learn that post-deregulation small community air service was struggling more in communities closer to major hubs.

Studies specific to the EAS program concluded that the program might have had a "negligible impact on air service to small communities" (Cunningham and Eckard, 1987, p. 255), since people prefer more than mere availability of air service and base their decision-making on

factors such as fares, arrival and departure times, frequency, aircraft type, and destinations served. EAS airports/flights and very small airports not only lack most of the desired air service attributes, but many also compete with unsubsidized airports within driving distance. As a result, enplanements dropped at rural reports by 15 percent between 1977 and 1988, while they doubled in medium sized cities. The reason for loss of service in rural and EAS airports was not attributed to a lack of market, but due to available service options in nearby areas. Among the study sample of 100 EAS communities, 85 are within 100 miles of larger airports that "are likely to offer lower fares, more nonstop service, and a wider selection of competing carriers than the small community airports" (Transportation Research Board, 1991, p. 123).

Vowles, 1999 used logistic regression analysis on small airports to calculate their odds of losing commercial air service in the future. The author adds a dummy variable for airports receiving EAS subsidies and the analysis suggests that the odds of communities losing airline service increases almost eight-fold if they have EAS airports. Also, turboprop service increases the odds of losing service by 230 percent, while additional direct flight destination decreases such odds by 43 percent and additional carriers decrease them by 98 percent. A 2002 GAO report that evaluates options for the program's long term viability indicates that, "Several factors—including increasing carrier costs, limited passenger revenue, and increasing numbers of eligible communities requiring subsidized service—are likely to affect potential future subsidy requirements of the EAS program" (p. 2). Moreover, subsidies increased more than passenger use during the period of the GAO study, contributed by proximity of EAS communities to small and non-hub airports like Charleston, WV and Syracuse, NY.

Another deterrent to sustenance or growth of air service is passenger leakage from local airports. Passenger leakage from EAS airports results from people's willingness to drive farther

for better flights, an issue often discussed in GAO reports and other evaluations of the program. EAS airports have lost as much as 90 percent of their market to nearby better-served airports (GAO, 2009). Improvement of the highway system and availability of more public transport options to better-served airports near some EAS communities have increased leakage distances. Suzuki, 2004 suggests that airport leakage is geographically more widespread; people are willing to drive over 200 miles to airports with more connections and cheaper fares. Phillips, 2005 studied 202 non-hub airports and found that local air service is more important to rural areas west of the Mississippi as all airports east of the river are within 100 miles of a major airport. Also, leakage rates are positively related to wedge fares – an additional rate one must pay if one uses a connecting flight from a local to a hub airport. Small but vibrant airports are struggling to compete with other airports for traffic as pointed out by Fuellhart, 2007. The author conducted parking lot and airport surveys to collect zip-code level data on Harrisburg International Airport (MDT) in Pennsylvania and its competing airports to conclude that people in MDT's market-catchment area were driving to Baltimore Washington International (BWI) airport or farther to take low cost carrier flights.

Fuellhart, 2007 also hinted at a chronic problem: leakage is perpetuated even if better service becomes available at a small airport because people stop looking for alternatives once they are comfortable with their initial choice. When many EAS communities temporarily lose service, people get accustomed to using other airports. Moreover, they are willing to travel farther for better air service in the Midwest and the West where driving a few hours is common practice to obtain regional services such as shopping and health care, among others.

In 2009, GAO published a comprehensive and targeted study on the EAS program, titled "Options and Analytical Tools to Strengthen DOT's Approach to Supporting Communities'

Access to the System." The report highlighted many issues with the program: "Relatively high

EAS fares, low-cost alternatives, and inconveniences associated with EAS flights contribute to

low EAS ridership" (p. 21). Some airports have leakage rates of up to 90 percent and some

people are willing to drive farther than earlier studies estimated (over 150 miles). Public surface

transportation competes with the EAS market: over 2.5 million passengers are transported from

current EAS communities and other locales in Maine, Vermont and New Hampshire to Boston

Logan annually. Similarly, bus companies provide service to half of the current EAS

communities.

From the above discussion, it not only seems difficult for the EAS program to meet its

purpose of connecting small communities to the national air transportation system, but it is also

intriguing to see continued local support for air service that is not attractive to the residents.

Proponents of air service have nevertheless supported the program. The next section provides

some background information on airport functions and financing that shows how the EAS

program serves local purposes other than connectivity.

Airport functions

Airports serve multiple functions that have economic impact locally and regionally.

Public-use airports are home to businesses that own, operate, charter or maintain aircraft, provide

cargo facilities and employ people. Businesses use airports for corporate travel and also to

maintain jets contributing to airport revenue. Cargo airports provide vital connections for parcel

carriers and major businesses to transport goods across the country and beyond. Small airports

have a considerable advantage for offering general aviation and cargo facilities because of their

lower landing fees and reduced congestion as compared to major airports. Scheduled airline

service is just one of many functions of airports and it may contribute little economically or

fiscally to small airports and their communities, especially EAS airports. However, commercial

airline service has the most potential to bring in federal funds critical for maintenance and

expansion of airport facilities. The federal Department of Transportation (DOT) uses passenger

boardings or enplanements as an important determinant of appropriations, with minimum

thresholds to qualify for funding. Therefore, airport administrations are inevitably concerned

about scheduled commercial air service, even if it has little possibility of resurgence in EAS

airports in multi-airport regions.

Airports are more than passenger terminals

Airport managers and directors justify investment in local airports by showing economic

impact analyses of their airports. These studies claim that airports generate employment, and

have strong spill-over effects across regions, adding to economic and fiscal gains for the region.

In interviews, proponents mention the same studies as a justification for air service and their

support for the EAS program. However, airports do much more than enplane a few people; their

economic impacts are a result mostly of non-commercial air service activities. They are

important access points with vibrant general aviation (GA) facilities critical to rural accessibility

and development (see figure 1). GA facilities allow for an aircraft to take-off, land and park at

the airport. Many facilities also provide infrastructure for cargo movement allowing tenants such

as UPS or FedEx to bring in rent, jobs and revenue for the airport by loading and offloading

cargo and refueling their aircraft. EAS airports are similar to most airports in the United States;

most aircraft operations are for private and corporate aviation purposes (see Figure 1).

Figure 1: Most airports cater to general aviation
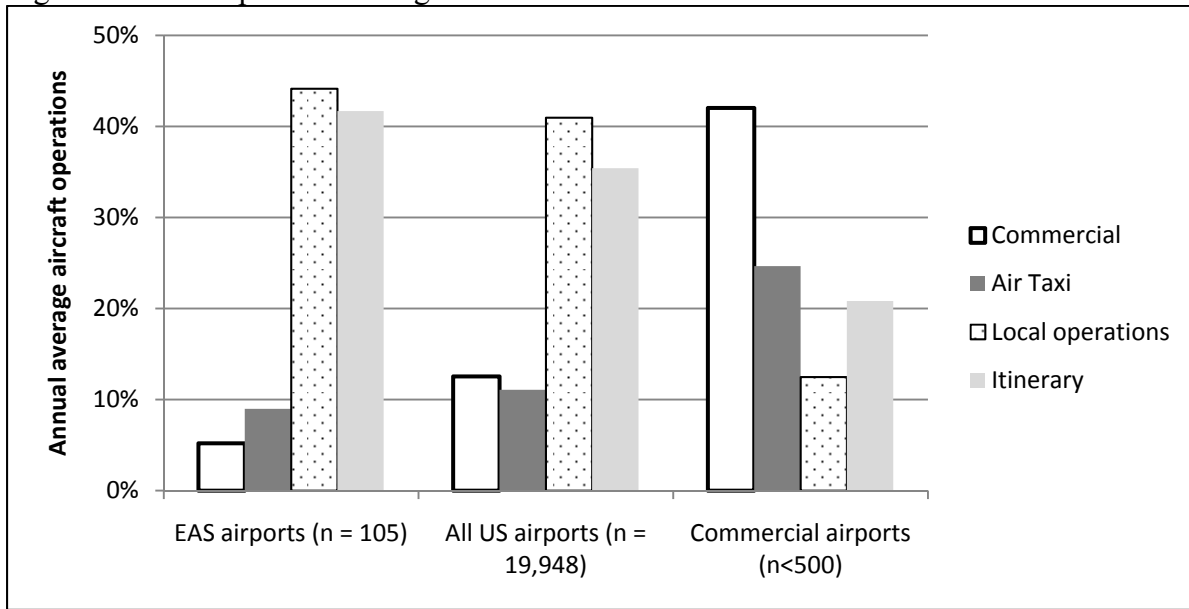
Source: FAA, 2010.
**Air Taxi, local operations and itinerary may refer to private, corporate, unscheduled charters, and other airline activities. Military operations excluded from this analysis.

Passenger services: Airlines serve over 450 airports in the United States with scheduled passenger commercial air service. Airports are categorized by the number of people they board annually, referred to as annual enplanements. An airport is considered a commercial airport if it enplanes over 2,500 people a year. It receives a primary airport designation if it enplanes over 10,000 annual passengers. In 2009, there were 367 primary airports and 127 non-primary commercial airports in the United States (FAA, 2010). Passenger facilities and user-fees are important sources of revenue for larger airports. Passenger Facilities Charges (PFCs), landing and gate parking fees, and refueling costs pay for terminal maintenance and expansion, operational expenses of the airport, and contribute to capital projects. However, small airports such as the ones with essential air service either do not charge PFCs or earn little from passenger use of the facilities. Moreover most EAS airports no longer charge parking fees, eliminating another source of revenue. Hence, passenger services contribute little to airport revenues in small communities.

General Aviation and Cargo: Any airport enplaning less than 2,500 people a year is considered as a General Aviation facility. GA facilities exist at most airports, providing space and infrastructure for private aircrafts, fixed-based operators (FBO), charters, airside industries and similar aviation-related uses. Small airports, including many EAS airports, have extensive GA facilities that employ many people and are magnets for business development. Some EAS airports also offer cargo facilities including customs clearance and free-trade zones that may allow for future international private or cargo aviation activities. Though limited existing studies provide a clear idea of the impact of GA airports, their importance has been recognized for decades. In 1986, over two-thirds of all business aircraft trips used GA airports, providing decision-makers access to regions and towns for future development (Weisbrod, 1991).

However, absence of commercial air service limits opportunities for obtaining federal funds that can support airside infrastructure such as instrument landing system, taxiways, runways, lighting, fire services and terminals. The need to maintain or expand this infrastructure has become more critical post-9/11 as the new federal regulation FAR Part 19 requires additional passenger safety for aircrafts carrying more than 34 people.

Airport financing

Major sources of public-use airport funding include tax-exempt bonds, state and local grants, passenger facility charges, airport operating revenue, and the Airport Improvement Program (AIP). Airports use varying combinations of these sources to fund capital and operational expenses to support aircraft, cargo, and passenger movement. The EAS program is a more targeted financing program that does not support airports directly, but funds airlines. AIP is a focus of this chapter as it contributes significantly to the maintenance and growth of EAS airports.

Airport Improvement Program

The Airport Improvement Program provided $3.4 billion dollars in federal funds in 2007 to airports that annually enplaned over 2,500 passengers and were listed in the National Plan of Integrated Airport Systems (NPIAS) (FAA, 2010). Over 3,500 airports, including all EAS airports, are listed in NPIAS, establishing their eligibility for AIP funds in a given year. AIP is crucial for small and rural non-hub airports that cater to few passengers, as other funding sources are less prominent in their financing. Moreover, AIP appropriations favor small airports over large airports as federal funds can cover up to 95 percent of project costs at small airports, requiring a very small match of local funds, compared to 70 percent at larger airports (FAA, 2000). Non-hub airports with commercial service depend on AIP for 89 percent of total capital spending, while large and medium-hub airports depend on AIP for less than 30 percent of their spending (Kirk, 2007).

AIP is an important, and at times the only source of funding for major capital projects at small airports that do not enplane many people. These airports often struggle to maintain their general aviation facilities due to fewer options for secured funding. Appropriations formulas require passenger activities at public-use airports and substantially increase airports' access to AIP funds if they are designated as primary airports. The minimum entitlement to primary airports is $1 million a year, versus $150,000 a year for non-primary airports. The need for passenger activity to qualify for federal funds links AIP with EAS: small airports receiving Essential Air Service funds can significantly improve their finances and thus their infrastructure if they are able to achieve primary designation by enplaning over 10,000 people annually.

SCASD Program: Flexible but under-funded

Small Community Air Service Development Program (SCASDP) is a more recent federal program that provides grants to airports smaller than small-hub as of 1997 classification. Established in 2000 as part of the AIR-21 Act, SCASDP funds specific projects that enhance air connectivity from small communities. EAS airports are eligible for SCASDP if they have had inefficient air carrier service or unreasonably high air fares. SCASDP funding requirements and procedures are more flexible than EAS or AIP program requirements. For instance, airports that have lost service are eligible to submit proposals and the program can also fund surface transportation from a small community to a better served airport. The program funds can be used for more creative methods of retaining and enhancing existing commercial service, including advertising campaigns and subsidies to new airlines or existing airlines in a timeline not limited to one year.

SCASDP has limitations; it is a drop of $20 million in a bucket of federal funding for airports that exceeds $3 billion annually. The General Accounting Office evaluated the program as one with mixed results (GAO, 2005); SCASDP funds forty projects with $20 million a year, which is a very small amount for most airport projects. Moreover, a recipient cannot reapply for a grant, which may discourage communities from seeking funds for projects that may not show short-term results and require continued support.

Conclusion

Air service may contribute little to local economic impacts of small airports, but it may have a strong fiscal impact on the airport's future. Airports serve multiple functions, including general aviation, commercial, and cargo aircraft. Small airports, including the EAS airports are part of the majority of airports that cater to general and corporate aviation. However, federal

funds critical for airport maintenance and expansion are appropriated based on commercial passenger-use of airports. The EAS program does not fund the airports, but provides eligible airports with commercial air service that is of little interest to passengers, thereby providing a gateway to more critical federal funds. Small community airline service has declined for various reasons, including people's preferences for aircraft, time and cost, and the ease of driving to nearby airports. Existing studies paint a gloomy picture for the future of small-community air service, emphasizing a need to consider why alternate EAS programs have generated no interest from small communities.

Chapter 3: Methodology

One problem faced by researchers studying small community air service is the diversity

between communities, especially EAS communities: There is not only diversity in their access to

transportation infrastructure, but also in their demography and economy. This thesis uses a case

study methodology to more effectively explore the sustained support for the EAS program and

obstacles to the adoption of program alternatives in the context of this diversity. This chapter

details case study methodology, explaining how such protocols can be used to create a robust

research design, drawing largely from Yin, 2009 and Gerring, 2009. Major components of this

methodology include design and implementation of case studies including case selection, site

visits and interviews, and analysis of collected information to inform decision-making, as well as

airport functions and financing, literature review of existing studies, and review of the program

discussed in Chapter 2.

Characterizing EAS airports: a GIS Analysis

In 2009, there were 105 EAS communities in contiguous United States. This study

assumes that the EAS program and the availability of local air service is of real importance for

most remote communities and therefore excludes them from this analysis. Communities were

characterized as remote based on their access to other commercial airports. Using ArcGIS, EAS

communities within 70 highway miles of another commercial airport (subsidized or not) were

designated as communities in multi-airport regions; remaining EAS communities were

designated as remote.

If another EAS or commercial airport was located within the 70-mile service area

polygon of a given EAS airport, then that airport was counted as an EAS airport in a multi-

airport region (see Figure 2). GIS network analysis showed that 64 out of 105 communities

served by the EAS program are in multi-airport regions with at least one, but sometimes two or three additional airports within 70 highway miles. Furthermore, 35 of those 64 airports have another EAS airport in their 70-mile region and seven airports have two EAS airports in their region.[1]

Figure 2: Network Analyst generated 70-mile service areas for each EAS airport
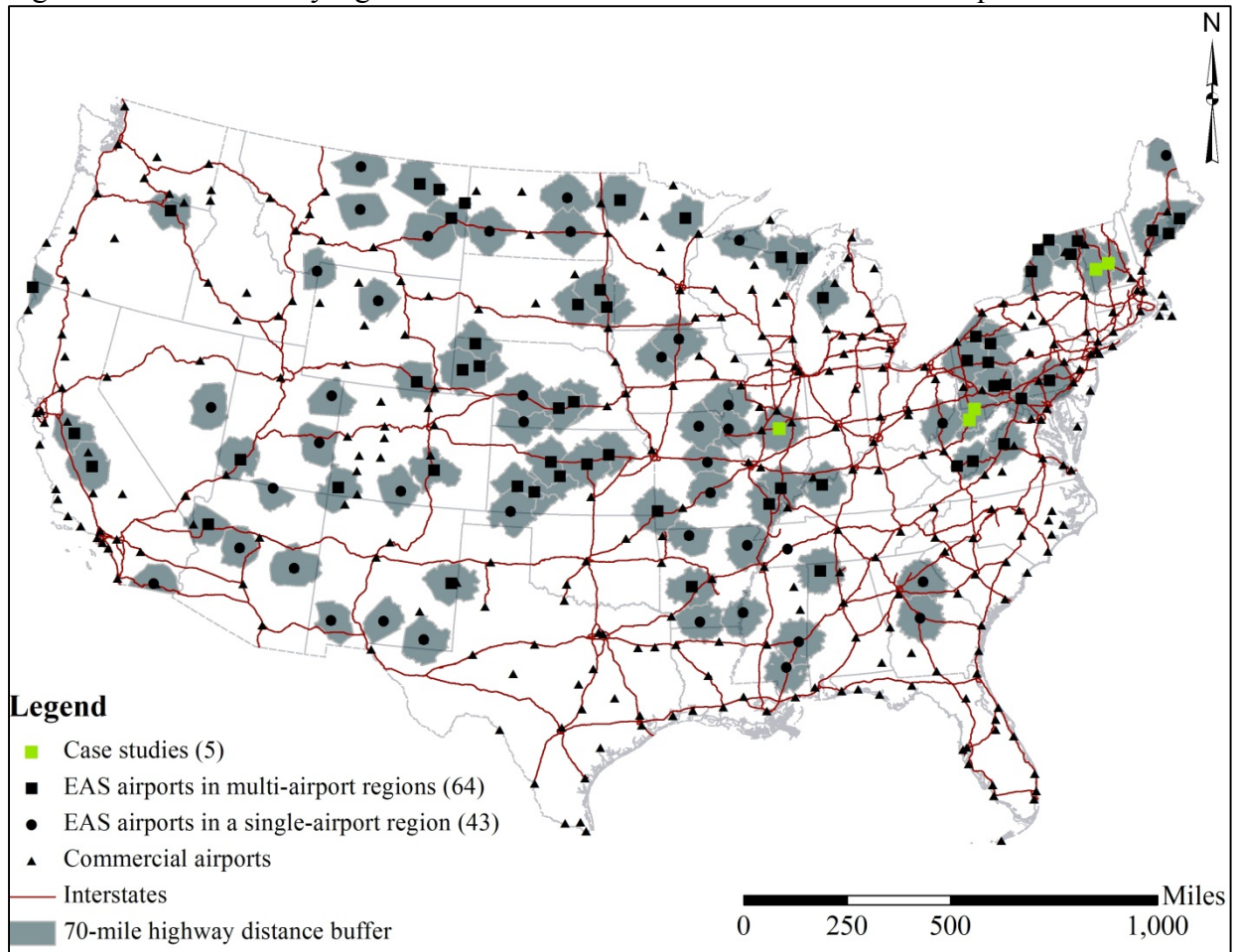
For a more detailed analysis of chosen cases, more service areas were created. Below is the detailed analysis for Decatur, Illinois, although similar analyses were conducted on all cases

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[1] Database used in this analysis include, The National Transportation Atlas Database 2009 from the Bureau of Transportation Statistics for airport and national highway planning network shapefiles; the Bureau of Transportation Statistics for airfare data from 2006-2009; the Office of Aviation Analysis, Department of Transportation for the Essential Air Service airport Excel files of years 2000-2010; the Federal Aviation Administration for the airport boarding (enplanement) data for all United States public-use airports; the US Census TIGER shapefiles for county and state shapes and for county level population data.

identified as potential possibilities for further study in order to better understand community access to the aviation network and thereby facilitate case selection. As mentioned before, some people are willing to drive much farther than 70 miles to find better-suited flights. Therefore, further rings of 70, 100, 150 and 200 miles were chosen to create multiple service areas around Decatur, Illinois. The map shows that Decatur has three airports in 70 mile region, and four major hubs and one non-hub within 200-miles of highway distance (see Figure 3).

Figure 3: Network Analysis on Decatur
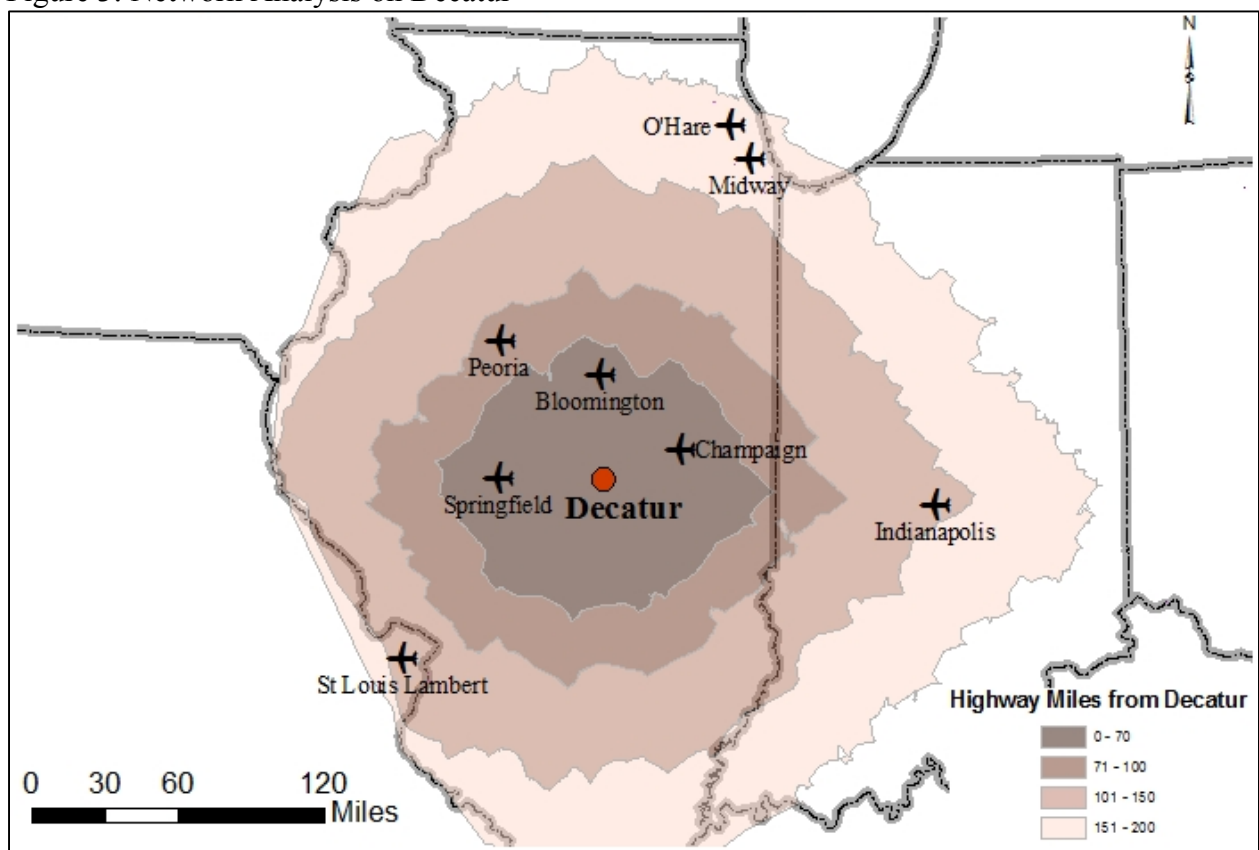
The GIS analysis narrowed potential cases from all EAS communities to the ones that are proximate to each other or other airports. Yet these remaining cases are very different in economic and demographic aspects as well as transportation accessibility.

Why case studies?

A case study is an "intensive study of a single unit or a small number of units, for the purpose of understanding a larger class of similar units" (Gerring, 2009, p. 37). Here, the principal municipality(ies) that an EAS airport serves is the unit of analysis. There are trade-offs with choosing a case study method as opposed to the cross-case analysis approach used in many studies cited in Chapter 2. Case studies are better suited for various purposes of this thesis, such as local dynamics and decision-making. The main reasons for opting to use a case study approach include:

There are a limited number of EAS communities in multi-airport regions (small-n problem), making statistical inferences on a population of 64 communities unreliable. An initial regression analysis on various factors related to enplanement figures made little logical sense. Existence of subsidies made EAS enplanements non-random, creating severe problems with the reliability of those results. Second, there are many independent variables to consider, reducing the degrees of freedom in a statistical analysis. Moreover, many variables are difficult to quantify, such as an airport manager's fear of losing their job for foregoing essential air service.

The goal of this thesis is to understand causal mechanisms for strong local interest in the EAS program, such as the program's connection with AIP appropriations. Single or pilot cases serve to hypothesis generating, an integral part of this study, and subsequent cases serve to test those observations of pilot case and research at diverse locations. Moreover, past studies are limited in their scope of the issue: a lot is known about why people will not get on small planes, but we know very little about why the Chamber of Commerce continues to send a letter of support for the EAS program other than our presumption that they prefer subsidized air service.

It is also imperative to interview economic development officials who can judge if their community would be affected without air service.

Case Selection

The objective of this study is to generalize findings from chosen case studies to the larger set of 64 EAS communities. In order to do so, considerable importance was given to case selection. The main questions considered in this study during the initial design phase included whether to select a single case or multiple cases, what case(s) to select, and why select them. Yin 2009 recommends more than one case if resources permit since "greater certainty lies with the larger number of cases" (p. 58). A pilot-case can help determine the main objectives and research question of the study that may clarify the need for more cases. For this study, Decatur, Illinois served as a pilot-case from the universe of 64 EAS communities in multi-airport regions. Initial visits and interviews helped draft preliminary hypotheses for the study and illuminated the need for more cases as Decatur only represented a small segment of the set: an a declining manufacturing city in an urban county with major industries that generate air travel demand, but they also have access to several options to obtain air connectivity in the region.

Gerring, 2009 presents several case selection techniques, including several types of possible cases. The EAS airports have great variation among themselves; specifically they differ in demographic make-up, geographical proximity to transportation infrastructure and airports, history of air service, and administration of their airports. Therefore, diverse case selection is the most appropriate method to help obtain findings that are generalizable to the universe of this study. To explain these differences among relevant variables, at least two cases are needed for contrast. Since Decatur is in a multi-airport region with interstate access to two of three unsubsidized airports, Rutland, Vermont represents a more secluded community with no

interstate access and one EAS airport in its region: Lebanon, New Hampshire. However, further variations exist, such as Morgantown and Clarksburg. West Virginia that are also within each-other's multi-airport regions. The West Virginian communities are connected by interstate not only to each other, but to the Pittsburgh International Airport to the north. Hence, these five diverse cases help to accurately represent the universe of this study.

A systematic identification of proponents and stakeholders at each case study

After selecting Decatur as a pilot-case, locals who work with, are otherwise associated with or may use the airport and the airline were identified. The DOT publishes all communications between local officials, proponents, stakeholders and the public regarding the EAS agreements. In this study, air service stakeholders were defined as local institutions, businesses and members of the public who may use the airport or the airline service. Proponents were defined as supporters of local air service and the EAS program.

The DOT requests comments from public officials within the communities or the owners of the airport such as the Mayor or the City Manager and airport administrations. Other local proponents in support of certain carriers or EAS more generally may include the local chamber of commerce, economic development agencies, and sometimes local business owners or members of the general public. Non-local proponents include state senators and representatives, but they are not included in this study. All proponents were contacted to arrange meetings, either at each location before site visits or over the phone if individuals were not available to meet in person. Meetings were also made with representative stakeholders in each community to gain an understanding of their views local airport use. As interviews progressed in Decatur, potential causal links emerged that could be tested at other cases.

Hypotheses

The six hypotheses of this study were tested in each case study through focused interviews to understand why community proponents cling to underused air service.

Proponents believe the EAS program opens doors for other federal airport funds: Proponents are concerned with the viability of their airport as a general and corporate aviation facility, and local air service opens doors to funds critical to airport construction and maintenance. As explained in chapter 2, primary airports are eligible for a million dollar entitlement every year from the Airport Improvement Program (AIP), and funds decrease to $150,000 a year for a non-primary airport, so local proponents are vocal for a better, and at times an expensive contract for another attempt to increase their enplanements over 10,000.

Proponents believe that airports are important for economic development: Many public officials and economic development professionals stress that airports are an important factor for attracting and retaining businesses. Existence of air service is part of a checklist of desirable services available in the community.

Proponents believe that small communities continue to be viable markets for air service: Proponents envision that their local airport will eventually capture most of the local passenger base. Their suggestions to reform EAS may include enhancing local air service to control passenger leakage to other airports.

Proponents believe they are entitled to the EAS program: The program requires no local match for funds and in recent years, DOT has rarely exercised its right to restrict communities with annual per-passenger subsidies higher than $200. Therefore, proponents evaluate airport success as maintaining free air service rather than increasing its use. Foregoing free commercial air service can also be a political misstep in some communities.

Proponents and stakeholders are unaware of alternatives: The local proponents and stakeholders are unaware of options such as the Alternate EAS program, which would provide the communities with funds to implement any mode of connectivity.

Airport administrators do not want to lose air service during their tenure: The job of airport managers or directors is to run their airports. EAS and AIP help maintain a community's status as one with local air service and also lift a substantial financial responsibility from local authorities or taxpayers. Losing EAS may mean the end of community air service, which may not reflect well on their ability as airport administrators.

Sources

Yin stresses the importance of using multiple sources to avoid biased or incorrect data collection, recommends the creation of a case-study database and, suggests maintaining a chain of evidence (2009, p. 101). Multiple sources of evidence are essential to avoid traps of misleading information and to conduct case studies that are likely to be more convincing and accurate. This process of "converging lines of inquiry" (p.113) or triangulation is practiced in this thesis to accurately detail the process of the program, its relationship to other goals of airport financing, and the local struggle to maintain their airport. The GAO reports, expert interviews, past studies, and official documentation all contribute to a comprehensive picture of these relationships.

Interviews with proponents and stakeholders

Local interviews serve two purposes in addition to the initial data collection and analysis: first, certain questions helped verify whether generalized trends played a role in a specific case study, and second, focused interviews provided evidence for causal inferences and explanations from on-the-ground stakeholders and proponents, who have seldom been part of past studies. In
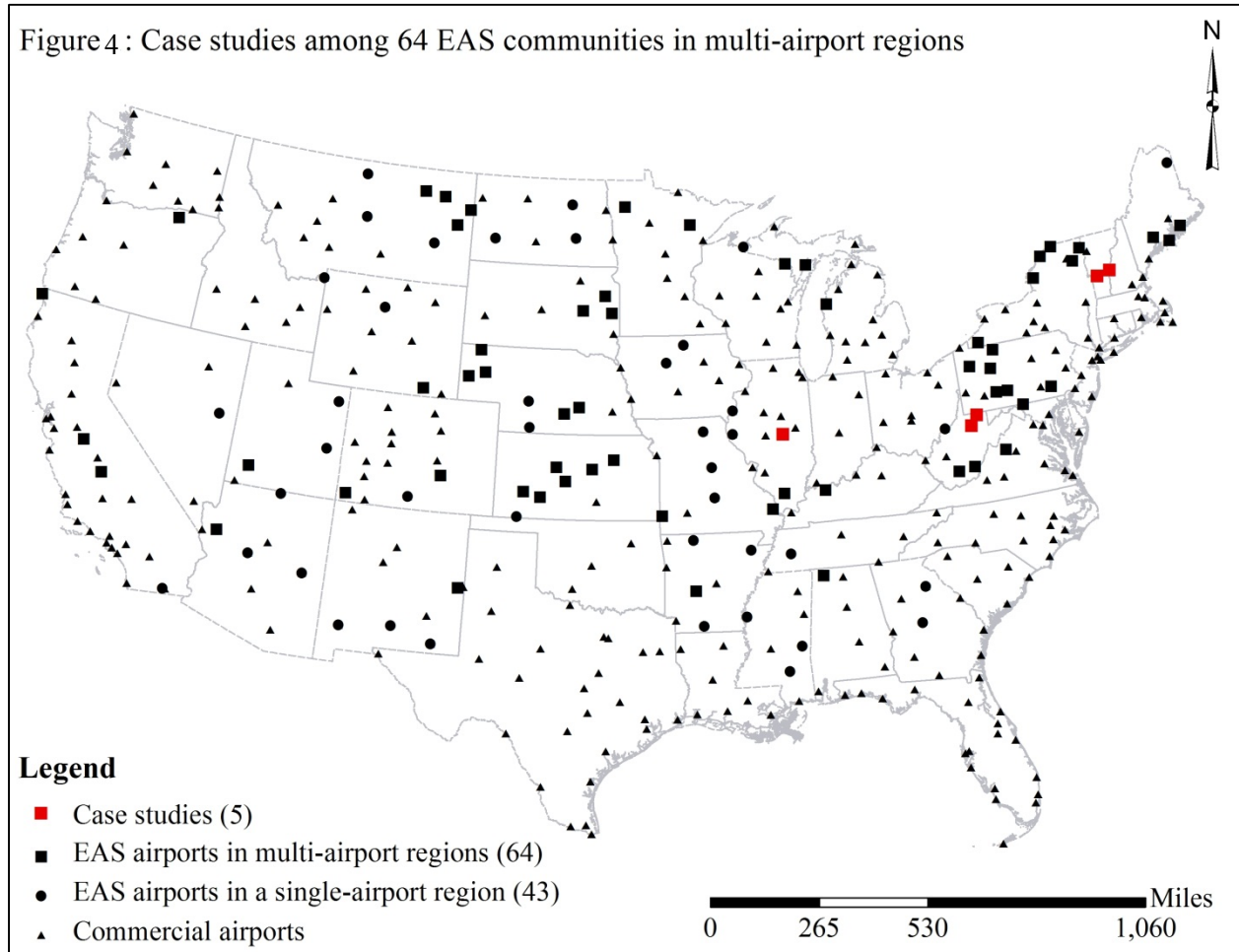
each community, stakeholders and proponents were interviewed with either on the phone or in-person (see Table 4 in appendix). If certain officials recommended additional informants, these interviews were accommodated them during extra time reserved for such snowballing, or on the phone at a later date. The Transportation Research Board panel comprising of Linda Howard, former Aviation Director at the Texas DOT, John Fischer, transportation analyst at the Library of Congress, and Debbie Alke, the Aviation Director at the Montana DOT, and this study's advisor Professor Andrew Isserman offered their expertise at all stages of the research.

Conclusion: case study evaluation criteria

This chapter presented the methodologies used in this thesis, including a GIS network analysis to define a set of EAS communities, rationales for using a case study method, and techniques for selecting cases and conducting the research. The purpose of this study design was to present research that surpasses the logical tests to judge its quality, such as trustworthiness, credibility, confirmability, and data dependability (GAO, 1990 from Yin, 2009). The judgment criteria of these four tests guided the chosen procedure and research design, including c*onstruct validity:* identifying correct operational measures for the study, including the use of multiple sources of evidence, establishing a chain of evidence, and having key informant review of drafts; *internal validity:* confirming relationships between variables as causal, as distinguished from spurious relationships, through pattern matching, explanation building, addressing rival explanations and the use of logic models; e*xternal validity:* defining the generalizable population from case studies through replication-logic, and r*eliability:* demonstrating that the research design can be replicated through the use of case study protocol or the development of a case study database (Yin, 2009, p. 40-41). Careful attention was paid to these measures while conducting case studies and developing hypotheses to explain local support for the program.

Chapter 4: Case Studies

Five cases presented here are representatives of diverse EAS communities in multi-airport regions (see figure 4).

Figure 4 : Case studies among 64 EAS communities in multi-airport regions

Legend
- Case studies (5)
- EAS airports in multi-airport regions (64)
- EAS airports in a single-airport region (43)
- Commercial airports

Miles
0   265   530   1,060

While the cases are similar in distance to nearby commercial airports and falling enplanements (except Rutland; see Figure 5), they vary significantly from each other as communities and airports (see Table 1).

Table 1: Characteristics of diverse case studies

| Town | Population (2009) | | Per-capita | Main | Airport |
	City	County	income ($)	Industry	Owner
Decatur	76,199	108,204	39,147	Manufacturing	Local
Rutland	16,630	63,014	37,166	Retail	State
Lebanon	12,722	86,291	44,795	Health-care	Municipal
Morgantown	30,330	90,080	35,287	State/Education	Municipal
Clarksburg	16,408	68,911	33,925	Federal	County

Sources: US Census, REIS and local airports.
Income and industry by county, REIS 2008.

The small towns not only provide the local context of struggle with rural air connectivity, but they also highlight possibilities for alternate transportation - a single approach of the traditional EAS program does not suit all communities. This chapter provides an account for each case – its location, demographics, air history, EAS experience, proponents and stakeholders, and options to connect to the national air transportation system.

Figure 5: Falling enplanements at case study airports
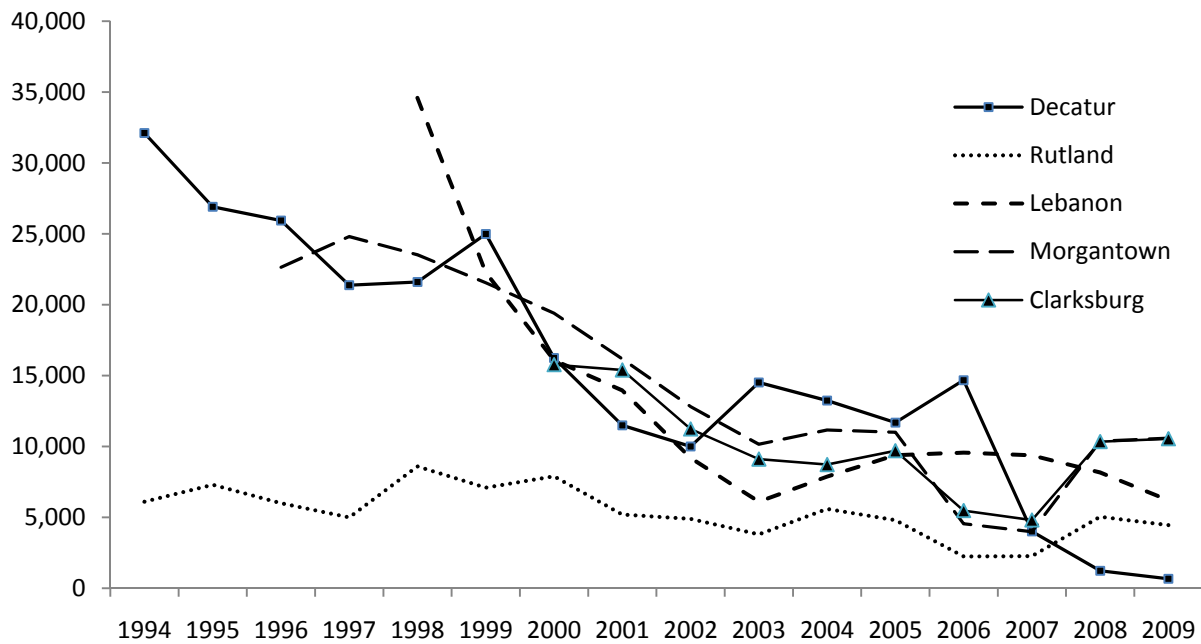
Case 1: Decatur, Illinois

Decatur is located 138 miles from St. Louis, Missouri; 171 miles from Indianapolis,
Indiana; and 180 miles from Chicago, Illinois. While Decatur's population compares to other
central Illinois towns, such as Bloomington, Champaign, and Springfield, its population
continues to decline as the other towns grow. Macon County's population was 108,204 people in
2009, and Decatur's population was 76,199 people (US Census 2000). Major businesses employ
more than 10 percent of the workforce in Decatur, including Archer, Daniels & Midland (ADM),
Caterpillar, and Tate & Lyle. ADM employs over 3,000 people, while Caterpillar employed over
3,000 people until 2009 when they laid off over 1,000 workers (REIS 2008).

Figure 6: Decatur's multi-airport region
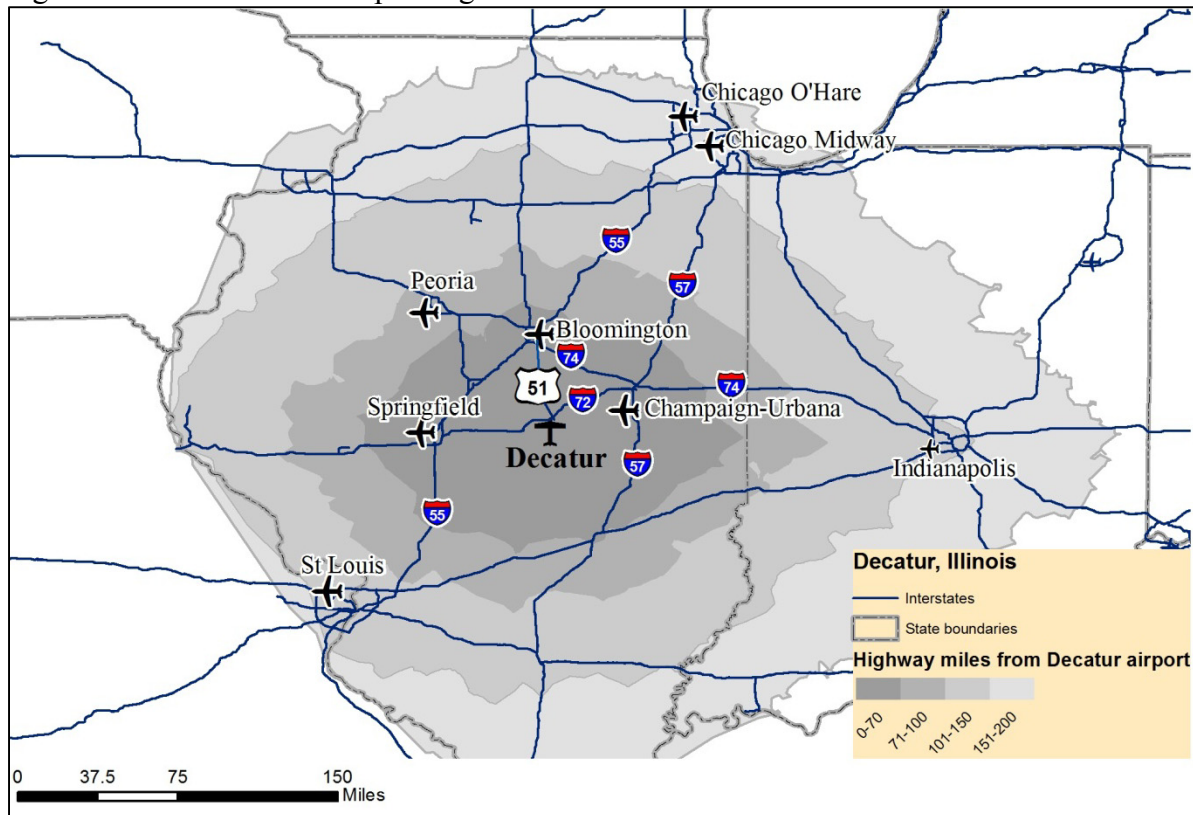
Airline service and history

Air Choice One currently serves the Decatur airport and began service in 2009 to St Louis Lambert and in 2010 to Chicago O'Hare airports under the EAS program. The airport serves Macon County and the city of Decatur, its seat and main population center. In the Central Illinois region, commercial air service has existed since pre-deregulation in not only Decatur, but also Springfield, Champaign and Bloomington (see Figure 6). Because Decatur's major employers are multi-national corporations, it generates a substantial number of business trips. The airport averaged over 40,000 enplanements in the 1980s and 1990s, and until 2006, it was a primary airport with over 14,000 enplanements (see Figure 7). United Express served the airport between 1996 and 2000 with direct service to Chicago O'Hare. The airport joined the EAS program in 2003 after its sole carrier, Trans States, ceased unsubsidized service in 2002. Regions Air and Great Lakes Airlines provided service in subsequent contracts, but their unreliability was a factor in falling annual ridership to just 700 passengers in 2009. Air Choice One began EAS operations in 2009 with three daily departures to St. Louis Lambert and Chicago O'Hare. The airline receives a $3.1 million annual subsidy from the DOT to provide service on nine-seat Cessna Caravans.

Figure 7: Over a decade of falling enplanements at the Decatur airport.
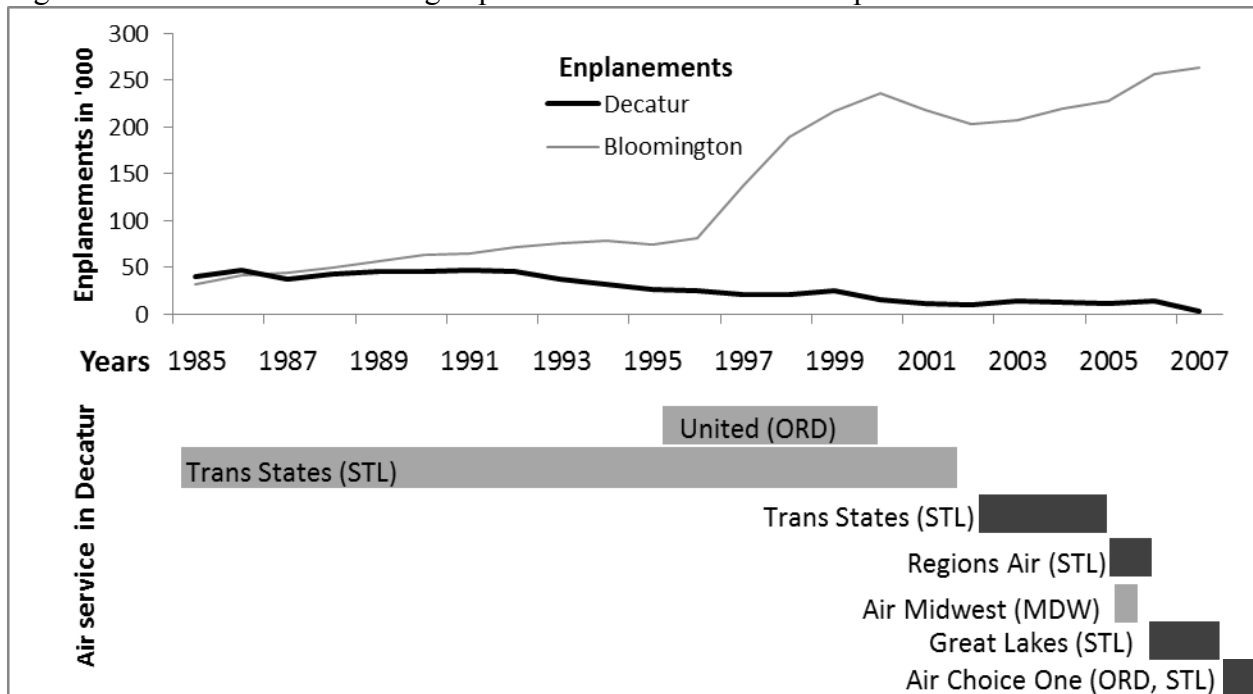
Geographical Context

Various factors, including Decatur's proximity to the growing Bloomington airport, contribute to the steep fall in airport use. Bloomington, Champaign Willard, and Springfield Capitol are less than an hour's drive from Decatur and offer more choices to air travelers. Among the four airports, Decatur has lost most enplanements and Bloomington airport has grown significantly (see Figure 7). Moreover, people also drive to Chicago O'Hare, St. Louis Lambert, Indianapolis, and Peoria airports, which are within 200 miles of the city. Together, these airports provide options to meet people's preferences regarding jet service, flight frequency, free parking, mainstream airlines, direct flights, and cheaper fares. Moreover, many stakeholders were unaware of local air service or considered it unsafe to travel on single propeller planes.

Decatur presents opportunity for a public ground transport connection to nearby airports, but few options currently exist. Baldwin Shuttle, a private charter van service, provides reserved

rides to airports and communities in the area and charges a more expensive one-way fare of $235 to Chicago airports. Businesses in town use their own vehicles to transport their employees to airports. For instance, ADM operates and maintains a fleet of 17 vans to transport its employees to any airport in the region. This system, which the agribusiness giant set up in 2001, now diverts most of its employee travel from air to ground transport. The company travel office cited the loss of unsubsidized service with Trans States—which employees previously used to fly from Decatur to a major airport hub—as one of their reasons to set up their network to other airports. They also prefer not to transport employees on unreliable, lesser known and smaller airplanes. Based on these and other factors, ADM runs a more expensive ground service compared to the cost of a round-trip ticket on an EAS flight, evidenced by their internal costs of a one-way trip of up to $150 per person.

Airport administration and proponents of air service

The proponents of air service include the airport manager and the owner of the airport, the Park District. They make decisions regarding the local input on airline selection for the program. The management is keen to regain ridership with the new contract and believe that if they get the major businesses' support to reconsider the airport for their travel needs they can meet the $200 per-passenger subsidy requirement and also receive the AIP entitlement. Stakeholders of local air service, including major businesses, public officials, and economic development professionals, are less involved with the EAS program and local decision-making. They provide comments to the Park District regarding airline selection when solicited, but it is clear that the community officials consider the airport a separate entity and their involvement is limited to their recommendation to the Park District.

Decatur airport, in its current state, faces tough competition from nearby airports, and it is doubtful travelers will return to the local airport. Moreover, the ownership of the airport becomes an important issue to ensure awareness of the alternatives to the program and the administrative capacity necessary to implement a more suitable option, such as a ground transport network similar to ADM's system.

Cases 2 and 3: Rutland, Vermont, and Lebanon, New Hampshire

Rutland and Lebanon are EAS communities 45 miles from each other with limited connectivity between them (see Figure 8).

Figure 8: Rutland and Lebanon's multi-airport regions
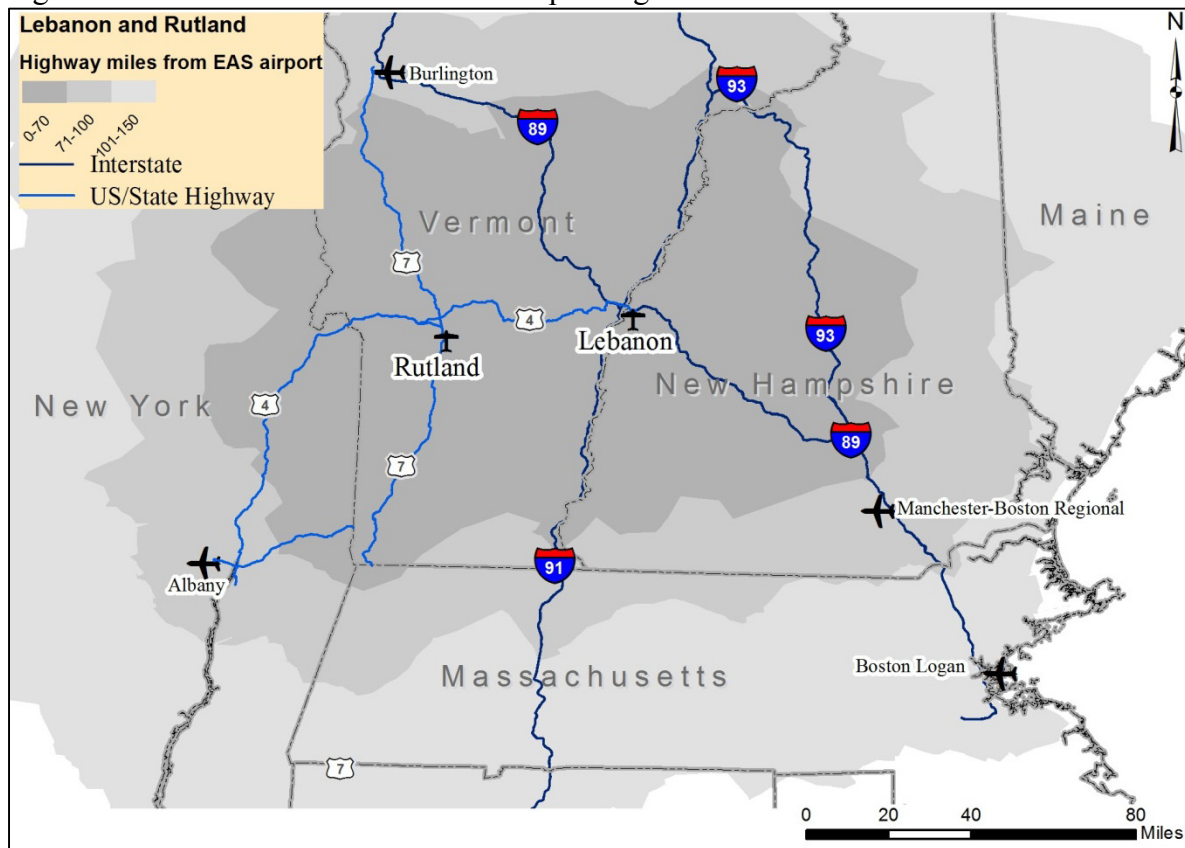
Case 2: Rutland, Vermont

Rutland is the least accessible community of the five cases, and it has been part of the EAS program since 1990. Local north–south and east–west roads connect the town to the

Burlington airport 69 miles to the north, to Albany airport 99 miles to the south, to Manchester airport 126 miles to the east and Boston Logan 172 miles to the east. The closest interstate access is via Lebanon 45 miles away. This rural and remote county has a population of 63,104 and the city was home to over 18,000 people in 2009. The area's economy depends on agriculture, tourism, local manufacturing, and calcium carbonate mining. Omya, a major business moved their headquarters in 2007 from the county to Cincinnati citing a lack of airline hub as a reason for their move.

Airline service and history

Rutland airport is located in Clarendon, VT, south of the city of Rutland. Cape Air currently connects Rutland to Boston as a Jet Blue partner, and the airport has the smallest passenger market of all cases: historically, fewer than 10,000 people have flown out of the airport a year. In its busiest year to date, just over 7,800 people flew out of the local airport in 1987 (FAA, 2010). Cape Air serves Rutland with a nine-seat Cessna 402 aircraft, which has a single propeller engine, one pilot, and no bathroom facility. The airline outbid Commut Air in 2007 and signed an unusual four-year EAS contract from 2009 to 2013 with the DOT.

The unsubsidized air service in Rutland dates back to Precision Valley, a subsidiary of Eastern Airlines that connected Rutland, Laconia and Keene, NH to Boston or New York on a direct or one-stop service. In 1990, the carrier ceased to exist and Rutland received intermittent airline service until 1993. Colgan began subsidized service to Boston from 1993 until 2003 and CommutAir provided service for four years until 2007. During this time, per-passenger subsidies increased over $200, and the DOT required the airport and the community to justify their need for air service and show cause to continue being part of the EAS program. A state-wide effort to keep service in town included letters of support for local air service from local citizens, business

owners, local stakeholders and the state legislature. Rutland's passengers turned back to the

airport since with the Cape Air service and enplanements have rebounded to their highest in a

decade (see Figure 9).

Figure 9: A recent stable demand for air service in Rutland
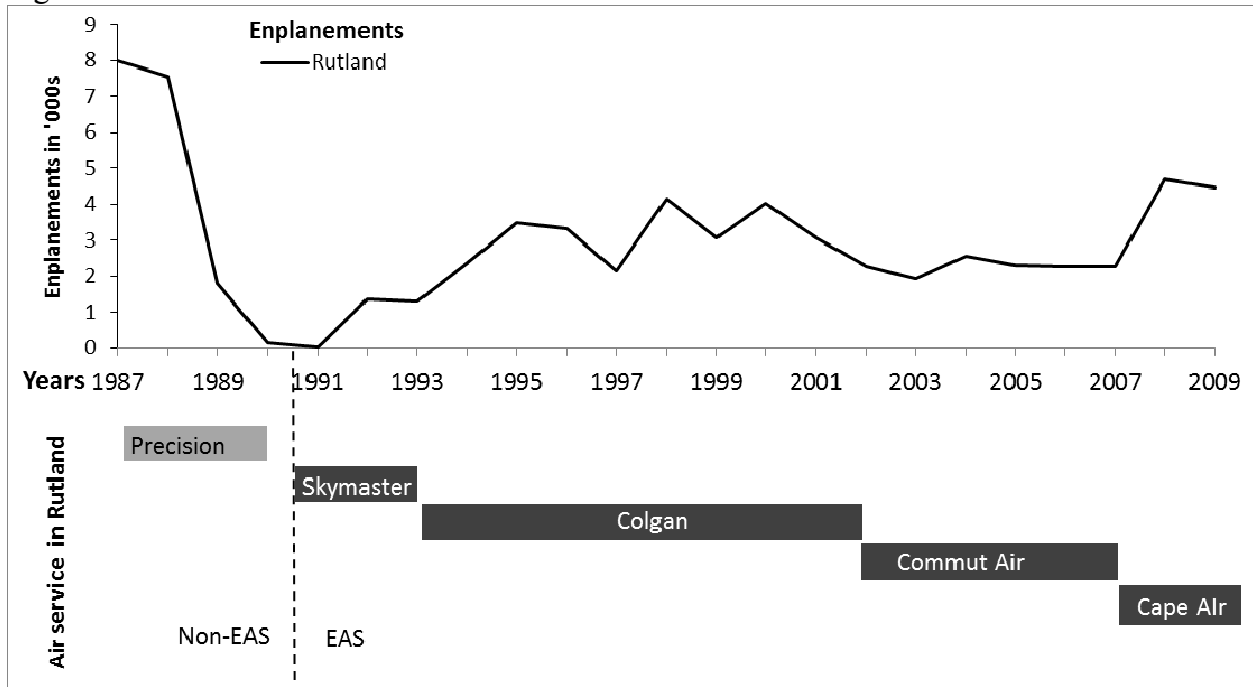
Rutland's history illustrates another opportunity and struggle: The airport received the

Small Communities Air Service Development Program (SCASDP) grant of $280,000 in 2002 to

advertise its local air service. The president of the Rutland Chamber of Commerce, an active

proponent of the airport mentioned the struggle of advertising for a carrier that was unreliable

and expensive. In his opinion, the grant would benefit Rutland more today, but it was spent by

the time Cape Air began its service. However, the program's limited budget and current

provisions preclude previous award winners to reply for a SCASDP grant contributing to limited

success of similar and other larger-scale community initiatives to restore air connectivity.

Geographical context

Transportation access and public transportation options in Rutland are limited. Driving to Burlington or Albany airports is the most preferred way to catch a flight. Amtrak's daily rail service is a good connection to New York City, but the train is significantly slower between Albany and Rutland and many people drive that distance. Due to a lack of interstates and bad road conditions in winter, air service matters more to Rutland as other modes are not well developed and flying has an advantage over them. Two lane roads connect the town to all airports in the area, including Lebanon and the 45 mile drive to Lebanon airport can take over an hour on clear summer days. Therefore, regional airport option makes little sense for either community as people from Rutland would prefer to drive to BTV or Albany and people from Lebanon would go to Manchester and Boston.

Airport administration and proponents of air service

Unlike other cases in this study, Rutland's ridership has increased over the past decade as people can save significant time by flying to Boston. The local proponents, who include the mayor, Chamber of Commerce, the regional transportation commission, and the economic development corporation, seem optimistic about the current Cape Air connection, agreeing to a four-year contract in 2009. The mayor mentioned that their experience with the EAS program has dependent on the carrier. Two years ago, he would not be advocating or praising the program when Commut Air operated as Continental Connection to La Guardia. There were no morning flights then; now Cape Air parks one plane at the airport overnight providing a 630 am flight to Boston and a flight back by dinner. Cape Air has been the only "successful" carrier in the community's long experience with the program. In his opinion, the airline serves the residents and not a changing, seasonal or unreliable market, such as tourists. Access is more important

than tourism to Rutland and initiatives to maintain a favorable schedule has allowed for business travel to Boston and beyond to rebound. Moreover, stable service is expected until 2013 after the City agreed to a four year contract to build on this good experience.

The State of Vermont owns the airport and the director of the airport works for the Agency of Transportation and not the local municipality or the county. The ownership and management situation may have created a dysfunctional environment for local input in EAS decision making, but the past two contracts have been to the contrary. When the DOT solicited comments regarding the next EAS bids from the local elected official the mayor of Rutland, and the State, the mayor formed a local committee to review the airline proposals. The State did not submit a letter that year, and the committee worked together to discuss what was best for the community. Similarly, past airport related grants such as SCASDP have involved the local Chamber of Commerce that played an active role to ensure its implementation. The mayor submitted the final recommendation for a new airline in 2007, Cape Air, which has served the community well. The interviews showed that much of this process occurred by happenstance; as the mayor's office was not involved in past contracts. However, an active local response saved air service for Rutland in 2003, and now has guaranteed the small town with air service until 2013.

The general aviation at the airport is substantial for a small facility: 50-55 aircraft including Omya's business jet are parked here. Other nearby companies like Powercorp use the airport as well. The airport currently does not have an instrument landing system, which is planned for future installation. The economic development officials pointed out that the area is weak in other transportation infrastructure and therefore the airport is a very important asset that

not only provides direct access to and from the community, but its existence asserts that the area is not disconnected and backward.

Rutland's proponents and stakeholders alike made a strong case for local air service in their community. Since 2007, passenger traffic has also rebounded and twice the number of people flew in 2009 and more are expected to fly this year. Stakeholders, though disaggregated compared to other cases, preferred the local airport because the area is relatively less accessible than many EAS communities. Moreover, the scheduling of flights and airline's commitment to the community has benefited Rutland. Proponents agreed that the quality of their air service has dependent on many factors, including the air carrier, and they would not have spoken positively of the program during other contracts.

Case 3: Lebanon, New Hampshire

The Lebanon Micropolitan area comprises of one county in NH and two in Vermont and had a population of 167,387 in 2000. The White River Valley area is home to the Dartmouth-Hitchcock Medical Center and Dartmouth College, which are also the major employers in the region. The Lebanon area is well-connected with multiple transportation options to airports in its region. The Lebanon airport is located on Interstate 89 in West Lebanon and serves the White River Valley region that includes Lebanon, West Lebanon, and Hanover in New Hampshire and White River Junction in Vermont.

Lebanon has interstate access to Burlington airport, Manchester airport and Boston Logan airport. It is 92 miles from the Burlington airport, 80 miles from the Manchester airport and 126 miles from the Boston Logan airport. Public transportation options include Greyhound and Amtrak to various cities in the Northeast. Dartmouth Coach, a private bus company offers multiple bus trips to Boston Logan airport and New York City daily with intermediate stops.

Since Rutland is the closest airport to Lebanon 45 miles to the west, a regional airport may have met travelers' preferences, but there are natural barriers of topography and weather that make regional airport an unattractive option for both communities.

Airline service and history

Cape Air also connects Lebanon to Boston on a nine-seat Cessna 402 aircraft, which has a single propeller engine, one pilot, and no bathroom facility. Cape Air is a new carrier for the communities, replacing and outbidding Colgan Air in 2008. The new airline provided six flights a day from Lebanon to Boston Logan airport when the community agreed to waive its minimum-size aircraft requirement in lieu of higher frequency. Now, the airline offers four flights to Boston and two to White Plains, NY with a limousine service to New York City to cater to that market, since this contract ended Colgan's service to New York LaGuardia.

Lebanon's local air service rivaled Manchester's until the 1990s with three airlines serving the airport to east-coast destinations, including Philadelphia and New York. Proponents and stakeholders recalled having options to multiple destinations on major air carriers. For instance, in 1994, Colgan began service as US Airways to La Guardia airport, while Delta and Northwest codeshare partners served the airport. Over 50,000 people flew out of Lebanon airport in 1994, but the airport became less popular as nearby Manchester airport grew. By 2000, annual enplanements had dropped to 15,000, and in 2003, the sole carrier Colgan decided to end unsubsidized air service to Lebanon (see Figure 10).

Figure 10: Lebanon airport loses its market to the Manchester airport: A timeline
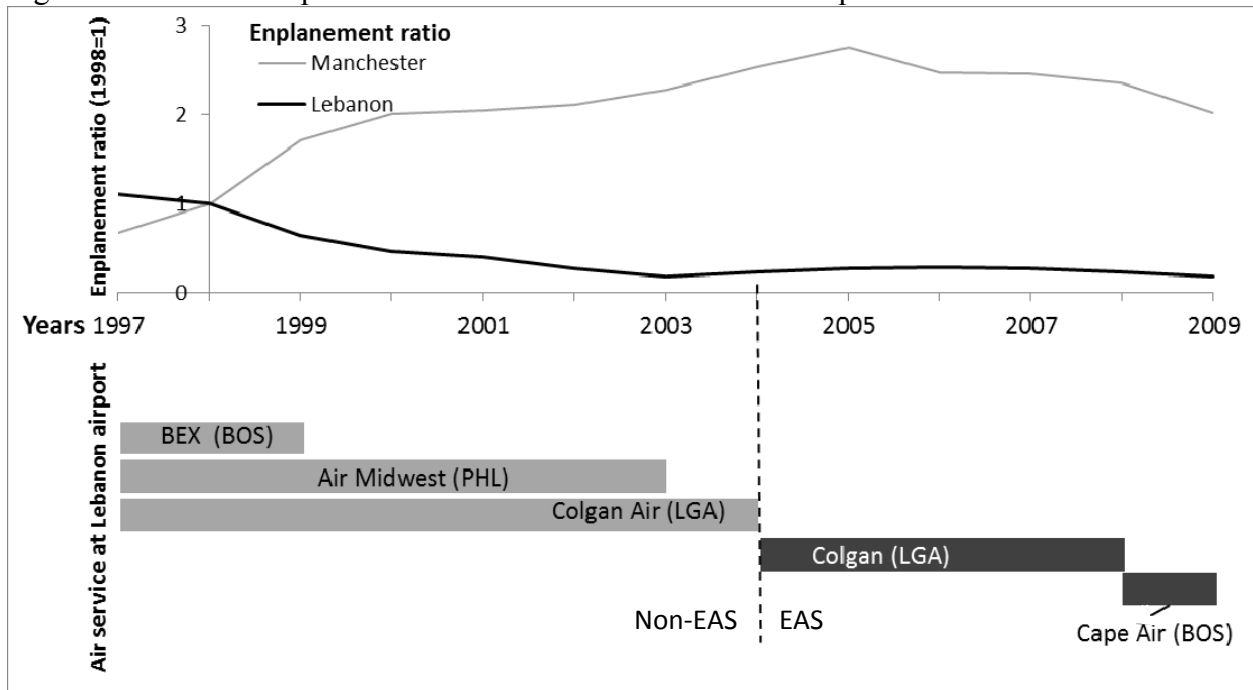
Colgan continued to provide essential air service until the end of 2007. During this time, service was mostly affordable to high-end business travelers since the average fares ranged between an advance-purchased one-way fare of $350 and an instant one-way ticket of $600 to New York (Union Leader, 2005). Cape Air's service became more affordable with average one-way fares under $100, however, the change of hub to Boston initially eroded New York's passenger traffic to Dartmouth Coach or Manchester airport. Cape Air's initiative to connect Lebanon to White Plains and provide ground transport to Manhattan has received positive attention with increased bookings.

Geographical context

Lebanon's air service history is similar to Decatur's: growth of nearby airports has eroded passenger traffic that is unlikely to return to the local airport. Lebanon airport has less chance to rebound as more options are available here, such as Dartmouth Coach that appeals to an important segment of the market. Moreover, people and businesses of the state do not

consider Lebanon as an airport with commercial air service. A business survey by the DOT found that most businesses chose Manchester for their commercial and corporate aviation activities (NHDOT, 2010). Similarly, a SCASDP funded study found that, "there were 171,000 potential passengers in the immediate area and only 4.5 percent of them were using the Lebanon Airport. Few businesses were using the airport at all, it read. Dartmouth College accounted for 46 percent of the use" (Union Leader, 2005). These findings are not much different from the ones a decade ago, when BEX filed to terminate service in 1998. In its letter to the DOT, BEX mentioned that "Lebanon. Manchester offers a substantial level of scheduled air service to New York LaGuardia, Newark, Philadelphia, Washington National and Dulles International Airports, Pittsburgh, Chicago O'Hare, and Cincinnati. BEX is informed and believes that a substantial portion of Lebanon area residents *use* Manchester as their airport of choice. Relatively few Lebanon-Boston travellers go by air, and many of those going to other destinations way of New York or Philadelphia. This is reflected factors BEX has experienced in the market" (Dockets, 1998). Lebanon's connectivity to Manchester and Boston presents little room for a successful airline service in its current form.

Airline administration and proponents

Lebanon's local proponents include the city, Chamber of Commerce, and the airport advisory board. The city owns the airport, and therefore the city council approves a recommendation for an airline to serve its EAS route. The community is more aware of the local air service and council members have mixed feelings about the existence of the airport because it has recently operated with a cumulative deficit of half a million dollars. The major stakeholders of local air service are Dartmouth College and the Dartmouth-Hitchcock medical center, although the area is also attractive to tourists. People affiliated with both institutions travel

internationally and frequently use air service. However, Boston Logan and Manchester airports are more attractive options for travelers in the area, and Lebanon airport continues to attract marginal ridership (Union Leader, 2005 and NHDOT).

Initially, enplanements on the new Boston service at Lebanon airport decreased significantly, because former flights on a different airline used to service New York—an important connection for the community. A local institution's travel department confirmed that people prefer Dartmouth Coach, as it provides service to New York, and that they choose not to fly Cape Air to Boston and beyond. Cape Air amended its contract and traded two Boston flights to White Plains, New York, and provides complimentary ground transportation to Manhattan, which has received positive attention in the community. Lebanon is due for a new contract in 2010, and the two carriers are expected to bid again for the next two years of subsidized air service.

Cases 4 and 5: Morgantown and Clarksburg, West Virginia

Morgantown and Clarksburg overlap in their multi-airport regions with no unsubsidized airport within 70 miles of either airport (see Figure 11). Unlike the less connected Lebanon and Rutland areas, Morgantown and Clarksburg are connected by Interstate 79 and are located 35 miles from each other. Moreover, Colgan Air provides connecting service to both communities with a combination of direct and one-stop flights. Since 2005, the airports receive essential air service after Air Midwest ceased unsubsidized operations to Pittsburgh. Regions Air, which won the first contract under the program, experienced a rough transition with delays and cancelations, leaving both communities without any air service for over four months.

Figure 11: Morgantown and Clarksburg's multi-airport regions
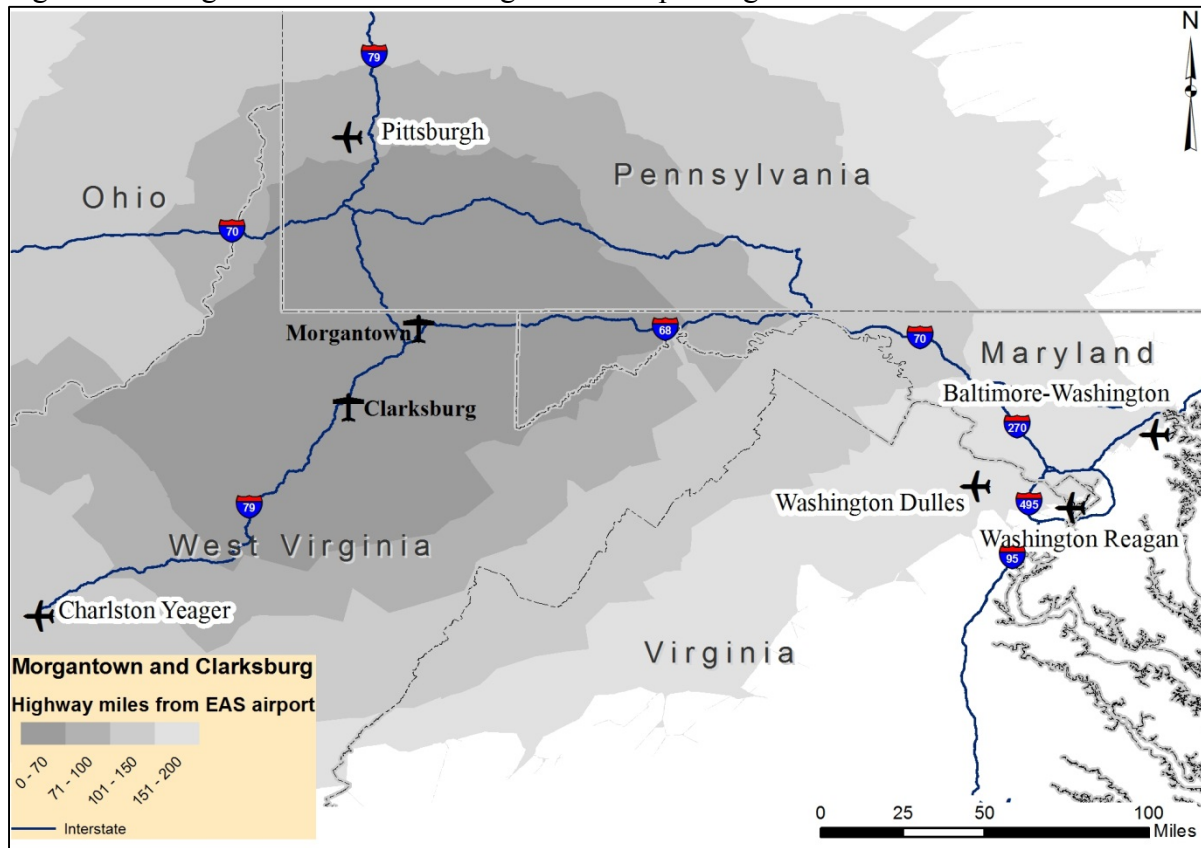
Morgantown, West Virginia

As a regional education and health center, Morgantown had a population of 30,330 people in 2009 with 90,080 people in Monongalia County. The city is the main population and employment center of the Morgantown Metropolitan Statistical Area that consists of two counties and over 110,000 people (US Census). Located 75 miles south of Pittsburgh on I-79, Morgantown is home to West Virginia University (WVU) and major health care facilities that are also the major employers. The biggest employer in the county is the state due to WVU with 19 percent share of employment (MEDC, 2009). More employment opportunities are on the horizon as well: Military employment and travel is expected to increase due to construction of a new National Guard Readiness Center and expansion of Camp Dawson, and a proposed research park near the airport that could attract more firms to the area.

History of air service in Morgantown

Morgantown had retained local air service to Pittsburgh and Washington Reagan airports with subsidiaries of US Airways. In 1993, the airport enplaned most passengers annually in its history with 26,130 boardings (FAA, 2010). However, by 2000, a generally stable market of the airport had begun to erode and enplanements fell to just over 16,000 in 2004. When Air Midwest ceased operations that year, Regions Air began essential air service to Pittsburgh and in later contracts, Colgan Air changed the hub to Washington Dulles to attract more passengers (see Figure 12). This relatively new airport for the EAS program would not be eligible for the subsidized flights if it were five miles closer to Pittsburgh airport, now a medium-hub airport. The airport is also new to its non-primary designation as it was partly impacted by US Airways falling interest in Pittsburgh airport. Moreover, Interstate 79 was built in parts during the mid-to-late 1970s, providing a quick connection to the Pittsburgh airport.

Figure 12: Falling Morgantown enplanements recover slightly after service interruption
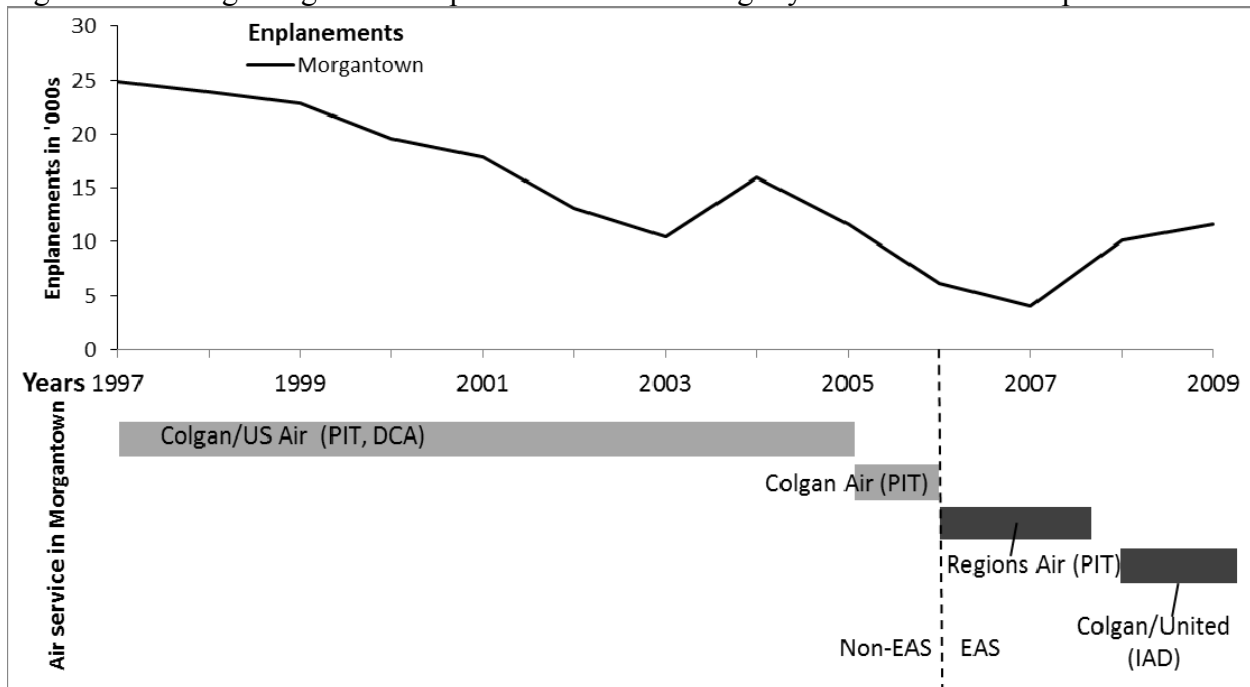
Geographical context

Morgantown airport struggles to attract passengers for two reasons: convenience of Pittsburgh airport and distrust in local air service. Residents of Morgantown are not as excited about the local air service and the airline has not regained their trust after Regions Air's interrupted service in 2005. University scholars and professors prefer to drive to Pittsburgh because they have more options, especially if their flight was canceled. The cost of driving and parking their car at Pittsburgh for a week is less than a round trip ticket to IAD. Moreover, public transportation provides direct access to Pittsburgh airport with two daily round trips. Mountain Line Transit connects the town to Pittsburgh airport for $25 one-way where travelers can take direct or connecting flights to anywhere in the country and beyond. This service is popular among students, many of whom call New Jersey, Pennsylvania and Maryland their home. Washington Dulles is not the most ideal airport for their travel and Pittsburgh airport offers more connectivity and low-cost carriers. Hence, people who may regularly travel to Washington do not use the airline and it makes more sense for passengers traveling to other destinations to fly out of Pittsburgh rather than change flights in DC.

Airport administration and proponents

The local airport is owned by the city and benefits from Morgantown's established economy. All proponents including the mayor, city manager, and the airport director consider the airport an important asset and a tool for economic development. Because it allows them to access AIP funds, the airport administration finds their eligibility for EAS flights critical for the airport's maintenance and growth. However, since the airport joined the EAS program, enplanements have averaged close to 10,000 annually, compared to over 40,000 in the late

1970s. As discussed before, this drop in use is partly attributed to people driving directly to Pittsburgh International Airport.

The proponents of air service in Morgantown include the City Manager, the Mayor and the Airport management. They are optimistic about the future of air service with Colgan and mentioned that their goal is to get unsubsidized service. Currently, military enplanements average about 165 people a month on EAS flights after procuring GSA discounts for airfare for federal employees. The proponents stressed that service to Washington Dulles is optimal for students and scholars to connect to national and international flights. Moreover, they believe that local air service can work well because of existing institutions and businesses of pharmaceuticals, university and Department of Energy and emerging Camp Dawson. They also believe that the airline has worked with the community and had met with all major employers to get them onboard.

The local stake is more in the sustenance and expansion of the airport, which is spatially bound for further development without a major capital project. Proponents believe that the airport is an asset for the community and its economic development. The airport manager mentioned that corporate aviation is more important to them than commercial air service as it brings in executives and decision makers to town who will participate in future economic growth. However, the airport pays for itself because of the AIP entitlement which would not be available to Morgantown without the EAS program.

Clarksburg, West Virginia

The North Central West Virginia airport serves Clarksburg, Fairmont, and Bridgeport, and it is jointly owned by Harrison and Marion counties, located 34 miles south of Morgantown on interstate 79. Major international companies use the airside facilities to manufacture,

maintain, and ship aircraft components. Tenants of the business park include Bombardier, Pratt&

Whitney, KCI Aviation, and the U.S. Army National Guard. Mid-Atlantic Aerospace Complex is

also located here to promote the space for a growing aerospace industry and attract firms that

need airside facilities. NASA and the FBI Center are also located in the area with travel needs to

Washington, DC, on a regular basis. The area is a regional health center with two major facilities

and a third one under construction. Clarksburg is home to 16,408 people, while Harrison County

has a population of 68,911 people and Marion County is home to 56,508 people (US Census).

Colgan Air as United Express offers one direct and two one-stop flights via Morgantown

to Washington-Dulles since 2008 on Saab 34-seat turboprop aircraft. The joint routing is

economical for the program as annual subsidies are just over $500,000 for each airport.

However, major businesses and the general public is yet to take substantial advantage of this

service. Even though the airport management continues to work with the airline to reduce airfare

for federal employees and the military, change schedules, and offer deals, enplanements are yet

to reflect a strong community interest in the airline. Stakeholders drive to Pittsburgh,

Washington, DC or Charleston, WV, and rarely use the airport.

History of air service in Clarksburg

The local airport provides better facilities for airplanes in the state of West Virginia since

a major capital project extended the length of the runway to 7000 ft. Clarksburg had retained

joint unsubsidized service with Morgantown to Pittsburgh and Washington Dulles on the same

airline. The airport attracted more interest from major subsidiaries such as Com Air that

contracted jet servicing to Bombardier. The airline provided a daily flight to Cincinnati in 2003,

but ended scheduled service before it could attract a substantial market. Since Clarksburg joined

the EAS program, the airport has tried to end its dependence on a joint-routing with

Morgantown, which many local proponents and stakeholders blame for minimal passenger interest in using the local airport. However, Colgan Air will continue to provide service to IAD until 2012.

Clarksburg's annual enplanements also dropped below 10,000 people since the airport joined the EAS program, but began to rebound in 2008 due to a strong administrative response to increase ridership. One stakeholder mentioned that they cannot rely on EAS flights, but enjoyed taking a chartered jet flight, organized by the airport, to a football game in Charlotte, NC. The airport is planning to offer and subsidize similar charters this fall to New York City, Washington, DC, and WVU football games. They have sold out all seats on these chartered flights in the past and hope the community will begin to also recognize the airport's service and take local flights to help reach their 10,000 enplanement mark by the end of 2010. The administration is also trying to attract low-cost vacation carriers, such as Allegiant Air, which serves a few EAS communities and accounts for most of their enplanements. However poor EAS enplanements deter these types of airlines from most small airports.

Figure 13: Clarksburg's similar air history as Morgantown
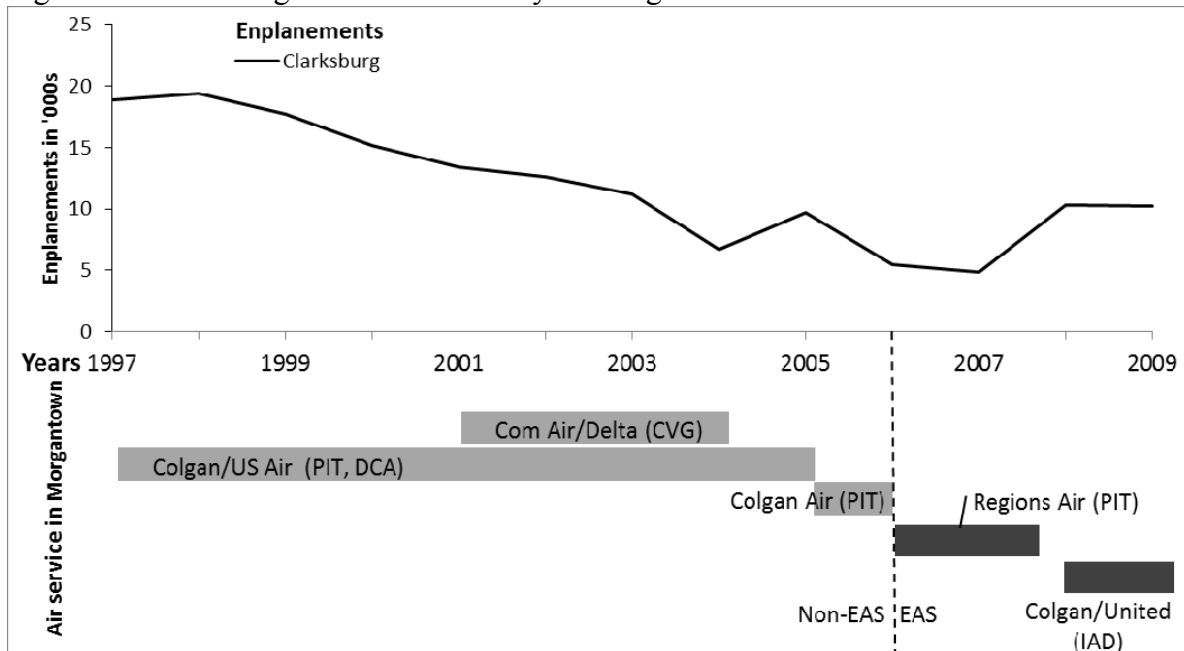
Geographic context

Clarksburg area is relatively farther from Pittsburgh and DC as compared to Morgantown, by 35 miles. Many local proponents justify air service for Clarksburg over Morgantown, because of the added forty-minute drive through hilly parts of West Virginia. However, majority of the flights stop in Morgantown reducing time savings of getting to Washington, DC. Moreover, many important centers of the country are less than an eight-hour drive from here, allowing cars to be competitive over turbo-prop flights on small aircraft. Hence, the airport administration faces tough struggle to encourage people to fly out of here to Washington Dulles: the airport is far from DC, attracting few federal employees to fly there regularly, and people do not trust short-haul airlines to catch connecting flights.

However, there are geographical advantages for the Clarksburg airport and its aviation facilities. Airlines have access to the longest runway in the state and major international companies to service their jets regularly. Moreover, assembled aircraft and other aviation parts can be easily transported to markets around the country. The Chamber of Commerce mentioned continuing efforts to grant the airport customs clearance status, which may allow for international business and cargo travel from the airport. Cheaper land rent combined with easy access to the area makes the airport a driving force of economic development for the region.

Airport administration and proponents

The Harrison and Marion counties own the airport and have established an airport authority to manage its operations. The proponents of airport are the Benedum Airport Authority, Harrison County Commission, City of Clarksburg and City of Bridgeport. The Benedum Airport Authority has been the official and the only local voice in the past two contracts. The airport authority comprises of five members from each county including representation from Clarksburg

and Bridgeport. The political power bestowed on the public airport authority provides an opportunity for local citizens and stakeholders to voice their concern, but it also allows the authority not to seek community views outside of their proceedings. The local Chamber of Commerce has taken a stakeholder role in this community as it has not been involved in EAS decision-making and their opinion has not been solicited. The Mid-Atlantic Aerospace Complex manages capital projects and business recruitment at the airport. Even though they work closely with the airport and are represented on the airport authority board, they do not use local air service and fly from Pittsburgh airport.

Conclusion

Communities and smalls airport struggle within the EAS program. Few passengers are interested in taking local flights from all cases investigated in this study. Proximity to nearby airports on interstates contributes to passenger leakage. However, proponents and administrators of the airport continue to support the program. Many reasons for their clinging to air service span across diverse cases and therefore the cases offer valuable insight into the dynamics of local decision-making. The five case studies also verified many existing or possible opportunities for alternatives to air service, including charters, bus and van services. The next chapter highlights why these alternatives have not formally become part of the program.

Chapter 5: Results and analysis

The case studies present a holistic picture of the local struggle to be part of the traditional EAS program as a means to obtain air connectivity. Before presenting the cross-case analysis of obstacles to alternatives, consider possible alternatives in the five case studies. What would they look like?

What would alternatives look like?

Driving: Congress has restricted the EAS program to the most rural and inaccessible communities. People from 64 communities that lost their EAS eligibility and subsidized air service now drive to nearby airports. Local airports receive AIP entitlements under a special provision allowing general aviation to thrive and contribute to local economic development.

Shuttle service: Decatur airport is now a general aviation and cargo facility and does not offer scheduled passenger service. Instead, Decatur airport offers frequent van-service for airline ticket holders to Chicago O'Hare, St Louis Lambert, Chicago Midway, Indianapolis and Bloomington airports. The shuttle is funded by the alternate EAS program and is free to BMI passengers and discounted for passengers to other airports. American Airlines and United offer baggage check facilities at the airport.

Similarly, Morgantown and Lebanon airports do not serve scheduled commercial airline service. Lebanon airport is now home to a new Dartmouth Coach facility. New services include four-daily trips to New York City and frequent service to Manchester airport for connecting passengers. The service to Manchester is free for ticket holders and discounted for Boston and New York service.

In Morgantown, Mountain Line Transit now offers frequent direct service to Pittsburgh airport in two hours. The service is free and subsidized by the alternate EAS program. Moreover,

a SCASDP grant has supplemented similar service to Washington, DC in four hours, which is subsidized for everyone. Decatur, Lebanon and Morgantown continue to be eligible for AIP funds as bus boardings to airports count as enplanements.

Charter services: Clarksburg airport has hired USA 3000 to offer regular charters every year with over 75 all-jet flights, a capacity of over 10,000 annual enplanements. Regular flights include weekend gateways to New York City and Myrtle Beach, SC. Special charters include flights to all WVU games that draws in many passengers from Morgantown. Tickets are subsidized to as low as $150 round-trip as airport funds and alternate EAS funds pay for a substantial chunk of charter costs. If all seats are sold, Clarksburg can enplane over 15,000 people a year, securing an AIP entitlement for its runway extension.

Different scenarios work for different airports, but alternatives to airline service may can serve the communities better in obtaining air service with or without the program. In order to understand the obstacles to making one or more of the above scenarios possible, the following findings are presented:

From Hypotheses to Findings

Three main findings are identified in this chapter to understand the obstacles to local air service alternatives. Interaction between airport funding policies, information gap between the local and the federal levels, and local administration and politics are the main reasons why proponents continue to strongly support small community air service and the EAS program. These cross-case findings can be viewed as common themes across the five diverse cases that represent 64 communities with essential air service. Since the six hypotheses are at times related to one-another and connected logically, the findings and the hypotheses are linked with one another (see Table 2):

H1. The EAS program opens doors for federal airport funds;

H2. Proponents believe that airports are important for economic development;

H3. Proponents believe that small communities continue to be viable markets for air service;

H4. Proponents believe they are entitled to the EAS program;

H5. Proponents and stakeholders are unaware of alternatives;

H6. Airport administrators do not want to lose air service in their tenure.

Table 2: Relationship between findings and hypotheses

Finding	Hypothesis
F1 Interaction between airport funding programs	H1, H2
F2 Information gap	H3, H5
F3 Local politics and administration sustain free commercial airline service	H4, H6

Findings from case studies support these hypotheses as major deterrents to local air service options that may include driving and public transportation such as an express bus for airplane ticket holders, regional airports, scheduled charters, or similar creative solutions that can allow airports to survive economically and help small communities obtain air connectivity.

Interaction between funding policies: The EAS program is a gateway to AIP funds.
While the EAS program was not meant to be a gateway to airport infrastructure maintenance funds, it has become one. If communities and airports forfeit air service, they also forfeit these funds. Every airport in this case study is striving to reach 10,000 enplanements a year, which is the magic number to qualify for a million dollar primary airport entitlement from the Airport Improvement Program (AIP). The airport administrators focus their efforts on getting enough people on board, inhibiting growth of other options that people would be willing to use. The EAS program is the most assured method to secure critical funds for airport maintenance and capital projects at small airports where unsubsidized commercial service is no longer viable. Proponents

at EAS communities have been vocal for a better, and at times, an expensive contract for another attempt to increase their annual enplanements to more than 10,000 people.

AIP funding has supported important capital projects at case-study airports, and required a very small local match. AIP entitlement provided funds for one of three runways at the Decatur airport to accommodate a Boeing 757 freighter, allowing UPS flights to operate there until 2007. Lebanon airport used its funds to conduct environmental planning studies; Clarksburg airport used theirs to invest in airside expansion, and Rutland airport plans to invest in an instrumental landing system. Proponents firmly believe that without AIP funds, they cannot maintain or expand their facilities, such as Clarksburg's largest commercial runway in the state, which provides access to companies including Bombardier and Pratt & Whitney. Stakeholders and public officials in communities, who are often less aware of the EAS program, view their airports' goal as pursuit and receipt of AIP funds.

Decatur's service to Chicago and St. Louis, Lebanon's connection to Boston and New York, Rutland's four-year contract to fly to Boston Logan and Clarksburg and Morgantown's most recent contract to Washington-Dulles illustrate hard fought changes to the norm to attract ridership and exceed 10,000 enplanements a year. In this pursuit, the question of how to establish new alternatives or support existing ones for residents to connect to the national air transportation system is unanswered, resulting in many lost opportunities for better air connectivity. These lost opportunities include a possible public version of ADM's ground transportation network in Decatur: ADM operates 17 vans as on-demand service for their employees to any airport in its 200-mile radius. ADM employees travel to Chicago O'Hare and St. Louis the most, making its service a winning competitor against the essential air service.

In Lebanon, Dartmouth Coach, a private bus company provides over six daily round-trips to Boston Logan and one round-trip to New York City. However, there is no public transport option to the nearby popular Manchester airport for many college students and their parents. People prefer staying overnight near the airport to catch an early morning direct flight to their destinations. Lebanon could have created an intermodal hub, serviced by a local bus company that requested to use its parking lot as a stop to connect Lebanon to the Manchester airport. Similarly, alternate EAS funds could support Morgantown's Mountain Line Transit for express rides to Pittsburgh airport, promoting the airport's existence and the ability to travel without hassle to a major airport. Subsidies under the alternate program could enhance these and similar services, which people can trust and choose to take to connect to the national air transportation system.

Information gap: Alternate provisions are unknown in or risky for EAS communities.

In all of the case study communities, proponents including airport administrators and local officials are unaware of the two alternatives to the EAS program. Within this set, only one airport is considering an alternate option seriously, showing a lack of knowledge about the EAS program and its objectives. Proponents in four of five cases agreed that options that connect their communities to traditional air service would be more attractive to them if they could keep their AIP entitlement. Stakeholders are also unaware of EAS options: they depend on airport administrators for information on the program and their involvement in EAS decision-making depends on airport ownership and public officials' initiative. Communities exhibit varying degrees of awareness regarding the program and none regarding its alternatives.

State officials aware of the alternatives suggested that the provisions are vague and risky for EAS airports to consider in lieu of the traditional program. The airports not only lose the

guarantee of scheduled air service, but they may also take on more responsibility in implementing a new service. Airports that show willingness to forego air service under the program and become the main contractors with the DOT to implement alternatives may not be able to attract airlines in the future if their alternate service was unsuccessful – re-entry to the traditional EAS program does not guarantee local air service, increasing risk for airport administrators and communities to try options.

Local politics and administration sustain "free" commercial airline service.

The EAS program does not require a local match from the airport or its users/communities and subsidizes the airlines' requested amount. Therefore, the program is perceived locally as an air service entitlement. Losing air service or advocating giving it up can be a political issue in most communities and represents a major obstacle. There is a strong perception that no community would be better off without subsidized air service even if people do not take it. Economic development officials are proponents of air service and many believe that, **"**It is better to have it than not." A corporate manager in one community mentioned that they have never considered flying out of the local airport, but people would "have heart failures" if the airport were to lose commercial air service.

Since people expect the airport to receive subsidized air service and proponents argue for its importance in local economic development, creative and attractive substitutes are needed to replace air service to help convince people and politicians alike about the importance of these alternatives. Airports like Clarksburg may consider its alternate EAS program more lucrative to subsidized charter service and following their example, airports could provide direct subsidies to people to take regular charters. However, these opportunities require political backing to convince proponents that the airport will be viable without commercial air service.

Many airports may be in a situation of Lebanon's, where the city owned airport is often considered a burden by certain city council members. A couple of council members do not find the airport an asset for the community and have argued for its closure in its recent times of deficit. AIP funding is the only way to justify the fiscal viability of this airport's capital maintenance and expansion. Therefore, administrators and proponents cling to the program and work hard to get enough people on board to qualify Lebanon as a primary airport.

Another bureaucratic issue about local support for the air service is the future of airport administrators. The most knowledgeable people about the EAS program who suggest the course of action in most communities are concerned about their future if they recommend and lead the airport in foregoing commercial air service. Hence, airport managers or directors in each community strongly support the EAS program. Most administrators pragmatically concede that people do not use the airport as anticipated, and in some cases, they vigorously promote the local airline in the community on their dime to get people on board.

Other Findings

Some proponents believed that certain clientele prefer air service and they would not consider taking alternative modes of transit. For example, Lebanon's local air service is vital for organ donors or corporate clients that are affiliated with the medial center or the college. Rutland's economic development officials and chamber of commerce president felt strongly that without air service important business day trips to Boston would not be easily possible. However, stakeholders such as major businesses and institutions in Lebanon and Decatur relied more on surface transportation to connect to airports, while few business travelers preferred to fly from Morgantown and Clarksburg to Washington, DC. In larger communities with easy access to highways, rail, or nearby unsubsidized airports, local air service was not on the "top

three" list of important services, which one economic development official pointed out. Moreover, decision makers of multi-nationals may not take EAS flights, as all airports accommodated corporate jets. Therefore, limited evidence emerged for strong air travel preferences among corporate clientele.

Some officials noted that they would not want to run a chartered van service, preferring instead a privately run, federally subsidized enterprise. On the other hand, Clarksburg airport exhibits the capacity to establish regular, chartered flights; it enplaned more than 25 percent of its travelers on charters in 2009, and the airport administrators gained considerable experience in providing leisure trips for education and tourism. Rutland airport provided further contrast as the airport is owned and managed by the State of Vermont. However, a local official mentioned they would consider surface transportation if explicitly required by the program. Therefore, communities and airports would vary in their administrative capacity to implement a different system if federal subsidies were offered to them.

Finally, selecting one of the two proximate airports as a regional airport seems a logical consideration for communities 35 miles from each other. Morgantown and Clarksburg have discussed a potential regional airport in the past, but talks have stalled on selecting one airport over the other. Morgantown has a larger market for airline service than Clarksburg, but its proximity to the Pittsburgh airport has a greater impact on its local air service. Contrarily, Clarksburg's airport can easily accommodate jet service, but it is unlikely that Morgantown's passengers will travel to Clarksburg if it were established as a regional airport as Pittsburgh airport would be their ideal choice. Other airports in similar situation may successfully designate one regional airport, but such an outcome would be context based, such as prior political success in regionalizing other services across jurisdictions.

Chapter 6: Policy Implications and Conclusion

This study has shown that local proponents of the EAS program cling to traditional air service because of its connection to AIP funds, local ignorance of alternatives, and political and administrative reasons. Assuming that the federal government would be interested in pushing creative and lower cost alternatives to underused air service, this study has highlighted barriers to such possibilities. In light of these findings and past studies, lawmakers may consider eliminating the EAS program or further restricting communities from the program to only subsidize flights to the most remote airports. However, this study does not critically assess the program, but provides insight into why alternate provisions of the program have not attracted much attention. From its findings, the study presents some administrative responses and policy changes that may enhance the alternatives and draw more local attention toward them, if the program is not eliminated.

The DOT should advertise program alternatives to eligible communities.

No airport or community contacted for this study was aware of the alternatives to the traditional airline service. Many stakeholders were not aware of how the program worked and believed they had no role to play in decision making. Hence, the DOT should contact not only the local airport or officials, but many stakeholders in the area with an EAS airport to raise awareness about the program, its objectives, and possible alternatives. As discussed before, four out of five cases in this study has an existing or a viable option to air service. If the local proponents, stakeholders, and administrators were aware of these options and their benefits, they could work to gain the political support necessary to undertake this effort.

Since no community has successfully implemented an alternate program, there are no success stories that can attract more communities. Certain EAS airports successfully attracted

less frequent air service of carriers, such as Allegiant Air, to vacation destinations. EAS is no longer a primary contributor to their enplanements, and therefore, these communities emerge as good candidates for an alternate program. More success stories and experience with alternatives can help communities gain confidence in taking such offers and allow the federal government to alter program requirements to make them more realistic and attractive to communities. Clarksburg airport provides one example from the case studies where a combination of subsidized charters and scheduled service to a vacation destination can help end dependence on the EAS subsidies. Such services can meet many local demands: jet planes, a variety of destinations for an affordable price, reliability and trust of the airport, and a potential primary airport designation.

More research and analysis are needed to address local concerns

There are more local concerns that need to be addressed once communities are aware of alternatives of the program and to the program. If lawmakers may choose to eliminate the EAS program or restrict funding to remote communities, two-thirds of current participants of the program will lose access to AIP funds. This step may be a major setback for future maintenance and expansion of vibrant facilities such as Clarksburg airport, and may therefore impact the local economy. To address this and similar issues, the following should be considered:

Study the impact of general aviation facilities: Few studies exist regarding the economic impact of non-commercial airports, and many were conducted decades ago. New studies can shed more light on the economic impact of GA facilities and serve two purposes: They may clarify if GA facilities are worth federal funds and they can separate the impact of commercial air service on the local economy from other airport functions.

Study communities that lost EAS eligibility: Many candidates exist for further case studies on how EAS communities that lose airline service connect to the national air transportation system. For example, Danville, Illinois and Terre Haute, Indiana were among the communities that lost the EAS service when Indianapolis airport, located less than 70 highway-miles away became a medium-hub airport. In 2004, Grand Rapids and Ely, Minnesota ceased to be part of the EAS program and Chisholm-Hibbing airport applied for a SCASDP grant to initiate a bus service from the EAS airport to these communities. These locations can provide further insights into how small communities can obtain air service with or without the support of the EAS program.

Maintain AIP eligibility for EAS airports: A couple of incentives may attract communities to reconsider being part of the EAS program. These incentives may create less political tension from the Congress members who are proponents of the program. However, they may not be fiscally more efficient. The incentives may include creating a special provision for an EAS airport to receive a primary airport AIP grant, counting boardings on a preferred mode of transportation from an EAS community to an airport, maintaining AIP eligibility, and explicitly advertising community eligibility for surface transportation grants to establish their facilities as intermodal hubs. Federal funding programs for intercity transport include Non-urbanized Area Formula Grant Program, flexible funds of Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ) funding, TEA-21: Rural Transportation Accessibility Incentive Program, among others (TCRP, 2002).

Leverage State funds: Airports that lose primary airport designation offer further insight into specific funding opportunities. Most state departments of transportation fund their airports along with federal and local funds. Decatur received more state funds since it became a non-primary airport, which helped pay for its control tower. EAS communities that may lose service or

primary airport status should leverage state and local funds to pay for their infrastructure. Moreover, if the trend of falling enplanements continues in these cases and more airports lose their primary designations, options to suboptimal air service may be more lucrative as EAS can support different methods to enhance connectivity.

Enhance SCASDP: Many EAS communities have applied for and received SCASDP funding in the past, including Rutland, Lebanon and Clarksburg airports. Rutland won a grant and used it to advertise its service and increase enplanements, while Lebanon hired consultants for a market study, which showed that only four percent of local travelers use the local EAS airport (Tracy, 2005). Other EAS airports have used the grant for capital projects or to attract a new airline. As discussed before, the limited funds and one-time award undermine the program. Congress can enhance SCASDP funding with creative incentives for EAS airports; for example, SCASDP funds can help establish ground transportation and allow present or past EAS communities to help create more success stories of embracing alternatives. Moreover, a SCASDP match with possible AIP eligibility in lieu of giving up essential air service may lure some communities to consider alternative options more seriously.

Conclusion

The EAS program is likely to maintain support from local proponents, despite the fact that program flights continue to be unattractive to passengers accessing the national air transportation system. Alternate provisions for air connectivity intended to enhance the program will therefore remain unattractive to participating airports and communities, even if they can support popular transportation modes to nearby airports. This thesis has presented findings with serious implications for the future of alternative provisions of the EAS program. In their current form, the alternatives are not viable because of three reasons. AIP is an important and a sole

source of capital funds for many airports and the EAS program provides free airline service that can help airports meet the eligibility criteria of that entitlement. Moreover, most EAS communities and airports are unaware of the alternate EAS programs, and if they are aware, local concerns need to be addressed to attract them to opt for the alternatives. Finally, airport administrators do not want to forego air service and negatively impact their careers. These findings represent major obstacles to the future implementation or success of air service alternatives.

This study also presents multiple case studies and develops a robust methodology to distill generalizable findings. The quality of the research design is evaluated using four criteria (see Table 3). Multiple case studies and sources of evidence, hypotheses building and testing, replication logic and documentation of data collection and operational procedures serve as important tactics that make this thesis robust. Various strategies of primary and secondary research mentioned in table 3 are used in this study to implement a robust research design.

Table 3: Quality judging criteria for research design

Tests	Case study tactic
Construct validity	Used multiple sources of evidence TRB panel reviewed drafts
Internal validity	Developed hypotheses for explanation building Tested hypotheses in multiple cases
External validity	Used replication logic for multiple cases
Reliability	Demonstrated data collection and operational procedures

Source: Figure 2.3 in Yin (2008), p. 41

While significant attention is paid to ensure the validity of this study, this research is not without its limitations. For example, this thesis does not convince or engage with people who

may propose ending the EAS program without the need for any justifications. Nor does it explicitly address how important the EAS program is to the federal government or the legislature, and falls short in arguing against critics who may not care to study a comparatively small federal program. Also, five cases provide breadth of knowledge regarding the diversity of EAS communities at the sacrifice of depth to some extent.

Beyond its limitations, this research has important policy implications for the future of small airports, rural air connectivity and the EAS program. Focused studies that address diverse issues from the importance of general aviation facilities for local economic development to how existing surface transportation options can replace or participate in the EAS program will allow lawmakers to more accurately determine the future of the EAS program and of many small airports and communities across the country.

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Appendix

Case Study Protocol

Interview: _____
Date: _____
Location: _____

Questions

Which airport do business travelers that currently fly use in the area? If they do not fly to Decatur, what are their reasons?

Are there any firms that considered moving to Decatur and enquired about the local air service?

Which places does Decatur compete with as a location for businesses? Do you believe nearby similar places with airline service are more attractive locations for prospective firms?

How do the local government and area business organizations follow up after they have secured air service? Do they continue to advertise and encourage firms to use the local service?

Do the employees of Archer Daniels & Midland (ADM), Caterpillar and other businesses regularly use local air service? If not, then how do they meet their transportation needs?

Have local businesses communicated with the city council or any politicians to request better connectivity?

What would you change in the EAS program requirements for better service?

Do you expect the enplanement numbers to increase again if certain requirements were changed in the program? If so, do you expect to attract carriers who do not require the subsidy?

What are your thoughts on the future of the EAS service? Do you anticipate losing air service if gas prices increase further or an unreliable airline won the contract to serve you? If you lose subsidized air service, would you contemplate options more seriously?

If a bus service was established from the Decatur airport to Bloomington-Normal airport continuing to Chicago O'Hare airport every two hours, who would and would not utilize it? Why?

How does the airport pay for its general aviation and other facilities? Which funds are critical for its operations and maintenance, especially after the departure of UPS in 2007?

What would be the consequences of giving up the EAS subsidies? Does the local air service secure more funds for the airport?

Would you consider giving up the EAS air service if the AIP funding requirements were changed so you received your entitlement anyway? If so, would you contemplate a ground transportation network to nearby airports?

Have you contemplated a regional airport in the area? Which place would be best for such a centralized airport? How would Decatur residents connect to this airport if they chose not to drive?

Does the DOT inform the city about available options in lieu of the EAS subsidies that directly pay the airlines? Are there provisions for the city to use the funds? If so, have they contemplated receiving direct subsidies? Why or why not?

What would be the positives and the negatives of the community getting the funds directly rather than the airlines? How would you use the funds differently if you were given the money?

Consider a scenario where the city is required to implement express bus service to ORD leaving every two hours. Who would implement and administer this project in the city? Would you have to create a new position? Do you have the budget to establish such a service? If the service was subsidized, would you consider implementing it?

Table 4: Interview Statistics

Case	Number of visits	Interviews	
		Proponents	Stakeholders
Decatur	4	3	4
Lebanon	2	3	2
Rutland	1	3	1
Morgantown	1	3	2
Clarksburg	1	2	2

Notes on the administration of the EAS program

When an airline is a sole carrier at an eligible airport and files a 90-day notice of intent to end unsubsidized service, the DOT issues requests for proposals from all airlines to serve that airport with or without subsidy. After airlines submit bids with detailed cost calculations and subsidy requests, the DOT solicits comments from community leaders and the public, giving substantial consideration to local official comments in their decision-making. Many airlines present their proposals to local decision makers, but neither the airline nor the airport administrator is required to involve local stakeholders.

The airline bids must include a history of the airport's passenger traffic to predict future business and detailed cost calculations to show a need for subsidy, which is the gap between a minimum five percent profit and the operational costs of serving that community. These bids are submitted to the DOT and made available for public review on www.regulations.gov. Once the public comment period has passed, the DOT reviews all comments and delivers its decision to enter in an agreement with the selected airline, setting subsidy rates for two years' of minimum air service. Many bids involve multiple EAS communities to connect to the same hub, but the DOT may choose to select multiple airlines to serve the communities and its decision mainly depends on the cost of the contract. However, some communities have received air service with a more expensive contract if other factors such as the quality of the current service and proposed hubs to be served by an airline are more important to a community's needs.

The local awareness of and response to bids varies significantly across communities. Generally, the owner of the airport and local officials provide their recommendations for an air carrier and justifications explaining how local air service is important to their community. For some communities, other proponents such as the Chamber of Commerce and the Economic

Development Council also submit their preference. Non-local proponents have included senators and house representatives, governors and other state officials.

More comments seem to pour in when a contentious bid has been received and people are afraid of its selection. When Rutland, Vermont was asked to show cause in 2003 as the per-passenger subsidies were above the $200 mark, over 50 comments poured in from the general public in support of the subsidized air service. Travel agencies, businessmen, university officials and citizens submit comments from communities with a contentious contract. In contrast, Decatur, Illinois' case received only two letters of support from the local Chamber of Commerce and the county economic development agency in 2007. The 2009 renewal received no public comments from anyone but the airport.