

Economic Impact Assessment Floyd Bennett Memorial Airport

THE PURPOSE OF THIS REPORT IS TO document the process used to quantify the economic impact and contribution of Floyd Bennett Memorial Airport (GFL) to the local economy. The recent actions to expand the Airport have been met with questions about the value of the Airport and its significance to the local economy. In particular, it is important to identify the direct economic contribution to the community and to area businesses that the Airport provides. Further, the potential impacts from lengthening the runway must be documented.

All across the nation, and particularly in the Northeast, there exists a growing negative attitude toward aviation development and growth in general. These attitudes have many causes but environmental concerns and quality of life issues lead the list. Negative perceptions of environmental consequences of airports, in many instances, are driven by experience with large airline airports rather than general aviation facilities. For these airports, the perceptions are generally worse than the reality. Yet these airports support new jobs and industry, which bring a higher standard of living for the residents of a particular area. Thus, general aviation airports are pegged with over-negative perceptions of environmental impact, while at the same time, they are not credited with their full economic contributions to the community.

This analysis will demonstrate the economic effects of Airport and aviation use within the Glens Falls Metropolitan Statistical Area (MSA), which includes Warren and Washington Counties. The economic impact assessment will trace the movement of expenditures through the local economic sectors until the money is exported incrementally from the MSA through purchases of outside goods and services.

1. GOALS AND METHODS OF ECONOMIC ANALYSIS

THE GOALS OF THIS ANALYSIS INCLUDED THE use of a number of economic impact assessment methods to quantify the following economic aspects of Floyd Bennett Memorial Airport:

- **Direct Spending:** Includes on-airport spending on employment, operations, and capital projects. It also includes off-airport spending by air travelers for rental cars, hotels, restaurants, etc. Thus, direct spending is associated with both the *providers* and the *users* of airport services.
- **Induced Benefits:** Impacts above the original direct spending created by the successive rounds of spending in the local economy until the original direct impact has been incrementally exported from the local area.
- **Jobs and Income:** Quantify the income generated by aviation and the number of jobs supported by the Airport.
- **Total Output in Dollars:** The combined impacts of direct and induced spending.
- **Taxes:** Tax revenue contribution of the aviation industry to local and State units of government in New York.

- **Airport Community Value:** Quantification of the asset value of the Airport in addition to its economic impact.

To accomplish these goals, the study utilized the following simplified process and methodology:

- Collect Data on Direct Impacts
- Apply Regional Multipliers to Direct Impact Numbers
- State and Local Tax Impacts
- Airport Community Value
- Summarize All Impacts
- Describe Non-monetary Impacts of Floyd Bennett Memorial Airport and Local Aviation.

2. DATA COLLECTION

THE MOST SIGNIFICANT, WORK-INTENSIVE PORTION OF THE economic impact analysis was the data collection effort. Results of the inventory and data collection formed the basis for inputs to the economic impact model. To perform the inventory and data collection process, the following steps were undertaken:

- Airport Setting
- Economic Characteristics of the Area
- On-Airport Employment
- Visitor Spending
- Capital Spending
- Survey Input

2.1 Airport Setting

The Warren County/Floyd Bennett Memorial Airport occupies a 628-acre valley floor location approximately 3 miles northeast of the City of Glens Falls, and approximately 45 miles north of Albany, New York. The Airport is owned by Warren County, and managed by the County's Department of Public Works. Rich Air serves as the Airport's Fixed Base Operator (FBO), providing a wide range of aviation related services. Floyd Bennett Memorial Airport is included in the National Plan of Integrated Airport Systems (NPIAS), and is classified as a General Aviation Airport. As such, it is eligible for federal and state funding assistance for the planning, design, and construction of non-revenue generating, public-use portions of the Airport.

The Airport has two runways: Runway 1/19 and Runway 12/30. The primary instrument runway, Runway 1/19, is 5,000 feet long and 150 feet wide. This runway is served by four access taxiways. Based upon current activity, the critical aircraft for design purposes is the Gulfstream IV. This aircraft is a large corporate jet that weighs approximately 74,500 pounds fully loaded and has a wingspan of 78 feet. The current runway length of 5,000 feet may restrict some aircraft operations. The existing pavement strength is adequate to accommodate the Gulfstream IV and larger aircraft.

2.2 Economic Characteristics of the Area

The Glens Falls MSA enjoys a diverse economy, one that has followed a general economic shift toward health care services, medical equipment suppliers, and financial services. Both Warren and Washington Counties are located near the center of a 19-county region called Tech Valley in eastern New York, and offer real competitive advantages for companies specializing in innovation, technology, and research and development. With a business-class airport like Floyd Bennett Memorial, business and industry can locate outside the metropolitan area in Warren County and still enjoy the convenience of local corporate air transportation.

With a population of 128,430 in 2013¹, the Glens Falls MSA has enjoyed slow, but stable growth over the past two decades and is projected for continued growth in the future.² Top employers in Tech Valley include several worldwide technology leaders and research institutions, including IBM, General Electric Global Research, Rensselaer Polytechnic Institute (RPI), and the Albany-based College of Nanoscale Science & Engineering (CNSE) campus of the SUNY Polytechnic Institute. Today, the Glens Falls MSA is home to a large concentration of medical and surgical instrument industries, including well-established operations by industry leaders C.R. Bard and AngioDynamics, which recently purchased Navilyst Medical. Warren County is also an important healthcare provider for the southern Adirondack region, and the county's finance, insurance, information management, and business support services actively contribute to area growth.

The recreation and tourism surrounding Lake George and the Adirondack Park provide additional economic strength to the area. Large-scale employers and well-known attractions include Gore Mountain and Whiteface Ski Resorts, Great Escape/Six Flags Theme Park, the 1980 Olympic Center in Lake Placid, and the Sagamore Resort.

Employment projections for Warren County indicate that annual job growth will increase through 2022, as healthcare, healthcare support, construction, and personal care represent a high percentage of the labor market, and are poised for the fastest projected future growth³. Some of the largest employers in Warren County are shown in Table 1.

Attraction of Business

Warren County is currently located within a New York State Empire Zone and Foreign Trade Zone, and is three hours drive time from the major international metropolitan areas of New York City, Montreal, and Boston. The overall positive population growth and stable economic health creates an environment where new partnerships and investments in innovation can flourish. Recent examples include newly opened regional training center for plumbers and pipefitters in Tech Meadows, and in Queensbury Business Park, the luxury wooden boat builder Hacker Boat Company is poised to construct its new facility.

¹ Bureau of Economic Analysis, U.S. Department of Commerce, January 2015

² Warren County Economic Development Corporation, January 2015

³ Bureau of Labor Statistics Occupational Employment Projections

Table 1 - Warren County Top Employers - 2015	
Company	Full-Time Employees
Glens Falls Hospital	2,800
C.R. Bard	900
Angiodynamics/Navilyst	800
Finch Paper	700
Hudson Headwaters Health Network	650
Community Work Independence/CWI	575
Sagamore Resort	500
Glens Falls National Bank	470
Tribune Media Services	400
Walmart	400

Source: Warren County Economic Development Corporation, www.edcwc.com

Lower housing costs and a favorable cost of living index relative to the surrounding MSAs provides another advantage to the area. In addition to this, Warren County's skilled workforce productivity levels are 20 percent higher than the national average.⁴ The area is poised to attract and sustain business growth, with the offerings of quality work environments and a variety of business locations supported by first class infrastructure.

Floyd Bennett Memorial Airport itself is an attractor of business capable of handling business-class jet aircraft, and offering hangar space available for jets as large as a Gulfstream IV. With a 5,000-foot runway and instrument landing system, the airport is capable of servicing the needs of corporate aviation. Amenities include a conference room, passenger lounge, concierge service, catering, limousine, taxi, and rental car service, as well as domestic and international charter services. The airport serves such corporate clients as International Paper Company, General Electric Company, Aetna Insurance, Irving (Scott Paper Company), NIBCO Company, and Travelers Insurance. It is located three miles northeast of the city of Glens Falls, with convenient access to Queensbury and the Lake George regional of the southern Adirondack Mountains. Development opportunities at the airport include a 60-acre airport industrial park with long-term lease options and "shovel ready" development opportunities. All of these advantages are available in the center of New York's Tech Valley corporate environment with major international metropolitan areas within quick driving distance.

2.3 On-Airport Employment

An inventory of all on-airport employment was taken in November 2014. The results of that inventory showed the following:

⁴ <http://www.warrencountyny.gov/business/>

	Number	Full/Part Time
• Warren County Employees		
○ Airport Manager	1	FT
○ Maintenance Workers	3	FT
○ Account Clerk	1	PT
• Rich Air (FBO) Employees		
○ Owner	1	FT
○ Operations Manager	1	FT
○ Aircraft Mechanics	2	FT
○ Line Service Workers	2	FT
○ Line Service Worker	1	PT
○ Accountant	1	PT
• Restaurant Employees		
○ Owner, Cook, Server	3	FT
○ Servers	2	PT
• Corporate Flight Department		
○ Flight Crew	2	FT
○ Mechanic	1	FT
○ Other	2	PT

In total, there are 16 full time and seven part time employees at Floyd Bennett Memorial Airport. These jobs make up part of the direct impact of aviation at the Airport. Other direct job impacts come from capital spending on the Airport, including all of the spending that contractors pay their employees. In addition, air visitors that use the Airport and spend money on rental cars, hotels, and restaurants create jobs that are counted as a part of the direct impact of the Airport on the region.

2.3 Visitor Spending

Every year, air visitors to Glens Falls arrive using general aviation as their primary transportation means. These visitors spend money for rental cars, hotels, and restaurants during their trips and that spending can be attributed to their use of GFL. To estimate visitor spending, true itinerant visitor trips were multiplied times the amount spent per trip.

The method for determining spending by visitors is a two-step process. Essentially, this method first estimates the number of visitors to an airport. Then, an estimated expenditure per visitor is applied to the total number of visitors, quantifying direct visitor spending economic impacts. To estimate the number of general aviation visitors to GFL, it was assumed that only the true transient pilots and passengers would be counted as visitors. The Aircraft Owners & Pilots Association (AOPA) estimates that the average occupancy of general aviation aircraft is roughly 2.5 passengers per flight. Since itinerant operations can contain significant numbers of local residents (leaving and coming back to the Airport), it was assumed that only one-tenth (10 percent) of these passengers were actually from locations other than the Glens Falls area.

To estimate visitor spending a number of publications were researched. Important in that research was to identify two characteristics of visitor profiles. The first was the average length of

stay per trip and the second was the amount of spending per day. Although no recent surveys concerning the average length of stay per trip were available for the Glens Falls area, an in-depth survey for the State of New Jersey was taken in 2013. Of significance was a business trip profile that showed an average length of stay of 2.5 days.⁵ Leisure travelers stayed longer on their trips - up to 5.5 days for vacationers. In order to remain conservative in the estimate, this study used 2.5 days as the average length of stay because that timeframe corresponds to other studies of business air travel in different states.

Similar to statistics on the average length of stay in the Glens Falls area, there were no recent surveys of visitor spending available for this study. Instead, a surrogate measure was used which involved the General Services Administration's (GSA's) FY 2015 Per Diem Rates for New York. These are the allowable expenditures for trips involving government employees or private company employees working under government contract. For Glens Falls, the daily maximum lodging rate is \$101, except for July and August, when the rate increases to \$159. For this study, \$101 per day was used. The daily rate for meals and other incidental expenditures was \$66 throughout the year. Thus, an average of \$167 per day was used times 2.5 days = \$417.50 per trip, per person.

This estimate was multiplied by the estimated number of true visitors flying into Floyd Bennett Memorial Airport. The result is as follows:

- Itinerant Arrivals = Itinerant Operations/2
 - $15,490/2 = 7,745$ Itinerant Arrivals
- Visitors = 0.10 times Itinerant Arrivals times 2.5
 - $0.10 \times 7,745 \times 2.5 = 1,936$

Using this method, the number of general aviation visitors was estimated for Floyd Bennett Memorial Airport. To estimate the individual economic impact of these visitors, the number of annual visitors was multiplied by the average visitor spending level. Using this method, it was estimated that \$808,400 was expended in 2013 by visitors using the Airport.

2.4 Capital Spending

The most recent Airport Capital Improvement Program (ACIP) listing for GFL shows a six-year (2015-2020) expenditure total of \$24,960,000. The average expenditure per year is \$4,160,000. This level of capital spending was compared to the historical level of spending over the last three years. In this regard, a total of \$3,369,297 was expended for the years 2012-2014, for an average of \$1,123,099 per year. Given that the historical capital spending is less than the projected spending, the forecast capital spending for the IMPLAN analysis was reduced by averaging the historical and the projected numbers. This resulted in \$2,641,550 as the average capital spending to be used in the IMPLAN model. This average combines the desired amounts with the realism of past funding totals for capital improvements.

⁵ Source: "2013 Tourism Promotion Survey," New Jersey Visitor Profile Study, (Stockton College's Lloyd D. Levenson Institute of Gaming, Hospitality and Tourism (LIGHT)). p. 9.

2.5 Survey Input

In December 2014, Floyd Bennett Memorial Airport users and businesses were surveyed for purposes of evaluating local area business use and economic impact of the Airport. The Airport User Survey was developed for based aircraft owners and frequent users of the Airport, while the Airport Employer/Business Survey was developed for businesses that either use the Airport or have owners that base their aircraft at the Airport. Because some respondents could be described as both an Employer and a User, both an Employer/Business Survey and a User Survey were made available to those emailed. In total, 56 contacts were emailed. Prior to the emailing, the Airport User and Business Surveys were launched via SurveyMonkey.com so that respondents could complete them online. The surveys were on-line at floydbennettsurvey.com. A copy of the Airport User Survey is included on the following page.

This survey effort asked respondents to return completed surveys by December 15, 2014. By that date, a total of 16 Airport User surveys and 2 Airport Business surveys were completed online. One respondent identified as both an Airport User and an Airport Employer. The final response rate was 31.9 percent for the total surveying effort. For this type of survey, the normal response range is between 18 percent and 28 percent. Thus, an above-average response was received from the total survey effort.

AIRPORT USER SURVEY

2. Please list type of aircraft

A total of 16 Airport users responded to this question. Aircraft types included 24 single-engine aircraft, 1 multi-engine aircraft, 1 jet aircraft, and 1 helicopter for a total of 27 aircraft (some respondents owned multiple aircraft). Twelve users base their aircraft at Floyd Bennett Memorial, and four respondents listed other airports as their home airport.

3. Please estimate the total annual level of spending associated with your aircraft at Floyd Bennett Memorial:

Sixteen respondents, accounting for 27 aircraft, were responsible for \$276,205 in spending. Each aircraft owner spent an average of \$6,234 annually for fuel, \$2,123 for maintenance, \$3,333 for storage, and \$563 for aviation related taxes and “other.” The average annual aircraft spending (fuel, maintenance, storage, aviation-related taxes, and other) per respondent equaled \$17,263.



Floyd-Bennett Memorial Airport (GFL)
Economic Impact Assessment
AIRPORT USER SURVEY

Name _____ Phone _____

Address _____ Email: _____

City _____ State _____ ZIP _____

Aircraft Economic Information

1. Aircraft type (Please list all aircraft): _____

2. Home Airport for your aircraft: _____

3. Please estimate the total annual level of spending associated with your aircraft at Floyd Bennett Memorial:

Fuel:	\$ _____
Maintenance:	\$ _____
Storage	\$ _____
Other	\$ _____
TOTAL	\$ _____

Aircraft Activity Information

4. Please estimate the **number of take offs or landings** per year at GFL: _____

5. What new facilities or services would cause you to use Floyd Bennett Memorial Airport more frequently?

Business/Aviation Relationships

6. Please estimate the percentage use of your aircraft:

Business:	_____ %
Personal:	_____ %
Government:	_____ %
Other:	_____ %
Total	100%

7. If applicable, please explain the importance of the business use of your aircraft to you or your business:

8. Comments: _____

A breakdown of average spending by type of aircraft was calculated for respondents that indicated one type of aircraft only. If users indicated multiple types of aircraft, their responses were not broken down by spending by type because specific spending per aircraft could not be determined. Total spending by aircraft type:

- 23 Single-Engine Aircraft spent an average of \$7,471 per year for a total of \$171,840
- One jet aircraft spent an average of \$71,865 annually (\$53,865 of this was from fuel purchases).

4. *Estimated Yearly Takeoffs or Landings at Floyd Bennett Memorial:*

Fourteen users with 25 aircraft (22 single-engine, 1 multi-engine, 1 jet aircraft, and 1 helicopter) reported an estimated 4,246 annual operations (2,123 takeoffs) for an average of 169 operations per aircraft or 303 operations per user.

Average spending on fuel per takeoff at Floyd Bennett Memorial was estimated as follows:

- Single-Engine (23): Spent an average of \$82 in fuel per takeoff (1,902 takeoffs)
- Jet Aircraft (1): Spent an average of \$2,565 in fuel per takeoff (21 takeoffs)

5. *What new facilities or services would cause you to use Floyd Bennett Memorial Airport more frequently?*

There were 15 responses to this question. Two respondents indicated the need for additional food services, one respondent indicated the need for lower fuel prices, one respondent listed adding an aircraft washing facility, one respondent indicated the need for an updated FBO and easier access, two respondents listed adding an avionics shop, two respondents listed adding a paint shop, one respondent indicated that new management was needed at the airport, one respondent indicated "none," and one respondent desired that runways be left open during Balloon Fest.

6. *Please estimate the percentage use of your aircraft?*

A total of 15 Airport users responded to this question. In terms of the percentage of flights flown, Airport User respondents indicated that 35.1 percent of flights flown were for business reasons and 64.9 percent of flights flown were for personal reasons. No respondent listed "other" as a reason for operating aircraft. In terms of the number of flights flown, respondents indicated that 675 flights were for business, and 1248 flights were for personal reasons.

7. *If possible, please explain the importance of the business use of your aircraft to your company or business:*

The following are summarized comments of Airport users:

- The ability to travel closer to your destination
- Allows business to make better usage of time
- Clients can enjoy scenery of Adirondacks
- Meeting clients
- Commute to business headquarters
- Increased business revenue

Summary of Airport User Survey Results

In summary, there were several key points expressed by respondents to the Floyd Bennett Memorial User Survey:

- A total of \$276,205 was spent by 16 Floyd Bennett Memorial user respondents on their aircraft in 2013.
- Fourteen users reported an estimated 4,246 annual operations at Floyd Bennett Memorial in 2013 - 303 operations per user.
- In 2013, 35.1 percent of flights flown were for business reasons (1,350 operations), and 64.9 percent of flights flown were for personal reasons (2,495 operations).
- The three main issues/comments that Airport users reported on the survey included:
 - The need for additional food service offerings,
 - An avionics shop,
 - A paint shop.

AIRPORT EMPLOYER/BUSINESS SURVEY

The Airport Employer/Business Survey (shown on the following page) generated two responses from employers that have a location at Floyd Bennett Memorial. However, due to the lack of detailed information provided, a breakdown of survey results was unable to be completed. Instead, a summary of key points learned via the survey and other correspondence with local businesses is provided here:

- The Hacker Boat Company specifically mentioned the Airport as a deciding factor for the location of a 70,000 square foot expansion in the Queensbury Business Park. Many of their prospective clients use the Airport and are minutes from the factory.
- Similarly, the Melvina Can Machinery Company stated that the Airport was a deciding factor in their move to Queensbury in 2006.
- In addition to these companies, the local fixed base operator, Rich Schermerhorn, has invested more than \$3 million in the Airport since 2006, and plans an additional \$625,000 investment in 2015.
- Another example involves the location and support of a regional construction company, D.A. Collins, Inc. which has its headquarters in Wilton, NY (Saratoga County). D.A. Collins has a land lease at Floyd Bennett Memorial with a hangar for multiple company owned planes used for business purposes.



Floyd-Bennett Memorial Airport (GFL)
Economic Impact Assessment
BUSINESS/EMPLOYER SURVEY

Name _____ Phone _____

Address _____ Email: _____

City _____ State _____ ZIP _____

Company Information

1. Type of Business Product or Service _____

2. This Business is: _____ Aviation Related _____ Non-Aviation Related _____ Partial

3. Total number of employees at this location in 2013: Full Time _____ Part Time _____

Business Aviation Activity

4. Please estimate what percent, if any, of your company's employment and sales is related to the availability of Floyd Bennett Memorial Airport:

Employment _____ % Sales _____ %

5. Was the Airport a decision factor in moving to or remaining in the region? Please describe the nature of your business dependence upon Floyd Bennett Memorial, if any:

6. If your company uses Floyd Bennett Memorial, please estimate the number of aircraft flights per month: _____

7. Do any of your clients or vendors use Floyd Bennett Memorial? _____ Yes _____ No

If yes, please estimate the number of flights per month: _____

8. What new facilities or services would cause you to use the Airport more frequently? _____

Comments

9. Comments: _____

- The Sagamore Luxury Resort and Fort William Henry Hotel and Conference Center report that a number of their clientele use the Airport via general aviation to reach their facilities at Lake George. The Sagamore reports of more than 50 shuttle trips to the Airport in 2014. Both are in favor of Airport expansion to accommodate more corporate aircraft.

In addition to these businesses, other companies in the region rely upon general aviation transportation. GLOBALFOUNDRIES, the world's first full-service semiconductor foundry with a truly global manufacturing and technology footprint is developing a massive \$2 billion facility in Malta, NY. The company recently acquired IBM's semiconductor manufacturing business. Business jet connectivity is important and currently Albany International receives most of their general aviation traffic because of its runway length. The potential to attract aircraft activity related to this company and its suppliers to Floyd Bennett Memorial increases as its runway length expands.

3. REGIONAL MULTIPLIERS

ECONOMIC IMPACT ANALYSIS IS THE PROCESS OF quantifying the economic contributions of any specific activity under study. End products of these analyses are described in terms of jobs, income, and total economic output in dollars. The economic impact analysis of Floyd Bennett Memorial Airport will provide stakeholders with evidence that their expenditures on the Airport are having an impact in creating and sustaining jobs.

Regional multipliers are the reason why impacts on the local economy from direct expenditures are larger than the expenditures themselves. As an example, if a new firm comes into an area and employs 50 people and also purchases some local goods and services, economic studies have shown that the impacts in the area will be attributable to the company's direct outlays plus the respending of these outlays by firms supplying inputs to the new firm. There will be two types of ripple effects: (1) those associated with firm-to-firm transactions and (2) those derived from the wages and salaries allocated to employees in these firms. The wages and salaries paid to the 50 new employees will be spent and respent several times within the community. Retail establishments that have nothing to do with the nature of the new firm's business will be affected by its presence as the new employees spend their income on clothes, automobiles, restaurant meals and so forth. Thus, for every dollar of new wages and salaries, an additional twenty-five to seventy-five cents of income might be generated elsewhere in the area. As supplier firms providing inputs to the new firm expand their production and thus allocate more resources to wages and salaries, a further consumption-generated ripple effect will be observed.

When all the effects are summed up, a new job can often generate the equivalent of another job (summed up over many partial jobs in different parts of the area's economy) if the community is large and has a sophisticated consumer retail base. In smaller communities, the effect of a new job might be to generate between one-third and two-thirds additional jobs. Ripple or multiplier effects work in both a **positive** (when a new airport enters or an existing airport expands) and in a **negative** manner (when an enterprise goes out of business or an airport closes).

3.1 IMPLAN Modeling

IMPLAN, developed originally by the U.S. Forest Service, is a comprehensive impact system that is built on the framework of input-output and social accounting methodology. The database is maintained at the county level, affording the analyst an opportunity to create regions for study that are aggregations of counties. The database includes the latest business censuses supplemented by County Business Patterns and other data derived from the Bureau of Economic Analysis.

The input-output and social accounting models are derived from national data with adjustments made to reflect regional specialization, size, and industrial composition. The procedures used to accomplish this are well known and accepted in the literature on nonsurvey techniques. Since IMPLAN provides a comprehensive system (i.e., the complete input-output table or social accounts), it is possible to trace impacts of change in one sector on other sectors in a detailed fashion. The IMPLAN software permits users to:

- Develop a complete set of social account matrices
- Develop user-specified multiplier tables
- Change any component of the system: production functions, trade flows, or database
- Create custom impact analyses by entering final demand changes
- Obtain any report in the system to examine the model's assumptions and calculations

In addition, the IMPLAN databases are composed of the following components:

- Employment;
- Industry Output;
- Value Added
 - Employee Compensation;
 - Proprietary Income;
 - Other Property Type Income;
 - Indirect Business Taxes;
- Institutional Demands
- Personal Consumption Expenditures (PCE) - three income levels;
- Federal Government Military and Non-Military Purchases;
- State and Local Government Education and Non-Education Purchases;
- Commodity Credit Corporation;
- Inventory Purchases;
- Capital Formation;
- Foreign Exports;
- Federal, State and Local Government Sales;
- Inventory Sales.
- National Structural Matrices
 - Use
 - Make

– Inter-Institutional Transfers

The ability to edit data makes IMPLAN a dynamic economic modeling tool. Software users have the ability to edit all underlying data, from value added, employment, and final demands to production functions, byproducts, and regional purchase coefficients - and many other components.

One advantage of the IMPLAN system is the open access philosophy instilled by the Forest Service. IMPLAN is designed to provide users with maximum access so that they can alter the underlying structure of the data, the model, or means of assessing impact. The combination of the detailed database, flexibility in application, and the open access philosophy has made IMPLAN one of the most widely used and accepted economic impact modeling systems in the U.S. IMPLAN has been accepted in the U.S. court system and in many regulatory settings.⁶ In one example, the Florida Bar Association contracted with a private company that used IMPLAN to show the economic impacts of delays in civil trials in Florida's state courts due to underfunding.⁷ In addition, R.A. Wiedemann & Associates developed one of the first acceptable economic jobs forecasting models used in California by the U.S. Customs and Immigration Service (USCIS) in the evaluation of EB-5 regional center applications using IMPLAN modeling.

3.2 Input-Output Accounting System

A typical region with m firms, produces a whole array of goods and services from agriculture, to food processing, to manufacturing, to personal and business services and government. Tracing all the detailed transactions between these firms would be a daunting task; hence, firms are assigned to n broad sectors based on their principal product. The number of sectors, n , ranges from 50 to several hundred and the allocation conforms to the North American Industry Classification System (NAICS). For this example, only five sectors will be shown to facilitate the analysis and to avoid getting bogged down in details.

The transactions between these sectors are arrayed in a matrix (n rows and n columns), as shown in Table 2. Looking across the *rows*, the sales made by the firm at the left can be traced to firms listed at the top of the column. Thus, sector 3 sells \$3m to sector 1, \$20m to sector 2, \$50m to sector 4 and so forth. The *columns* provide complementary information of the source of purchases made by the sector at the top of the column from all other sectors. Again, following sector 3, note that it buys \$9m from sector 1, \$7m from sector 2, \$38m from sector 4 and \$26m from sector 5. This part of the input-output table is referred to as the *interindustry transactions*; it provides an *economic photograph* of the ways in which one sector is linked to another sector.

⁶ Source: University of Wisconsin Center for Cooperatives, Research on the Economic Impact of Cooperatives. <http://reic.uwcc.wisc.edu/implan/>

⁷ Source: "The Economic Impacts of Delays in Civil Trials in Florida's State Courts Due to Under-Funding," The Washington Economics Group, Inc. for the Florida Bar Association, February 2009.

Table 2 - The Input-Output Accounting System											
		Interindustry Transactions (Millions of \$)					Final Demand (Millions of \$)				
							Households	Government	Exports	Total Final Demand	Total Sales
	Sector	1	2	3	4	5	6	7	8	9	10
1	1	21	0	9	3	0	30	15	22	67	100
2	2	1	8	7	29	0	25	7	23	55	100
3	3	3	20	0	50	7	5	9	6	20	100
4	4	31	2	38	0	3	12	13	1	26	100
5	5	10	25	26	1	4	9	19	6	34	100
6	Total Intermediate	66	55	80	83	14	81	63			
7	Value Added	20	40	10	17	40	2	62			
8	Imports	14	5	10	0	46	77	55			
9	TOTAL INPUTS	100	100	100	100	100	160	180			

However, sectors also make sales to other sets of activities: consumers, government and to customers located outside the region (exports). In addition, firms also make purchases of labor (wages and salaries), returns to capital (profits and dividends) and imports. The sum of wages and salaries and profits and dividends (returns to labor and capital) are referred to as *value added*. These are shown in row 7 while *imports* has its own row (8). The columns 6-8 (aggregated in column 9) are referred to as *final demand*; rows 7 and 8 are referred to as primary inputs.

3.3 The Input-Output Model Demonstration

Table 2 is basically an accounting system - a double entry one similar to that prepared for a business in which sales and purchases or assets and liabilities will be shown but, in this case, for a regional economy. The next step is to prepare an economic model so that the impact of changes in one sector can be traced on the rest of the economy. The reason for doing this rather than assuming that all sectors will have the same impact is because the nature of dependence on the regional economy and interdependence among sectors varies.

It can be assumed that each sector produces goods and services according to a fixed recipe (formally known as a production function); hence, to produce \$1m worth of steel, it is assumed that a fixed proportion will be allocated to limestone, iron ore, scrap, energy, coke, labor and so forth. Inputs are expressed in monetary terms since it would be difficult to combine tons of iron ore with megawatts of electricity, or hours of labor in some consistent fashion. This

fixed recipe permits expression of the transactions in proportional form, known as *direct coefficients*. These are shown in Table 3. A simple case was used in which each sector's output was \$100m (in reality, each sector's production will be very different). To obtain the direct coefficients, the entries in the 5 x 5 part of Table 2 are divided by 100. It is further assumed that these proportions are invariant with levels of production (i.e., no economies of scale). The final assumption is that the economy is driven by signals emanating from final demand (consumers, government, and exports). This is the *exogenous* part of the economy, while the interindustry transactions respond to these signals and are therefore *endogenous*.

<i>Sector</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>1</i>	0.21	0.00	0.09	0.03	0.00
<i>2</i>	0.01	0.08	0.07	0.29	0.00
<i>3</i>	0.03	0.20	0.00	0.50	0.07
<i>4</i>	0.31	0.02	0.38	0.00	0.03
<i>5</i>	0.10	0.25	0.26	0.01	0.04

In a mathematical sense, the input-output model can be defined by a series of equations. Using a simplified format:

- Let T be the matrix of transactions in the 5x5 part of Table 2;
- Let f (nx1) be the aggregation of final demand and
- Let x be the vector (nx1).

The accounting yields the following:

$$T+f=x \tag{1}$$

Define R as the matrix of coefficients (Table 3); by definition:

$$T=Rx \tag{2}$$

Substituting for T back into equation (1), yields the following:

$$Rx+f=x \tag{3}$$

Solving for x , yields the following:

$$x= [I - R]^{-1}f \tag{4}$$

Equation (4), therefore, represents the basic driving mechanism of the regional economy. Final demand, f , generates total output x , but expanded by the value $[I - R]^{-1}$. The latter is the essence of the input-output model and is known as the *Leontief inverse matrix*, named after the founder of input-output analysis, who was awarded the Nobel Prize in economics for his efforts. This matrix is shown in Table 4. The entries reveal the direct and indirect impacts on a sector when

final demand in the sector at the top of the column changes by \$1 (or \$1 million or \$100 million). Moving down column 3, it was noted earlier that sector 3 purchased \$0.09 for every \$1 of production from sector 1. However, as a result of this, sector 1's production increases and this, in turn, generates additional demands on other sectors and eventually some of these sectors will require inputs from sector 1. Thus, the difference between 0.09 in Table 3 and 0.18 in Table 4 represents the *induced impact*. Moving down the rest of column 3 and comparing the entries with those in Table 3, it is noted that the entry on the principal diagonal is always >1. The unit value represents the increase in final demand in that sector. The remaining portion is the direct and induced impact of expansion.

Table 4 - The Leontief Inverse (Multiplier) Matrix					
SECTOR	1	2	3	4	5
1	1.33	.05	.18	.15	.02
2	.23	1.17	.3	.50	.04
3	.4	.36	1.41	.82	.13
4	.58	.19	.61	1.38	.09
5	.31	.41	.48	.38	1.09
Multiplier	2.85	2.18	2.98	3.23	1.37

At the bottom of Table 4 there is a row labeled "multiplier." It should be noted that these values vary from 1.37 (sector 5) to 3.23 (sector 4). How should these entries be interpreted? Essentially, they provide information on the impact on the rest of the economy (including the sector in question) of a unit change in final demand in any sector. The value 2.98 for sector 3 explains that for every increase of \$1 in that sector an additional 1.98 worth of activity is generated for a total value of production of 2.98. Why do these values vary? In large part, they reflect the degree to which a sector is dependent on other sectors in the region for its inputs and as a source of consumption for its products. It would be incorrect to assume that a sector's importance in the economy is directly related to the size of the multiplier. While true in part, a sector with a large volume of production but a modest multiplier may generate a greater volume of activity in the region than the sector with the largest multiplier but a smaller volume of production.

There are several additional multipliers that can be calculated. For example, when a sector expands production, it will increase payments to labor generating additional wages and salaries that will be spent in the region. Further, other industries whose production has to expand to meet these new demands will also spend more on wages and salaries. Thus, an income multiplier may be generated that reveals the relationship between direct income generation and total income (in similar fashion to output). The analysis could also be transformed into employment terms. Referring back to the opening section, it becomes clear why more total jobs were created than simply the direct jobs. The secret is the multiplier process!

Multipliers vary not only across sectors but also across regions. A small regional economy, with a modest representation of industry, may not be able to provide all the necessary inputs required by local industry. Thus, there will be considerable importation of inputs (sometimes referred to as leakages). In general, the larger the value of the imports, the lower the value of the multiplier. The value of multipliers could be expected to decrease as the economic region under consideration gets smaller. Thus moving from the US as a whole to a census region, an individual state, a metropolitan region and finally to a county would result in smaller and smaller multiplier values. However, there are a few cases in which this finding is not confirmed - cases in which a region may have a significant representation of a particular sector.

4. APPLICATION TO FLOYD BENNETT MEMORIAL AIRPORT

THE FINAL STEP IN THE ANALYTICAL PROCESS of regional economic impact analysis is the estimation of the induced or multiplied effects of Floyd Bennett Memorial's direct and indirect aviation impacts. Using the IMPLAN software, multiplier tables were generated for the Glens Falls MSA (Warren and Washington Counties) for all of the potential impacted industries. Results and data from the estimation of direct and indirect impacts were plugged into the appropriate multiplier process and the results were summed for each airport to obtain output and employment totals supported by aviation. Appendix A presents the tabular results of the IMPLAN process.

This section provides a summary the Airport's direct and induced economic impacts. In addition, there is a discussion of market potential and future economic development. This documentation is the culmination of work involving the survey data, the secondary source data, and the IMPLAN multipliers in determining the economic impact of Floyd Bennett Memorial Airport.

The economic impact methodology first identified the direct spending and employment at Floyd Bennett Memorial Airport (called direct impacts) and included the direct spending of air visitors at off-airport sites such as hotels and restaurants. Armed with this information, regional respending multipliers derived from IMPLAN software were applied to the data to determine the multiplied impacts of direct spending (called induced impacts). Table 5 presents a summary of Floyd Bennett Memorial Airport's direct and induced economic impacts.

Table 5 - Direct and Induced Economic Impacts: Floyd Bennett Memorial Airport	
ITEM	AMOUNT
Direct Impacts	
Airport-related Income*	\$3,115,400
On-Airport Expenditures (Total including capital costs)	\$6,747,000
Estimated State/Local Taxes	\$478,400
Airport-related Employment (Total)	69

Table 5 - Direct and Induced Economic Impacts: Floyd Bennett Memorial Airport	
ITEM	AMOUNT
Induced Impacts	
Induced Direct Impacts	\$3,295,900
Total Induced Employment Impacts	28
Grand Total Dollar Impacts	\$10,042,900
Grand Total Income Impacts*	\$4,314,500
Grand Total Employment Impacts	97

* Includes indirect incomes from visitor spending and capital development. This is a subset of the total impacts and is already included in the output number.

As shown, Floyd Bennett Memorial Airport supports 97 jobs and \$10 million in annual economic impact. The Airport generates \$478,400 in State and local taxes and provides incomes of more than \$4.3 million to New York residents. Appendix B presents a detailed summary of the IMPLAN economic impact respending process, by economic sector.

4.1. State And Local Tax Impacts

When discussing economic impacts of aviation, many people are interested in the collective benefits to the local municipalities and the State of New York. One measure of the collective local benefits involves the level of taxes paid to these local governmental units. In New York, there are a variety of taxes paid by airports and aviation users:

- Airport property taxes on privately owned airports
- Sales tax
- Payroll taxes
- Aviation fuel tax
- Public accommodations tax

All of these tax impacts were estimated by the IMPLAN model for expenditures at the State and local level. Estimated state and local tax impacts from aviation for Floyd Bennett Memorial Airport totaled \$478,400 in 2013. This tax revenue benefits all citizens of the area, not just those in aviation.

5. AIRPORT/COMMUNITY VALUE

WHEN CONSIDERING THE VALUE OF AN AIRPORT, its economic impact is usually identified, but rarely are the assets identified or valued. At Floyd Bennett Memorial Airport, a significant value of the facility is related to its current asset worth. In this regard, an analysis was developed that estimated the replacement value of the Airport, along with a depreciated estimate of facilities based on ranges of potential useful life. Each of these

estimates is described below.

5.1 Existing Value of Airport Property and Facilities

The first value of an existing airport is the replacement cost of the facility. While this is not the current value of the facility due to depreciation of assets, it gives an idea of the resources needed to replicate the facilities at Floyd Bennett Memorial. The Airport replacement value can be estimated by multiplying unit costs of construction times the existing quantities of facilities to derive an approximate infrastructure investment total. Land values are added to the facility development costs, yielding a total replacement value. Not included in this mix are the potential difficulties of actually replacing the airport due to environmental issues, land use constraints, and property availability. Table 6 shows the estimation of those costs, including the value of the property on which the Airport is located. Replacement of the Airport would cost about \$80.4 million.

Table 6 - Airport Replacement Value					
	Description	Units		Cost/Number	Amount
Land Value	Acres from 5010	628	Cost/Acre	\$25,000.00	\$15,700,000
Pavement					
Runway	Length x Width	1,500,000	Cost/sq.ft.	\$15.00	\$22,500,000
Taxiway	Length x Width	347,750		\$15.00	\$ 5,216,300
Apron Area	Estimated	417,875	Cost/sq.ft.	\$15.00	\$ 6,268,100
Hangars					
Conventional Hangars	Total Square Footage	69,700	Cost/sq.ft.	\$230	\$16,031,000
T-Hangars	Total Units	24	Cost/Unit	\$75,000	\$ 1,800,000
Fuel System	0=None, 1=10,000 gals, 2=More than 10,000 gals.			2	\$ 500,000
Navigational Aids	0=None, 1=Nonprecision 2=Precision			2	\$ 4,500,000
Internal Roadways	Total Linear Feet	3,800	Cost/l.f.	\$120	\$ 456,000
Auto Parking Lots	Total Square Footage	37,700	Cost/sq.ft.	\$8.00	\$ 301,600
Perimeter Fence	Total Linear Feet	34,000	Cost/l.f.	\$35	\$ 1,190,000
Air Traffic Control Tower	0=No, 1=Yes			0	\$ -
Non-Hangar Buildings	Total Square Feet from Aerial	13,100	Cost/sq.ft.	\$450	\$ 5,895,000
Total Replacement Value					\$80,358,000

Thus, one method of valuing the facility would be to consider the equivalent costs of replacement. Since many of the existing facilities are aging, they have lost a portion of their value in accordance with their useful life. In this regard, a second measure of Airport value was made - Current Value of Airport Facilities.

5.2 Current Value of Airport Facilities

The current value of Airport facilities was estimated using the calculated replacement value along with the age of various facilities and their estimated useful life. The ACV metric includes the following assumptions:

- **Paved Area Value Reductions:** The replacement cost of paved areas were reduced by applying the following percentages based on estimated facility age:
 - Good (0-5 years): -12.5%
 - Fair (6-10 years): -37.5%
 - Poor (11-20 years): -75%
 - Over 20 years: -100%
- **Hangars and Non-Hangar Building Value Reductions:** Using a 40-year life as a reasonable benchmark, the following percentages were applied to estimated replacement values for each facility:
 - 0-5 years: -6.25%.
 - 6-10 years: -18.75%
 - 11-20 years: -37.50%
 - Over 20 years: -67.00%
- **Other Facilities:** Other facilities such as fuel systems, air traffic control tower, and instrument approaches were not reduced in value, since their replacement costs are assumed to increase at the same rate as their depreciation.
- **Land Value:** The land value used for the ACV metric was taken from an average of recent listings of property in the vicinity of the Airport. For the purpose of the ACV metric, both the existing and replacement land values are the same since land typically does not depreciate in value.

To account for the remaining useful life in terms of replacement costs, the replacement values listed in Table 7 were decreased in accordance with the age and remaining useful life of each facility. No depreciation was assumed for the land or the fuel system since they hold their original replacement value by function. Table 7 presents the results of the current value estimate using the principles of remaining useful life.

	Age of Existing Facilities				\$ Amount
Land Value	N/A				\$15,700,000
Pavement	Square Feet 0-5 yrs	6-10 yrs	11-20 yrs	20 + yrs	
Runway		500,000	1,000,000		\$ 8,437,500
Taxiway			347,750		\$ 1,304,100
Apron Area	15,500		296,675	132,700	\$ 1,316,000
Auto Parking Lots			37,700		\$ -
Hangars	SF for C-hangars, # of Units for Ts				

Table 7 - Current Airport Value Calculation					
	Age of Existing Facilities			\$ Amount	
Conventional Hangars		46,000	11,200	12,500	\$11,155,000
T-Hangars		6	6	12	\$ 943,900
Fuel System	N/A				\$ 100,000
Instrument Approaches	N/A				\$ 4,500,000
Internal Roadways			3,800		\$ 285,000
Linear Fence			34,000		\$ 743,800
Air Traffic Control Tower	N/A				\$ -
Non-Hangar Buildings	300			12,800	\$ 2,027,400
Existing Facility Value					\$46,512,700

As shown, the Airport's existing facility value based upon useful life estimates is approximately \$46.5 million. This is roughly 58 percent of its replacement value as estimated with land costs. If the land is taken out of the equation (because it was not depreciated), the depreciated value of the existing airport is about 48 percent of its construction replacement value.

In context, this means that the Airport is producing output equal to 21.6 percent of its current asset value each year. The operational investment of approximately \$800,000 to run the Airport each year is only 1.7 percent of the Airport's existing asset value. By comparison, this would be equal to spending a total of \$3,400 per year on operating and maintaining a \$200,000 home.

5.3 Summary of Airport Community Value

The value of Floyd Bennett Memorial Airport has been estimated in this analysis, using two very different measures. The first was the economic activity metric, which assesses the job creation, income, and output, generated at the Airport. This value was determined through analysis, and shows that the Airport generates an average of \$10.04 million per year and sustains 97 jobs in the area.

A second measure of the value of the Airport involves the current asset value. In this regard, a method was used that first estimated the current replacement value of the facility and then reduced that value by the useful life remaining on each specific asset. This procedure resulted in a replacement value estimate of \$80.4 million and a current value of \$46.5 million. Taken as a snapshot in time, the total value of the Airport could be estimated to include its annual economic activity (\$10.0 million) plus its current asset value (\$46.5 million). Adding these two numbers, it can be shown that **the overall value of the Airport to the community is \$56.5 million.**

As mentioned, this means that the Airport is producing output equal to 21.6 percent of its current asset value each year. The operational investment of approximately \$800,000 to run the Airport each year is only 1.7 percent of the Airport's existing asset value.

There are a number of non-monetary benefits of aviation that have not been mentioned in this analysis. Some of these benefits include:

- ***Transportation Benefits:*** Defined as the time saved and cost avoided by travelers who use airports rather than the next best alternative. Floyd Bennett Memorial Airport provides access to the National Air Transportation System for both domestic and international flights.
- ***Stimulation of Business:*** Floyd Bennett Memorial Airport is used extensively by area businesses. As such, its convenience is highly valued by aviation business travelers.
- ***Aeromedical Evacuation:*** Floyd Bennett Memorial Airport serves aeromedical evacuation teams and flight services. This life-saving function has intrinsic value that often cannot be adequately quantified.
- ***Recreation:*** Roughly 50 percent of commercial airline travel and 50 percent of general aviation travel is for recreational purposes. The location of the Sagamore Luxury Resort and Fort William Henry Hotel and Conference Center, Adirondack Park, Lake George, and other attractions are a draw for general aviation visitors to the area.

All of the above factors point to a value of an airport that is not easily quantified. The impacts that were estimated within the body of this report are only one facet of the overall picture. The economic activity generated by the Airport along with its current asset value represent the monetary value of the facility, while these other non-monetary factors describe other features of its intrinsic worth.