Lebanon Airport

Comprehensive Airport Master Plan

Final Report

November 2017

CITY OF LEBANON N.H. INCORPORATED JULY 4 1761 ESTABLISHED 1958

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Chapter 1
Inventory

1.1 OVERVIEW OF LEBANON MUNICIPAL AIRPORT

The purpose of this package is to provide stakeholders with summary information on Lebanon Municipal Airport (LEB) as it exists today. While a brief historical overview is provided, the majority of information focuses on the Airport's current characteristics, operations, finances, market position, and regulatory requirements. This airport summation is intended to impart a generalized, yet comprehensive, overview of LEB, in order to foster informed discussion and decision-making as stakeholders work to help craft a vision and mission for the airport that represents the community it serves.

The information contained within this package has been compiled, in part, from multiple sources including the Lebanon Municipal Airport Economic Impact Study of 2008, the Conceptual Airport Master Plan from 2010, the Runway Safety Area Environmental Assessment of 2012, and the New Hampshire State Airport System Plan (NHSASP) completed in 2015. Stakeholders are encouraged to explore these source documents in detail to obtain a greater understanding of the Airport, its operational and financial components, the regulatory environment, and the Airport planning process.

1.1.2 History

The Lebanon Municipal Airport was established in 1941, at the recommendation of the U.S. War Department, which believed an airport constructed in the vicinity of the Town of Lebanon would be advantageous during war and other emergencies. At the advice and approval of the War Department, the Civil Aeronautics Authority (CAA) apportioned funding to cover the cost of constructing a new airport. However, per stipulations of the federal appropriations, the Town of Lebanon had to purchase and own the land upon which the Airport was to be built prior to the commencement of construction and before the disbursement of any public funds.

As a result, the Selectmen of Lebanon petitioned the State of New Hampshire (NH) for permission to hold a special town meeting that would determine whether the Town would raise and appropriate the funds necessary to purchase the land, or whether the money would be borrowed. The State granted the Selectmen of Lebanon their special meeting, during which the

purchase of land in favor of establishing an airport was unanimously approved. Construction of LEB began shortly thereafter and was completed the same year.

After World War II, the federal government turned responsibility for the Airport over to the Town of Lebanon. The Airport received its inaugural airline service in 1948 and by 1954 passenger enplanements reached 8,000.

In 1959, the Lebanon Regional Airport Authority (LRAA) was formed and was deeded portions of the airfield inherent to overseeing an airport's operations (runway environment, terminal building, etc.). The City of Lebanon retained the remaining airport parcels with the intent to develop non-aeronautical usage on those properties. However, the LRAA was later dissolved and the Airport was deeded back to the City. LEB is presently undergoing an Airport Property Study – funded by the Federal Aviation Administration (FAA) – to determine if the City unknowingly apportioned parcels of the airfield without approval and/or proper compensation to the Airport (LRAA), both of which may have violated federal grant assurances. The City's attorney is leading this review.

The 1980s brought a runway extension and formulation of an off-airport Airport Business Park, which would continue to develop throughout the 1990s and early 2000s. In 2004, LEB received a Small Community Air Service Development Grant (SCASD) from the U.S. Department of Transportation (USDOT) for the purpose of improving air carrier service to the Airport, which can include airport marketing efforts and financial incentives for airlines. Beginning in 2008, Cape Air offered scheduled airline service from LEB to Boston. Today, Cape Air offers four daily flights to Boston and two daily flights to White Plains, NY, with ground transportation to Midtown New York City included in the White Plains fare. In 2011, the Airport surrendered its Part 139 operating certificate after losing funding for its required recurrent Aircraft Rescue and Fire Fighting (ARFF) training.[1] However, given the size of aircraft flown by Cape Air, LEB may continue to legally operate without it.

In 2009, LEB began an Environmental Assessment (EA) to address project alternatives, impacts, and mitigation that could incur from Runway Safety Area (RSA) regulatory compliance required by the FAA. The City of Lebanon voted in 2013 to take No Action regarding the RSA improvements, despite warnings from the FAA that non-compliance could result in funding restrictions. Since 2013, the FAA has refused to fund projects not related to RSA improvement or non-safety projects that are underway and LEB is presently at risk to lose $750,000 in entitlement funds because of non-compliant RSAs. If LEB is unable to use those funds, the money will be awarded to other NH airports with whom LEB competes.[2]

[1] 2011 City Budget – Overview and Summary: Municipal Airport Fund.
[2] Doyle-Burr, N. (31 Mar 2015) *Lebanon Airport Loses Out on Federal Funds After Delays*. Valley News.

1.1.3 Governance

The Airport is currently owned by the City of Lebanon (Airport Sponsor) and is operated as a municipal department. The Airport Manager oversees daily operations of the Airport and reports to the City Manager; the City Manager then reports to the City Council on behalf of the Airport. This type of structure results in decisions that are made based upon the makeup of the City's elected representatives and the political environment at that time.

In contrast, during its tenure the LRAA acted as a single-purpose authority, separate from City Council and other municipal departments. This style of governance bestows considerable power to the independent authority/commission and generally implies a more focused approach to airport management by those with substantial aviation knowledge and experience. Additionally, this method is more likely to be a catalyst for joint funding and/or oversight initiatives from neighboring municipalities that utilize and benefit from their local airport. For example, the LRAA included representatives, funding, and management authority from 14 towns in NH and four towns in Vermont.

A more detailed discussion on local airport governance can be found under Section 1.2.7 Local Agencies of this chapter.

1.1.4 Airport Role

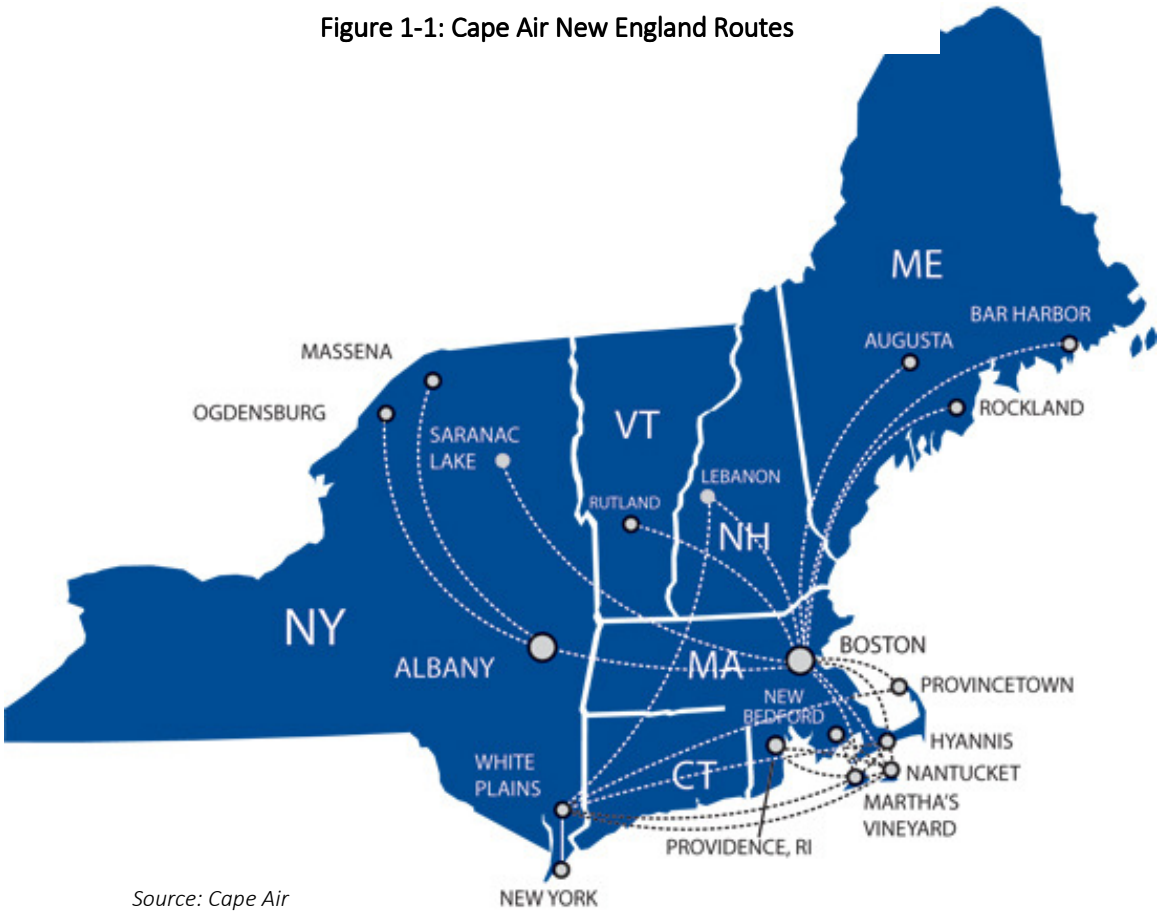
LEB is designated by the FAA as a publicly owned, public-use facility. Under the Airport and Airways Improvement Act, the Secretary of Transportation is required to publish a national plan for the development of public-use airports in the United States. This plan is published as the National Plan of Integrated Airport Systems (NPIAS) and includes all commercial service, relievers (high capacity general aviation airports in metropolitan areas), and select general aviation airports.

The most recent NPIAS report classifies LEB as a non-hub primary commercial service airport. Commercial service is currently provided by Cape Air (see **Figure 1-1**). The non-hub designation is given to those airports that enplane more than 10,000 annual passengers, but less than 0.05 percent of the nation's total commercial activity. The non-hub commercial service airports typically support a large amount of general aviation activity as well, which is the case for Lebanon.

The Airport is one of three commercial service airports in the state, and one of four airports in NH to have an air traffic control tower. LEB is one of the largest airports in the region and a

number of local industries utilize the Airport, allowing employees, vendors, and visitors to access facilities quickly using charter or corporate aircraft. In addition, Lebanon is home to Dartmouth-Hitchcock Medical Center. The Airport is a critical resource for Dartmouth-Hitchcock Advanced Response Team (DHART), whose crews provide air medical transportation services to the medical communities of Northern New England.[3] According to Air Traffic Control Tower (ATCT) personnel at LEB, it is estimated that the DHART team lands at LEB approximately six times per month, but utilizes the Airport's ATC services approximately 8 to 10 times per day for non-LEB flights.

Figure 1-1: Cape Air New England Routes



Source: Cape Air

[3] *NHSASP*, 2015

1.1.5 Regional Transportation Network

The Lebanon Municipal Airport is conveniently located within the local and regional transportation networks servicing the New England area. These multi-modal networks serve as an asset to LEB, facilitating the efficient movement of both people and goods across the Northeast. **Figures A-1** and **A-2**, as seen in **Appendix A**, show the local and regional transportation assets, which are described in more detail below.

1.1.5.1 Highway

With regard to roadway infrastructure, LEB is located approximately one mile from the intersection of Interstates 89 and 91. Interstate 91 runs north-south from the Canadian border to the Long Island Sound in New Haven, CT, while Interstate 89 travels east-west from the top of Lake Champlain to Concord, NH. These major arterial highways link most of the major urban areas in the region, and are supplemented by U.S. Route 4 and U.S. Route 5, along with smaller state roadways that comprise the local road network.

Within the City of Lebanon itself, the Dartmouth Coach offers daily bus service to the City of Boston and Boston Logan International Airport. There are eight daily arrivals and departures on this route, approximately two hours apart. In addition, the Dartmouth Coach provides twice daily shuttles between Lebanon and New York City.

1.1.5.2 Rail

The New England Central Railroad (NECR) operates approximately 400 miles of railroad between the Vermont/Canada border, and the tidewater at the Port of New London, CT. The route mirrors the Connecticut and Winooski Rivers, passing through the White River Junction adjacent to the City of Lebanon. The Vermont Rail System (VRS) runs north-south service from the White River Junction to Newport, VT and Pan Am Southern (PAS) runs south from White River Junction to the Port of New Haven, CT, with options to branch off east or west to the Port of Boston or Port of Albany, respectively. Combined, the network of railroad service provides for the movement of goods from LEB to larger centers of multi-modal transportation such as Albany, Boston, New York, and Montreal.

Passenger rail service is provided by Amtrak via the Vermonter route, which runs daily from Washington, D.C. to St. Albans, VT and has stops in Claremont, NH and the White River Junction.

1.1.5.3 Port

According to the U.S. Department of Transportation's Maritime Administration (MARAD), nearly 99% of the volume of overseas trade (62% by value) enters or leaves the U.S. by ship. Given the distances and drive times shown in **Table 1-1**, Lebanon Municipal Airport is located approximately two to three hours from several major ports in the New England area. **Table 1-1** depicts the details of the ports which serve as part of the greater multi-modal transportation network available to LEB.

Table 1-1: New England Ports Near LEB

Port City	Distance to LEB	Time to LEB	Rank by Tonnage*
Boston, MA	126 miles	2 hours	28
Albany, NY	135 miles	2.5 hours	79
Portland, ME	140 miles	2.5 hours	97
Montreal, CN	183 miles	3 hours	4**
New Haven, CT	186 miles	3 hours	60
New York, NY	260 miles	4.5 hours	3

** Out of 172 Ports*
***Ranks 4th in Canada*
Sources: American Association of Port Authorities, U.S. Waterborne Foreign Trade Port Ranking By Cargo Volume; Statistics Canada, Shipping in Canada

Additionally, access to Montreal by highway or rail also allows the portage of goods via the Great Lakes and St. Lawrence River/Seaway.

1.1.6 Budgets

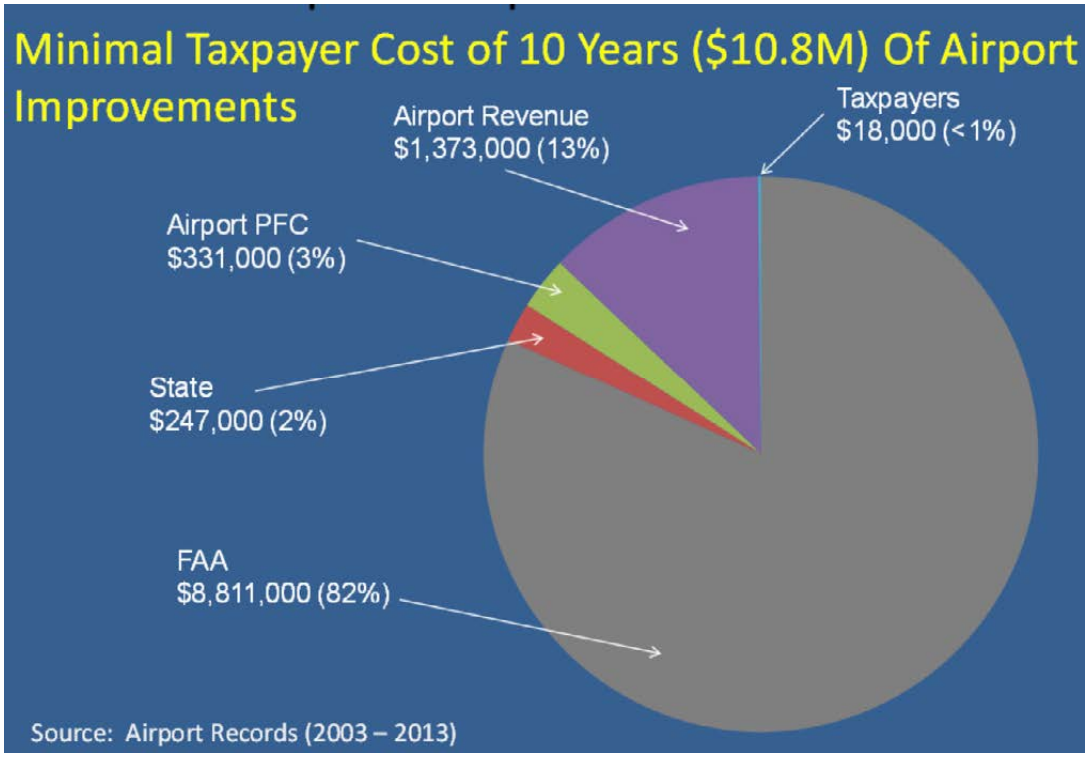
The annual costs to operate and maintain LEB are divided into two categories – capital and operational. Capital costs include improvements, or additions, to the Airport's infrastructure such as runways, taxiways, terminal building upgrades, navigation equipment, and aircraft hangars. Certain non revenue-producing capital projects are eligible for state and federal funding, which reduces the overall cost of LEB to the City's residents. Airport capital improvements are ordinarily funded on the shared basis of:

- 90% Federal (FAA)
- 5% State (NHDOT Bureau of Aeronautics)
- 5% Local (City of Lebanon)

However, these percentages may shift slightly with state and local share requirements varying between 2.5% and 7.5%, respectively. Still, when looking at the cost summary provided in **Figure**

1-2, it is apparent that the local share for many capital projects are paid for, or reimbursed by, Passenger Facility Charges (PFCs) or by airport revenues. PFCs are monies received from airline passenger ticket purchases from only those that use the Airport. These charges are set by federal legislation and are collected by airports, which are then able to use those funds for eligible capital projects. The application of airport revenues and/or PFC monies implies that LEB is providing the local share of capital improvements at little to no cost to City residents. The only time the City has to provide for airport capital costs is when PFCs or airport revenues are not enough to cover the full amount of the local share or the project is not eligible for PFC funding. Figure 1-2 illustrates the breakdown of historical airport capital improvement costs by funding source for the 10-year period of 2003-2013. As indicated, of $10,800,000 of capital improvements, Lebanon City residents paid approximately $18,000 or about $1.30 per resident. These capital improvement projects provide the additional direct economic benefit of creating engineering, environmental, planning, and construction-related jobs in the region.

Figure 1-2: LEB Costs 2003-2013



Source: LEB Website, 2015

In addition to the capital budget, also requires an operational budget, which consists of administrative expenditures such as employee salaries and benefits, airfield maintenance costs (mowing, plowing, etc.) utilities, and advertising costs. A portion of this budget is allocated to payments to the City's General Fund, which covers the Airport's administrative overhead and

computer support costs as charged by the City. **Appendix B** contains the 2014 Municipal Airport Fund overview, detailing the various line item revenues and expenses at LEB. **Table 1-2** illustrates the Airport operations budget from 2009-2014. Yearly variations can be attributed to vacant staff positions being filled, changes in ARFF coverage (roughly $60,000 per year), and changing fuel and utility prices. The Airport's operational budget is paid by the City's General Fund when airport revenues are less than airport expenditures. On average, the City pays $168,889 per year to cover LEB's operating deficits. This cost to the City amounts to approximately $12.20 per resident per year (see **Table 1-3**).

Table 1-2: Operational Budget for LEB, 2009-2014

Year	Budget
2009	$941,840
2010	$848,510
2011	$977,620
2012	$979,120
2013	$794,440
2014	$864,720

Source: City of Lebanon records

Table 1-3: Operational Deficit for LEB, 2009-2015

Year	Deficit	Cost Per Resident*
2009	$308,539	$22.28
2010	$191,773	$13.85
2011	$204,752	$14.79
2012	$170,045	$12.28
2013	$14,282	$1.03
2014	$113,305	$8.18
2015	$179,530	$12.97
Average	**$168,889**	**$12.20**

**Assumes current population of 13,846*
Source: City of Lebanon records

Although LEB historically operates at a deficit, as seen in **Table 1-4** the Airport generates a significant amount of property tax revenue that gets contributed to the City's General Fund, as well as to the school and county tax systems. This tax revenue, on average, more than offsets LEB's operational deficit. These amounts are not included in the Airport's operational budget.

Table 1-4: Airport-Generated Property Tax Contributions, 2009-2015

Year	General Fund	Schools/County	Total
2009	$65,140	$95,457	**$151,485**
2010	$65,560	$110,541	**$179,495**
2011	$63,370	$116,614	**$186,952**
2012	$63,930	$117,137	**$189,662**
2013	$65,160	$117,571	**$186,520**
2014	$67,310	$119,784	**$189,905**
2015	$71,100	$119,784	**$189,905**

Source: City of Lebanon records

With regard to the Airport's budgetary process, both the capital and operational budgets must be approved in advance by the City Council. This process is discussed in more detail in Section 1.2. The City of Lebanon and NHDOT Bureau of Aeronautics keep detailed records of LEB's annual budgets and yearly grant awards. These documents are public information and are available for review.

1.1.7 Grants

Since 2008, LEB has received 14 grants under the FAA's Airport Improvement Program (AIP). The AIP provides grants to public and private agencies for the planning and development of public-use airports included within the NPIAS. LEB's grants range from approximately $49,000 for a Wildlife Hazard Assessment to $520,000 for Runway Obstruction Marking/Removal. **Appendix C** contains a summary of LEB grants from 2008-2012, including amounts for the state and local shares.

Because LEB receives state and federal funding, there are certain obligations/grant assurances with which the Airport and the airport sponsor (City of Lebanon) must comply. These obligations are discussed more in Section 1.2.

1.1.8 Market Position

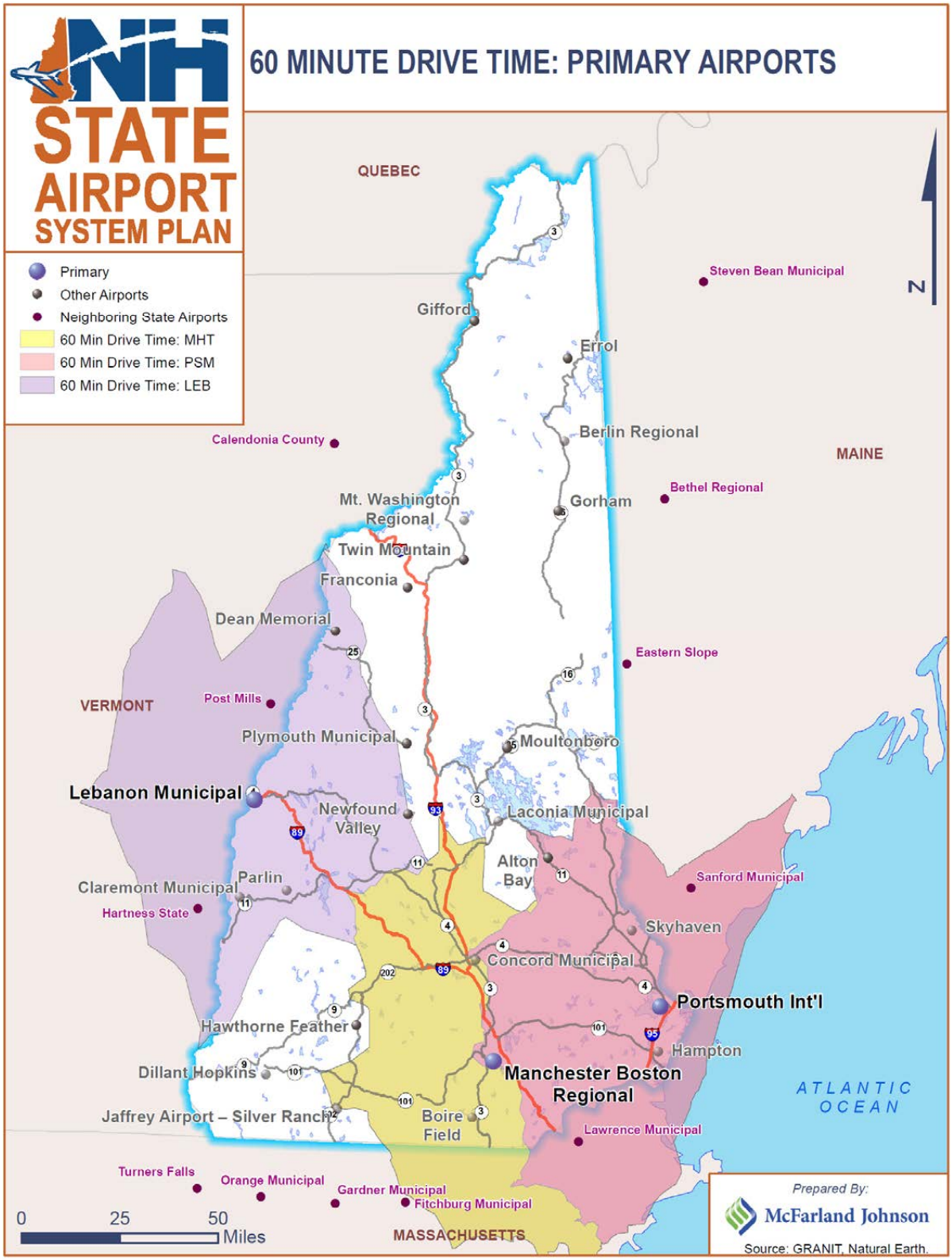
1.1.8.1 Airport Service Area

An airport's service area, or catchment area, is often defined through a 60-minute drive time radius centered on the airport. This distance is generally used as an indication of how far passengers are willing to drive for commercial air service, and thus it is assumed that most passengers using LEB originate from within this boundary. The airport service area for LEB can

be seen in **Figure 1-3**, along with those of Manchester-Boston Regional and Portsmouth International at Pease, the other two primary commercial service airports in NH.

From this figure it is evident that LEB's service area covers a large portion of Vermont and that there is very little overlap between LEB's service area and that of Manchester or Portsmouth. Still, according to the 2008 Master Plan LEB is only capturing 9% of passengers in its service area. Surveys indicated that the majority of passenger leakage was to Boston Logan International and Manchester-Boston Regional, mostly due to the availability of low-cost carriers and greater choices in destinations. LEB also experienced passenger leakage to Burlington International in Vermont and Bradley International in Connecticut. These results imply that passengers within the LEB service area are willing and able to travel upwards of two hours to obtain the commercial air service they desire.

Figure 1-3: LEB Service Area



Source: NHSASP, 2015

1.1.8.2 Market Segments Served

LEB's user market can be divided into two segments – general aviation users and commercial service passengers. GA users can be further broken down into business/corporate and recreational. Business/corporate operations are most critical given the direct and indirect economic impacts their activity has on the local and regional economies surrounding Lebanon. Additionally, some business/corporate users provide significant public value through their use of LEB, like the DHART team for example. Recreational airport users are those associated with activities such as tourism or flight training, which also spur added economic and employment benefits to the region. Further discussion on airport users and market segments can be found in Section 1.3 – Airport Industry Trends.

1.1.8.3 Airport Business Parks

There are four areas surrounding LEB which are dedicated for non-aviation/aviation compatible business development. Although they are not on airport property, these business parks were analyzed in detail as part of the Airport Economic Impact Study of 2008, and were found to be significant contributors to the City's tax base. While two of the business parks – Airport Business Park and Centerra Resource Park – have been substantially developed and built out, additional parcels remain available for potential development. **Appendix D** depicts the existing airport layout which includes the business park facilities.

1.1.9 Economic Impact

Both the Lebanon Municipal Airport Economic Impact Study of 2008 and the NHSASP of 2015 focused on defining the economic impact of LEB. These studies looked at the direct (on-airport) and indirect (off-airport) impacts to the City of Lebanon and surrounding area. The local and regional value of the Airport will be discussed in more detail later on, but the following key findings highlight the economic details of the Lebanon Municipal Airport:

- In 2013, there were an estimated 66 jobs on-airport. Of those, five were employed by the City of Lebanon, while the remaining were employed by the TSA, Cape Air, Granite Air, Sharkey's Helicopters, the contract control tower, Lebanon Hangar Associates, Avis and Hertz rental cars, White Mountains Insurance, Catamount Air, and Big Green Aviation.
- Collectively, all on-airport employees received an estimated $4.43 million in employee compensation in 2013.
- Indirect economic impacts via capital expenditures or operations and maintenance (O&M) expenditures supported an additional 62 jobs, $2.97 million in labor income,

$7.60 million in output at businesses located throughout the state, as well as additional state tax revenues.

- Approximately 44% of commercial service passengers to arrive at LEB in 2013 were visitors and contributed a combined total of $2.41 million on lodging, dining, entertainment, transportation, and retail.[4]

1.1.10 Operations and Based Aircraft

Airport usage is measured in terms of annual aircraft operations. An operation is the movement of an aircraft on a runway, typically for takeoff or landing, where each is counted as a separate operation. Another type of operation is a touch-and-go, which consists of an aircraft approaching the runway to land, touching its wheels on the runway, and then immediately taking off again. Since this is both a takeoff and landing, a touch-and-go counts as two operations. **Table 1-5** illustrates LEB aircraft operations counts by type. Air taxi operations include Cape Air flights because they have less than 66 seats, while GA operations are split between local and itinerant, where itinerant operations are airport visits conducted by aircraft outside the local area. LEB's GA operations are split rather evenly between local and itinerant, which is indicative of a significant number of airport users flying into Lebanon from outside the local area.

Table 1-5 : LEB Operations, 2013

Type of Operation	Air Carrier	Air Taxi	GA Local	GA Itinerant	Military	Total Operations	Total GA Operations
Lebanon Municipal	0	8,347	13,665	12,187	334	34,533	25,852

Source: NHSASP, 2015

A based aircraft is defined as an active aircraft that is stored at an airport on a permanent basis, either in a hangar or tied down on an apron. Based aircraft data serves as a measure of airport activity and can provide an indication of an airport's general well-being. **Table 1-6** shows the current based aircraft counts at LEB. According to airport management, the Airport will have one new jet tenant in the near term.

[4] *NHSASP*, 2015

Table 1-6 : LEB Based Aircraft, 2013

Type of Aircraft	Single	Multi	Jet	Helo	Other	Military	Total
Lebanon Municipal	39	8	0	13	1	0	61

Source: NHSASP, 2015

Commercial service at LEB is provided in conjunction with the Essential Air Service (EAS) Program which subsidizes air service to rural communities that lack access to otherwise affordable air service. Cape Air operates a nine-seat Cessna 402 with service to Boston, MA (Boston Logan International Airport) and White Plains, NY (White Plains Airport). The service to White Plains includes complementary ground transportation to Manhattan. Since Cape Air's service to LEB is provided on an aircraft with less than nine seats, the Airport is not required to satisfy the same FAR Part 139 Certification requirements as other commercial service airports with service on aircraft larger than nine seats, such as daily inspections and ARFF coverage.

1.1.11 Airport Facilities

LEB has two runways, a primary and a crosswind, which are determined based on usage and prevailing wind direction. The primary runway, Runway 7-25, measures 5,496 feet long and 100 feet wide. It is equipped with medium intensity runway lighting, a full parallel taxiway, and precision approaches. The crosswind runway, Runway 18-36, is 5,200 feet long and 100 feet wide. It is equipped with high intensity runway lighting and precision approaches.

On-airport navigational aids include a rotating beacon, lighted wind indicator, and glide path indicators. The rotating beacon helps pilots locate LEB at night and during periods of low visibility, while the wind indicator provides approximate wind direction and velocity to pilots, both on the ground and in the air. Glide path indicators use a series of colored lights to inform pilots if their aircraft is above (too high), or below (too low), the optimum approach path to the runway. LEB is also equipped with an automated surface observation system (ASOS), which provides weather information to aircraft. Additionally, the Airport offers precision and non-precision instrument approaches to facilitate aircraft approaches and landings during poor weather and visibility.

LEB has 32 T-hangars and 4 conventional hangars, and there is a waiting list for aircraft owners who wish to store their aircraft in hangars on the Airport. In addition to hangars, LEB also offers approximately 30 tie-downs, which enable pilots to tether their aircraft to pavement as an alternative means of storage.

The Airport has one fixed based operator (FBO), Granite Air, which provides a variety of aviation services including maintenance, flight training, and aircraft hangar and tie-downs. The FBO also owns the fuel farm which provides AvGas and Jet A fuel for aircraft. Passenger amenities such as catering and on-site car rentals are available, while pilots and aviation enthusiasts can take advantage of flight instruction, aircraft repairs, and ground services such as deicing. The other major tenant is Sharkey's Helicopter, which services and sells piston and turbine helicopters nationally and internationally. **Appendix D** depicts the existing airport layout and facilities.

1.1.12 Safety and Security

Many of the FAA's policies and standards regarding airport design and aircraft operations are grounded in cultivating a safe and efficient environment. As a result, adherence to these operating policies and design standards inherently creates an emphasis on safety at LEB, both on the ground and in the air. Some general FAA recommendations and requirements* that foster airport safety include:

- Emergency Response Plans (ERP)
- Safety Management Systems (SMS)
- Airspace Analyses/Obstruction Surveys*
- Updated Airport Layout Plans (ALPs)*
- Airport Inspection Programs*
- Compliant Airport Safety Areas*

Presently, LEB does not have the recommended ERP or SMS; however, the Airport does conduct an annual emergency response tabletop exercise. When it comes to airport safety, one of the FAA's top priorities is on RSAs and Runway Object Free Areas (ROFAs). These areas immediately surround the runway and thus receive a high percentage of aircraft accidents and fatalities when they occur. As such, RSAs and ROFAs are designed to reduce the risk of damage to aircraft and injury to passengers in the event of a runway undershoot, overshoot, or excursion. These areas must meet certain dimensions and be cleared, graded, and free of hazardous objects, ruts, depressions, or other surface variations. Currently, three of the four runway ends at LEB do not have compliant RSAs, which makes the Airport at risk to lose FAA funds and increases the risk of damage in the case of an accident.

Another of the FAA's high priorities for airport safety is maintaining clear approach surfaces. Approach surfaces are sections of the airspace immediately surrounding the Airport that are critical to the safe operation of aircraft. These surfaces are recommended to be clear of hazards and obstructions such as tall towers, buildings, and trees. Given their importance to a safe airport operating environment, the FAA places significant emphasis on compliant approach

surfaces. LEB completed an EA in 2014 for the Obstruction Removal Project set to begin in 2015, which will involve tree removal and hazard lighting as it pertains to clear and compliant approach surfaces.

In addition to safety initiatives, LEB is also subject to TSA Part 1542 Airport Security requirements, which require airport operators to adopt and enforce an airport security program approved by the TSA. General components include differentiating between secured and non-secured areas, implementing security identification display areas (SIDA) (by identification badges), and controlled-access systems, such as electronic gates. Additional screening measures may be required for airport personnel and users, such as fingerprint-based criminal background checks.

The Airport has several security measures in place to facilitate a secure operating environment. The Airport is equipped with an access control system, or electronic gates, to prevent unauthorized access to aircraft movement areas. The control system utilizes a card reader in conjunction with the Airport identification/badging system, thus enabling the tracking of personnel and user entry. There is also a perimeter fence surrounding the airport property, which is used to deter access to the airfield by both people and wildlife.

1.1.13 Noise Abatement

In 1986, following completion of an FAA Part 150 Airport Noise Compatibility Planning Study, Lebanon Municipal Airport submitted a Noise Compatibility Program (NCP) to the FAA which outlined proposed actions and measures to be taken in order to continue to reduce noise exposure from aircraft operations on and around the airport. These measures included acquisition of a clear zone to further separate aircraft operations from surrounding land uses, establishment of preferential runway usage procedures, construction of holding pads for aircraft engine run-ups, and the adoption of a Special Aircraft Noise Exposure Zoning District by the City of Lebanon. The FAA determined that since noise contours from the Airport's Noise Exposure Map (NEM) were already within acceptable parameters, the NCP would be approved in support of the City's efforts for continued minimization of noise exposure above and beyond the norm.[5]

Moreover, in order to be a good neighbor and mitigate potential noise impacts from aircraft operations before they occur; LEB voluntarily implemented noise abatement policies and procedures for arriving and departing aircraft. These policies and procedures are posted on aviation websites such as AirNav, AOPA, and Skyvector, which are commonly used by pilots for flight planning purposes.

[5] Lebanon Municipal Airport, *Noise Compatibility Program* (1986).

Those noise abatement notices are stated as follows:

- Noise abatement procedures in effect 24 hours for jet aircraft, commuter aircraft, and all aircraft with 12,500 pounds or more gross takeoff weight.
- Manufacturer's Standard Noise Abatement Procedures for departure will be exercised. Please maintain runway heading through 5,000 feet mean sea level (MSL).
- No practice low approach or touch and go landing from 12am-7am
- Noise abatement procedures in effect; contact airport manager. All arriving and departing aircraft follow manufacturer's recommended procedure for quiet option and minimum noise.

1.2 AIRPORT REGULATORY REQUIREMENTS

Lebanon Municipal Airport is subject to jurisdiction from various regulatory agencies and organizations at the federal, state, and local levels. Combined, these jurisdictions encompass everything from capital improvement projects and air traffic control procedures to airport security and environmental impacts. The oversight provided by these agencies and organizations is often focused on the safe and efficient operation of the airport and its users, as well as the establishment of practices intended to be fiscally responsible and environmentally sustainable. The various agencies and organizations that oversee LEB are described herein, including pertinent regulations that apply to the airport sponsor. It is noted that the goals of these various agencies are, at times, in conflict with the desires of the City of Lebanon as the airport sponsor.

1.2.1 Federal Aviation Administration

The FAA regulates day-to-day airport functions and layout through the use of technical documents such as design standards and airport operating requirements. To support needed airport improvements and meet design requirements and aviation regulations, the FAA provides federal funding through the AIP as established and dictated by Congress. When airport sponsors such as the City of Lebanon, in the case of LEB, agree to accept these AIP funds for airport purposes, the sponsor also agrees to comply with certain obligations, which are enforced through the FAA's Airport Compliance Program. A copy of the FAA's Assurances for Airport Sponsors can be found in **Appendix E**, and some of the major elements of the Airport Compliance Program are highlighted below:[6]

- Operation and Maintenance – Sponsor shall continue to operate and maintain the airport for the purpose of aviation/aeronautical use in accordance with minimum standards.

[6] The full FAA Airport Compliance Manual can be found online at: http://www.faa.gov/airports/resources/publications/orders/compliance_5190_6/media/5190_6b.pdf.

- Pavement Preventative Maintenance – Sponsor must implement an effective airport pavement maintenance-management program.

- Conformity to Plans and Specifications – Sponsor will execute projects subject to plans, specifications, and schedules approved on Airport Layout Plan.

- Hazard Removal and Mitigation – Sponsor will take appropriate action to clear and protect terminal airspace as required to protect instrument and visual approaches to the airport through the use of removal, lighting, lowering, relocating, or other mitigation.

- Accounting System and Record Keeping – Sponsor shall adequately keep and fully disclose project/grant amounts and funding sources and comply with audit requests.

- Fee and Rental Structure – Sponsor shall maintain a fee and rental structure at the airport in order to make the airport as self-sustaining as possible.

- Compatible Land Use – Sponsor will take appropriate action to adopt zoning laws that restrict the use of land adjacent to the airport and aircraft operations.

- Airport Land Use – Airport property must be used for aviation-related functions. Land cannot be used, or released, for non-aeronautical purposes without the consent of the FAA.

- Airport Revenues – All revenues generated by an airport, and any local taxes on aviation fuel, shall be expended for the capital and operating costs of the airport, or other local facilities which are owned or operated by the owner or operator of the airfield and are directly and substantially related to the actual air transportation of passengers or goods.

Airport Sponsors must be careful not to violate federal grant assurances and obligations as such violations could result in fines, decreased funding, and/or legal action. The current FAA funding restrictions over RSA improvements are an example of this.

1.2.2 FAR Part 139 Certification

Airports that provide commercial passenger service on aircraft carrying more than nine passengers per flight are required to be certificated by the FAA under Federal Aviation Regulations (FAR) Part 139. The certification process is conducted on an annual basis through airport inspections and review of the minimum requirements, to ensure air transportation safety. As such, an airport operator must agree to certain operational and safety standards and provide the necessary services and items to maintain the certificate. These requirements vary depending on aircraft used and operations conducted.

In 2011, LEB relinquished its Part 139 Certification due to budget losses that resulted in the loss of ARFF training and coverage. However, due to the size of Cape Air flights, both the airline and airport are permitted to continue operating without the certification. If LEB were to attract additional air service opportunities from either network or low-cost carriers, the Airport would be required to again comply with Part 139 standards, which would increase LEB's annual operating costs.

The basic requirements for Part 139 compliance would include:

- Additional inspections of the airfield and approach areas
- Compliant Runway Safety Areas
- Appropriate aircraft firefighting and rescue capabilities
- Increased documentation, training, and record-keeping

The most costly, and one of the more critical Part 139 components, is Airport Rescue and Fire Fighting (ARFF). ARFF vehicles cost between $500,000 and $700,000 on average; however, multi-purpose vehicles are being used for airports similar to LEB to reduce equipment and operational costs. While the vehicles themselves are eligible for federal funding, the annual operational cost and staffing is not, and is thus incurred by the Airport and/or local municipality. Per review of LEB's annual budgets and discussions with airport management, it is estimated that ARFF staffing/training would cost the Airport an additional $60,000 per year when operating under Part 139. This is in part because ARFF training is currently categorized as overtime for firefighters and the firefighters' union requires that all firefighters have equal and equitable access to overtime. LEB's ARFF costs under Part 139 would be less if not all firefighters had to be trained each year.

Similarly, TSA security requirements call for security staffing under Part 139 operations, which means law enforcement officers (LEOs) must be present for all aircraft departures. The TSA would pay approximately 80% of staffing costs, but LEB would be responsible for the remainder.

These costs would fluctuate depending on the number of daily departures, but at last estimate, the total LEO cost would be approximately $121,000 per year, with LEB responsible for roughly $24,000.[7] In total, Part 139 operations would add an additional $84,000 to LEB's annual operating budget.

1.2.3 New Hampshire Department of Transportation

The New Hampshire Department of Transportation Bureau of Aeronautics (NHDOT) is similar to the FAA in providing oversight and funding to airports within the state. NHDOT helps plan, construct, and maintain the state's airports in accordance with federal, state, and local regulations. The Bureau of Aeronautics also works closely with airport sponsors and users to promote aviation and ensure a safe, efficient, and economical air transportation system.

1.2.4 Transportation Security Administration

The Transportation Security Administration (TSA) is a division of the Department of Homeland Security (DHS) responsible for the security of the traveling public and the nation's airports. TSA airport security requirements vary between GA and Commercial Service Airports, with commercial service airports being more stringent and strictly enforced. Airport security requirements can be found in 49 Code of Federal Regulations (CFR) Part 1542, while air carriers, flight schools, and aircraft repair stations each fall under separate categories.

The main tenant of 49 CFR Part 1542 is the establishment of a TSA-approved airport security program. The airport security program should appoint an Airport Security Coordinator (ASC) and allows for TSA inspections, as applicable. In addition, the security program should adopt measures that restrict the distribution, disclosure, and availability of sensitive security information (SSI).

1.2.5 U.S. Army Corps Of Engineers

The United States Army Corps of Engineers (USACE) regulates water bodies under Section 10 of the Rivers and Harbors Appropriation Act (RHA) that are considered to be Traditionally Navigable Water of the United States (TNW) as defined specifically there within. The USACE also regulates water bodies through Section 404 of the Clean Water Act (CWA).

With regard to LEB, the USACE is responsible for the oversight and permitting of airport development projects that may impact surrounding water bodies, including wetlands. Projects that have no practicable alternatives to avoid direct environmental impacts will require Section

[7] Based on LEB Officer Agreement Program Submission, FFY 2013-2015.

404 permits from the USACE. Compensatory mitigation practices may be required as a permit condition depending on the details of a proposed project. Mitigation may take the form of restoration, establishment, enhancement, and/or preservation.

1.2.6 New Hampshire Department of Environmental Services

Similar to the USACE, the New Hampshire Department of Environmental Services (NHDES) is responsible for the oversight of wetlands and waters, but under Section 401 of the CWA and per NH wetlands protection statutes and rules, RSA 482-A and Env-Wt 100-900, respectively. Permitting at the state level is likely to be required for projects as they relate to dredge and fill, alteration of terrain, and/or coordination with the National Heritage Bureau.

Airport development projects that result from this master plan will be required to undergo some type of environmental review, such as an Environmental Assessment in accordance with the National Environmental Policy Act (NEPA) of 1969. Given the recent completion of the Runway Safety Area Environmental Assessment at LEB, the environmental information contained within will be used to guide this Master Plan in the formulation of airport development options and can be used for future permitting efforts from USACE and NHDES.

1.2.7 Local Agencies

Lebanon Municipal Airport is governed by City Council. The City Council is made up of nine elected members representing all three wards of Lebanon. Council members appoint one of their nine members to serve as Mayor. The City Manager position is also decided by the City Council, but the position is filled externally, outside of existing council members. The Airport Manager reports to the City Manager.

The City Council is advised by several committees, such as the Conservation Committee,[8] whose members are appointed by City Council (external from the council) but also consist of at least one council member. In other words, council members serve on the specialized committees developed for the purpose of advising City Council. With regard to LEB, any projects or actions proposed by the Airport are subject to review from the Conservation Committee, which can then voice its findings and opinions to City Council.

In addition to the Conservation Committee, there is also a Planning Board in place that reviews airport Capital Improvement Program (CIP) projects intended to enhance or enlarge the Airport. Smaller projects such as airport maintenance, or acquisition of maintenance vehicles, are not subject to a Planning Board review. Similar to the specialized committees, Planning Board

[8] At one point an Airport Advisory Committee was established, but it has since been disbanded.

members are appointed by City Council (external to the council), but one or two council members preside on the board as well.

Irrespective of the Conservation Committee and Planning Board, the City Council has the final say in deciding how the Airport is managed and operated. Procedurally, when LEB requires approval for projects, leases, budgets, etc., the Airport Manager works directly with the City Manager. The City Manager provides initial review and oversight of the matter, and then brings it before City Council on behalf of the Airport Manager. Ultimately, City Council is responsible for reviewing and approving all airport-related matters including land and terminal leases. The Airport Manager does not have legal or financial authority to enter into any contracts on behalf of the Airport.

1.3 AIRPORT INDUSTRY TRENDS

For an airport offering scheduled commercial service, such as LEB, it is important to have a strong understanding of the industry dynamics and the potential changes and impacts that extend far beyond the Airport and into the community and broader region as a whole. Commercial air service directly effects regional commerce and the degree to which local and regional businesses are connected to the global market and broader transportation network. The following sections provides a brief overview of the key market segments that are relevant to smaller commercial service and GA airports like LEB.

1.3.1 Network Carriers

Over the past decade, major network carriers in the United States (American, Delta, and United) consolidated with other airlines (US Airways, Northwest, and Continental, respectively), each of whom operated hundreds of flights to the New England region at their peak. This consolidation has resulted in the elimination of duplicate (competitive) routes in the northeast, as well as a reduction in connecting hub options in cities like Baltimore (US Airways), Cincinnati (Delta), Cleveland (Continental), Pittsburgh (US Airways), and Memphis (Northwest). As airlines have shifted the focus away from local market dynamics and instead view the airport's market connectivity to the greater global network, many smaller and medium sized airports have lost service to more distant hubs in favor of those with closer proximity.

Network air service for communities similar in size to Lebanon, is increasingly difficult to obtain, with the overwhelming majority of small airports struggling to maintain existing levels of service both in terms of seats and frequency. Several smaller airports with Essential Air Service, such as Lebanon, have been able to defy the industry trends and have gained service. Watertown, NY and Manhattan, KS have successfully upgraded service from 9-19 seat aircraft to 37-50 seat

regional aircraft through cooperation with nearby military facilities and/or universities. Several airports in North Dakota successfully upgraded from a single airline with 19-seats, to multiple airlines with regional jets with the regional growth associated with the oil drilling in the region.

Overall, successful air service upgrades are the result of targeted coordination within the local/regional business community and higher education institutions. Shared/common needs for air service will result in a stronger case for improved air service. With enough support from the community, smaller airports can sustain service to a nearby hub through service on regional aircraft of a network airline. From these hubs, passengers can connect to hundreds of destinations in the U.S. and across the globe. Examples of network airline service from Lebanon might include:

- Delta – 2x daily regional jet service to New York LaGuardia or Kennedy International
- United – 2-3x daily service on regional (jet or turboprop) aircraft to Newark Liberty International or Dulles International Airport
- American – 2-3x daily service on regional (jet or turboprop) aircraft to Philadelphia International

Any commercial service with aircraft in excess of nine seats requires FAR Part 139 certification for the Airport. Those requirements and associated costs were discussed previously in Section 2.3.

1.3.2 Low Cost Carriers (LCCs)

Industry consolidation has lead the network carriers to shift their focus to larger business markets and international flying, which tend to be more lucrative for airlines than domestic and leisure routes with higher levels of competition. Airlines like JetBlue, Frontier, Southwest, and Spirit have been the key drivers in domestic capacity for U.S. airlines, primarily in the leisure and budget-conscious segment of the air travel market. Since LCCs strive for the lowest possible cost, they typically operate full-size aircraft and have multiple flights spread throughout the day to better distribute the station operating costs per passengers. Higher passenger volume among multiple flights is the primary reason why LCCs typically do not serve smaller airports with less than 250,000 annual passengers.

A noted exception for LCCs at smaller U.S. airports has been Allegiant Air, which provides less than daily service to leisure destinations primarily in Florida and the Southeastern U.S. Allegiant will typically operate 2-3 weekly frequencies to a single destination with successful stations often seeing additional destinations added. Customers using this type of service sacrifice schedule and choice for low fares and non-stop flights from their local airport. The station costs are offset by

contracting out aircraft services, in most cases to the FBO or another airline, allowing them to achieve the desired level of minimal costs. Due to large numbers of Florida destinations by JetBlue and Southwest in the New England region (over 500 weekly non-stops during the peak season), Allegiant presently only operates out of Burlington, VT; Portsmouth, NH; and Bangor, ME.

While some LCCs serve airports similar in size to LEB, those situations involve less than daily service to leisure oriented passengers. This type of service yields little to no benefit to the needs of local businesses as they do not connect the airport to a broader, global transportation network. In most instances the LCC service at smaller airports is dependent on a nearby city or populated region to support the demand for service, the nearest populated area is Manchester, which currently offers convenient and affordable LCC air service. Between the state of the LCC and regional market conditions, LCC service at LEB is not anticipated over the planning period. Similar to the network carriers, an FAR Part 139 certificate would be required for LCC service.

1.3.3 Essential Air Service

The EAS program was established in 1978 to protect smaller and rural communities' connections to the national transportation network as control of the flight/route networks were transferred from the Civil Aeronautics Board (CAB) to the airlines themselves. Since 1978, the EAS program has endured near endless scrutiny with program modifications and/or cuts occurring every few years. Many once eligible airports have fallen out of the EAS program, especially if there are other airports that provide service in the greater vicinity (within 60-90 minutes). Recent changes to the EAS program include:

- Waived requirement for aircraft to be of 15-seats or larger
- $200 per passenger subsidy cap
- Average of 10 enplanements per day minimum

Presently, the subsidy for LEB seems on par with other similar EAS airports, and the per passenger subsidy is well below the program $200 cap with an estimated $110 per passenger. When considering the extensive history of reforms and cuts to the EAS program, however, it may be prudent for the City of Lebanon and the Airport to consider the community and airport impacts associated with reductions in the EAS program. Some scenarios to consider include:

- Higher airfares to offset increased costs/lower subsidy levels
- Impact of a community match towards the EAS subsidy
- Loss of subsidy on one of the two destinations presently served
- Loss of all subsidies and elimination of air service

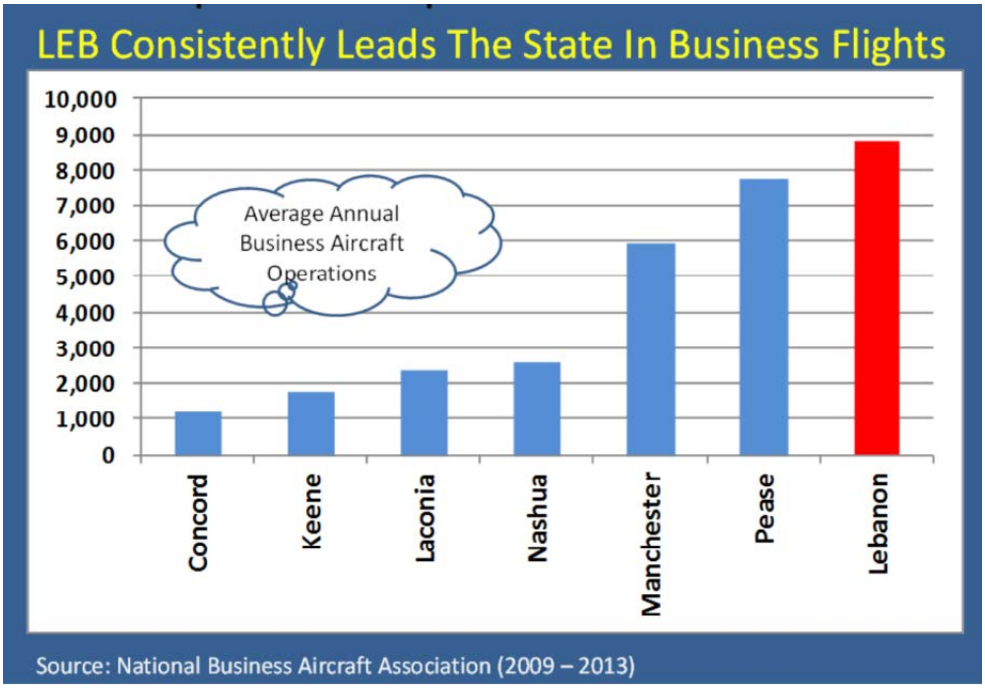
1.3.4 General Aviation

According to the FAA's Aerospace Forecast for 2014-2034, the business/corporate aviation sector is expected to experience robust growth over the next 20 years. This is in part due to higher corporate profits, growth of the worldwide Gross Domestic Product (GDP), and continued advantages related to safety, security, and flexibility that make business aviation attractive. The FAA Aerospace Forecast anticipates the following growth rates for the General Aviation (GA) fleet nationally:

- Piston Powered → - 0.3%
- Turbine Powered → 2.6%
- Turbine Jet → 3.0%
- Turbine Helo → 3.1%[9]

These numbers indicate that recreational GA activity (single-engine piston aircraft) is forecasted to decline, while business/corporate GA activity (multi-engine turbine jet/helo) is projected to increase. As LEB currently experiences significant business/corporate use compared to other airports in the state (see **Figure 1-4**), the Airport is poised to capitalize on this potential growth. However, similar to the previous discussion on network carrier air service, success will be dependent upon targeted, coordinated campaigns between the local/regional business communities and LEB.

Figure 1-4: LEB Business Usage



[9] *NHSASP,* 2015

1.4 AIRPORT LOCAL/REGIONAL VALUE

According to the NHSASP, in 2013, through direct and indirect impacts, LEB supported an estimated total of 168 jobs, $8.87 million in labor income, $26.77 million in business output, and $0.33 million in tax revenue for New Hampshire. The Airport also generated an estimated total of $1.47 million in cost savings for local businesses relying on general/corporate aviation for business travel.[10]

In addition to LEB's economic contributions, **Table 1-7** contains a list of businesses that use LEB, which further the Airport's overall impact to the City and region. The businesses include a mix of some of New Hampshire's largest employers as well as smaller kick-start companies, which are indicative of the Upper Valley region's growing trend of innovative start-up firms focusing on engineering, information technology, and biotechnology.

Table 1-7: Businesses Using LEB

Business	Employees
Dartmouth-Hitchcock	8,000
Dartmouth College	3,500
Dartmouth-Hitchcock Keene	3,000
Hypertherm/Hypertherm, Inc.	4,400
Sturm Ruger	2,700
Simbex	35

Source: CareerOneStop, in conjunction with the U.S. Department of Labor, 2015

Moreover, aside from these economic benefits, LEB also creates public value by facilitating air transportation services related to medical transport/evacuation, law enforcement, search and rescue, pilot training, and more. For example, the DHART helicopter utilizes ATC services to transport medical patients and human organs needed for transplants 8 to 10 times a day. In such life and death situations, timing is essential for success, and the facilities at LEB make that possible.

Finally, LEB's presence allows the City of Lebanon and the Upper Valley region to be accessed, and enjoyed, by the outside world. Although it has been demonstrated that alternative air transportation options exist for City residents seeking to depart to other destinations, in the absence of LEB, options for visitors, tourists, students, and/or business professionals seeking to efficiently and affordably access the City are reduced and require travel outside the area or even

[10] The NHSASP used industry standard multiplier effects to calculate off-airport impacts. The methodologies, formulas, and assumptions used for that economic analysis are detailed within Appendix B of that report and can be found at: http://www.nh.gov/dot/org/aerorailtransit/aeronautics/documents/Chapter9-EconomicContribution.pdf

the state. The 2008 Economic Impact Study phrased it appropriately when it stated, "Without LEB, the region would lose some of its 'luster' as one of New Hampshire's primary economic destinations."[11] As seen in the air access figures below (**Figures 1-5 – 1-7**), without a functional airport in the City of Lebanon, there would be a large gap, when it comes to air transportation in the western part of NH; one that could not be easily filled by the state's remaining airfields. Given the aforementioned economic impacts and public value associated with the Airport, losing LEB would mean the loss of much more to the City, the region, and the state.

[11] *Lebanon Municipal Airport Economic Impact Study*, 2008.

Figure 1-5 : NH Airports Having 5,000-Foot Runways or Greater*

**5,000' is the typical runway length needed for business/corporate jets*
Source: NHSASP, 2015

Figure 1-6: NH Airports With Precision Approaches*

**Precision approaches are desired by aircraft operators because they provide lower approach minimums, thus enhancing the ability to land in poor weather.*
Source: NHSASP, 2015

Figure 1-7: NH Airports With Jet A Fueling*

**Jet A Fuel required for business/corporate aircraft*
Source: NHSASP, 2015

1.5 Airport Sustainability

In 2010, the FAA initiated a pilot program for airports to undertake Airport Sustainability Master Plans. The primary intent of the program is to make environmental sustainability a core objective in airport planning. These efforts are intended to establish initiatives for reducing environmental impacts, achieving economic benefits, and increasing integration with local communities. This section presents an overview of the FAA's Sustainability Master Plan Pilot Program, and identifies sustainability initiatives applicable to the unique conditions of LEB for potential inclusion in the Comprehensive Airport Master Plan.

1.5.1 Airport Sustainability Master Plan Program

The FAA's Sustainability Master Plan Pilot Program (Pilot Program)[12] provides funding to airports to integrate sustainability into an airport master plan (sustainability master plan) or to develop a standalone sustainable management plan.[13] Although the FAA had sustainability-related programs and practices in place prior to the introduction of the Pilot Program (e.g., project review under the National Environmental Policy Act, Noise Compatibility Program, and Voluntary Airport Low Emissions [VALE] program), this new effort established the FAA's intent to make sustainability a core objective of airport planning.

Through the Pilot Program, the FAA is promoting a proactive, holistic approach to airport sustainability. This approach goes beyond just environmental concerns to include economic and social aspects, with a focus on operational efficiency. Accordingly, sustainability plans under this program include initiatives to reduce negative environmental effects, promote stable economic growth, and ensure operational consistency with the socioeconomic conditions of local communities.

Introduced in May 2010, the Pilot Program awarded grant funding to several airports, which produced sustainability master plans (e.g., Buffalo-Niagara International Airport, Nashville International Airport) and stand-alone sustainable management plans (e.g., Denver International Airport, Hartsfield-Jackson Atlanta International Airport). Around the time the Pilot Program launched, the FAA published interim guidance to help define sustainability planning principles and to outline the plan for program implementation.[14] According to this guidance, the contents and scope of sustainability plans should, at a minimum, include/address:

[12] http://www.faa.gov/airports/environmental/sustainability/
[13] McDermott, C. (2012). *Airport Sustainability Planning*. Presentation. Retrieved 24 April 2015, from www.swaaae.org/associations/11853/files/3-CharlieMcDermott.pptx.
[14] http://www.faa.gov/airports/environmental/sustainability/media/interim_guidance_sustainable_master_plan_pilot.pdf

- Written sustainability mission statement and a description of its communication (i.e., how will the mission statement be communicated to employees, tenants, and the community);
- Defined sustainability categories (e.g., energy, air quality, waste management, people);[15]
- A baseline assessment for each defined sustainability category;
- Measurable goals for each sustainability category;
- Identification of sustainability initiatives to achieve each goal; and
- Public participation and community outreach.

The Pilot Program was reauthorized in 2012, which enabled the FAA to award grant funding to more than 30 additional airports. Boston Logan International Airport and Portland International Jetport, both located in the FAA's New England Region Airports Division along with Lebanon Municipal Airport, are among those additional airports to receive grant funding under the 2012 reauthorization. Logan International Airport just completed its sustainable management plan,[16] while Portland International Airport is in the process of developing its sustainability master plan.[17]

Throughout the life span of the Pilot Program, the FAA has collected lessons learned from participating airports with the intent of developing national program guidance on airport sustainability. The FAA summarized the lessons learned under the first grant authorization in *Lessons Learned from the Sustainable Master Plan Pilot Program*, a report that is available on the agency's website.[18] Some of the lessons identified in this report include:

- Participating airports have identified the creation of sustainability plans as a value-added process;
- Identifying stakeholders and engaging them at every stage of the process;
- Identifying funding opportunities for sustainability initiative implementation is critical;
- Implementing and monitoring plans are crucial for plan success and ensuring the plan is applied.[19]

[15] FAA priority considerations include energy and waste management, which involve a detailed analysis of energy efficiency and a waste audit.
[16] https://www.massport.com/environment/sustainability-management-plan/
[17] http://thejetport.airportstudy.com/master-plan/
[18] http://www.faa.gov/airports/environmental/sustainability/media/SustainableMasterPlanPilotProgramLessonsLearned.pdf
[19] Barrilleaux, J. (2012). *Sustainable Planning Makes $$ and Sense*. Presentation. Retrieved 24 April 2015, from https://www.faa.gov/airports/northwest_mountain/airports_news_events/annual_conference/2012/media/sustainable_planning_makes_dollars_and_sense.pdf

1.5.2 Potential Sustainability Initiatives at LEB

In developing the Lebanon Municipal Airport Comprehensive Master Plan, the Airport should review sustainability plans previously developed and published under the Pilot Program, and identify sustainability initiatives suited to LEB's unique conditions and characteristics. Five potential sustainability initiatives that should be considered as part of the Comprehensive Master Plan are:

- **Initiative:** Switch to using warm-mix asphalt instead of hot-mix asphalt for paving operations. **Description:** Warm-mix asphalt uses less energy during production and placement, thus generating less greenhouse gas and other air pollutant emissions.[20]

- **Initiative:** Establish an on-airport apiary (i.e. beehives) to produce and sell honey and honey-based products. **Description:** Apiaries have proven successful at a number of airports such as Chicago O'Hare and Montreal Mirabel. This initiative offers the opportunity to engage local agricultural operations such as beekeepers and to hire local disadvantaged populations. This creates a harmonious partnership with the nearby apple orchards for propagation of their crop, and the creation of apple blossom honey. Products produced can be sold within the airport terminal building or at local farmers' markets such as the Lebanon Farmers' Market at Colburn Park.[21]

- **Initiative:** Install solar-powered roadway signs and parking lot lights. **Description:** To reduce LEB's energy consumption and reliance on fossil fuels, convert existing roadway and parking lot lighting to solar LED lighting systems. This initiative is consistent with the principles of the Solarize Lebanon-Enfield program.[22]

- **Initiative:** Install a solar array to power airport facilities. **Description:** To reduce the LEB's energy consumption and reliance on fossil fuels, build a solar photovoltaic farm on land not needed for aeronautical purposes to generate electricity.

- **Initiative:** Install energy-efficient lighting in the terminal. **Description:** Convert existing terminal lighting to higher efficiency or LED lighting systems.

[20] ACRP. (2011). *Handbook for Considering Practical Greenhouse Gas Emission Reduction Strategies for Airports*. Retrieved 24 April 2015, from http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_056.pdf
[21] http://lebanonfarmersmarket.org/index.html
[22] http://vitalcommunities.org/Solarize/Lebanon-Enfield/index.cfm

Chapter 2
Forecast of Aviation Activity

2.0 INTRODUCTION

Forecasts of aviation demand are a key element in all airport planning. Demand forecasts, based upon the characteristics of the service area and airport along with industry trends, provide a basis for determining the type, size, and timing of aviation facility development and are a platform upon which this master planning study is based. Major sections of this chapter include:

- Aircraft Operations
- Passenger Enplanements
- Based Aircraft
- Comparison with FAA Forecast
- Future Design Aircraft
- Summary of Preferred Forecast

This section presents the methodologies and assumptions used in the development of the aviation forecasts. To provide a useful planning tool, the projections are presented for short (2015-2019), intermediate (2020-2024), and long (2025-2034) range time frames. These time frames will be used to develop the airport's capital improvement program (ACIP).

The aviation demand forecasts will serve two primary purposes in the development of this master plan. Specifically, they provide the basis for:

- Determining the necessary capacity of the airfield, passenger terminal area, general aviation area, and ground access network serving the airport.
- Identifying the future facilities required to support demand, including the size and timing thereof.

Forecasts of aviation demand can be developed for numerous elements. In the case of the Lebanon Municipal Airport (LEB), the key demand elements focus on scheduled airline passenger traffic, typically expressed in enplanements, and general aviation descriptors such as based aircraft and operations. For this study aviation activity forecasts were prepared for the following elements:

- Annual Passenger Enplanements – the number of people boarding commercial service aircraft at LEB each year: used to assist in terminal facilities and financial planning.

- Aircraft Operations – defined as the number of takeoffs or landings at LEB: used to assist in airside facilities planning.
- Based Aircraft by Type - defined as a general aviation (GA) aircraft that are kept at an airport on a permanent basis: used to assist with hangar and apron space planning.

Even in the event of significant growth, peaking characteristics and annual instrument operations are not expected to have a notable impact on the future development at Lebanon and therefore separate forecasts were not developed as part of this process.

Alternative Scenarios **-** Since its inception, the aviation industry has been in a constant state of change with new developments and technology constantly evolving. This forecast chapter will identify cases where an alternative scenario may exist in the future that have the potential to notably alter the operational activity at the airport. The alternative scenarios are separate from, but supplement to, the selected preferred forecast, which will be submitted to the FAA for approval. The alternative forecasts will allow LEB and the City of Lebanon to quickly consider the impact of changes that could occur outside of the FAA approved forecasts.

Existing FAA Forecasts - Forecast guidance is available from several existing sources within the FAA. The FAA Terminal Area Forecast (TAF) is an airport specific forecast created by the FAA. This set of forecasts is developed on general airport knowledge, high level trends, and national rates of growth or decline. No comprehensive airport-specific analyses are conducted as part of the development of the TAF. While these forecasts are not based on a master plan level analysis, they are considered generally reasonable and it is standard industry practice to use them as a benchmark for any other forecast. Forecasts that are not generally consistent with the TAF (10% off within 5 years and 15% off within 10 years) must be submitted to FAA headquarters in Washington D.C. for further analysis and approval.

For airports with notable itinerant general aviation and commercial/scheduled traffic, the FAA National Aerospace Forecast is helpful in assessing national trends. The TAF identifies a significant number of jet operations at LEB, yet there are only two jets based at the airport providing a strong example of how national (external) factors affect activity levels at the airport.

2.1 AIRCRAFT OPERATIONS

The operations forecast for the airport is important to the assessment of infrastructure and facilities utilized by all aviation elements including commercial airlines, corporate aviation, recreational aviation, and military activity. Overall annual operations are not only applied in the assessment of runway and taxiway infrastructure, but the forecast is also useful for more specific airport requirements such as fuel facilities and hangars.

Air Carrier **-** Air carrier operations are considered operations conducted on aircraft with 60 seats or greater. Air carrier activity, as defined, at LEB has been minimal or non-existent in years past and neither the FAA TAF nor this forecast project operations on aircraft with greater than 60 passenger seats in the future for LEB.

Air Taxi/Commuter - Air taxi operations cover both scheduled and non-scheduled commercial aviation services. While the FAA TAF combines these elements, airport records break out the commuter airline activity from air taxi activity. Cape Air operations typically account for approximately 4,000 or approximately 45% of the air taxi operations in a given year with the remainder being on-demand charter activity. The FAA Aerospace Forecast 2015-2035 has a declining growth rate of -1.2% over the next 20 years applied to this market sector due largely in part to the up-gauging of regional aircraft from 37-50 seats to those that contain 66-90 seats (Air Carrier). This industry trend is not applicable to LEB as the smaller regional jets and turboprops do not provide scheduled service and expected EAS providers, such as Cape Air, do not have larger aircraft to increase the gauge and decrease frequency of operations. Air Taxi/Commuter operations associated with the EAS at LEB is expected to be relatively flat over the forecast period with overall Air Taxi/Commuter operations growing slightly, which is consistent with the forecast contained in the FAA TAF.

Itinerant General Aviation - Itinerant general aviation traffic is considered operational activity that originates from or terminates at LEB from airports greater than 20 nautical miles from the airport. The FAA identifies an average annual growth rate of 0.4% for itinerant operations. Compared to historical activity, itinerant operations at LEB have declined by over 40% in the past 10 years, driven in large part by the economic recession along with reduced recreational activity in light of higher fuel prices.

Local General Aviation **-** Local general aviation traffic is considered operational activity that both originates and terminates within 20 nautical miles of LEB. This type of activity includes touch-and-go operations and would also include flights between Lebanon and Parlin Field or Claremont. The FAA identifies an average annual growth rate of 0.5% for local general aviation operations. Compared to historical activity, local operations at LEB have declined by over 60% in the past 10 years, driven in large part by the retirement of older aircraft along with reduced recreational activity in light of higher fuel prices and an aging pilot population.

Local operations are not expected to further erode as they have reached core levels based on the existing user base. Growth in local general aviation is expected to keep pace with nation-wide trends in the longer term timeframe will depend highly on the ability to train and retain new pilots in the Upper Valley.

Military **-** The 2015-2035 FAA Aerospace Forecast identifies national trends as flat to a slight decline in military operations at civilian airports nationwide between 2007 and 2014. The forecast for 2015-2035 depicts military operations as flat nationwide. The FAA TAF for LEB also depicts zero growth in military activity with an annual average of approximately 277 itinerant operations and 182 local operations. Over the past 20 years, combined annual military operations at LEB have ranged between 150 and 1,000. With no military installations at the Airport, the flat trend identified in the TAF is considered prudent for future airport planning.

Based on these growth factors, the airport operations forecast is displayed in **Table 2-1**.

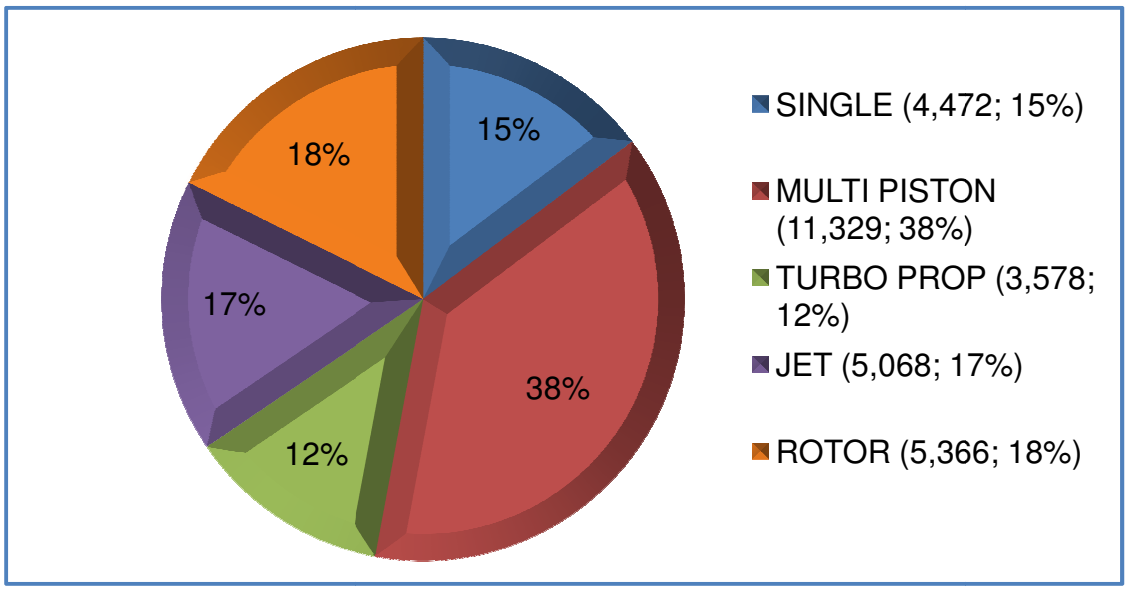
Table 2-1: Airport Operations Forecast

	ITINERANT				*LOCAL*			
Year	Air Taxi	GA	Military	Total Itin.	Civil	Military	Total Local	TOTAL
2014	8,523	10,863	290	19,676	9,727	224	9,951	29,627
2015	8,673	10,906	277	19,856	9,776	182	9,958	29,814
2020	8,845	11,126	277	20,248	10,022	182	10,204	30,453
2025	9,023	11,351	277	20,651	10,276	182	10,458	31,108
2035	9,389	11,813	277	21,479	10,801	182	10,983	32,462

Source: McFarland Johnson Analysis.

As part of the overall airport activity, operational data was obtained from the FAA Traffic Flow Management System which contains aircraft operational data including arrivals and departures by type. **Figure 2-1** displays the annual breakdown of operation by type of aircraft. Multi-engine piston aircraft is the largest category largely due to Cape Air scheduled service. Overall, between multi-engine aircraft, single, jet, turboprop, and rotor aircraft, the Airport sees a healthy and diverse mix in operations. Critical design aircraft considerations are discussed at the end of this chapter.

Figure 2-1 LEB Operations by Type of Aircraft



Source: McFarland Johnson Analysis extrapolated from FAA Traffic Flow Management System Counts, October 2015.

Alternative Operations Scenario: No Commercial Service - This scenario assumes that changes in the Essential Air Service (EAS) program result in commercial service no longer being offered from Lebanon. Air Taxi and commercial operations still occur from charter activity but Air Taxi/Commuter operations and total activity would be approximately 4,000 operations lower per year from the effective year of this scenario.

Alternative Operations Scenario: Regional Jet Service - This scenario assumes that the existing Cape Air service will be replaced with regional airline, flying under a legacy airline brand, with service to a hub airport. Service would consist of approximately 2-3 departures on weekdays with reduced frequencies on the weekend. This level of service is assumed to be twice daily with regional jet service, or three times daily by turboprop (DH-8 or Saab 340) service, offering approximately 100 total daily seats. Air taxi/commuter operations and total activity would be approximately 2,000 operations lower per year from the effective year of this scenario due to the reduced operating frequency from the current schedule.

Alternative Operations Scenario: New Corporate Tenant – This scenario assumed that the airport is successful in attracting a new corporate aviation tenant to be based at the Airport that would contribute to the annual operations at LEB. Many full-service, uncongested airports in the northeast have been successful in attracting corporate tenants and charter operators away from the busier and land constrained airports near Boston, New York, and Philadelphia. These operators use the more convenient airport as their home base while operating on-demand charter operations throughout the region.

Based on similar operations at other airports, this scenario assumes a total of four based aircraft (two jets and two turbo-props,) conducting two operations per aircraft per day on average. This alternative scenario would result in a total of approximately 2,900 additional annual itinerant operations.

2.2 PASSENGER ENPLANEMENTS

Passenger enplanements are a key measure in the forecasting efforts for commercial service airports. The enplanements forecast focuses on the total annual enplanements. The results of these forecasts are particularly useful in the assessment of the passenger terminal building and associated facilities such as auto parking lots and aircraft parking aprons. Additionally, the implications of growth potentially extend beyond the terminal area to the airfield, a key example being the design requirements associated with the introduction of a new aircraft type.

The amount of passenger seat capacity (number of flights multiplied by number of aircraft seats available) offered at LEB is currently regulated by the EAS program solicitation process and the airline providing the service (i.e. bids are based on using particular aircraft with x-amount of seats). Since the first full year of Cape Air Service, enplanements have grown from just under 8,000, to over 10,500 in 2014. Future growth, however, is predicated based on the number of available scheduled seats, something that is not expected to change as result of the EAS program (based on the current program).

Assuming demand is limited to the existing EAS schedule offering, the incremental natural enplanement growth would continue, but will ultimately be met with a maximum theoretical service level. It is unreasonable to assume that flight levels will grow to be 100% full with a 100% completion factor, as there are off peak days, off peak times, and with weather related travel disruptions throughout the year. Presently, the load factor is just over 50% with an average of five passengers out of the nine available seats per flight. This forecast assumes that passenger service could realistically grow to a level that averages seven out of every nine seats filled on the airplane, with an average annual completion factor of 95%, which is near current levels.

The forecast scenario of incremental growth towards the maximum theoretical service level is rather consistent with both the FAA TAF as well as the forecast that uses the 1.7% annual growth in domestic enplanements identified in the 2015 FAA National Aerospace Forecast. The three forecast scenarios are compared in **Table 2-2**. The incremental growth based on the maximum theoretical capacity is the selected forecast for this master plan as this forecast assumes no changes in the EAS program. The FAA Aerospace Forecast would result in higher enplanement levels; however, seat capacity would constrain anticipated growth based on the national average (FAA Aerospace).

Table 2-2: Passenger Enplanements Forecast

Year	FAA Aerospace	FAA TAF	Max Theoretical
2014	10,597	10,597	10,597
2015	10,777	10,883	10,786
2020	11,725	11,282	11,730
2025	12,756	11,687	12,674
2035	15,098	12,545	14,563

Source: McFarland Johnson Analysis

Alternative Enplanements Scenario: No Commercial Service – This scenario assumes that changes in the EAS program result in commercial service no longer being offered from Lebanon. Some enplanements may still occur from charter activity but for planning purposes, this scenario would consider enplanements being zero as little charter activity exists today. The financial chapter of this report will identify the financial implications of losing commercial service at the airport such as Passenger Facility Charge (PFC) revenue and primary entitlement funds.

Alternative Enplanements Scenario: Regional Airline Service - This scenario assumes that the existing Cape Air service (Table 2-2) will be replaced with regional airline service flying under a legacy airline brand to a hub airport. Service would likely consist of approximately 100 departing seats on weekdays with reduced frequencies/seats on the weekend. This level of service is consistent with twice daily regional jet service, or three times daily turboprop (DH-8 or Saab 340) service. The forecast assumes an initial load factor of 65% growing at the FAA Aerospace identified growth rate of 1.7% annually with consistent service levels over the planning period. Because this forecast scenario does not have a defined start year, it is defined as years 1, 5, 10, and 20; the Alternative Scenario: Regional Airline Service forecast is displayed in Table 2-3.

Table 2-3: Alternative Scenario Regional Air Service Enplanements

Year	Enplanements	Load Factor
1	21,632	65%
5	23,141	70%
10	25,176	76%
20	29,799	90%

Source: McFarland Johnson Analysis

2.3 BASED AIRCRAFT

In addition to the overall operational and passenger activity, it is important to forecast the number and type of aircraft that will be based at LEB in the future. The number and types of aircraft based at the airport play a key role in validating the operational counts, and more importantly, planning for future airport facilities. Key airport infrastructure such as aprons,

hangars, fueling facilities, and the overall taxiway network is largely determined by the user base at an airport. Historically the number of based aircraft at LEB has fluctuated somewhat, averaging around 70 aircraft through the 1990s down to a low of 47 in 2010 before climbing slightly to the approximately 55 aircraft today. Some of this can be attributed to more accurate aircraft counting techniques by the FAA, which mitigates situations where aircraft were being double counted by airports due to seasonality. While there has been some fluctuation in the past in both based aircraft and operations a return to consistency in aircraft fleet trends at LEB now mirror those of the national fleet forecast produced by the FAA. Details by aircraft type from the national fleet forecast are as follows:

Single Engine (Piston) - The national fleet forecast for single engine aircraft identifies a slight reduction in the fleet of single engine aircraft with an average annual growth rate of -0.7%. This decline in based aircraft does not infer a decline in activity/operations. The negative growth rate in based aircraft is consistent with the trend of older, less utilized aircraft leaving the fleet and pilots becoming members of flying clubs, where aircraft have greater utilization resulting in lower operational costs for the users. Considering this is a nationwide trend that represents all airports, large and small, it is assumed that single engine aircraft will continue to seek out airports like LEB as opposed to larger and busier airports. Rather than applying the negative growth rate, the single engine fleet will be shown as constant throughout the 20-year planning period given the character of the Airport.

Multi Engine (Piston) - Similar to single engine piston, multi engine piston aircraft typically represent older aircraft in the fleet and are slowly being withdrawn from service as they age. Growth for multi engine aircraft is expected to occur in the turbo-prop market segment which is broken out separately in the FAA forecast guidance. The national fleet forecast identifies an average annual growth rate of -0.4% over the planning period. This ratio is considered in the preferred forecast; however, as further discussed below, the growth rate of the turbo-prop category is also taken into account.

Turbo-Prop - Turbo-Prop aircraft include both single engine and multi engine turbine powered aircraft. These aircraft tend be newer and more fuel efficient. Aircraft such as the PC-12, a single engine turbine aircraft, have become increasingly popular for business use. The national fleet forecast identifies a growth rate of 1.5% annually for turbo-prop aircraft. For the LEB forecast, single engine turbo-props are categorized as single engine aircraft and multi engine turbo-props are categorized as multi engine aircraft. The resulting rate of growth in the preferred forecast is 1%.

Jet - Jet aircraft fleet growth is being driven by the introduction of newer, more efficient business jet aircraft in the small/medium market segment. These smaller and medium sized business jets have also increased the popularity and use of fractional ownership, especially in the northeast. The national fleet forecast identifies a growth rate of 2.8% annually for jet aircraft, which is used in the preferred forecast.

Rotor – LEB has a higher than average proportion of based helicopters due, in part, to Sharkey's Helicopters which is based at the Airport. Having a business that specializes in helicopter service, parts, charter, and flight instruction, will help to fuel further growth in rotor operations. This growth is consistent with national trends which identifies an average annual growth rate of 2.2% for piston rotorcraft and 2.8% for turbine rotorcraft. With the bulk of LEB users in the piston category, the 2.2% figure is used for the preferred forecasts.

Experimental/Sport/Other – One of the higher areas of growth in based aircraft is in the sport aircraft category which is projected to grow at 5% annually. These new light sport aircraft have lower acquisition and operational costs compared to traditional single engine aircraft which is a contributing factor to higher the higher growth rates. In addition to sport aircraft, the experimental and other category, which includes gliders, is projected to grow at 2.1% annually. The combined 7% was used in predicting this category in the preferred forecast.

Unmanned Aerial Vehicles (UAVs), or "drones," are not included in this based aircraft forecast. Aircraft classification and market dynamics for UAVs has not fully been determined and a separate market assessment and forecast for UAV activity at LEB should be conducted when more information is known.

Based on these growth factors, the based aircraft forecast is displayed in **Table 2-4**. Not included in this table, which represents the 'preferred forecast', is the previously mentioned alternative scenario for a new corporate tenant that results in two additional jets and two additional turbo-prop aircraft added to the effective year of the scenario.

Table 2-4: Based Aircraft Forecast

Year (Growth Rate)	Single (0%)	Multi (1%)	Jet (2.8%)	Rotor (2.2%)	Other/Sport (7%)	Total	TAF
2014	30	4	2	19	1	56	56
2015	30	4	3	19	1	57	56
2020	30	4	4	22	2	62	64
2025	30	4	4	24	2	64	68
2035	30	5	6	30	4	75	78

Source: McFarland Johnson Analysis

2.4 COMPARISON WITH FAA FORECAST

As a check on prudence, Master Plan aviation forecasts are often compared with other aviation forecasts prepared for the airport and the region. Ideally, this report's forecasts should be reasonably consistent with the FAA TAF and the national and regional forecasts previously referenced in this report. The TAF is prepared annually, and includes airport forecasts for all

active NPIAS airports. The Lebanon forecast is available on an FAA website (http://www.apsm.faa.gov/). The table below, **Table 2-5**, depicts the compared results between this forecast with that of the FAA's TAF.

Table 2-5: Preferred Airport Master Plan Forecast and TAF Comparison

	Year	Preferred Forecast	TAF	% Difference
Passenger Enplanements				
Base yr.	2015	10,786	10,883	-0.9%
Base yr. + 5yrs.	2020	11,730	11,282	4.0%
Base yr. + 10yrs.	2025	12,674	11,687	8.4%
Base yr. + 15yrs.	2030	13,619	12,109	12.5%
Commercial Operations				
Base yr.	2015	8,673	8,704	-0.4%
Base yr. + 5yrs.	2020	8,845	8,880	-0.4%
Base yr. + 10yrs.	2025	9,023	9,059	-0.4%
Base yr. + 15yrs.	2030	9,203	9,240	-0.4%
Total Operations				
Base yr.	2015	29,814	29,502	1.1%
Base yr. + 5yrs.	2020	30,453	29,976	1.6%
Base yr. + 10yrs.	2025	31,108	30,460	2.1%
Base yr. + 15yrs.	2030	31,777	30,953	2.7%

Source: FAA TAF, McFarland Johnson analysis

The comparison above shows that the results of the Master Plan forecast are within the allowances permitted by the FAA (10% within 5 years; 15% within 10 years). The stable, insulated market with relatively few external competitive forces result in conditions at LEB that reflect national, state, and regional trends that are captured in the FAA forecast methodologies. Overall, the comparison shows the Preferred Master Plan forecast is reasonable.

2.5 FUTURE DESIGN AIRCRAFT

Future airport facilities must consider the most demanding aircraft, or group of aircraft, in terms of size and weight, that conduct a total of 500 annual itinerant operations. The FAA categorizes aircraft into Aircraft Approach Categories (A,B,C, etc.), which are based on approach speed, and Airplane Design Groups (I,II,III, etc.), which are based on tail height and wingspan, each of which has specific facility/design requirements which must be met in order to accommodate those aircraft. In order to determine which aircraft, if any, meets the threshold of 500 annual operations, operational data was obtained from the FAA Traffic Flow Management System which includes arrivals and departures by type.

The only single aircraft make/model that exceeds 500 annual itinerant operations is the Cessna 402 (B-I) with over 4,200 operations. The next closest is the Cessna Citation Excel (B-II) with just over 460 operations. These aircraft, however, do not represent some of the more demanding aircraft that use the airport on a regular basis. Aircraft operational counts for the most demanding aircraft over the past 5 years were compiled to identify if there was a more demanding grouping of aircraft that together exceeded the 500 annual itinerant operations threshold. These counts are shown below in **Table 2-6.**

Table 2-6: Category C Operations

Aircraft	Design Code	2015 EST	2014	2013	2012	2011	2010
Citation X	C-II	96	174	198	192	192	196
Challenger 300	C-II	184	210	162	114	72	90
Challenger 600	C-II	200	200	228	220	198	210
Embraer Legacy	C-II	5	6	10	10	44	46
Global Express	C-II	48	24	20	18	20	22
Gulfstream III/IV	C-II	99	132	174	188	164	106
Gulfstream V	C-III	128	112	80	64	46	42
Lear 30/31/35/36	C-I	61	38	68	20	25	80
Lear 40/45	C/D-I	173	152	88	68	56	94
Lear55/60	C/D-I	32	60	54	66	82	60
	Total	**1,027**	**1,108**	**1,082**	**960**	**899**	**946**

Source: FAA Traffic Flow Management System Counts, October 2015, MJ analysis
Note: 2015 Operations are estimated

Combined, there are consistently over 1,000 annual operations by Approach Category C aircraft at LEB, the most common being the Bombardier Challenger family of series -300 and -600 aircraft with an average of near 400 annual operations. Over 600 of these annual operations are on aircraft considered to be in Airplane Design Group II. The largest aircraft using LEB on a regular basis is the Gulfstream V, which due to its longer wingspan, has a designation of Group III; however, at just over 100 operations annually does not reach the design consideration threshold. Even considering a growth rate of triple the FAA forecast (0.4% annually), Gulfstream operations do not come close to exceeding the necessary 500 annual operations and thus should not be considered the design aircraft.

This forecast recommends that the Bombardier Challenger -300 and -600 family of aircraft be considered as the design aircraft for LEB. The existing 400 operations combined with hundreds of aircraft sharing the same design standards far exceed the necessary thresholds at the existing level today. With respect to the previously mentioned alternative scenarios, the Bombardier Challenger is the business jet derivative of the popular regional jet used in airline service. Should the regional jet alternative scenario materialize, there would be no change to the airport's design standards.

2.6 SUMMARY OF PREFERRED FORECAST

Table 2-7 illustrates the preferred forecasts for aircraft operations, based aircraft, and passenger enplanements at LEB.

Table 2-7: Preferred Airport Master Plan Forecasts

	Aircraft Operations					
2015	29,814					
2020	30,453					
2025	31,108					
2030	31,777					
	Based Aircraft					
	Single	*Multi*	*Jet*	*Rotor*	*Other*	*Total*
2015	30	4	3	19	1	56
2020	30	4	4	22	2	62
2025	30	4	4	24	2	64
2030	30	5	6	30	4	75
	Passenger Enplanements					
2015	10,786					
2020	11,730					
2025	12,674					
2030	13,619					

Source: McFarland Johnson Analysis

Overall, LEB will demonstrate growth consistent with national trends and similar to previous forecasts.

Chapter 3
Capacity Analysis and Facility Requirements

3.0 INTRODUCTION

This chapter describes the airside, landside, and terminal facility requirements necessary to accommodate existing and forecasted demand in accordance with Federal Aviation Administration (FAA) and New Hampshire Department of Transportation (NHDOT) design and safety standards. The facility requirements are based upon the aviation demand forecasts presented in Chapter 2, *Forecast of Aviation Activity*, and the guidelines provided in FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, and 14 Code of Federal Regulations (CFR) Part 77, *Objects Affecting Navigable Airspace*. The major components of this chapter are listed below:

- Airfield Capacity Analysis
- Design Aircraft and Runway Design Code
- Airside Facility Requirements
- Terminal Facility Requirements
- Landside Facility Requirements

As minimal time has passed since the previous Conceptual Master Plan was completed in 2010, those existing analyses and facility requirements will be reviewed and summarized to the extent that they meet the new Vision Statement established for the Airport. Components that were not previously completed, or do not adhere to the new Vision Statement, will be added or revisited as necessary.

3.1 AIRFIELD CAPACITY ANALYSIS

Airfield capacity refers to the ability of an airport to safely accommodate a given level of aviation activity. The FAA has prepared a number of publications and computerized programs to assist in the calculation of capacity, most notably those in AC 150/5060-5, *Airport Capacity and Delay.*

Capacity is described using three terms: Annual Service Volume (ASV), Visual Flight Rules (VFR) Hourly Capacity, and Instrument Flight Rules (IFR) Hourly Capacity. The ASV is a reasonable estimate of the annual capacity, or the maximum annual level of aircraft operations, that can be accommodated at an airfield. Airports can, and do, exceed their stated ASV. However, delays begin to increase rapidly once the ASV has been exceeded.

The VFR and IFR Hourly Capacities are the maximum number of aircraft operations that can take place on the runway system in one hour under VFR or IFR conditions, respectively. When hourly demand approaches or exceeds the hourly capacity, delays may force traffic into the succeeding hours, or cause aircraft to divert to other airports. These occurrences indicate the need to augment airport capacity through mechanisms such as additional runways or taxiways.

The FAA recommends that capacity improvement planning take place once annual operations equal 60% of the ASV. Based on the runway configurations at LEB, AC 150/5060-5 suggests that the ASV at LEB is approximately 205,000 operations with one runway in use for arrivals and departures and 215,000 operations when both runways are utilized simultaneously for arrival and departures. LEB currently experiences approximately 30,000 operations annually, or just 15% of the Airport's ASV. According to Chapter 2, *Forecast of Aviation Activity*, these levels are expected to experience flat to modest growth rates over the twenty-year planning period. As a result, the current and forecasted operations levels pose no risk to airfield capacity and thus require no further analysis.

3.2 DESIGN AIRCRAFT AND RUNWAY DESIGN CODE

Airport design is based upon the identification of a critical aircraft for that airport. The dimension and performance characteristics of the critical aircraft form the basis on which design guidelines for the airport are identified, which in determine the appropriate runway and taxiway width and separation standards, as well as dimensions of various airport safety areas. The critical aircraft for an airport is defined as the most demanding aircraft, or group of aircraft, (based on approach speed and wingspan or tail height) that conducts, or is anticipated to conduct, a minimum of 250 takeoffs/landings (500 operations) per year. When the crosswind runway has significantly different operating or usage characteristics than the primary runway, the design aircraft for the two runways may differ.

Chapter 2, *Forecast of Aviation Activity*, identified the Bombardier Challenger -300 and -600 family series of aircraft as the existing and future critical aircraft. This family of aircraft is categorized as C-II as indicated by approach speeds, tail height, and wing span. **Table 3-1** illustrates the different Aircraft Approach Categories (AACs) and Airplane Design Groups (ADGs) which make up the Runway Design Code (RDC), along with the instrument approach minimums.

Based on the design family of aircraft (C-II), and the approach minimums at LEB (not lower than 1 mile), the RDC for both runways at LEB is C-II-5000. These findings are consistent with those of the previous master plan.

Table 3-1 – Runway Design Code (RDC)

Aircraft Approach Category (AAC)		
Category	Approach Speed	
A	Less than 91 knots	
B	91 knots or more but less than 121 knots	
C	121 knots or more but less than 141 knots	
D	141 knots or more but less than 166 knots	
E	166 knots or more	
Airplane Design Group (ADG)		
Group	Wingspan	Tail Height
I	Up to but not including 49 feet	Up to but not including 20 feet
II	49 feet up to but not including 79 feet	20 feet up to but not including 30 feet
III	79 feet up to but not including 118 feet	30 feet up to but not including 45 feet
IV	118 feet up to but not including 171 feet	45 feet up to but not including 60 feet
V	171 feet up to but not including 214 feet	60 feet up to but not including 66 feet
VI	214 feet up to but not including 262 feet	66 feet up to but not including 80 feet
Visibility Minimums (VIS)		
RVR (FT)	Flight Visibility Category (statute mile)	
VIS	Visual Approaches	
5000	Not lower than 1 mile	
4000	Lower than 1 mile but not lower than ¾ mile (APV ≥ 3/4 but < 1 mile)	
2400	Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA)	
1600	Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA)	
1200	Lower than 1/4 mile (CAT-III PA)	

Source: AC 150/5300-13A

3.3 AIRSIDE FACILITY REQUIREMENTS

Airside facilities are the facilities associated with the takeoff and landing of aircraft, i.e. the airfield and its components. Airside facility requirements are identified for current and future airport needs. This section examines the needs of the following airside facilities:

- Runway Length
- Runway Width
- Runway Strength and Condition
- Runway Safety Areas
- Runway Object Free Areas
- Runway Protection Zones
- Runway Obstacle Free Zone
- Runway Pavement Markings
- Taxiways
- Airfield Lighting

Per **Table 3-2**, facilities in green are already in compliance with existing FAA standards and do not require corrective action at this time. Facilities in yellow have portions that are presently non-standard, or are anticipated to be non-compliant, and will require corrective action at some point during the 20-year planning period. Airside components in orange are those that are currently non-standard and require immediate action to comply with FAA requirements.

Table 3-2 – Summation of LEB Facility Requirements

Airside Component	Existing Condition	Conceptual Master Plan Requirement (2010)	Comprehensive Master Plan Requirement (2015)
Airfield Capacity	15% of ASV	--	No action required
Runway Design Code (RDC)	C-II	C-II*	C-II-5000
Runway Length	**RW 7-25** 5,496' **RW 18-36** 5,200'	Between 5,642' and 8,158' with 7,000' being the midpoint; immediate need to maintain unrestricted length of 5,500' with standard RSAs	Concur with previous master plan; emphasis on maintaining length for runway with ILS approach and most capable of C-II RSA compliance
Runway Safety Area (RSA)	**RW 7** 500' W x 100' L **RW 25** <400'W x < 1,000'L **RW 18** 500' W x 350' L **RW 36** 500' W x 1,000' L	500' W 1,000' L	Concur with previous master plan and RSA determinations (2000 and 2010); emphasis on maintaining runway length and C-II standards
Runway Object Free Area (ROFA)	**RW 7** 800' W x 1,000' L **RW 25'** 650' W x 1,000'L**RW**	800' W x 1,000' L Terrain issues to both runways	Concur with previous master plan; emphasis on RW 25 and RW 36 near airport property

Table 3-2 – Summation of LEB Facility Requirements

Airside Component	Existing Condition	Conceptual Master Plan Requirement (2010)	Comprehensive Master Plan Requirement (2015)
	18 800' W x 1,000' L **RW 36** 650' W x 1,000'L		boundary and up slopes
Runway Strength	**RW 7-25** Single = 42,000lbs Dual = 60,000 lbs **RW 18-36** Single = 42,000 lbs Dual = 48,000 lbs	Suggest strengthening as part of next runway rehab; likely 90,000 lbs.	Concur with previous master plan, emphasis on RW 18-36
Runway Condition	**Good** **RW 7-25** Reconstructed 1991 **RW 18-36** Reconstructed 1997	--	**RW 7-25** Pavement beyond its 20-year useful life; should be reconstructed first **RW 18-36** Pavement nearing end of useful life; suggest rehabilitation or reconstruction during 20-year planning period
Taxiways	**RW 7-25** Full Parallel **RW 18-36** Partial Parallel	**RW 7-25** Taxiway pavement nearing end of useful life; reconstruction and strengthening	Concur with previous master plan; Taxiway B East should be reconstructed first

Table 3-2 – Summation of LEB Facility Requirements

Airside Component	Existing Condition	Conceptual Master Plan Requirement (2010)	Comprehensive Master Plan Requirement (2015)
Runway Protection Zone (RPZ)		required **RW 18-36** Construct full parallel including reconstruction and strengthening of existing partial	
	All Runways 500' Inner Width 1,010' Outer Width 1,700' Length	500' Inner Width 1,010' Outer Width 1,700' Length	Easement zoning on RW 7 and 18 requires no action**; Property boundary on RW 36 requires no action; Easements required for RW 25
Runway Width	100'	100'	100'
Runway Obstacle Free Zone (ROFZ)	**All Runways** 400' W 200' L	400' W 200' L	Concur with previous master plan; no action required
Runway Pavement Markings	**RW 7-25** Non-Precision **RW 18-36** Precision	No action required	Concur with previous master plan
Airfield Lighting	**RW 7-25** MIRLs **RW 18-36** HIRLs	No action required	Concur with previous master plan

*Airport Reference Code (ARC) based on previous Advisory Circular
**Consider revising City Airport Protection District to reflect current Part 77 standards.
Source: Lebanon Conceptual Master Plan, 2010; McFarland Johnson Analysis, 2015

3.3.1 Runway Length Analysis

Runway length requirements were determined based on AC 150/5325-4B, *Runway Length Requirements for Airport Design*. Based on **Table 2-6** in Chapter 2 of this document, there were 1,108 AAC C aircraft operations in 2014 which are considered the critical operations for this runway length analysis. These operations are further sub-divided into three categories of operations identified in the Runway Length AC, which is used to calculate the required runway length for an airport:

- Greater than 60,000 pounds (24% of LEB critical operations)
- 100% of the fleet of aircraft between 12,500 and 60,000 pounds (59% of LEB critical operations)
- 75% of the fleet of aircraft between 12,500 and 60,000 pounds (17% of LEB critical operations)

These different groups have different runway length analysis requirements, per AC 150/5325-4B. Of the 2014 AAC C operations, 17% fall into the partial fleet category of the AC, 59% are total fleet category (of 12,500 to 60,000 pounds), and 24% are in the greater than 60,000 pounds category. The following sections identify the requirements based on each of the aircraft categories:

Greater Than 60,000 pounds

Per the AC, the runway length analysis for aircraft greater than 60,000 pounds requires a review of the specific aircraft using LEB and their airplane planning or airplane flight manual. The Gulfstream IV was determined to be the representative aircraft for this group, due to the highest number of operations and most critical landing distance.

This type of operation represented 24% of the critical 2014 operations. The Gulfstream IV has a maximum range of approximately 3,800 nm.[1] It is not anticipated that an aircraft using LEB will go to or come from that distance of destination. It is assumed that aircraft using LEB will have maximum destinations east of the Mississippi River, which is approximately 1,300 nm (southern Louisiana) from LEB. Instead of landing at the maximum landing weight, it is anticipated that the Gulfstream IV will land at the operating weight plus the maximum payload weight plus one hour reserve fuel of approximately 55,000 pounds landing weight.

[1] http://www.aoc.noaa.gov/aircraft_g4.htm

At 55,000 pounds and a 603-foot airport elevation (mean sea level), the required landing runway length results are shown below. Please note that takeoff requirements usually exceed landing lengths.

Adjustment	Dry Runway	Wet and Slippery Runway	Increased Gradient – Dry Runway
Basic (elevation)	2,890'	3,740'	2,890'
Temperature	3,205'	4,150'	3,205'
Runway Gradient	3,450'	4,470'	3,525'
One engine inoperative	N/A	4,780'	N/A
Part 135	4,815'	6,230'	4,815'

N/A – not applicable (one engine inoperative adjustments only apply to wet and slippery runways)

The following factors were adjusted for:

- Airport Elevation: 603 feet (mean sea level),
- Mean daily high temperature of the hottest month: 81 degrees Fahrenheit,
- Runway gradient (Runway 18-36): 39.8 feet over 5,200 feet,
- Protect for one engine inoperative or one thrust reverser inoperative (wet runway only),
- No tailwind, and
- Part 135 operations.

This results in a minimum dry runway length of approximately 4,815 feet and minimum wet and slippery runway length of approximately 6,230 feet.[2] Wet runway conditions are shown based on the manufacturers publication tables and therefore differ from the ACs 15% increase.

Summary: Group 3 (Gulfstream IV) needs a landing length of 4,815 feet in dry runway conditions and 6,230 feet in wet and slippery runway conditions based on a mission profile less than maximum landing weight consistent with LEB activity.

Total Fleet of Aircraft (12,500-60,000 lbs)

This section reviews required runway length for the most critical operations group: 100% of aircraft between 12,500 and 60,000 pounds per the AC. This was determined using the mean daily maximum temperature of the hottest month of the year in degrees Fahrenheit (81 degrees for LEB) and the airport elevation (603 feet for LEB). Based on Figure 3-2 of the AC, this results in a dry runway length of 5,300 feet for 60% useful load factor and 7,750 feet for 90% useful load factor. Useful load is defined as "the difference between the maximum allowable structural gross

[2] http://www.gulfstream.com/images/uploads/technical_publications/GIV_OIS_11_Rev_00.pdf.

weight and the operating empty weight."[3] The useful load includes passengers, cargo, and usable fuel. Since a wet and slippery runway requires more runway length (just like it takes a car longer to come to a full stop on a wet and slippery road), these distances are increased by 15% to 6,095 feet for 60% useful load factor and 8,913 feet for 90% useful load factor. As with the previous category, many of these aircraft are operating regionally in the eastern half of the U.S. and therefore are operating below their maximum mission range, therefore the 60% useful load numbers are used.

Summary: To accommodate a 60% useful load factor, these operations require a minimum of 5,300 feet of dry runway length or 6,095 feet in wet and slippery runway conditions.

Partial Fleet of Aircraft (12,500-60,000 lbs)

The third step identified the runway length requirements for the last user group, which represents 17% of critical aircraft operations at LEB. Runway length requirements are determined the same way as the previous category, except Figure 3-1 of the AC was used. This results in dry runway length requirements of 4,650 feet and 6,200 feet for 60% and 90% useful load factors, respectively. Wet runway length requirements are a 15% increase of dry runway lengths at 5,348 feet and 7,130 feet for 60% and 90% useful load factors, respectively. As with the previous category, many of these aircraft are operating regionally in the eastern half of the U.S. and therefore operating below their maximum mission range, therefore the 60% useful load numbers are used.

Summary: To accommodate a 60% useful load factor, group 1 operations require a minimum of 4,650 feet of dry runway length and 6,200 feet in wet and slippery runway conditions

Summary

The table shows the results of all three runway length requirements.

Category	Useful Load Factor	Dry Runway	Wet and Slippery Runway
>60,000 lbs.	Full Payload	4,815' (landing)	6,230' (landing)
100% fleet of 12,500-60,000 lbs	60%	5,300'	6,095'
	90%	7,750'	8,913'
75% fleet of 12,500-60,000 lbs	60%	4,650'	5,348'
	90%	6,200'	7,130'

Sources: AC 150/5325-4B Figures 3-1 and 3-2, Gulfstream IV Technical Publications, McFarland Johnson Analysis (2016)

[3] FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, p. 10.

The weighted average of the actual operations in each category of total critical operations for the runway length analysis comes out to a dry runway length of 5,100 feet and a wet runway length of 6,000 feet.

Runway 7-25 at LEB is 5,500 feet long and currently accommodates the partial fleet of 12,500 to 60,000-pound aircraft in wet and slippery conditions up to and slightly over a useful load factor of 60%. Additionally, the full fleet of 12,500 to 60,000-pound aircraft is being accommodated in dry conditions up to a useful load factor of 60%.

A runway length of 5,500 feet would accommodate 76% of critical aircraft operations (AGD C operations) at Lebanon at 60% useful load factor or higher in dry conditions and 17% of critical operations at 60% useful load factor in wet conditions.

For the three most common 12,500 to 60,000-pound aircraft, a 5,500-foot dry runway translates into the following trip ranges:

- Challenger 600: 925 nautical miles (nm) (Jacksonville, FL; Birmingham, AL; St. Louis, MO; Minneapolis, MN; and most of Ontario, Quebec, and Newfoundland and Labrador Counties in Canada)
- Citation X: 1,300 nm (Oklahoma City, OK; Wichita, KS; Bismarck, ND; most of Manitoba County, Canada; and most of the Bahamas)
- Challenger 300: 1,350 nm (Dallas, TX; most of OK, KS, NE, SD, and ND; most of Manitoba County, Canada; the southeast corner of Saskatchewan County, Canada; and northern Cuba)

In wet and slippery runway conditions, these ranges are reduced by approximately 450 to 650 nm or require reducing useful load factor even further.

Gulfstream IV-type aircraft could land on a 5,500-foot long runway with full payload in dry conditions and a reduced payload in wet conditions.

It is recommended that Runway 18-36 be extended to 5,500 feet in place of Runway 7-25, which would provide the additional benefit of an instrument landing system (ILS) approach and improved safety areas, both of which Runway 7-25 does not provide today. Extending Runway 8-36 to 5,500 feet would also allow Runway 7-25 length to be reduced and improve its safety areas. Maintaining a 5,500-foot long runway length for all operations at the Airport allows the airport to maintain the existing aircraft operational mix with the added benefit of providing an ILS with the longer length on Runway 18.

Although a runway length greater than 5,500 feet could be demonstrated, it is highly likely that it would not be accepted by the community nor the city council based on past public discourse.

3.3.2 Conclusion

In conclusion, the most critical components of the airside facility requirements are maintaining an unrestricted runway length of 5,500' and improving the three non-standard RSAs. The next chapter, *Airport Alternatives*, will discuss various airside developments aimed at achieving those facility requirements, while simultaneously meeting the Airport's Vision Statement. Those three elements will guide the remainder of the master plan process.

3.4 TERMINAL FACILITY REQUIREMENTS

This section summarizes the analysis conducted to determine the long term facility requirements for key functional areas of the passenger terminal. Requirements were analyzed based on a multitude of factors, but the primary tool for the analysis was *ACRP Report 25, Airport Passenger Terminal Planning and Design, Volume 2: Spreadsheet Models and User's Guide* (Model). Terminal facility requirements have been generated for all functional areas of the Lebanon terminal building, which include the following passenger processing functions:

- Terminal Curb
- Airline Check-in and Ticketing
- Outbound Baggage System and Baggage Make-up
- Passenger Security Screening
- Holdrooms
- Inbound Baggage Systems and Baggage Claim
- Concourse and Circulation Areas
- Gates

The ACRP Model is designed to determine terminal requirements by functional areas based on historical and forecasted annual enplanements, departures, and gates. The Model uses these inputs (along with a variety of assumptions) to identify peak hour activity. Peak hour activity at an airport is defined as the number of enplaned and deplaned passengers departing or arriving on aircraft in an elapsed hour of a typically busy (design) day. The Model then uses peak hour activity levels to produce space requirements as demand increases. In this way, the Model serves as "top down" analysis, starting with annual demand to hone in on peak activity demand.

For Lebanon, however, peak passenger activity levels are bound to the existing Essential Air Service (EAS) schedule offering. This link is described in more detail in Chapter 2, *Forecast of Aviation Activity*. This means that while annual enplanement levels are over 10,000 passengers,

those levels do not drive the types of peak passenger levels that create large terminal functional area square footage requirements in the Model. The Model, however, remains useful, as industry guidance and standards are built into each functional area calculation.

Based upon existing and forecasted levels of enplaned passengers, the following enplanements per gate and per departure are used in the Model.

Table 3-3: Enplaned Passengers Per Gate

Year	Annual Enplaned Passengers	Annual Departures	Enplaned Passengers/Gate	Enplaned Passengers/Departure
2015	10,786	2,190	5,400	5
2020	11,730	2,190	5,900	5
2025	12,674	2,190	6,400	6
2035	14,563	2,190	7,400	7

Source: McFarland-Johnson Analysis, 2015

For the purposes of this terminal facility requirement analysis, peak/design hour departing passengers for the long term period are determined to be 17. This represents the number of departing passengers on two simultaneous departing flights, which reflects the 95% load factor of current EAS service as detailed in Chapter 2, *Forecast of Aviation Activity*.

Assumptions used for the application of the ACRP Model are included in **Appendix F**, as well as Level of Service (LOS) Standards published by the International Air Transport Association (IATA), for reference. LOS standards are defined with letter grades, from A through F, where A represents an excellent level of service and F is an unacceptable level of service. LOS C is a common target for evaluating terminal functional space requirements, which is defined as a good level of service with stable passenger flow, acceptable delays, and good levels of comfort. Once LOS reaches D, while performance is still adequate, passenger flow is unstable and delays are acceptable only for short periods.

3.4.1. Results of ACRP Model Analysis

The results of LEB's terminal capacity assessment were organized by functional area in **Tables 3-4** through **3-12**, and are accompanied by descriptions in the sections that follow:

- Terminal Curb
- Airline Check-in and Ticketing
- Baggage Security Screening
- Outbound Baggage Make-up
- Passenger Security Screening
- Holdroom
- Inbound Baggage Systems and Baggage Claim

- Concourse and Circulation Areas
- Gates

Terminal Curb **-** The first part of accommodating passenger activity levels at LEB is servicing vehicle traffic for departing passengers at the curb in front of the terminal building. Incoming traffic is comprised of a range of different vehicles, and the Model incorporates assumptions regarding the total volume, peak 15-minute volume, dwell time by type of vehicle, and vehicle length. As a percentage of total vehicle demand, it was assumed that 90 percent would utilize the curb in the busiest 15-minute period. **Table 3-4** displays the terminal curb's ability to accommodate peak hour departing passengers. The design hour vehicle demand accounts for private automobiles and rental car shuttles only, as it assumed that the remaining 10 percent passengers would utilize free parking offered by the Airport and not arrive at the curb.

Table 3-4: Terminal Curb Requirements

Curb Requirements	Peak Hour
Design Hour Demand in Vehicles	9
Existing Curb Length	~155 ft.
Required Curb Length for LOS C	57-68 ft.
Performance	A

Source: McFarland-Johnson Analysis, 2015

As shown, the existing length of usable curb outside the terminal building will remain adequate through the 20-year forecast period. Based on the Model, the existing curb length should still perform at a LOS A should vehicle demand (and departing passengers) double in volume during this time.

Airline Check-In and Ticketing **-** Once passengers enter the terminal building, it is important for airline check-in and ticketing facilities (staffed airline counters and self-serve kiosks) to be able to adequately serve demand during peak travel times. At LEB, all departing passengers must utilize staffed counter positions, as no kiosks are available and remote check-in is not provided. The results of the Model analysis are presented in **Table 3-5**.

Table 3-5: Airline Check-In/Ticketing

Staffed Counter Positions	Peak Hour
% Passengers Using Staffed Counter Positions	100%
Existing Staffed Counter Positions	1
Required Staffed Counter Positions	1
Performance	Adequate
Existing Passenger Queue Area	~40 s.f.
Required Passenger Queue Area	18 s.f.
Performance	Adequate

s.f. – square feet

Source: McFarland-Johnson Analysis, 2015

The analysis indicates that the existing ticket counter frontage and passenger queue area is sufficient to support airline check-in practices at LEB under existing and expanded EAS passenger volumes. Based on the Model, the existing configuration may still be adequate with an increase of nearly 50 percent in passenger volume. This is especially true given that increasing use of advance ticket purchase and off-site check-in options will lead to a general reduced need for traditional staffed ticket counters, and an increase in demand for kiosk-style check-in units. This supports the conclusion that the terminal's existing airline check-in/ticketing area will remain sufficient in size. Consideration should be made for technology upgrades in coordination with the airlines serving the Airport.

Baggage Security Screening **–** Typically, the TSA baggage screening process is defined in three stages. Baggage screening refers to bags checked by passengers at check-in, which are passed through to the secure side of the terminal for screening by TSA staff. In Level 1 screening, bags pass through an Explosives Detection System (EDS). After passing through the machine, a portion of the bags will be cleared and routed to the baggage make-up operations, while the remainder will continue to a Level 2 screening operation, called On-Screen Resolution (OSR). At the completion of the Level 2 screening, a portion of the bags will be cleared and diverted toward the baggage make-up operation. Any remaining bags that have not yet been cleared through EDS or OSR proceed to Checked Baggage Reconciliation Area (CBRA) for Level 3 screening. In CBRA, TSA will utilize Explosives Trace Detection to examine bags even further. At LEB, there is no Level 1 screening, as the TSA does not operate an EDS, so the Model is adjusted such that all checked baggage requires Level 2, manual screening.

The existing area of the terminal building utilized for TSA screening of checked baggage is a sectioned-off area within the baggage office, which also includes outbound baggage make-up and an area for transferring arrival baggage to baggage claim. The results of the baggage screening capacity assessment are shown in **Table 3-6**.

Table 3-6: Baggage Screening Performance

Baggage Screening	Peak Hour
Existing Area for Levels 2 & 3 Screening	~360 s.f.
Required Area for Levels 2 & 3 Screening	140 s.f.
Required Area for Levels 1, 2, & 3 Screening	940 s.f.
Performance	Adequate for Levels 2 & 3 Screening Not Adequate for Level 1 Screening

s.f. – square feet
Source: McFarland-Johnson Analysis, 2015

As shown, baggage security screening spatial requirements for all three levels of screening exceed current space dedicated for TSA operations. However, this requirement is mostly the result of standards built into the Model for a Level 1 EDS Unit. Since the TSA does not operate

an Explosive Trace Detection (ETD) at LEB, existing space allocations for TSA operations are currently adequate. Should LEB desire to add Level 1 screening to include an EDS, the 940 square feet requirement will apply and once achieved, should be adequate with double the level of existing peak passengers.

Outbound Baggage Make-up **-** The key component of the outbound baggage system is the make-up operation, in which screened baggage is transferred from the TSA baggage screening process, after check-in, to the loading area and placed in carts grouped by flight. Table 3-7 presents the result of the Model analysis for baggage make-up.

Table 3-7: Baggage Make-Up Performance

Baggage Make-Up	Peak Hour
Existing Area for Baggage Make-Up	~730 s.f.
Required Area for Baggage Make-Up	700 s.f.
Performance	Adequate

s.f. – square feet

Source: McFarland-Johnson Analysis, 2015

As described above, outbound baggage makeup shares an area of the terminal with that used for transferring arriving baggage to baggage claim. As shown, the Model indicates that LEB's existing baggage make-up area is adequate to service peak hour passenger demand under EAS service through the 20-year forecast period.

Passenger Security Screening **–** Passenger security screening refers to the TSA operation that screens each passenger and any carry-on or personal items prior to admittance to the secure area of the terminal for departure. The Model evaluates passenger security screening capability based upon: originating passenger volume during a peak 30-minute period, an assumed capacity (passengers/hour), a maximum target wait time, and an estimate of the security screening area square footage. At LEB, while the overall passenger screening area is shared with the holdroom, the low level of passenger volume and staging of passenger screening (just prior to boarding) does not create significant passenger wait time in the queue. The results of this analysis are shown in Table 3-8.

Table 3-8: Security Screening Performance

Security Screening Lanes	Peak Hour
Throughput Capacity (Passengers/Hour)	150
Existing Screening Lanes	1
Required Screening Lanes	1
Performance	Adequate
Security Queue Area	**Peak Hour**
Existing Security Queue per Passenger	~11.0 s.f.
Required Security Queue per Passenger	10.8 s.f.

Performance	Adequate

s.f. – square feet
Source: McFarland-Johnson Analysis, 2015

As indicated, the existing one-lane screening configuration will remain adequate through the forecast period. Passenger queue area, while adequate under the existing EAS service, may become constrained with any increases in passenger volumes.

Holdroom – A holdroom is the area of the terminal where passengers congregate prior to boarding the plane. The evaluation of current holdroom capacity is based on the space planning standards provided by the IATA, utilizing a 95 percent load factor. The results of LEB's holdroom performance in the Model are shown in **Table 3-9**.

Table 3-9: Holdroom Performance

Holdroom	Peak Hour
Existing Holdroom Area	~415 s.f.
Required Holdroom Area	600 s.f.
Performance	Not Adequate

s.f. – square feet
Source: McFarland-Johnson Analysis, 2015

Currently, the holdroom at LEB shares space with the passenger security screening operation and the gate areas. LEB addresses this by staging passenger screening in such a way that the non-secure terminal lobby essentially functions as holdroom area because passenger screening during the peak period can be accomplished swiftly. Doing so relieves the existing holdroom of the burden typical of larger and more active airports, where passengers generally arrive early and wait in holdrooms for longer periods prior to boarding. However, based on industry standards and the Model analysis, passengers could benefit from additional space in the existing holdroom now and as enplanements increase.

Inbound Baggage System and Baggage Claim – The inbound baggage system is comprised of the operation and equipment that facilitate transfer of passenger baggage on arriving flights for passengers to collect at baggage claim. The Model assesses inbound baggage and baggage claim areas based on peak hour deplaning passengers, the percentage of passengers checking bags, the average travel party size, and includes an allowance for additional people meeting passengers at baggage claim. The existing inbound baggage system and claim area at LEB is comprised of approximately 675 square feet of area, and existing baggage claim frontage is 25 feet, which is the length of area available to passengers to claim their baggage. The results of the analysis are shown in **Table 3-10**.

Table 3-10: Baggage Claim Performance

Baggage Claim	Peak Hour
Total Linear Feet per Peak Hour Passenger	1.4
Average Peak Hour Passengers at Claim	17
Existing Total Baggage Conveyor Frontage	~25 ft.
Required Linear Feet per Flight	24 ft.
Performance	Adequate

Source: McFarland-Johnson Analysis, 2015

As indicated, the Model estimates that the existing baggage frontage is adequate to accommodate peak passenger demand at baggage claim through the 20-year forecast period; however, baggage claim frontage is at capacity and any increases in passengers during the peak hour will strain the operation and increase use times. This will need to be addressed over the planning period.

Concourse and Circulation Areas – Terminal concourses and circulation areas are comprised primarily of public spaces utilized by passengers, and airport, airline, and concessionaire staff to move through the airport. These include most of the non-revenue producing areas in the passenger terminal including: queuing areas, seating and waiting areas (exclusive of holdroom seating), and circulation corridors (secure and non-secure). The size and/or area of some of the public space is directly related to requirements imposed by the peak hour volume of passengers handled, such as allowance for common circulation areas in the ticket lobby and baggage claim, while other circulation space is required to access remaining functional areas. In either case, space must be sufficient to meet applicable life safety codes, avoid pinch points that lead to congestion of passenger flow, and provide additional space as necessary wherever cross circulation cannot be avoided. Table 3-11 depicts the ability of existing concourse and circulation areas to accommodate passenger demand through the 20-year forecast period.

Table 3-11: Concourse/Circulation Performance

Concourse/Circulation	Peak Hour
Existing Concourse Circulation Area	~2,160 s.f.
Required Concourse Circulation Area	2,400 s.f.
Performance	Not Adequate

s.f. – square feet

Source: McFarland-Johnson Analysis, 2015

As indicated, existing concourse/circulation area at LEB does not meet requirements determined by the Model. However, similar to the functionality and operation of passenger screening and the existing holdroom, since peak passenger levels are modest under existing EAS service, short periods of minimal congestion are not unmanageable. Further, larger queuing space at the security checkpoint alleviates congestion.

Gates **–** Aircraft gates allow for passengers to board and exit aircraft. The gate area at LEB contains approximately 415 SF of circulation space and seating. This area is shared with the security checkpoint and is referred to as "sterile" with regards to airport security. **Table 3-12** shows the results of the analysis for gates at the Airport.

Table 3-12: Gate Performance

Gate Claim	Peak Hour
Peak Hour Simultaneous Flights	2
Peak Hour Originating Passengers (Enplanements)	17
Existing Gates	2
Required Gates	2
Performance	Adequate

Source: McFarland-Johnson Analysis, 2015

As shown, existing gates at LEB are adequate to accommodate annual enplanements for the 20-year forecast period, and up to 8-10 flights per day.

3.5 TERMINAL FACLITY REQUIREMENTS SUMMARY

The preceding analysis of passenger terminal space has been applied to provide a summary of future terminal needs as indicated by current space utilization trends and information gathered from discussion with LEB staff. All information presented in this section is combined in **Table 3-13** as a summary.

Should regional airline service (30 or more seats) to a hub airport replace existing Cape Air service under the EAS program, passenger enplanement levels could double in volume over a 20-year period. Under such a scenario, the following terminal functional areas would likely reach or exceed capacity and will need to be reevaluated:

- Passenger Security Screening
- Holdroom
- Inbound Baggage System (Baggage Claim)

Table 3-13: Terminal Facility Requirements Summary

Item Description	Existing	Future Activity	-
Peak Hour Departing Passengers	17	17	-
Annual Departing Passengers	10,786	14,563	-
Terminal Space Requirements	**Existing**	**Future Requirement**	**Adequate/ Not Adequate**
Terminal Curb	~155 l.f.	57-68 l.f.	Adequate
Gates	2	2	Adequate
Airline Functional Area	**Existing**	**Future Requirement**	**Adequate/ Not Adequate**
Staffed Counter Positions	1	1	Adequate
Staffed Counter Queuing	~40 s.f.	18 s.f.	Adequate
Outbound Baggage Screening	~360 s.f.	140 s.f. for Levels 2 & 3 940 s.f. for Levels 1, 2, & 3	Adequate Not Adequate
Outbound Baggage Make-Up	~730 s.f.	700 s.f.	Adequate
Passenger Security Screening Lanes	1	1	Adequate
Passenger Security Queuing	~11.0 s.f.	10.8 s.f.	Adequate
Holdroom	~415 s.f.	600 s.f.	Not Adequate
Inbound Baggage System (Baggage Claim)	~25 l.f.	24 l.f.	Adequate
Public/Miscellaneous Space	**Existing**	**Future Requirement**	**Adequate/ Not Adequate**
Concourse/Circulation	~2,160 s.f.	2,400 s.f.	Not Adequate

l.f. – linear feet
s.f. – square feet
Source: McFarland-Johnson Analysis, 2015

3.5.1. Terminal Facility Recommendations

The ACRP Model analysis of passenger terminal space provides insight into current and future terminal space needs based on forecasted activity levels, industry best-practices, and trends in airport terminal space utilization. This analysis, along with general planning guidance and benchmarking, results in a holistic view of terminal needs. The following summarizes recommendations for the LEB terminal building:

Airline Terminal Functional Area Needs **-** As described and listed in **Table 3-13**, the analysis indicates that simultaneous flights under existing EAS service creates minimal deficiencies in the following functional areas:

- Outbound Baggage Screening: As described, the existing outbound baggage screening area is more than adequate for Levels 2 and 3 screening. However, if the Airport is going to add Level 1 screening with an EDS, the existing configuration is constrained, and will require approximately 580 square feet of additional space.
- Passenger Security Queuing: The area of the terminal currently utilized for passenger queuing prior to security screening performs at a LOS C under existing EAS service levels. Therefore, any increases in passenger volume will push performance to a LOS D, which will increase wait times and affect passenger comfort while in the queue.
- Holdroom: The holdroom is undersized and passengers would benefit from an additional 185 square feet of space. One option might be to reallocate space from an area currently used for an operations garage, shifting passenger screening into that area, or shifting baggage claim toward baggage makeup to expand the holdroom.
- Inbound Baggage System (Baggage Claim): The existing inbound baggage system and baggage claim operation meets the Model's standards under existing EAS passenger levels. Future increases in passenger volumes or flight frequency may strain this system and increase claim use time as passengers position to claim baggage after deplaning.
- Concourse/Circulation: The Model indicates that an additional 340 square feet of circulation space would be optimal for the non-secure side of the terminal operation While under existing passenger volumes and flight frequency, short periods of minimal congestion are not likely unmanageable. However, any increases in passenger volume or flights will likely reduce passenger comfort after check-in and prior to boarding.

Rental Car & Ground Transportation – LEB currently offers two rental car agencies located on–site, and situated directly across the lobby from baggage claim in the terminal building. Two additional agencies are located in close proximity to the Airport. The Airport's website lists these and other ground transportation options, including:

- Bus Service: Advance Transit provides a free, local bus service to the Upper Valley and City of Lebanon.
- Taxi, Limousine, & Shuttle: Six additional options include personal, group, and executive ground transportation.
- Train: The Vermonter (Amtrak) offers service from Northern Vermont to Washington D.C.

At this time, no additional ground transportation options appear necessary to service existing passenger levels.

Potential Landside Revenue Generation – The LEB terminal building currently has a number of vacant/underutilized areas that could be converted for revenue generation via a lease agreement with private interests. These areas are situated in the northern end of the terminal

building. As described on the LEB website, terminal opportunities for revenue generation include the following areas:

- Area A - Ramp-Front Corner Vacancy: This portion of the terminal is comprised of approximately 719 square feet, faces the terminal apron/ramp area, and is a prime location for a food and beverage kiosk, a restaurant or café.
- Areas B, C, & D - Curb-Front Corner Vacancy: Approximately 1,236 square feet are available on the curb-side of the terminal building and are comprised of a kitchen and lobby and bar area. This area is connected directly to the passenger hall/concourse near the restroom facilities.
- Area E - Curb-Front Lobby Vacancy: Adjacent existing rental car agency counters in the terminal building is a vacant area comprised of approximately 385 square feet that could be utilized for vending and/or a small vendor freestanding kiosk of some fashion.
- North Terminal Apron: This area of the terminal apron is comprised of approximately 55,000 square feet of paved ramp, which could be attractive to a specialized operator similar to or supportive of the existing FBO, for use as a base of operations with a new conventional/box hangar.

Terminal Services – Services available to commercial passengers today at the LEB terminal are limited to rental car agencies, other ground transportation options, and free wireless internet service. Additional services may be difficult to attract or provide given the existing levels of EAS service and passenger levels. However, if passenger volumes increase enough a restaurant, limited menu café, and/or expanded vending should be considered, along with a more comfortable passenger lounge area on the non-secure side of the terminal.

3.6 LANDSIDE FACILITY REQUIREMENTS

In order to accommodate existing and future demand, improvements to landside facilities should keep pace with growth in aviation activity at the airport, as well improvements to airside facilities. Similar to airside facility requirements, landside facility requirements are a function of the forecasts presented in Chapter 2, *Forecasts of Aviation Activity*, which assist in determining the timing and magnitude of landside improvements throughout the 20-year planning period. The section examines the following landside areas:

- Roadway Access and Auto Parking
- FBO Areas and Facilities
- Air Cargo Facilities
- Aviation Fuel Storage and Distribution
- Airfield Maintenance and SRE Storage
- Aircraft Hangars
- ARFF Facilities
- Land/Easement Acquisition
- Customs and Border Patrol
- Non-Aviation Use Areas

- Aircraft Aprons and Tie Downs

3.6.1 Roadway Access and Auto Parking

Airpark Road provides access to LEB and the business located in the adjacent industrial park. When entering the Airport, vehicles turn left off Airpark Road and follow a small airport circulation road. The circulation road allows vehicles to park, pull up along the terminal curb, or merge back onto Airpark Road to form a loop. This type of circulation allows for Airport traffic to be segregated from Airpark Road traffic and reduces congestion around the terminal. As such, the existing roadway system is currently sufficient for the Airport's capacity. However, the condition of Airpark Road and the internal circulation are in poor condition and will need rehabilitation or other improvements early on during the 20-year planning period.

With regard to airport parking, there are approximately 265 parking spaces available for passengers, not including those allocated for Airport employees. Given the discussion of peak passenger levels in the previous Terminal section, the existing auto parking capacity is adequate for the Airport's current and forecasted activity levels. Since the Airport currently does not charge for parking, discussion on passenger parking fees as a potential source of revenue will be discussed in a later chapter. Lastly, similar to the roadway access, the condition of the parking lot pavement is deteriorating and will need improvements during the 20-year planning period.

Recommendation: Pavement rehabilitation/reconstruction for Airpark Road, internal circulation road, and parking lot.

3.6.2 Fixed Based Operator (FBO) Areas and Facilities

Granite Air Center serves as the Airport's only FBO and provides fueling services, hangar storage, parking, aircraft maintenance, de-icing, and other services to pilots, flight crews, and passengers operating in and out of LEB. The FBO operates out of a building measuring approximately 23,000 square feet and includes a large box hangar and office space used for administrative purposes and guest amenities. Granite Air has expressed interest in renting more ramp space to augment their existing hangar and office space through construction of an additional 45,000 square foot building. It is recommended that additional conventional hangar space be constructed at LEB during the planning period and that private businesses, such as Granite Air, be pursued as a potential source of development funding.

Recommendation: Existing FBO areas and facilities are adequate.

3.6.3 Air Cargo Facilities

There are currently minimal cargo operations at LEB and no increase is expected over the forecast period. As such, the capacity to handle existing cargo operations is adequate and no changes or improvements are required.

Recommendation: No changes required.

3.6.4 Aviation Fuel Storage and Distribution

Granite Air currently handles all the fueling needs at LEB. The airport is equipped with a 20,000-gallon Jet A storage tank, a 10,000-gallon Jet A tank, and a 12,000-gallon AvGas tank. All three tanks are stored underground. Granite Air uses a fleet of four fueling trucks to offload fuel into aircraft at the Airport. There are no fueling islands or self-service pumps available because of this service.

The Jet A tanks receive delivery three or four times per week and each deliver is approximately 10,000 gallons. The AvGas tanks receives delivery one or two times per month and each deliver is 12,000 gallons. While the FAA recommends having a 14-day supply, this system has proved to be adequate to serve LEB and the Airport is comfortable with the current level of service.

Recommendation: No changes required.

3.6.5 Airfield Maintenance and Snow Removal Equipment (SRE) Storage

The Airport currently has multiple pieces of snow removal equipment (SRE) that is used to clear snow, assess runway friction, and generally maintain safe operating conditions at LEB. A list of airport equipment and their function is shown in **Table 3-14.**

Given the harsh winters in New Hampshire, it is recommended that snow removal equipment be stored inside to maintain its working condition and prolong its useful life. There are currently plans to construct an expansion to the existing SRE building at LEB in order to house equipment that is currently stored outside. The expansion will measure approximately 7,900 square feet and will include two additional drive-thru storage bays, material storage areas, and support areas.

The SRE expansion was programmed to receive FAA funding; however, this funding will not occur until the City of Lebanon provides an action plan to improve the non-standard RSAs.

Recommendation: Construction of an SRE building expansion.

Table 3-14: Snow Removal Equipment at LEB

Equipment	Purpose	Storage
2004 15-ton 4x4 Truck	22' plow blade with scraper	Inside
1994 15-ton 4x4 Truck	19' plow blade, sander, scraper or 18' sweeper and air blast	Outside
2009 Chevy 1-ton 4x4 Truck	9' plow blade, sander	Inside
2012 Chevy ¾-ton 4x4 Truck	9' plow blade	Outside
2009 New Holland 4x4 Tractor	3 cubic yard snow loading bucket with front mount snow blower	Outside
2001 Case Front End Loader	22' plow blade and 4 cubic yard loading bucket	Inside
2000 Kodiak Rotary Plow	3000 tons of snow per hour	Inside
1982 Oshkosh Plow	1500 tons of snow per hour	Outside *(not used)*
2000 Ford 4x4 SUV	Operations/Surface Reports	Inside
2000 KIA 4x4 SUV	Operations/Surface Reports	Outside

Source: Airport Certification Manual and Airport Staff

3.6.6 Aircraft Aprons and Tie-Downs

LEB has three apron or ramp areas. The North Ramp is located in front of Granite Air and Sharkey's Helicopters; the Passenger Terminal Apron is located in front of the Terminal Building, and the South Ramp is adjacent to the southernmost T-hangar buildings. With the exception of the North Ramp, much of the apron areas remain unused or are only used intermittently. The

pavement areas are in good to fair condition, but will reach their useful life during the 20-year planning period.

There are approximately 22 aircraft tie-downs available at LEB, most of which can be found on the North Ramp, followed by the South Ramp. Since less than a third of these tie-downs are utilized on a regular basis, the existing tie-down capacity is sufficient to meet the needs of the Airport.

Recommendation: Rehabilitate apron pavements as necessary.

3.6.7 Aircraft Hangars

There are two eight-unit T-hangar buildings located on the west end of the North Ramp and two ten-unit T-hangar buildings are located on the south end of the South Ramp. Some of the T-hangars remained vacant in the past, but occupancy is approximately 85%. Until there is a tenant waiting list, the existing T-hangar capacity will be adequate to meet the needs of LEB.

As described in the FBO section, conventional hangar space at LEB is limited. There are four conventional hangars, all of which are occupied or leased to tenants. At least one tenant has expressed interest in obtaining additional apron space to construct an additional conventional hangar to be used for storage or maintenance services.

Recommendation: Construct at least one additional conventional hangar.

3.6.8 Airport Rescue and Fire Fighting (ARFF) Facilities

ARFF coverage at LEB is dependent upon Part 139 certification, which applies to airports that provide commercial passenger service on aircraft carrying more than nine passengers per flight. Since Cape Air operates aircraft with nine seats or less, the Part 139 certification does not apply to LEB at this time. When LEB was previously certified under Part 139, the existing ARFF facilities met minimum standards for the amount of space and type of equipment required. It is recommended that if LEB regains Part 139 certification in the future; a slight expansion to the existing ARFF facility and equipment should be considered.

Recommendation: In the event of Part 139 certification, a slight expansion to the existing ARFF facility and equipment should be considered.

3.6.9 Land and Easement Acquisition

In order to protect an aircraft's approach to and from a runway, airports seek to clear and control the airspace surrounding those approaches known as the Runway Protection Zone (RPZ). RPZ control is achieved either through the acquisition of land parcels or easements or through zoning regulations that protect the areas surrounding an airport. The City of Lebanon has a Declaration of Easement that declares certain properties subject to Airport easement or right-of-way. A copy of that document can be found in **Appendix G** and a corresponding illustration of the easement overlay can be seen in **Figure 3-1**. Of note, the easement overlay mostly addresses Runway 7 and 18. The RPZ to Runway 36 remains on Airport property and thus does not require acquisition or easement. Conversely, portions of the Runway 25 RPZ and ROFA are not on Airport property and will require avigation easements. The majority of property in that area is unused land, Interstate 89, or commercial developments. Those portions still outstanding can be seen in **Figure 3-2.**

Recommendation: Obtain avigation easements for Runway 25 RPZ.

3.6.10 Customs and Border Patrol

Currently, Customs and Border Patrol (CBP) services are not available at LEB. The closest CBP station is located at the Burlington International Airport in Burlington, Vermont, approximately two hours away. CBP will provide coverage to LEB only in the event of an emergency. The FBO has inquired about obtaining CBP service at LEB, as several pilots and passengers have asked as well. There is a cost associated with CBP service and it may only be available during certain hours of the day.

Recommendation: Consider a small space in the Terminal or FBO buildings to accommodate CBP service. Due to the low level of activity at LEB, the CBP would require the Airport to provide all of the capital and operational funding; however, this funding could be cost-shared and/or passed on to users.

AVIGATION EASEMENT:
- RUNWAY LOCATION AND ELEVATIONS FROM FAA AVN DATASHEET.
  - RUNWAY 7 ELEVATION: 562.5'
  - RUNWAY 18 ELEVATION: 563.5'
- HORIZONTAL SURFACE ELEVATION BASED ON FAA AVN DATASHEET AIRPORT ELEVATION PLUS 150'.
  - AIRPORT ELEVATION: 603.3'
  - HORIZONTAL SURFACE ELEVATION: 753.3'.

AVIGATION EASEMENT
RUNWAY PROTECTION ZONE
AVIGATION EASEMENT
RUNWAY PROTECTION ZONE
AIRPORT PROPERTY
CITY OF LEBANON
AVIGATION EASEMENT
CITY OF LEBANON
RUNWAY PROTECTION ZONE
RUNWAY PROTECTION ZONE
AVIGATION EASEMENT

SCALE
0 2000 4000
FEET

AIRPORT PROPERTY LINE
EXISTING EASEMENT

Image Source: USGS 24k Quadrangle

Figure 3-1
Easement Declaration

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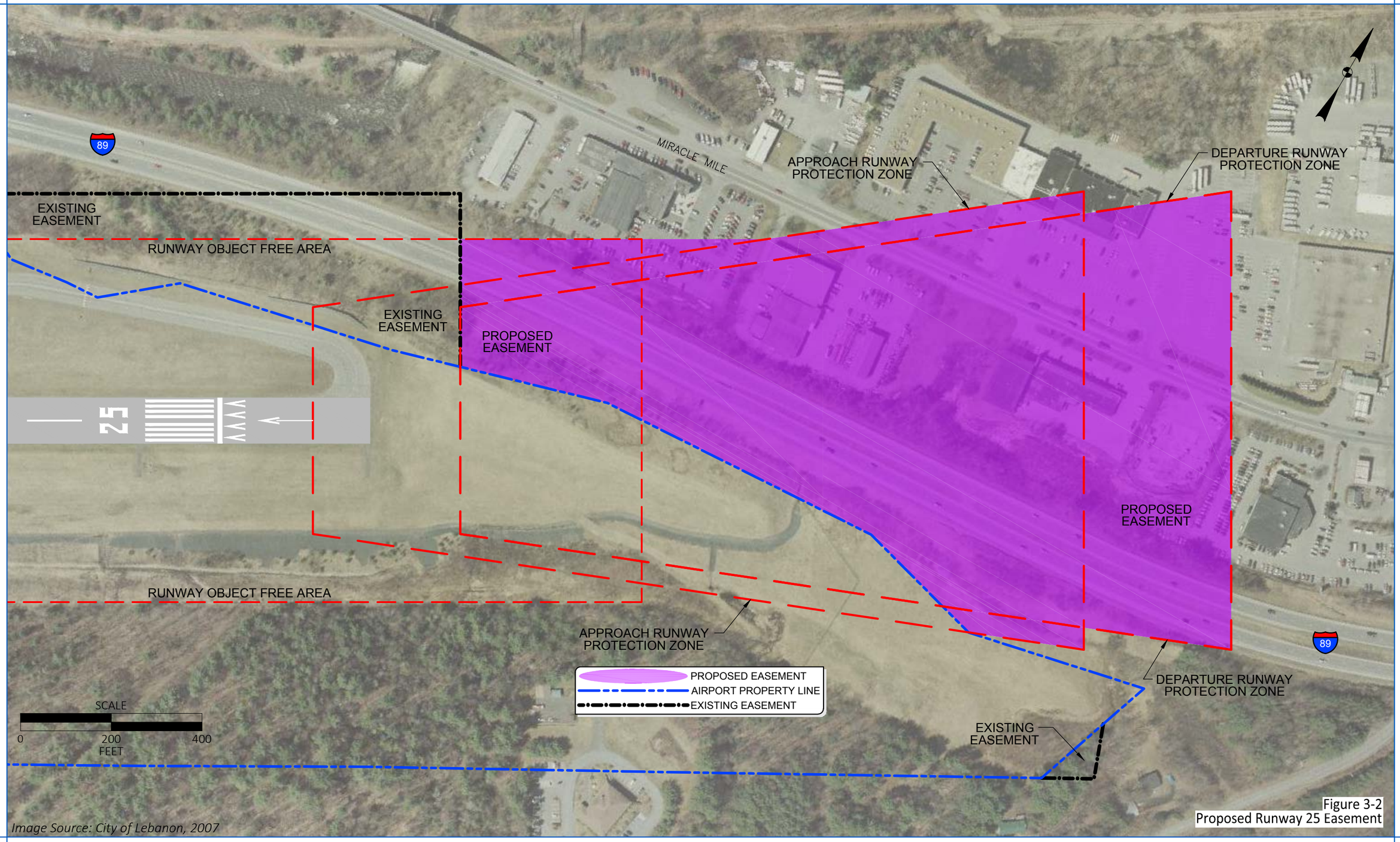

Image Source: City of Lebanon, 2007

Figure 3-2
Proposed Runway 25 Easement

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3.6.11 Non-Aviation Use Areas

In addition to this Comprehensive Airport Master Plan, LEB has simultaneously been engaged in an FAA-funded Airport Property Study. The purpose of this study is to investigate parcels of land that were separated from the Airport by the City over time, including those that are currently home to commercial/industrial enterprises. At issue is whether the City received prior approval from the FAA to release those lands and whether the Airport received compensation for those properties as required by FAA Grant Assurances.

While the Property Study has not yet been resolved in its entirety, preliminary FAA suggestions for resolution include, but are not limited to, fair market value payments to the Airport and deeding the lands back to the Airport. Since LEB currently struggles to be financially self-sustaining, payment for these lands and/or revenue from these non-aviation lease areas would significantly increase the Airport's revenue-generating capabilities. This is particularly so since there are limited opportunities for non-aviation developments at LEB given the constraints to development on and around the Airport (terrain, trees, wetlands, etc.).

Recommendation: Continue to seek resolution from the Airport Property Study.

Chapter 4
Airport Alternatives

4.0 INTRODUCTION

The Alternatives chapter assessed the recommended facility improvements identified in Chapter 3, *Demand Capacity and Facility Requirements*, against a number of evaluation factors to determine if the recommended improvements do indeed enhance the operation of the airport, while meeting safety requirements, accommodating future demand, and minimizing environmental and community impacts. The evaluation factors used to compare development options were selected based on specific considerations associated with Lebanon Municipal Airport (LEB) including its recently adopted Vision Statement below:

"The Lebanon Airport will be a community asset with optimized air service through financially self-sustaining means, while minimizing negative environmental and social impacts."

The identification and evaluation of the airport development alternatives are outlined in the following sections:

- Summary of Airport Facility Requirements
- Development Constraints and Considerations
- Runway Alternatives
- Taxiway Alternatives
- Landside Alternatives
- Recommended Development Strategy

4.1 SUMMARY OF AIRPORT FACILITY REQUIREMENTS

The previous chapter identified and quantified the necessary improvements that should be addressed at Lebanon Municipal Airport over the 20-year planning period. These improvements are consistent with the recommendations of earlier planning documents including the previous Conceptual Airport Master Plan from 2010 and Runway Safety Area (RSA) Determinations from 2010 and 2000. The following is a summary of the key airport facility requirements as discussed in Chapter 3, *Demand Capacity and Facility Requirements*:

<u>Airside Requirements:</u>

- Maintain a minimum unrestricted runway length of 5,500'
- Improve three non-standard RSAs on Runways 7, 18, and 25

- Address Runway Object Free Area (ROFA) terrain issues along Runways 25 and 36
- Reconstruct Runway 7-25 first and then Runway 18-36; include strengthening as part of reconstruction efforts
- Reconstruct and strengthen parallel taxiway to Runway 7-25; emphasis on Taxiway B
- Construct full parallel taxiway to Runway 18-36 and strengthen existing partial parallel taxiway

4.2 DEVELOPMENT CONSTRAINTS AND CONSIDERATIONS

In order to address the Airport's current and future needs, potential alternatives for future development were considered. The challenge in creating these alternatives was finding an appropriate balance between Federal Aviation Administration (FAA) regulations and safety requirements, aircraft operational needs, and minimizing negative environmental and social impacts going forward. Additionally, the Airport is essentially land-locked on three of its four runway ends due to steep grade changes, property boundary limits, and the location of Interstate 89 and Airpark Road, thus making it difficult to create financially-feasible alternatives that meet the Airport's Vision Statement. **Figure 4-1** presents the development constraints, which are further detailed in the following sections:

Wetland Areas: The Environmental Assessment completed in 2013 provided a delineation of the wetland areas found on Airport property. The majority of those wetland areas flank Runway 18-36, with emphasis on the Runway 36 approach end. Having wetlands present affects the location, duration, and environmental impact of proposed constructions projects. Any effect that future development would have on these areas must be properly permitted and mitigated in an effort to reduce their impacts, which can increase the cost and timeline of development initiatives.

Land Use and Terrain: Development at LEB must consider neighboring land uses, which include commercial and light industrial activity along Airpark Road, portions of Interstate 89 along Runways 18 and 25, significant grade changes (steep inclines or declines) to all four runway ends, and residential neighborhoods along aircraft flight paths. These features reduce the number of feasible airport alternatives as their presence makes development efforts more complex and, in tandem, require more financial resources.

Available Funding and Grant Cycles: Among the stipulations for LEB to receive federal funding from the FAA is the local contribution that must occur, which is approximately 5% of the total project cost. Typically, the FAA covers 90% of the cost, with the State contributing another 5% toward development. The remaining local share of airport development is funded through the use of Passenger Facility Charges (PFCs) and from the City of Lebanon's General Fund. The availability of local funds often depends on the fiscal capacity of the City and can vary from year to year. These monetary consideration may influence the progression and timing of the proposed development described in this chapter.

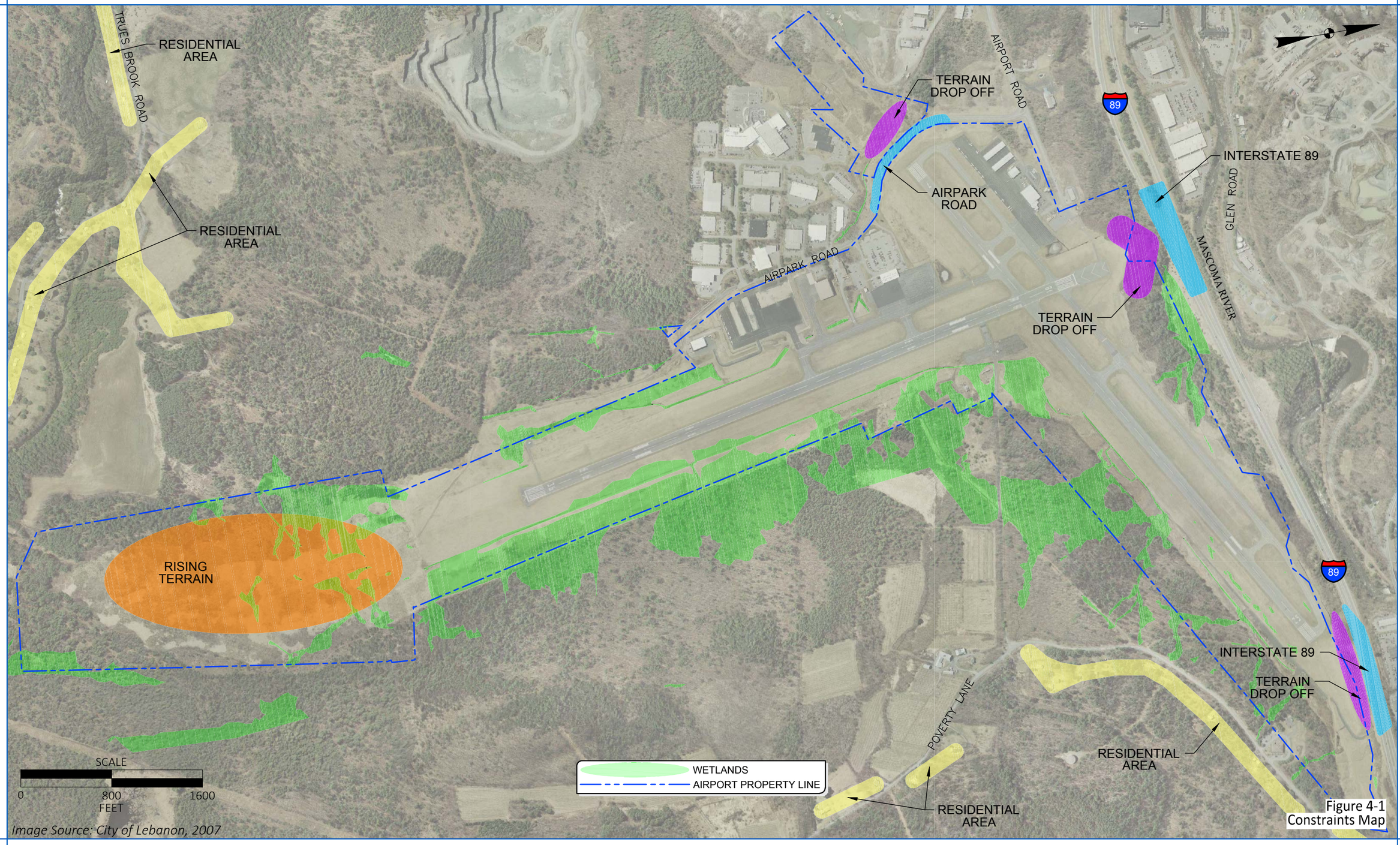

Image Source: City of Lebanon, 2007

Figure 4-1
Constraints Map

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4.3 RUNWAY ALTERNATIVES

A main emphasis of this Alternatives chapter is a focus on runway safety. The most pressing components of the facility requirements analyses in this area include maintaining an unrestricted runway length of 5,500' and improving the three non-standard RSAs on Runways 7, 18, and 25. This section provides options to meet the operational and safety needs of the runway and RSA environment, and includes the following elements for each development alternative:

- Runway Length: Based on data and analyses from this Comprehensive Master Plan, the Conceptual Master Plan (2010), and RSA Determinations from the FAA (2000, 2010), a minimum unrestricted runway length of 5,500' is needed to accommodate the type of aircraft already operating at LEB today. The majority of these aircraft fall into the C-II category, although there is a multitude of aircraft from more demanding categories presently operating there as well. Various analyses show that longer runway lengths are well justified; however. the physical and financial difficulty of achieving significantly longer runways combined with public concern over environmental impacts, results in a recommendation to maintain at least 5,500 feet of unrestricted runway length.

  Currently, Runway 7-25 measures 5,496' in length, while Runway 18-36 measures 5,200'. The runway alternatives were developed with the intention of maintaining a minimum length of 5,500' at LEB in accordance with previous planning documents and determinations. In consideration of feedback received during the public outreach process, the runway development alternatives included options for decreasing the length of one runway as a compromise to increasing the length of the other. As such, the increase was used to accommodate RSA standards at the expense of existing runway length elsewhere.

  Modifications to runway length were depicted using relocated thresholds (moving the physical end of the runway) or displaced thresholds (physical runway end remains, but the landing point is relocated further down the runway), and the corresponding declared distances (landing length, takeoff length, etc.) were shown for each of the alternatives.

- Runway Safety Area: The standard RSA dimensions for all runway ends at LEB are 500' wide and 1,000' long. Currently, only the Runway 36 approach end meets this standard, with Runways 7, 18, and 25 being non-standard and requiring significant improvements. Given the FAA's emphasis on safety in recent years[1], and in light of public perception of past proposed development options, the runway alternatives presented in this section sought to strike a balance between those differing interests to move forward with the necessary RSA improvements.

[1] Per FAA Order 5200.8, *Runway Safety Area Program*, which stipulated RSA compliance deadline by 2015.

- Engineered Materials Arresting System (EMAS): The engineered materials in an EMAS are best described as concrete blocks injected with air bubbles. These blocks are installed at the end of a runway and are designed to collapse under the weight of an aircraft to safely stop it without injury to persons on board and with minimal structural damage to the aircraft. Because of the safety features involved, a standard EMAS provides a level of safety that is equivalent to an RSA built to dimensional standards. These systems were suggested as an alternative to traditional RSA designs, as they require less of a development "footprint" but still comply with FAA safety standards.

4.3.1 Runway Alternative Evaluation Criteria

A set of evaluation criteria was developed to provide assessment of the various factors affecting future development decisions. The criteria were intended to assess both the qualitative and quantitative features of each runway alternative, and are defined as follows:

- **Airport Vision:** Does the alternative support the Airport's established Vision Statement?

- **FAA Safety Standards:** Does the alternative meet the design standards of FAA Advisory Circular 150/5300-13A, *Airport Design*, to the maximum extent feasible?

- **Operational Requirements:** Does this alternative meet the operational requirements of aircraft currently operating at LEB today and those forecast to use the airport in the future?

- **Environmental Impacts:** What are the potential social and environmental impacts associated with implementation of the alternative? Does the alternative avoid, minimize, or mitigate environmental or social impacts?

- **Development Costs**: Does the alternative have reasonable development costs in comparison to other alternatives that achieve the same goal?

Each of the evaluation factors above, with the exception of Development Costs, were scored on a scale of 0 to 5, with a value of 0 being the worst and a value of 5 being the best. Development Costs were compared according to their dollar estimates. It is noted that although 'Environmental Impacts' is a typical criteria used that this is very similar to a key portion of the established Vision Statement.

4.3.2 Runway Alternative Identification

The following runway alternatives were developed to meet the needs of LEB and the City of Lebanon:

- **Runway Alternative 1: (No Build)**
  - No changes would be made to the runways or RSAs.

- **Runway Alternative 2: (Standard RSAs)**
  - This alternative suggests implementing standard RSAs measuring 500' wide and 1,000' long to each of the three non-standard runway ends.

- **Runway Alternative 3: (Standard EMAS)**
  - This alternative proposes installation of standard EMAS systems[2] to each of the three non-standard runway ends. Each of the EMAS beds would measure 135' wide and 500' long.

- **Runway Alternative 4: (Non-Standard EMAS)**
  - The fourth alternative advocates for the installation of non-standard EMAS systems to each of the three non-standard runway ends.[3] The EMAS beds would measure 135' wide and between 240'-300' long.

- **Runway Alternative 5: (EMAS and Thresholds)**
  - This alternative suggests a combination of four non-standard EMAS systems, two threshold displacements, and two threshold relocations.

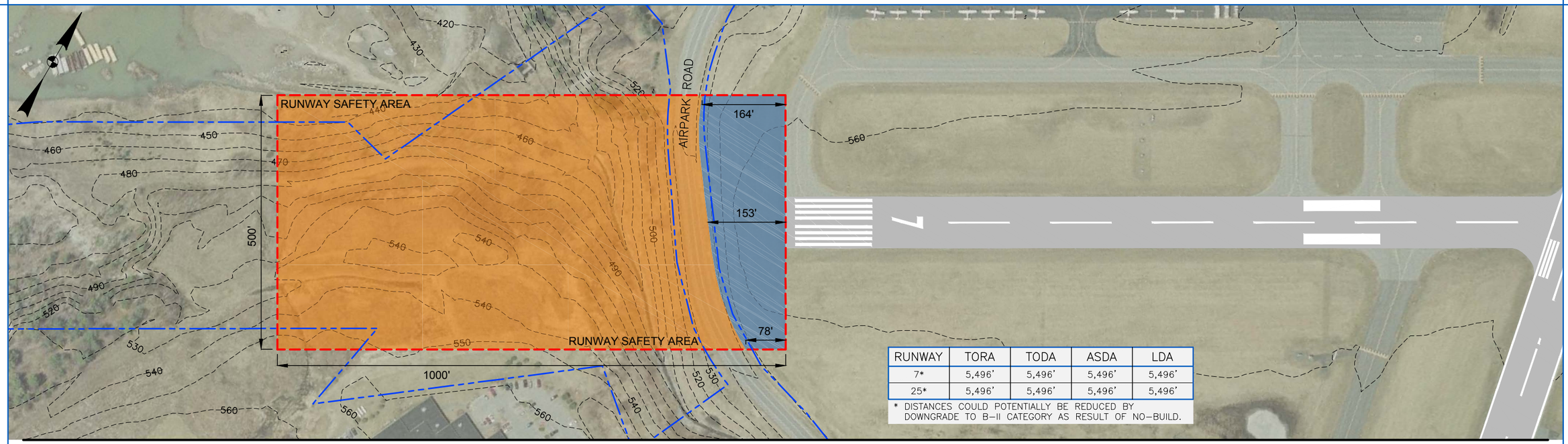
- **Runway Alternative 6: (EMAS and Thresholds)**
  - This alternative suggests a combination of two non-standard EMAS systems, two threshold displacements, and two threshold relocations.

The alternatives above are detailed and evaluated in the next sections.

4.3.3 Runway Alternative 1 (No Build)

The No Build alternative offers no change to the existing runways and RSAs at LEB. This existing airport layout can be seen in **Figures 4-2 and 4-3.**

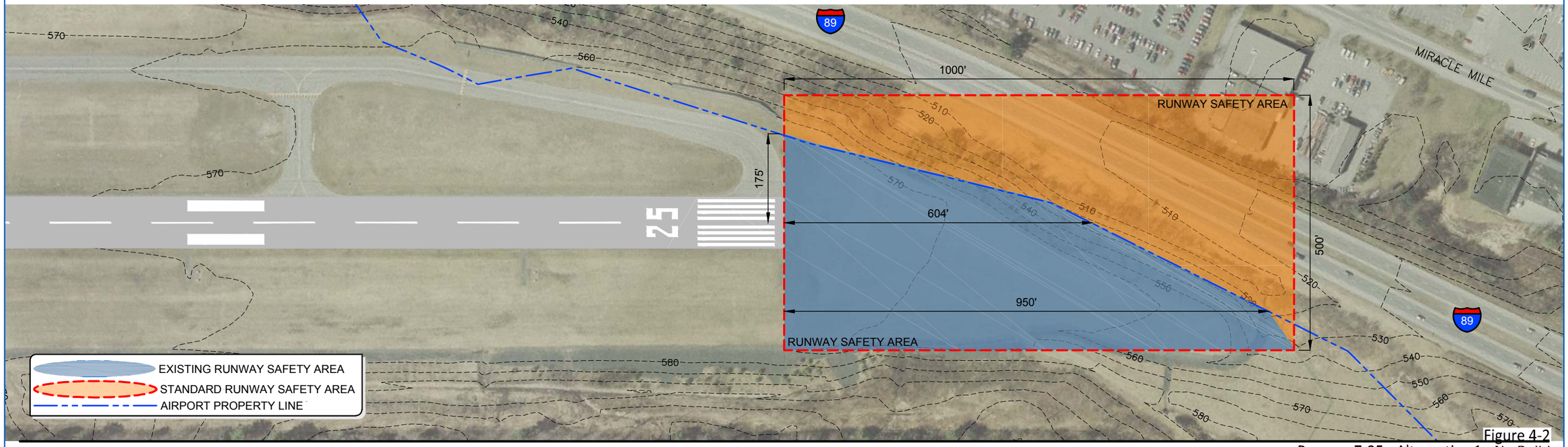
[2] Standard EMAS systems are defined as having the capability to stop the most demanding aircraft (in terms of weight and tire pressure) operating at an airport at a speed of 70 knots. Generally speaking, the more demanding an aircraft is the longer the EMAS bed will need to be to accommodate the 70 knot threshold.
[3] Non-standard EMAS systems are defined as those capable of stopping the most demanding aircraft at speeds less than 70 knots. They are typically shorter in length due to the slower threshold speed.



RUNWAY	TORA	TODA	ASDA	LDA
7*	5,496'	5,496'	5,496'	5,496'
25*	5,496'	5,496'	5,496'	5,496'

* DISTANCES COULD POTENTIALLY BE REDUCED BY DOWNGRADE TO B-II CATEGORY AS RESULT OF NO-BUILD.

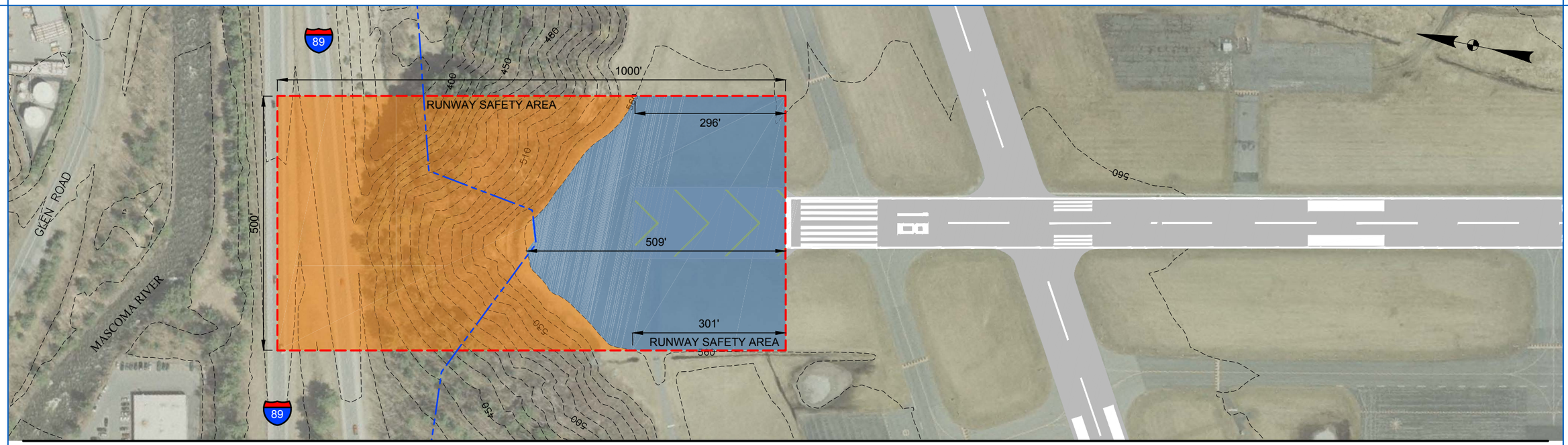
RUNWAY 7



RUNWAY 25

Image Source: City of Lebanon, 2007

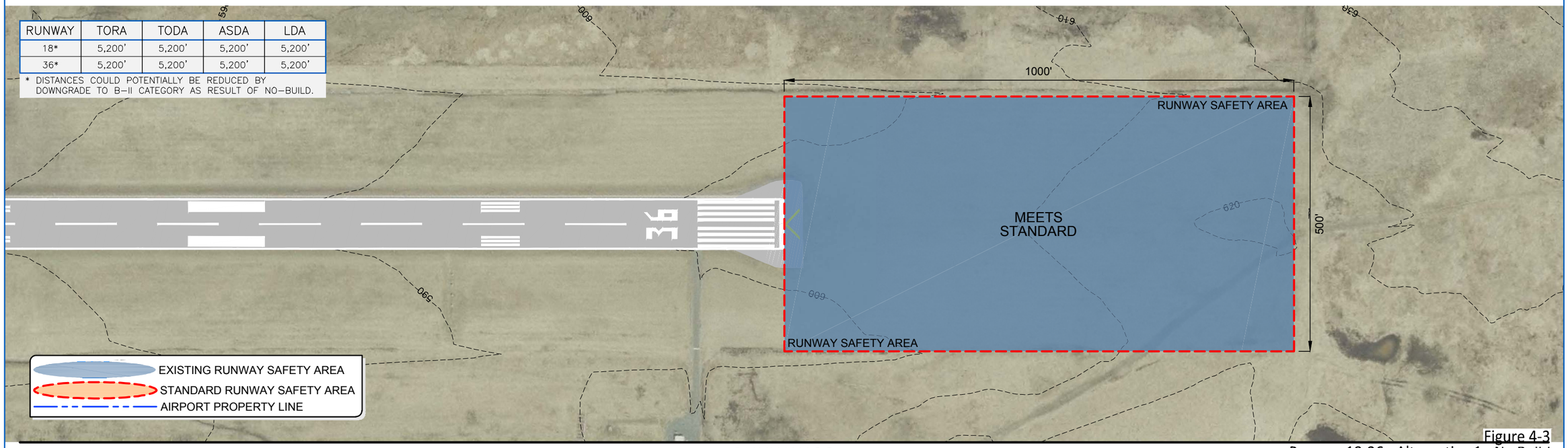
Figure 4-2
Runway 7-25 - Alternative 1 - No Build



RUNWAY 18

RUNWAY	TORA	TODA	ASDA	LDA
18*	5,200'	5,200'	5,200'	5,200'
36*	5,200'	5,200'	5,200'	5,200'

* DISTANCES COULD POTENTIALLY BE REDUCED BY DOWNGRADE TO B-II CATEGORY AS RESULT OF NO-BUILD.



RUNWAY 36

Image Source: City of Lebanon, 2007

Figure 4-3
Runway 18-36 - Alternative 1 - No Build

SCALE
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FEET

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Runway Alternative 1 was assessed against the five evaluation factors; the results are below:

- **Airport Vision:** Alternative 1 does not meet the Airport's Vision Statement as it fails to provide or foster means by which the Airport can become a financially self-sustaining community asset. This alternative would result in no federal funding for needed airport maintenance and improvement due to the fact that it declines to make any change to improve safety and meet FAA's regulatory requirements. Further, as a result of the No Build, the FAA may enforce mandatory declared distance penalties for the three non-standard RSAs. Such action would effectively reduce the ability of C-II aircraft to operate at LEB and significantly impact airport revenue received from those operations, including leases, landing fees, and fuel sales. **Score = 0**

- **FAA Safety Standards:** Alternative 1 does not meet nor attempt to meet FAA safety and design standards related to RSA dimensions for C-II runways. **Score = 0**

- **Operational Requirements:** This alternative meets the operational needs of C-II aircraft operating at LEB today as it pertains to a minimum runway length of 5,500', however if the FAA institutes declared distances it would not. **Score = 5 (with FAA imposed declared distances = 2)**

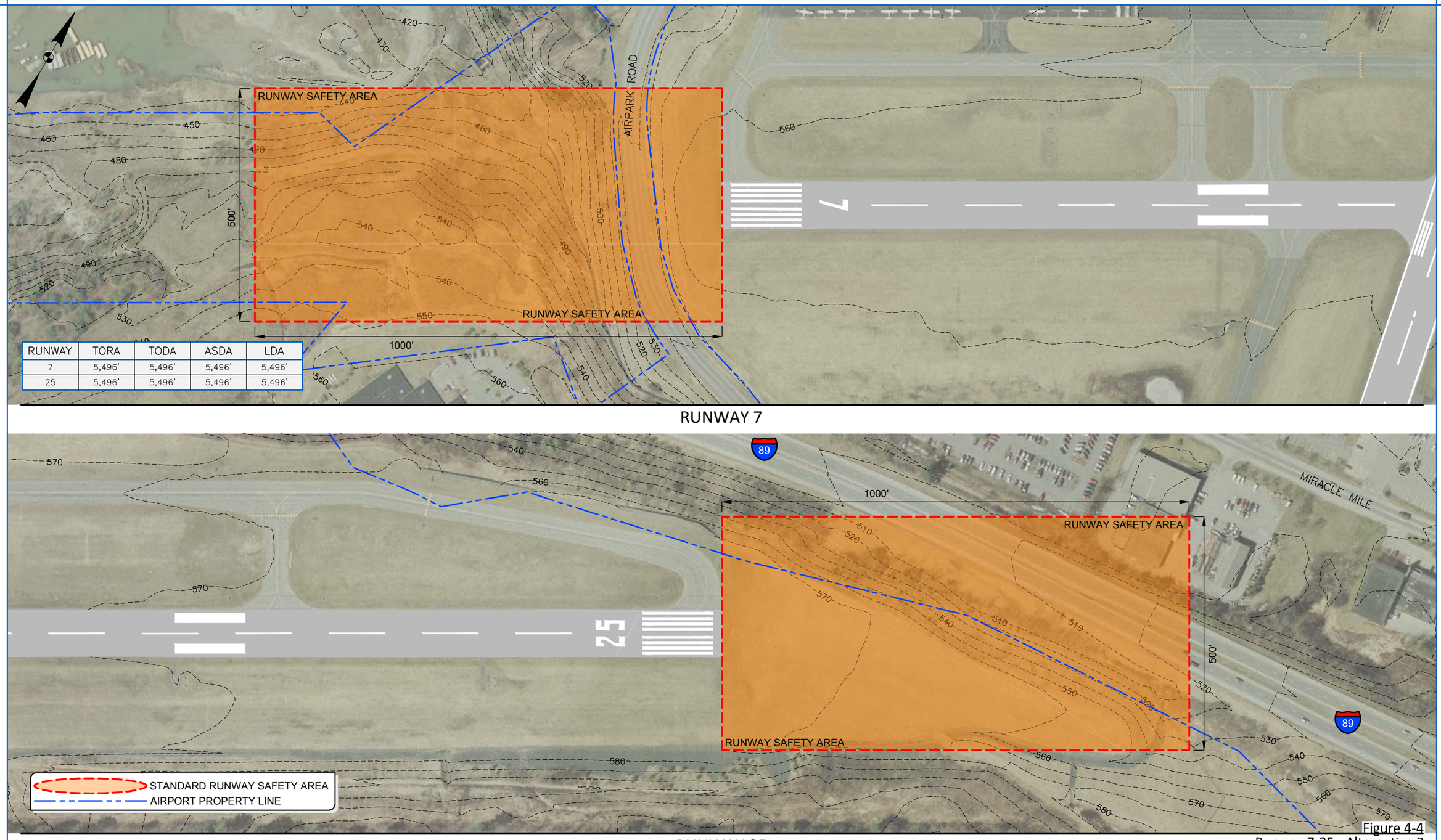
- **Environmental Impacts:** This alternative does not incur any typical environmental impacts; however, some level of social impact would be seen from the reduction in business use of the airport and a corresponding reduction in associated jobs. **Score = 4**

- **Development Costs**: There are no development costs associated with the No Build.

4.3.4 Runway Alternative 2 (Standard RSAs)

Runway Alternative 2 (**Figures 4-4 and 4-5**) proposes standard safety areas to Runways 7, 18, and 25. This would require implementation of full RSA dimensions off each of the three runway ends. Each area would measure 500' wide and 1,000' long and would be cleared of obstacles and graded to safely accommodate overruns and undershoots by C-II aircraft, as well as emergency and maintenance vehicles. Runway 36 would remain unchanged as it already meets RSA standards.

Standard RSAs, when achievable, are always the FAA's preferred option.



RUNWAY	TORA	TODA	ASDA	LDA
7	5,496'	5,496'	5,496'	5,496'
25	5,496'	5,496'	5,496'	5,496'

Figure 4-4
Runway 7-25 - Alternative 2

Image Source: City of Lebanon, 2007

SCALE
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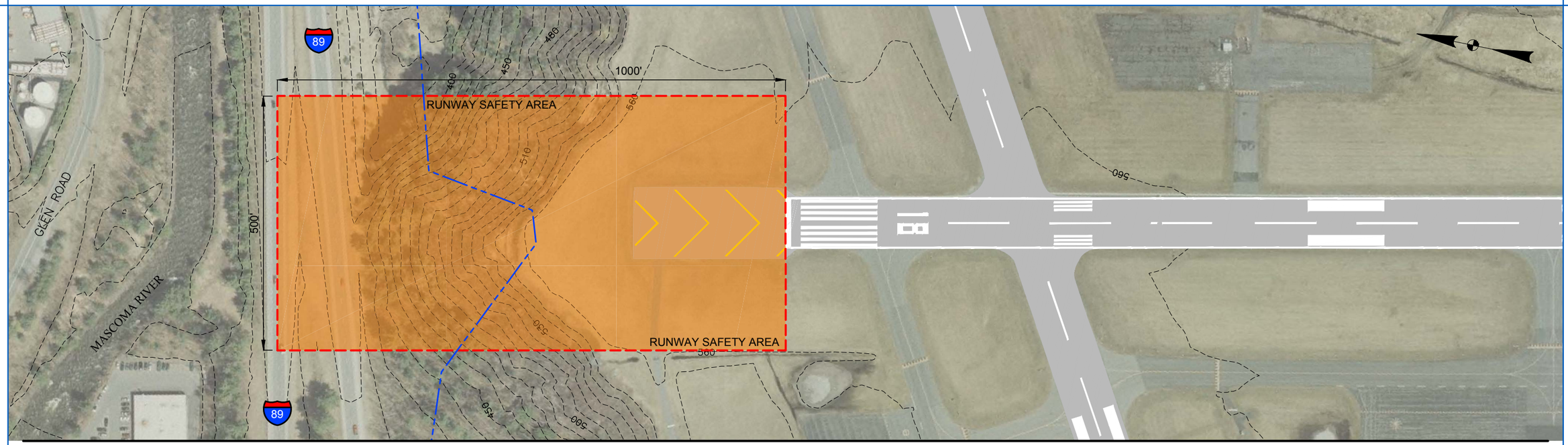
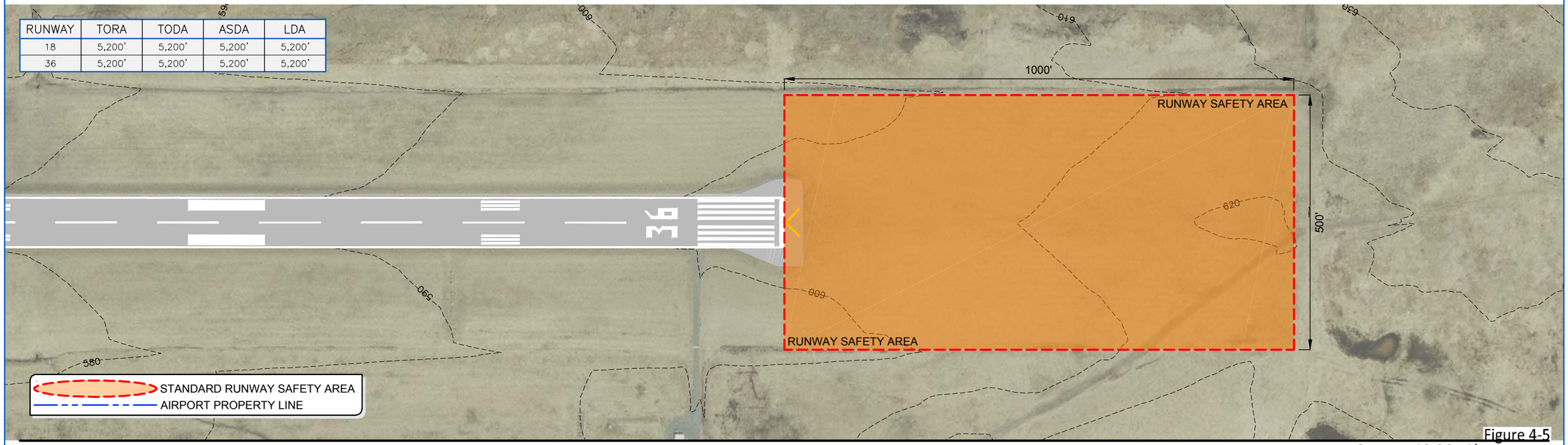
FEET



RUNWAY 18

RUNWAY	TORA	TODA	ASDA	LDA
18	5,200'	5,200'	5,200'	5,200'
36	5,200'	5,200'	5,200'	5,200'



RUNWAY 36

Figure 4-5
Runway 18-36 - Alternative 2

Image Source: City of Lebanon, 2007

SCALE
0 200 400
FEET

Runway Alternative 2 was assessed as follows:

- **Airport Vision:** This alternative does not meet the Airport's Vision Statement given the substantial social and environmental impacts that would result from alterations to the surrounding landscape, such as tree clearing and relocating Interstate 89. Moreover, these actions and impacts would significantly increase the development costs associated with future airport development and places a burden on the City of Lebanon taxpayers, especially as it relates to programming other capital improvements within the City. As such, Alternative 2 is not in accordance with the airport's mission to become a financially self-sustainable community asset and minimize environmental impacts. **Score = 0**

- **FAA Safety Standards:** Alternative 2 meets FAA safety and design standards related to RSA dimensions for C-II runways. **Score = 5**

- **Operational Requirements:** This alternative meets the operational needs of C-II aircraft operating at LEB today as it pertains to a minimum runway length of 5,500'. **Score = 5**

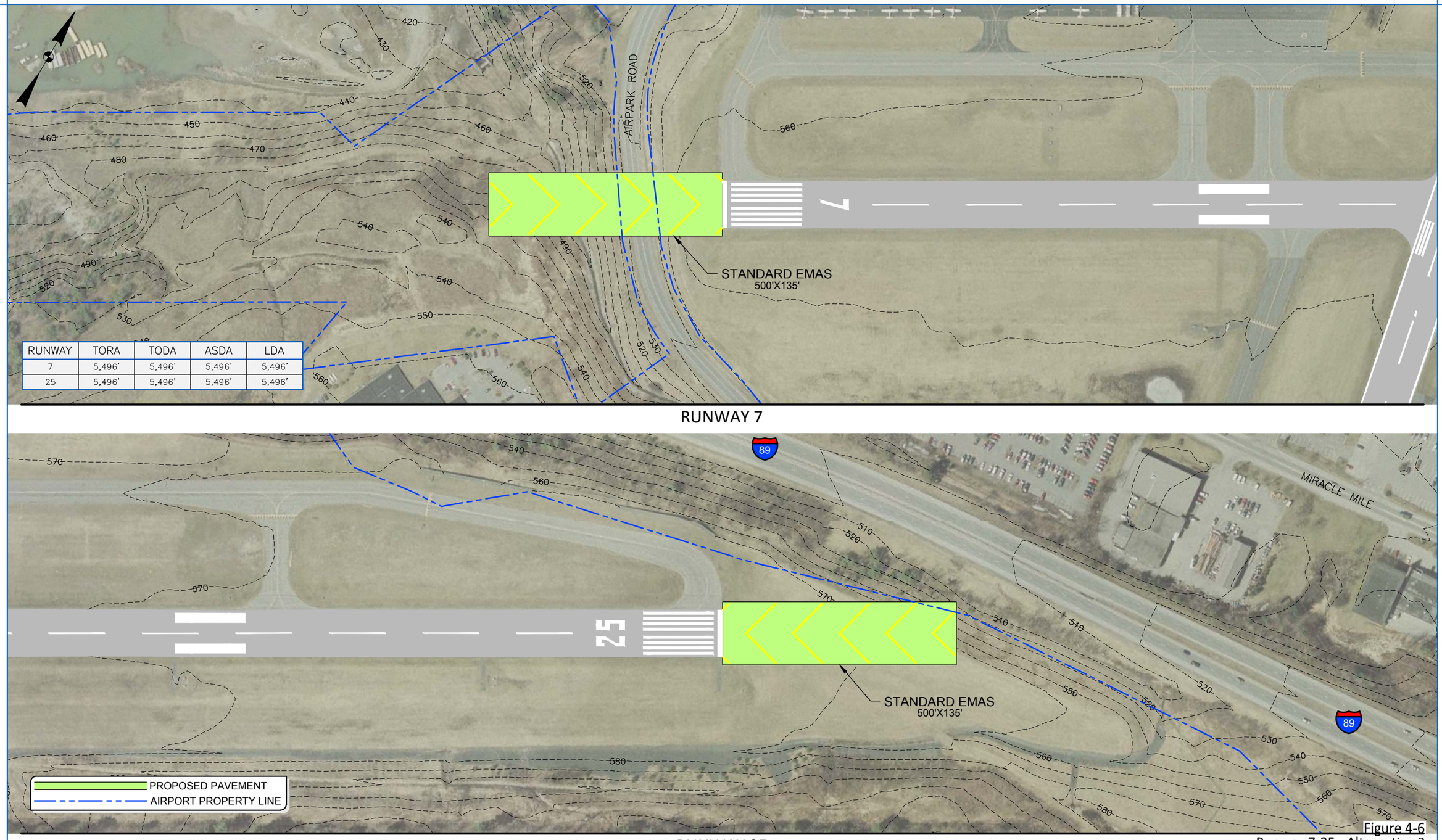
- **Environmental Impacts:** This alternative would require multiple acres of tree clearing and extensive quantities of fill for large areas of earthwork. Airpark Road, Interstate 89, and the businesses located along those routes, would have to be demolished and relocated. Alternative 2 does not attempt to avoid or mitigate environmental and social impacts, as it places an emphasis on safety that supersedes such considerations. **Score = 0**

- **Development Costs**: The estimated cost of development would be greater than $105,000,000.

Standard RSAs as described in this alternative are not considered feasible.

4.3.5 Runway Alternative 3 (Standard EMAS)

Runway Alternative 3 (**Figures 4-6 and 4-7**) suggests installing standard EMAS beds to Runways 7, 18, and 25. Each bed would measure 135' wide and 500' long, and would be capable of stopping most C-II aircraft or smaller at 70 knots, which meets FAA's regulatory RSA requirement. Runway 36 would remain unchanged as it already meets RSA standards.

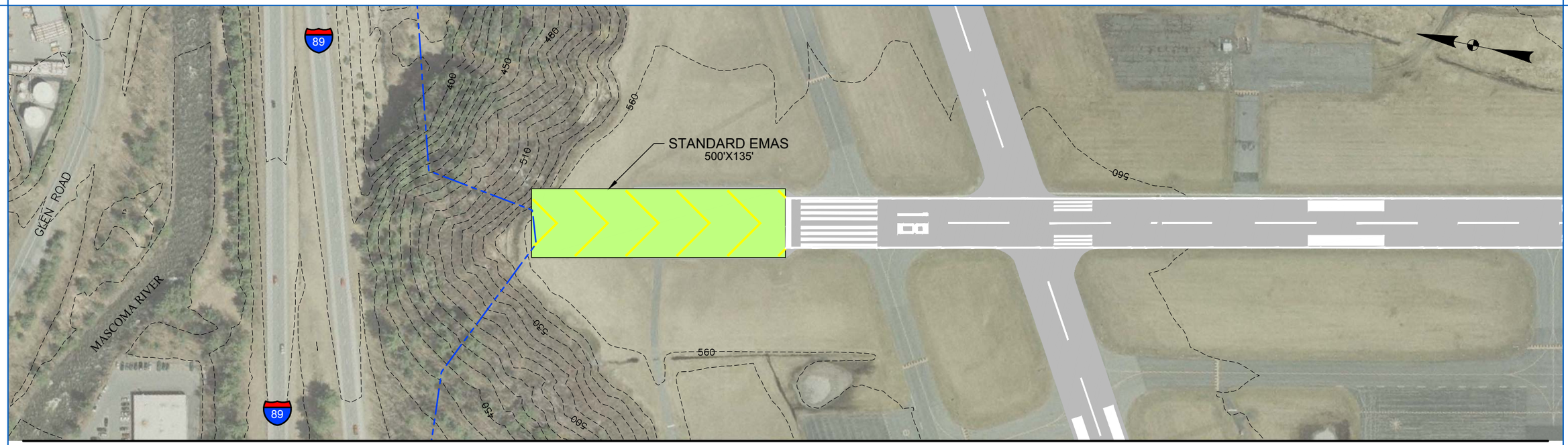


RUNWAY	TORA	TODA	ASDA	LDA
7	5,496'	5,496'	5,496'	5,496'
25	5,496'	5,496'	5,496'	5,496'

SCALE
0 200 400
FEET

Figure 4-6
Runway 7-25 - Alternative 3

Image Source: City of Lebanon, 2007



RUNWAY	TORA	TODA	ASDA	LDA
18	5,200'	5,200'	5,200'	5,200'
36	5,200'	5,200'	5,200'	5,200'

Image Source: City of Lebanon, 2007

Figure 4-7
Runway 18-36 - Alternative 3

SCALE
0 200 400
FEET

Alternative 3 was assessed below:

- **FAA Safety Standards:** Per Advisory Circular 150/5220-22B, *Engineered Materials Arresting System*, Alternative 3 meets FAA safety and design standards related to RSA dimensions for C-II runways. **Score = 5**

- **Operational Requirements:** This alternative meets the operational needs of C-II aircraft operating at LEB today as it pertains to a minimum runway length of 5,500'. **Score = 5**

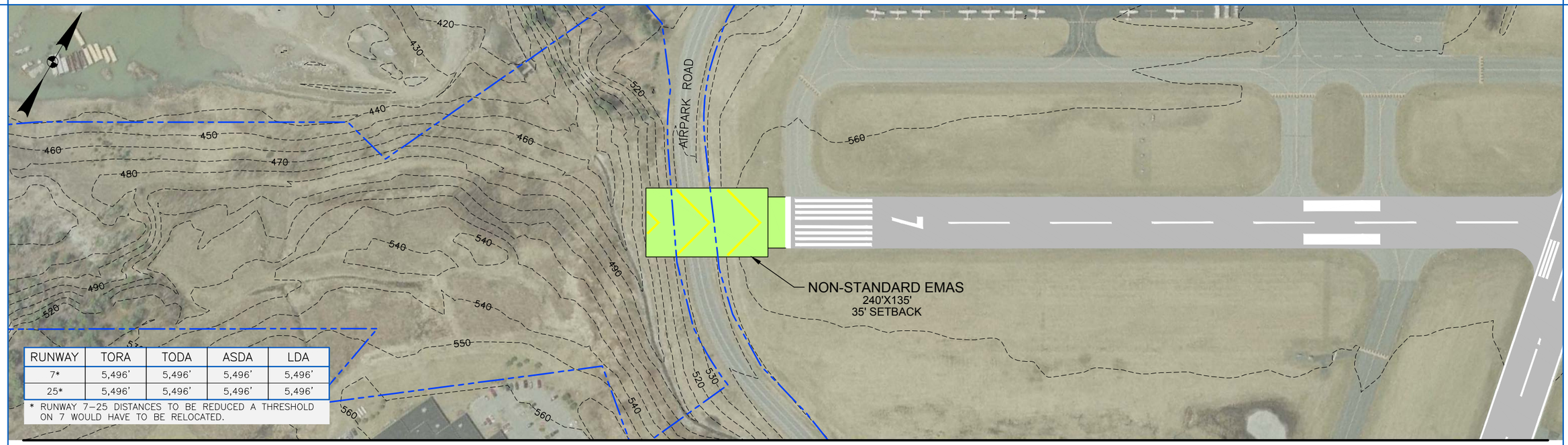
- **Environmental Impacts:** As mentioned under the Airport Vision criterion, the standard EMAS beds in Alternative 3 minimize environmental and social impacts compared to the standard RSAs. However, there will still be impacts given the steep terrain on each end of Runway 7-25, as well as the location of Airpark Road on Runway 7. **Score = 3**

- **Development Costs**: The estimated cost of development is $68,700,000, not including property acquisition.

4.3.6 Runway Alternative 4 (Non-Standard EMAS)

Runway Alternative 4 (**Figures 4-8 and 4-9**) proposes installing non-standard EMAS beds to Runways 7, 18, and 25. The EMAS beds for Runway 7-25 would measure approximately 135' wide by 240' long and would be capable of stopping most C-II aircraft or smaller at speeds of 50-65 knots. The EMAS to Runway 18 would measure 135' wide and 300' long and would also be capable of stopping most C-II aircraft or smaller at speeds of 50-65 knots. Runway 36 would remain unchanged as it already meets RSA standards. Alternative 4 was assessed as follows:

- **Airport Vision:** Alternative 4 partially supports the Airport's Vision Statement. The reduced size of the non-standard EMAS beds means less environmental and social impacts are incurred as part of this alternative's implementation. The smaller beds also imply smaller costs, as compared to the standard EMAS beds described in Alternative 3. The area of most concern and least likely to adhere to the Airport's mission is off the Runway 7 end, where steep terrain and Airpark Road are located. These features would require much more construction, extensive fill, and greater costs associated with the Runway 7 EMAS, including temporary closure of the Airport's only access road. Overall, Alternative 4 somewhat conforms to the Airport's Vision as it recognizes finding a balance between safety requirements, maintaining the Airport as an asset, and significantly minimizing impacts to the community. **Score = 3**



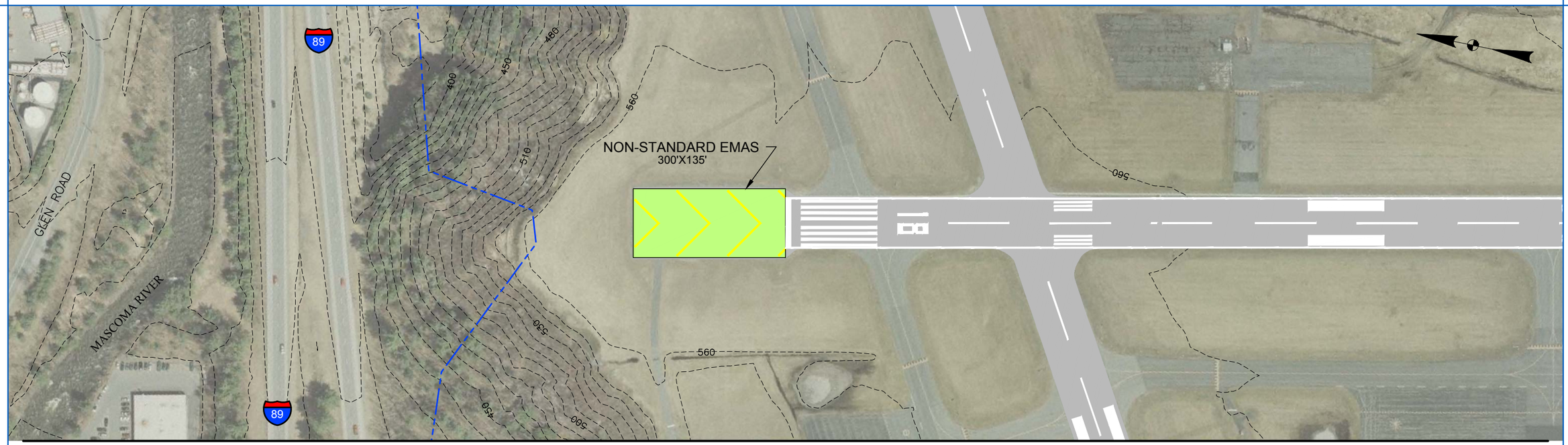
RUNWAY	TORA	TODA	ASDA	LDA
7*	5,496'	5,496'	5,496'	5,496'
25*	5,496'	5,496'	5,496'	5,496'

* RUNWAY 7–25 DISTANCES TO BE REDUCED A THRESHOLD ON 7 WOULD HAVE TO BE RELOCATED.

Image Source: City of Lebanon, 2007

SCALE
0 200 400
FEET

Figure 4-8
Runway 7-25 - Alternative 4



RUNWAY	TORA	TODA	ASDA	LDA
18	5,200'	5,200'	5,200'	5,200'
36	5,200'	5,200'	5,200'	5,200'

Figure 4-9
Runway 18-36 - Alternative 4

Image Source: City of Lebanon, 2007

SCALE
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FEET

- **FAA Safety Standards:** Per Advisory Circular 150/5220-22B, *Engineered Materials Arresting System*, Alternative 4 partially meets FAA safety and design standards related to RSA dimensions for C-II runways. While the non-standard EMAS beds are an improvement to the existing safety areas, they do not provide the same level of safety as a standard RSA or standard EMAS would. This is particularly true given the lack of undershoot protection to the busiest runways. **Score = 3**

- **Operational Requirements:** This alternative meets the operational needs of C-II aircraft operating at LEB today as it pertains to a minimum runway length of 5,500'. **Score = 5**

- **Environmental Impacts:** As described in the Airport Vision criterion, concerns for social and environmental impacts are centered on Runway 7. There are significant grades changes off the end of the runway that would require extensive fill to remedy. In addition, Airpark Road, which serves as the main access point for both LEB and the adjacent industrial park, would have to be relocated and which creates additional disturbance elsewhere. These aspects would all require substantial construction efforts at significant cost. **Score = 3**

- **Development Costs**: The engineers' estimate of probable costs is $34,500,000, not including property acquisition.

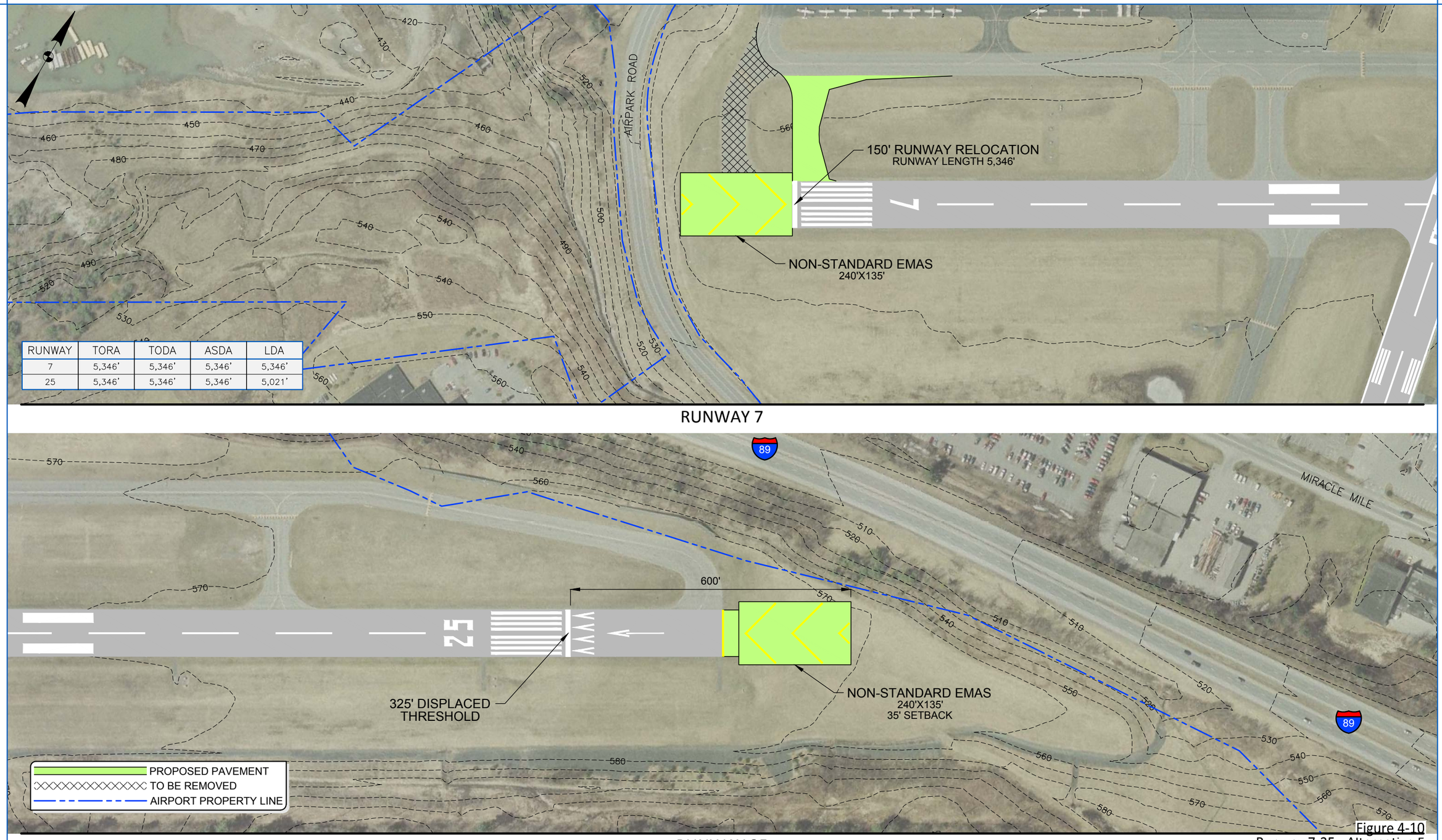
4.3.7 Runway Alternative 5 (EMAS and Thresholds)

Runway Alternative 5 (**Figures 4-10 and 4-11**) suggests implementing a combination of non-standard EMAS beds and threshold displacements or relocations to improve the RSAs at LEB. The actions for each of the runway ends under this option are as follows:

- Runway 7: the threshold would be relocated approximately 150' to the east in order to accommodate a non-standard EMAS measuring 135' wide and 240' long.

- Runway 25: the threshold would be displaced approximately 325' to the west in order to accommodate a non-standard EMAS measuring 135' wide and 240' long. The total distance from the far end of the EMAS to the displaced landing threshold (undershoot protection) would measure 600'.

- Runway 18: the threshold would be displaced approximately 300' south to accommodate a non-standard EMAS measuring 135' wide and 300' long. The total distance from the far end of the EMAS to the runway threshold (undershoot protection) would measure 600'.



RUNWAY	TORA	TODA	ASDA	LDA
7	5,346'	5,346'	5,346'	5,346'
25	5,346'	5,346'	5,346'	5,021'

SCALE
0 200 400
FEET

Figure 4-10
Runway 7-25 - Alternative 5

Image Source: City of Lebanon, 2007

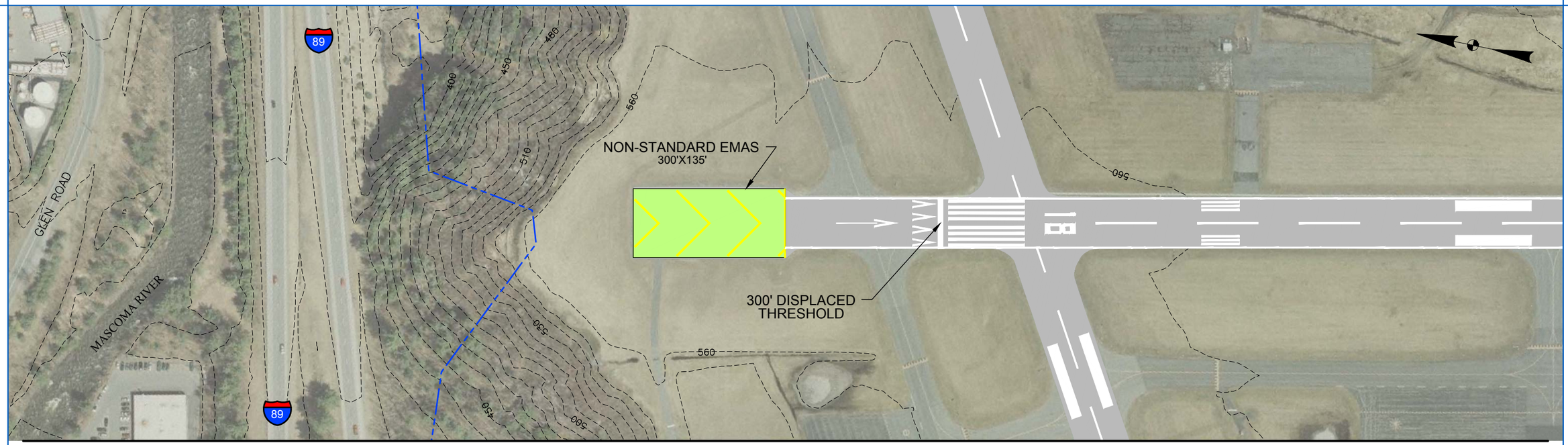


Figure 4-11
Runway 18-36 - Alternative 5

Image Source: City of Lebanon, 2007

SCALE
0 200 400
FEET

- Runway 36: the threshold would be relocated approximately 600' south, and a non-standard EMAS measuring 135' wide and 300' long would be installed. The total distance from the far end of the clearway to the runway threshold (undershoot protection) would measure 400'.

The assessment of Runway Alternative 5 is below:

- **Airport Vision:** Alternative 5 mostly supports the Airport's Vision Statement. The reduced size of the non-standard EMAS beds means less environmental and social impacts are incurred as part of this alternative's implementation. The smaller beds also reduce costs, as compared to the standard EMAS beds described in Alternative 3. Additionally, relocation of the Runway 7 threshold eliminates the need to relocate Airpark Road and provide extensive fill as described in Alternative 4.

  The area of most concern and least likely to adhere to the Airport's mission is off the Runway 36 end, where rising terrain is located. Although the terrain would not be affected by the physical changes of Runway 36, the relocation of the threshold incurs changes to the approach surfaces which must be clear of obstacles per FAA standards. This implies that obstacle removal, or tree clearing, would have to take place to ensure the new approach surface is free of obstructions. This impact is somewhat reduced by the fact that obstructions currently exist to the runway end that require removal. However, additional obstructions may result if this alternative is selected. Upon initial review, the Airport should be able to clear a 20:1 surface without significant impacts. If FAA requires removal of all 34:1 obstructions, impacts would be greater. Overall, Alternative 5 mostly confirms to the Airport's Vision. **Score = 4**

- **FAA Safety Standards:** Per Advisory Circular 150/5220-22B, *Engineered Materials Arresting System*, Alternative 5 partially meets FAA safety and design standards related to RSA dimensions for C-II runways. While the non-standard EMAS beds are an improvement to the existing safety areas, they do not provide the same level of safety as would a standard RSA or standard EMAS.

  What distinguishes this alternative from the previous ones is that Alternative 5, in addition to the EMAS beds providing overrun protection for aircraft, also provides the 600' undershoot protection for Runways 18 and 25 as required when implementing an EMAS. Since Runways 18 and 25 account for approximately 70% of operations at LEB, the undershoot protection becomes more pertinent than that of Runways 7 or 36. This added level of protection increases the overall compliance with FAA safety standards. **Score = 4**

- **Operational Requirements:** Due to the Runway 7 threshold relocation of 150', the overall length of Runway 7-25 decreases from 5,496' to 5,346'. Aircraft landing on Runway 25 must also account for the 325' threshold displacement, which further reduces the

Landing Distance Available (LDA) to 5,021'. Since these changes would not meet the minimum operational requirement of 5,500', additional changes were proposed to Runway 18-36 which currently measures 5,200'. Runway 18 was displaced 300' to accommodate the 600' undershoot requirement, thus reducing the LDA Runway 18 to 4,900'. Then, to ensure that at least one of the runways met the minimum operational requirement, the Runway 36 threshold was relocated 600' to bring the total length to 5,800'. However, with the 300' displacement to Runway 18 the unrestricted runway length (LDA) remains 5,500'. **Score = 5**

- **Environmental Impacts:** As described under the Airport Vision, concerns for environmental impacts arise from the steep incline in terrain off Runway 36. Although the terrain would not be affected by the physical changes of Runway 36, the relocation of the threshold incurs changes to the approach surfaces which must be clear of obstacles per FAA standards. This implies that obstacle removal, or some level of tree clearing, would have to take place to ensure the new approach surface is free of obstructions. Such action could cause negative environmental impacts and although initial analysis does not appear to result in significant impacts, the level of obstruction removal required should be analyzed and deliberated in more detail. **Score = 4**

- **Development Costs**: The estimated cost of development is $48,200,000.

4.3.8 Runway Alternative 6 (EMAS and Thresholds)

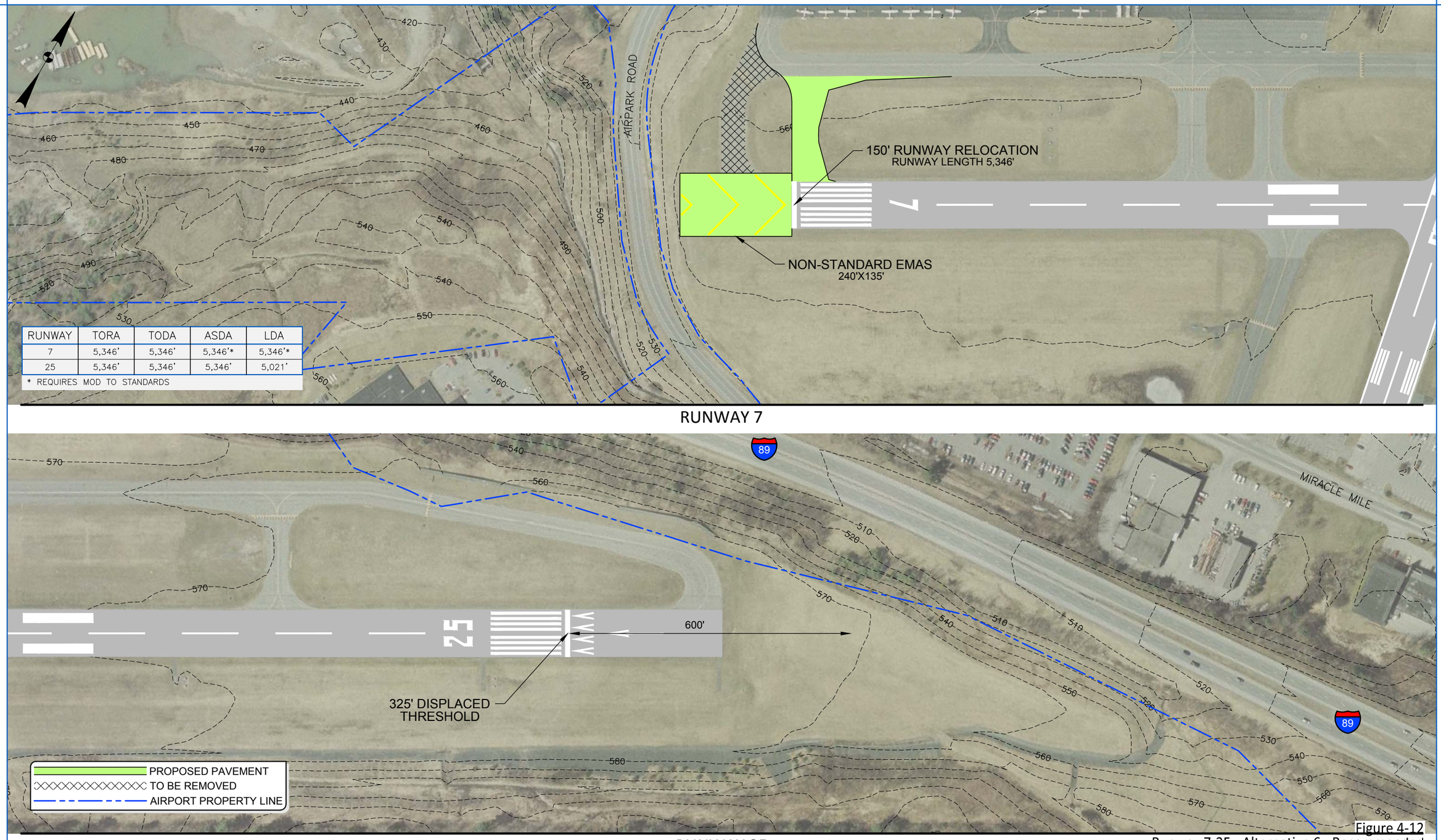
Runway Alternative 6 (**Figures 4-12 and 4-13**) suggests implementing a combination of non-standard EMAS beds and threshold displacements or relocations to improve the RSAs at LEB. The actions for each of the runway ends under this option are as follows:

- Runway 7: the threshold would be relocated approximately 150' to the east in order to accommodate a non-standard EMAS measuring 135' wide and 240' long.

- Runway 25: the threshold would be displaced approximately 325' to the west. The total distance from the far end of the clearway to the runway threshold (undershoot protection) would measure 600'.

- Runway 18: the threshold would be displaced approximately 300' south. The total distance from the far end of the blast pad to the runway threshold (undershoot protection) would measure 600'.

- Runway 36: the threshold would be relocated approximately 600' south, and a non-standard EMAS measuring 135' wide and 300' long would be installed. The total distance from the far end of the clearway to the runway threshold (undershoot protection) would measure 400'.



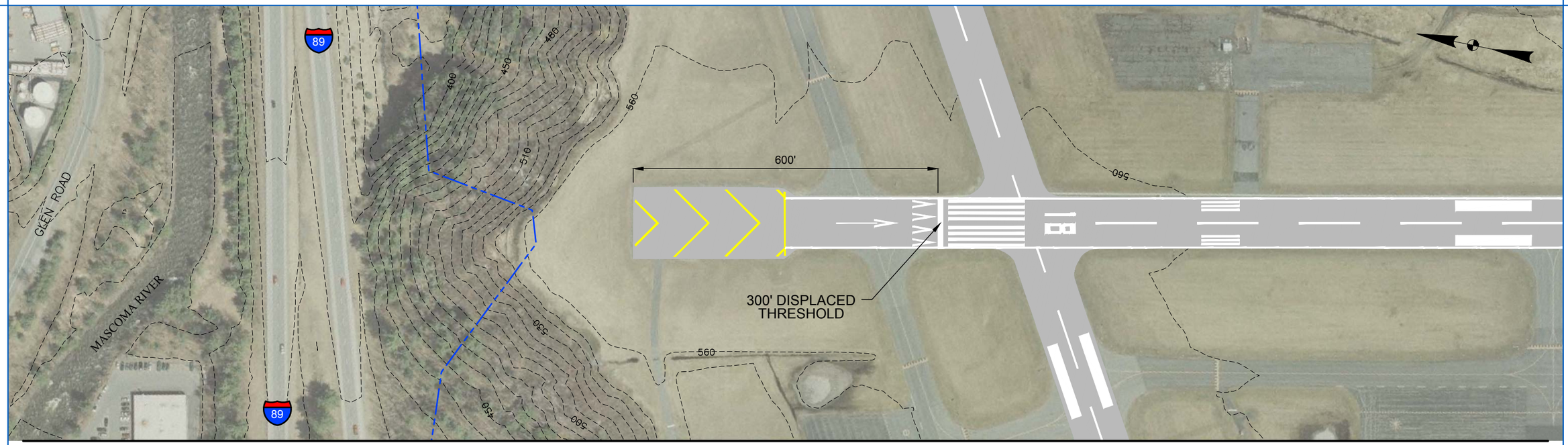
RUNWAY	TORA	TODA	ASDA	LDA
7	5,346'	5,346'	5,346'*	5,346'*
25	5,346'	5,346'	5,346'	5,021'

* REQUIRES MOD TO STANDARDS

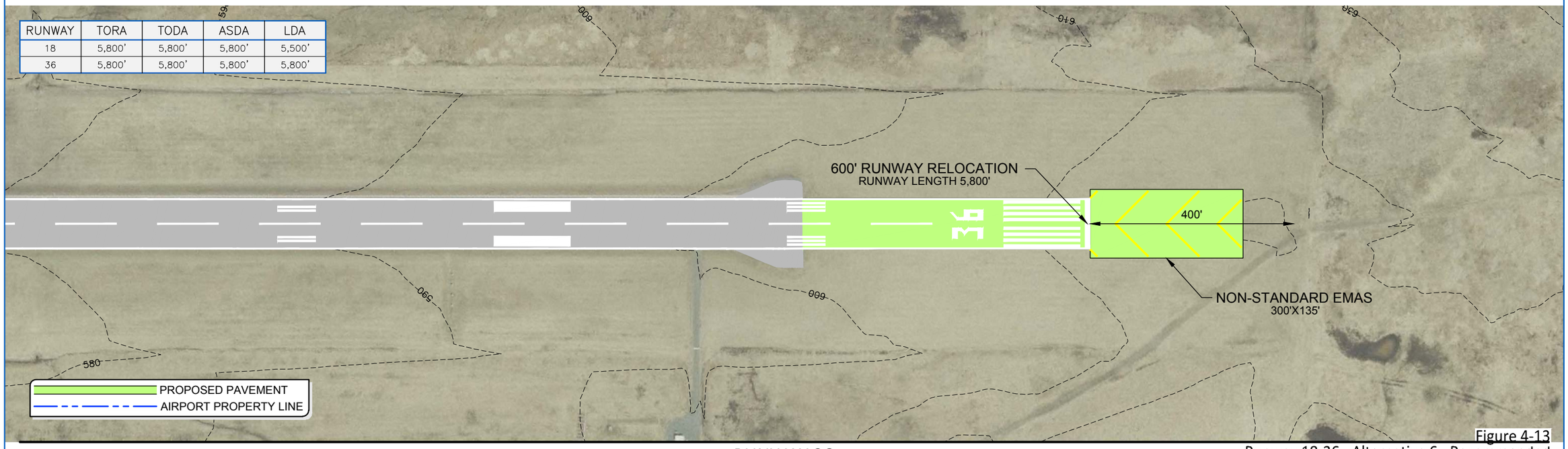
Image Source: City of Lebanon, 2007

SCALE
0 200 400
FEET

Figure 4-12
Runway 7-25 - Alternative 6 - Recommended



RUNWAY 18



RUNWAY 36

Image Source: City of Lebanon, 2007

Figure 4-13
Runway 18-36 - Alternative 6 - Recommended

SCALE
0 200 400
FEET

Runway Alternative 6 was assessed as follows:

- **Airport Vision:** Alternative 6 mostly supports the Airport's Vision Statement. The reduced size of the non-standard EMAS beds means less environmental and social impacts are incurred as part of this alternative's implementation. Also, requiring only two EMAS beds substantially reduces the development costs, which supports the Airport's mission to become financially self-sustaining and may ultimately improve the FAA's ability to fund needed improvements.

  Similar to Alternative 5, the area of most concern for this component of Alternative 6 relates to clearing the approach to Runway 36. Again, these actions would have to be analyzed and deliberated in more detail. **Score = 4**

- **FAA Safety Standards:** Per Advisory Circular 150/5220-22B, *Engineered Materials Arresting System*, Alternative 6 partially meets FAA safety and design standards related to RSA dimensions for C-II runways. While the non-standard EMAS beds are an improvement to the existing safety areas, they do not provide the same level of safety as would a standard RSA or standard EMAS.

  However, while this alternative removes the two EMAS beds that had been concurrently proposed to Runways 18 and 25 in the previous alternative, Alternative 6 provides the same undershoot protection to Runways 18 and 25 that Alternative 5 does. **Score = 4**

- **Operational Requirements:** Using the same distance calculations described in Alternative 5, this alternative meets the operational needs of C-II aircraft operating at LEB today as it pertains to a minimum runway length of 5,500'. **Score = 5**

- **Environmental Impacts:** Similar to Alternative 5, the impacts incurred from Alternative 6 relate to the Runway 36 approach and will require additional analysis to fully understand the social and environmental impacts. **Score = 4**

- **Development Costs**: The engineers' estimate of probable costs is $16,540,686.

4.4 RUNWAY SUMMARY AND SELECTION OF PREFERRED ALTERNATIVE

Table 4-1 provides a summary of the aforementioned Runway Alternatives and their respective evaluations.

Table 4-1: Runway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Development Cost	Overall Score
Alt 1 (No Build)	0	0	5	4	None	**9**
Alt 2 (Standard RSAs)	0	5	5	0	+$105,000,000	**10**
Alt 3 (Standard EMAS)	3	5	5	3	$68,700,000*	**16**
Alt 4 (Non-Standard EMAS)	3	3	5	3	$34,500,000*	**14**
Alt 5 (EMAS and Thresholds)	4	4	5	4	$48,200,000	**17**
Alt 6 (EMAS and Thresholds)	4	4	5	4	$16,540,686	**17**

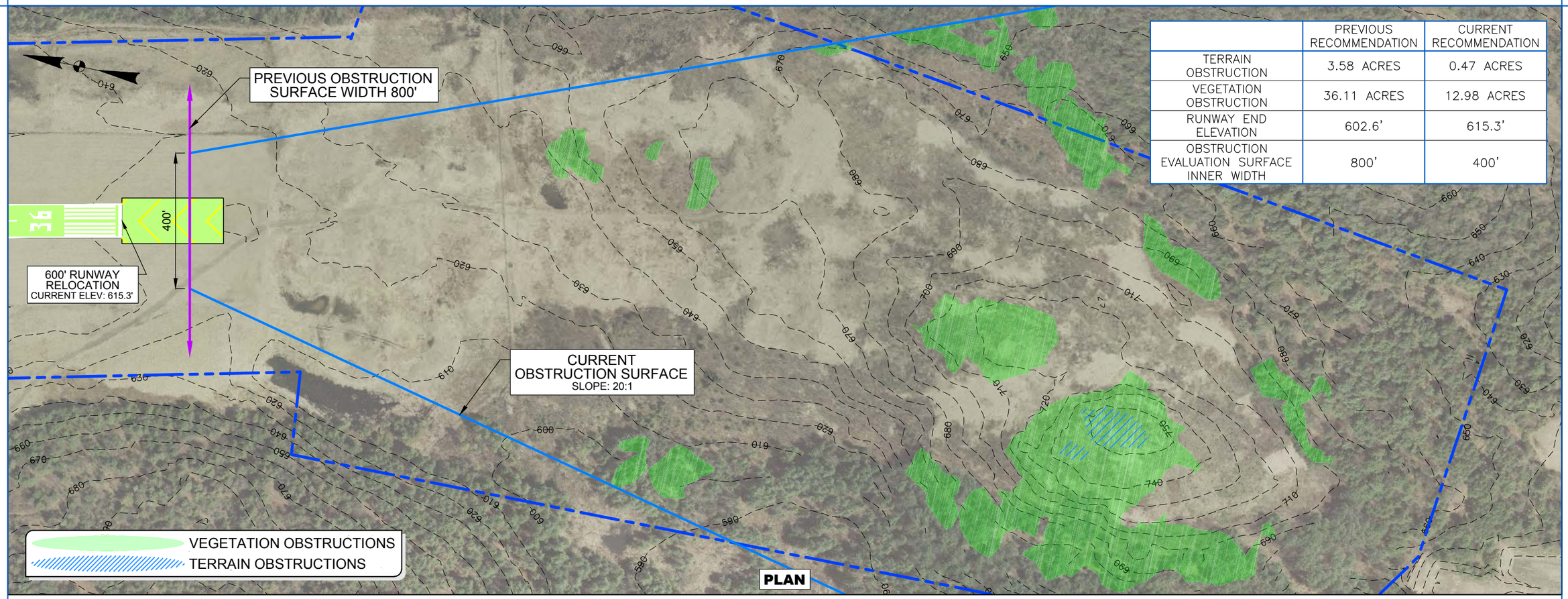
* excluding property acquisition
Source: McFarland Johnson analysis (2015)

Based on this scoring and the cost of development, Runway Alternative 6 is the Consultant Recommendation. **Figure 4-14** depicts a preliminary comparison of impacts between this RSA recommendation and the previous recommendation from the 2010 Conceptual Master Plan. Once public comment has been solicited, identification of the preferred Runway Alternative will be finalized and presented to the City of Lebanon City Council for approval as part of the Recommended Airport Development Strategy for LEB.

4.5 TAXIWAY ALTERNATIVES

The Taxiway Alternatives include proposed development to taxiways and runways, outside of the RSA improvements previously identified. These developments are mainly structural improvements in the form of pavement rehabilitation (rehab) or reconstruction, as the taxiway and runway asphalts are nearing the end of their useful life.

	PREVIOUS RECOMMENDATION	CURRENT RECOMMENDATION
TERRAIN OBSTRUCTION	3.58 ACRES	0.47 ACRES
VEGETATION OBSTRUCTION	36.11 ACRES	12.98 ACRES
RUNWAY END ELEVATION	602.6'	615.3'
OBSTRUCTION EVALUATION SURFACE INNER WIDTH	800'	400'



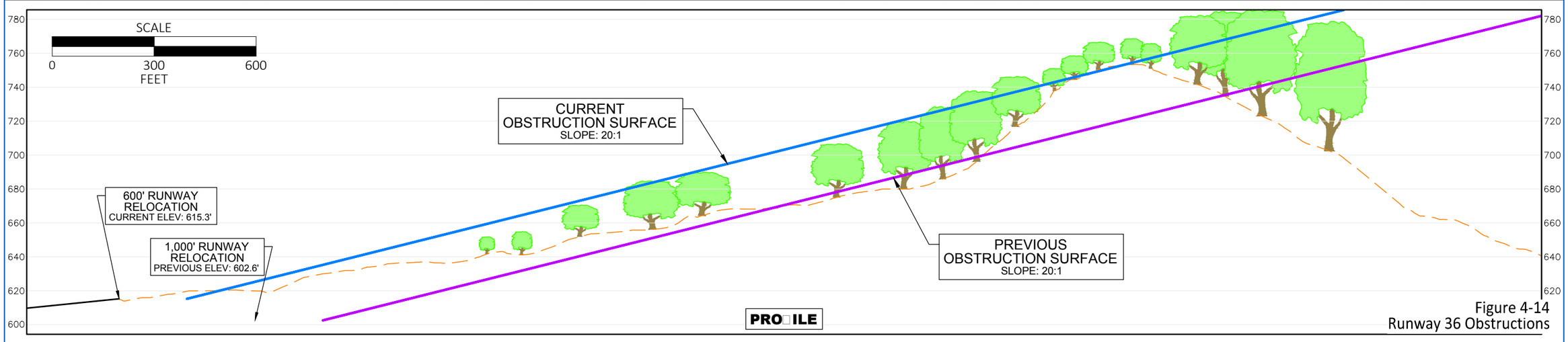


Figure 4-14
Runway 36 Obstructions

4.5.1 Taxiway Alternative Identification

The following taxiway alternatives were developed to meet the needs of LEB and the City of Lebanon:

- Taxiway Alternative 1: (No Build)
  - No changes would be made to the taxiway or runway systems.

- Taxiway Alternative 2: (Pavement Rehab/Reconstruction)
  - This alternative suggests rehabilitation or reconstruction of Taxiways Alpha and Bravo, as well as the stub taxiways that connect Alpha and Bravo to the runway system. In addition, both runways (Runway 7-25 and Runway 18-36) would be rehabilitated or reconstructed and would include pavement strengthening to accommodate the heavier aircraft currently operating at the Airport.

- Taxiway Alternative 3: (Pavement Rehab/Reconstruction and Full Parallel)
  - This taxiway alternative is similar to the previous alternative but differs in its proposal to extend Taxiway Alpha to the end of Runway 36.

The alternatives above were evaluated using the same criteria as the Runway Alternatives, with the exception of Development Costs. Financial estimates related to the rehabilitation or reconstruction of taxiways/runways is dependent upon soil testing and pavement analyses which determine whether superficial rehabilitation or complete reconstruction will be required and to what depth. Once those preliminary tests and analyses have been completed, estimates of probable costs will be provided. The following qualitative alternative evaluations have been provided in the interim.

4.5.2 Taxiway Alternative 1 (No Build)

The No-Build alternative offers no change to the existing taxiways and runways at LEB. This existing layout can be seen in **Figure 4-15.** Taxiway Alternative 1 was assessed against the four evaluation factors; the results are below:

- **Airport Vision:** Alternative 1 does not meet the Airport's Vision Statement. By allowing deteriorating pavement to further degrade, this alternative fails to provide or foster means by which the Airport can become a financially self-sustaining community asset. This alternative would result in no federal funding for needed airport maintenance due to the fact that it declines to meet FAA's regulatory requirements regarding pavement conditions. Additionally, as a result of the No Build, further degradation of the taxiway and runway pavements could significantly impact airport revenue received from potential damage to aircraft and lost operations, including leases, landing fees, and fuel sales. Score = 0

Figure 4-15
Taxiway Alternative 1 - No Build

- **FAA Standards:** Alternative 1 does not attempt to meet FAA safety and design standards related to pavement condition. **Score = 0**

- **Operational Requirements:** This alternative temporarily meets the operational needs of aircraft operating at LEB today. However, as taxiway and runway pavement conditions deteriorate, it will become more difficult for aircraft to operate safely and efficiently. **Score = 2**

- **Environmental Impacts:** This alternative does not incur any typical environmental impacts; however, some level of social impact would be seen from the reduction in business use of the airport and a corresponding reduction in associated jobs. **Score = 4**

4.5.3 Taxiway Alternative 2 (Pavement Rehab or Reconstruction)

Taxiway Alternative 2 (see **Figure 4-16**) suggests rehabilitation or reconstruction of Taxiways Alpha and Bravo, as well as the stub taxiways that connect Alpha and Bravo to their respective runways. In addition, both Runways 7-25 and 18-36 would also be rehabilitated/reconstructed and strengthened to consistently accommodate the heavier aircraft already operating at LEB.

This alternative also identifies which taxiway and runway pavements should be addressed first based on their age and current condition. Of the taxiways, Taxiway Bravo and its stub connectors would be rehabilitated or reconstructed first (Taxiway Phase I), followed by Taxiway Alpha and its connectors (Taxiway Phase II). For the runways, Runway 7-25 would be addressed first (Runway Phase I) and Runway 18-36 would be addressed second (Runway Phase II). However, this does not imply that Taxiway Phase I and Runway Phase I would be, or should be, addressed concurrently.

Rather, given the anticipated costs and length of time required to complete rehabilitation or reconstruction projects of this size and nature, each taxiway and runway phase would be broken down into even smaller phased projects. By further phasing the construction, the costs can be distributed over time and portions of the taxiways and runways can remain operational throughout, both of which are essential for the Airport.

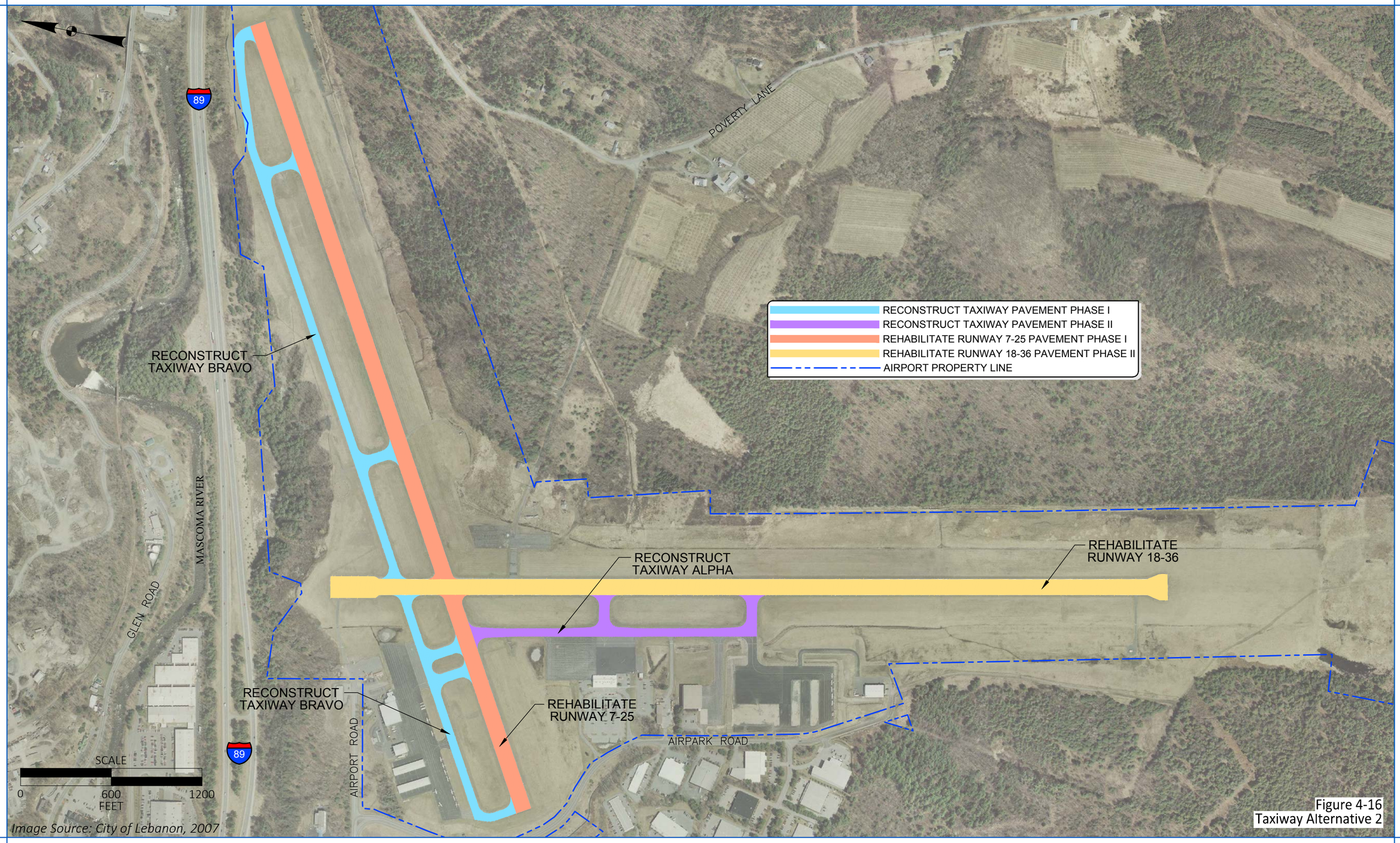


Figure 4-16
Taxiway Alternative 2

Taxiway Alternative 2 was assessed as follows:

- **Airport Vision:** Alternative 2 mostly meets the Airport's Vision Statement. Performing routine and preventative pavement maintenance is required for the safe, efficient, and long-term operation of an airport, which in and of itself is aligned with the notion of making LEB a community asset. Similarly, in order to have optimized air service, airport facilities must be continuously inspected and upgraded to remain current and competitive with other airports and industry trends. Taxiway Alternative 2 directly meets these components of the Vision Statement, but only indirectly furthers the ability of the Airport to become financially self-sustaining. The taxiway and runway improvements will require significant financial resources over time, but can foster additional Airport revenue in the long run through landing fees, hangar rents, and fuel sales. **Score = 3**

- **FAA Standards:** Alternative 2 complies with FAA safety and design standards related to pavement strength and management. **Score = 5**

- **Operational Requirements:** This alternative meets the operational needs of aircraft operating at LEB today and in the future. However, Alternative 2 does not address the issue of a parallel taxiway to Runway 36 as identified in the *Facility Requirements* chapter and previous planning documents. Lacking a full parallel taxiway increases runway use time of aircraft having to back-taxi on the runway before takeoff or after landing. This added runway time decreases the Airport's overall capacity and increases the likelihood of aircraft accidents or incursions. **Score = 3**

- **Environmental Impacts:** This alternative would incur minimal environmental impacts associated with construction as no new development is proposed, only the replacement of existing pavement. Additionally, the proposed construction would provide positive social impacts through the creation of short-term jobs. **Score = 5**

4.5.4 Taxiway Alternative 3 (Pavement Rehab/Reconstruction and Full Parallel)

Taxiway Alternative 3 (see **Figure 4-17**) is nearly the same as Alternative 2, with the exception of proposing a full-parallel taxiway to Runway 36. This Alternative suggests extending the south end of Taxiway Alpha to connect to the south end of Runway 18-36 in order to provide a parallel taxiway along the full length of the runway.

Taxiway Alternative 3 was evaluated below:

- **Airport Vision:** The explanation for this component under Alternative 2 can be applied to this element of Alternative 3 as well. The only difference is the consideration of the full-parallel taxiway which is more aligned with providing optimized air service, as it is the preference of airlines/air carriers and most business aircraft. **Score = 4**

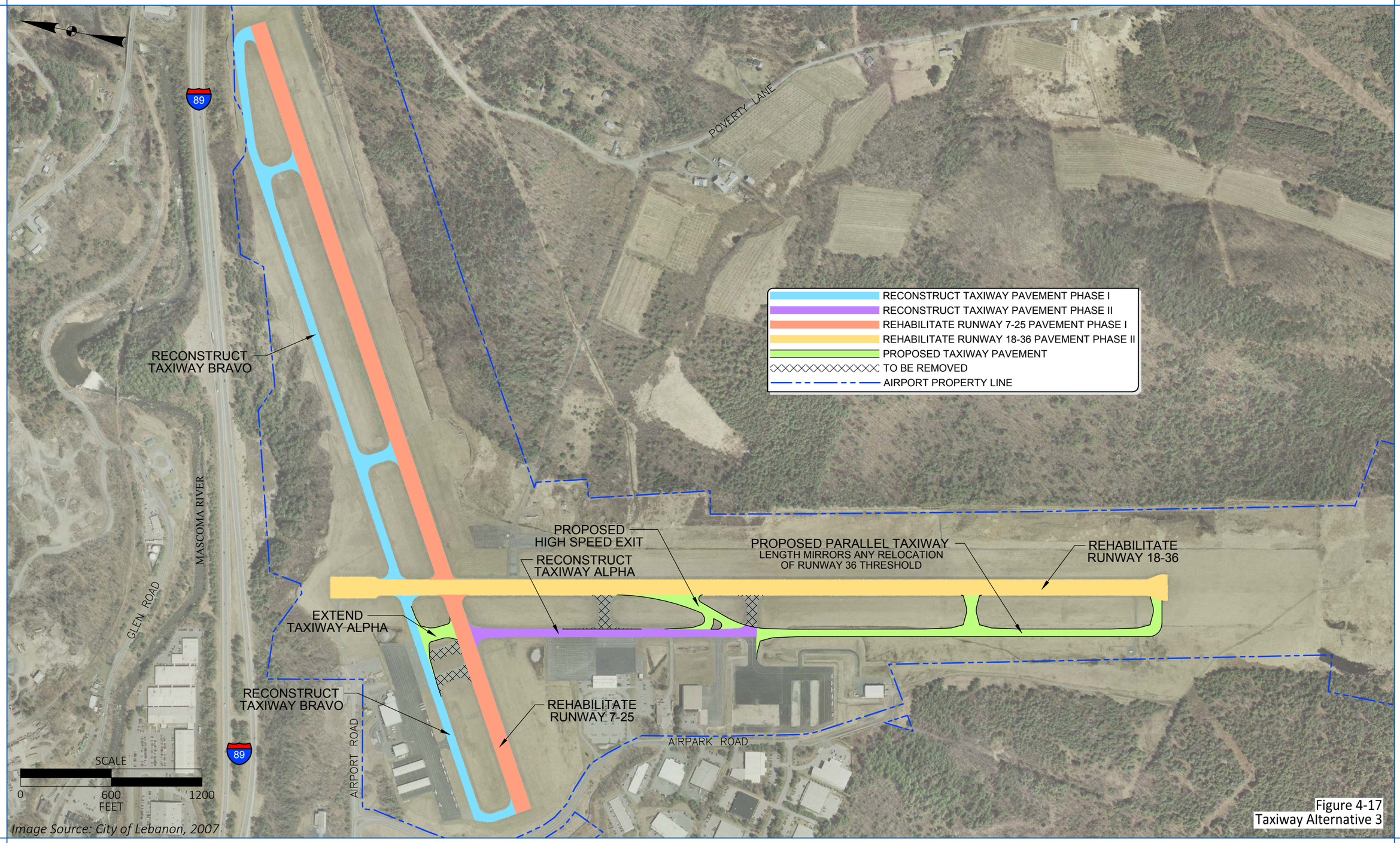


Image Source: City of Lebanon, 2007

Figure 4-17
Taxiway Alternative 3

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- **FAA Standards:** Alternative 3 complies with FAA safety and design standards for pavement strength and management, and follows the guidelines for parallel taxiways at airports with instrument approach procedures. **Score = 5**

- **Operational Requirements:** This alternative meets the operational needs of aircraft operating at LEB today and in the future. **Score = 5**

- **Environmental Impacts:** Although some jobs would be created as a result of this alternative, the location of wetland areas along the proposed Taxiway Alpha extension indicates that this alternative would incur some environmental impacts due to the new development footprint. **Score = 3**

4.6 TAXIWAY SUMMARY AND SELECTION OF PREFERRED ALTERNATIVE

Table 4-2 provides a summary of the aforementioned Taxiway Alternatives and their respective evaluations.

Table 4-2: Taxiway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Overall Score
Alt 1 (No Build)	0	0	2	4	**6**
Alt 2 (Rehab or Reconstruction)	3	5	3	5	**13**
Alt 3 (Rehab or Reconstruction with Alpha Extension)	4	5	5	3	**17**

Based on this scoring, Taxiway Alternative 3 is the Consultant Recommendation. Once public comment has been solicited, identification of the preferred Taxiway Alternative will be finalized and presented to the City of Lebanon City Council for approval as part of the Recommended Airport Development Strategy for LEB.

4.7 LANDSIDE ALTERNATIVES

This portion of the *Alternatives* chapter focuses on addressing needs and deficiencies in the landside facilities at LEB, as identified and discussed in the *Facility Requirements* chapter.

4.7.1 Landside Alternative Evaluation

The landside evaluation criteria were provided by the City of Lebanon and were used to assess the various factors affecting future landside development decisions. Those factors are as follows:

- **Airport Vision:** Does the alternative support the Airport's established Vision Statement?
- **Land Use Compatibility:** Is the alternative compatible with on-airport and off-airport patterns of land use? This criterion will evaluate such things as access to the airside movement areas and the local road network.
- **Environmental Impacts:** What are the potential social and environmental impacts associated with implementation of the alternative? Does the alternative avoid, minimize, or mitigate environmental or social impacts?
- **Potential for Expansion:** Does this alternative have the ability to accommodate future unanticipated development? This criterion recognizes the fact that location decisions made today will influence future airport development for many years to come.
- **Operational Efficiency:** Will this alternative contribute to the development of a smoothly functioning Airport with efficient movement of aircraft?
- **Revenue Generation Capability:** Does the alternative afford opportunities for Airport Management to increase revenue generation, thereby improving the overall competitiveness and cost effectiveness of the airport?

4.7.2 Landside Alternative Identification

The following Landside Alternatives were developed to meet the existing and future facility requirements at LEB:

- **Landside Alternative 1: (No Build)**
  - The existing airport layout would remain the same. There would be no change to the hangars, parking lots, or support facilities.

- **Landside Alternative 2: (One Hangar)**
  - This alternative proposes an additional conventional hangar, along with expansions to the ARFF and SRE facilities.

- **Landside Alternative 3: (Two Hangars)**
  - Alternative 3 suggests the same changes as Alternative 2, but with the addition of a much larger conventional hangar as well.

4.7.3 Landside Alternative 1 (No Build)

The No Build alternative offers no change to the existing landside configuration at LEB. This existing layout can be seen in **Figure 4-18**.

Landside Alternative 1 was evaluated as follows:

- **Airport Vision:** Alternative 1 does not meet the Airport's Vision Statement as it fails to provide or foster means by which the Airport can become a financially self-sustaining community asset. **Score = 0**

- **Land Use Compatibility:** There would be no changes to land uses on- or off-Airport under this Alternative. However, if the parking lot and Airpark Road are not reconstructed early on in the 20-year planning period, those current land uses will be negatively impacted. **Score = 3**

- **Environmental Impacts:** There are no environmental impacts associated with Landside Alternative 1. However, there could be negative social impacts if the parking lot and Airpark Road become unusable. **Score = 3**

- **Potential for Expansion:** Since Alternative 1 does not propose any new development, it has the potential to accommodate unanticipated development in the future. **Score = 5**

- **Operational Efficiency:** Alternative 1 does not propose any changes that would impact aircraft operations on the airfield. **Score = 5**

- **Revenue Generation Capability:** Due to the lack of proposed development, Landside Alternative 1 does not afford Airport Management opportunities to increase revenue and remain competitive or cost effective. **Score = 0**

Image Source: City of Lebanon, 2007

Figure 4-18
Landside - Alternative 1 - No Build

4.7.4 Landside Alternative 2 (One Hangar)

Landside Alternative 2 (see **Figure 4-19**) proposes constructing an additional conventional hangar measuring approximately 16,800 square feet adjacent to the Terminal Apron and vehicle parking lot, and both the parking lot and Airpark Road would be reconstructed. This Alternative also suggests an expansion of the SRE building as FAA funding permits. The SRE expansion has already been designed, but will not be funded until RSA improvements are pursued. Lastly, if and when LEB regains Part 139 certification, Landside Alternative 2 recommends a slight expansion to the existing ARFF building to better comply with Part 139 standards.

Landside Alternative 2 was assessed below:

- **Airport Vision:** Landside Alternative 2 partially meets the Airport's Vision Statement. This alternative provides some means by which the Airport can become a financially self-sustaining community asset, as suggested by an additional hangar lease and a more welcoming, updated appearance to visitors and passengers when they enter the airport. **Score = 3**

- **Land Use Compatibility:** There would be minimal changes to the land uses on- or off-Airport under this Alternative, but none of them would be incompatible with existing usage. **Score = 5**

- **Environmental Impacts:** There would be minimal, or temporary, environmental impacts associated with Landside Alternative 2 as it relates to construction impacts on-Airport and along Airpark Road. **Score = 4**

- **Potential for Expansion:** Landside Alternative 2 leaves substantial room for future landside development, specifically in the area adjacent the parking lot and south of the proposed SRE building. **Score = 5**

- **Operational Efficiency:** Landside Alternative 2 does not propose any changes that would impact aircraft operations on the airfield. This is evident by the ground vehicle access road that would be built in conjunction with the SRE building, thus separating ground vehicles from aircraft. **Score = 5**

- **Revenue Generation Capability:** Landside Alternative 2 affords Airport Management modest opportunities to increase revenue and remain competitive or cost effective, based on hangar or land leases associated with the proposed conventional hangar. **Score = 3**

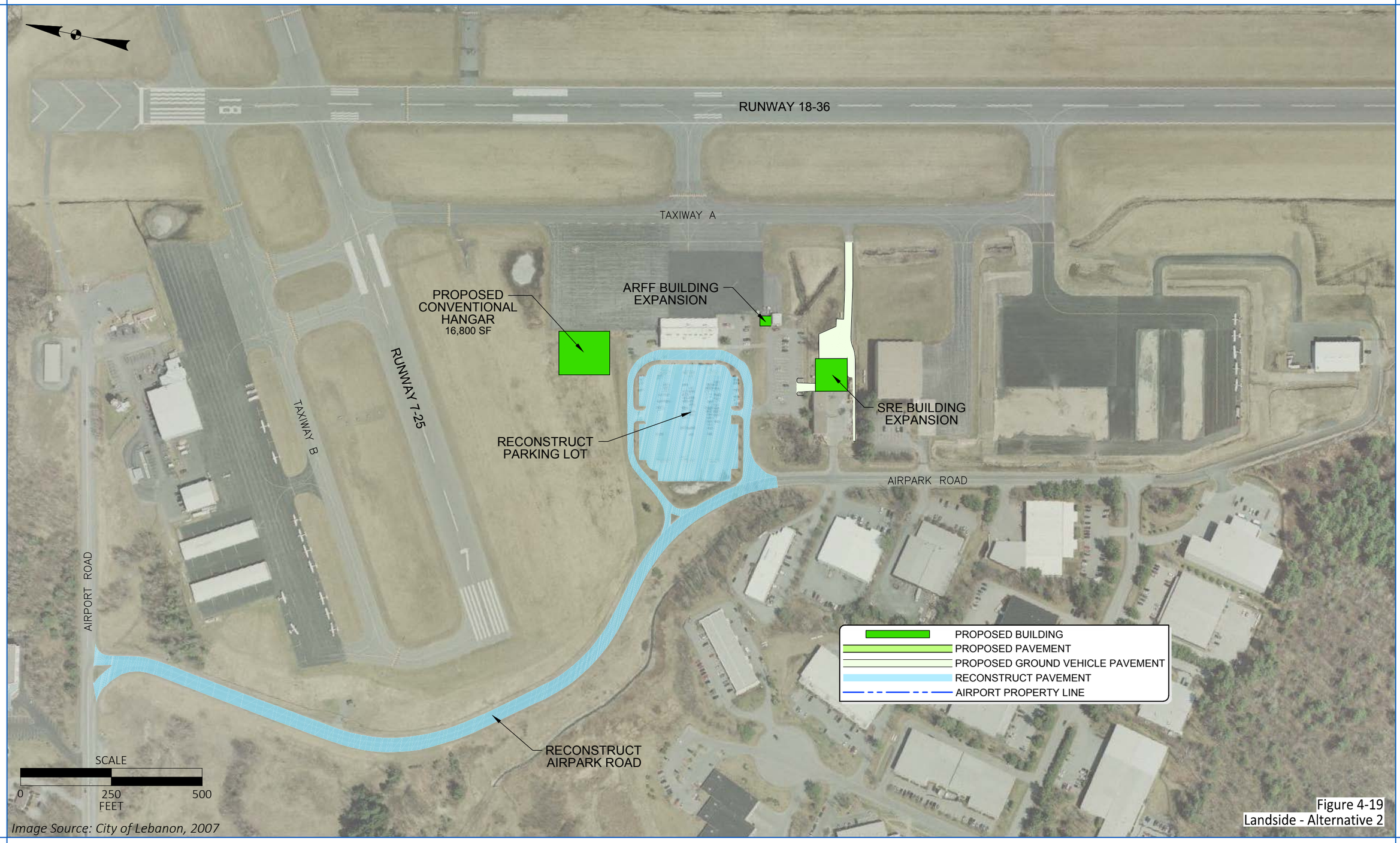

Image Source: City of Lebanon, 2007

Figure 4-19
Landside - Alternative 2

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4.7.5 Landside Alternative 3 (Two Hangars)

Landside Alternative 3 (see **Figure 4-20**) is nearly the same as Alternative 2, with the exception of the much larger conventional hangar proposed adjacent to the existing T-hangars to the south. This additional hangar would measure approximately 45,000 square feet and could be used for a variety of aviation purposes including a maintenance facility or corporate flight department.

Landside Alternative 3 was assessed as follows:

- **Airport Vision:** Landside Alternative 3 meets the Airport's Vision Statement. This alternative provides multiple means by which the Airport can become a financially self-sustaining community asset, as suggested by additional hangar leases and a more welcoming, updated appearance to visitors and passengers when they enter the airport. **Score = 5**

- **Land Use Compatibility:** There would be minimal changes to the land uses on- or off-Airport under this Alternative, but none of them would be incompatible with existing usage. **Score = 5**

- **Environmental Impacts:** There would be minimal, or temporary, environmental impacts associated with Landside Alternative 2 as it relates to construction impacts on-Airport and along Airpark Road. **Score = 4**

- **Potential for Expansion:** Landside Alternative 3 leaves slightly less room for future landside development compared to the previous alternatives, specifically in the area along the south T-hangars. **Score = 4**

- **Operational Efficiency:** Landside Alternative 3 does not propose any changes that would impact aircraft operations on the airfield. This is evident by the ground vehicle access road that would be built in conjunction with the SRE building, thus separating ground vehicles from aircraft. **Score = 5**

- **Revenue Generation Capability:** Landside Alternative 3 affords Airport Management multiple opportunities to increase revenue and remain competitive or cost effective, based on hangar or land leases associated with the proposed conventional hangars. **Score = 5**

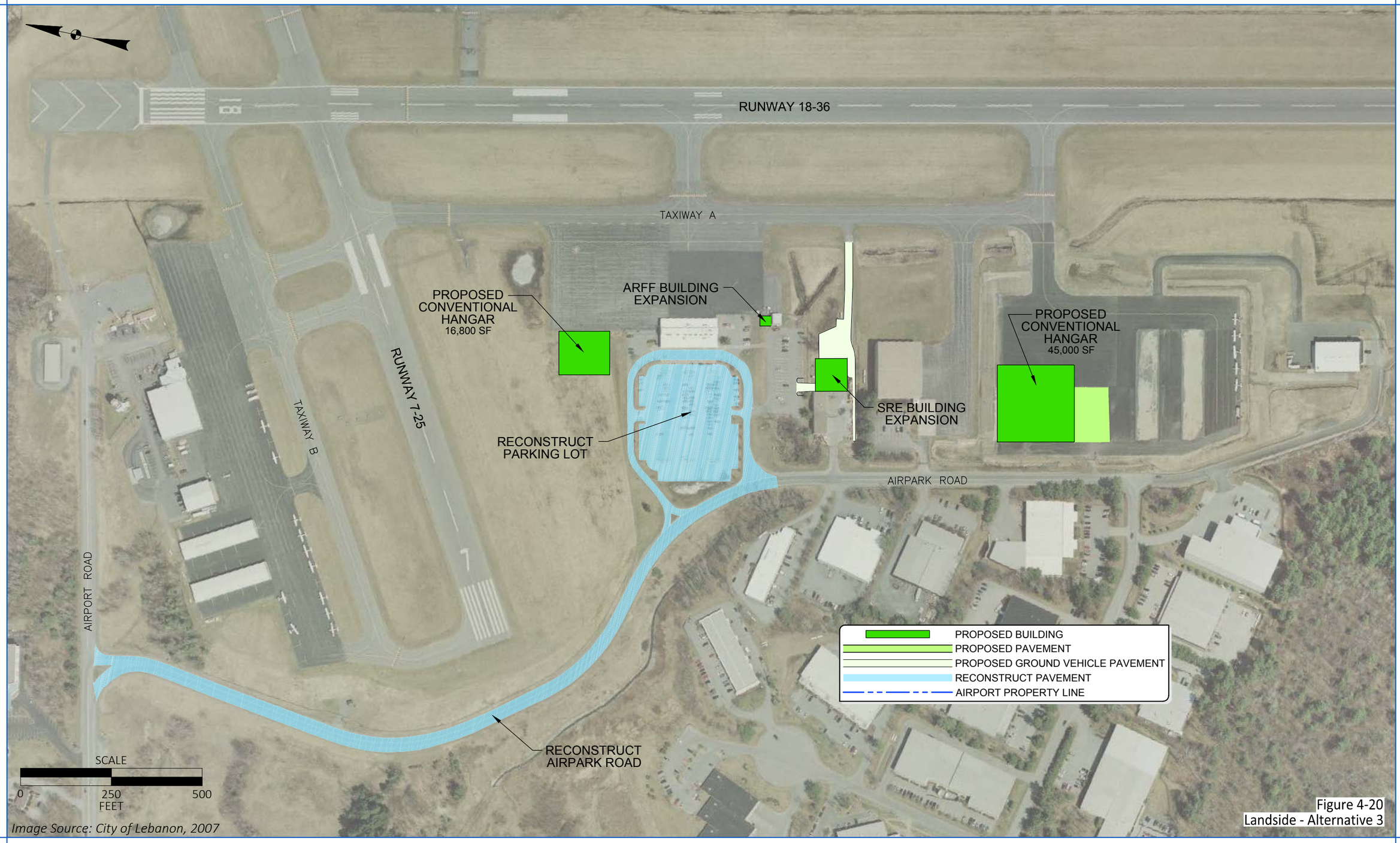

Image Source: City of Lebanon, 2007

Figure 4-20
Landside - Alternative 3

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4.8 LANDSIDE SUMMARY AND SELECTION OF PREFERRED ALTERNATIVE

Table 4-3 provides a summary of the aforementioned Landside Alternatives and their respective evaluations.

Table 4-3: Landside Alternatives Summary

Alternative	Airport Vision	Land Use Capability	Environmental Impacts	Potential for Expansion	Operational Efficiency	Revenue Generation Capability	Overall Score
Alt 1 (No Build)	0	3	3	5	5	0	**16**
Alt 2 (One Hangar)	3	5	4	5	5	3	**25**
Alt 3 (Two Hangars)	5	5	4	4	5	5	**28**

Based on this scoring, Landside Alternative 3 is the Consultant Recommendation. Once public comment has been solicited, identification of the preferred Landside Alternative will be finalized and presented to the City of Lebanon City Council for approval as part of the Recommended Airport Development Strategy for LEB.

4.9 RECOMMENDED AIRPORT DEVELOPMENT STRATEGY

The Recommended Airport Development Strategy is a combination of the Consultant Recommended alternatives from each of the categories presented – Runway, Taxiway, and Landside – thus providing a holistic development plan for the Lebanon Municipal Airport. This section will be updated in the Final Draft version to reflect comments and input received from the public and City of Lebanon stakeholders. A comprehensive illustration depicting all of the proposed elements can be seen in **Figure 4-21.** Additionally, a supplemental airport noise analysis and sustainability assessment were completed as part of this master plan and were based on the proposed development shown in the Recommended Airport Development Strategy. These items can be found in **Appendix H** and **Appendix I**, respectively.

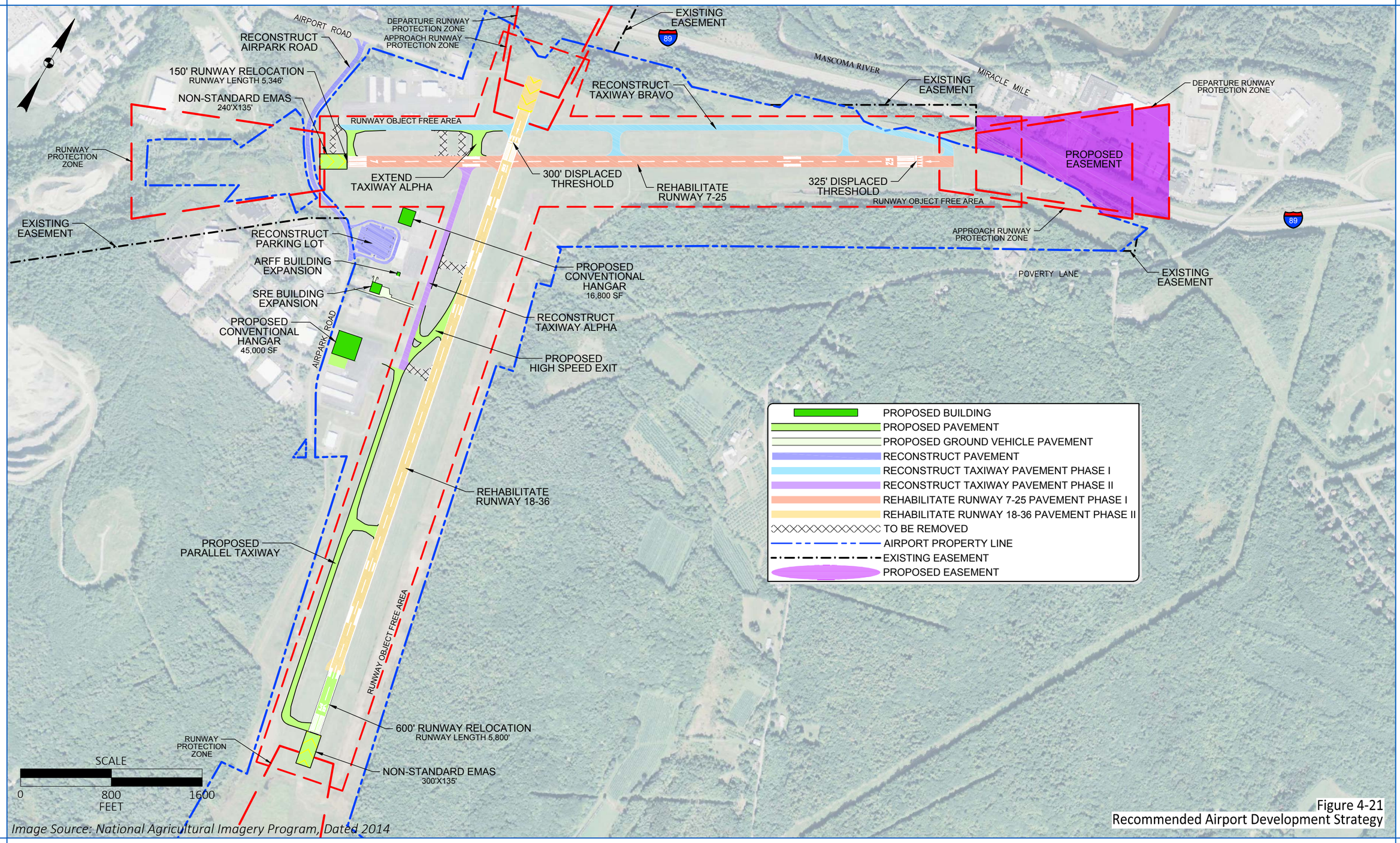


Image Source: National Agricultural Imagery Program, Dated 2014

Figure 4-21
Recommended Airport Development Strategy

\\mjcolo-dc-x64\K\Lebanon NH\T-18011.00 Lebanon MPU\Draw\Drawings\Figures\ALT-RECOMMENDED.dwg

LEGEND

DESCRIPTION	EXISTING	PROPOSED
HOLD LINE		
RUNWAY SAFETY AREA (RSA)		
RUNWAY OBJECT FREE AREA (ROFA)		
RUNWAY PROTECTION ZONE (RPZ)		
RUNWAY VISIBILITY ZONE (RVZ)		
DEPARTURE SURFACE		
GLIDE PATH QUALIFICATION SURFACE		
NAVAID CRITICAL AREA		N/A
AIRPORT REFERENCE POINT		
ASPHALT AIRFIELD PAVEMENT		
GROUND VEHICLE PAVEMENT		
TO BE REMOVED	N/A	
REHABILITATE RUNWAY 18–36	N/A	
REHABILITATE RUNWAY 7–25	N/A	
RECONSTRUCT TAXIWAY ALPHA	N/A	
RECONSTRUCT TAXIWAY BRAVO	N/A	
RECONSTRUCT GROUND VEHICLE PAVEMENT	N/A	
AIRPORT BUILDING		
MISCELLANEOUS BUILDINGS		N/A
AIRPORT PROPERTY		N/A
TO BE RELEASED	N/A	
AIRPORT EASEMENT		
NGS MONUMENT		N/A
TREE LINE		N/A
DELINEATED WETLAND		N/A
GROUND ELEVATION CONTOURS (10')		N/A

Federal Aviation Administration
New England Region - Airports Division

Conditionally Approved: _____
(Manager NE Airports Division)

Date: _____

Subject to comments in letter dated: _____

Airspace Study Number: _____

FAA'S APPROVAL OF THIS AIRPORT LAYOUT PLAN (ALP) REPRESENTS ACCEPTANCE OF THE GENERAL LOCATION OF FUTURE FACILITIES DEPICTED. DURING THE PRELIMINARY DESIGN PHASE, THE AIRPORT OWNER IS REQUIRED TO RESUBMIT FOR APPROVAL OF THE FINAL LOCATIONS, HEIGHTS AND EXTERIOR FINISH OF STRUCTURES. FAA'S CONCERN IS OBSTRUCTIONS, IMPACT ON ELECTRONIC AIDS OR ADVERSE EFFECTS ON CONTROLLER VIEW OF AIRCRAFT APPROACH AND GROUND MOVEMENT AREAS WHICH COULD ADVERSELY AFFECT THE SAFETY, EFFICIENCY OR UTILITY OF THE AIRPORT.

LEBANON MUNICIPAL AIRPORT
CITY OF LEBANON, NH

APPROVED _____ DATE _____

NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

DIRECTOR, OF AERONAUTICS, RAIL & TRANSIT _____ DATE _____

TRUE NORTH

MAG. DECLINATION: 14.6° WEST
YEAR: 2015

EXISTING RUNWAY PROTECTION ZONE
INNER WIDTH = 500'
OUTER WIDTH = 1,010'
LENGTH = 1,700'
APPROACH SLOPE 34:1

PROPOSED RUNWAY PROTECTION ZONE
INNER WIDTH = 500'
OUTER WIDTH = 1,010'
LENGTH = 1,700'
APPROACH SLOPE 34:1

PROPOSED DEPARTURE SURFACE
INNER WIDTH: 1,000'
OUTER WIDTH: 6,466'
LENGTH: 10,200'
SLOPE: 40:1

EXISTING DEPARTURE SURFACE
INNER WIDTH: 1,000'
OUTER WIDTH: 6,466'
LENGTH: 10,200'
SLOPE: 40:1

EXISTING RUNWAY END 7
LAT: N43°37'33.02"
LONG: W72°18'43.41"
ELEV: 562.5'

PROPOSED RUNWAY END 7
LAT: N43°37'33.78"
LONG: W72°18'41.66"
ELEV: 563.2'

EXISTING GLIDE PATH QUALIFICATION SURFACE
INNER WIDTH: 300'
OUTER WIDTH: 1,520'
LENGTH: 10,000'
SLOPE: 30:1

PROPOSED GLIDE PATH QUALIFICATION SURFACE
INNER WIDTH: 300'
OUTER WIDTH: 1,520'
LENGTH: 10,000'
SLOPE: 30:1

TO BE RELEASED

DEPARTURE SURFACE
INNER WIDTH: 1,000'
OUTER WIDTH: 6,466'
LENGTH: 10,200'
SLOPE: 40:1

RUNWAY END 18
LAT: N43°37'45.51"
LONG: W72°18'26.51"
ELEV: 563.4'

PROPOSED 300' DISPLACED THRESHOLD
LAT: N43°37'42.61"
LONG: W72°18'25.66"
ELEV: 562.0'

PROPOSED DEPARTURE RUNWAY PROTECTION ZONE
EXISTING RUNWAY PROTECTION ZONE
INNER WIDTH = 500'
OUTER WIDTH = 1,010'
LENGTH = 1,700'
APPROACH SLOPE 50:1/40:1

PROPOSED APPROACH RUNWAY PROTECTION ZONE
EXISTING RUNWAY PROTECTION ZONE
INNER WIDTH = 500'
OUTER WIDTH = 1,010'
LENGTH = 1,700'
APPROACH SLOPE 50:1/40:1

LIGHTED WINDCONE AND SEGMENTED CIRCLE

PROPOSED RUNWAY VISIBILITY ZONE

EXISTING ARP
LAT: N43°37'34.00"
LONG: W72°18'15.11"

PROPOSED ARP
LAT: N43°37'31.77"
LONG: W72°18'14.51"

EXISTING RUNWAY VISIBILITY ZONE
PROPOSED RUNWAY VISIBILITY ZONE

PROPOSED 325' DISPLACED THRESHOLD
LAT: N43°37'59.08"
LONG: W72°17'42.96"
ELEV: 573.1'

RUNWAY END 25
RUNWAY HIGH POINT
LAT: N43°38'00.72"
LONG: W72°17'39.16"
ELEV: 573.9'

TO BE RELEASED

PROPOSED DEPARTURE RUNWAY PROTECTION ZONE
EXISTING RUNWAY PROTECTION ZONE
INNER WIDTH = 500'
OUTER WIDTH = 1,010'
LENGTH = 1,700'
APPROACH SLOPE 34:1

PROPOSED APPROACH RUNWAY PROTECTION ZONE
EXISTING RUNWAY PROTECTION ZONE
INNER WIDTH = 500'
OUTER WIDTH = 1,010'
LENGTH = 1,700'
APPROACH SLOPE 34:1

DEPARTURE SURFACE
INNER WIDTH: 1,000'
OUTER WIDTH: 6,466'
LENGTH: 10,200'
SLOPE: 40:1

EXISTING RUNWAY PROTECTION ZONE
INNER WIDTH = 500'
OUTER WIDTH = 1,010'
LENGTH = 1,700'
APPROACH SLOPE 34:1

PROPOSED RUNWAY END 36
AIRPORT ELEVATION
RUNWAY HIGH POINT
LAT: N43°36'49.48"
LONG: W72°18'10.08"
ELEV: 615.3'

EXISTING RUNWAY END 36
LAT: N43°36'55.28"
LONG: W72°18'11.78"
ELEV: 603.3'

PROPOSED RUNWAY PROTECTION ZONE
INNER WIDTH = 500'
OUTER WIDTH = 1,010'
LENGTH = 1,700'
APPROACH SLOPE 34:1

EXISTING DEPARTURE SURFACE
INNER WIDTH: 1,000'
OUTER WIDTH: 6,466'
LENGTH: 10,200'
SLOPE: 40:1

PROPOSED DEPARTURE SURFACE
INNER WIDTH: 1,000'
OUTER WIDTH: 6,466'
LENGTH: 10,200'
SLOPE: 40:1

FACILITIES TABLE

EXISTING ID	EXISTING FACILITY NAME	EXISTING TOP ELEV.	PROPOSED ID	PROPOSED FACILITY NAME
1	9 UNIT T–HANGAR	580'	A	REHABILITATE RUNWAY 18–36
2	8 UNIT T–HANGAR	580'	B	REHABILITATE RUNWAY 7–25
3	SHARKEY'S HELICOPTER HANGAR	588'	C	RECONSTRUCT TAXIWAY ALPHA
4	SIGNAL AVIATION HANGAR	605'	D	RECONSTRUCT TAXIWAY BRAVO (35')
5	FAA AIR TRAFFIC CONTROL TOWER	625'	E	300' DISPLACED THRESHOLD
6	INTERSTATE AIRCRAFT (MAGIC BIRD)	611'	F	325' DISPLACED THRESHOLD
7	AIRFIELD ELECTRICAL VAULT	570'	G	600' RUNWAY RELOCATION
8	FAA AIRWAYS FACILITIES BUILDING, SECTOR FIELD OFFICE	577'	H	NON–STANDARD EMAS 300'X135'
9	ARFF BUILDING	570'	J	PARALLEL TAXIWAY
10	STORAGE BUILDING	581'	K	150' RUNWAY RELOCATION
11	TERMINAL BUILDING	581'	L	NON–STANDARD EMAS 240'X135'
12	SRE/MAINTENANCE BUILDING	573'	M	EXTEND TAXIWAY ALPHA
13	MAINTENANCE VEHICLE FUEL TANKS	556'	N	HIGH SPEED EXIT
14	SOUTH HANGAR	594'	O	CONVENTIONAL HANGAR
15	AVIATION FUEL TANKS	N/A	P	ARFF BUILDING EXPANSION
16	POLICE DEPARTMENT (NON–AVIATION)	688'	Q	SRE BUILDING EXPANSION
			R	CONVENTIONAL HANGAR
			S	RECONSTRUCT AIRPARK ROAD
			T	RECONSTRUCT PARKING LOT
			U	PROPOSED EASEMENT

NOTES:
- ALL POSITIONAL DATA REFERENCES NORTH AMERICAN DATUM OF 1983 (NAD83) AND NORTH AMERICAN VERTICAL DATUM 1988 (NGVD88).
- ALP PROPERTY LINES NOT SURVEYED.

SCALE
0 400 800 1200 1600
FEET

NO.	STANDARD MODIFIED	FAA STANDARDS	EXISTING CONDITION	PROPOSED ACTION	DATE APPROVED
MODIFICATION TO DESIGN STANDARDS					

REV	DATE	DESCRIPTION	BY	SPONSOR

McFarland Johnson
49 COURT STREET, METROCENTER, PO BOX 1980
BINGHAMTON, NEW YORK 13902 www.mjinc.com

LEBANON MUNICIPAL AIRPORT
GRAFTON COUNTY, NEW HAMPSHIRE

AIRPORT LAYOUT PLAN

SCALE:	1" = 400'	DESIGN:	DKS
DRAWN:	RGT	PROJECT:	18011.00
CHECKED:		DATE:	NOVEMBER 2017

SHEET: 2

K:\Lebanon NH\T-18011.00 Lebanon MPU\Draw\Drawings\Drawing Set\ALP.dwg

RUNWAY DATA TABLE

ITEM		EXISTING		PROPOSED	
		RUNWAY 7–25	RUNWAY 18–36	RUNWAY 7–25	RUNWAY 18–36
EFFECTIVE RUNWAY GRADIENT		0.21%	0.77%	0.20%	0.89%
MAXIMUM GRADE CHANGE		0.97%	1.61%	0.97%	2.00%
WIND COVERAGE (%)	ALL WEATHER	16 KNOTS – 99.67%	16 KNOTS – 99.83%	16 KNOTS – 99.67%	16 KNOTS – 99.83%
	IFR	16 KNOTS – 99.84%	16 KNOTS – 99.92%	16 KNOTS – 99.84%	16 KNOTS – 99.92%
MAX. ELEVATION (MSL)		573.9'	603.3'	573.9'	615.3'
RUNWAY LENGTH		5,495'	5,200'	5,345'	5,800'
RUNWAY WIDTH		100'	100'	100'	100'
DISPLACED THRESHOLD		NONE	NONE	NONE / 325'	300' / NONE
USABLE RUNWAY LENGTH		5,495'	5,200'	5,345'	5,800'
SURFACE TYPE		ASPHALT	ASPHALT	ASPHALT	ASPHALT
PAVEMENT STRENGTH	SINGLE WHEEL	42,000 LBS	42,000 LBS	42,000 LBS	42,000 LBS
	DUAL WHEEL	60,000 LBS	48,000 LBS	60,000 LBS	90,000 LBS
APPROACH SURFACE SLOPE		34:1 / 34:1	50:1, 40:1 / 34:1	34:1 / 34:1	50:1, 40:1 / 34:1
APPROACH MINIMUMS		1 1/4 MILE	1 1/4 MILE	1 1/4 MILE	1 1/4 MILE
VISUAL APPROACH AIDS		REIL, PAPI / REIL, VASI	REIL / PAPI	REIL, PAPI / REIL, PAPI	REIL, PAPI / REIL, PAPI
INSTRUMENT APPROACH AIDS		VOR / VOR	ILS, LOC / NONE	VOR / VOR	ILS, LOC / NONE
RUNWAY LIGHTING		MIRL	HIRL	MIRL	HIRL
RUNWAY MARKING		NON–PRECISION	PRECISION	NON–PRECISION	PRECISION
RUNWAY DESIGN CODE (RDC)		C–II	C–II	C–II	C–II
CRITICAL AIRCRAFT		EMBRAER 135 BJ	EMBRAER 135 BJ	CHALLENGER 300/600	CHALLENGER 300/600
APPROACH REFERENCE CODE (APRC)		B–III / D–II–5000	B–III / D–II–5000	B–III / D–II–5000	B–III / D–II–5000
DEPARTURE REFERENCE CODE (DPRC)		B–III / D–II	B–III / D–II	B–III / D–II	B–III / D–II
DEPARTURE SURFACE		YES	YES	YES	YES
RUNWAY PROTECTION ZONE (RPZ)					
	INNER WIDTH	500'	500'	500'	500'
	OUTER WIDTH	1,010'	1,010'	1,010'	1,010'
	LENGTH	1,700'	1,700'	1,700'	1,700'
RUNWAY OBJECT FREE AREA (ROFA)					
	LENGTH BEYOND RUNWAY	35' / 0'	300' / 1,000'	35' / 0'	300' / 1,000'
	WIDTH	800'	800'	800'	800'
RUNWAY SAFETY AREA (RSA)					
	LENGTH BEYOND RUNWAY	35' / 0'	300' / 1,000'	35' / 0'	300' / 1,000'
	WIDTH	500'	500'	500'	500'
OBSTACLE FREE ZONE (OFZ)					
	LENGTH BEYOND RUNWAY	200'	200'	200'	200'
	WIDTH	400'	400'	400'	400'
FAR PART 77 CATEGORY		NON–PREC / NON–PREC	PRECISION / NON–PREC	NON–PREC / NON–PREC	PRECISION / NON–PREC
RUNWAY END COORDINATES	LATITUDE	7 – N43°37'33.02"	18 – N43°37'45.51"	7 – N43°37'33.78"	18 – N43°37'45.51"
	LONGITUDE	7 – W72°18'43.41"	18 – W72°18'26.51"	7 – W72°18'41.66"	18 – W72°18'26.51"
	LATITUDE	25 – N43°38'00.72"	36 – N43°36'55.28"	25 – N43°38'00.72"	36 – N43°36'49.48"
	LONGITUDE	25 – W72°17'39.16"	36 – W72°18'11.78"	25 – W72°17'39.16"	36 – W72°18'10.08"
RUNWAY END ELEVATIONS (MSL)		562.5' / 573.9'	563.4' / 603.3'	563.2' / 573.9'	563.4' / 615.3'
DISPLACED THRESHOLD ELEVATION (MSL)		N/A	N/A	N/A / 573.1'	562.0' / N/A
TDZ ELEVATION (MSL)		564.4' / 573.9'	572.4' / 603.3'	564.5' / 573.1'	575.9' / 615.3'
LINE OF SIGHT VIOLATIONS		NONE	NONE	NONE	NONE

AIRPORT DATA TABLE

AIPORT DATA		EXISTING	PROPOSED
AIRPORT ELEVATION/RUNWAY HIGH POINT (M.S.L.)		603.3'	615.3'
AIRPORT REFERENCE POINT (NAD 83)	LATITUDE	N43°37'34.00"	N43°37'31.77"
	LONGITUDE	W72°18'15.11"	W72°18'14.51"
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		81.3°F	81.3°F
AIRPORT TERMINAL AREA NAVAIDS		BEACON / ILS / GPS	BEACON / ILS / GPS
MAGNETIC VARIATION (SOURCE: NGS)		14.6 WEST	14.6 WEST
DATE OF MAGNETIC VARIATION		2015	2015
NPIAS SERVICE LEVEL		NON–HUB PRIMARY	NON–HUB PRIMARY
STATE SERVICE LEVEL		NON–HUB PRIMARY	NON–HUB PRIMARY
COMBINED WIND COVERAGE (%)	ALL WEATHER	16 KNOTS – 99.99%	16 KNOTS – 99.99%
	IFR	16 KNOTS – 99.99%	16 KNOTS – 99.99%
DESIGN AIRCRAFT		EMBRAER 135 BJ	CHALLENGER 300/600
TAXIWAY LIGHTING		MITL	MITL
TAXIWAY MARKING		CENTERLINE	CENTERLINE
TAXIWAY SURFACE TYPE		ASPHALT	ASPHALT

RUNWAY SAFETY AREA DETERMINATION

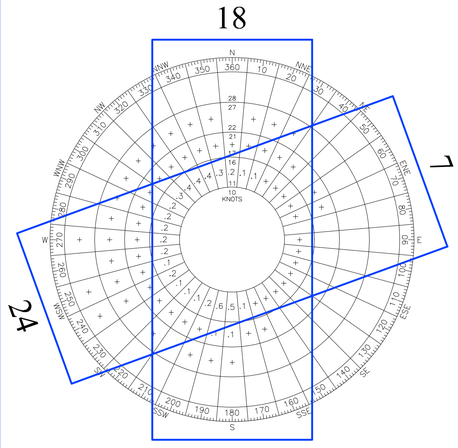
APPROACH END ID	STANDARD RSA LENGTH BEYOND RUNWAY END	ACTUAL RSA		RSA DETERMINATION	DATE APPROVED
		LENGTH BEYOND RUNWAY END	VIOLATIONS TO RSA ALONG SIDE OF RUNWAY		
EXISTING					
7	1,000' (C–II)	35'	GRADING	NO PRACTICABLE ALTERNATIVE	4/14/10
25	1,000' (C–II)	NONE	GRADING	NO PRACTICABLE ALTERNATIVE	4/14/10
18	1,000' (C–II)	300'	GRADING	NO PRACTICABLE ALTERNATIVE	4/14/10
36	1,000' (C–II)	1,000'	NONE	MEETS STANDARD	4/14/10
PROPOSED					
7	1,000' (C–II)	240'	GRADING	RELOCATE RUNWAY 7 THRESHOLD 150' INSTALL EMAS 240'X135'	
25	1,000' (C–II)	600'	GRADING	DISPLACE RUNWAY 25 THRESHOLD 325'	
18	1,000' (C–II)	600'	GRADING	DISPLACE RUNWAY 25 THRESHOLD 325'	
36	1,000' (C–II)	400'	GRADING	INSTALL EMAS 300'X150'	

DECLARED DISTANCES

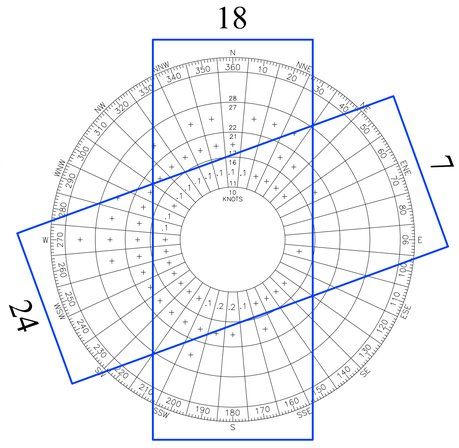
APPROACH END ID	TORA	TODA	ASDA	LDA	LDA		ASDA	DATE APPROVED
					APPROACH END RSA LENGTH	STOP END RSA LENGTH	RSA LENGTH	
PROPOSED								
7	5,346'	5,346'	5,346'*	5,346'*				
25	5,346'	5,346'	5,346'	5,021'				
18	5,800'	5,800'	5,800'	5,500'				
36	5,800'	5,800'	5,800'	5800				

* REQUIRES MOD TO STANDARDS

WIND COVERAGE



ALL WEATHER WINDROSE



IFR WINDROSE

WIND COVERAGE

KNOTS	ALL WEATHER	IFR
10.5	99.60%	99.84%
13	99.94%	99.95%
16	99.99%	99.99%
20	100.00%	100.00%

SOURCE:
NATIONAL CLIMACTIC DATA CENTER
94765 LEBANON MUNICIPAL AIRPORT, NH 2007–2016

REV	DATE	DESCRIPTION	BY	SPONSOR

McFarland Johnson
49 COURT STREET, METROCENTER, PO BOX 1980
BINGHAMTON, NEW YORK 13902 www.mjnc.com

LEBANON MUNICIPAL AIRPORT
GRAFTON COUNTY, NEW HAMPSHIRE

AIRPORT LAYOUT PLAN TABLES

SCALE:	NONE	DESIGN: DKS	SHEET: 3
DRAWN:	RGT	PROJECT: 18011.00	
CHECKED:		DATE: NOVEMBER 2017	

K:\Lebanon NH\T–18011.00 Lebanon MPU\Draw\Drawings\Drawing Set\ALP.dwg

Chapter 5
Airport Layout Plan and Airport Capital Improvement Plan

5.0 INTRODUCTION

This chapter presents the Airport Layout Plan (ALP), Project Phasing Plan, and Airport Capital Improvement Plan (ACIP), which comprise the final recommendations of the Lebanon Comprehensive Airport Master Plan (CAMP). The Recommended Development Strategy, identified in Chapter 4, forms the basis for the preparation of the ALP, which illustrates the short, intermediate, and long-range development plan for Lebanon Municipal Airport (LEB) over a 20-year planning period. The ALP serves as the official development plan for the Airport, and future development projects must be consistent with the ALP in order to be eligible for funding from the Federal Aviation Administration (FAA).

The ACIP presents a recommended phasing schedule for implementing the proposed improvements over the 20-year planning period. The ACIP details the funding mechanisms and costs for implementing the program, with emphasis on projects within the first five years. Federal, State, Sponsor, and private funding are also indentified for each project. The ALP and ACIP documents become the final recommendations of the CAMP.

The major components of this chapter include:

- Public Participation Process
- Airport Layout Plan
- Capital Improvement and Phasing Plan

5.1 PUBLIC PARTICIPATION PROCESS

The ALP, Project Phasing Plan, and ACIP are the result of a planning process that was designed to facilitate comment from all interested parties. The planning process included multiple meetings of key advisory committees that were held at key stages in the planning process. Those committees included the Technical Advisory Committee (TAC), Citizens Advisory Committee (CAC), Airport Users Advisory Committee (AUAC), and City Management Team (CMT). Members of these groups included municipal leaders, airport tenants, airport users, airport neighbors, regional businesses, and representatives of the New Hampshire Department of Transportation (NHDOT). The various meeting dates are listed on the following page and copies of the presentations, which included meeting agendas, project schedules, an overview of the airport's

layout, finances, operations, airline service, and more, are attached as an appendix to this report, along with their sign in sheets.

In addition to the advisory committee meetings, this planning process also included a substantial public outreach effort that focused on the City's mentality of "Residents First." Efforts under this initiative included the placement of informational displays and airport surveys at community centers and libraries within the City, the staffing of an informational booth at the farmers' market throughout the summer, small presentations to groups like the Rotary Club and Vital Communities, community coffees held at residents' homes, two public workshops held at the Kilton Public Library, and several City Council meetings. The approximate dates of these events are noted below, and related materials such as presentations, sign in sheets, survey, and comment sheets have been included in **Appendix J**.

• One-On-One Meetings with Business Leaders	March 2015
• Rotary Club Presentation	April 23, 2015
• TAC/CAC/AUAC Planning Charrette	May 6-7, 2015
• Library Displays with Survey	June – August 2015
• Farmers' Market Booth with Survey	June – August 2015
• TAC/CAC/AUAC Visioning Workshop	July 8, 2015
• Vital Communities Presentation	July 8, 2105
• Poverty Lane Coffee # 1	July 8, 2015
• Poverty Lane Coffee #2	August 2015
• Public Visioning Workshop	August 25, 2015
• TAC/CAC/AUAC Input Session	January 4, 2016
• Public Input Session	January 5, 2016

5.2 AIRPORT LAYOUT PLAN

The ALP has been prepared in accordance with generally accepted planning practices and with the following FAA guidance materials:

- FAA Advisory Circular 150/5300-13A, *Airport Design*
- FAA Advisory Circular 150/5070-6B, *Airport Master Plans*
- Federal Aviation Regulations, Part 77, *Objects Affecting Navigable Airspace*
- Standard Procedure for FAA Review and Approval of Airport Layout Plans

The ALP is based on the existing airport layout, but also illustrates the proposed facilities and design standards. These facilities are based on the recommended alternative in Chapter 5, and have been refined according to additional comments received from the City of Lebanon and the FAA. The ALP serves as the official document detailing the City of Lebanon's proposed development for the Airport. This drawing is signed by the Airport Sponsor (City), NHDOT, and the FAA. Projects that are eligible for federal grant funding must be shown on the ALP to be

considered for funding in the future. The ALP Drawing is provided at the end of this chapter. Narrative descriptions of each proposed development project are provided below.

5.2.1 Airside Improvements

The airside development presented is derived from the recommended alternative selected at the end of Chapter 5, *Airport Alternatives*. The major airside components are as follows:

Runway Safety Area (RSA) Improvements
Using a combination of Engineered Materials Arresting Systems (EMAS) and runway threshold displacement or relocation, the non-standard RSAs at LEB will be improved. The ALP shows the following proposed developments:

- Runway 7: the threshold would be relocated approximately 150' to the east in order to accommodate a non-standard EMAS measuring 135' wide and 240' long.

- Runway 25: the threshold would be displaced approximately 325' to the west. The total distance from the far end of the clearway to the displaced landing threshold (undershoot protection) would measure 600'.

- Runway 18: the threshold would be displaced approximately 300' south. The total distance from the far end of the blast pad to the runway threshold (undershoot protection) would measure 600'.

- Runway 36: the threshold would be relocated approximately 600' south, and a non-standard EMAS measuring 135' wide and 300' long would be installed. The total distance from the far end of the clearway to the runway threshold (undershoot protection) would measure 400'.

Runway Pavement Rehabilitation
The ALP depicts rehabilitation or reconstruction of Runway 7-25 and Runway 18-36. This is preventative maintenance that typically occurs when pavement is nearing the end of its useful life, or approximately 20 years old. Runway 7-25 is slightly older and in worse condition compared to Runway 18-36 and normally should be rehabilitated or reconstructed first. However, since Runway 7-25 is the longer runway, it is advisable that repairs are first made to Runway 18-36, including the threshold relocation, in order to maintain one functional runway that provides 5,500' in length. These projects will be phased as smaller projects in order to assure portions of the runways remain open, thus allowing a continuity of operations and revenues at the airport.

Taxiway Improvements
To combat runway incursions, new FAA taxiway design standards require that taxiways currently providing direct access between aprons and runways be staggered such that aircraft are

prevented from taxiing directly onto the runway. By incorporating these "jogs" into taxiway designs, pilots are forced to make control inputs, which allow pilots to maintain better situational awareness during their taxi and thus reduce the likelihood of runway incursions. The relocation of stub taxiways is intended to meet this purpose.

In addition to the stub taxiway relocation, the ALP also depicts rehabilitation or reconstruction of Taxiways Alpha and Bravo similar to that of the runways. Taxiway Bravo is slightly older than Taxiway Alpha and will be reconstructed first. Only the northern portion of Taxiway Alpha will need to be addressed, as the proposed southern extension will be brand new. This extension is meant to more safely and efficiently serve aircraft utilizing Runway 36.

5.2.2 Landside Improvements

Landside improvements shown on the ALP include constructing two additional conventional hangars measuring approximately 16,800 square feet and 45,000 square feet, which would be adjacent to the Terminal Apron and south T-hangars, respectively. Proposed rehabilitation or reconstruction to the parking lot and airport access road (Airpark Road) is also depicted, as well as expansions to the Snow Removal Equipment (SRE) building and Airport Rescue and Fire Fighting (ARFF) facilities. Lastly, a proposed avigation easement is shown off the Runway 25 end, which will provide assurance for approach obstruction clearance.

5.3 PROJECT PHASING PLAN

In order to accomplish the recommended projects in an efficient and cost-effective manner, a project phasing schedule is proposed for the 20-year planning period and beyond. The phasing recommendations constitute a logical sequence of development that will implement the recommended plan in the most orderly and economical fashion. The phasing of airfield projects is based on providing the maximum increase in airport safety and utility, as soon as possible. Other airfield improvements, such as those recommended to increase the capacity of the airport's landside facilities, are phased based on the forecasted level of operations at LEB.

The phasing recommendations are broken into three phases, corresponding to the short, medium, and long-range aviation forecasts. Those phases are as follows:

- Phase I: 2016-2020
- Phase II: 2021-2030
- Phase III: 2031 and beyond

In the event that forecast levels of activity are not attained, or are instead exceeded, the development projects can be re-phased as appropriate. This also holds true for private investors seeking further aviation development. Implementation of the phasing schedule is not only dependent on the growth of aviation activity, but on the availability of federal, state, and local funding. Thus, the phasing plan must remain flexible, yet comprehensive, to ensure that

adequate fiscal, staff, and scheduling resources are available. The Project Phasing Plan for LEB is depicted in **Table 5-1**.

Table 5-1: Project Phasing Plan for LEB

Phase I Projects (2016-2020)	
2016	Taxiway Bravo East Full-Depth Reconstruction
2016	Perimeter Fence and Tree Clearing
2016	Airport Mapping, ALP Drawings, and EA Re-evaluation
2017	Phase I: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) - Design and Permitting
2017	Construct Conventional Hangar (45,000 SF)
2017	Terminal ADA Improvements
2018	Phase II: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Construction Phase I: Rehab and Relocation
2019	Phase III: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Construction Phase II: EMAS and Obstructions
2019	Phase I: Taxiway Alpha South Extension – Design, Permitting, and Mitigation
2019	SRE Building Expansion Construction
2020	Phase II: Taxiway Alpha South Extension – Construction Phase I
Phase II Projects (2021-2030)	
2021	Phase III: Taxiway Alpha South Extension – Construction Phase II
2021	Construct Conventional Hangar (16,800 SF)
2022	Airport Survey and Exhibit A "Airport Property Map" Update
2023	Phase I: Taxiway Bravo West Reconstruction/Geometry – Design and Permitting
2024	Phase II: Taxiway Bravo West Reconstruction/Geometry – Construction Phase I
2025	Phase III: Taxiway Bravo West Reconstruction/Geometry – Construction Phase II
2026	Phase I: RW 7-25 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Design and Permitting
2027	Phase II: RW 7-25 Safety Improvements (Rehab, RSA, Obstruction Removal) – Construction Phase I: Rehab
2028	Phase III: RW 7-25 Safety Improvements (Rehab, RSA, Obstruction Removal) – Construction Phase II: EMAS
Phase III Projects (2031 and Beyond)	
2031	Phase I: Taxiway Alpha North Rehabilitation – Design and Permitting
2032	Phase II: Taxiway Alpha North Rehabilitation – Construction Phase I
2033	Phase III: Taxiway Alpha North Rehabilitation – Construction Phase II
2033	Phase I: Parking Lot Rehabilitation – Design and Permitting
2033	Phase I: Access Road Rehabilitation – Design and Permitting
2034	Phase II: Parking Lot Rehabilitation – Construction
2034	Phase II: Access Road Rehabilitation – Construction
2035	ARFF Expansion

Source: McFarland Johnson

5.4 CAPITAL IMPROVEMENT PLAN

The ACIP for the 20-year planning period is presented below in **Table 5-2**. The ACIP incorporates estimated overall project costs and potential funding sources for all projects within Phases I, II, and III. Projects eligible for funding through the FAA's Airport Improvement Program (AIP) can receive up to 90% of the total project costs from the FAA, with the remaining costs split between the NHDOT and the City of Lebanon at 5% each. Detailed cost estimates can be found in **Appendix K.**

Project eligibility for FAA AIP funding is generally restricted to projects that are for public use and are not revenue generating, although these requirements are sometimes relaxed for smaller airports. Examples of these types of projects include taxiways, aprons, easement acquisition, and obstruction removal, as well as associated environmental assessments. Projects that may not be eligible, or that have a low funding priority for the FAA, include fuel facilities, parking lots, T-hangars, conventional hangars, and mowing equipment.

Projects not eligible for AIP monies may be funded through other state or federal grants such as economic development grants or will need to be funded privately. These types of improvements are typically business decisions to expand or refurbish existing facilities and are primarily tenant-related and market driven.

Table 5-2: Airport Capital Improvement Program Project Costs

Year	Project	Estimated Cost	FAA Share (90%)	NHDOT (5%)	Local (5%)	Private Funding
	Phase I Projects (Through 2020)					
2016	Taxiway Bravo East Full-Depth Reconstruction*	$3,000,000	$2,700,000	$150,000	$150,000	--
2016	Perimeter Fence and Tree Clearing*	$430,000	$387,000	$21,500	$21,500	--
2016	Airport Mapping and ALP Drawings and EA Re-evaluation	$195,000	$175,500	$9,750	$9,750	--
2017	Phase I: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Design, Permitting, and Mitigation	$1,857,868	$1,672,082	$92,893	$92,893	--
2017	Construct Conventional Hangar (45,000 SF)	$6,468,750	--	--	--	$6,468,750
2017	Terminal ADA Improvements*	$70,000	$63,000	$3,500	$3,500	--
2018	Phase II: RW 18-36 Safety Improvements (Rehab, RSAs,	$5,572,313	$5,015,082	$278,616	$278,616	--

	Obstruction Removal) – Construction Phase I: Rehab and Relocation					
2019	Phase III: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Construction Phase II: EMAS and Obstructions	$6,252,469	$5,627,222	$312,624	$312,624	--
2019	Phase I: Taxiway Alpha South Extension – Design, Permitting, and Mitigation	$755,199	$649,290	$36,072	$36,072	--
2019	SRE Building Expansion Construction	$697,291	$627,562	$34,865	$34,865	--
2020	Phase II: Taxiway Alpha South Extension – Construction Phase I	$1,804,507	$1,624,057	$90,225	$90,225	--
	Subtotal Phase I	**$27,103,397**	**$18,540,795**	**$1,030,045**	**$1,030,045**	**$6,468,750**
	Phase II Projects (2021 - 2030)					
2021	Phase III: Taxiway Alpha South Extension – Construction Phase II	$1,804,507	$1,624,057	$90,225	$90,225	--
2021	Construct Conventional Hangar (16,800 SF)	$2,415,000	--	--	--	$2,415,000
2022	Airport Survey and Exhibit A "Airport Property Map" Update*	$65,000	$58,500	$3,250	$3,250	--
2023	Phase I: Taxiway Bravo West Reconstruction and Geometry – Design and Permitting	$242,505	$218,255	$12,125	$12,125	--
2024	Phase II: Taxiway Bravo West Reconstruction and Geometry – Construction Phase I	$811,682	$730,514	$40,584	$40,584	--
2025	Phase III: Taxiway Bravo West Reconstruction and Geometry – Construction Phase II	$811,682	$730,514	$40,584	$40,584	--
2026	Phase I: RW 7-25 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Design and Permitting	$1,300,808	$1,170,727	$65,041	$65,041	--
2027	Phase II: RW 7-25 Safety	$3,439,485	$3,095,537	$171,974	$171,974	--

	Improvements (Rehab, RSA, Obstruction Removal) – Construction Phase I: Rehab					
2028	Phase III: RW 7-25 Safety Improvements (Rehab, RSA, Obstruction Removal) – Construction Phase II: EMAS	$5,232,563	$4,709,307	$261,628	$261,628	--
	Subtotal Phase II	**$16,123,232**	**$12,337,411**	**$685,411**	**$685,411**	**$2,415,000**
	Phase III Projects (2031 and Beyond)					
2031	Phase I: Taxiway Alpha North Rehabilitation – Design and Permitting	$188,929	$170,036	$9,447	$9,447	--
2032	Phase II: Taxiway Alpha North Rehabilitation – Construction Phase I	$629,762	$566,786	$31,488	$31,488	--
2033	Phase III: Taxiway Alpha North Rehabilitation – Construction Phase II	$629,762	$566,786	$31,488	$31,488	--
2033	Phase I: Parking Lot Rehabilitation – Design and Permitting	$155,443	$139,899	$7,772	$7,772	--
2033	Phase I: Access Road Rehabilitation – Design and Permitting	$98,907	$89,017	$4,945	$4,945	--
2034	Phase II: Parking Lot Rehabilitation – Construction	$1,036,283	$932,655	$51,814	$51,814	--
2034	Phase II: Access Road Rehabilitation – Construction	$659,375	$593,438	$32,969	$32,969	--
2035	ARFF Expansion	$122,188	$109,969	$6,110	$6,110	--
	Subtotal Phase III	**$3,520,649**	**$3,168,586**	**$176,033**	**$176,033**	**--**
	TOTAL	**$46,747,278**	**$34,046,792**	**$1,891,489**	**$1,891,489**	**$8,883,750**

** These projects are already programmed into the ACIP and are separate from the CAMP recommendations.*

Source: McFarland Johnson

The overall local share for the proposed development projects is approximately $1,891,489 over the next 20-year planning period. This local share is funded by Passenger Facility Charges (PFCs), airport revenues, and the City of Lebanon. The following chapter of this report, *Airport Financial Plan*, provides a baseline financial assessment of airport revenue and expenses and offers recommendations on how to improve airport revenue generation in order to help offset the anticipated capital improvement expenses shown above.

Chapter 6
Financial

6.0 INTRODUCTION

As detailed in Chapter 5, *Airport Layout Plan and Airport Capital Improvement Plan*, this Master Plan Update (MPU) sets forth a long range Airport Capital Improvement Plan (ACIP) that can accommodate future demand levels while meeting the long term goals of the City for the Airport and responding to the desires of the community. This chapter explores the financial implications of implementing the preferred alternative of the MPU in the short-term by focusing on cost estimates for ACIP projects identified for the short-term.

6.1 CAPITAL IMPROVEMENT PLAN – SHORT-TERM FUNDING NEED

The LEB ACIP for the short-term period (2016-2020) is summarized in **Table 6-1**. These projects represent the highest priority for the Airport over the next five years. Perimeter fencing and tree clearing, an update to the Airport Exhibit "A", and terminal projects to improve compliance with the Americans with Disabilities Act (ADA) were identified by Airport Management.

Table 6-1: Capital Improvement Plan - Phase I Projects

Year	Project
2016	Taxiway Bravo East Full-Depth Reconstruction [1/]
2016	Perimeter Fence and Tree Clearing [1/]
2016	Airport Mapping, ALP Drawings, and EA Re-evaluation
2017	Phase I: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Design, Permitting, and Mitigation
2017	Construct Conventional Hangar (45,000 SF) [2/]
2017	Terminal ADA Improvements[1/]
2018	Phase II: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Construction Phase I: Rehab and Relocation
2019	Phase III: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Construction Phase II: EMAS and Obstructions
2019	Phase I: Taxiway Alpha South Extension – Design, Permitting, and Mitigation
2019	SRE Building Expansion Construction
2020	Phase II: Taxiway Alpha South Extension – Construction Phase I

Source: McFarland Johnson, Inc.

Note: [1/] Projects are from previous ACIP.

[2/] Hangar to be constructed by private interests.

Planning-level cost estimates developed for the ACIP are included for the short-term in **Table 6-2**. To win FAA funding for these projects, the City must submit and/or update its five-year ACIP to the FAA on an annual basis. The annual ACIP update process is used by FAA to prioritize its funding program on a State-wide basis in light of system-wide considerations, which include both safety and capacity.

Table 6-2: Capital Improvement Plan - Phase I Project Cost Estimates

Year	Project	Total Cost	FAA	NHDOT	Local
2016	Taxiway Bravo East Full-Depth Reconstruction [1/]	$3,000,000	$2,700,000	$150,000	$150,000
2016	Perimeter Fence and Tree Clearing [1/]	$430,000	$387,000	$21,500	$21,500
2016	Airport Mapping, ALP Drawings, and EA Re-evaluation	$195,000	$175,500	$9,750	$9,750
2017	Phase I: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Design, Permitting, and Mitigation	$1,857,868	$1,672,082	$92,893	$92,893
2017	Construct Conventional Hangar (45,000 SF) [2/]	$6,468,750	--	--	--
2017	Terminal ADA Improvements [1/]	$70,000	$63,000	$3,500	$3,500
2018	Phase II: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Construction Phase I: Rehab and Relocation	$5,572,313	$5,015,082	$278,616	$278,616
2019	Phase III: RW 18-36 Safety Improvements (Rehab, RSAs, Obstruction Removal) – Construction Phase II: EMAS and Obstructions	$6,252,469	$5,627,222	$312,624	$312,624
2019	Phase I: Taxiway Alpha South Extension – Design, Permitting, and Mitigation	$755,199	$649,290	$36,072	$36,072
2020	SRE Building Expansion Construction	$697,291	$627,562	$34,865	$34,865
2020	Phase II: Taxiway Alpha South Extension – Construction Phase I	$1,804,507	$1,624,057	$90,225	$90,225
	Total	$27,103,397	$18,540,795	$1,030,045	$1,030,045

Source: McFarland Johnson, Inc.
Note: [1/] Hangar to be constructed by private interests.

As shown in **Table 6-2**, with a total short-term ACIP program of over $26.1 million, the local or sponsor share of these projects is estimated to be about $1.03 million. The breakdown of funding represents an FAA share of 90 percent for eligible projects through the FAA Airport Improvement Program (AIP), and State and local shares each of five percent. The City and Airport have several options to fund their local share of the ACIP, which amounts to an annual need of approximately $206,000. These options are presented and discussed in the next section.

6.2 FINANCIAL OUTLOOK

This section explores the future financial performance of the Airport under two scenarios. The first scenario is a baseline condition where no changes or expansion of the Airport's operation are pursued beyond those already in place. The second scenario is a situation where certain specific actions are taken to improve the financial performance of the Airport. The analysis projects revenues and expenses under both scenarios through 2020 to highlight how pursuing several options can help the City and Airport generate income that can offset operating deficits and contribute to the local share of the short and long term ACIP program outlined in Chapter 5 of this MPU. To assess future financial performance, this section is organized as follows:

- Historical Revenues and Expenses
- Baseline Forecast of Financial Performance
- Forecast of Financial Performance with Preferred Alternative

6.2.1 Historical Revenues & Expenses

Historical revenue and expense statements for the Airport were provided by Airport Management for the 2012-2014 period. This information gives some indication of the trends that can be useful for forecasting future financial performance. **Table 6-3** shows the historical revenues and expenses as documented in the income statements for each respective year.

Table 6-3: Historical Revenues & Expenses

Category	2012	2013	2014	Avg. Growth/Yr.
OPERATING REVENUES				
Air Carrier Landing Fees	$204,767	$200,693	$199,432	-1.3%
General Aviation Landing Fees	$131,844	$152,036	$146,824	5.5%
Rent-A-Car Fees	$113,745	$117,739	$120,074	2.7%
Parking Lot Rental	$9,558	$14,990	$9,706	0.8%
Hangar Rentals	$70,425	$63,731	$70,225	-0.1%
Terminal Building Rent	$98,136	$113,551	$108,505	5.2%
Land Rent	$40,986	$38,734	$39,063	-2.4%
Fixed Base Operating Commissions	$37,574	$34,358	$33,543	-5.5%
Air Carrier Fuel Flow	$5,847	$6,670	$7,070	10.0%
General Aviation Fuel Flow	$50,418	$53,549	$51,800	1.4%
Other Miscellaneous[1/]	$17,404	$24,792	$15,367	-6.0%
Operating Revenues	**$780,703**	**$820,845**	**$801,608**	**1.3%**

Category	2012	2013	2014	Avg. Growth/Yr.
NON-OPERATING REVENUES				
Intergovernmental (NHAC Aid, FEMA)	$9,667	$28,483	$7,976	-9.2%
Investment Income	($814)	($264)	$15	-
Interfund Transfers from General Fund	$198,480	$215,590	$169,600	-6.6%
Non-Operating Revenues	**$207,332**	**$243,809**	**$177,591**	**-6.4%**
Grand Total Revenues	**$988,036**	**$1,064,654**	**$979,200**	**-0.4%**
OPERATING EXPENSES				
Administration	$312,158	$309,283	$329,075	2.7%
Aircraft Rescue and Firefighting	$0	$114	$87	-
Maintenance and Repairs	$428,550	$397,473	$404,720	-2.8%
Purchased Services[2/]	$0	$20,147	$0	-
Operating Expenses	**$740,708**	**$727,016**	**$733,882**	**-0.5%**
NON-OPERATING EXPENSES				
Debt Service/Principal Long-Term Bonds/Notes	$66,579	$66,579	$66,579	0.0%
Interest Long-Term Bonds/Notes	$49,255	$46,088	$42,921	-6.7%
Transfers to General Fund - Administrative Overhead	$43,200	$43,810	$45,320	2.4%
Transfers to Capital Improvement Fund (Non-AIP Capital Improvements)	$0	$0	$28,490	-
Non-Operating Expenses	**$159,034**	**$156,477**	**$183,310**	**6.4%**
Grand Total Expenses	**$899,742**	**$883,493**	**$917,191**	**1.0%**
Net Operating Income/(Deficit)	**$39,996**	**$93,829**	**$67,726**	**30.1%**
Total Net Income/(Deficit)	**$88,294**	**$181,161**	**$62,008**	**-16.2%**

Source: City of Lebanon, 2015

Notes: [1/] Other Miscellaneous revenues as identified by Airport Management were allocated as Operating Revenues.

[2/] Purchased Services in 2013 are related to a storm event in July 2013.

As shown in **Table 6-3**, on the operating side of the ledger, Lebanon Municipal Airport has generated positive income every year from 2012-2014. Net operating income fluctuated from nearly $40,000 in 2012 to $93,800 in 2013, and then down to about $67,700 in 2014. For the

three year period, net operating income grew at an annual rate of 30 percent, an increase of nearly 70 percent from 2012. The largest contributors to revenue gains for 2013 include:

Revenue Category	Increase Over 2013
• General Aviation Landing Fees	$20,200
• Terminal Building Rent	$15,400
• Other Miscellaneous	$7,400
• Parking Lot Rental	$5,400
• Rent-A-Car Fees	$4,000
• General Aviation Fuel Flow	$3,100

On the non-operating side of the ledger, non-operating revenues fluctuated in the same manner as operating revenues, showing increases in 2013 and decreases in 2014. The largest portion of non-operating revenues at the Airport is Interfund Transfers from the General Fund. Each year, the budget for this transfer is based upon the Airport's audited operating deficit two years prior. As such, transfers from the City's General Fund to support the Airport's operations for 2015 are based upon the audited deficit for 2013, which was provided as $39,940.

In terms of operating expenses, the 2012-2014 period recorded decreases from about $740,700 to $733,900 (0.5 percent annually). This decrease can be primarily attributed to a 25 percent reduction in wages, and associated decreases in employee benefits and retirement, which amount to about 38 percent and 11 percent, respectively. These reductions were offset by increases in overtime wages (33 percent), repair and maintenance services costs (31 percent), and supplies such as bottled gas, fuel oil, diesel fuel, and utility expenses.

Non-operating expenses during this period reflect payments for debt service, including long-term principal and interest on bonds and notes. Additionally, the Airport is responsible for contributing a prorated portion of computer support costs back to the City General Fund, as well as a payment for administrative services and support. This transfer back to the City General Fund also serves to decrease the net cost to the City for subsidy support for Airport deficits. Finally, periodic transfers are also made to the Airport Capital Improvement Fund for projects not covered by the FAA AIP. One such expense accounted for $28,500 in 2014.

Overall, the Airport has generated positive operating income over the three-year period considered, and it appears Airport Management has been diligent in controlling expenses.

6.2.2 Baseline Forecast of Financial Performance

The baseline forecast for future revenues and expenses at Lebanon Municipal Airport represents a scenario that assumes all current operating conditions remain the same. While this may be somewhat unrealistic, it does present a forecast benchmark that can be used as a measure for the performance of recommended alternatives. The baseline forecasts do not consider improvements to the Airport's financial performance that may occur through the implementation of the preferred alternative plan or other economic shifts that could alter the existing trend.

Airport Management provided a detailed narrative regarding the Airport's budget and actual expenses and income for 2014, along with estimates of year end 2015 revenue performance. The 2015 Revised Budget for the Airport Department serves as the foundation of the baseline expense forecast.

For example, the baseline forecast of revenues considers how 2015 year-to-date actual receipts are tracking in comparison to year-end 2014 performance. Overall, the Airport is performing better than in 2014, with revenues from hangar rentals and land rent up nearly 28 percent and 14 percent, respectively. Some revenue categories are tracking behind 2014, including rental car fees (-nine percent), FBO commissions (-four percent), and general aviation fuel flow (-three percent).

On the expense side, the forecasted rates utilized are based upon details and insights provided by Airport Management from the 2015 Airport budget. For example, Airport Management budgeted to fill a previously vacant Airport Maintenance Specialist position in 2015. The costs associated with filling this position affect the Maintenance and Repairs budget: part time and overtime wages will decrease, while the City will incur increased expenses for benefits, FICA/Medicare, and retirement and worker's compensation. Assumptions used in developing the baseline forecast included the following:

- **Base Financial Data:** The baseline forecast utilizes detailed financial information provided by Airport Management. Specifically, the baseline forecast builds from estimated 2015 year-end revenues, which represents the City's best estimates of revenues based upon monthly year-to-date activity through the July/August/September timeframe. Notably, these year-end estimates are accurate for fixed revenues from rent payments for terminal, hangar, and land-lease tenants based on existing lease agreements. Conversely, year-end estimates for revenues from air carrier and general aviation activity (i.e., landing fees, tie-down rental, FBO commissions, and fuel flowage fees) are subject

to greater variability and are more difficult to predict. For the purpose of this baseline forecast, the 2015 year-end estimate provided by the City will be used.

- **Trends Regarding Rates of Growth/Decline:** As described, the baseline forecast assumes all current operating conditions remain the same for the forecast period. This means that areas of revenue growth at the Airport as reported for the 2012-2014 period, as well as those tracking ahead of 2015 budget, are forecasted to experience continued growth at the average rate of inflation for 2014, which is 1.62 percent[1]. By contrast, any revenue category that experienced decreases during the 2012-2014 period, that were budgeted for a decrease in 2015, are projected to remain flat (held constant) at the level estimated for 2015 year-end revenues. Holding revenues in these categories constant aids in financial analysis by isolating the impacts of increasing revenues in the Airport's growth areas, and keeps the forecast conservative.

- **Interfund Transfers from General Fund:** As described previously, Interfund Transfers to the Airport account from the General Fund are based upon the Airport's audited deficit two years prior. Therefore, the baseline forecast utilizes City financial data to estimate this amount for 2016 and 2017 based upon performance in 2014 and estimated year-end 2015 performance, respectively. For the remaining 2018-2020 periods, the amount of Interfund Transfers from the General Fund is based on the forecasted deficit.

Drawing on these assumptions, the following forecast was developed. The baseline projection of revenues and expenses was forecast through the year 2020 and is detailed in Table 6-4.

Table 6-4: Baseline Forecast of Revenues & Expenses

Category	2016	2017	2018	2019	2020
OPERATING REVENUES					
Air Carrier Landing Fees	$203,874	$207,177	$210,533	$213,944	$217,410
General Aviation Landing Fees	$143,868	$143,868	$143,868	$143,868	$143,868
Rent-A-Car Fees	$108,877	$108,877	$108,877	$108,877	$108,877
Parking Lot Rental	$9,706	$9,706	$9,706	$9,706	$9,706
Hangar Rentals	$91,153	$92,630	$94,130	$95,655	$97,205
Terminal Building Rent	$108,537	$108,537	$108,537	$108,537	$108,537
Land Rent	$44,478	$44,478	$44,478	$44,478	$44,478
Fixed Base Operating Commissions	$32,067	$32,067	$32,067	$32,067	$32,067
Air Carrier Fuel Flow	$7,088	$7,088	$7,088	$7,088	$7,088

[1] The rate of inflation is frequently used to escalate prices when making forecasts of revenues and expenses. The Inflation rate is calculated using the Current Consumer Price Index (CPI-U) published monthly by the Bureau of Labor Statistics.

Category	2016	2017	2018	2019	2020
General Aviation Fuel Flow	$50,025	$50,025	$50,025	$50,025	$50,025
Other Miscellaneous	$9,955	$9,955	$9,955	$9,955	$9,955
Operating Revenues	**$809,628**	**$814,408**	**$819,265**	**$824,200**	**$829,216**
NON-OPERATING REVENUES					
Intergovernmental (NHAC Aid, FEMA)	$7,980	$7,980	$7,980	$7,980	$7,980
Investment Income	($1,000)	($1,000)	($1,000)	($1,000)	($1,000)
Interfund Transfers from General Fund	$107,592	$278,880	$242,259	$257,465	$273,707
Non-Operating Revenues	**$114,572**	**$285,860**	**$249,239**	**$264,445**	**$280,687**
Grand Total Revenues	**$924,200**	**$1,100,268**	**$1,068,504**	**$1,088,645**	**$1,109,902**
OPERATING EXPENSES					
Administration	$401,688	$415,875	$430,790	$446,470	$462,957
Aircraft Rescue and Firefighting	$2,400	$2,400	$2,400	$2,400	$2,400
Maintenance and Repairs	$501,159	$509,426	$517,914	$526,633	$535,591
Purchased Services	$0	$0	$0	$0	$0
Operating Expenses	**$905,247**	**$927,701**	**$951,104**	**$975,503**	**$1,000,948**
NON-OPERATING EXPENSES					
Debt Service/Principal Long-Term Bonds/Notes	$66,580	$66,580	$66,580	$66,580	$66,580
Interest Long-Term Bonds/Notes	$37,115	$34,647	$32,342	$30,191	$28,183
Transfers to General Fund - Administrative Overhead	$49,925	$49,925	$49,925	$49,925	$49,925
Transfers to Capital Improvement Fund (Non-AIP Capital Imp.)	$0	$0	$0	$0	$0
Non-Operating Expenses	**$153,620**	**$151,152**	**$148,847**	**$146,696**	**$144,688**
Grand Total Expenses	**$1,058,867**	**$1,078,853**	**$1,099,951**	**$1,122,199**	**$1,145,636**
Net Operating Income/(Deficit)	**($95,619)**	**($113,293)**	**($131,839)**	**($151,303)**	**($171,732)**
Grand Total Net Income/(Deficit)	**($134,667)**	**$21,415**	**($31,448)**	**($33,554)**	**($35,734)**

Source: McFarland Johnson, Inc.

As shown in **Table 6-4**, total baseline operating revenues might be anticipated to grow from approximately $809,600 in 2015 to about $829,200 by 2020. During the same period, baseline operating expenses are forecast to increase from about $905,200 to roughly $1.0 million in 2020. This represents a cumulative net operating deficit of over $663,800 between 2016 and 2020. As indicated by the estimates shown for Interfund Transfers from General Fund, this level of financial performance under the baseline scenario is forecast to cost the County approximately $1.16 million in Interfund Transfers from the General Fund during the period. However, since Interfund Transfers from the General Fund are budgeted based upon the audited deficit two years prior, budgeted transfer levels may not help the Airport break even on an annual basis. This baseline forecast estimates that an additional $214,000 may be necessary over the 5-year period. A summary of the baseline operating forecast is presented in **Table 6-5**.

Table 6-5: Baseline Net Operating Income/(Deficit) Summary

Year	Total Operating Expenses	Total Operating Revenues	Net Operating Income/(Deficit)
2016	$905,247	$809,628	($95,619)
2017	$927,701	$814,408	($113,293)
2018	$951,104	$819,265	($131,839)
2019	$975,103	$824,200	($151,303)
2020	$1,000,948	$829,216	($171,732)

Source: McFarland Johnson, Inc.

The results of this baseline forecast indicate that under status quo scenario, where no new revenue-generating strategies are undertaken and no negative economic impacts are considered, Lebanon Municipal Airport will produce net operating deficits through the 5-year forecast period and require increased levels of General Fund support.

6.2.3 Forecast of Improved Financial Performance with Preferred Alternative

The forecast of financial performance at Lebanon Municipal Airport with the preferred alternative represents a scenario that assumes a number of improvements are implemented that will impact operating conditions during the 5-year forecast period. The improvements are primarily associated with the following:

- **Additional Business/Corporate Based Jet:** As detailed in Chapter 2, *Forecast*, one additional jet is projected to base at the Airport by 2020. The financial performance forecast assumes this jet arrives at the Airport in 2016. The addition of this jet assumes increases in fuel flowage fees and landing fees. Fuel fees are estimated to be roughly $2,400-$2,600 annually, which equates to approximately 30,000-32,000 gallons of fuel

per year. Landing fees were estimated based on the Airport's current rate schedule, and assume an active operator making up to 75 flights annually (approximately 1½ flights per week).

- **Terminal Passenger Auto Parking:** The financial performance forecast assumes that passenger auto parking at the terminal will be converted from no charge to paid parking, and the City will install and operate a standalone system for collecting payment and controlling access. Auto parking rates are assumed to be held at $6.00 per vehicle per day beginning in mid-2016 through 2020. A standalone system is estimated to cost $120,000, including a contingency for specifications and construction requirements. It is assumed that the Airport will seek and win state grant funding for this improvement.

- **Additional Tenants Occupy Vacant Space in Terminal Building:** It is assumed that the small open area (approximately 385 square feet) could be leased at a rate of $5.00 per square foot and the larger area identified for a restaurant or café (approximately 1,955 square feet) could be leased at a rate of $6.00 per square foot. It is assumed that the larger space may not attract a restaurant or café operator until 2018.

- **Additional Land Lease for Private Hangar Development:** With the arrival of an additional business/corporate jet operator, it is assumed that this operator will lease land for the construction of a conventional hangar. This forecast assumes this operator will lease 30,000-35,000 square feet to accommodate a hangar with offices, auto parking, and aircraft ramp area. An additional $5,000 annual payment to the Airport was added for this operator in years 2018-2020 in the event the operator is a specialty aviation service business. Often, lease agreements with specialty operators include a fee schedule that compensates the Airport for revenues from operating there. These schedules are typically graduated, such that these businesses do not pay until they reach certain thresholds for gross receipts. For this forecast, the schedule stipulates an annual fee of two percent of gross receipts once they surpass $250,000, and 1½ percent for each additional $100,000 in gross receipts thereafter.

- **Additional Rent Revenues for Police Department Land Lease:** Based on conversations with Airport Management and results of the Airport Property Study, the Airport property line will be revised to include the City Police Department facility on Poverty Lane in 2018. This will require a land lease, which is anticipated to add $25,000 per year to Airport operating revenues for rent payments.

Drawing on these assumptions, the following forecast was developed. The projection of Airport financial performance through the year 2020 is detailed in **Table 6-6**.

Table 6-6: Forecast of Improved Financial Performance

Category	2016	2017	2018	2019	2020
OPERATING REVENUES					
Air Carrier Landing Fees	$203,874	$207,177	$210,533	$213,944	$217,410
General Aviation Landing Fees	$147,384	$150,899	$150,899	$150,899	$150,899
Rent-A-Car Fees	$108,877	$108,877	$108,877	$108,877	$108,877
Parking Lot Rental	$9,706	$9,706	$9,706	$9,706	$9,706
Hangar Rentals	$91,153	$92,630	$94,130	$95,655	$97,205
Terminal Passenger Parking	$22,970	$46,717	$47,506	$48,309	$49,131
Terminal Building Rent	$110,462	$117,305	$124,427	$124,427	$124,427
Land Rent	$52,206	$59,934	$109,934	$111,866	$113,798
Fixed Base Operating Commissions	$32,067	$32,067	$32,067	$32,067	$32,067
Air Carrier Fuel Flow	$7,088	$7,088	$7,088	$7,088	$7,088
General Aviation Fuel Flow	$52,585	$52,585	$52,585	$52,585	$52,585
Other Miscellaneous	$9,955	$9,955	$9,955	$9,955	$9,955
Operating Revenues	**$850,887**	**$897,499**	**$965,268**	**$972,939**	**$980,958**
NON-OPERATING REVENUES					
Intergovernmental (NHAC Aid, FEMA)	$7,980	$7,980	$7,980	$7,980	$7,980
Investment Income	($1,000)	($1,000)	($1,000)	($1,000)	($1,000)
Interfund Transfers from General Fund	$107,592	$293,310	$407,000	$380,373	$333,703
Non-Operating Revenues	**$114,572**	**$300,290**	**$413,980**	**$387,353**	**$340,683**
Grand Total Revenues	**$965,459**	**$1,197,789**	**$1,379,248**	**$1,360,292**	**$1,321,641**
OPERATING EXPENSES					
Administration	$401,688	$415,875	$430,790	$446,470	$462,957
Aircraft Rescue and Firefighting	$2,400	$2,400	$2,400	$2,400	$2,400
Maintenance and Repairs	$501,159	$509,426	$517,914	$526,633	$535,591
Purchased Services	$0	$0	$0	$0	$0
Operating Expenses	**$905,247**	**$927,701**	**$951,104**	**$975,503**	**$1,000,948**
NON-OPERATING EXPENSES					
Debt Service/Principal Long-Term Bonds/Notes	$66,580	$66,580	$66,580	$66,580	$66,580
Interest Long-Term Bonds/Notes	$37,115	$34,647	$32,342	$30,191	$28,183
Transfers to General Fund - Administrative Overhead	$49,925	$49,925	$49,925	$49,925	$49,925

Category	2016	2017	2018	2019	2020
Transfers to Capital Improvement Fund (Non-AIP Capital Imp.)	$206,000	$206,000	$206,000	$206,000	$206,000
Non-Operating Expenses	**$359,620**	**$357,152**	**$354,847**	**$352,696**	**$350,688**
Grand Total Expenses	**$1,264,867**	**$1,284,853**	**$1,305,951**	**$1,328,199**	**$1,351,636**
Net Operating Income/(Deficit)	**($54,360)**	**($30,201)**	**$14,164**	**($2,564)**	**($19,990)**
Grand Total Net Income/(Deficit)	**($299,408)**	**($87,063)**	**$73,297**	**$32,093**	**($29,995)**

Source: McFarland Johnson, Inc.

As shown in **Table 6-6**, total operating revenues under the preferred alternative might grow from approximately $850,900 in 2015 to about $981,000 in 2020. During the same period, operating expenses are forecast to remain the same as the baseline forecast, (increasing from about $905,200 to roughly $1.0 million in 2020) because growth is associated with private activity funded by private interests. This represents an increase in average net operating performance of nearly $114,200 annually. Over the 5-year period, this improved performance could reduce the Airport's cumulative operating deficit by more than 85 percent, a gain of roughly $570,800.

Considering non-operating revenues, this forecast follows current City policy for determining transfers from the General Fund to the Airport. As noted previously, the budget for this transfer is based upon the Airport's audited operating deficit two years prior. Therefore, the forecast of revenues in this category follows the same schedule - where transfers from the City's General Fund to support the Airport's operations for 2016-2020 are based upon the audited deficits for 2014-2018. As shown in **Table 6-6**, these transfers are estimated to increase through 2018, then decrease from 2019-2020 as revenues improve from private activity resulting from implementation of the preferred alternative.

A summary of the Airport's operating financial performance forecast under the preferred alternative is presented in **Table 6-7**.

Table 6-7: Forecast of Financial Performance – Preferred Alternative
Net Operating Income/(Deficit) Summary

Year	Total Operating Expenses	Total Operating Revenues	Net Operating Income/(Deficit)
2016	$905,247	$850,887	($54,360)
2017	$927,701	$897,499	($30,202)
2018	$951,104	$965,268	$14,164
2019	$975,503	$972,939	($2,564)
2020	$1,000,948	$980,958	($19,990)

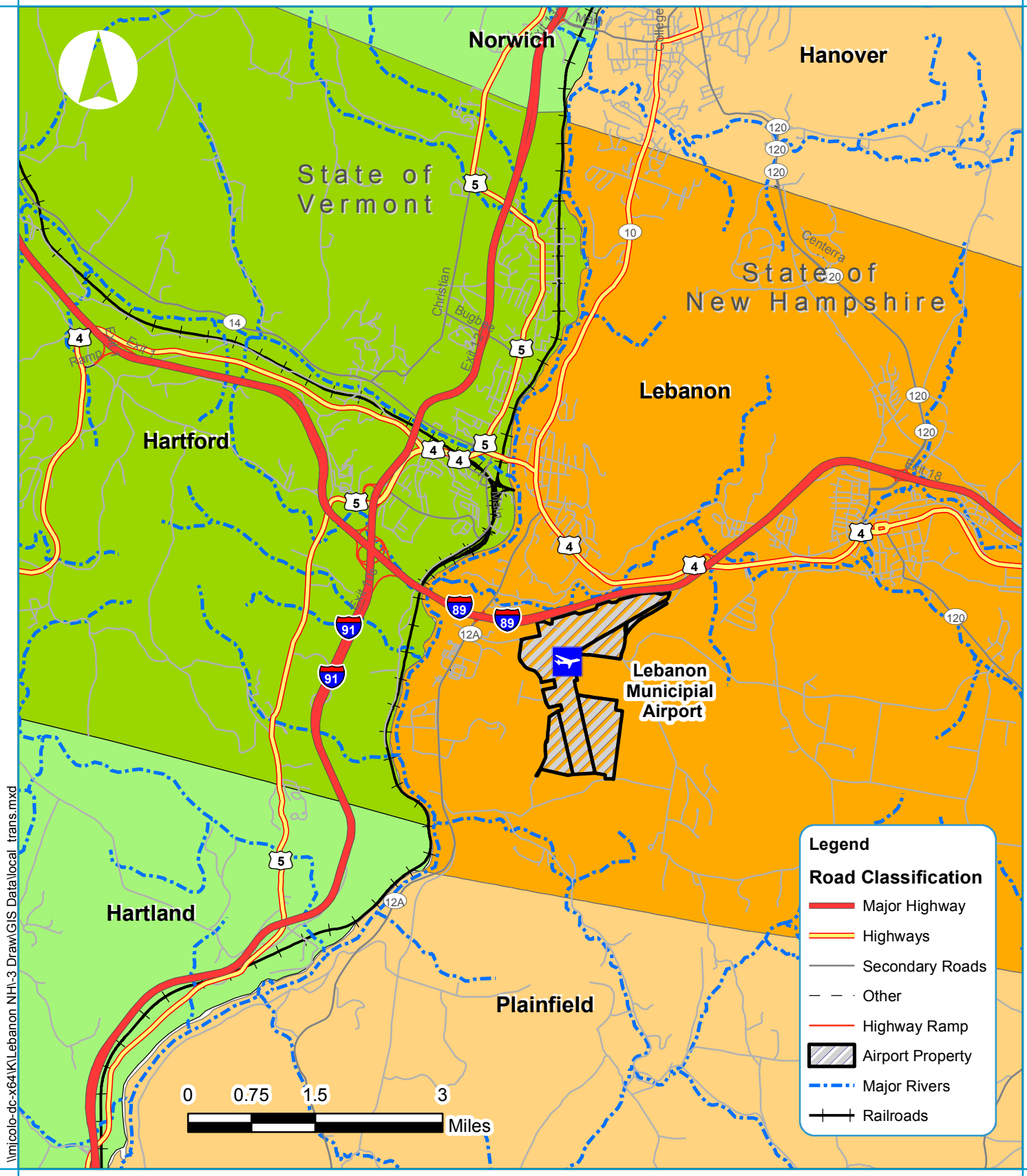
Source: McFarland Johnson, Inc.

The results of this financial performance forecast indicate that under the preferred alternative, where business/corporate jet activity increases, paid passenger parking is implemented, the Airport acquires a police station, and tenants are attracted to lease vacant terminal spaces, Lebanon Municipal Airport can improve net operating performance over the status quo, or baseline scenario.

Appendix A

Lebanon Airport

Local Transportation Assets



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McFarland Johnson

Figure A-2

Lebanon Airport

Regional Transportation Assets

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McFarland Johnson

Figure A-3

Appendix B

2014 CITY BUDGET -- Section 8 Budgeted Funds

MUNICIPAL AIRPORT FUND

		2013			2014				
		Original Budget	Adjustments	Revised Budget	Original Budget	Adjustments	Revised Budget	$ Chg v. '13	% Chg v. '13
EXPENDITURES		$950,920	$0	$950,920	$1,048,040	$0	$1,048,040	$97,120	10.2%
OPERATION AND MAINTENANCE:									
Airport	TOTAL	$794,440	$0	$794,440	$864,720	$0	$864,720	$70,280	8.8%
DEBT SERVICE:		$112,670	$0	$112,670	$109,510	$0	$109,510	($3,160)	-2.8%
INTERFUND TRANSFERS:		$43,810	$0	$43,810	$73,810	$0	$73,810	$30,000	68.5%
	TOTAL	$156,480	$0	$156,480	$183,320	$0	$183,320	$26,840	17.2%
Personnel Services		$423,170	$140	$423,310	$445,540	$0	$445,540	$22,230	5.3%
Contractual Services		$191,000	($1,420)	$189,580	$238,230	$0	$238,230	$48,650	25.7%
Materials and Supplies		$170,270	$1,280	$171,550	$170,950	$0	$170,950	($600)	-0.3%
Property		$10,000	$0	$10,000	$10,000	$0	$10,000	$0	0.0%
Debt Service		$112,670	$0	$112,670	$109,510	$0	$109,510	($3,160)	-2.8%
Interfund Transfers		$43,810	$0	$43,810	$73,810	$0	$73,810	$30,000	68.5%
	TOTAL	$950,920	$0	$950,920	$1,048,040	$0	$1,048,040	$97,120	10.2%
REVENUES		$1,033,210	($28,900)	$1,004,310	$993,580	$0	$993,580	($10,730)	-1.1%
Revenues Over/(Under) Expenditures		$82,290	($28,900)	$53,390	($54,460)	$0	($54,460)	($107,850)	-202.0%

SUMMARY

2014 CITY BUDGET -- Section 8 Budgeted Funds

MUNICIPAL AIRPORT FUND

	2013			2014				
	Original Budget	Adjustments	Revised Budget	Original Budget	Adjustments	Revised Budget	$ Chg v. '13	% Chg v. '13
REVENUES	**$1,033,210**	**($28,900)**	**$1,004,310**	**$993,580**	**$0**	**$993,580**	**($10,730)**	**-1.1%**
Intergovernmental	**$8,000**	**$6,010**	**$14,010**	**$10,000**	**$0**	**$10,000**	**($4,010)**	**-28.6%**
Charges for Services	**$803,620**	**($38,910)**	**$764,710**	**$804,980**	**$0**	**$804,980**	**$40,270**	**5.3%**
Other	**$6,000**	**$4,000**	**$10,000**	**$9,000**	**$0**	**$9,000**	**($1,000)**	**-10.0%**
Interfund Transfers	**$215,590**	**$0**	**$215,590**	**$169,600**	**$0**	**$169,600**	**($45,990)**	**-21.3%**
Revenues Over/(Under) Expenditures	**$82,290**	**($28,900)**	**$53,390**	**($54,460)**	**$0**	**($54,460)**	**($107,850)**	**-202.0%**
INTERGOVERNMENTAL								
2120 - 3359 - 01 - 0000 NHAC Aid	$8,000	$6,010	$14,010	$10,000	$0	$10,000	($4,010)	-28.6%
CHARGES FOR SERVICES								
2120 - 3401 - 01 - 0000 Air Carrier Landing Fees	$205,000	($6,150)	$198,850	$200,000	$0	$200,000	$1,150	0.6%
2120 - 3401 - 03 - 0000 General Aviation Landing Fees	$130,000	$20,000	$150,000	$150,000	$0	$150,000	$0	0.0%
2120 - 3401 - 04 - 0000 Rent-A-Car Fees	$115,540	($9,040)	$106,500	$106,500	$0	$106,500	$0	0.0%
2120 - 3401 - 10 - 0000 Parking Lot Rental	$12,660	($1,950)	$10,710	$12,930	$0	$12,930	$2,220	20.7%
2120 - 3401 - 11 - 0000 Hangar Rentals	$51,080	$10,920	$62,000	$59,400	$0	$59,400	($2,600)	-4.2%
2120 - 3401 - 06 - 0000 Terminal Building Rent	$136,070	($21,460)	$114,610	$154,130	$0	$154,130	$39,520	34.5%
2120 - 3401 - 08 - 0000 Land Rent	$62,640	($21,710)	$40,930	$40,800	$0	$40,800	($130)	-0.3%
2120 - 3401 - 09 - 0000 Fixed Base Operating Commissions	$40,000	($9,310)	$30,690	$30,690	$0	$30,690	$0	0.0%
2120 - 3502 - 03 - 0000 Air Carrier Fuel Flow	$5,100	($210)	$4,890	$5,000	$0	$5,000	$110	2.2%
2120 - 3502 - 10 - 0000 General Aviation Fuel Flow	$45,530	$0	$45,530	$45,530	$0	$45,530	$0	0.0%
OTHER								
2120 - 3502 - 01 - 0000 Investment Income	($2,000)	$1,000	($1,000)	($2,000)	$0	($2,000)	($1,000)	100.0%
2120 - 3502 - 90 - 0000 Other Miscellaneous	$8,000	$3,000	$11,000	$11,000	$0	$11,000	$0	0.0%

2014 CITY BUDGET -- Section 8 Budgeted Funds

MUNICIPAL AIRPORT FUND

		2013			2014				
		Original Budget	Adjustments	Revised Budget	Original Budget	Adjustments	Revised Budget	$ Chg v. '13	% Chg v. '13
INTERFUND TRANSFERS									
2120 - 3711 - 01 - 0000 General Fund		$215,590	$0	$215,590	$169,600	$0	$169,600	($45,990)	-21.3%
	Total	$1,033,210	($28,900)	$1,004,310	$993,580	$0	$993,580	($10,730)	-1.1%

REVENUES

2014 CITY BUDGET -- Section 8 Budgeted Funds

MUNICIPAL AIRPORT FUND

	2013			2014				
	Original Budget	Adjustments	Revised Budget	Original Budget	Adjustments	Revised Budget	$ Chg v. '13	% Chg v. '13
EXPENDITURES	**$794,440**	**$0**	**$794,440**	**$864,720**	**$0**	**$864,720**	**$70,280**	**8.8%**
Personnel Services	**$423,170**	**$140**	**$423,310**	**$445,540**	**$0**	**$445,540**	**$22,230**	**5.3%**
Contractual Services	**$191,000**	**($1,420)**	**$189,580**	**$238,230**	**$0**	**$238,230**	**$48,650**	**25.7%**
Materials and Supplies	**$170,270**	**$1,280**	**$171,550**	**$170,950**	**$0**	**$170,950**	**($600)**	**-0.3%**
Property	**$10,000**	**$0**	**$10,000**	**$10,000**	**$0**	**$10,000**	**$0**	**0.0%**
Administration								
2120 - 4651 - 01 - 1100 Full-Time Wages	$137,430	($260)	$137,170	$133,380	$0	$133,380	($3,790)	-2.8%
2120 - 4651 - 01 - 2100 Employee Benefits	$34,490	$0	$34,490	$54,560	$0	$54,560	$20,070	58.2%
2120 - 4651 - 01 - 2200 FICA/Medicare	$10,520	$260	$10,780	$10,210	$0	$10,210	($570)	-5.3%
2120 - 4651 - 01 - 2301 Retirement	$13,500	$0	$13,500	$14,370	$0	$14,370	$870	6.4%
2120 - 4651 - 01 - 2600 Workers' Compensation	$390	$0	$390	$410	$0	$410	$20	5.1%
2120 - 4651 - 01 - 2900 Other Employee Benefits	$3,000	$0	$3,000	$17,600	$0	$17,600	$14,600	486.7%
2120 - 4651 - 01 - 3300 Legal Expenses	$40,000	($1,420)	$38,580	$35,000	$0	$35,000	($3,580)	-9.3%
2120 - 4651 - 01 - 4300 Repair/Maintenance Services	$0	$340	$340	$550	$0	$550	$210	61.8%
2120 - 4651 - 01 - 4420 Rental: Vehicles/Equipment	$850	($340)	$510	$0	$0	$0	($510)	-100.0%
2120 - 4651 - 01 - 5200 Property/Liability Insurance	$19,550	$0	$19,550	$26,120	$0	$26,120	$6,570	33.6%
2120 - 4651 - 01 - 5300 Tele/Communications System	$2,400	$0	$2,400	$2,420	$0	$2,420	$20	0.8%
2120 - 4651 - 01 - 5335 Information Access	$500	$0	$500	$500	$0	$500	$0	0.0%
2120 - 4651 - 01 - 5400 Advertising	$16,000	$0	$16,000	$16,000	$0	$16,000	$0	0.0%
2120 - 4651 - 01 - 5600 Dues/Memberships	$3,650	$0	$3,650	$3,650	$0	$3,650	$0	0.0%
2120 - 4651 - 01 - 5850 Staff Development	$7,530	($4,700)	$2,830	$7,530	$0	$7,530	$4,700	166.1%
2120 - 4651 - 01 - 5870 Travel	$500	$0	$500	$500	$0	$500	$0	0.0%
2120 - 4651 - 01 - 5900 Other Purchased Services	$45,220	$0	$45,220	$61,680	$0	$61,680	$16,460	36.4%
2120 - 4651 - 01 - 6200 Office Supplies	$2,000	$0	$2,000	$2,000	$0	$2,000	$0	0.0%

Dpt: Airport

OPERATIONS AND MAINTENANCE

		2013			2014				
		Original Budget	Adjustments	Revised Budget	Original Budget	Adjustments	Revised Budget	$ Chg v. '13	% Chg v. '13
2120 - 4651 - 01 - 6700	Books/Periodicals	$400	$0	$400	$400	$0	$400	$0	0.0%
	Administration Total	$337,930	($6,120)	$331,810	$386,880	$0	$386,880	$55,070	16.6%
Aircraft Rescue and Firefighting									
2120 - 4651 - 02 - 1400	Overtime Wages	$0	$90	$90	$0	$0	$0	($90)	-100.0%
2120 - 4651 - 02 - 2200	FICA/Medicare	$0	$10	$10	$0	$0	$0	($10)	-100.0%
2120 - 4651 - 02 - 2303	Retirement	$0	$30	$30	$0	$0	$0	($30)	-100.0%
2120 - 4651 - 02 - 2600	Workers' Compensation	$0	$10	$10	$0	$0	$0	($10)	-100.0%
2120 - 4651 - 02 - 6100	General Operating Supplies	$2,400	($140)	$2,260	$2,400	$0	$2,400	$140	6.2%
	Aircraft Rescue and Firefighting Total	$2,400	$0	$2,400	$2,400	$0	$2,400	$0	0.0%
Maintenance and Repairs									
2120 - 4651 - 03 - 1100	Full-Time Wages	$69,610	$0	$69,610	$61,440	$0	$61,440	($8,170)	-11.7%
2120 - 4651 - 03 - 1200	Part-Time Wages	$83,590	($6,110)	$77,480	$85,970	$0	$85,970	$8,490	11.0%
2120 - 4651 - 03 - 1400	Overtime Wages	$18,000	$0	$18,000	$18,000	$0	$18,000	$0	0.0%
2120 - 4651 - 03 - 2100	Employee Benefits	$25,650	$2,400	$28,050	$23,700	$0	$23,700	($4,350)	-15.5%
2120 - 4651 - 03 - 2200	FICA/Medicare	$13,100	$0	$13,100	$12,660	$0	$12,660	($440)	-3.4%
2120 - 4651 - 03 - 2301	Retirement	$5,890	$2,060	$7,950	$4,920	$0	$4,920	($3,030)	-38.1%
2120 - 4651 - 03 - 2600	Workers' Compensation	$8,000	$1,650	$9,650	$8,320	$0	$8,320	($1,330)	-13.8%
2120 - 4651 - 03 - 4110	Water	$4,600	$0	$4,600	$4,600	$0	$4,600	$0	0.0%
2120 - 4651 - 03 - 4120	Sewer	$4,020	$0	$4,020	$4,020	$0	$4,020	$0	0.0%
2120 - 4651 - 03 - 4300	Repair/Maintenance Services	$46,180	$0	$46,180	$68,180	$0	$68,180	$22,000	47.6%
2120 - 4651 - 03 - 4420	Rental: Equipment	$0	$4,700	$4,700	$7,480	$0	$7,480	$2,780	59.1%
2120 - 4651 - 03 - 6150	Small Tools/Equipment	$4,000	$0	$4,000	$4,000	$0	$4,000	$0	0.0%
2120 - 4651 - 03 - 6221	Electricity: Terminal	$34,000	$0	$34,000	$34,000	$0	$34,000	$0	0.0%
2120 - 4651 - 03 - 6222	Electricity: Airfield	$20,000	$0	$20,000	$20,000	$0	$20,000	$0	0.0%
2120 - 4651 - 03 - 6230	Bottled Gas	$12,750	$0	$12,750	$10,200	$0	$10,200	($2,550)	-20.0%
2120 - 4651 - 03 - 6240	Fuel Oil	$20,000	$1,420	$21,420	$23,000	$0	$23,000	$1,580	7.4%
2120 - 4651 - 03 - 6260	Gasoline	$3,100	$0	$3,100	$2,940	$0	$2,940	($160)	-5.2%
2120 - 4651 - 03 - 6265	Diesel	$30,010	$0	$30,010	$30,400	$0	$30,400	$390	1.3%

	2013			2014				
	Original Budget	Adjustments	Revised Budget	Original Budget	Adjustments	Revised Budget	$ Chg v. '13	% Chg v. '13
2120 - 4651 - 03 - 6300 Maintenance Materials	$39,810	$0	$39,810	$39,810	$0	$39,810	$0	0.0%
2120 - 4651 - 03 - 6820 Uniforms	$1,800	$0	$1,800	$1,800	$0	$1,800	$0	0.0%
2120 - 4651 - 03 - 7400 Equipment	$10,000	$0	$10,000	$10,000	$0	$10,000	$0	0.0%
Maintenance and Repairs Total	$454,110	$6,120	$460,230	$475,440	$0	$475,440	$15,210	3.3%
TOTAL AIRPORT OPERATIONS AND MAINTENANCE	$794,440	$0	$794,440	$864,720	$0	$864,720	$70,280	8.8%

2014 CITY BUDGET -- Section 8 Budgeted Funds

MUNICIPAL AIRPORT FUND

	2013			2014				
	Original Budget	Adjustments	Revised Budget	Original Budget	Adjustments	Revised Budget	$ Chg v. '13	% Chg v. '13
EXPENDITURE	**$112,670**	**$0**	**$112,670**	**$109,510**	**$0**	**$109,510**	**($3,160)**	**-2.8%**
PRINCIPAL LONG-TERM BONDS/NOTES	**$66,580**	**$0**	**$66,580**	**$66,580**	**$0**	**$66,580**	**$0**	**0.0%**
INTEREST LONG-TERM BONDS/NOTES	**$46,090**	**$0**	**$46,090**	**$42,930**	**$0**	**$42,930**	**($3,160)**	**-6.9%**
General Obligation Debt Principal								
2120 - 4711 - 02 - 9822 2006 Public Improvements	$45,000	$0	$45,000	$45,000	$0	$45,000	$0	0.0%
2120 - 4711 - 02 - 9823 2007 Public Improvements	$21,580	$0	$21,580	$21,580	$0	$21,580	$0	0.0%
General Obligation Debt Principal Total	$66,580	$0	$66,580	$66,580	$0	$66,580	$0	0.0%
General Obligation Debt Interest								
2120 - 4721 - 02 - 9822 2006 Public Improvements	$29,710	$0	$29,710	$27,460	$0	$27,460	($2,250)	-7.6%
2120 - 4721 - 02 - 9823 2007 Public Improvements	$16,380	$0	$16,380	$15,470	$0	$15,470	($910)	-5.6%
General Obligation Debt Interest Total	$46,090	$0	$46,090	$42,930	$0	$42,930	($3,160)	-6.9%
TOTAL	$112,670	$0	$112,670	$109,510	$0	$109,510	($3,160)	-2.8%

DEBT SERVICE

2014 CITY BUDGET -- Section 8 Budgeted Funds

MUNICIPAL AIRPORT FUND

	2013			2014				
	Original Budget	Adjustments	Revised Budget	Original Budget	Adjustments	Revised Budget	$ Chg v. '13	% Chg v. '13
EXPENDITURES	**$43,810**	**$0**	**$43,810**	**$73,810**	**$0**	**$73,810**	**$30,000**	**68.5%**
TRANSFERS TO GENERAL FUND	**$43,810**	**$0**	**$43,810**	**$45,320**	**$0**	**$45,320**	**$1,510**	**3.4%**
TRANSFER TO CAPITAL IMPROVEMENTS FUND	**$0**	**$0**	**$0**	**$28,490**	**$0**	**$28,490**	**$28,490**	**-**
Transfers to General Fund								
2120 - 4911 - 01 - 9010 Administrative Overhead	$43,810	$0	$43,810	$45,320	$0	$45,320	$1,510	3.4%
Transfers to General Fund Total	$43,810	$0	$43,810	$45,320	$0	$45,320	$1,510	3.4%
Transfers to Capital Improvements Fund								
2120 - 4913 - 01 - 9300 Terminal Building	$0	$0	$0	$28,490	$0	$28,490	$28,490	-
Transfers to Capital Improvements Fund Total	$0	$0	$0	$28,490	$0	$28,490	$28,490	-
TOTAL	$43,810	$0	$43,810	$73,810	$0	$73,810	$30,000	68.5%

INTERFUND TRANSFERS

Appendix C

LEB Grant History 2008-2012		FAA	NH	Local	Total
2008					
Electrical Improvements	AIP #3-33-0010-37-2008	$107,826	$2,838	$2,838	$113,501
Wetland Mitigation Program	AIP #3-33-0010-38-2008	$193,743	$5,099	$5,099	$203,940
Design Only: Obstruction Pole & Light Rehabilitation	AIP 3-33-0010-36-2008	$229,900	$6,050	$6,050	$242,000
Procure ADA Boarding Ramp, Purchase SRE, and Construct	AIP 3-33-0010-35-2008	$132,161	$3,478	$3,478	$139,117
2009					
RSA Enhancement: EA, Preliminary Design, Permitting - Phase I	AIP #3-33-0010-41-2009	$408,769	$0	$21,514	$430,283
RSA Enhancement: EA, Preliminary Design, Permitting - Phase II	AIP #3-33-0010-42-2009	$148,330	$3,903	$3,903	$156,137
Installation of Airfield Lighting Control System	AIP #3-33-0010-39-2009	$95,000	$0	$5,000	$100,000
Purchase SRE (Tractor 37, Loader, Plow)	AIP #3-33-0010-40-2009	$162,450	$0	$8,550	$171,000
Wildlife Hazard Assessment	AIP #3-33-0010-43-2009	$46,713	$1,229	$1,229	$49,172
2010					
Update Exhibit 'A' as part of ALP Set	AIP 3-33-0010-44-2010	$66,500	$1,750	$1,750	$70,000
2011					
Runway Pavement Crack Repairs and Crack Seal	AIP 3-33-0010-46-2011	$45,557	$1,199	$11,989	$58,745
Prepare Additional Envrionmental Assessement Work	AIP 3-33-0010-45-2011	$86,888	$2,286	$2,287	$91,461
2012					
Remove/Mark Obstructions (on-airport south of Runway 7-25)	AIP 3-33-0010-47-2012	$467,640	$12,990	$38,970	$519,600
Design Only: SRE Building Expansion	AIP 3-33-0010-48-2012	$146,097	$4,058	$12,175	$162,330
	TOTALS	**$2,337,574**	**$44,880**	**$124,832**	**$2,507,286**

Appendix D

AIRPORT BUSINESS PARK PHASE 1A

AIRPARK ROAD

AIRPORT ROAD

AIRPORT BUSINESS PARK PHASE 1B

TAXIWAY D

TAXIWAY B-1

PASSENGER TERMINAL APRON

TAXIWAY A

TAXIWAY B

TAXIWAY B-2

SOUTH RAMP

NORTH RAMP

TAXIWAY A-2

TAXIWAY A-1

RUNWAY 18-36 (5,200' X 100')

INTERSTATE 89

AIRPORT PROPERTY LINE

TAXIWAY B-3

AIRPORT BUSINESS PARK PHASE 3

CIVIL AIR PATROL ROAD

RUNWAY 07-25 (5,496' X 100')

TAXIWAY B-4

AIRPORT BUSINESS PARK PHASE 2

POVERTY LANE

AIRPORT PROPERTY LINE

BUILDING LEGEND

1	PASSENGER TERMINAL
2	AIRCRAFT RESCUE AND FIRE FIGHTING
3	AIRPORT MAINTENANCE AND SNOW REMOVAL
4	CONVENTIONAL HANGAR (PRIVATE)
5	HANGAR (8 T-HANGARS & 2 BOX UNITS)
6	HANGAR (8 T-HANGARS & 2 BOX UNITS)
7	CONVENTIONAL HANGAR (BIG GREEN AVIATION)
8	T-HANGARS (9 UNITS)
9	T-HANGARS (8 UNITS)
10	CONVENTIONAL HANGAR (SHARKEY'S HELICOPTER)
11	CONVENTIONAL HANGAR (SIGNAL AVIATION)
12	FAA AIRWAYS FACILITIES
13	AVIATION FUEL STORAGE
14	AIR TRAFFIC CONTROL TOWER/ROTATING BEACON
15	AIRFIELD ELECTRICAL VAULT
16	STORAGE
17	OLD ELECTRICAL VAULT

N

-14° 55'

MAGNETIC DECLINATION 14° 55' W
CHANGES 4' MIN/YR (WEST)
NOVEMBER 2009

GRAPHIC SCALE

300 0 150 300 600 1200

ENGINEER'S SEAL

Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101-1227
Tel 603-669-5555
Fax 603-669-4168
Web Page: www.hoyletanner.com

DESIGNED BY DJD | DRAWN BY DJD | CHECKED BY RMF

LEBANON AIRPORT
LEBANON, NEW HAMPSHIRE

EXISTING FACILITIES CONCEPTUAL AIRPORT MASTER PLAN

SCALE: GRAPHIC | DATE: MARCH 2010

REVISIONS

REV. NO.	DATE	DESCRIPTION	BY

DO NOT SCALE DRAWING

PROJ. No.: 390601
FILE NAME: 390601e21
LAYOUT:
AIP No.: 3-33-0010-34

EXHIBIT
2-1

a:\390601\exe.dwg
F:\3900\Drawings\Exhibits\a390601mstb.dwg

Appendix E

FAA
Airports

ASSURANCES

Airport Sponsors

A. General.

1. These assurances shall be complied with in the performance of grant agreements for airport development, airport planning, and noise compatibility program grants for airport sponsors.
2. These assurances are required to be submitted as part of the project application by sponsors requesting funds under the provisions of Title 49, U.S.C., subtitle VII, as amended. As used herein, the term "public agency sponsor" means a public agency with control of a public-use airport; the term "private sponsor" means a private owner of a public-use airport; and the term "sponsor" includes both public agency sponsors and private sponsors.
3. Upon acceptance of this grant offer by the sponsor, these assurances are incorporated in and become part of this grant agreement.

B. Duration and Applicability.

1. **Airport development or Noise Compatibility Program Projects Undertaken by a Public Agency Sponsor.**

   The terms, conditions and assurances of this grant agreement shall remain in full force and effect throughout the useful life of the facilities developed or equipment acquired for an airport development or noise compatibility program project, or throughout the useful life of the project items installed within a facility under a noise compatibility program project, but in any event not to exceed twenty (20) years from the date of acceptance of a grant offer of Federal funds for the project. However, there shall be no limit on the duration of the assurances regarding Exclusive Rights and Airport Revenue so long as the airport is used as an airport. There shall be no limit on the duration of the terms, conditions, and assurances with respect to real property acquired with federal funds. Furthermore, the duration of the Civil Rights assurance shall be specified in the assurances.

2. **Airport Development or Noise Compatibility Projects Undertaken by a Private Sponsor.**

   The preceding paragraph 1 also applies to a private sponsor except that the useful life of project items installed within a facility or the useful life of the facilities developed or equipment acquired under an airport development or noise compatibility program project shall be no less than ten (10) years from the date of acceptance of Federal aid for the project.

3. **Airport Planning Undertaken by a Sponsor.**

Unless otherwise specified in this grant agreement, only Assurances 1, 2, 3, 5, 6, 13, 18, 25, 30, 32, 33, and 34 in Section C apply to planning projects. The terms, conditions, and assurances of this grant agreement shall remain in full force and effect during the life of the project; there shall be no limit on the duration of the assurances regarding Airport Revenue so long as the airport is used as an airport.

C. Sponsor Certification.

The sponsor hereby assures and certifies, with respect to this grant that:

1. **General Federal Requirements.**

It will comply with all applicable Federal laws, regulations, executive orders, policies, guidelines, and requirements as they relate to the application, acceptance and use of Federal funds for this project including but not limited to the following:

Federal Legislation

a. Title 49, U.S.C., subtitle VII, as amended.
b. Davis-Bacon Act - 40 U.S.C. 276(a), et seq.[1]
c. Federal Fair Labor Standards Act - 29 U.S.C. 201, et seq.
d. Hatch Act – 5 U.S.C. 1501, et seq.[2]
e. Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 Title 42 U.S.C. 4601, et seq.[1 2]
f. National Historic Preservation Act of 1966 - Section 106 - 16 U.S.C. 470(f).[1]
g. Archeological and Historic Preservation Act of 1974 - 16 U.S.C. 469 through 469c.[1]
h. Native Americans Grave Repatriation Act - 25 U.S.C. Section 3001, et seq.
i. Clean Air Act, P.L. 90-148, as amended.
j. Coastal Zone Management Act, P.L. 93-205, as amended.
k. Flood Disaster Protection Act of 1973 - Section 102(a) - 42 U.S.C. 4012a.[1]
l. Title 49, U.S.C., Section 303, (formerly known as Section 4(f))
m. Rehabilitation Act of 1973 - 29 U.S.C. 794.
n. Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
o. Americans with Disabilities Act of 1990, as amended, (42 U.S.C. § 12101 et seq.), prohibits discrimination on the basis of disability).
p. Age Discrimination Act of 1975 - 42 U.S.C. 6101, et seq.
q. American Indian Religious Freedom Act, P.L. 95-341, as amended.
r. Architectural Barriers Act of 1968 -42 U.S.C. 4151, et seq.[1]
s. Power plant and Industrial Fuel Use Act of 1978 - Section 403- 2 U.S.C. 8373.[1]
t. Contract Work Hours and Safety Standards Act - 40 U.S.C. 327, et seq.[1]
u. Copeland Anti-kickback Act - 18 U.S.C. 874.1
v. National Environmental Policy Act of 1969 - 42 U.S.C. 4321, et seq.[1]
w. Wild and Scenic Rivers Act, P.L. 90-542, as amended.
x. Single Audit Act of 1984 - 31 U.S.C. 7501, et seq.[2]
y. Drug-Free Workplace Act of 1988 - 41 U.S.C. 702 through 706.

z. The Federal Funding Accountability and Transparency Act of 2006, as amended (Pub. L. 109-282, as amended by section 6202 of Pub. L. 110-252).

Executive Orders

a. Executive Order 11246 - Equal Employment Opportunity[1]
b. Executive Order 11990 - Protection of Wetlands
c. Executive Order 11998 – Flood Plain Management
d. Executive Order 12372 - Intergovernmental Review of Federal Programs
e. Executive Order 12699 - Seismic Safety of Federal and Federally Assisted New Building Construction[1]
f. Executive Order 12898 - Environmental Justice

Federal Regulations

a. 2 CFR Part 180 - OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement).
b. 2 CFR Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. [OMB Circular A-87 Cost Principles Applicable to Grants and Contracts with State and Local Governments, and OMB Circular A-133 - Audits of States, Local Governments, and Non-Profit Organizations].[4, 5, 6]
c. 2 CFR Part 1200 – Nonprocurement Suspension and Debarment
d. 14 CFR Part 13 - Investigative and Enforcement Procedures14 CFR Part 16 - Rules of Practice For Federally Assisted Airport Enforcement Proceedings.
e. 14 CFR Part 150 - Airport noise compatibility planning.
f. 28 CFR Part 35- Discrimination on the Basis of Disability in State and Local Government Services.
g. 28 CFR § 50.3 - U.S. Department of Justice Guidelines for Enforcement of Title VI of the Civil Rights Act of 1964.
h. 29 CFR Part 1 - Procedures for predetermination of wage rates.[1]
i. 29 CFR Part 3 - Contractors and subcontractors on public building or public work financed in whole or part by loans or grants from the United States.[1]
j. 29 CFR Part 5 - Labor standards provisions applicable to contracts covering federally financed and assisted construction (also labor standards provisions applicable to non-construction contracts subject to the Contract Work Hours and Safety Standards Act).[1]
k. 41 CFR Part 60 - Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor (Federal and federally assisted contracting requirements).[1]
l. 49 CFR Part 18 - Uniform administrative requirements for grants and cooperative agreements to state and local governments.[3]
m. 49 CFR Part 20 - New restrictions on lobbying.
n. 49 CFR Part 21 – Nondiscrimination in federally-assisted programs of the Department of Transportation - effectuation of Title VI of the Civil Rights Act of 1964.
o. 49 CFR Part 23 - Participation by Disadvantage Business Enterprise in Airport Concessions.

p. 49 CFR Part 24 – Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs.[1] [2]
q. 49 CFR Part 26 – Participation by Disadvantaged Business Enterprises in Department of Transportation Programs.
r. 49 CFR Part 27 – Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance.[1]
s. 49 CFR Part 28 – Enforcement of Nondiscrimination on the Basis of Handicap in Programs or Activities conducted by the Department of Transportation.
t. 49 CFR Part 30 - Denial of public works contracts to suppliers of goods and services of countries that deny procurement market access to U.S. contractors.
u. 49 CFR Part 32 – Governmentwide Requirements for Drug-Free Workplace (Financial Assistance)
v. 49 CFR Part 37 – Transportation Services for Individuals with Disabilities (ADA).
w. 49 CFR Part 41 - Seismic safety of Federal and federally assisted or regulated new building construction.

Specific Assurances

Specific assurances required to be included in grant agreements by any of the above laws, regulations or circulars are incorporated by reference in this grant agreement.

Footnotes to Assurance C.1.

[1] These laws do not apply to airport planning sponsors.

[2] These laws do not apply to private sponsors.

[3] 49 CFR Part 18 and 2 CFR Part 200 contain requirements for State and Local Governments receiving Federal assistance. Any requirement levied upon State and Local Governments by this regulation and circular shall also be applicable to private sponsors receiving Federal assistance under Title 49, United States Code.

[4] On December 26, 2013 at 78 FR 78590, the Office of Management and Budget (OMB) issued the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards in 2 CFR Part 200. 2 CFR Part 200 replaces and combines the former Uniform Administrative Requirements for Grants (OMB Circular A-102 and Circular A-110 or 2 CFR Part 215 or Circular) as well as the Cost Principles (Circulars A-21 or 2 CFR part 220; Circular A-87 or 2 CFR part 225; and A-122, 2 CFR part 230). Additionally it replaces Circular A-133 guidance on the Single Annual Audit. In accordance with 2 CFR section 200.110, the standards set forth in Part 200 which affect administration of Federal awards issued by Federal agencies become effective once implemented by Federal agencies or when any future amendment to this Part becomes final. Federal agencies, including the Department of Transportation, must implement the policies and procedures applicable to Federal awards by promulgating a regulation to be effective by December 26, 2014 unless different provisions are required by statute or approved by OMB.

[5] Cost principles established in 2 CFR part 200 subpart E must be used as guidelines for determining the eligibility of specific types of expenses.

[6] Audit requirements established in 2 CFR part 200 subpart F are the guidelines for audits.

2. **Responsibility and Authority of the Sponsor.**

   a. Public Agency Sponsor:

   It has legal authority to apply for this grant, and to finance and carry out the proposed project; that a resolution, motion or similar action has been duly adopted or passed as an official act of the applicant's governing body authorizing the filing of the application, including all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the applicant to act in connection with the application and to provide such additional information as may be required.

   b. Private Sponsor:

   It has legal authority to apply for this grant and to finance and carry out the proposed project and comply with all terms, conditions, and assurances of this grant agreement. It shall designate an official representative and shall in writing direct and authorize that person to file this application, including all understandings and assurances contained therein; to act in connection with this application; and to provide such additional information as may be required.

3. **Sponsor Fund Availability.**

   It has sufficient funds available for that portion of the project costs which are not to be paid by the United States. It has sufficient funds available to assure operation and maintenance of items funded under this grant agreement which it will own or control.

4. **Good Title.**

   a. It, a public agency or the Federal government, holds good title, satisfactory to the Secretary, to the landing area of the airport or site thereof, or will give assurance satisfactory to the Secretary that good title will be acquired.

   b. For noise compatibility program projects to be carried out on the property of the sponsor, it holds good title satisfactory to the Secretary to that portion of the property upon which Federal funds will be expended or will give assurance to the Secretary that good title will be obtained.

5. **Preserving Rights and Powers.**

   a. It will not take or permit any action which would operate to deprive it of any of the rights and powers necessary to perform any or all of the terms, conditions, and assurances in this grant agreement without the written approval of the Secretary, and will act promptly to acquire, extinguish or modify any outstanding rights or claims of right of others which would interfere with such performance by the sponsor. This shall be done in a manner acceptable to the Secretary.

b. It will not sell, lease, encumber, or otherwise transfer or dispose of any part of its title or other interests in the property shown on Exhibit A to this application or, for a noise compatibility program project, that portion of the property upon which Federal funds have been expended, for the duration of the terms, conditions, and assurances in this grant agreement without approval by the Secretary. If the transferee is found by the Secretary to be eligible under Title 49, United States Code, to assume the obligations of this grant agreement and to have the power, authority, and financial resources to carry out all such obligations, the sponsor shall insert in the contract or document transferring or disposing of the sponsor's interest, and make binding upon the transferee all of the terms, conditions, and assurances contained in this grant agreement.

c. For all noise compatibility program projects which are to be carried out by another unit of local government or are on property owned by a unit of local government other than the sponsor, it will enter into an agreement with that government. Except as otherwise specified by the Secretary, that agreement shall obligate that government to the same terms, conditions, and assurances that would be applicable to it if it applied directly to the FAA for a grant to undertake the noise compatibility program project. That agreement and changes thereto must be satisfactory to the Secretary. It will take steps to enforce this agreement against the local government if there is substantial non-compliance with the terms of the agreement.

d. For noise compatibility program projects to be carried out on privately owned property, it will enter into an agreement with the owner of that property which includes provisions specified by the Secretary. It will take steps to enforce this agreement against the property owner whenever there is substantial non-compliance with the terms of the agreement.

e. If the sponsor is a private sponsor, it will take steps satisfactory to the Secretary to ensure that the airport will continue to function as a public-use airport in accordance with these assurances for the duration of these assurances.

f. If an arrangement is made for management and operation of the airport by any agency or person other than the sponsor or an employee of the sponsor, the sponsor will reserve sufficient rights and authority to insure that the airport will be operated and maintained in accordance Title 49, United States Code, the regulations and the terms, conditions and assurances in this grant agreement and shall insure that such arrangement also requires compliance therewith.

g. Sponsors of commercial service airports will not permit or enter into any arrangement that results in permission for the owner or tenant of a property used as a residence, or zoned for residential use, to taxi an aircraft between that property and any location on airport. Sponsors of general aviation airports entering into any arrangement that results in permission for the owner of residential real property adjacent to or near the airport must comply with the requirements of Sec. 136 of Public Law 112-95 and the sponsor assurances.

6. **Consistency with Local Plans.**

   The project is reasonably consistent with plans (existing at the time of submission of this application) of public agencies that are authorized by the State in which the project is located to plan for the development of the area surrounding the airport.

7. **Consideration of Local Interest.**

   It has given fair consideration to the interest of communities in or near where the project may be located.

8. **Consultation with Users.**

   In making a decision to undertake any airport development project under Title 49, United States Code, it has undertaken reasonable consultations with affected parties using the airport at which project is proposed.

9. **Public Hearings.**

   In projects involving the location of an airport, an airport runway, or a major runway extension, it has afforded the opportunity for public hearings for the purpose of considering the economic, social, and environmental effects of the airport or runway location and its consistency with goals and objectives of such planning as has been carried out by the community and it shall, when requested by the Secretary, submit a copy of the transcript of such hearings to the Secretary. Further, for such projects, it has on its management board either voting representation from the communities where the project is located or has advised the communities that they have the right to petition the Secretary concerning a proposed project.

10. **Metropolitan Planning Organization.**

    In projects involving the location of an airport, an airport runway, or a major runway extension at a medium or large hub airport, the sponsor has made available to and has provided upon request to the metropolitan planning organization in the area in which the airport is located, if any, a copy of the proposed amendment to the airport layout plan to depict the project and a copy of any airport master plan in which the project is described or depicted.

11. **Pavement Preventive Maintenance.**

    With respect to a project approved after January 1, 1995, for the replacement or reconstruction of pavement at the airport, it assures or certifies that it has implemented an effective airport pavement maintenance-management program and it assures that it will use such program for the useful life of any pavement constructed, reconstructed or repaired with Federal financial assistance at the airport. It will provide such reports on pavement condition and pavement management programs as the Secretary determines may be useful.

12. **Terminal Development Prerequisites.**

    For projects which include terminal development at a public use airport, as defined in Title 49, it has, on the date of submittal of the project grant application, all the safety equipment required for certification of such airport under section 44706 of Title 49, United States Code, and all the security equipment required by rule or regulation, and

has provided for access to the passenger enplaning and deplaning area of such airport to passengers enplaning and deplaning from aircraft other than air carrier aircraft.

13. **Accounting System, Audit, and Record Keeping Requirements.**

    a. It shall keep all project accounts and records which fully disclose the amount and disposition by the recipient of the proceeds of this grant, the total cost of the project in connection with which this grant is given or used, and the amount or nature of that portion of the cost of the project supplied by other sources, and such other financial records pertinent to the project. The accounts and records shall be kept in accordance with an accounting system that will facilitate an effective audit in accordance with the Single Audit Act of 1984.

    b. It shall make available to the Secretary and the Comptroller General of the United States, or any of their duly authorized representatives, for the purpose of audit and examination, any books, documents, papers, and records of the recipient that are pertinent to this grant. The Secretary may require that an appropriate audit be conducted by a recipient. In any case in which an independent audit is made of the accounts of a sponsor relating to the disposition of the proceeds of a grant or relating to the project in connection with which this grant was given or used, it shall file a certified copy of such audit with the Comptroller General of the United States not later than six (6) months following the close of the fiscal year for which the audit was made.

14. **Minimum Wage Rates.**

    It shall include, in all contracts in excess of $2,000 for work on any projects funded under this grant agreement which involve labor, provisions establishing minimum rates of wages, to be predetermined by the Secretary of Labor, in accordance with the Davis-Bacon Act, as amended (40 U.S.C. 276a-276a-5), which contractors shall pay to skilled and unskilled labor, and such minimum rates shall be stated in the invitation for bids and shall be included in proposals or bids for the work.

15. **Veteran's Preference.**

    It shall include in all contracts for work on any project funded under this grant agreement which involve labor, such provisions as are necessary to insure that, in the employment of labor (except in executive, administrative, and supervisory positions), preference shall be given to Vietnam era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns owned and controlled by disabled veterans as defined in Section 47112 of Title 49, United States Code. However, this preference shall apply only where the individuals are available and qualified to perform the work to which the employment relates.

16. **Conformity to Plans and Specifications.**

    It will execute the project subject to plans, specifications, and schedules approved by the Secretary. Such plans, specifications, and schedules shall be submitted to the Secretary prior to commencement of site preparation, construction, or other performance under this grant agreement, and, upon approval of the Secretary, shall be incorporated into this grant agreement. Any modification to the approved plans,

specifications, and schedules shall also be subject to approval of the Secretary, and incorporated into this grant agreement.

17. **Construction Inspection and Approval.**

    It will provide and maintain competent technical supervision at the construction site throughout the project to assure that the work conforms to the plans, specifications, and schedules approved by the Secretary for the project. It shall subject the construction work on any project contained in an approved project application to inspection and approval by the Secretary and such work shall be in accordance with regulations and procedures prescribed by the Secretary. Such regulations and procedures shall require such cost and progress reporting by the sponsor or sponsors of such project as the Secretary shall deem necessary.

18. **Planning Projects.**

    In carrying out planning projects:

    a. It will execute the project in accordance with the approved program narrative contained in the project application or with the modifications similarly approved.

    b. It will furnish the Secretary with such periodic reports as required pertaining to the planning project and planning work activities.

    c. It will include in all published material prepared in connection with the planning project a notice that the material was prepared under a grant provided by the United States.

    d. It will make such material available for examination by the public, and agrees that no material prepared with funds under this project shall be subject to copyright in the United States or any other country.

    e. It will give the Secretary unrestricted authority to publish, disclose, distribute, and otherwise use any of the material prepared in connection with this grant.

    f. It will grant the Secretary the right to disapprove the sponsor's employment of specific consultants and their subcontractors to do all or any part of this project as well as the right to disapprove the proposed scope and cost of professional services.

    g. It will grant the Secretary the right to disapprove the use of the sponsor's employees to do all or any part of the project.

    h. It understands and agrees that the Secretary's approval of this project grant or the Secretary's approval of any planning material developed as part of this grant does not constitute or imply any assurance or commitment on the part of the Secretary to approve any pending or future application for a Federal airport grant.

19. **Operation and Maintenance.**

    a. The airport and all facilities which are necessary to serve the aeronautical users of the airport, other than facilities owned or controlled by the United States, shall be operated at all times in a safe and serviceable condition and in accordance with the minimum standards as may be required or prescribed by applicable Federal,

state and local agencies for maintenance and operation. It will not cause or permit any activity or action thereon which would interfere with its use for airport purposes. It will suitably operate and maintain the airport and all facilities thereon or connected therewith, with due regard to climatic and flood conditions. Any proposal to temporarily close the airport for non-aeronautical purposes must first be approved by the Secretary. In furtherance of this assurance, the sponsor will have in effect arrangements for-

1) Operating the airport's aeronautical facilities whenever required;

2) Promptly marking and lighting hazards resulting from airport conditions, including temporary conditions; and

3) Promptly notifying airmen of any condition affecting aeronautical use of the airport. Nothing contained herein shall be construed to require that the airport be operated for aeronautical use during temporary periods when snow, flood or other climatic conditions interfere with such operation and maintenance. Further, nothing herein shall be construed as requiring the maintenance, repair, restoration, or replacement of any structure or facility which is substantially damaged or destroyed due to an act of God or other condition or circumstance beyond the control of the sponsor.

b. It will suitably operate and maintain noise compatibility program items that it owns or controls upon which Federal funds have been expended.

20. **Hazard Removal and Mitigation.**

It will take appropriate action to assure that such terminal airspace as is required to protect instrument and visual operations to the airport (including established minimum flight altitudes) will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or otherwise mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards.

21. **Compatible Land Use.**

It will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the noise compatibility program measures upon which Federal funds have been expended.

22. **Economic Nondiscrimination.**

a. It will make the airport available as an airport for public use on reasonable terms and without unjust discrimination to all types, kinds and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.

b. In any agreement, contract, lease, or other arrangement under which a right or privilege at the airport is granted to any person, firm, or corporation to conduct or

to engage in any aeronautical activity for furnishing services to the public at the airport, the sponsor will insert and enforce provisions requiring the contractor to-

1) furnish said services on a reasonable, and not unjustly discriminatory, basis to all users thereof, and

2) charge reasonable, and not unjustly discriminatory, prices for each unit or service, provided that the contractor may be allowed to make reasonable and nondiscriminatory discounts, rebates, or other similar types of price reductions to volume purchasers.

c. Each fixed-based operator at the airport shall be subject to the same rates, fees, rentals, and other charges as are uniformly applicable to all other fixed-based operators making the same or similar uses of such airport and utilizing the same or similar facilities.

d. Each air carrier using such airport shall have the right to service itself or to use any fixed-based operator that is authorized or permitted by the airport to serve any air carrier at such airport.

e. Each air carrier using such airport (whether as a tenant, non-tenant, or subtenant of another air carrier tenant) shall be subject to such nondiscriminatory and substantially comparable rules, regulations, conditions, rates, fees, rentals, and other charges with respect to facilities directly and substantially related to providing air transportation as are applicable to all such air carriers which make similar use of such airport and utilize similar facilities, subject to reasonable classifications such as tenants or non-tenants and signatory carriers and non-signatory carriers. Classification or status as tenant or signatory shall not be unreasonably withheld by any airport provided an air carrier assumes obligations substantially similar to those already imposed on air carriers in such classification or status.

f. It will not exercise or grant any right or privilege which operates to prevent any person, firm, or corporation operating aircraft on the airport from performing any services on its own aircraft with its own employees [including, but not limited to maintenance, repair, and fueling] that it may choose to perform.

g. In the event the sponsor itself exercises any of the rights and privileges referred to in this assurance, the services involved will be provided on the same conditions as would apply to the furnishing of such services by commercial aeronautical service providers authorized by the sponsor under these provisions.

h. The sponsor may establish such reasonable, and not unjustly discriminatory, conditions to be met by all users of the airport as may be necessary for the safe and efficient operation of the airport.

i. The sponsor may prohibit or limit any given type, kind or class of aeronautical use of the airport if such action is necessary for the safe operation of the airport or necessary to serve the civil aviation needs of the public.

23. **Exclusive Rights.**

It will permit no exclusive right for the use of the airport by any person providing, or intending to provide, aeronautical services to the public. For purposes of this paragraph, the providing of the services at an airport by a single fixed-based operator shall not be construed as an exclusive right if both of the following apply:

a. It would be unreasonably costly, burdensome, or impractical for more than one fixed-based operator to provide such services, and

b. If allowing more than one fixed-based operator to provide such services would require the reduction of space leased pursuant to an existing agreement between such single fixed-based operator and such airport. It further agrees that it will not, either directly or indirectly, grant or permit any person, firm, or corporation, the exclusive right at the airport to conduct any aeronautical activities, including, but not limited to charter flights, pilot training, aircraft rental and sightseeing, aerial photography, crop dusting, aerial advertising and surveying, air carrier operations, aircraft sales and services, sale of aviation petroleum products whether or not conducted in conjunction with other aeronautical activity, repair and maintenance of aircraft, sale of aircraft parts, and any other activities which because of their direct relationship to the operation of aircraft can be regarded as an aeronautical activity, and that it will terminate any exclusive right to conduct an aeronautical activity now existing at such an airport before the grant of any assistance under Title 49, United States Code.

24. **Fee and Rental Structure.**

It will maintain a fee and rental structure for the facilities and services at the airport which will make the airport as self-sustaining as possible under the circumstances existing at the particular airport, taking into account such factors as the volume of traffic and economy of collection. No part of the Federal share of an airport development, airport planning or noise compatibility project for which a grant is made under Title 49, United States Code, the Airport and Airway Improvement Act of 1982, the Federal Airport Act or the Airport and Airway Development Act of 1970 shall be included in the rate basis in establishing fees, rates, and charges for users of that airport.

25. **Airport Revenues.**

a. All revenues generated by the airport and any local taxes on aviation fuel established after December 30, 1987, will be expended by it for the capital or operating costs of the airport; the local airport system; or other local facilities which are owned or operated by the owner or operator of the airport and which are directly and substantially related to the actual air transportation of passengers or property; or for noise mitigation purposes on or off the airport. The following exceptions apply to this paragraph:

1) If covenants or assurances in debt obligations issued before September 3, 1982, by the owner or operator of the airport, or provisions enacted before September 3, 1982, in governing statutes controlling the owner or operator's financing, provide for the use of the revenues from any of the airport owner or

operator's facilities, including the airport, to support not only the airport but also the airport owner or operator's general debt obligations or other facilities, then this limitation on the use of all revenues generated by the airport (and, in the case of a public airport, local taxes on aviation fuel) shall not apply.

2) If the Secretary approves the sale of a privately owned airport to a public sponsor and provides funding for any portion of the public sponsor's acquisition of land, this limitation on the use of all revenues generated by the sale shall not apply to certain proceeds from the sale. This is conditioned on repayment to the Secretary by the private owner of an amount equal to the remaining unamortized portion (amortized over a 20-year period) of any airport improvement grant made to the private owner for any purpose other than land acquisition on or after October 1, 1996, plus an amount equal to the federal share of the current fair market value of any land acquired with an airport improvement grant made to that airport on or after October 1, 1996.

3) Certain revenue derived from or generated by mineral extraction, production, lease, or other means at a general aviation airport (as defined at Section 47102 of title 49 United States Code), if the FAA determines the airport sponsor meets the requirements set forth in Sec. 813 of Public Law 112-95.

b. As part of the annual audit required under the Single Audit Act of 1984, the sponsor will direct that the audit will review, and the resulting audit report will provide an opinion concerning, the use of airport revenue and taxes in paragraph (a), and indicating whether funds paid or transferred to the owner or operator are paid or transferred in a manner consistent with Title 49, United States Code and any other applicable provision of law, including any regulation promulgated by the Secretary or Administrator.

c. Any civil penalties or other sanctions will be imposed for violation of this assurance in accordance with the provisions of Section 47107 of Title 49, United States Code.

26. **Reports and Inspections.**

It will:

a. submit to the Secretary such annual or special financial and operations reports as the Secretary may reasonably request and make such reports available to the public; make available to the public at reasonable times and places a report of the airport budget in a format prescribed by the Secretary;

b. for airport development projects, make the airport and all airport records and documents affecting the airport, including deeds, leases, operation and use agreements, regulations and other instruments, available for inspection by any duly authorized agent of the Secretary upon reasonable request;

c. for noise compatibility program projects, make records and documents relating to the project and continued compliance with the terms, conditions, and assurances of this grant agreement including deeds, leases, agreements, regulations, and other instruments, available for inspection by any duly authorized agent of the Secretary upon reasonable request; and

d. in a format and time prescribed by the Secretary, provide to the Secretary and make available to the public following each of its fiscal years, an annual report listing in detail:

1) all amounts paid by the airport to any other unit of government and the purposes for which each such payment was made; and

2) all services and property provided by the airport to other units of government and the amount of compensation received for provision of each such service and property.

27. **Use by Government Aircraft.**

It will make available all of the facilities of the airport developed with Federal financial assistance and all those usable for landing and takeoff of aircraft to the United States for use by Government aircraft in common with other aircraft at all times without charge, except, if the use by Government aircraft is substantial, charge may be made for a reasonable share, proportional to such use, for the cost of operating and maintaining the facilities used. Unless otherwise determined by the Secretary, or otherwise agreed to by the sponsor and the using agency, substantial use of an airport by Government aircraft will be considered to exist when operations of such aircraft are in excess of those which, in the opinion of the Secretary, would unduly interfere with use of the landing areas by other authorized aircraft, or during any calendar month that –

a. Five (5) or more Government aircraft are regularly based at the airport or on land adjacent thereto; or

b. The total number of movements (counting each landing as a movement) of Government aircraft is 300 or more, or the gross accumulative weight of Government aircraft using the airport (the total movement of Government aircraft multiplied by gross weights of such aircraft) is in excess of five million pounds.

28. **Land for Federal Facilities.**

It will furnish without cost to the Federal Government for use in connection with any air traffic control or air navigation activities, or weather-reporting and communication activities related to air traffic control, any areas of land or water, or estate therein, or rights in buildings of the sponsor as the Secretary considers necessary or desirable for construction, operation, and maintenance at Federal expense of space or facilities for such purposes. Such areas or any portion thereof will be made available as provided herein within four months after receipt of a written request from the Secretary.

29. **Airport Layout Plan.**

a. It will keep up to date at all times an airport layout plan of the airport showing

1) boundaries of the airport and all proposed additions thereto, together with the boundaries of all offsite areas owned or controlled by the sponsor for airport purposes and proposed additions thereto;

2) the location and nature of all existing and proposed airport facilities and structures (such as runways, taxiways, aprons, terminal buildings, hangars and

roads), including all proposed extensions and reductions of existing airport facilities;

3) the location of all existing and proposed nonaviation areas and of all existing improvements thereon; and

4) all proposed and existing access points used to taxi aircraft across the airport's property boundary. Such airport layout plans and each amendment, revision, or modification thereof, shall be subject to the approval of the Secretary which approval shall be evidenced by the signature of a duly authorized representative of the Secretary on the face of the airport layout plan. The sponsor will not make or permit any changes or alterations in the airport or any of its facilities which are not in conformity with the airport layout plan as approved by the Secretary and which might, in the opinion of the Secretary, adversely affect the safety, utility or efficiency of the airport.

b. If a change or alteration in the airport or the facilities is made which the Secretary determines adversely affects the safety, utility, or efficiency of any federally owned, leased, or funded property on or off the airport and which is not in conformity with the airport layout plan as approved by the Secretary, the owner or operator will, if requested, by the Secretary (1) eliminate such adverse effect in a manner approved by the Secretary; or (2) bear all costs of relocating such property (or replacement thereof) to a site acceptable to the Secretary and all costs of restoring such property (or replacement thereof) to the level of safety, utility, efficiency, and cost of operation existing before the unapproved change in the airport or its facilities except in the case of a relocation or replacement of an existing airport facility due to a change in the Secretary's design standards beyond the control of the airport sponsor.

30. **Civil Rights.**

It will promptly take any measures necessary to ensure that no person in the United States shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination in any activity conducted with, or benefiting from, funds received from this grant.

a. Using the definitions of activity, facility and program as found and defined in §§ 21.23 (b) and 21.23 (e) of 49 CFR § 21, the sponsor will facilitate all programs, operate all facilities, or conduct all programs in compliance with all non-discrimination requirements imposed by, or pursuant to these assurances.

b. Applicability

1) Programs and Activities. If the sponsor has received a grant (or other federal assistance) for any of the sponsor's program or activities, these requirements extend to all of the sponsor's programs and activities.

2) Facilities. Where it receives a grant or other federal financial assistance to construct, expand, renovate, remodel, alter or acquire a facility, or part of a facility, the assurance extends to the entire facility and facilities operated in connection therewith.

3) Real Property. Where the sponsor receives a grant or other Federal financial assistance in the form of, or for the acquisition of real property or an interest in real property, the assurance will extend to rights to space on, over, or under such property.

c. Duration.

The sponsor agrees that it is obligated to this assurance for the period during which Federal financial assistance is extended to the program, except where the Federal financial assistance is to provide, or is in the form of, personal property, or real property, or interest therein, or structures or improvements thereon, in which case the assurance obligates the sponsor, or any transferee for the longer of the following periods:

1) So long as the airport is used as an airport, or for another purpose involving the provision of similar services or benefits; or

2) So long as the sponsor retains ownership or possession of the property.

d. Required Solicitation Language. It will include the following notification in all solicitations for bids, Requests For Proposals for work, or material under this grant agreement and in all proposals for agreements, including airport concessions, regardless of funding source:

"The **(Name of Sponsor)**, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises and airport concession disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award."

e. Required Contract Provisions.

1) It will insert the non-discrimination contract clauses requiring compliance with the acts and regulations relative to non-discrimination in Federally-assisted programs of the DOT, and incorporating the acts and regulations into the contracts by reference in every contract or agreement subject to the non-discrimination in Federally-assisted programs of the DOT acts and regulations.

2) It will include a list of the pertinent non-discrimination authorities in every contract that is subject to the non-discrimination acts and regulations.

3) It will insert non-discrimination contract clauses as a covenant running with the land, in any deed from the United States effecting or recording a transfer of real property, structures, use, or improvements thereon or interest therein to a sponsor.

4) It will insert non-discrimination contract clauses prohibiting discrimination on the basis of race, color, national origin, creed, sex, age, or handicap as a

covenant running with the land, in any future deeds, leases, license, permits, or similar instruments entered into by the sponsor with other parties:

a) For the subsequent transfer of real property acquired or improved under the applicable activity, project, or program; and

b) For the construction or use of, or access to, space on, over, or under real property acquired or improved under the applicable activity, project, or program.

f. It will provide for such methods of administration for the program as are found by the Secretary to give reasonable guarantee that it, other recipients, sub-recipients, sub-grantees, contractors, subcontractors, consultants, transferees, successors in interest, and other participants of Federal financial assistance under such program will comply with all requirements imposed or pursuant to the acts, the regulations, and this assurance.

g. It agrees that the United States has a right to seek judicial enforcement with regard to any matter arising under the acts, the regulations, and this assurance.

31. **Disposal of Land.**

a. For land purchased under a grant for airport noise compatibility purposes, including land serving as a noise buffer, it will dispose of the land, when the land is no longer needed for such purposes, at fair market value, at the earliest practicable time. That portion of the proceeds of such disposition which is proportionate to the United States' share of acquisition of such land will be, at the discretion of the Secretary, (1) reinvested in another project at the airport, or (2) transferred to another eligible airport as prescribed by the Secretary. The Secretary shall give preference to the following, in descending order, (1) reinvestment in an approved noise compatibility project, (2) reinvestment in an approved project that is eligible for grant funding under Section 47117(e) of title 49 United States Code, (3) reinvestment in an approved airport development project that is eligible for grant funding under Sections 47114, 47115, or 47117 of title 49 United States Code, (4) transferred to an eligible sponsor of another public airport to be reinvested in an approved noise compatibility project at that airport, and (5) paid to the Secretary for deposit in the Airport and Airway Trust Fund. If land acquired under a grant for noise compatibility purposes is leased at fair market value and consistent with noise buffering purposes, the lease will not be considered a disposal of the land. Revenues derived from such a lease may be used for an approved airport development project that would otherwise be eligible for grant funding or any permitted use of airport revenue.

b. For land purchased under a grant for airport development purposes (other than noise compatibility), it will, when the land is no longer needed for airport purposes, dispose of such land at fair market value or make available to the Secretary an amount equal to the United States' proportionate share of the fair market value of the land. That portion of the proceeds of such disposition which is proportionate to the United States' share of the cost of acquisition of such land will, (1) upon application to the Secretary, be reinvested or transferred to another

eligible airport as prescribed by the Secretary. The Secretary shall give preference to the following, in descending order: (1) reinvestment in an approved noise compatibility project, (2) reinvestment in an approved project that is eligible for grant funding under Section 47117(e) of title 49 United States Code, (3) reinvestment in an approved airport development project that is eligible for grant funding under Sections 47114, 47115, or 47117 of title 49 United States Code, (4) transferred to an eligible sponsor of another public airport to be reinvested in an approved noise compatibility project at that airport, and (5) paid to the Secretary for deposit in the Airport and Airway Trust Fund.

c. Land shall be considered to be needed for airport purposes under this assurance if (1) it may be needed for aeronautical purposes (including runway protection zones) or serve as noise buffer land, and (2) the revenue from interim uses of such land contributes to the financial self-sufficiency of the airport. Further, land purchased with a grant received by an airport operator or owner before December 31, 1987, will be considered to be needed for airport purposes if the Secretary or Federal agency making such grant before December 31, 1987, was notified by the operator or owner of the uses of such land, did not object to such use, and the land continues to be used for that purpose, such use having commenced no later than December 15, 1989.

d. Disposition of such land under (a) (b) or (c) will be subject to the retention or reservation of any interest or right therein necessary to ensure that such land will only be used for purposes which are compatible with noise levels associated with operation of the airport.

32. **Engineering and Design Services.**

It will award each contract, or sub-contract for program management, construction management, planning studies, feasibility studies, architectural services, preliminary engineering, design, engineering, surveying, mapping or related services with respect to the project in the same manner as a contract for architectural and engineering services is negotiated under Title IX of the Federal Property and Administrative Services Act of 1949 or an equivalent qualifications-based requirement prescribed for or by the sponsor of the airport.

33. **Foreign Market Restrictions.**

It will not allow funds provided under this grant to be used to fund any project which uses any product or service of a foreign country during the period in which such foreign country is listed by the United States Trade Representative as denying fair and equitable market opportunities for products and suppliers of the United States in procurement and construction.

34. **Policies, Standards, and Specifications.**

It will carry out the project in accordance with policies, standards, and specifications approved by the Secretary including but not limited to the advisory circulars listed in the Current FAA Advisory Circulars for AIP projects, dated _____ (the latest approved version as of this grant offer) and included in this grant, and in accordance

with applicable state policies, standards, and specifications approved by the Secretary.

35. **Relocation and Real Property Acquisition.**

    a. It will be guided in acquiring real property, to the greatest extent practicable under State law, by the land acquisition policies in Subpart B of 49 CFR Part 24 and will pay or reimburse property owners for necessary expenses as specified in Subpart B.
    b. It will provide a relocation assistance program offering the services described in Subpart C and fair and reasonable relocation payments and assistance to displaced persons as required in Subpart D and E of 49 CFR Part 24.
    c. It will make available within a reasonable period of time prior to displacement, comparable replacement dwellings to displaced persons in accordance with Subpart E of 49 CFR Part 24.

36. **Access By Intercity Buses.**

    The airport owner or operator will permit, to the maximum extent practicable, intercity buses or other modes of transportation to have access to the airport; however, it has no obligation to fund special facilities for intercity buses or for other modes of transportation.

37. **Disadvantaged Business Enterprises.**

    The sponsor shall not discriminate on the basis of race, color, national origin or sex in the award and performance of any DOT-assisted contract covered by 49 CFR Part 26, or in the award and performance of any concession activity contract covered by 49 CFR Part 23. In addition, the sponsor shall not discriminate on the basis of race, color, national origin or sex in the administration of its DBE and ACDBE programs or the requirements of 49 CFR Parts 23 and 26. The sponsor shall take all necessary and reasonable steps under 49 CFR Parts 23 and 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts, and/or concession contracts. The sponsor's DBE and ACDBE programs, as required by 49 CFR Parts 26 and 23, and as approved by DOT, are incorporated by reference in this agreement. Implementation of these programs is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the sponsor of its failure to carry out its approved program, the Department may impose sanctions as provided for under Parts 26 and 23 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1936 (31 U.S.C. 3801).

38. **Hangar Construction.**

    If the airport owner or operator and a person who owns an aircraft agree that a hangar is to be constructed at the airport for the aircraft at the aircraft owner's expense, the airport owner or operator will grant to the aircraft owner for the hangar a long term lease that is subject to such terms and conditions on the hangar as the airport owner or operator may impose.

39. **Competitive Access.**

a. If the airport owner or operator of a medium or large hub airport (as defined in section 47102 of title 49, U.S.C.) has been unable to accommodate one or more requests by an air carrier for access to gates or other facilities at that airport in order to allow the air carrier to provide service to the airport or to expand service at the airport, the airport owner or operator shall transmit a report to the Secretary that-

   1) Describes the requests;

   2) Provides an explanation as to why the requests could not be accommodated; and

   3) Provides a time frame within which, if any, the airport will be able to accommodate the requests.

b. Such report shall be due on either February 1 or August 1 of each year if the airport has been unable to accommodate the request(s) in the six month period prior to the applicable due date.

Appendix F

ACRP Model

F.1. LEVEL OF SERVICE STANDARDS (LOS)

The International Air Transport Association (IATA) has developed and refined a comprehensive set of standards for planning various passenger processing functions for airport terminal buildings and is typically used as the standard for most terminal space planning uses. These Level of Service (LOS) standards are presented in the IATA *Airport Development Reference Manual, 9th Edition*, published in January 2004. These standards apply primarily to calculation of passenger queuing areas and circulation space and are intended to control passenger densities to enhance individual passenger comfort.

- A - Excellent level of service. Conditions of free flow, no delays, and excellent levels of comfort
- B - High level of service. Conditions of stable flow, very few delays, and high levels of comfort
- C - Good level of service. Conditions of stable flow, acceptable delays, and good levels of comfort
- D - Adequate level of service. Conditions of unstable flow, acceptable delays for short periods and adequate levels of comfort
- E - Inadequate level of service. Conditions of unstable flow, unacceptable delays and inadequate levels of comfort
- F - Unacceptable level of service. Conditions of cross-flows, system breakdown and unacceptable delays, unacceptable level of service

Table F-1 below provides the IATA Level of Service Area Standards and Definitions in square feet for various passenger processing conditions included in this analysis.

Table F-1: IATA Level of Service
Standards & Definitions (Square Feet)

Functional Area	A	B	C	D	E	F
Check-In Queuing	19	17	15	13	11	Unserviceable
Wait/Circulate	29	25	20	16	11	Unserviceable

Table F-1: IATA Level of Service
Standards & Definitions (Square Feet)

Functional Area	A	B	C	D	E	F
Holdroom	15	13	11	9	6	Unserviceable
Bag Claim	22	19	17	15	13	Unserviceable

Source: International Air Transport Association

Terminal area requirements will be based on maintaining LOS "C" as recommended by IATA, due to the stable flow, good levels of comfort and minimal delay, unless otherwise noted.

F.2. ACRP MODEL ASSUMPTIONS

Assumptions used in the application of the ACRP Model are as follows:

Percentage of Originating Passengers - For purposes of analyzing passenger terminal space requirements, it is assumed that 100 percent of enplaned passengers are originating. The Model uses originating passenger percentage to determine the number of passengers who pass through check-in processing and security screening, which affects facility capacity requirements.

Load Factor - For the purpose of analyzing passenger terminal space requirements (primarily holdroom sizing for seating), a load factor of 95 percent was applied to calculations in the Model. Holding the load factor constant throughout the forecast period serves as an allowance for highest activity level under the existing EAS service.

Vehicle Demand at Terminal Curb - Vehicle demand in the Model is comprised of a range of types utilized by passengers as ground transport to an airport for departing flights. These include private automobiles carrying multiple passengers to tour buses carrying large groups of passengers. For LEB, a focus was placed on private automobiles parking at the Airport, with remaining vehicles using the curb for drop-off, and rental car shuttles. The number of vehicles is based on the assumption that private autos will drop-off one passenger each and rental car shuttles will carry 1-3 passengers each. The length of the paved curb was estimated at 155 feet.

Passenger Check-In – The Model is calibrated to consider passenger processing preferences, such as staffed airline counters, self-serve kiosks, and online transactions. However, at LEB only staffed airline counter positions are available, and the existing EAS airline does not provide kiosks. Therefore, all passengers must check-in at the staffed airline counter in the terminal.

Passenger Security Screening Checkpoints – At LEB, the passenger security screening area is shared with the holdroom; however, the low level of existing passenger volumes and the staging

of security processing (i.e., occurring immediately prior to boarding) make the shared space manageable. The following space assumptions were utilized to analyze the security screening of departing passengers, including queue area and screening lanes:

- Security Queue Depth: 25 feet
- Security Lane Width: 5 feet
- Overall Checkpoint Length: 30 feet
- Reconciliation Area Depth: 10 feet

Outbound Baggage & Checked Bag Screening - In terms of Explosive Detection System (EDS), On-Screen Resolution (OSR), and Explosives Trace Detection (ETD) equipment requirements, the analysis recognizes that Level 1 EDS screening does not occur at LEB; therefore, the Model was set with an alarm rate of 100 percent. This reflects the current operation, where all outbound baggage is manually screened via the Level 2 OSR process. The process rate was set at 60 bags per hour per operator, with 90 percent of OSR bag reviews being resolved. For Level 3 ETD screening, the TSA suggests 24 bags per hour per operator. Baggage screening space requirements contained in the Model are as follows:

- Level 1 Area: 800 SF per EDS Unit
- Level 2 Area: 40 SF per OSR Station
- Level 3 Area: 100 SF per ETD Unit

In terms of checked baggage make-up, the analysis assumed two baggage carts are required during the peak hour. The Model suggests that each cart requires 600 square feet of space.

Inbound Baggage - Concerning inbound baggage, the Model considers not just terminating passengers with checked baggage but also includes an allowance for additional people at baggage claim who are meeting/greeting travelers. The industry standard for planning baggage claim area is to add 20-30 percent above the volume of passengers with checked bags for "meeters/greeters". The analysis assumed 100 percent of passengers will deplane in a peak 20-minute period, with 100 percent of passengers terminating at the Airport.

The Model for baggage claim area requirements also includes a buffer of up to 10 minutes to allow for late pick-up of baggage, and an unload rate of seven bags per minute.

Holdrooms - Holdroom seating demand was based on the load factor noted (95 percent) for flights and carriers operating at LEB. Seating was estimated to be provided for 75 percent of passengers with additional standing space for the remaining 25 percent of passengers. Space planning factors of 15 square feet per seated passenger and 10 square feet per standing passenger were used.

Terminal Circulation - For estimating terminal circulation, the Model offers a number of options such as considerations for a single-loaded versus double-loaded concourse, and an "Airport

Hubbing Activity Factor" that adjusts for connecting passengers. For LEB, a single-loaded concourse was selected, the hubbing factor was set to zero, and no allowance was included for moving walkways. An estimated terminal corridor width of 24 feet was used as the average of width of spaces adjacent the terminal entry vestibule, from baggage claim to rental car counters, and hall outside restroom facilities. Concourse length was estimated at 80 feet. The total square footage (1,920) accounts for the non-secure areas of the terminal building less passenger check-in area near the airline ticket counter and security counter.

Appendix G

DECLARATION OF EASEMENT

WHEREAS, the CITY OF LEBANON, a municipal corporation duly organized and existing under the laws of the State of New Hampshire, with principal offices at 51 North Park Street, Lebanon, Grafton County, State of New Hampshire, is the owner in fee of certain property situated in the Village of West Lebanon, City of Lebanon, Grafton County, State of New Hampshire, more particularly described on a subdivision plan entitled, "Subdivision Plan of Land in Lebanon, New Hampshire, City of Lebanon - Owner", done in July 1978 by Hoyle, Tanner and Associates, Inc., Sheet #1 of 2, which property is shown as parcels 3-42.21, 3-42.22 and 3-42.23 on said plan, a copy of which is to be recorded in the Grafton County Registry of Deeds, and which property is hereinafter called the "city property" for the purposes of the declaratioh of this easement.

NOW, THEREFORE, for valuable consideration consisting of the mutual covenants existing, or hereafter to exist, by and between the City of Lebanon and future grantees of any site or lot contained within the property hereinbefore described, the City of Lebanon declares the aforementioned property to be subject to the following easement and right-of-way for the use and benefit of the public and the City of Lebanon, its heirs, successors and assigns, and for the unobstructed passage of all aircraft, ("aircraft" being defined for the purpose of this instrument as any contrivance now known, or hereafter invented, used or designed for navigation of or flight in the air) by whomsoever owned and operated, being in the air-space above the property of the city hereinbefore described, and being more particularly described as follows:

Plan recorded #171

PART I - RUNWAY 18 - APPROACH SURFACE

The Runway 18 - Approach Surface is a regular trapezoidal shaped incline plane. The short-parallel side of the plane is 1000 feet long, the long-parallel side is 4000 feet long, and the height of the figure is 10,000 feet. The plane is centered on an extension of the centerline of the runway, and is inclined at a slope equal to one foot vertically for each 34 feet horizontally, a so-called 34 to 1 slope. The short side of the plane is at the same elevation as the northerly end of the runway, 565.6 feet above mean sea level and the mid-point of the short side is 200 feet from the end of the runway.

PART II - RUNWAY 18-36 - PRIMARY SURFACE

The Runway 18-36 - Primary Surface is a surface 1000 feet wide longitudinally centered on the runway centerline and extending 200 feet beyond the end of the runway. The elevation of any point on the longitudinal profile of the primary surface, including the extensions, coincides with the elevation of the centerline of the runway or extension as appropriate.

PART III - RUNWAY 18 - WESTERLY TRANSITION SURFACE

The Runway 18 - Westerly Transition Surface is an inclined plane beginning at the westerly edge of the Runway 18 Approach Surface and sloping westerly at a slope equal to one foot vertically for each 7 feet horizontally, a so-called 7 to 1 slope, measured perpendicular to the centerline of the Approach, extending up to elevation 745 feet above mean sea level.

PART IV - RUNWAY 07 - APPROACH SURFACE

The Runway 07 - Approach Surface is a regular trapesoidal shaped inclined plane. The short-parallel side of the plane is 500 feet long, the long-parellel side is 3500 feet long, and the height of the figure is 10,000 feet. The plane is centered on an extension of the centerline of the runway, and is inclined at a slope equal to one foot vertically for each 34 feet horizontally, a so-called 34 to 1 slope. The short side of the plane is at the same elevation as the south-westerly end of the runway, 563 feet above mean sea level and the mid-point of the short side is 200 feet from the end of the runway.

PART V - RUNWAY 07-25 - PRIMARY SURFACE

The Runway 07-25 - Primary Surface is 500 foot wide surface longitudinally centered on the runway centerline and extending 200 feet beyond the end of the runway. The elevation of any point on the longitudinal profile of the primary surface, including the extensions, coincides with the elvations of the centerline of the runway or extension as appropriate.

PART VI - RUNWAY 07 - NORTHERLY TRANSITION SURFACE

The Runway 07 - Northerly Transition Surface is an inclined plane beginning at the Northerly edge of the Runway 07 Approach Surface and Northerly edge of the Runway 07 Primary Surface and sloping Northerly at a slope equal to one foot vertically for each 7 feet horizontally, a so-called 7 to 1 slope, measured perpendicular to the centerline of the Approach, extending up to elevation 745 feet above mean sea level.

PART VII - HORIZONTAL SURFACE

The Horizontal Surface is a horizontal plane at elevation 745 feet above mean sea level.

Together with the rights of entry, ingress and egress, with respect to such land to remove or demolish structures and to cut and trim trees or other vegetation which might at any time extend above such imaginary surfaces and,

Together with the right to cause in the airspace above the surface of such land such noise, vibrations, fumes, dust, fuel particles, and all other effects that may be inherent in the operation of aircraft, now known or hereafter used for navigation of or flight in the air, using said airspace for landing at, taking off from or operating on the airport, or other use of the airspace, and,

The City of Lebanon does hereby covenant and agree with itself and for the purpose of binding future grantees with respect to the aforementioned property (The purpose of these covenants and agreements is to further restrict and limit the use of the property herein described.):

A. Not to erect, maintain or allow on such land structures or objects of natural growth which extend or might extend above such imaginary surfaces, and

B. Not to use or permit any use of such land for any purpose which will interfere with the use, operation, maintenance and further development of the airport, and, in addition, not to use or permit the use of such land and of structures therein for purposes which will create or result in a hazard to flight such as, but not limited to, purposes which will (a) produce electrical interferences with radio communications, (b) make it difficult for pilots to distinguish between airport lights and others, (c) project glare to the eye of the pilot, (d) impair visibility in the vicinity of the airport, or (e) otherwise endanger the landing, taking-off, and maneuvering of the aircraft, and

C. That the rights granted and covenants undertaken in and by this instrument shall be binding on the City of Lebanon, its heirs, administrators, executors and assigns and shall run with the land above described which shall be the servient tenement, it being intended that the land now and hereafter comprising the airport shall be the dominant tenement.

Any grantees of the property which is being made subject to this easement by these presents, do hereby fully waive, remise and release any right or cause of action which they may now have or which they may have in the future against the City of Lebanon, or its successors and assigns as operators of the Lebanon Regional Airport, due to such noise, vibrations, fumes, dust fuel particles and all other effects that may be caused or may have been caused by the operation of aircraft landing at or taking off from, or operating at, or on said Lebanon Regional Airport.

The aforementioned easement shall be in effect until the Lebanon Regional Airport, its successors or assigns, if the airport is continued) shall be abandoned and shall cease to be used for public airport purposes.

1362 478

Meaning and intending hereby to convey an easement over a portion of the parcel that was conveyed to the City of Lebanon by deed of the Lebanon Regional Airport Authority dated July 31, 1978, which deed is recorded in the Grafton County Registry of Deeds at Book 1348, Page 608. See also deed of Emma L. Elliott to the Town of Lebanon dated March 18, 1941 and a map entitled, "Preliminary Sketch Map of Property Under Option by the Board of Selectmen of the Town of Lebanon for Proposed West Lebanon Airport", which was done February 14, 1941 by Francis R. Drury, a copy of which map is on record with the City Clerk of the City of Lebanon. Reference should also be made to various deeds from the Town of Lebanon (and the City of Lebanon) to the Lebanon Regional Airport Authority, which subsequently reverted to the City of Lebanon by virtue of the deed first described in this paragraph.

IN WITNESS WHEREOF, the City of Lebanon has caused its hands and seal to be affixed hereto by Allen M. Perkins, Jr. its City Manager, duly authorized, this 28 day of February, 1979.

CITY OF LEBANON

Witness

BY: _____
Allen M. Perkins, Jr.
Its City Manager
Duly Authorized

STATE OF NEW HAMPSHIRE
GRAFTON, SS.

On this the 28th day of February, 1979, came Allen M. Perkins, Jr. and took oath that the foregoing declaration signed by him on behalf of the City of Lebanon was his voluntary act and deed, and that he was duly authorized to sign the same on behalf of the City of Lebanon.

_____
Notary Public/Justice of the Peace

Received and recorded: February 28, 1979 11:45 AM

Charles A. Wood, Register

AMENDMENT TO DECLARATION OF EASEMENT
RECORDED IN THE GRAFTON COUNTY REGISTRY OF DEEDS AT
BOOK 1362, PAGE 475

018310

BK1763 PG0200

WHEREAS, The City of Lebanon, a New Hampshire municipal corporation, having its principal offices at 51 North Park Street, Lebanon, Grafton County, State of New Hampshire, has executed a Declaration of Easement dated February 28, 1979 and recorded in the Grafton County Registry of Deeds at Book 1362, Page 475; and

WHEREAS, in order to ensure the unobstructed passage of all aircraft over the property subject to said Declaration of Easement, it is necessary that said Declaration be amended as follows; and

WHEREAS, the within Amendment to said Declaration affects the "City property" only as defined in said Declaration;

NOW THEREFORE, the City of Lebanon hereby amends the Declaration of Easement dated February 28, 1979 and recorded in the Grafton County Registry of Deeds at Book 1362, Page 475 as follows:

1. The second sentence of "PART IV - RUNWAY 07 - APPROACH SURFACE" is hereby deleted, and the following inserted in lieu thereof:

   "The short-parallel side of the plane is 1,000 feet long, the long-parallel side is 4,000 feet long, and the height of the figure is 10,000 feet."

2. The first sentence of "PART V - RUNWAY 07-25 - PRIMARY SURFACE" is hereby deleted, and the following inserted in lieu thereof:

   "The Runway 07-25 - Primary Surface is 1,000 foot wide surface longitudinally centered on the runway centerline and extending 200 feet beyond the end of the runway."

As to all other provisions of said Declaration of Easement, recorded in the Grafton County Registry of Deeds at Book 1362, Page 475, not amended herein, said provisions shall remain in

full force and effect.

Dated this 7th day of September, 1988.

CITY OF LEBANON

By: _____
John Aubin
Acting City Manager
Duly Authorized

STATE OF NEW HAMPSHIRE
GRAFTON, SS.

On this 7th day of September, 1988, came John Aubin and took oath that the foregoing Amendment, signed by him on behalf of the City of Lebanon, was his voluntary act and deed, and that he was duly authorized to sign the same on behalf of the City of Lebanon.

_____
Dorothy Doyle
Justice of the Peace
My commission expires: 3/4/92

RECEIVED
88 SEP 22 AM 8:41
GRAFTON COUNTY
REGISTRY OF DEEDS

AB-9/88-1-LEBANON2

EXAMINED, ATTEST Carol A. Elliott
GRAFTON COUNTY REGISTRY OF DEEDS

BK1763 PG0201

Appendix H

Noise Analysis

H.0 INTRODUCTION

Noise emission generated by aircraft and the operation of an airport can have an impact on land uses surrounding an airport. Some land uses are more susceptible to noise impacts than others. Typically, places of religious worship, hospitals, schools, parks, amphitheaters, and residential districts are considered noise-sensitive land uses, while recreational land uses are moderately noise-sensitive. Noise levels inherent to airports are generally compatible with most industrial, commercial, and agricultural land uses. Therefore, it is important to measure or model existing noise levels and then predict future noise levels to determine if impacts would occur to any noise-sensitive land uses near the airport. This, in turn, aids planners in deciding what necessary measures should be implemented in order to ensure that existing and future land uses are compatible with the airport.

H.1 METHODS

The Federal Aviation Administration (FAA) has developed the Integrated Noise Model (INM) to evaluate the noise impacts of aviation activity on surrounding areas. This computer model calculates cumulative aircraft noise at ground level expressed in decibels (dBA), using the Day-Night Average Sound Level (DNL). Decibels are measured in A-weighted units, which approximate the range of human hearing. The DNL is the average daily noise level, with an additional 10 dBA weight for nighttime aircraft operations (between 10:00 pm and 7:00 am) as people are typically more sensitive to noise during nighttime hours. 65 dBA DNL is considered by FAA to be the threshold of impact for noise sensitive land uses. Once the mean aircraft operations are calculated, noise contours are computed.

The FAA's threshold of significant noise impact is a 1.5 dBA DNL increase in noise over any noise sensitive area located within the 65 dBA DNL contour, or an increase of 1.5 dBA or greater in areas of less than 65 dBA which would increase levels to 65 dBA or above. Therefore, if the proposed FAA action results in an increase within the 65 dBA DNL of 1.5 dBA DNL or greater on any noise sensitive area, it would be necessary to do further analysis using DNL contours to express in more detail the impact on specific areas. **Table H-1** presents DNL levels associated with common land uses in order to put the 65 dBA DNL into perspective:

Table H-1: Typical Outdoor Day-Night Noise Levels

DNL Day-Night Noise level (dBA)	Location
50 dBA	Residential area in a small town or quiet suburban area
55 dBA	Suburban residential area
60 dBA	Urban residential area

65 dBA	Noisy urban residential area
70 dBA	Very noisy urban residential area
80 dBA	City noise (downtown of major metropolitan area)
88 dBA	Third floor apartment in a major city next to a freeway

Source: "Noise Fundamentals Training Document, Highway Noise Fundamentals," USDOT, FAA.

Table H-2 compares the compatibility of specific land uses to a range of noise levels, expressed as yearly day/night average.

Table 2: Land Use Compatibility* With Yearly Day-Night Average Sound Levels (Source: 14 CFR 150.35)

Land Use	Yearly day-night average sound level (L[INF]dn[/INF]) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile Home Parks	Y	N	N	N	N	N
Transient Lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and Nursing Homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N

Outdoor music shells, amphitheaters	Y	N	N	N	N	**N**
Nature exhibits and zoos	Y	Y	N	N	N	**N**
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	**N**
Golf courses, riding stables and water recreation	Y	Y	25	30	N	**N**

Numbers in parenthesis refer to notes.

*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table 5-2:

SLUCM=Standard Land Use Coding Manual

Y (Yes) =Land Use and related structures compatible without restrictions.

N (No) =Land Use and related structures are not compatible and should be prohibited.

NLR=Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes for Table 5-2:

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria would not eliminate outdoor noise problems.

(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require an NLR of 30.

(8) Residential buildings not permitted.

Preliminary noise exposure levels at Lebanon Municipal Airport (LEB) were determined for the current Existing Conditions and predicted for the future Recommended Airport Development Strategy. The Existing Conditions were based on the more comprehensive analysis found in the Environmental Assessment completed in 2013. For the purposes of this master plan, the 65 dBA DNL contour was calculated using INM Version 7.0d. Data input for INM included the following:

- Aircraft Operations
- Operational Mix
- Operations by Time of Day
- Runway and Helipad Length and Orientation
- Runway and Helipad Use
- Flight Tracks

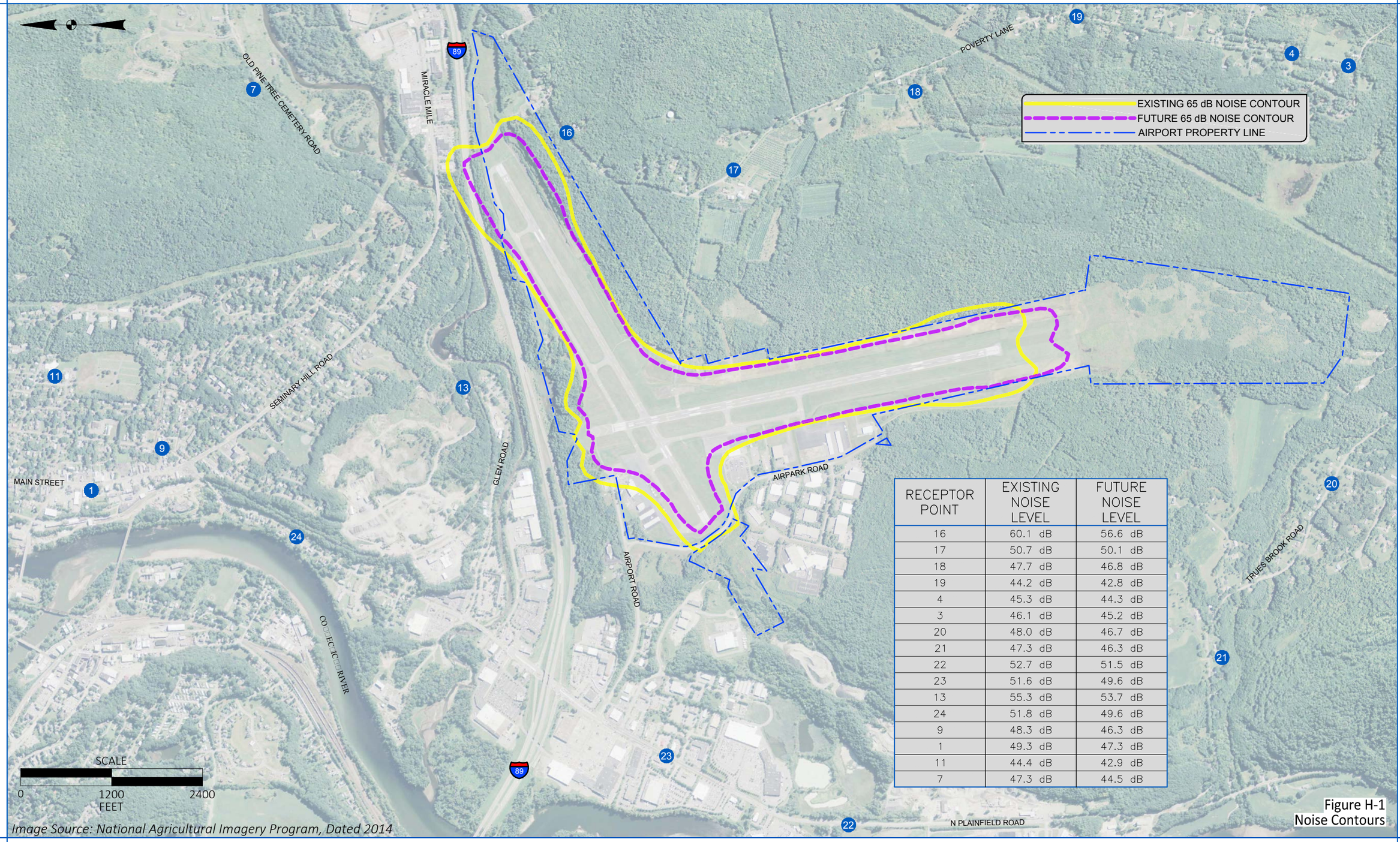
H.2 RESULTS

The results of the noise analysis for the existing and future conditions are described below and illustrated in the **Noise Contours Figure H-1** on the following page.

Existing Conditions: The Noise Contours Figure presents a visual representation of the 65 dBA DNL in yellow. The 65 dBA DNL contour is primarily within airport property, with the exception of an area off the Runway 36 end; a portion of two industrial parcels adjacent to the west side of the Airport on Airpark Road; and an area that crosses over Interstate 89 onto an industrial parcel on the south side of Miracle Mile. No part of the 65 dBA DNL contour extends onto or near any residential or other non-compatible land uses.

Future Conditions: The Noise Contours Figures presents a visual representation of the future 65 dBA DNL in purple. This analysis was based on the aforementioned data inputs as found in Chapter 2, *Forecast of Aviation Activity* and the Recommended Airport Development Strategy found in Chapter 4, *Airport Alternatives*. With the exception of a small area that extends out to Interstate 89, the future 65 dBA DNL contour remains entirely on airport property and is smaller than the existing contour footprint. No part of the future 65 dBA DNL contour extends onto or near any residential or other non-compatible land uses.

Receptor Points: As part of the preliminary noise analysis, the existing and future conditions were calculated at approximately 20 receptor points within the City of Lebanon. These points were all external to the airport property and selected based on feedback received from City residents throughout the Public Outreach Process. Similar to the airport noise contour, every receptor point was predicted to experience a decrease in noise levels based on the aforementioned data inputs. The existing and future noise levels for those receptor points can be seen in the table embedded in the Noise Contour Figure.



RECEPTOR POINT	EXISTING NOISE LEVEL	FUTURE NOISE LEVEL
16	60.1 dB	56.6 dB
17	50.7 dB	50.1 dB
18	47.7 dB	46.8 dB
19	44.2 dB	42.8 dB
4	45.3 dB	44.3 dB
3	46.1 dB	45.2 dB
20	48.0 dB	46.7 dB
21	47.3 dB	46.3 dB
22	52.7 dB	51.5 dB
23	51.6 dB	49.6 dB
13	55.3 dB	53.7 dB
24	51.8 dB	49.6 dB
9	48.3 dB	46.3 dB
1	49.3 dB	47.3 dB
11	44.4 dB	42.9 dB
7	47.3 dB	44.5 dB

Image Source: National Agricultural Imagery Program, Dated 2014

Figure H-1
Noise Contours

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Appendix I

Airport Sustainability Continued

I.1 SUSTAINABILITY AT LEB

This Appendix builds upon the Potential Sustainability Initiatives mentioned in Chapter 1, *Inventory*, and provides an overview of existing Airport Sustainability Initiatives to date.

- **Initiative:** Implement green building construction and design standards. **Description:** The Airport could establish a policy to pursue Leadership in Energy and Environmental Design (LEED) Certification (or similar standards), as applicable, to minimize the environmental impacts and improve human health conditions as they relate to new construction or major renovation projects. Such standards would emphasize the total costs expected throughout a project's expected service life, particularly with regard to operations and maintenance, rather than focusing on short-term savings in capital costs.

- **Initiative:** Maximize the use of the Airport's non-aeronautical properties. **Description:** The development of non-aeronautical properties at the Airport could fulfill a variety of the Airport's objectives, as long as it does not compromise safety at the Airport. These properties have the potential to generate revenue through parcel leasing (e.g., agricultural use, industrial or commercial facilities), support community well-being by providing public gathering spaces, and/or enhance natural resources by promoting the growth of native grasses to create habitat for grassland birds.

- **Initiative:** Prepare and maintain a comprehensive operation and maintenance (O&M) manual. **Description:** This action, an operation and maintenance best practice, would establish a record keeping system for all building systems (e.g., HVAC and lighting) and related operations. The Airport would use these records to establish an energy usage baseline and monitor ongoing energy performance. Data related to this monitoring activity would assist the Airport in determining which energy-efficiency improvements best fit the unique circumstances of the terminal.[1]

- **Initiative:** Install energy-efficient lighting in the terminal. **Description:** To reduce the Airport's energy consumption and reliance on fossil fuels, retrofit existing terminal incandescent or fluorescent lighting to higher efficiency or LED lighting systems. Further, the Airport should install occupancy sensors, where feasible, to manage energy in spaces that do not require constant lighting.

[1] ACRP. (2011). *Guidebook of Practices for Improving Environmental Performance at Small Airports.* Retrieved December 14 2015, from http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_043.pdf

- **Initiative:** Install water conserving plumbing fixtures throughout the terminal. **Description:** The Airport can conserve a significant amount of water and reduce the amount of wastewater generated at the terminal by installing low-flow, waterless, or pressure assisted plumbing fixtures. These types of plumbing fixtures are relatively inexpensive and generally necessitate no more maintenance beyond that required for conventional fixtures.[2]

- **Initiative:** Conduct a waste audit and use the results to facilitate waste reduction and recycling. **Description:** A baseline waste audit can help the Airport understand the types and amounts of waste that its facilities and operations generate. The Airport can apply this knowledge to increase opportunities for recycling and potentially improve operational efficiencies by simplifying waste collection and reducing contract costs associated with waste hauling and disposal.[3]

- **Initiative:** Strategically locate recycling containers around the terminal, while improving associated signage. **Description:** The strategic positioning of recycling containers should be coordinated with the primary locations of waste generation in the terminal and should include their co-location with existing trash receptacles. This activity would provide additional opportunities for building occupants to recycle their waste, which would reduce the amount of landfill-bound waste generated at the Airport. To improve the Airport's recycling rate even further, it could standardize and enhance associated signage to provide clear guidance on what materials are recyclable. These actions, if implemented, would be highly visible demonstrations of the Airport's commitment to environmental stewardship.[4]

[2] ACRP. (2011). *Guidebook of Practices for Improving Environmental Performance at Small Airports.* Retrieved December 14 2015, from http://onlinepubs.trb.org/onlinepubs/acrp/acrp_rpt_043.pdf
[3] *Ibid.*
[4] *Ibid.*

Sustainability at LEB

Comprehensive Airport Master Plan

What is sustainability and how does it relate to airports?

Airport Sustainability is a holistic approach to managing an airport so as to ensure the integrity of the **Economic viability**, **Operational efficiency**, **Natural resource conservation**, and **Social responsibility** (EONS).

– Airports Council International

What has the Airport done to address its sustainability?

- Supported the Upper Valley / Lake Sunapee Regional Planning Council in conducting an energy audit at the Airport in 2012.
- Identified terminal air conditioning units and boilers, installed in 1980, as inefficient and in need of replacement. This project would greatly improve the reliability and quality of cooling and heating, while lowering energy consumption and costs as well as reducing related greenhouse gas emissions.

Terminal Air Conditioning Unit

Terminal Boilers

Wings & Wheels - 2015

- Hosts community events throughout the year such as *Wings & Wheels – A Celebration of Lebanon*, in addition to conducting tours for local organizations such as schools and Boy/Girl Scout groups.
- Generates an economic impact of $4.43 million through direct employee compensation (2013), $2.97 million in indirect labor, $7.6 million in indirect output at state businesses (in addition to state tax revenues), and $2.41 million in passenger spending - Lebanon Municipal Airport Economic Impact Study, 2008 and New Hampshire State Airport System Plan, 2015.
- Retrofitted up to 30 exterior, incandescent flood lights to LEDs between 2013 and 2014.
- Modified mowing procedures around the runway safety areas to create grassland bird habitat to support species growth, while maintaining compliance with FAA regulations.
- Replaced 38 150-watt, steady burning obstruction lights with two 640-watt slow flashing lights.

What can the Airport do to improve its sustainability performance?

To improve its sustainability performance, the Airport could adopt the following sustainability ideas:

- **Switch to using warm-mix asphalt instead of hot mix asphalt for paving operations**

  Warm-mix asphalt, as opposed to hot mix asphalt, uses less energy during production and placement. Therefore, it generates less greenhouse gas and other air pollutant emissions. The Airport can potentially apply warm-mix asphalt in its parking lot, taxiways, runways, and aprons.

- **Establish an on-airport beehive (a.k.a. apiary) to produce and sell honey and honey-based products**

  Apiaries have proven successful at a number of airports such as Chicago O'Hare and Seattle-Tacoma. This activity offers the opportunity to engage local agricultural operations such as beekeepers, and would foster a harmonious partnership with the nearby apple orchards for propagation of their crop and the creation of apple blossom honey. The Airport can sell goods produced using products of the apiary within the terminal or at the local farmers' market at Colburn Park.

- **Install energy-efficient lighting in the terminal**

  To improve energy efficiency within the terminal, retrofit existing incandescent or fluorescent lighting to higher efficiency or LED lighting systems. Further, install occupancy sensors, where feasible, to manage energy in spaces that do not require constant lighting.

Apiary

- **Install a solar array to power Airport facilities**

  To reduce the Airport's energy consumption and reliance on fossil fuels, build a solar photovoltaic (PV) farm on land not needed for aeronautical purposes. One of the ways the Airport can accomplish this is through a solar power purchase agreement (SPPA), where a third-party developer would incur the upfront costs and the Airport would agree to purchase the electricity for a predetermined period.

Solar PV Installation

- **Maximize the use of the Airport's non-aeronautical properties**

  The development of non-aeronautical properties at the Airport could fulfill a variety of the Airport's objectives, as long as it does not compromise the Airport's safety. These properties have the potential to generate revenue through parcel leasing, provide community gathering spaces, and/or enhance natural resources through the creation of habitat for grassland birds.

- **Install water conserving plumbing fixtures throughout the terminal**

  The Airport can conserve a significant amount of water and reduce the amount of wastewater generated at the terminal by installing low-flow, waterless, or pressure assisted plumbing fixtures. These types of plumbing fixtures are relatively inexpensive and generally necessitate no more maintenance beyond that required for conventional fixtures.

- **Conduct a waste audit and use the results to facilitate waste reduction and recycling**

  A baseline waste audit can help the Airport understand the types and amounts of waste that is generated at its facilities. Such knowledge can be applied to increase opportunities for recycling and potentially improve operational efficiencies by simplifying waste collection and reducing contract costs associated with waste hauling and disposal.

Appendix J

McFarland Johnson

To: Lebanon CMT

Date: April 3, 2015

Project : LEB CAMP

From: Chad Nixon
Leo Pierre Roy

Re: Summary results of one-on-one meetings

This Memorandum summarizes the discussions with opinion leaders in the Lebanon, NH community, conducted by Chad Nixon and Leo Roy from March 23-26 2015 for the Lebanon Airport (LEB) Comprehensive Airport Master Plan (CAMP).

Key performance indicators (KPIs): Success of the conversations is defined as: 1) interviewees feel comfortable that they could provide frank and honest observations; 2) Consultant Team receives useful information on how airport is perceived in the community; and 3) interviewees provide names of other opinion leaders to speak to.

Participants:

Tom Sullivan and Tim Lowney, Strum Ruger (fourth largest regional employer, 1,400 employees)

Jim Goodrich, airport neighbor, 8 Hetzel Road

Bente Torjusen, Executive Director, AVA Gallery

Paul Boucher, President, Lebanon Chamber of Commerce

Tom Roberts, Executive Director, Vital Communities (with Aaron Brown, transportation planner)

Curt Jacques, Chairman, Lebanon Chamber of Commerce (owner, West Lebanon Feed & Supply)

Drew Nelson, Former Chairman, Lebanon Chamber of Commerce (former owner, Bowl & Board)

Dr. Scott Pauls, Mathematics Professor, Dartmouth College (former City Councilor)

Jonathan Edwards, former Town Planner, Town of Hanover

Dick Couch, President, Hypertherm (third largest regional employer, 1,500 employees)

Rick Greenwald, President, Simbex, local entrepreneur

Phil Hanlon, President, Dartmouth College (second largest regional employer, 3,500 employees)

General topics covered in the discussions included:

- Where do you go to catch a plane? Why?
- Do you use the Lebanon Municipal Airport? How? Do you know others that use it?
- What is your perception of the current role of the airport in the community and the region?
- Any thoughts on what its future role should be and how to make the most of this asset?
- Any other observations that you'd like to make about the airport?
- What is the best way to engage the residents of Lebanon in this conversation?

Summary responses:

Where do you go to catch a plane? Why?

Most respondents go to Manchester (MHT) first, Boston Logan (BOS) second, and Lebanon (LEB) third for air travel. One interviewee goes to Burlington, VT (BTV) and one goes to Bradley in Hartford, CT (BDL). The reasons include larger planes, more frequent schedule, direct flights to their destinations, and lower cost. Some concern was expressed about the weather-related delays and cancellations at LEB. One respondent used LEB for private jet travel direct to their destinations in the Northeast, and several used the Cape Air service frequently to White Plains/NYC for business travel. On average, taking the Dartmouth Coach to BOS was by far the most common means to access air travel.

Do you use the Lebanon Municipal Airport? How? Do you know others that use it?

The majority of respondents had used the Lebanon Airport occasionally in the past, but were not frequent users. They acknowledged having used the airport more regularly when there was more commercial service. Several knew businesspeople who used the Cape Air service to NYC. Some knew a pilot or two (Steve Ensign or Steve Christy) but did not know many people who actually used the airport for general aviation. One leading manufacturer said that we need the airport, as many of his customers and suppliers flew private planes to LEB for business meetings. The President of Dartmouth acknowledged that the airport was important to their alumni, donors, and visitors.

What is your perception of the current role of the airport in the community and the region?

The general consensus was that the airport did not play a significant role in the region; one respondent noted that few residents have ever been up the hill to see it, let alone fly out of it. The respondents felt that it was most important to the business community in the region, but not to the leisure traveler. There was a widespread opinion that City of Lebanon residents were subsidizing the airport through taxation, but that only a few wealthy individuals used it. Several respondents said that they thought it was important to Dartmouth College, especially trustees, alumni, and some parents, which was confirmed by President Hanlon. One respondent observed that the daily transient working population in Lebanon was largely indifferent to the airport, but that the taxpayers saw it as an albatross. It was observed that the FAA was viewed as extremely inflexible in its demands and that the neighbors were particularly angry at the airport.

Any thoughts on what its future role should be and how to make the most of this asset?

There was widespread support for expanded commercial service from LEB to New York, Philadelphia, and Baltimore (DC). It was felt that expanded service was needed to support the business community, the hospital, and the college, as well as local arts organizations. It was acknowledged that the airport served the region, but was only financially supported by the City.

Any other observations that you'd like to make about the airport?

Many said that the airport was a regional asset. There was a desire expressed for more objective information about the airport's finances, and a general feeling that it was significantly taxpayer supported. One felt that this gave rise to disgruntlement that the local taxpayers were financially supporting a regional facility. There was a feeling that other communities (and the college) should be contributing financially to support airport operations. One respondent expressed a desire for long term planning, considering the changing demographics, and what the community would look like in 25 years; they felt that the airport should be considered in a larger context. More than one respondent expressed the view that most residents of Lebanon are ambivalent about the airport, and that residents believed that closing it would not have a significant impact on the region. It was observed that a persuasive case for keeping the airport open had not been made. Several respondents wanted more data on airport usage, such as number of commercial passengers, number of GA flights, percentage of weather-related delays, and increased opportunities for expanded service.

What is the best way to engage the residents of Lebanon in this conversation?

The general consensus was that people of Lebanon would not engage unless they were directly affected by the airport, either as a business owner who relied upon the airport for their livelihood, or a neighbor who believed that they were being adversely affected. The respondents agreed that getting the average Lebanon resident engaged in a dialogue about the airport was going to be very difficult. It was noted by several respondents that "people just don't go to meetings". Several respondents suggested the use of an informative website, survey instruments, and social media, especially Facebook. Nearly all respondents said that the Valley News was the chief source of local information, but that it was known to promote controversy. One respondent suggested the local National Public Radio affiliate (91.3) as a source of local news. It was suggested by more than one respondent that the best way to engage this community was to meet in people's homes for coffee in small groups. One respondent felt that there was some curiosity about the airport, so he suggested hosting meetings there, and inviting school groups and others to tour the airport. He observed that free food often brought people out to meetings.

Suggestions of where to meet people included:

The weekly Farmer's Market on the green

Breakfast hangouts, including the Fort, the Lebanon Diner, and the Four Aces Diner

Lebanon Opera House

Senior Center

Salt Hill Pub

Village Pizza

AVA Gallery

Health clubs: both the River Valley Club (RVC) and CCBA

Speak at Rotary Club (scheduled for April 23)

Present at Vital Communities Corporate Council meeting

Suggestions of additional people to meet with one-on-one included:

Steve Wood, former City Councilor and abutter

William Dunn, Mascoma Savings Bank

Steve Christy, Mascoma Savings Bank (VC Corporate Council)

All the City Councilors, especially Karen Liot Hill

Bob Bauman, Plant Manager at Timkin

Susan Clark, Novo Nordisk

Rick Mills, Dartmouth College (VC Corporate Council)

Clay Adams, Simon Pierce (VC Corporate Council)

Bob Sherman, Great Eastern Radio

Heather Clow, Lebanon Opera House

Steve Whitman, Whitman Communications

David Clem, Lyme Properties (VC Corporate Council)

Matt Houde, Dartmouth Hitchcock Medical Center, former state senator

Matt Brown, Casella

Paul Coates, CCBA

Tripp Davis, Dartmouth Regional Technology Center

Julie Griffin, Town Manager, Hanover

Bain Stevenson, real estate developer

Mike Cryans, County Commissioner

David Pierce, State Senator, District 5

Ann Kuster, US Congresswoman

Lebanon Airport

Comprehensive Airport Master Plan

Small Group Meetings Presentation

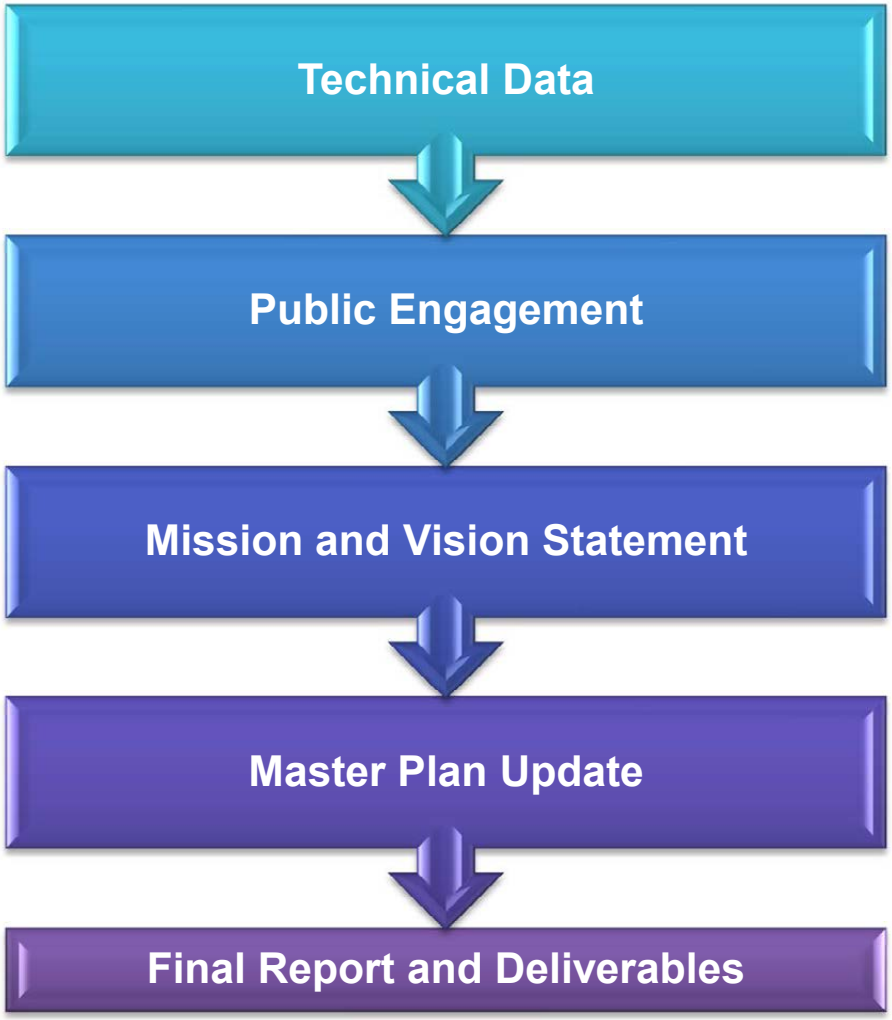
May 2015

McFarland Johnson

Agenda

- Introductions
- Outline of Master Plan Project
- Summary of Briefing Packages
- SWOT Process
- Defining Mission and Vision Statements
- Next Steps

Outline of Master Plan Project



Overview of LEB

History

- Established 1941 – U.S. War Department
- Inaugural Airline Service – 1948
- Lebanon Regional Airport Authority formed in 1959 but later dissolved
- Airport Business Park development through 1990s and early 2000s
- Small Community Air Service Development Grant – 2004
- Cape Air Service to BOS and WHP – 2008
- Relinquished Part 139 Certification in 2011 due to Loss of ARFF Coverage from Budget
- City of Lebanon votes No Action on RSA Improvements - 2013

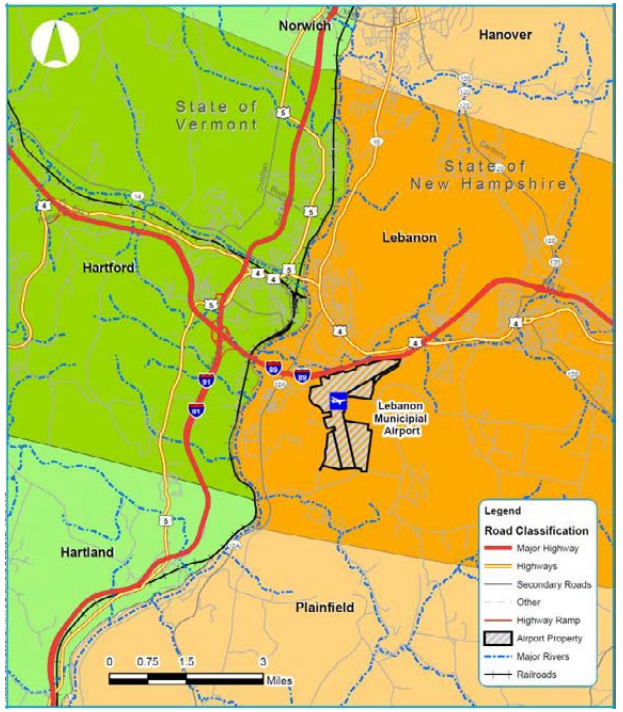
Overview of LEB

Governance

- Owned by the City of Lebanon (Airport Sponsor)
- Operated as Municipal Department
- Airport Manager → City Manager → City Council
- LRAA previously included funding and management authority from 14 towns in NH and 4 towns in VT

Role

- Publicly Owned, Public Use Facility
- Non-Hub Primary Commercial Service Airport
- One of three commercial service airports in NH
- One of four airports in NH with Control Tower
- 34,533 Annual Operations
  - Air Taxi = 8,347
  - GA Local = 13,665
  - GA Itinerant – 12,187



Transportation Network

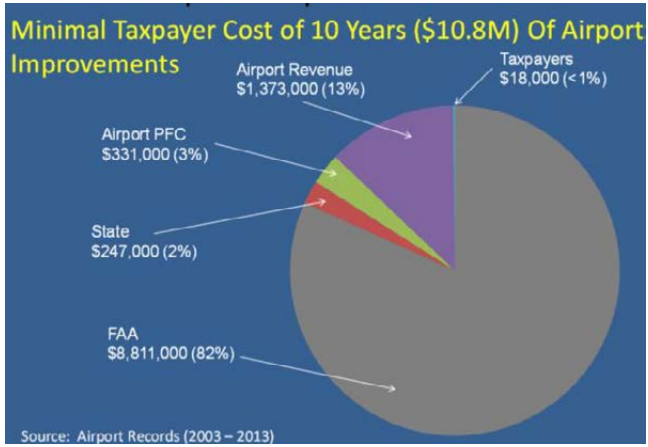
- Highway → Interstate 91 and 84; U.S. Route 4 and 5
- Rail → Lines to Albany, Boston, New York, Montreal
- Port → Access to Multiple Ports in New England Region

LEB Budgets

Capital

- Improvements or Rehabilitations to Airport Infrastructure
- Funded on Shared Basis:
  - 90% Federal (FAA)
  - 5% State (NHDOT Bureau of Aeronautics)
  - 5% Local (City of Lebanon)
- Local Share Funded by Airport Revenues and Passenger Facility Charges (PFCs)
  - City Only Contributes When:
    - ✓ Airport Revenues and PFCs are Not Enough
    - ✓ Projects are Not Eligible for PFC Funding

From 2003-2013, out of $10,800,000 in capital improvements Lebanon city residents paid approximately $18,000 or about $1.30 per resident.



LEB Budgets

Operational

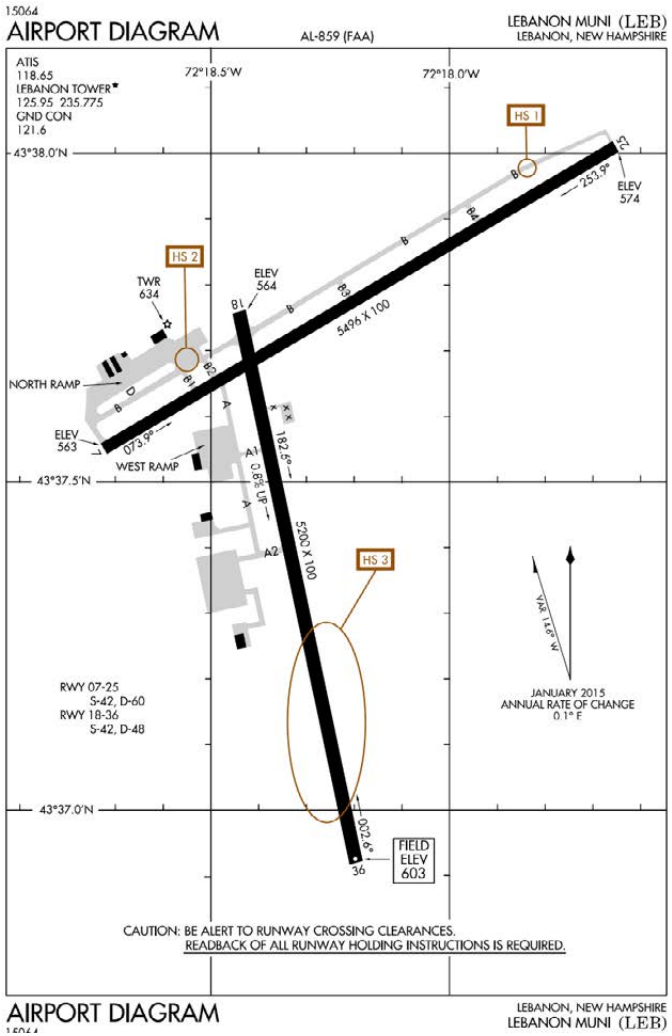
- Employee Salaries, Maintenance, Utilities, etc.
- Varies Year-to-Year
- Covered by City's General Fund when Revenues are Less than Expenditures
  - Traditionally Operates at a Loss
  - Average Cost of $168,889 per year, or $12.20 per resident
- LEB Does Pay Into General Fund
  - Admin and Computer Support Costs

Property Tax Generated

- Annual Average → $181,989
  - General Fund = $65,926
  - Schools/County = $113,841

LEB Facilities

- Two Runways Over 5,000’
- Contract Control Tower
- Weather, Navigation, and Approach Instrumentation
- Aircraft Storage and Fueling
- On-Airport Tenants
- Off-Airport Business Parks



LEB Facilities

- Safety
  - Annual Tabletop Exercises
  - Three Non-Compliant RSAs
  - Obstruction Removal
- Security
  - TSA Part 1542 Approved Security Program
  - Access-Control Systems
  - Card Readers
- Noise
  - Part 150 Noise Study and Noise Compliance Program
  - Special Zoning District
  - Noise Abatement Procedures

Changes Per Part 139 Airport Certification

-Additional Inspections
-Airport Rescue and Fire Fighting
-Additional Training, Documentation, Record-Keeping

Regulatory Environment

- Federal
  - FAA
  - TSA
  - U.S. Army Corps of Engineers
- State
  - NHDOT
  - NHDES
- Local
  - City Council
    - Conservation Committee
    - Planning Board

Regulatory Environment

Sponsor Assurances

- Obligations Incurred from Accepting and Using State and Federal Monies
- Lack of Compliance Could Result in Fines, Decreased Funding, and/or Legal Action/Liability
- Basic Tenets:

The Airport must continue to be operated as an Airport, ***it cannot be closed or sold.***

The Airport ***must be continually maintained and not fall into disrepair.***

Revenues received from the Airport must remain with the Airport; ***money cannot be diverted to other municipal departments for purposes that do not relate to the Airport (non-aeronautical).***

Airport land cannot be used , or released, for non-aeronautical purpose without FAA consent; ***property must be used for aviation-related purposes.***

Capital ***grant assurances expire at the end of the grant item's useful life*** (i.e. pavement generally has a useful life of 20 years).

Since ***land*** does not have a useful life, any property that was acquired using federal funds is ***obligated in perpetuity.***

Industry Trends

Network Carriers

- Mergers and Acquisitions
  - Reduction of Duplicate Routes
- Focus on Global Network/Larger Hubs
  - Difficult to Maintain Service at Smaller Airports

Cape Air

Low Cost Carriers (LCCs)

- Strive for Lowest Possible Cost
- Emphasis on Passenger Volume
- Competing Service in Region

Essential Air Service (EAS)

- Program Scrutiny and Budget Cuts
- Plan for “What If” Scenarios

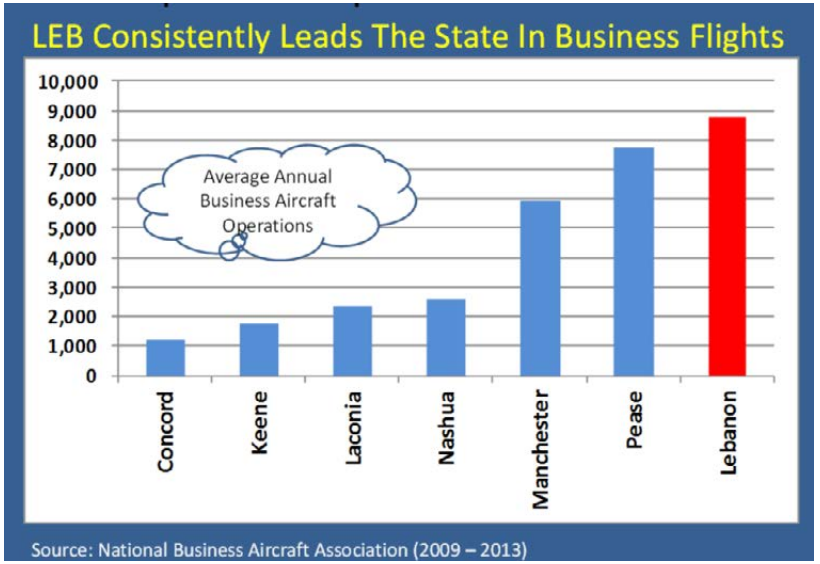
Industry Trends

General Aviation

- Local Industries Utilize LEB → Quicker, Easier Access
- LEB Leads the State in Business Flights
- FAA Aerospace Forecast Predicts Robust Growth for Business/Corporate Aviation Over Next 20 Years

Businesses Using LEB

Business	Employees
Dartmouth-Hitchcock	8,000
Dartmouth College	3,500
Dartmouth-Hitchcock Keene	3,000
Hypertherm/Hypertherm, Inc.	4,400
Sturm Ruger	2,700
Simbex	35



Public Value

- Critical Resource for DHART Crew
  - Utilizes LEB 6 times per month
  - ATC Services 8-10 times per day

- Economic Impacts

According to the NH State Airport System Plan, in 2013, through direct and indirect economic impacts, LEB supported an estimated total of 168 jobs, $8.87 million in labor income, $26.77 million in business output, and $0.33 million in state tax revenue. The airport also generated an estimated $1.47 million in cost savings for local businesses relying on general aviation for business travel.

- Aviation Impacts to State and Western NH
  - Jet A Fueling
  - Precision Approaches
  - 5,000-foot Runways or Greater

-Organ Transport
-Patient Transport
-Search and Rescue
-Law Enforcement
-Pilot Training
-Aerial Tours
-Tourism

Airport Sustainability

Sustainable Master Plans

- Intent to Incorporate Environmental Sustainability as Core Objective in Airport Planning

Sustainability Includes:

- Reducing Environmental Impacts
- Achieving Economic Benefits
- Increased Operational Efficiency
- Better Community Integration

Goes Beyond Environmental Concerns to Include Economic , Operational, and Social Aspects

Efforts Should Address :

- Defined Sustainability Mission Statement
- Defined Sustainability Categories
- Baseline Assessments
- Measurable Goals
- Identification of Initiatives

SWOT Process

Objective:
Identify what makes the Lebanon Municipal Airport surrounding area different from the competition and how we might capitalize on those differences.

What are our major internal or present strengths?
Internal strengths are resources or capabilities that help an organization accomplish its mission. (*Examples:* airport leadership, physical facilities, networks, etc.)

What are our major internal or present weaknesses?
Internal weaknesses are deficiencies in resources and capabilities that hinder an organization's ability to accomplish its mandate or mission. (*Examples:* lack of effective communications, absence of clear vision or mission, flawed organizational structure, performance issues, board turnover, or lack of financial resources.)

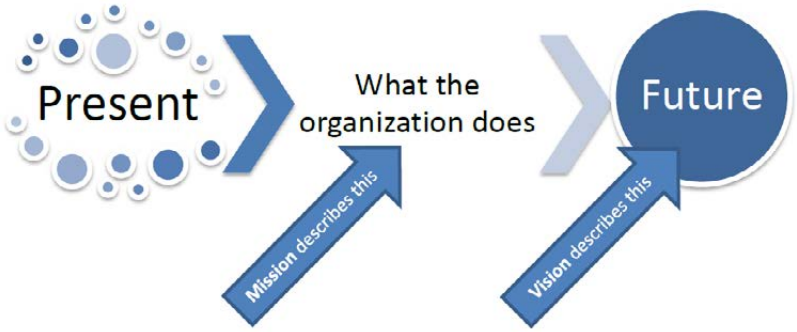
What major external or future opportunities do we have?
External opportunities are outside factors or situations that can affect your organization in a favorable way. (*Examples:* new funding from a federal program, political support for a potential project, the global economy, changing customer demographics and preferences, technological changes, timing and other trends.)

What major external or future threats do we face?
External threats are outside factors or situations that can affect your organization in a negative way. (*Examples:* loss of state funding, increasing demand for a specific service, union/management conflicts, the global economy, competition, customer preferences, technological changes, political or social trends.)

Vision and Mission Statements

Defining Vision and Mission Statements

Vision and Mission Statements serve two different purposes. The Vision Statement describes what the organization is about, and the Mission Statement describes how the organization will get there.



What is a Mission Statement?

- ➢ Describes what the organization does, and how it does it
- ➢ Explains why people should care about what the organization does
- ➢ Functions as the organization's reason for being

What makes a good Mission Statement?

- ✓ Focused on actions and core services
- ✓ Describes what the organization is
- ✓ Describes the "how" and "for whom"

What makes a poor Mission Statement?

- × Too general
- × Does not mention the core business
- × Too lofty or lengthy

What is a Vision Statement?

- ➢ Describes where or what you want the organization to be
- ➢ Explains how you want the organization to be perceived or known
- ➢ Functions as the organization's "north star"

What makes a good Vision Statement?

- ✓ Can be broad and succinct
- ✓ Describes what the organization represents
- ✓ Describes the "why" and "where"

What makes a poor Vision Statement?

- × Too specific
- × Includes short-term goals
- × Describes what the organization is doing

Next Steps

- **May Thru July 2015** – Direct Public Outreach Events
- **July 22** – Public Visioning Workshop *(Tentative)*
- **Nov 9 and 10** – Small Group Meetings *(Tentative)*
- **Dec 1** – Public Planning Workshop *(Tentative)*

AUAC Sign In Sheet

Comprehensive Airport Master Plan

Name	Organization	Email	Phone	City of Lebanon Resident Y/N
Deanna Stoddard	McFarland Johnson	dstoddard@mjinc.com		No
Steve Whitman		slw@whitsbbs.com	603-252-0279	Y
Roy [illegible]	[illegible]	[illegible]	603-298-8728	N
Greg Soho	Granite Air Center	gsoho@graniteair.com	603-298-6555	N
~~Patrick Cinske~~	--			N
Patricia Cinske		bergenconned@attnet		
Susan Weber Valiante	Resident	svaliante@aol.com	603 448-1323	
LAUREL STAVIS	RESIDENT	LAUREL.STAVIS@DARTMOUTH.EDU	603-359-4161	
Nicole Cormen	resident	nscormen@gmail.com	603-448-2442	Y
Theresa Hays	resident Simplex	thays@simplex.com		
Rick Greenwald	Simplex	rgreenwald@simplex.com	603-448-2619	N
Ken Gray		Kjgray@gmail.com	603-298-0116	
Bobbi Gross	resident	bobbigross@earthlink.net	603-643-4267	

TAC *Sign In Sheet*

Name	Organization	Email	Phone
Deanna Stoddard	McFarland Johnson	dstoddard@mjinc.com	
NATE MILLER	UVLSRPC	nmiller@uvlsrpc.org	448-1680
Bruce Temple	City of Lebanon	bruce.temple@lebanon	448-5112
RICK DUMONT	LEB AIRPORT	rick.dumont@lebcity.com	298-8878
Shelley Hadfield	COL	Shelley.hadfield@lebcity.com	469-3584
David Brooks	COL	David.Brooks@lebcity.com	448-1457
Joanna Whitcomb	Dartmouth	joanna.whitcomb@dartmouth.edu	646-9852

Lebanon Municipal Airport

Comprehensive Airport Master Plan

Project Memorandum

To: LEB City Management Team

Date: May 19, 2015

From: LEB Planning Team

Re: Lebanon Municipal Airport Comprehensive Master Plan
Summary of May TAC, AUC, and CAC meetings

In April 2015, the project team submitted a Communications Plan that outlines the community engagement strategy for the Lebanon Municipal Airport (LEB) Comprehensive Airport Master Plan. The approved Communications Plan structures the overall public/stakeholder outreach and involvement process through a series of meetings, public workshops, and citizen engagement. As described in the Communications Plan, the project team held an initial round of meetings with three advisory committees on May 6 and May 7, 2015. Meetings with the Technical Advisory Committee (TAC), Citizens Advisory Committee (CAC), and Airport Users Advisory Committee (AUAC) allowed the project team to get a sense of the varied sentiment toward the airport, understand how the airport is perceived, learn about the constraints under which the airport operates, and meet the individuals who will be providing their time and knowledge throughout this process.

The project team held two meetings, one with the TAC on May 6, and one combined meeting with both the CAC and AUAC on May 7. The informal structure of the meetings allowed participants to ask questions, share opinions and knowledge, and discuss issues openly with other participants. Since participants on the three committees have diverse professional and personal backgrounds with varying degrees of exposure to the airport, the project team provided participants with a briefing packet in advance of the meetings as a reference, giving participants a good working knowledge of the airport history and characteristics. The project team opened the meetings with a refresher presentation on the briefing packet which allowed participants to point out statements that needed to be clarified and ask questions about topics not covered in the packet.

The TAC, and CAC/AUAC meetings granted the project team an opportunity to talk to stakeholders, ask questions, and gather input. To facilitate the conversation, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) exercise had participants provide individual ideas and observations about the airport, and then collaboratively sort and prioritize shared concepts. Going through this exercise helps ensure that the project team accurately understands and records the main points of discussion, major concerns, areas for improvement, and desirable traits. The information from these two initial meetings, subsequent TAC, CAC, and AUAC meetings, other workshops, engagement events, and other outreach efforts is valuable because it contributes to the development of the Vision Statement, which is the foundation of the LEB Comprehensive Airport Master Plan.

The following pages provide details about what participants of the first TAC and CAC/AUAC meetings discussed, highlighted, and felt were important to recognize before creating the LEB Comprehensive Airport Master Plan.

May 6, 2015, TAC Meeting – Summary

Participants: Nate Miller, Bruce Temple, Rick Dyment, Shelley Hadfield, David Brooks, and Joanna Whitcomb. Facilitators: Chad Nixon, Deanna Stoddard; Leo Pierre Roy, Matthew Egge.

Strengths

- **Convenient Location**
  Conveniently located for businesses, outdoor recreation like skiing and hiking, and general aviation
- **Emergency and Medical Response**
  Valuable location for emergency response, medical services, and hospital-related access

Weaknesses

- **Limited Destinations & Service**
  Lack of Part 139 certification, limited options for flight destinations and times, absence of larger airlines and aircraft, limited intermodal ground connections, competition with larger airports (Boston Logan, Manchester)
- **Lack of Public Awareness**
  Weak online presence, unclear financial obligation, limited understanding of airport constraints and opportunities

Opportunities

- **Airport Service Growth**
  Pursue Part 139 certification to enable larger aircraft, identify a "niche", service to alternative destinations, position to accommodate overflow from Boston Logan growth
- **Airport Development**
  Build new hangar space, and identify non-aviation revenue opportunities: utilize restaurant space and modernize terminal amenities

Threats

- **Growing Competition**
  Increased competition from expanded Dartmouth Coach, rail service, bus service, and BOS/MHT
- **Current/Future FAA Compliance & Regulations**
  Financial and community cost of complying with current and future FAA regulations, associated funding loss if non-compliant
- **Airport State of Good Repair**
  Anticipating maintenance costs and safety requirements

The TAC summarized the afternoon's discussion:

What is LEB today?

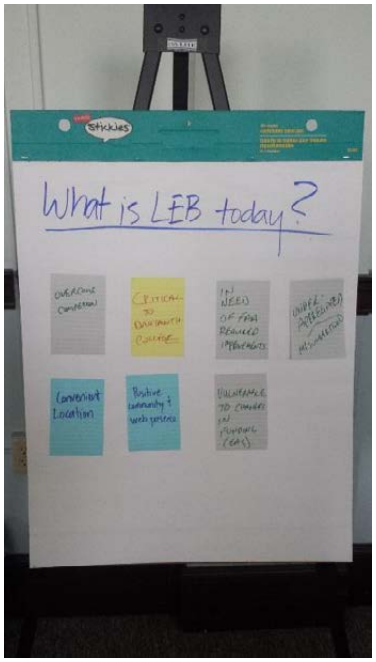
- Facing competition
- Critical to Dartmouth College
- In need of FAA-required improvements
- Underappreciated, and misunderstood
- Convenient
- Limited presence online (web)
- Vulnerable to changes in funding

What would you like LEB to be tomorrow?

- A gateway to recreation
- Have a niche or clear identity
- Provide flights to more destinations
- Become Part 139 and FAA compliant
- Have modern and well maintained facilities
- Be cash-flow positive
- Obtain reliable FAA funding

May 6, 2015, TAC Meeting

- Members of the Technical Advisory Committee talk about the airport, share their knowledge and opinions, and write what they think is important
- Strengths, Weaknesses, Opportunities, and Threats that the TAC saw for the airport
- The TAC talked about what the airport is now, and what it could be in the future



May 7, 2015, Combined CAC & AUAC Meeting – Summary

Participants: Steve Whitman, Patrick Christie, Susan Valiante, Laurel Stavis, Nicole Cormen, Theresa Hays, Rick Greenwald, Bobbi Gross, Roger Sharkey, Greg Soho Rick Dyment, Bobbi Gross, and Kevin Guay. Facilitators: Chad Nixon, Deanna Stoddard; Leo Pierre Roy, Matthew Egge.

Strengths

- **Convenient Location**
  Conveniently located for businesses, easy to use, access to healthcare and emergency services
- **Economic Generator**
  Valuable location for businesses, property tax revenue, services for businesses, serves population
- **Good Facility Condition, Efficient Operations, General Aviation Service**

Weaknesses

- **Limited Destinations & Service**
  Limited destinations, absence of larger airlines and aircraft, competition with larger airports (Boston Logan, Manchester)
- **Lack of Public Consensus & Understanding**
  Weak online presence, limited transparency, limited understanding of airport constraints, unclear impact on residents' quality of life and taxes
- **Political Conflict**
  Lacking political support, limited transparency, city council support unclear, no oversight board
- **Funding, Operations, FAA Compliance**

Opportunities

- **Airport Service Growth**
  Enable larger aircraft, more destinations
- **Airport Development**
  Build on unused space, use existing assets better Build new hangar space, and identify non-aviation revenue opportunities,
- **Improve Community Relations**
  Promote airport, community events
- **Economic Development**
  Leverage to create jobs, increase regional commerce

Threats

- **Lacking Community Support & Pride**
  No community support, general public is non-participatory, negative community sentiment, most residents don't use airport
- **Current/Future FAA Compliance & Regulations**
  Financial/community cost of complying with current and future FAA regulations, loss of control tower
- **Potential Funding Reduction**
  Loss of federal funding, loss of EAS funding, unpredictable financial future
- **Competition, Economic Uncertainty**

The CAC and AUAC summarized the day's discussion:

What is LEB today?

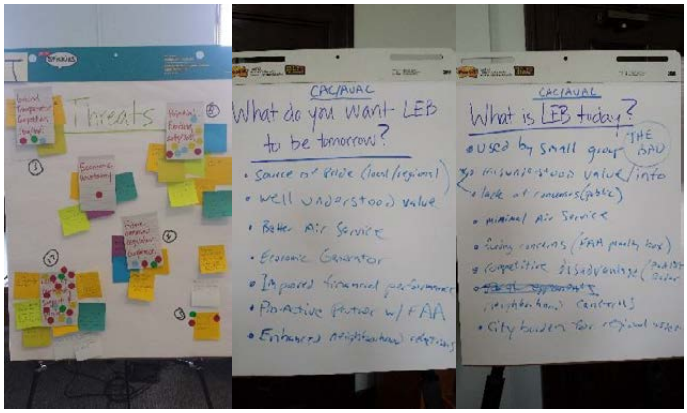
- Has small user group
- Lacks public consensus and is misunderstood
- Has limited air service
- Uncertain funding & FAA non-compliance
- At a competitive disadvantage (Part 139 & radar)
- Subject of neighborhood concern
- A city burden for a regional asset

What would you like LEB to be tomorrow?

- Source of pride (local and regional)
- Have better understanding of value
- Provide better air service
- Be an economic generator
- Have improved financial performance
- Proactively partner with FAA
- Enhance neighborhood relations

May 7, 2015, Combined CAC & AUAC Meeting

- Members of the Citizen's Advisory Committee and the Airport Users Advisory Committee meet each other and share how each participant relates to the airport
- Group sorting of ideas helps ensure that participants are in agreement on important issues
- With communication, willingness, and consideration, participants work collaboratively to point out what the airport does well and what must improve



Lebanon Municipal Airport
Comprehensive Airport Master Plan
Project Memorandum

To: LEB City Management Team

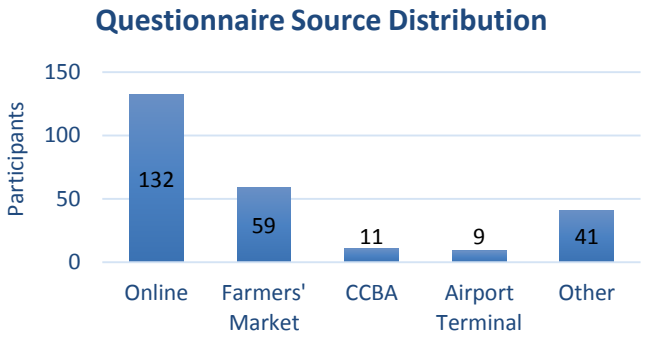
Date: June 30, 2015

From: LEB Planning Team

Re: Lebanon Municipal Airport Comprehensive Airport Master Plan
Public Questionnaire: Interim Report No. 1

In June 2015, 252 public questionnaires were completed and submitted as part of community outreach efforts associated with the Lebanon Municipal Airport Comprehensive Airport Master Plan. The distribution of the origination of these questionnaires is as follows:

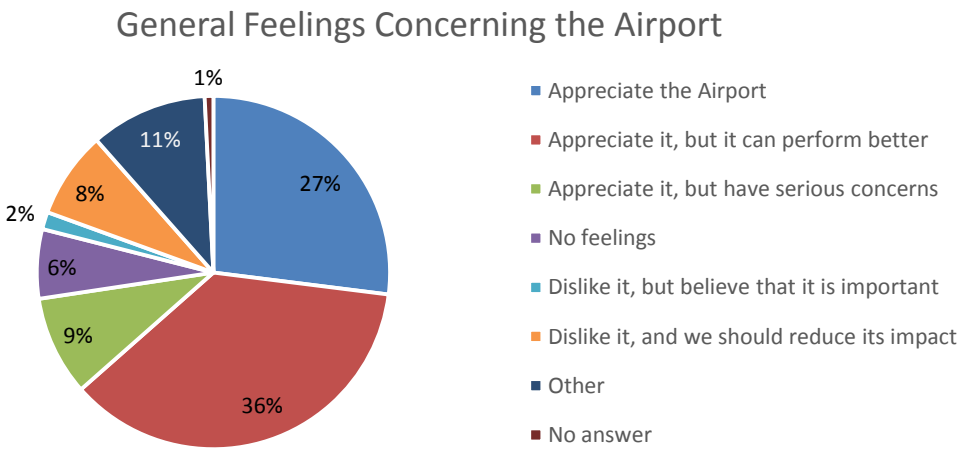
- 132 online submissions
- 59 collected at the Lebanon Farmers' Market over a period of four weeks
- 11 collected at the CCBA Recreation Center
- Nine collected at the Airport terminal
- 41 collected from other sources (e.g., Alumni on the Green event)



Approximately 67 percent of participants (169) self-identified as residents of the City of Lebanon (30 live in West Lebanon). Five participants reside on Poverty Lane.

When asked about their general feelings concerning the Airport:

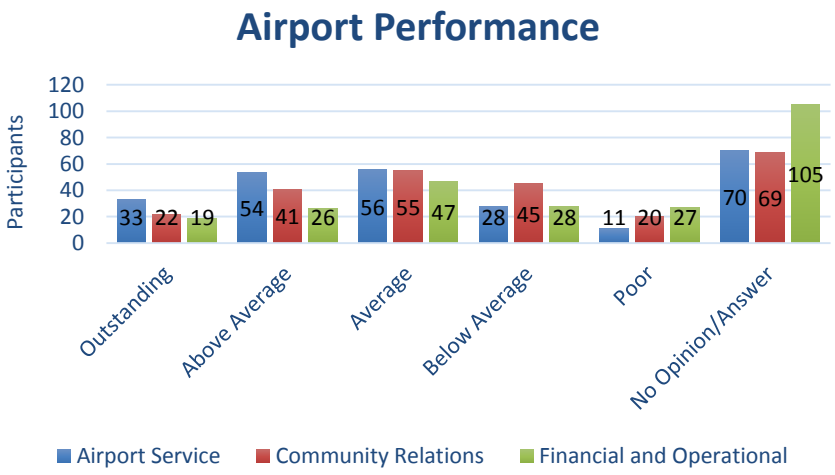
- Approximately 36 percent of participants (92) appreciate the Airport, but believe it could perform better in some areas
- Approximately 27 percent of participants (68) appreciate the Airport as it is
- Approximately 9 percent of participants (23) appreciate the Airport, but have serious concerns about certain aspects
- Approximately 8 percent of participants (20) dislike the Airport, and think steps should be taken to reduce its impact
- Approximately 6 percent of participants (16) have no feelings about the Airport
- Approximately 2 percent of participants (four) dislike the Airport, but believe that it is important to the city and region



In addition to the responses above, approximately 11 percent of participants (27) provided their general feelings about the Airport in their own words (rather than choosing from the list of pre-determined responses) and less than 1 percent of participants (two) did not answer the question. The sentiments below characterize the open-ended responses provided. The frequency of use is indicated in parentheses (some comments were counted multiple times due to their various intents).

- Expand commercial air service (seven comments)
- The Airport should be shutdown/commercial service stopped (four comments)
- Make air service at the Airport economically viable (three comments)
- The Airport should be regionally financed by multiple municipalities, and not solely supported by the taxpayers of the City of Lebanon (three comments)
- The Airport is rarely used (three comments)
- The Airport makes sense for private business purposes; however, expanding commercial services may be difficult with other airport service options nearby (e.g., Manchester) (two comments)
- The FAA should not have forced the Airport/City of Lebanon to cut down the trees (two comments)
- The need for the Airport is not well understood (one comment)
- The Airport should be financially self-supported (one comment)
- The Airport should host more community events (one comment)
- Residents of the City of Lebanon should fly free (one comment)
- The Airport is an asset to the City of Lebanon (one comment)
- Glad the Airport is available (one comment)
- The Airport is useful during emergency situations (e.g., family) (one comment)

Approximately 57 percent of participants (143) believe the Airport is providing average to outstanding airport service. Approximately 16 percent of participants (39) believe the Airport is performing below average or poor in this category. The remaining participants either had no opinion or did not answer the question.



Approximately 47 percent of participants (118) believe the Airport is performing average to outstanding with regard to community relations. Approximately 26 percent of participants (65) believe the Airport is performing below average or poor in this category. The remaining participants either had no opinion or did not answer the question.

Approximately 37 percent of participants (92) believe the Airport is performing average to outstanding with regard to financial and operational efficiency. Approximately 22 percent of participants (55) believe the Airport is performing below average or poor in this category. The remaining participants either had no opinion or did not answer the question.

Only about 7 percent of participants (17) use the Airport frequently. Among the remaining participants, approximately 23 percent (59) never used it, 23 percent (59) used it once or twice ever, 21 percent (53) use it occasionally (more than twice per year), and 22 percent (56) rarely use it (every few years). The remaining participants did not answer the question.

Lebanon Airport

Comprehensive Airport Master Plan

Vital Communities Presentation

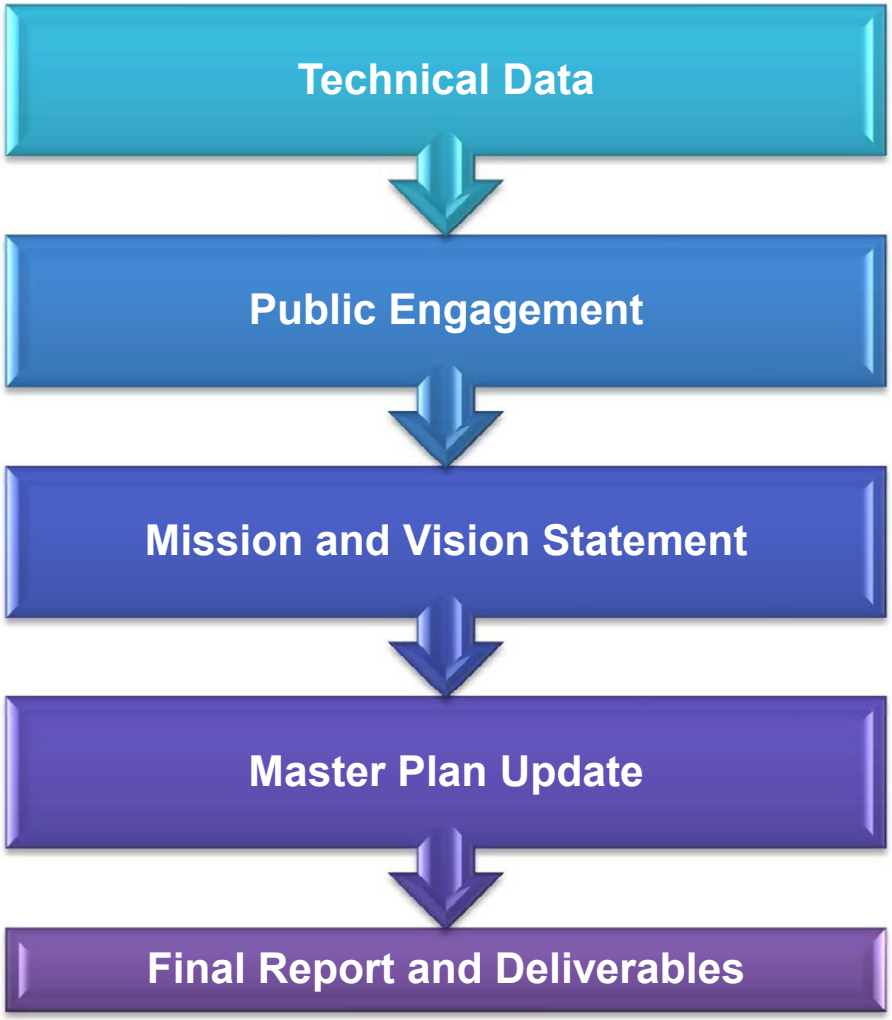
July 2015

McFarland Johnson

Agenda

- Introductions
- Outline of Master Plan Project
- Summary of Briefing Packages
- Community Conversation
- Next Steps

Outline of Master Plan Project



Summary of Briefing Packages

- Components Looked At:
  - Historical
  - Operational
  - Financial
  - Regulatory
  - Sustainability
- All Documents and Presentations are Online
  - Briefing Packages
  - Key Points

Overview of LEB

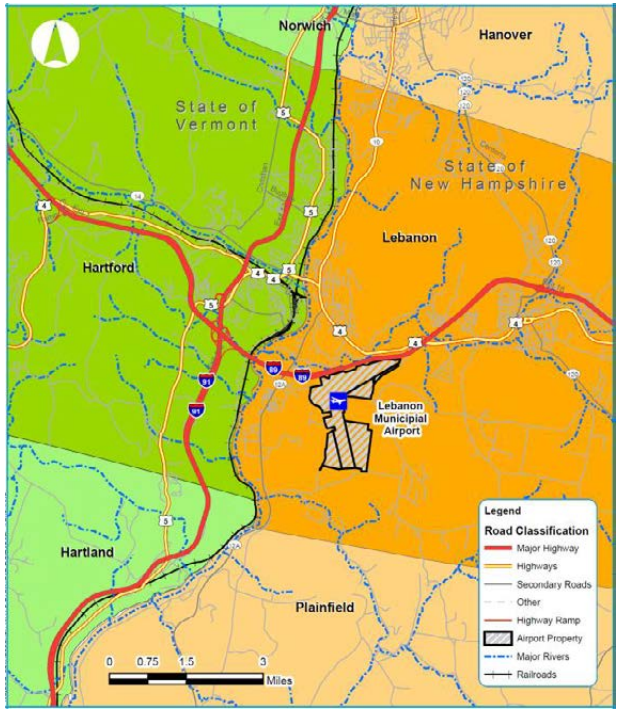
History

- Established 1941 – U.S. War Department
- Inaugural Airline Service – 1948
- Lebanon Regional Airport Authority formed in 1959 but later dissolved
- Airport Business Park development through 1990s and early 2000s
- Small Community Air Service Development Grant – 2004
- Cape Air Service to BOS and WHP – 2008
- Relinquished Part 139 Certification in 2011 due to Loss of ARFF Coverage from Budget
- City of Lebanon votes No Action on RSA Improvements - 2013

Overview of LEB

Governance

- Owned by the City of Lebanon (Airport Sponsor)
- Operated as Municipal Department
- Airport Manager → City Manager → City Council
- LRAA previously included funding and management authority from 14 towns in NH and 4 towns in VT



Role

- Publicly Owned, Public Use Facility
- Non-Hub Primary Commercial Service Airport
- One of three commercial service airports in NH
- One of four airports in NH with Control Tower
- 34,533 Annual Operations
  - Air Taxi = 8,347
  - GA Local = 13,665
  - GA Itinerant – 12,187

Transportation Network

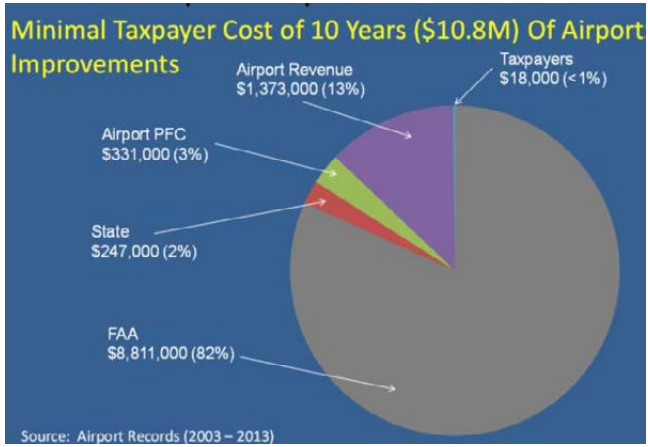
- Highway → Interstate 91 and 84; U.S. Route 4 and 5
- Rail → Lines to Albany, Boston, New York, Montreal
- Port → Access to Multiple Ports in New England Region

LEB Budgets

Capital

- Improvements or Rehabilitations to Airport Infrastructure
- Funded on Shared Basis:
  - 90% Federal (FAA)
  - 5% State (NHDOT Bureau of Aeronautics)
  - 5% Local (City of Lebanon)
- Local Share Funded by Airport Revenues and Passenger Facility Charges (PFCs)
  - City Only Contributes When:
    - ✓ Airport Revenues and PFCs are Not Enough
    - ✓ Projects are Not Eligible for PFC Funding

From 2003-2013, out of $10,800,000 in capital improvements Lebanon city residents paid approximately $18,000 or about $1.33 per resident.



LEB Budgets

Operational

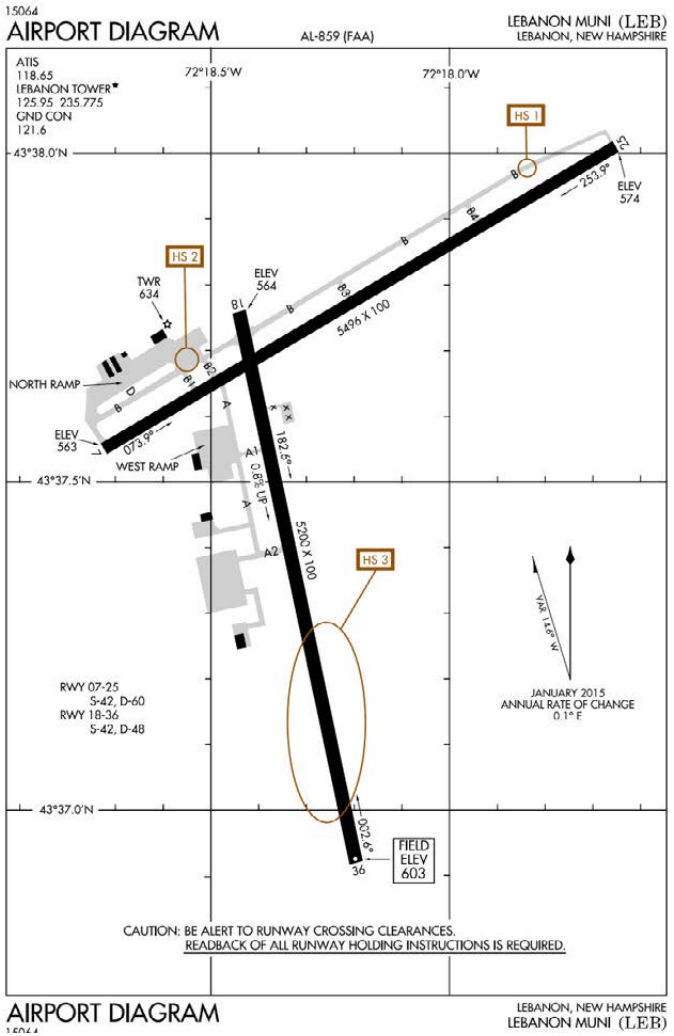
- Employee Salaries, Maintenance, Utilities, etc.
- Varies Year-to-Year
- Covered by City's General Fund when Revenues are Less than Expenditures
  - Traditionally Operates at a Loss
  - Average Cost of $168,889 per year, or $12.20 per resident
- LEB Does Pay Into General Fund
  - Admin and Computer Support Costs

Property Tax Generated

- Annual Average → $181,989
  - General Fund = $65,926
  - Schools/County = $113,841

LEB Facilities

- Two Runways Over 5,000’
- Contract Control Tower
- Weather, Navigation, and Approach Instrumentation
- Aircraft Storage and Fueling
- On-Airport Tenants
- Off-Airport Business Parks



LEB Facilities

- Safety
  - Annual Tabletop Exercises
  - Three Non-Compliant RSAs
  - Obstruction Removal
- Security
  - TSA Part 1542 Approved Security Program
  - Access-Control Systems
  - Card Readers
- Noise
  - Part 150 Noise Study and Noise Compliance Program
  - Special Zoning District
  - Noise Abatement Procedures

Changes Per Part 139 Airport Certification

-Additional Inspections
-Airport Rescue and Fire Fighting
-Additional Training, Documentation, Record-Keeping

Regulatory Environment

- Federal
  - FAA
  - TSA
  - U.S. Army Corps of Engineers
- State
  - NHDOT
  - NHDES
- Local
  - City Council
    - Conservation Committee
    - Planning Board

Transportation Security Administration

US Army Corps of Engineers®

New Hampshire DOT Department of Transportation

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Regulatory Environment

Sponsor Assurances

- Obligations Incurred from Accepting and Using State and Federal Monies
- Lack of Compliance Could Result in Fines, Decreased Funding, and/or Legal Action/Liability
- Basic Tenets:

The Airport must continue to be operated as an Airport, ***it cannot be closed or sold.***

The Airport ***must be continually maintained and not fall into disrepair.***

Revenues received from the Airport must remain with the Airport; ***money cannot be diverted to other municipal departments for purposes that do not relate to the Airport (non-aeronautical).***

Airport land cannot be used , or released, for non-aeronautical purpose without FAA consent; ***property must be used for aviation-related purposes.***

Capital ***grant assurances expire at the end of the grant item's useful life*** (i.e. pavement generally has a useful life of 20 years).

Since ***land*** does not have a useful life, any property that was acquired using federal funds is ***obligated in perpetuity.***

Industry Trends

- Network Carriers
  - Mergers and Acquisitions
    - Reduction of Duplicate Routes
  - Focus on Global Network/Larger Hubs
    - Difficult to Maintain Service at Smaller Airports
- Low Cost Carriers (LCCs)
  - Strive for Lowest Possible Cost
  - Emphasis on Passenger Volume
  - Competing Service in Region
- Essential Air Service (EAS)
  - Program Scrutiny and Budget Cuts
  - Plan for "What If" Scenarios

Cape Air

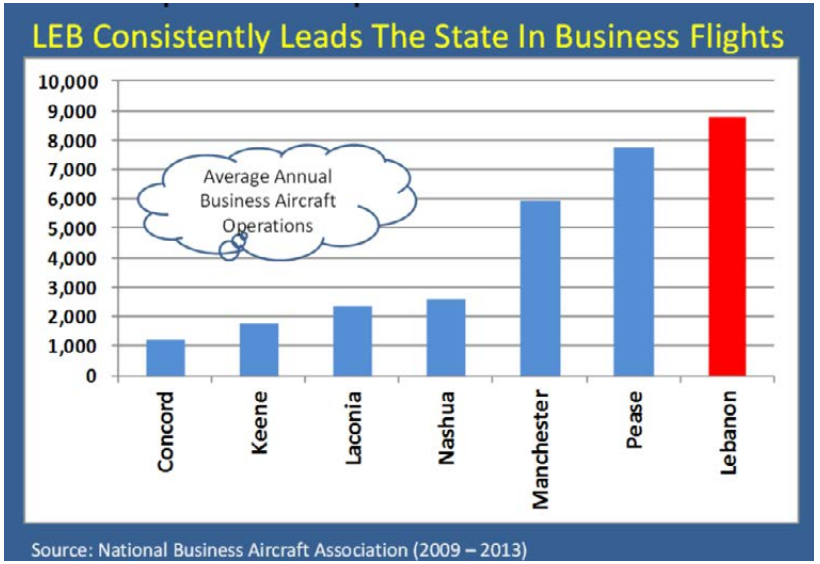
Industry Trends

✈ General Aviation

- ❑ Local Industries Utilize LEB → Quicker, Easier Access
- ❑ LEB Leads the State in Business Flights
- ❑ FAA Aerospace Forecast Predicts Robust Growth for Business/Corporate Aviation Over Next 20 Years

Businesses Using LEB

Business	Employees
Dartmouth-Hitchcock	8,000
Dartmouth College	3,500
Dartmouth-Hitchcock Keene	3,000
Hypertherm/Hypertherm, Inc.	4,400
Sturm Ruger	2,700
Simbex	35



Public Value

- Critical Resource for DHART Crew
  - Utilizes LEB 6 times per month
  - ATC Services 8-10 times per day

- Economic Impacts

According to the NH State Airport System Plan, in 2013, through direct and indirect economic impacts, LEB supported an estimated total of 168 jobs, $8.87 million in labor income, $26.77 million in business output, and $0.33 million in state tax revenue. The airport also generated an estimated $1.47 million in cost savings for local businesses relying on general aviation for business travel.

- Aviation Impacts to State and Western NH
  - Jet A Fueling
  - Precision Approaches
  - 5,000-foot Runways or Greater

-Organ Transport
-Patient Transport
-Search and Rescue
-Law Enforcement
-Pilot Training
-Aerial Tours
-Tourism

Airport Sustainability

Sustainable Master Plans

- Intent to Incorporate Environmental Sustainability as Core Objective in Airport Planning

Sustainability Includes:

- Reducing Environmental Impacts
- Achieving Economic Benefits
- Increased Operational Efficiency
- Better Community Integration

Efforts Should Address :

- Defined Sustainability Mission Statement
- Defined Sustainability Categories
- Baseline Assessments
- Measurable Goals
- Identification of Initiatives

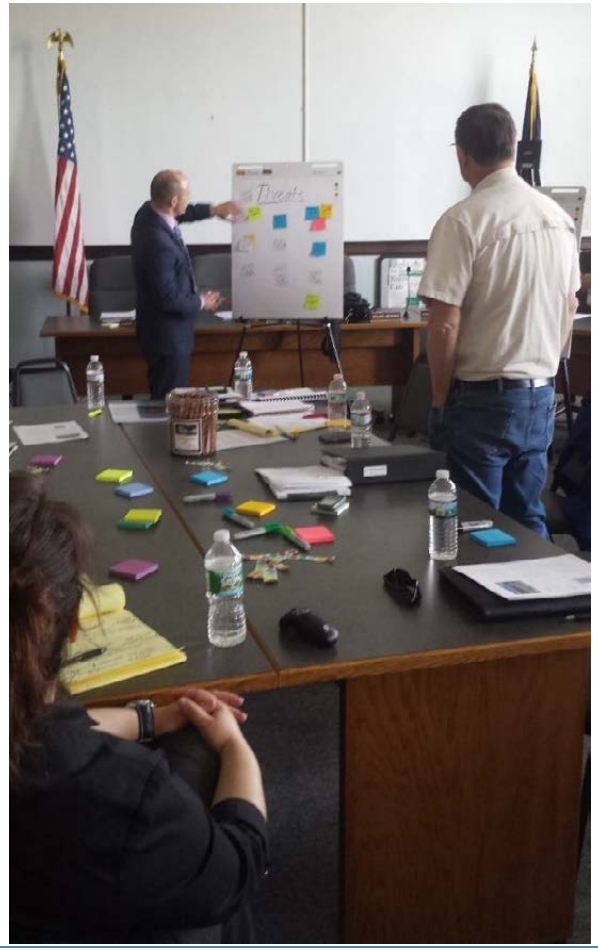
Goes Beyond Environmental Concerns to Include Economic , Operational, and Social Aspects

Community Conversation

- Small Group Meetings
- One-On-Ones
- Consultant-led Outreach
- City-led Outreach

Who We've Heard From

- Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis
  - Technical Advisory Committee (TAC) (May 6)
  - Citizens Advisory Committee (CAC) (May 7)
  - Airport Users Advisory Committee (AUAC) (May 7)
- Public Surveys (252+) (Ongoing)
- One-on-One Meetings (20+) (Ongoing)
- Citizen Engagement at Farmer's Market, health clubs, etc.



What We've Heard: TAC/CAC/AUAC

Strengths

- *Convenient Location*
- Emergency and Medical Response
- Economic Generator
- Good Facility Condition, Efficient Operations, General Aviation Service

Weaknesses

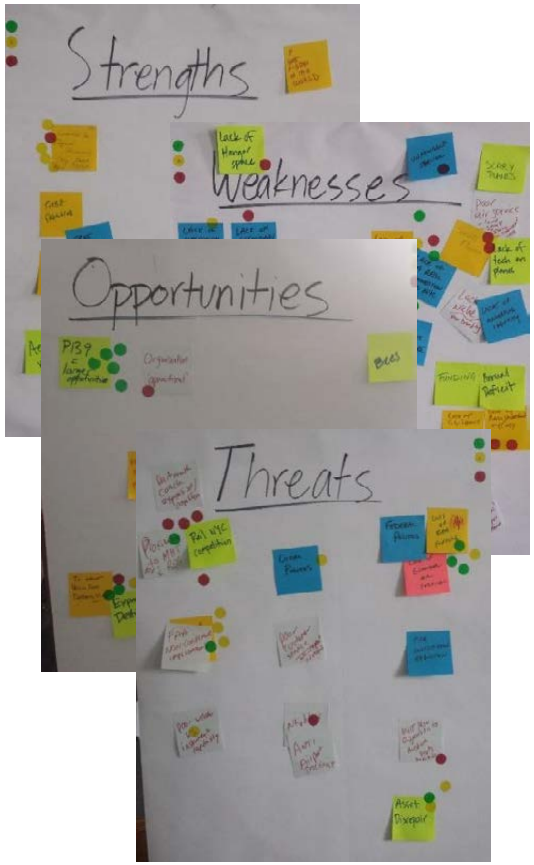
- *Limited Destinations & Service*
- *Lack of Public Awareness*
- Political Conflict
- Funding, Operations, FAA Compliance

Opportunities

- *Airport Service Growth*
- *Airport Development*
- Improve Community Relations
- Economic Development

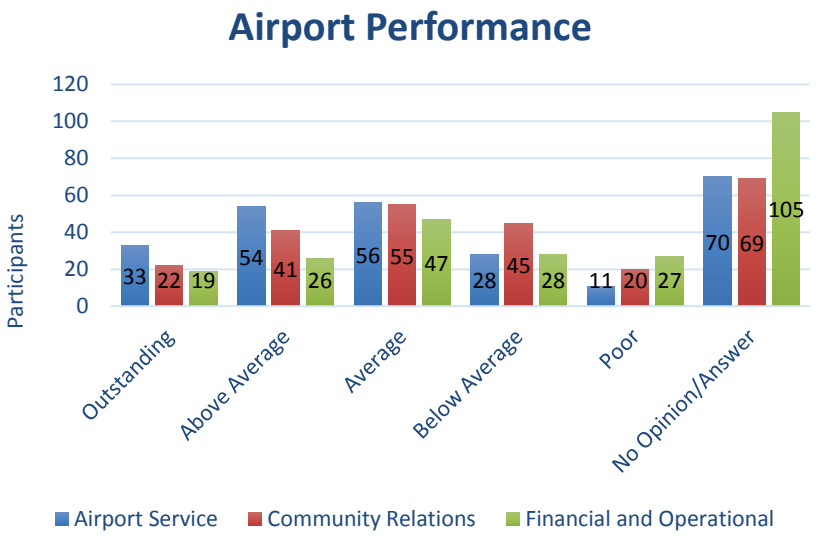
Threats

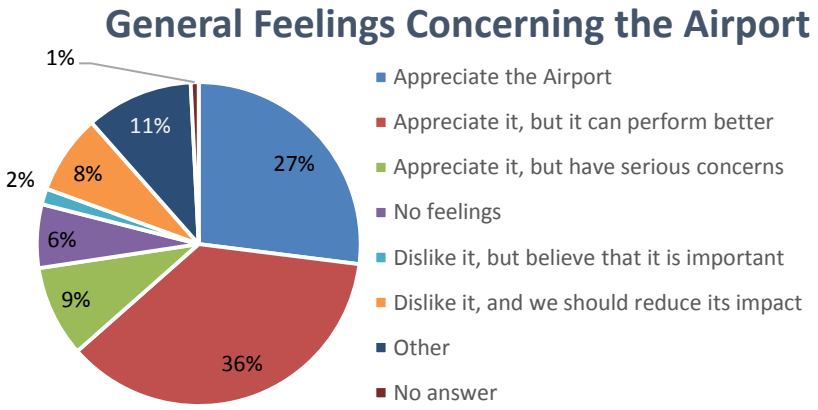
- *Growing Competition*
- *Current/Future FAA Compliance and Regulations*
- Airport State of Good Repair
- Lacking Community Support & Pride
- Potential Funding Reduction



What We've Heard: Public Surveys

- 252 Survey Submissions (June 2015)
  - 132 received from the CAMP website
  - 100 from Community Events (e.g., Farmers' Market, Alumni on the Green)
  - 20 from "Stand-Outs" at the Airport Terminal and CCBA Recreation Center





What We've Heard: Public Surveys

What We've Heard: Public Surveys

Comment	Frequency of Occurrence (Approx.)
Expand/Improve Air Service	66
Associated Impacts should be Reduced	17
The Airport should be Regionally Financed/Controlled	14
Differentiate from Competition - Define Identity/Niche	13
Enjoys the Convenience	11
The Airport should be Financially Self-Supporting	10
Include Non-Aeronautical Uses (e.g., Restaurant)	7
The Airport is Vital to the Local Economy	7
The Airport is a Local Asset	7
Do Not Expand the Airport	6
The Value of the Airport is Not Well Understood	6
Facilities should be Modern and Well-Maintained	5
More Community Events would be Nice	5
Close or Privatize the Airport	5
The Airport is Integral During Emergencies	2
Greater Transparency is Needed	2

What We've Heard: One-on-Ones

- General Consensus: *The Airport is vital to the local economy*
- Widespread Support for: *Expanded Commercial Service to New York, Philadelphia, and Washington, D.C.*
- Acknowledgment: *The Airport Serves the Region, but is only financed by the City; the City should see some benefits*

Next Steps

- **May Thru July 2015** – Direct Public Outreach Events
- **August 25** – Public Visioning Workshop
- **Nov 9 and 10** – Small Group Meetings *(Tentative)*
- **Dec 1** – Public Planning Workshop *(Tentative)*

Vital Communities *Sign In Sheet*

Name	Organization	Email	Phone
Deanna Stoddard	McFarland Johnson	dstoddard@mjinc.com	
Chad Nixon	MJ INC.	cnixon@mjinc.com	
LEO PISANI ROY	VHB	lroy@vhb.com	617 924 1770
Karen Colberg	King Arthur Flour	karen.colberg@kingarthurflour.com	445-5634
STEVE CHRISTY	MASCOMA S.B.	STEPHEN.CHRISTY@MASCOMABANK.COM	
Kathi Terami	Upper Valley Business & Education Partnership	kterami@uvbep.org	603 643 3431 x2402
LEN CADWALLADE	UVBEP CO-CHAIR	lennycad@gmail.com	643-1347

Vital Communities *Sign In Sheet*

Name	Organization	Email	Phone
Kathy Underwood	Ledyard National Bank	Kathy.Underwood@ledyardbank.com	603-640-2664
TERRY APPLEBY	HANOVER Co-op	terry@coopfoodstore.com	603-640-6303
Rick Mills	Dartmouth College	rgm@dartmouth.edu	603-646-8244
BILL GERAGHTY	VITAL COMM	BILLGERAGHTY16@GMAIL.COM	603 381-6568
JIM VARNUM	VITAL COMM	jim@VARNUM.ORG	603 643-2083
Tim BRIGLIN	TUCKERMAN CAPITAL	TIM@TUCKERMANCAPITAL.com	603-640-2291
Dan Jantzen	Dartmouth-Hitchcock	daniel.p.jantzen@hitchock.org	603-650-8136
Ken Holmes	North Branch Construction	Kholmes@northbranch.net	603-224-3233
STEVE ENSIGN	LAKE SUNAPEE BANK	SENSIGN@LAKESUNBANK.COM	603-865-6081

Community Coffee *Sign In Sheet*

Name	Organization	Email	Phone
Jeanne Stoddard	McFarland Johnson	jstoddard@mjinc.com	607-723-9421
Martha Smith	223 Poverty Ln.	Lebanon,	603-448-2884
Nancy Schofield	5 Stonehill	Lebanon	603 448 1362
[illegible]	10 Foliage Ave	Lebanon	448-7323
Louise D. Spencer	98 Poverty La	"	448-5644
Carissa Connelly	98 Poverty Ln	Lebanon	718-200-6055
Charley Henry	37 Poverty Lane		603 252 1986
Peter Brown	36 Westview Lane		448-1614
Harrison Ward	98 Poverty La	"	448-5644
Linda + Tom Jasinski	7 Moss Rd	Lebanon	448-4405
Susan Hary	266 Poverty Ln	"	448-4769
Guy + Alena Pardue	185 Poverty Lane	Leb	603-365-1631
Patty & Bob Maxfield	256 Poverty Lane	PMAX55@comcast.net	603-448-2651

Community Coffee *Sign In Sheet*

Name	Organization	Email	Phone
Ellen Gtomer	Stone Hill Rd, Lebanon		
Dick Milius	Lebanon	RMilius@Norwich.edu	448-3184
Amy Dingley	Lebanon, Parsby Lane	amydingley01@gmail.com	
Tony Gow & Marge Gow	Reland	117 Poverty Lane	

Lebanon Municipal Airport
Comprehensive Airport Master Plan
Project Memorandum

To: LEB City Management Team

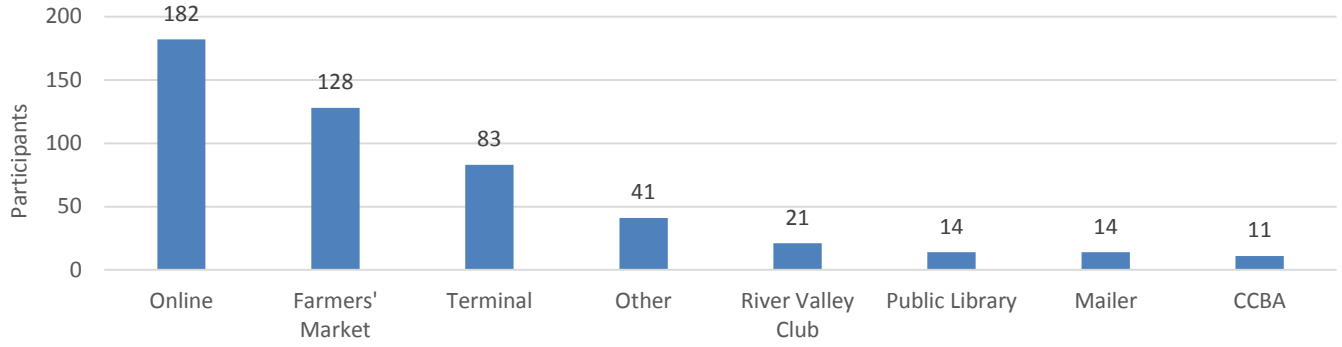
Date: August 6, 2015

From: LEB Planning Team

Re: Lebanon Municipal Airport Comprehensive Airport Master Plan
Public Questionnaire: Interim Report No. 2

In July 2015, an additional 242 public surveys were completed and submitted as part of community outreach efforts associated with the Lebanon Municipal Airport Comprehensive Airport Master Plan (the Project). Together with the surveys collected in June 2015, the Project Team has collected 494 surveys to date. Figure 1 presents the source distribution of all surveys.

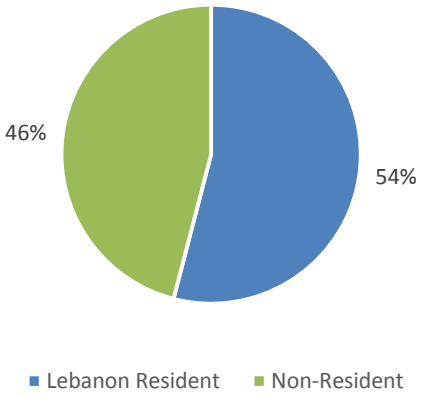
Figure 1: Survey Source Distribution



Note: 'Other' refers to questionnaires completed and collected at events such as Alumni on the Green and Citizen Coffees

As shown in Figure 2, 54 percent of survey participants (267) self-identified as residents of the City of Lebanon. Among them, eight reside on Poverty Lane.

Figure 2: Survey Distribution – Location of Residence



When asked about their general feelings concerning the Airport (Question 1), survey participants selected the pre-determined responses at the following rates:

- Approximately 38.7 percent of participants (191) appreciate the Airport, but believe it could perform better in some areas
- Approximately 28.3 percent of participants (140) appreciate the Airport as it is
- Approximately 8.7 percent of participants (43) appreciate the Airport, but have serious concerns about certain aspects
- Approximately 6.3 percent of participants (31) have no feelings about the Airport
- Approximately 5.9 percent of participants (29) dislike the Airport, and think steps should be taken to reduce its impact
- Approximately 1.2 percent of participants (six) dislike the Airport, but believe that it is important to the city and region

In addition to the pre-determined responses, approximately 9.5 percent of participants (47) provided their general feelings about the Airport in their own words, and 1.4 percent (seven) did not provide an answer. The summarized opinions below characterize the open-ended responses provided for Question 1. Use of parentheses indicates the frequency of mention (some comments were counted multiple times due to their various intents).

- The Airport and its partners should work to enhance air service (19 comments)
- The Airport is/should be considered a local/regional asset (seven comments)
- The Airport should be financially self-sustaining (five comments)
- Use of the Airport is infrequent (five comments)
- The Airport should be closed (three comments)
- Adequate alternatives exist that render commercial service at the Airport unnecessary (three comments)
- Surrounding communities should financially support the Airport, not just the City of Lebanon (two comments)
- Airport facilities and infrastructure should be brought up-to-date and well maintained (two comments)
- Efforts should be taken to reduce the environmental impacts associated with the Airport (two comments)
- Additional Airport uses should be explored (e.g., community events, gift shop) (two comments)
- Expression of concern for the trees within the Airport's safety areas (two comments)
- The Airport should not expand (one comment)
- Residents of the City of Lebanon should ride free (one comment)
- Commercial air service should cease at the Airport (one comment)
- The Airport is useful for emergencies (one comment)

Among residents of the City of Lebanon, the response rates to the predetermined answers of Question 1 were as follows:

- Approximately 38.2 percent of participants (102) appreciate the Airport, but believe it could perform better in some areas
- Approximately 24.3 percent of participants (65) appreciate the Airport as it is
- Approximately 9.7 percent of participants (26) appreciate the Airport, but have serious concerns about certain aspects
- Approximately 9.7 percent of participants (26) dislike the Airport, and think steps should be taken to reduce its impact
- Approximately 5.6 percent of participants (15) have no feelings about the Airport
- Approximately 1.9 percent of participants (five) dislike the Airport, but believe that it is important to the city and region

Approximately 9.4 percent of participants residing in the City of Lebanon (25) answered Question 1 in their own words; 1.1 percent (three) did not provide an answer. The opinions below characterize the open-ended responses provided. Use of parentheses indicates the frequency of mention (some comments were counted multiple times due to their various intents). Italicization indicates an opinion conveyed by a resident of Poverty Lane.

- The Airport and its partners should work to enhance air service (eight comments)
- The Airport is/should be considered a local/regional asset (four comments)
- The Airport should be financially self-sustaining (four comments)
- The Airport should be closed (three comments)
- Adequate alternatives exist that render commercial service at the Airport unnecessary (two comments)
- Surrounding communities should financially support the Airport, not just the City of Lebanon (two comments)
- Airport facilities and infrastructure should be brought up-to-date and well maintained (one comment)
- *Efforts should be taken to reduce the environmental impacts associated with the Airport* (one comment)
- Expression of concern for the trees within the Airport's safety areas (one comment)
- *The Airport should not expand* (one comment)
- Existing Airport passenger amenities and customer service is appreciated (one comment)
- Residents of the City of Lebanon should ride free (one comment)

- Commercial air service should cease at the Airport (one comment)

The following are examples of responses to Question 1 belonging to residents of the City of Lebanon:

"I think the airport has a role to play in private air services, but commercial service is a losing proposition. Too many better choices close by that are consistent and cheaper. Let's stop pouring Lebanon and federal money into it and ask the surrounding towns to financially support it."

"The airport is a remarkable and significant asset to the City. I'd like to see it expand service and become an alternative to Manchester."

"Good for private flights to support local needs; commercial service should not be subsidized."

"Doesn't serve most people due to poor stop choices; more towns (Hanover) should help pay - they use it more!"

Regarding participant opinions on enhancing air service, Figures 3 and 4 depict the categories of specific requests and their frequency. Assumptions made in the process of categorizing the specific requests included:

- Requests to physically expand the Airport were interpreted as a desire to see additional airlines/destinations as well as larger planes
- General requests to expand service were interpreted as a desire to see additional airlines/destinations as well as more frequent service
- A general lack of attractive/wanted flights was interpreted as a desire to see additional airlines/destinations

Figure 3: Requests for Enhanced Air Service (Question 1) – All Responses

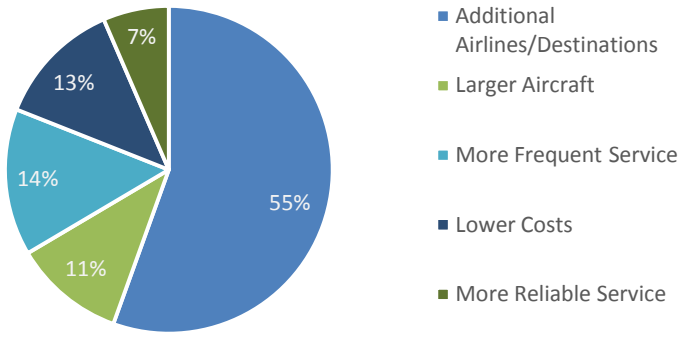
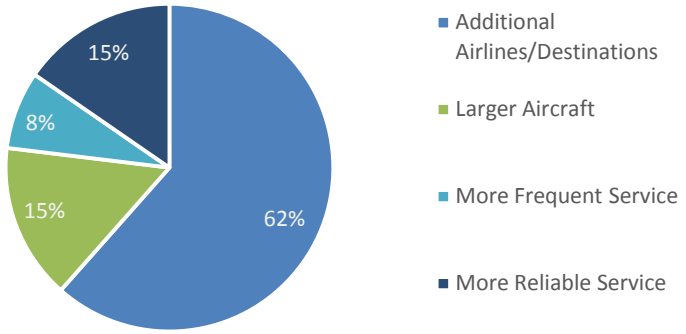


Figure 4: Requests for Enhanced Air Service (Question 1) – City of Lebanon Residents



Figures 5 and 6 detail survey participant responses relative to the Airport's performance in air service, community relations, and financial and operational efficiency (Question 2). With regard to air service, approximately 62.1 percent (307) of all participants and 56.2 percent (150) of the participants residing in the City of Lebanon believe the Airport is performing average to outstanding. These numbers decrease slightly when participants were asked about the Airport's performance in its community relations; approximately 50.4 percent (249) of all participants and 51.3 percent (137) of participants residing in the City of Lebanon believe the Airport is performing average to outstanding in this area. Finally, only 36.8 percent (182) of all participants and 37.1 percent (99) of the participants in the City of Lebanon believe the Airport is performing average to outstanding with regard to financial and operational efficiency.

Figure 5: Airport Performance (Question 2) – All Responses

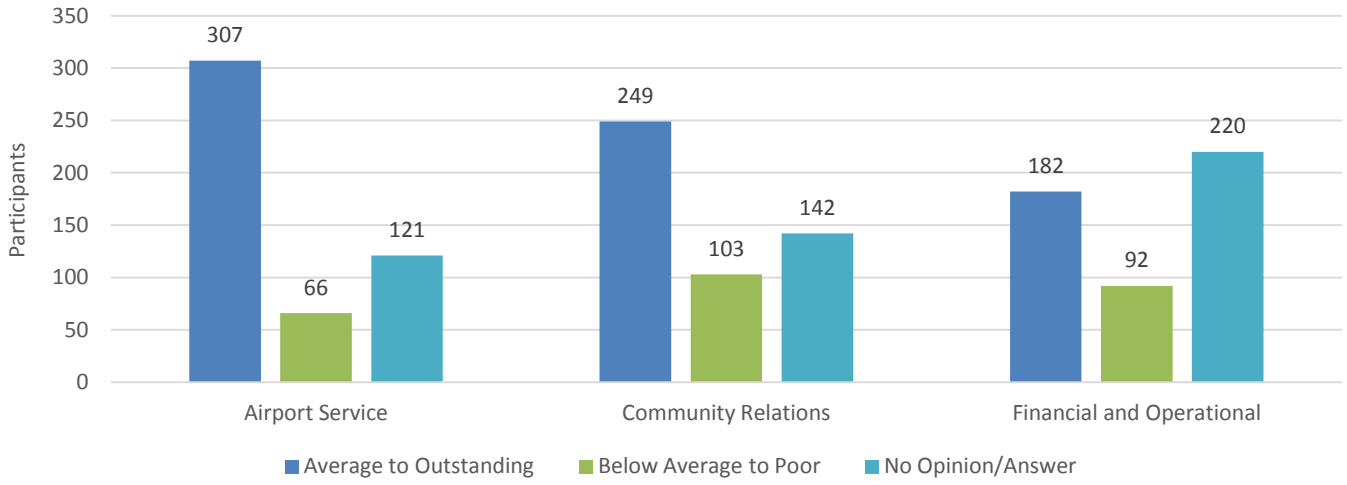
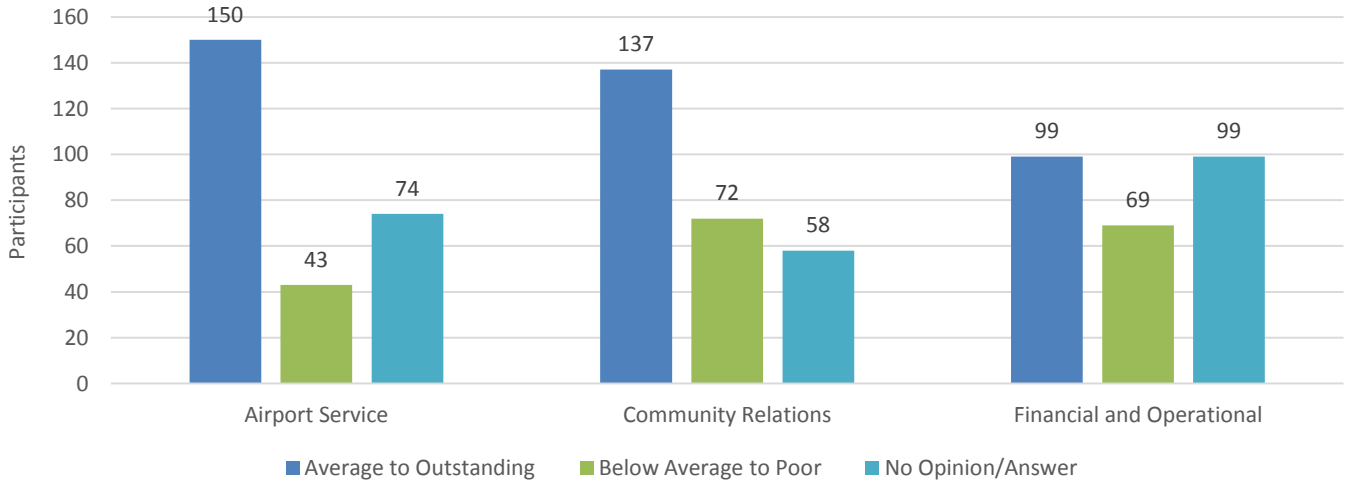
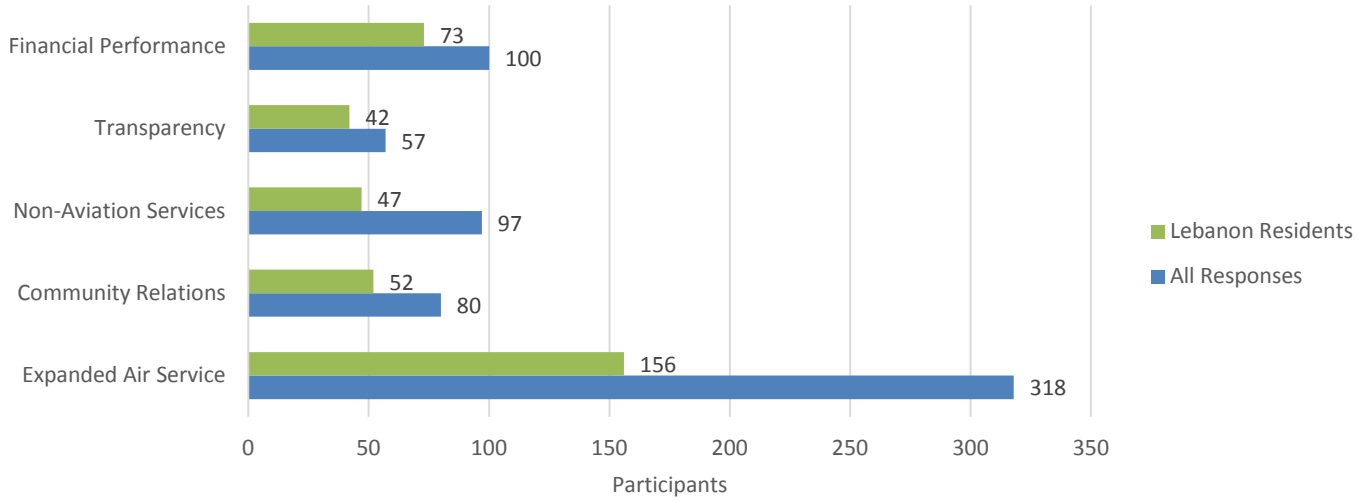


Figure 6: Airport Performance (Question 2) - City of Lebanon Residents



When asked what areas they would like to see the Airport improve upon the most (Question 3), the majority of all participants (64.4 percent or 318) as well as the participants residing in the City of Lebanon (58.4 percent or 156 participants) selected 'Expanded Air Service' as their top choice. 'Financial Performance' was the second-most selected improvement area, receiving 20.2 percent (100 participants) of the top-choice votes from all participants and 27.3 percent (73 participants) from the participants residing in the City of Lebanon. Figure 7 compares the preferred Airport improvement areas of all survey participants with just those participants residing in the City of Lebanon.

Figure 5: Improvement Areas (Question 3)

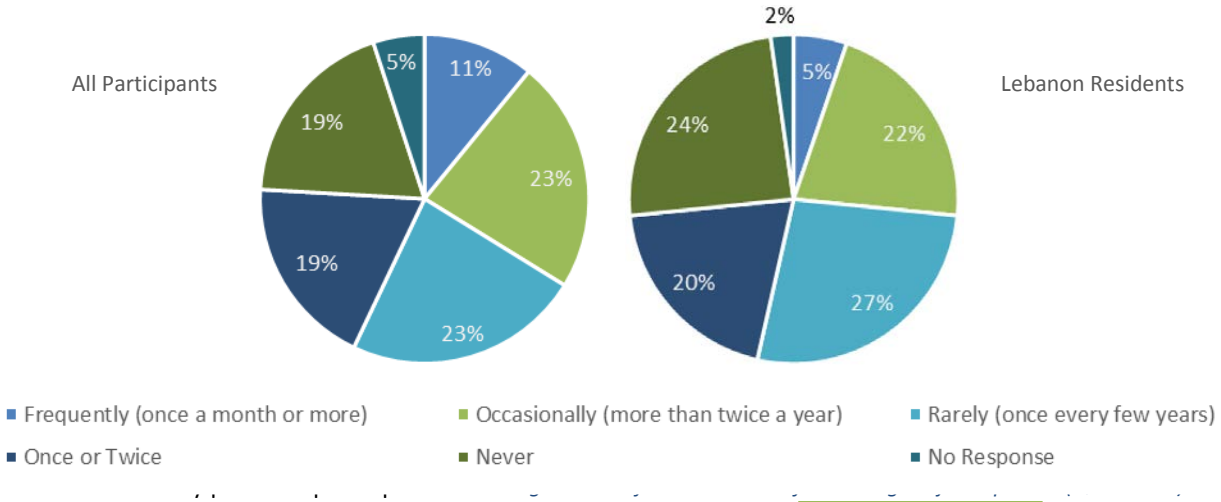


Note: Many participants identified multiple improvement areas as their top choice, which is the reason for the total number of participant responses exceeding the total number of completed surveys (494 [all responses], 267 [City of Lebanon resident responses]).

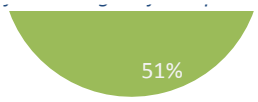
Figure 8 illustrates the frequency of Airport use among survey participants (Question 4). Approximately 10.9 percent (54 participants) of all survey participants use the Airport frequently. This compares to 5.2 percent of the survey participants residing in the City of Lebanon.

Figure 9 reveals the distribution of how participants would prefer to receive updates on the Project (Question 5). The preferred method of receiving Project-related information, requested by the majority of participants (51 percent or 220), is the City of Lebanon website and/or its associated social media accounts. Open-ended responses receiving just one vote each include LEB Alerts, the Corporate Council, and posting notices in the Airport terminal. Sixty-one participants did not respond to the question.

Figure 6: Frequency of Airport Use (Question 4)



with the opportunity to express additional opinions regarding the Airport in an open, short-



answer format. The summarized statements below characterize these opinions.[1] The use of parentheses indicates the frequency of mention (some comments were counted multiple times due to their various intents).

- The Airport and its partners should work to enhance air service (128 comments)
- The Airport is/should be considered a local/regional asset (44 comments)
- Efforts should be taken to reduce the environmental impacts associated with the Airport (29 comments)
- Surrounding communities should financially support the Airport, not just the City of Lebanon (23 comments)
- The Airport is convenient (21 comments)
- Existing passenger amenities and/or customer service is appreciated (e.g., free parking) (15 comments)
- Additional Airport uses should be explored (e.g., aviation history, community gathering space, Airport Day, flight school) (14 comments)
- The Airport should be financially self-sustaining (14 comments)
- The Airport should not expand (13 comments)
- Adequate alternatives exist that render commercial service at the Airport unnecessary (12 comments)
- Airport facilities and infrastructure should be brought up-to-date and well maintained (12 comments)
- The Airport should improve information sharing and marketing related to air service (11 comments)
- A restaurant/café should be operated at the Airport (10 comments)
- Better connections should be made to local transit options and points-of-interest (seven comments)
- Greater transparency of operations is needed (seven comments)
- Expression of concern for the trees within the Airport's safety areas (five comments)
- Use of the Airport is infrequent (four comments)
- The Airport should be permanently closed (four comments)
- The Airport should strive to improve GA facilities and/or services (three comments)
- The Airport is useful for emergencies (three comments)
- Commercial air service should cease at the Airport (two comments)
- The City of Lebanon should remain control of the Airport and related decision-making (two comments)

Approximately 57.3 percent of participants residing in the City of Lebanon (153) provided their additional thoughts on the Airport as part of their response to Question 6. The following list characterizes these opinions, along with their frequency of mention (some comments were counted multiple times due to their various intents). Italicization indicates an opinion conveyed by a resident of Poverty Lane.

- *The Airport and its partners should work to enhance air service (61 comments)*
- *Efforts should be taken to reduce the environmental impacts associated with the Airport (23 comments)*
- *Surrounding communities should financially support the Airport, not just the City of Lebanon (19 comments)*
- The Airport is/should be considered a local/regional asset (17 comments)
- The Airport should be financially self-sustaining (12 comments)
- *The Airport should not expand (11 comments)*
- Additional Airport uses should be explored (e.g., aviation history, community gathering space, flight school) (seven comments)
- The Airport should improve information sharing and marketing related to air service (seven comments)
- A restaurant/café should be operated at the Airport (seven comments)
- *Adequate alternatives exist that render commercial service at the Airport unnecessary (seven comments)*
- *Greater transparency of operations is needed (six comments)*
- The Airport is convenient (five comments)

[1] Opinions provided by a participant that have a similar intent to that person's response under Question 1 were considered duplicate, and not included.

- Expression of concern for the trees within the Airport's safety areas (five comments)
- Airport facilities and infrastructure should be brought up-to-date and well maintained (four comments)
- The Airport should be permanently closed (four comments)
- Use of the Airport is infrequent (three comments)
- Existing passenger amenities and/or customer service is appreciated (e.g., free parking) (two comments)
- Better connections should be made to local transit options and points-of-interest (two comments)
- The Airport is useful for emergencies (two comments)
- The City of Lebanon should remain control of the Airport and related decision-making (two comments)
- The Airport should strive to improve GA facilities and/or services (one comment)
- *Commercial air service should cease at the Airport (one comment)*

The following are examples of responses to Question 6 belonging to residents of the City of Lebanon:

"It's very nice to have an airport as an option, but I think the airport should stay 'in proportion' to the size of the community - i.e., I don't think we should over-expand it."

"I have serious concerns about expansion and what it would actually cost the residents as well as the impact on the surrounding area. I like the idea of having an airport but cannot see how it is needed especially commercially with Manchester being so close and easy to get to."

"More destinations please! The ONLY thing that keeps us from using the airport more is that it only goes to a few places, and we rarely need to go to those locations – except for Logan, and the Dartmouth Coach takes us there rather quickly and cheaply so..."

"I think the airport provides benefits to the Hanover, Norwich and the surrounding areas and if Lebanon is stuck, they should support it financially."

"Thank you for being here! Thanks for free parking. Please consider updating the visual appearance (esp. the parking lot and signs) first impressions go a long way."

Lebanon Airport

Your City. Your Airport. Your Voice.

WELCOME

Comprehensive Airport Master Plan

Public Visioning Workshop

CITY OF LEBANON N.H. INCORPORATED JULY 4 1761 ESTABLISHED 1958

McFarland Johnson

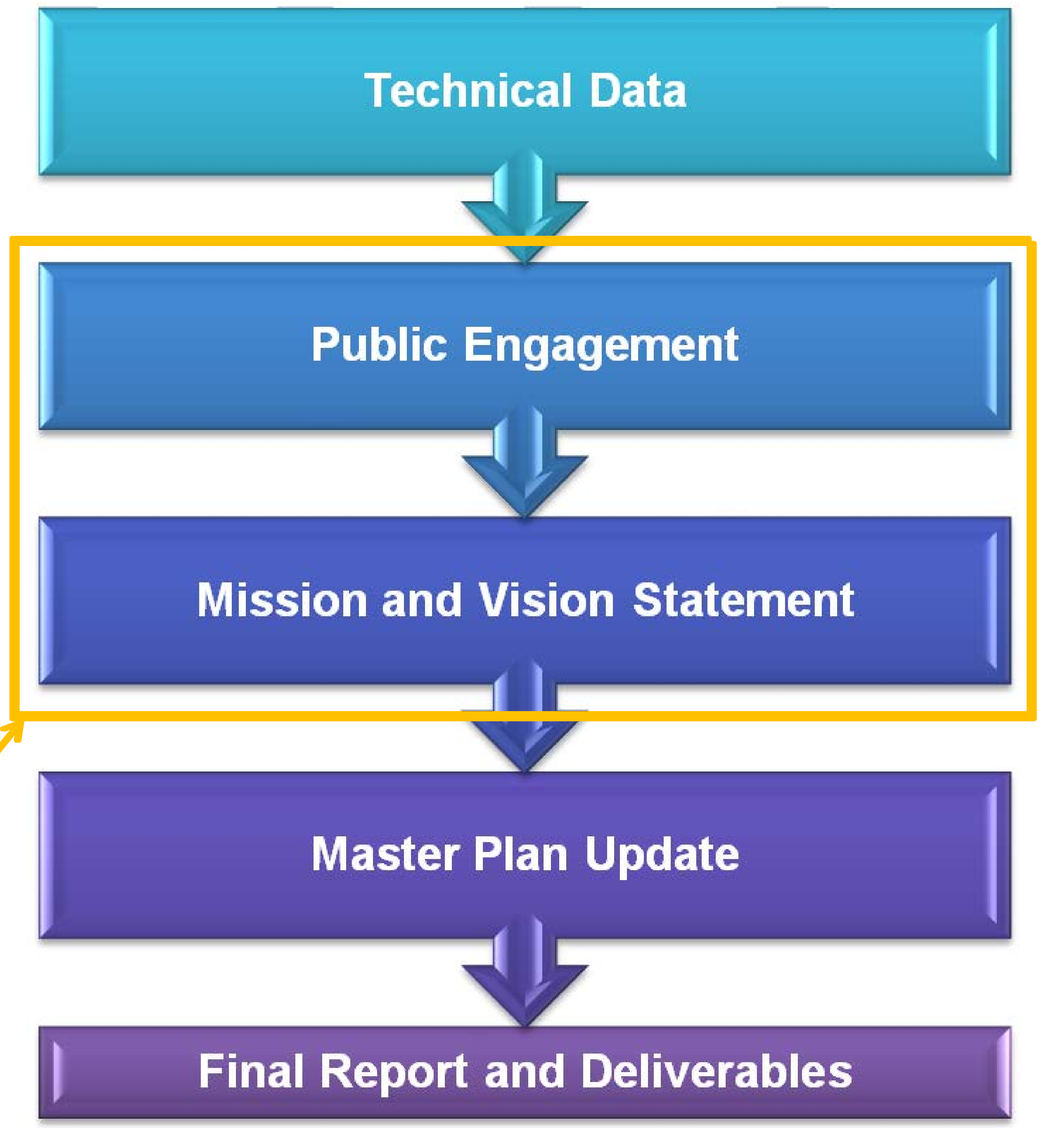
Project Introduction

What is a Master Plan?

- Official Airport Planning Document
- Reviewed by FAA and NHDOT
- Reflects Sponsor's Goals for the Airport
- Depicts Future Airport Development Over 10-20 Years
- Future Projects Contingent on FAA Funding and Environmental Approval

PURPOSE OF WORKSHOP

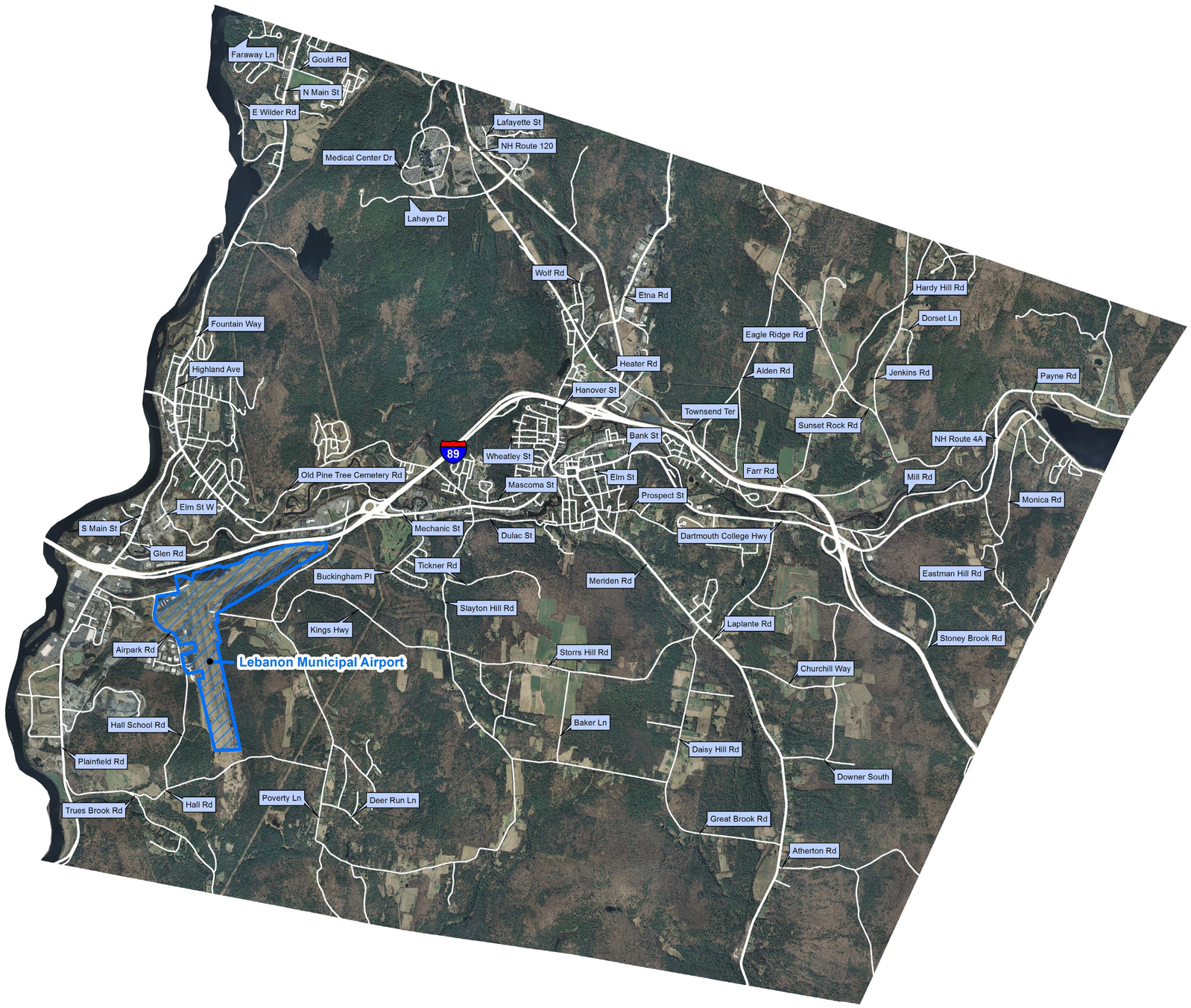
Outline of Master Plan Project



City of Lebanon – Aerial Imagery

Comprehensive Airport Master Plan

Place one dot on the map to indicate your current place of residence.
If you do not currently reside in the City of Lebanon, place one dot in the box below.



Lebanon Airport

Your City. Your Airport. Your Voice.

McFarland Johnson

Air Service at LEB

ESSENTIAL AIR SERVICE (EAS)

The EAS program was established in 1978 to protect smaller and rural communities' connections to the national transportation network while control of the flight/route networks were transferred from federal regulators to the airlines themselves. Since 1978, the federally-subsidized EAS program (100% user-fee funded) has endured near endless scrutiny with program modifications and/or cuts occurring every few years. Many once-eligible airports have fallen out of the EAS program, especially if other airports in the greater vicinity (within 60-90 minutes) already provide air service. Commercial air service at LEB is presently provided by Cape Air under the EAS program.

EAS Service at LEB provided by

Cape Air

-4x daily flights to Boston
-2x daily flights to White Plains, NY
(includes complimentary ground transportation to Manhattan)

Recent Changes to the EAS include:

- Waived requirement for aircraft to be of 15-seats or larger
- $200 per passenger subsidy
- Minimum average of 10 passenger enplanements per day

When considering the extensive history of reforms and cuts to the EAS program, it may be prudent for the City of Lebanon and the Airport to consider the community and airport impacts associated with reductions in the EAS program. Some scenarios to consider include:

- Higher airfares to offset increased costs/lower subsidy levels
- Impact of a community match toward the EAS subsidy
- Loss of subsidy on one of the two destinations currently served
- Loss of all subsidies and elimination of air service

PART 139 CERTIFICATION

Airports that provide commercial passenger service on aircraft carrying more than nine passengers per flight are required to be certificated by the FAA under Federal Aviation Regulations (FAR) Part 139. The basic requirements for Part 139 compliance include:

- Additional inspections of the airfield and approach areas
- Compliant Runway Safety Areas
- Appropriate aircraft rescue and firefighting (ARFF) capabilities
- Additional TSA security staffing
- Increased documentation, training, and record-keeping

Cape Air and LEB are currently exempt from Part 139 Certification. However, in order for LEB to attract additional air service from network or low-cost carriers, the airport would be required to comply with Part 139 standards. This would increase LEB's annual operating costs by an estimated $84,000 every year.

NETWORK CARRIERS

Network air service for communities similar in size to Lebanon, is increasingly difficult to obtain, with the overwhelming majority of small airports struggling to maintain existing levels of service both in terms of seats and frequency.

Overall, successful air service upgrades are the result of targeted coordination within the local/regional business community and higher education institutions. Shared/common needs for air service will result in a stronger case for improved air service. With enough support from the community, smaller airports can sustain service to a nearby hub through service on regional aircraft of a network airline. From these hubs, passengers can connect to hundreds of destinations in the US and across the globe. **Examples of possible network airline service from Lebanon, based on other small non-hub service, might include:**

DELTA	UNITED	American Airlines
2x daily service to New York LaGuardia or Kennedy International	2-3x daily service on regional aircraft (jet or turboprop) to Newark Liberty International or Dulles International	2-3x daily service on regional aircraft (jet or turboprop) to Philadelphia International

LOW COST CARRIERS (LCCs)

Industry consolidation has led the network carriers to shift their focus to larger business markets and international flying, which tend to be more lucrative for airlines than domestic and leisure routes with higher levels of competition. LCCs such as Allegiant Air, Frontier, Southwest, and Spirit strive for the lowest possible cost, so they typically operate full-size aircraft and have multiple flights spread throughout the day to better distribute the operating costs per passengers. *Higher passenger volume among multiple flights is the primary reason why LCCs typically do not serve smaller airports with less than 250,000 annual passengers (LEB).*

While some LCCs serve airports similar in size to LEB, those situations involve less than daily service to leisure oriented passengers. This type of service yields little to no benefit to the needs of local businesses as they do not connect the airport to a broader, global transportation network. In most instances the LCC service at smaller airports is dependent on a nearby city or populated region to support the demand for service, the nearest populated area is Manchester, which currently offers convenient and affordable LCC air service. *Due to the operating characteristics of LCCs and regional market conditions, LCC service at LEB is not anticipated.*

Who Uses LEB?

PUBLIC VALUE

LEB is home to Dartmouth-Hitchcock Medical Center. The airport is a critical resource for Dartmouth-Hitchcock Advanced Response Team (DHART), whose crews provide air medical transportation services to the communities of Northern New England. According to Air Traffic Control (ATC) personnel at LEB, it is estimated that the DHART team lands at LEB approximately 6 times per month, but utilizes the airport's ATC services approximately 8 to 10 times per day for non-LEB flights.

LEB's presence allows the City of Lebanon and the Upper Valley region to be accessed, and enjoyed, by the outside world. Although it has been demonstrated that alternative air transportation options exist for City residents seeking to depart to other destinations, in the absence of LEB, options for visitors, tourists, students, and/or business professionals seeking to efficiently and affordably access the City are reduced and require travel outside the area or even the state.

"Without LEB, the region would lose some of its 'luster' as one of New Hampshire's primary economic destinations."
-LEB Economic Impact Study, 2008

-Organ Transport
-Patient Transport
-Search and Rescue
-Law Enforcement
-Pilot Training
-Aerial Tours
-Tourism

According to the NH State Airport System Plan developed in conjunction with the NHDOT Bureau of Aeronautics, in 2013, through direct and indirect economic impacts, LEB supported an estimated total of 168 jobs, $8.87 million in labor income, $26.77 million in business output, and $0.33 million in state tax revenue. The airport also generated an estimated $1.47 million in cost savings for local businesses relying on general aviation for business travel.

The FAA's Aerospace Forecast for 2014-2034 predicts the business/corporate aviation sector will experience robust growth over the next 20 years. This is in part due to higher corporate profits, growth of the worldwide Gross Domestic Product (GDP), and continued advantages related to safety, security, and flexibility that make business aviation attractive. **As LEB currently experiences significant business/corporate use compared to other airports in the state, the airport is poised to capitalize on this potential growth. However, similar to the discussion on network carrier air service, success will be dependent upon targeted, coordinated campaigns between the local/regional business communities and LEB.**

COMMERCIAL SERVICE

LEB is designated by the FAA as a publicly owned, public-use facility. As a non-hub, primary commercial service airport, LEB enplanes more than 10,000 annual passengers, but less than 0.5 percent of the nation's total commercial activity. Non-hub commercial service airports typically support a large amount of general aviation activity as well, which is the case for Lebanon.

LEB is one of three commercial service airports in the state.

LEB is one of four airports in NH to have an Air Traffic Control Tower.

GENERAL AVIATION

LEB has among the highest number of business operations at any airport in the region, and a number of local industries and institutions utilize the airport, allowing employees, vendors, and visitors to access facilities quickly using charter or corporate aircraft.

Businesses Using LEB

Dartmouth-Hitchcock
Dartmouth College
Dartmouth-Hitchcock Keene
Hypertherm/Hypertherm, Inc.
Sturm Ruger
Simbex

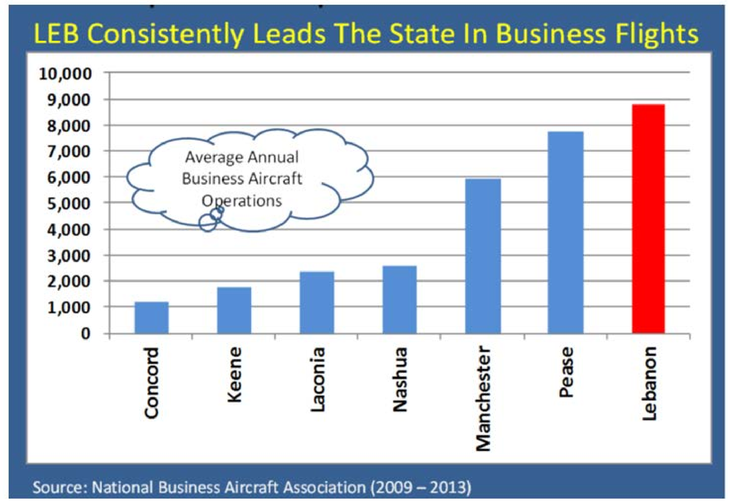
RUGER

Hypertherm

Simbex

Dartmouth-Hitchcock

Dartmouth



Understanding LEB Financials

The annual costs to operate and maintain the airport are divided into two categories – capital and operational.

CAPITAL COSTS

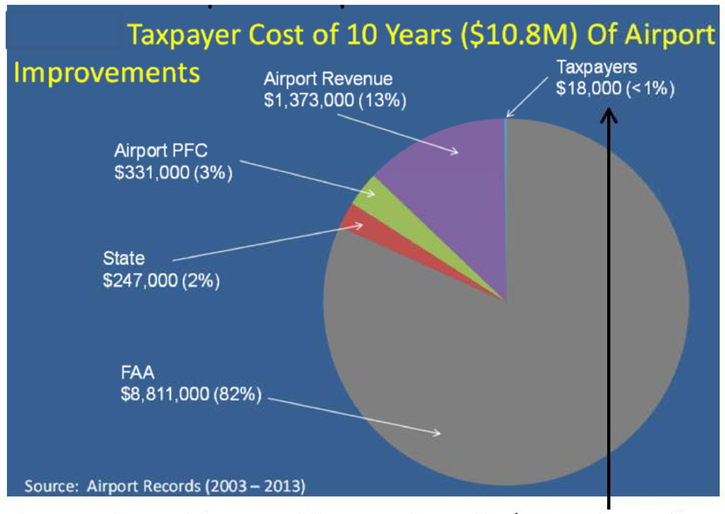
Capital costs include improvements, or additions, to the airport's infrastructure such as runways, taxiways, terminal building upgrades, navigation equipment and aircraft hangars. Certain non revenue-producing capital projects are eligible for state and federal funding, which reduces the overall cost of LEB to the city's residents.

Capital projects are funded on a shared basis:
90% Federal *(FAA)* ***5% State*** *(NHDOT)* ***5% Local*** *(City of Lebanon)*

The local share of capital costs are paid for, or reimbursed by, Passenger Facility Charges (PFCs) and/or airport revenues. PFCs are monies received from airline passenger ticket purchases from only those that use the airport. These charges are set by federal legislation and are collected by airports, which are then able to use those funds for eligible capital projects.

The application of airport revenues and/or PFC monies means that LEB is providing the local share of capital improvements at little to no cost to City residents. The only time the City has to provide for airport capital costs is when PFCs or airport revenues are not enough to cover the full amount of the local share or the project is not eligible for PFC funding. The figure below illustrates the breakdown of airport capital improvement costs at LEB according to funding source over the last 10 years.

Capital improvement projects provide a direct economic benefit by creating engineering, environmental, planning, and construction-related jobs in the region.



From 2003-2013, Lebanon city residents paid approximately $18,000 out of $10,800,000 in capital improvements . This amounts to $2.34 for each resident in the labor force or about $1.33 per resident overall.*

**Source: City of Lebanon and U.S Census Bureau, 2009-2013 5-Year American Community Survey*

OPERATIONAL COSTS

The airport requires an operational budget which consists of administrative expenditures such as employee salaries and benefits, airfield maintenance costs (mowing, plowing, etc.), utilities, and advertising costs. A portion of this budget is allocated to payments into the City's General Fund, which covers LEB's administrative overhead and computer support costs as charged by the City. (The budget has varied from year-to-year due to vacant staff positions being filled, changes in fire and rescue coverage, and changing fuel and utility prices.)

Since 2009, the airport's operational budget has been directly supplemented by the City's General Fund. The annual subsidy is calculated according to the most recent available audit, which is generally two years prior. This implies the subsidy may be more, or less, than the current year's deficit. For example, the subsidy for 2009 covered the deficit from 1998-2007, while the 2010 supplement was based on 2008 numbers. The tables below depict the annual averages of LEB's Operating Budget, General Fund Subsidy, and the Cost of LEB's Subside to City Residents/Residents in the Labor Force.

Operational Budget for LEB, 2000-2014

Year	LEB Budget	% of City Budget
2000	$569,560	2.02% of 28,182,790
2001	$561,590	1.86% of 30,248,530
2002	$659,020	2.00% of 32,999,043
2003	$737,990	2.11% of 34,994,170
2004	$531,470	1.60% of 33,178,378
2005	$587,350	1.65% of 35,690,370
2006	$782,210	1.81% of 43,327,384
2007	$959,690	1.90% of 50,506,710
2008	$976,220	2.44% of 40,041,463
2009	$941,840	1.72% of 54,643,536
2010	$848,510	2.00% of 42,502,610
2011	$815,870	1.74% of 46,956,750
2012	$822,840	1.67% of 49,236,710
2013	$794,440	1.67% of 47,694,389
2014	$864,720	1.68% of 51,413,290
AVERAGE	**$763,555**	**1.86% of City Budget**

Although LEB historically operates at a deficit, through its on-airport leases (hangars, etc.) the airport generates a significant amount of property tax revenue that gets contributed to the City's General Fund, as well as to the school and county tax systems. These amounts are not included in LEB's operational budget.

Airport-Generated Property Tax Contributions, 2009-2014

Year	General Fund	Schools/County	Total
2009	$65,140	$95,457	**$151,485**
2010	$65,560	$110,541	**$179,495**
2011	$63,370	$116,614	**$186,952**
2012	$63,930	$117,137	**$189,662**
2013	$65,160	$117,571	**$186,520**
2014	$67,310	$119,784	**$189,905**
Average	$65,078	$112,851	$177,929

On average, LEB generates approximately $177,929 per year in property tax revenue for the City's General Fund and school and county tax systems.

General Fund Subsidies to LEB, 2009-2014

Year	Total Subsidy
2009*	$779,775
2010	$446,680
2011	$270,140
2012	$198,480
2013	$215,590
2014	$169,600
TOTAL since 2009 (when subsidy began)	**$2,080,265**
AVERAGE since 2009 (when subsidy began)	**$346,711**
TOTAL since 1998 (when balance began to accrue)	**$2,080,265**
AVERAGE since 1998 (when balance began to accrue)	**$122,369**

*Prior to 2009, the City did not provide financial transfers to the Airport Fund. However, during that time any annual deficits in the Airport Fund were allowed to accumulate as a sort of "loan" balance owed to the City. This loan balance was allowed to accrue from year to year (1998-2007) due to City accounting procedures in existence at the time. However, at the advice of financial auditors, in 2008 the City changed their accounting procedures to avoid showing this growing balance as a loan "liability" in their accounting ledgers. Thus, in 2009 the City provided LEB with its first "subsidy" which canceled the existing "loan" balance from 1998-2007 ($779,775). Overall, since 2009 the City provided LEB with a total of $2,080,265 in financial assistance.

Average Cost of LEB Subsidy to City Residents and Residents in Labor Force

Year	Subsidy	Annual Cost Per Resident**	Annual Cost Per Resident in Labor Force***
2009*	$779,775	$57.76	$101.48
2010	$446,680	$33.08	$58.13
2011	$270,140	$20.01	$35.16
2012	$198,480	$14.70	$25.83
2013	$215,590	$15.97	$28.06
2014	$169,600	$12.56	$22.07
AVERAGE since 2009	**$346,711**	**$25.68**	**$45.12**
AVERAGE since 1998	**$122,369**	**$9.06**	**$15.93**

*See the General Fund Subsidies table for an explanation of years prior to 2009.
**Based on current population of 13,500 as provided by the City of Lebanon
***Based on current total of 7,684 as provided by the U.S. Census Bureau, 5-Year American Community Survey, 2009-2013.

The LEB Regulatory Environment

Lebanon Municipal Airport is subject to oversight from various regulatory agencies and organizations at the federal, state, and local levels, including FAA, DOT, DHS/TSA, NHDES, etc. Combined, this oversight encompasses everything from capital improvement projects and air traffic control procedures to airport security and environmental impacts. The regulation provided by these agencies and organizations is often focused on the safe and efficient operation of the airport and its users, as well as the establishment of practices intended to be fiscally responsible and environmentally sustainable.

FEDERAL AVIATION ADMINISTRATION

The FAA regulates day-to-day airport functions and layout through the use of technical documents, design standards, and airport operating requirements. To support needed airport improvements, meet design requirements, and meet Federal Aviation Regulations, the FAA provides federal funding through the Airport Improvement Program (AIP) as established and dictated by Congress. When airport sponsors such as the City of Lebanon agree to accept these AIP funds for needed rehabilitation or airport improvement projects, the sponsor also agrees to comply with certain obligations and grant assurances, which are enforced through the FAA's Airport Compliance Program.

Because the Airport receives state and federal funding, there are certain obligations/grant assurances with which LEB and the City ***must comply*** per 49 U.S.C. § 47101.

SPONSOR ASSURANCES UNDER FAA ORDER 5190.6B

The Airport must continue to be operated as an Airport, ***it cannot be closed or sold.***

The Airport ***must be continually maintained and not fall into disrepair.***

Revenues received from the Airport must remain with the Airport; ***money cannot be diverted to other municipal departments for purposes that do not relate to the Airport (non-aeronautical).***

Airport land cannot be used , or released, for non-aeronautical purpose without FAA consent; ***property must be used for aviation-related purposes.***

Capital ***grant assurances expire at the end of the grant item's useful life*** (i.e. pavement generally has a useful life of 20 years).

Since ***land*** does not have a useful life, any property that was acquired using federal funds is ***obligated in perpetuity.***

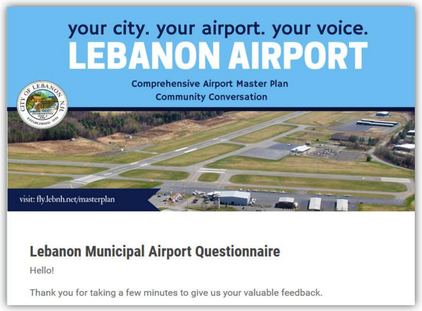
Sponsor shall maintain a fee and rental structure at the airport in order to ***make the airport as self-sustaining as possible.***

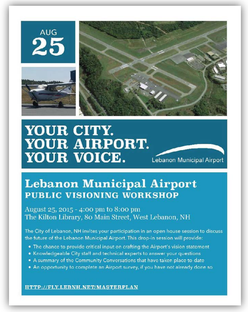
Sponsor will take appropriate action to clear and protect airport facility airspace as required ***to protect instrument and visual approaches to the airport through use of removal, lighting, lowering, relocating, or other mitigation.***

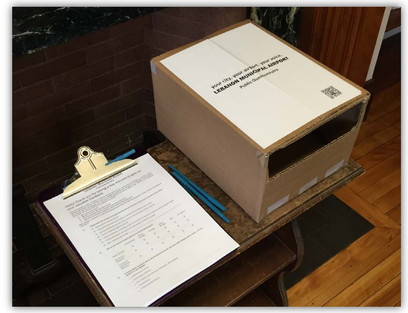
Sponsor will ***execute projects subject to plan, specifications, and schedules approved on Airport Layout Plan (ALP).***

As an airport sponsor, the City of Lebanon must be careful not to violate federal grant assurances and obligations because such violations or non-compliance could result in fines, decreased funding, and/or legal action. The FAA partners with the airport sponsor to provided needed funding, but requires that the sponsor be responsible for meeting safety standards and regulations.

Public Outreach Process







2015

March
- One-On-One Conversations
- Small Group Meetings

May

Advisory Committee Meetings:
- Technical Advisory Committee (TAC)
- Citizens Advisory Committee (CAC)
- Airport Users Advisory Committee (AUAC)

June
- Public Survey Kick-off
- Public Information and Survey Mailing
- Community Stand-outs
- Table at the Lebanon Farmers' Market

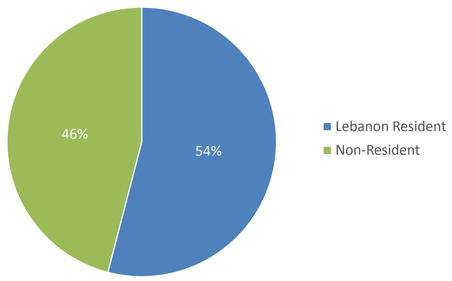
July
- Continuation of the Public Survey
- Poverty Lane Community Coffee #1
- Visioning Concept Workshop

August
- Continuation of the Public Survey
- Poverty Lane Community Coffee #2
- **PUBLIC VISIONING WORKSHOP (Welcome!)**

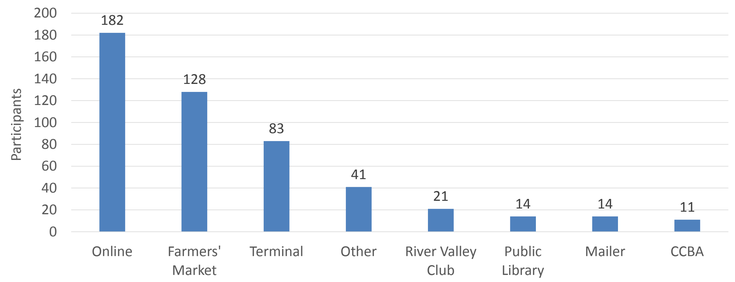
September
- Present Findings to the City Council

Public Survey Results

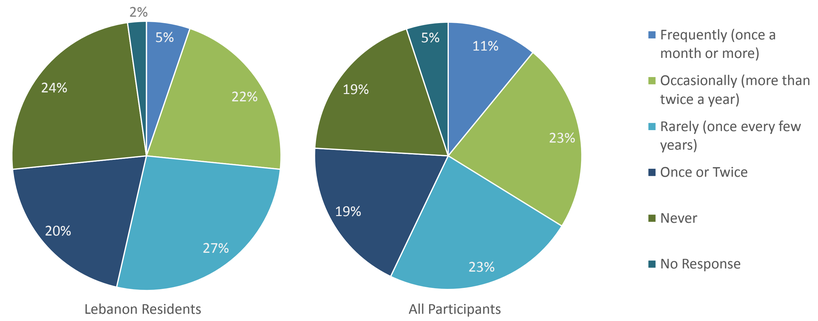
Participant Residency



Survey Distribution

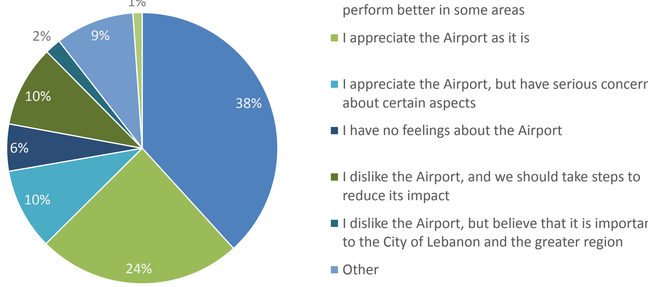


How often do you use the Airport?

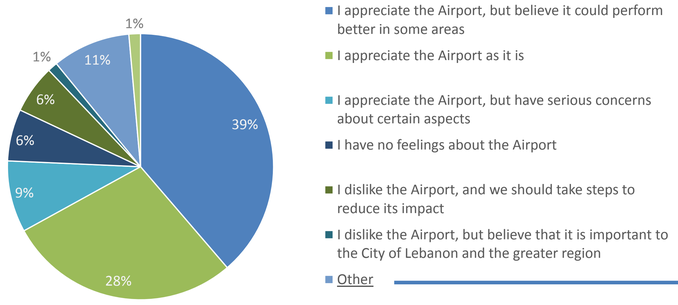


How do you feel about the Airport?

City of Lebanon Residents



All Responses



How do you feel about the Airport: Other Responses (Consolidated)

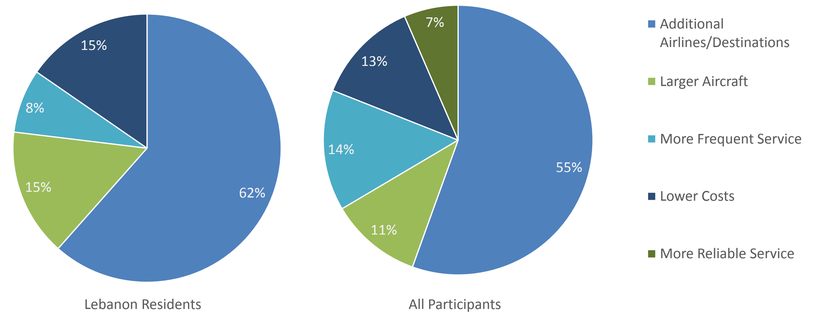
- The Airport and its partners should work to enhance air service (19 comments)
- The Airport is/should be considered a local/regional asset (seven comments)
- The Airport should be financially self-sustaining (five comments)
- Use of the Airport is infrequent (five comments)
- The Airport should be closed (three comments)
- Adequate alternatives exist that render commercial service at the Airport unnecessary (three comments)
- Surrounding communities should financially support the Airport, not just the City of Lebanon (two comments)
- Airport facilities and infrastructure should be brought up-to-date and well maintained (two comments)
- Efforts should be taken to reduce the environmental impacts associated with the Airport (two comments)
- Additional Airport uses should be explored (e.g., community events, gift shop) (two comments)
- Expression of concern for the trees within the Airport's safety areas (two comments)
- The Airport should not expand (one comment)
- Residents of the City of Lebanon should ride free (one comment)
- Commercial air service should cease at the Airport (one comment)
- The Airport is useful for emergencies (one comment)

Grading the Airport's Performance

City of Lebanon Residents

All Responses

Enhanced Air Service - Explained



Lebanon Airport

Your City. Your Airport. Your Voice.

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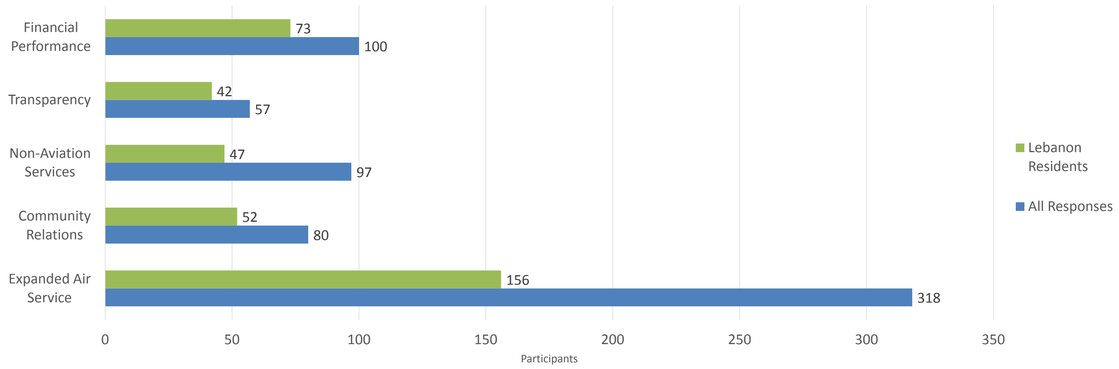
Public Survey Results (Continued)

In what areas would you like to see the Airport improve upon the most?



Open-ended Thoughts on the Present/Future of the Airport (Consolidated)

- *The Airport and its partners should work to enhance air service (128 comments)*
- *The Airport is/should be considered a local/regional asset (44 comments)*
- *Efforts should be taken to reduce the environmental impacts associated with the Airport (29 comments)*
- *Surrounding communities should financially support the Airport, not just the City of Lebanon (23 comments)*
- *The Airport is convenient (21 comments)*
- *Existing passenger amenities and/or customer service is appreciated (e.g., free parking) (15 comments)*
- *Additional Airport uses should be explored (e.g., aviation history, community gathering space, Airport Day, flight school) (14 comments)*
- *The Airport should be financially self-sustaining (14 comments)*
- *The Airport should not expand (13 comments)*
- *Adequate alternatives exist that render commercial service at the Airport unnecessary (12 comments)*
- *Airport facilities and infrastructure should be brought up-to-date and well maintained (12 comments)*
- *The Airport should improve information sharing and marketing related to air service (11 comments)*
- *A restaurant/café should be operated at the Airport (10 comments)*
- *Better connections should be made to local transit options and points-of-interest (seven comments)*
- *Greater transparency of operations is needed (seven comments)*
- *Expression of concern for the trees within the Airport's safety areas (five comments)*
- *Use of the Airport is infrequent (four comments)*
- *The Airport should be permanently closed (four comments)*
- *The Airport should strive to improve GA facilities and/or services (three comments)*
- *The Airport is useful for emergencies (three comments)*
- *Commercial air service should cease at the Airport (two comments)*
- *The City of Lebanon should remain control of the Airport and related decision-making (two comments)*

Examples of Participant Comments (Presented in no particular order)

"It [the Airport] should be returned to be a regional airport with shared control and financial responsibility among multiple jurisdictions."

"I would love to see a restaurant at the Airport that is connected to the air traffic control tower to listen to the control communications."

"I wish there was more information/availability for taking cheap flights to NYC, DC, or other destinations."

"The Airport has never been financial viable, and will never be as all the previous studies have shown. It will always need the taxpayers money for little benefit to the majority of Lebanon residents. Why do we continue along this path of failure?"

"The Airport should be expanded to attract regional airline service, specifically to Washington, D.C. The positive economic impact to the taxpayers is already tremendous, this would make it significantly more so."

"I think the Airport has a role to play in private air services, but commercial service is a losing proposition. Too many better choices close by that are consistent and cheaper. Let's stop pouring [City of] Lebanon and federal money into it, and ask the surrounding towns to financially support it."

"The Airport is a remarkable and significant asset to the City [of Lebanon]. I'd like to see it expand service and become an alternative to Manchester."

"Good for private flights to support local needs; commercial service should not be subsidized."

"Expanding the Airport has a lot of environmental concerns for the City of Lebanon and Poverty Lane (a scenic road). In addition, the tax increase would impact the city horribly, taxes are already some of the highest in the area (I literally pay as much in taxes as I do in mortgage), and we need to focus on improving our school system that will directly impact our residents, rather than increase taxes for a project that is going to help the residents of Hanover, etc."

"[The Airport] doesn't serve most people due to poor stop choices; more towns (e.g., Hanover) should help pay - they use it more!"

"It's very nice to have an airport as an option, but I think the Airport should stay 'in proportion' to the size of the community (i.e., I don't think we should over-expand it)."

"I have serious concerns about expansion and what it would actually cost the residents as well as the impact on the surrounding area. I like the idea of having an airport, but cannot see how it is needed especially commercially with Manchester being so close and easy to get to."

"More destinations please! The ONLY thing that keeps us from using the Airport more is that it only goes to a few places, and we rarely need to go to those locations – except for Logan, and the Dartmouth Coach takes us there rather quickly and cheaply so..."

"I think the Airport provides benefits to the Hanover, Norwich, and the surrounding areas, and if Lebanon is stuck, they should support it financially."

"I have never used the Airport, but I like that it is an option, I would like to see them fly into Manchester; I might use them in that case.
[The Airport] should probably have a small Café or club for dining purposes, or for the people awaiting arrivals or departures."

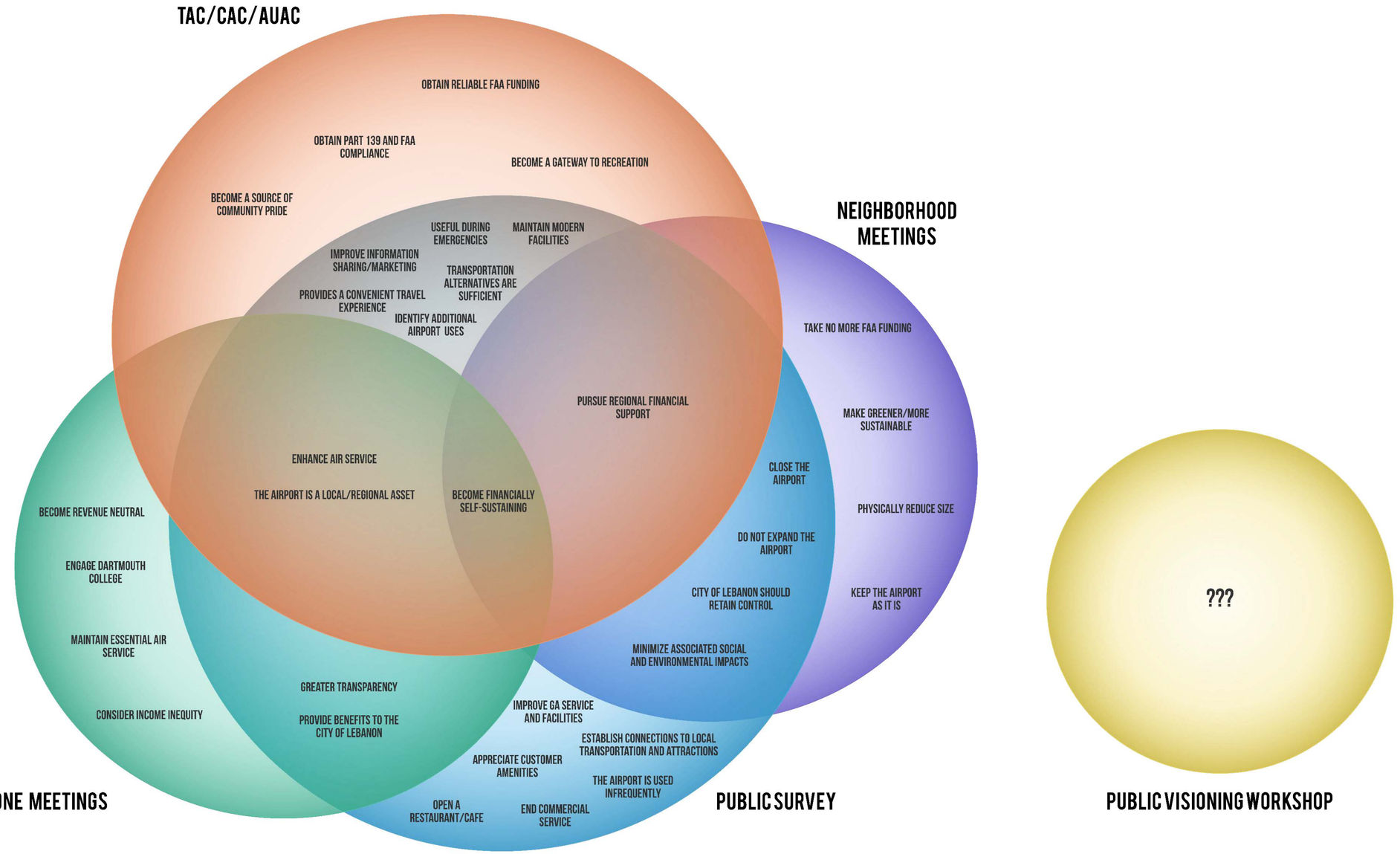
"Thank you for being here! Thanks for free parking. Please consider updating the visual appearance (esp. the parking lot and signs); first impressions go a long way."

What We've Heard

Presented in no particular order:

- Enhance Air Service
- The Airport is a Local/Regional Asset
- Minimize Associated Social and Environmental Impacts
- Pursue Regional Financial Support
- Provides a Convenient Travel Experience
- Identify Additional Airport Uses
- Become Financially Self-Sustaining
- Do Not Expand the Airport
- Transportation Alternatives are Sufficient
- Maintain Modern Facilities
- Improve Information Sharing and Marketing
- Open a Restaurant/Café
- Provide Benefits to the City of Lebanon
- Consider Income Inequity
- Become Revenue Neutral
- Become a Gateway to Recreation
- Make Greener/More Sustainable
- Physically Reduce the Size of the Airport
- Appreciate Customer Amenities
- Establish Better Connections to Local Transportation and Points-of-Interest
- Provide Greater Transparency
- The Airport is Used Infrequently
- Close the Airport
- Improve General Aviation Service and Facilities
- The Airport is Useful During Emergencies
- End Commercial Service
- The City of Lebanon Should Retain Control
- Engage Dartmouth College
- Maintain Essential Air Service
- Become A Source of Community Pride
- Obtain Part 139 and FAA Compliance
- Obtain Reliable FAA Funding
- Take No More FAA Funding
- Keep the Airport as it is

Who Said What?



Notes:

1. TAC = Technical Advisory Committee, CAC = Citizens Advisory Committee, AUAC = Airport Users Advisory Committee
2. The attributes presented under Public Survey and Neighborhood Meetings in the illustration above represent input received from City of Lebanon residents; the one-on-one meetings and TAC/CAC/AUAC also include representation from City of Lebanon officials and non-residents.

Vision Concept

FOR YOUR CONSIDERATION

Key Attributes for the Lebanon Municipal Airport Vision Statement:

- Provide Benefits to the City of Lebanon
- Minimize Associated Social/Environmental Impacts
- Become a Source of Community Pride
- Enhance Air Service
- Become Financially Self-Sustaining
- Maintain Modern Facilities

Note: The attributes identified for consideration for the Airport's Vision Statement derive from a Visioning Concept Workshop held on July 8, 2015. Workshop participants included city officials, City of Lebanon residents, and residents of the region.

McFarland Johnson
Innovative Solutions / Sustainable Results

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MEMORANDUM

TO: City of Lebanon City Council

FROM: Consultant Planning Team

DATE: September 10, 2015

RE: Master Plan Project Summary to Date

Airport Survey – The Consultant Planning Team, in conjunction with the City Management Team, led an extensive public outreach effort that began in early June. This effort consisted of distributing airport briefing materials and airport surveys at certain locations and events around the City. Those locations and events included displays at the public libraries, local health clubs, the weekly farmers' market, the Lebanon Municipal Airport, and two neighborhood meetings with Poverty Lane residents. A total of 742 survey responses were collected, including those that were mailed in or completed online. The majority of survey responses came from City of Lebanon residents; however, a significant number of non-residents took the time to complete the survey as well. The complete breakdown of survey responses is attached.

Final Venn Diagram – The Venn Diagram also attached to this summary represents the visioning attributes obtained from each group or component of the public outreach effort. Those groups/components included:

- One-on-One Meetings
- Neighborhood Meetings
- TAC/CAC/UAC Meetings[1]
- Public Surveys
- Public Visioning Workshop

The visioning attributes in each of the respective circles represent the main topics and ideas that the various groups/components contributed. The items in the overlapped portions of the respective circles represent consensus building among the attributes received from the

[1] Technical Advisory Committee, Community Advisory Committee, Airport Users Advisory Committee

different groups.[2]. In other words, the attributes in the center of the diagram represent the recurring themes apparent from each of the groups/components. These commonly shared attributes were then used to formulate a draft vision statement which represents the consensus achieved.

Vision Statement – The draft Vision Statement is the culmination of an extensive public outreach effort focused on putting Residents First. The draft Vision Statement can be seen below, with the top-four attributes ***underlined:***

The Lebanon Airport will be a community asset with enhanced air service through financially self-sustaining means, while minimizing negative environmental and social impacts.

Next Steps – The Consultant Planning Team will seek concurrence on the draft Vision Statement from the City Council in October. Once concurrence on the draft Vision Statement has been granted, the Master Plan Project will proceed forward, starting with a technical analysis of the aviation elements integral to achieving the community's vision for the airport. This will include preparation of aviation forecasts, airport facility requirements, a financial analysis, and airport development alternatives. It is anticipated that much of the technical analysis can be completed this calendar year and that conceptual development alternatives can be presented at a public workshop during the December/January timeframe.

[2] Consensus building was achieved through voting exercises with each of the groups, including rankings on the airport surveys and ballots provided at the Public Visioning Workshop.

Lebanon Airport

Your City. Your Airport. Your Voice.

WELCOME

Comprehensive Airport Master Plan

Public Input Session on Proposed Improvements

CITY OF LEBANON N.H. INCORPORATED JULY 4 1761 ESTABLISHED 1958

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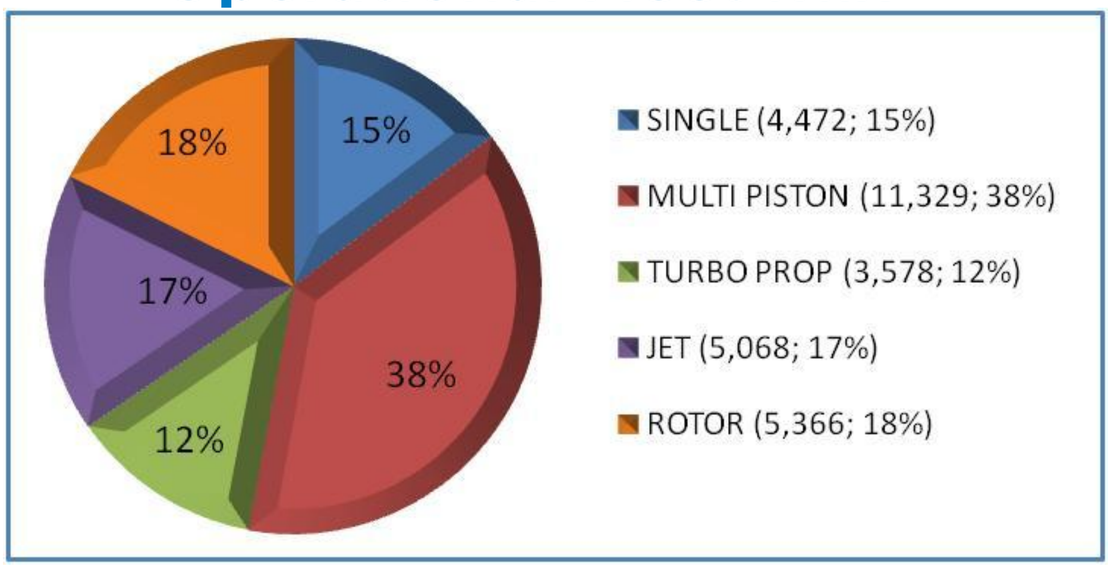
Forecast of Aviation Activity

Forecast Elements

- Aircraft Operations - Slow and Stable Growth Consistent with National Trends
- Based Aircraft – Matches National Trends - Older Piston Aircraft Leaving Fleets, Growth in Jets and Rotor
- Passenger Enplanements – Growth Limited by EAS Schedule Limitations, Monitor Regional Airline Dynamics
- Future Design Aircraft - Bombardier Challenger 300/600 Series Family, Consistent with Similar Sized Aircraft

Operational Fleet Mix



Forecast Summary

Aircraft Operations	
2015	29,814
2020	30,453
2025	31,108
2030	31,777

Based Aircraft	*Single*	*Multi*	*Jet*	*Rotor*	*Other*	*Total*
2015	30	4	2	19	1	56
2020	30	4	2	22	2	60
2025	30	4	3	24	2	63
2030	30	5	4	30	4	72

Passenger Enplanements	
2015	10,786
2020	11,730
2025	12,674
2030	13,619

Facility Requirements

Airside

- Improve Runway Safety Areas (RSAs)
- Maintain Unrestricted Runway Length of 5,500’
- Rehabilitate or Reconstruct Taxiways
- Rehabilitate or Reconstruct Runways
- Easements to Runway Protection Zone
- Meet the Airport’s Vision Statement

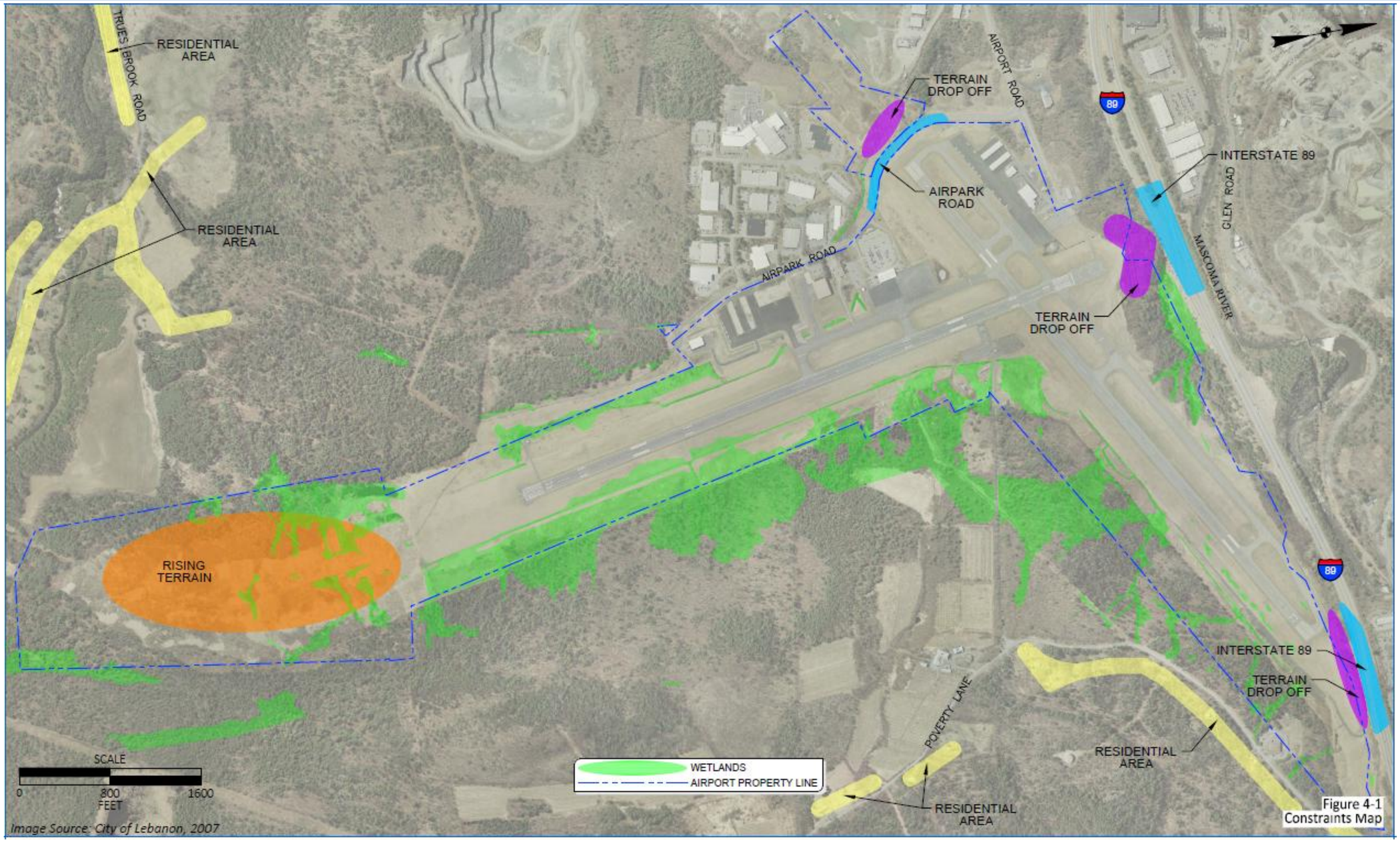
Landside

- Rehabilitate or Reconstruct Parking Lot and Airpark Road
- Expansions to ARFF and SRE sites
- Additional Conventional Hangar(s) for Revenue Generation
- Seek Non-Aviation Development
- Meet the Airport’s Vision Statement

Terminal

- Increase Space Required for Outbound Baggage Screening and Passenger Holdroom/Circulation
- Continue to Implement Sustainability Initiatives
- Meet the Airport’s Vision Statement

Development Considerations



"The Lebanon Airport will be a community asset with optimized air service through financially self-sustaining means, while minimizing negative environmental and social impacts."

Funding Breakdown

- **Capital Improvement Projects (CIP) are Funded on a Shared Basis:**
  - **90% Federal** (FAA)
  - **5% State** (NHDOT)
  - **5% Local** (Passenger Facility Charges, Airport Revenue, City of Lebanon)

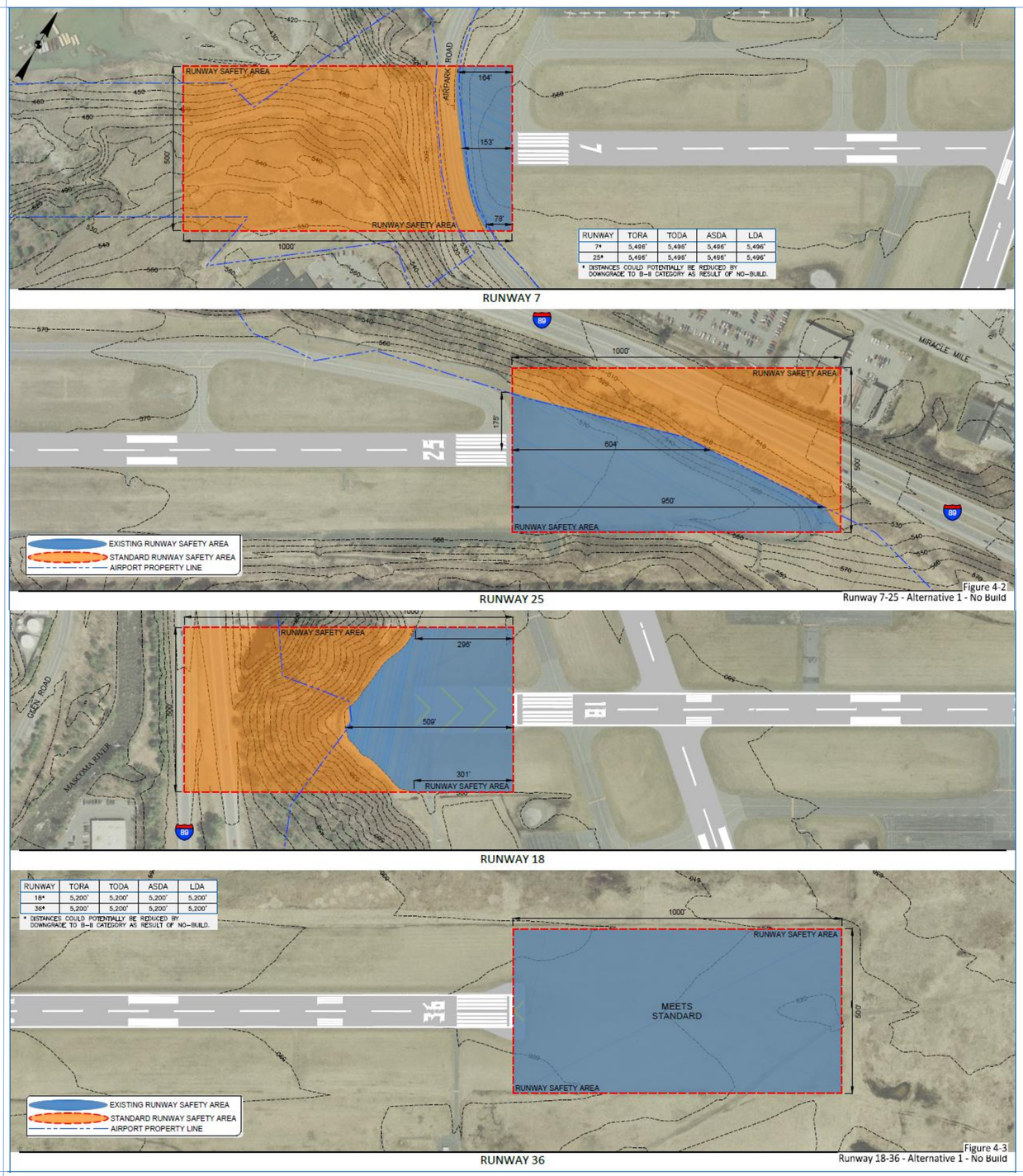
- **Capital Projects are Phased Over the Entire 20-year Planning Period**

- **Capital Projects are Completed Within Even Smaller Phases**
  - Example: One Taxiway Project Make Be Completed Over Multiple Years

- **Project Phasing Allows for Local Costs to Be Financed Over Time**

- **Capital Projects Bring Signifcant Outside Funding Into the City of Lebanon**

Runway Alternative 1 – No Build



RUNWAY	TORA	TODA	ASDA	LDA
7*	5,496'	5,496'	5,496'	5,496'
25*	5,496'	5,496'	5,496'	5,496'

* DISTANCES COULD POTENTIALLY BE REDUCED BY DOWNGRADE TO B-II CATEGORY AS RESULT OF NO-BUILD.

RUNWAY	TORA	TODA	ASDA	LDA
18*	5,200'	5,200'	5,200'	5,200'
36*	5,200'	5,200'	5,200'	5,200'

* DISTANCES COULD POTENTIALLY BE REDUCED BY DOWNGRADE TO B-II CATEGORY AS RESULT OF NO-BUILD.

Runway 7-25

- No change would occur
- Existing RSAs would remain non-standard
- Unacceptable to regulatory agencies

Runway 18-36

- No change would occur
- RW 18 RSA would remain non-standard
- Potential for reduction to B-II which would negatively impact revenues and operations

Table 4-1: Runway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Development Cost	Overall Score
Alt 1 (No Build)	0	0	5	4	None	9

(Local Share $0)

Runway Alternative 2

RUNWAY	TORA	TODA	ASDA	LDA
7	5,496'	5,496'	5,496'	5,496'
25	5,496'	5,496'	5,496'	5,496'

RUNWAY	TORA	TODA	ASDA	LDA
18	5,200'	5,200'	5,200'	5,200'
36	5,200'	5,200'	5,200'	5,200'

Runway 7-25

- Standard RSAs would be implemented (1000’ x 500’)
- Significant construction costs due to grading, property acquisition, and relocation of I-89
- Significant environmental and social impacts

Runway 18-36

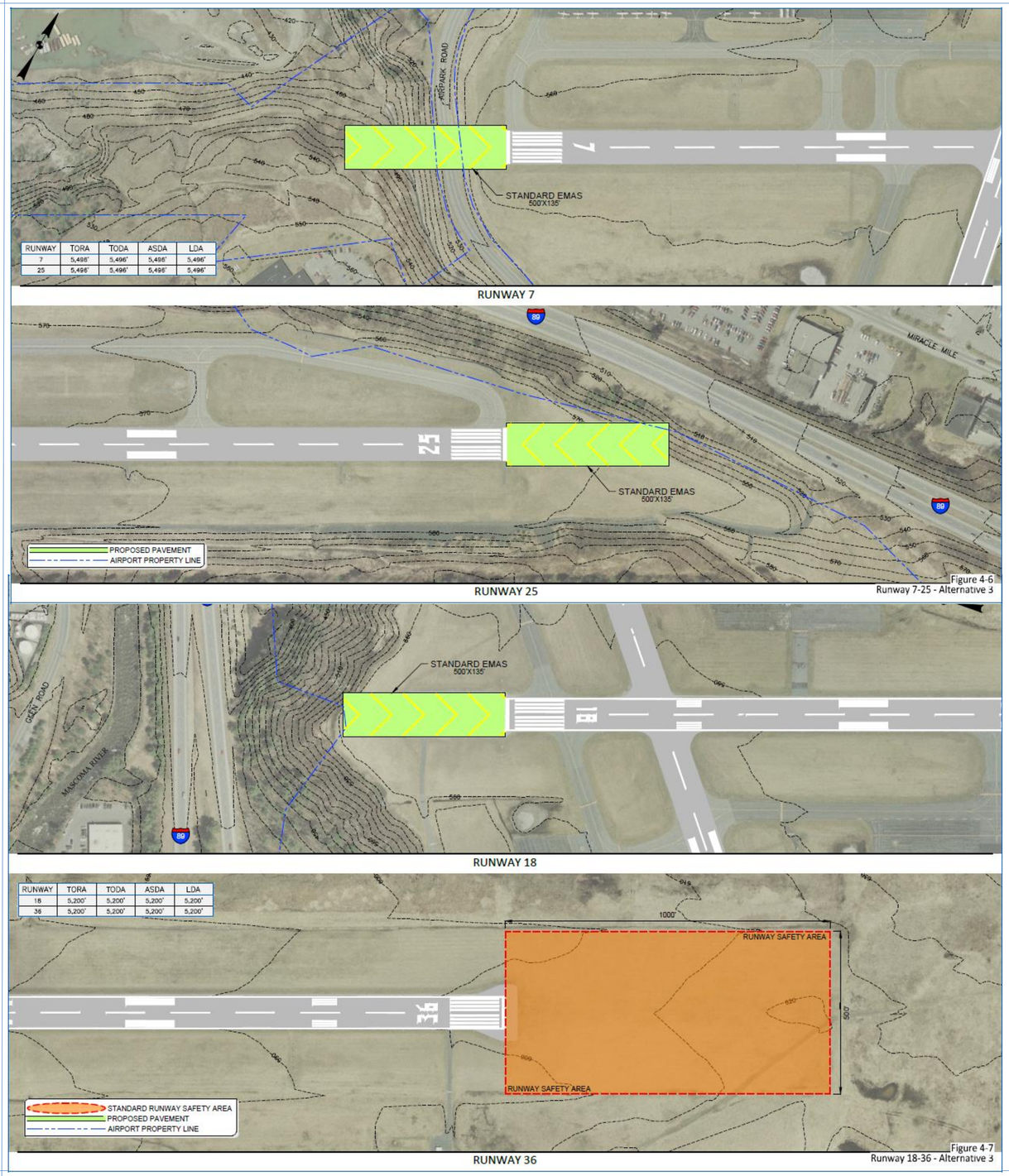
- Same as above for RW 18
- No change to RW 36

Table 4-1: Runway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Development Cost	Overall Score
Alt 2 (Standard RSAs)	0	5	5	0	+$105,000,000	10

(Local Share $5,250,000)

Runway Alternative 3



RUNWAY	TORA	TODA	ASDA	LDA
7	5,496'	5,496'	5,496'	5,496'
25	5,496'	5,496'	5,496'	5,496'

RUNWAY	TORA	TODA	ASDA	LDA
18	5,200'	5,200'	5,200'	5,200'
36	5,200'	5,200'	5,200'	5,200'

Runway 7-25

- Standard EMAS would be implemented (500’ x 135’)
- Significant construction costs due to grading, property acquisition, and EMAS
- Significant environmental and social impacts

Runway 18-36

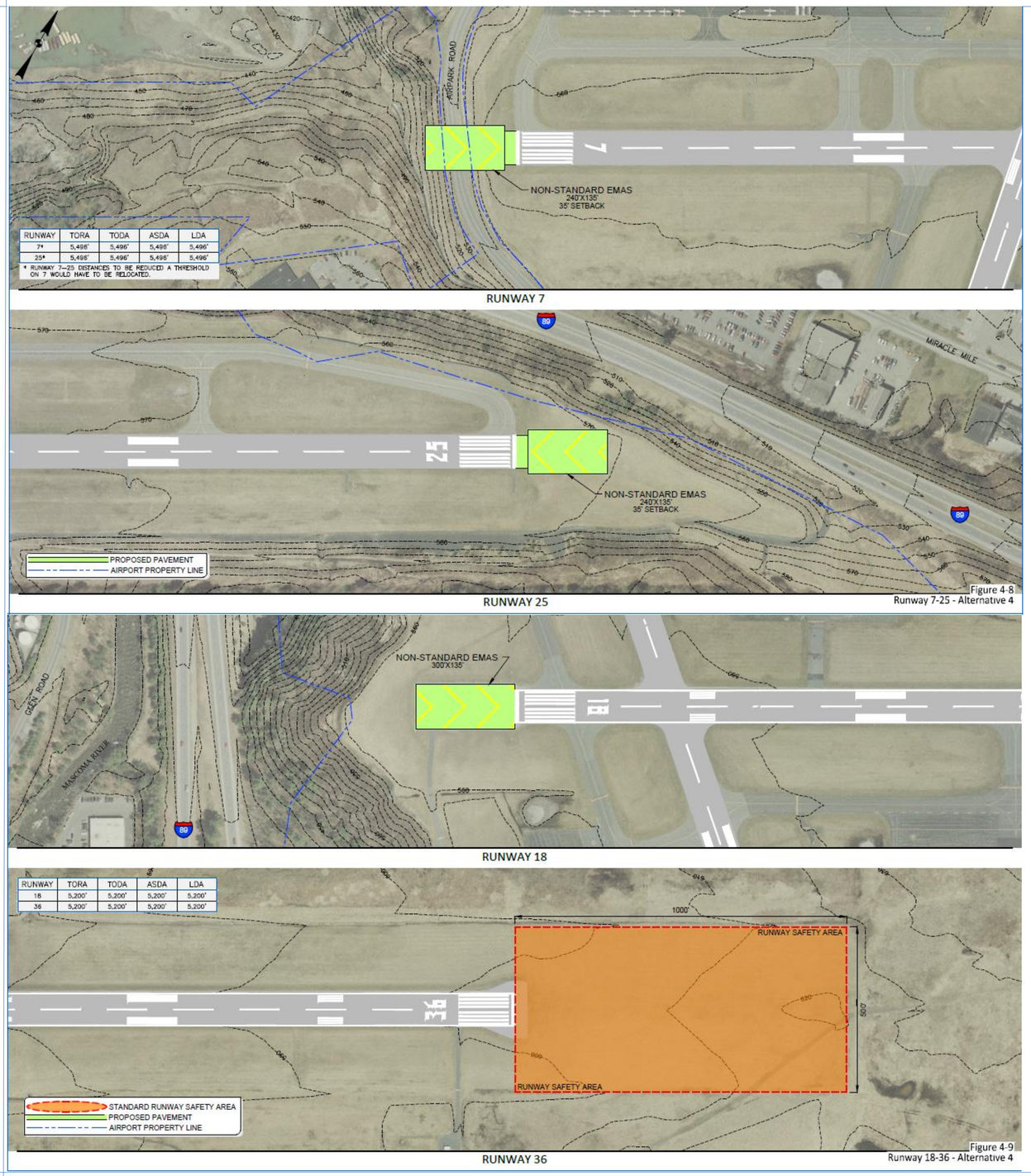
- Same as above for RW 18
- No change to RW 36

Table 4-1: Runway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Development Cost	Overall Score
Alt 3 (Standard EMAS)	3	5	5	3	$68,700,000	16

(Local Share $3,435,000)

Runway Alternative 4



RUNWAY	TORA	TODA	ASDA	LDA
7*	5,496'	5,496'	5,496'	5,496'
25*	5,496'	5,496'	5,496'	5,496'

* RUNWAY 7–25 DISTANCES TO BE REDUCED A THRESHOLD ON 7 WOULD HAVE TO BE RELOCATED.

RUNWAY	TORA	TODA	ASDA	LDA
18	5,200'	5,200'	5,200'	5,200'
36	5,200'	5,200'	5,200'	5,200'

Runway 7-25

- Non-Standard EMAS would be implemented (240’ x 135’)
- Less construction costs due to reduced grading and smaller EMAS
- Less environmental and social impacts

Runway 18-36

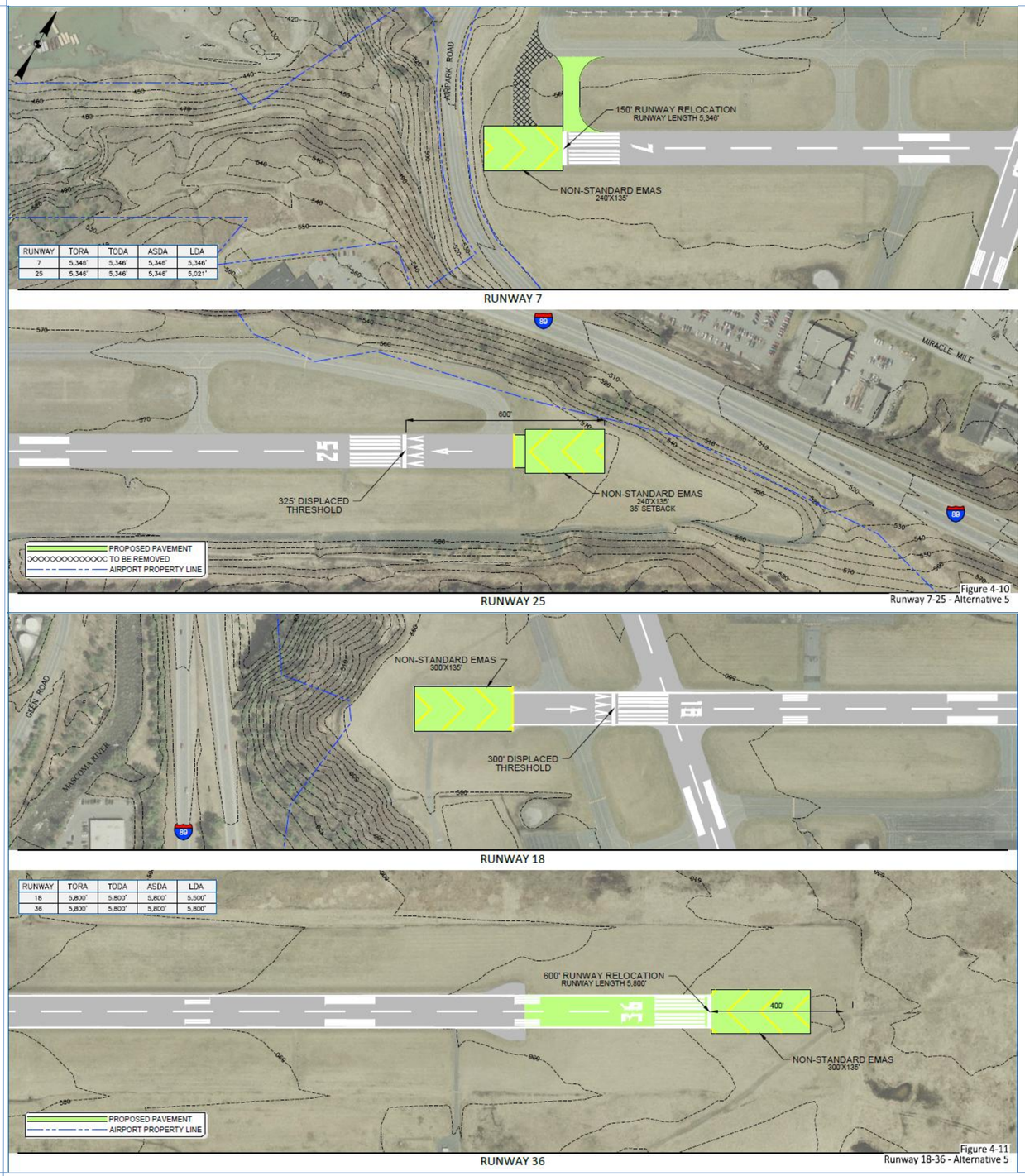
- Non-Standard EMAS (300’ x 135’)
- No change to RW 36

Table 4-1: Runway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Development Cost	Overall Score
Alt 4 (Non-Standard EMAS)	3	3	5	3	$34,500,000	14

(Local Share $1,725,000)

Runway Alternative 5



RUNWAY	TORA	TODA	ASDA	LDA
7	5,346'	5,346'	5,346'	5,346'
25	5,346'	5,346'	5,346'	5,021'

RUNWAY	TORA	TODA	ASDA	LDA
18	5,800'	5,800'	5,800'	5,500'
36	5,800'	5,800'	5,800'	5,800'

Runway 7-25

- Non-Standard EMAS (240’ x 135’)
- RW 7 150’ threshold relocation
- RW 25 325’ displaced threshold
- Undershoot protection RW 25

Runway 18-36

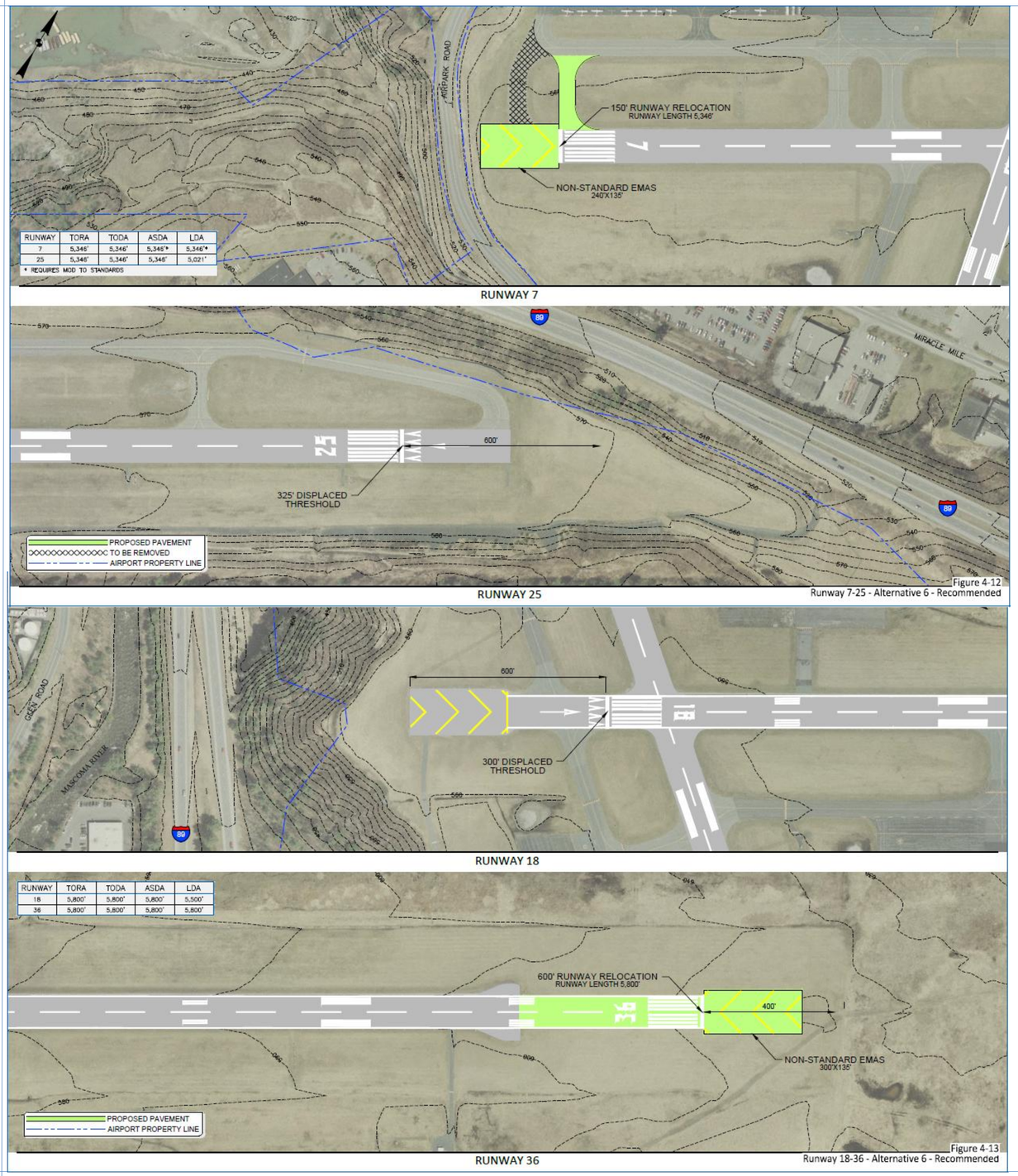
- Non-Standard EMAS (300’ x 135’)
- RW 18 300’ displaced threshold
- RW 36 600’ threshold relocation
- Undershoot protection RW 18

Table 4-1: Runway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Development Cost	Overall Score
Alt 5 (EMAS and Thresholds)	4	4	5	4	$48,200,000	17

(Local Share $2,410,000)

Runway Alternative 6



RUNWAY	TORA	TODA	ASDA	LDA
7	5,346'	5,346'	5,346'*	5,346'*
25	5,346'	5,346'	5,346'	5,021'

* REQUIRES MOD TO STANDARDS

RUNWAY	TORA	TODA	ASDA	LDA
18	5,800'	5,800'	5,800'	5,500'
36	5,800'	5,800'	5,800'	5,800'

Runway 7-25

- RW 7 Non-Standard EMAS
- RW 7 150’ threshold relocation
- RW 25 325’ displaced threshold
- Undershoot protection RW 25

Runway 18-36

- RW 36 Non-Standard EMAS
- RW 36 600’ threshold relocation
- RW 18 300’ displaced threshold
- Undershoot protection RW 18

Table 4-1: Runway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Development Cost	Overall Score
Alt 6 (EMAS and Thresholds)	4	4	5	4	$34,900,000	17

(Local Share $1,745,000)

Runway Alternatives Summary

Comprehensive Airport Master Plan

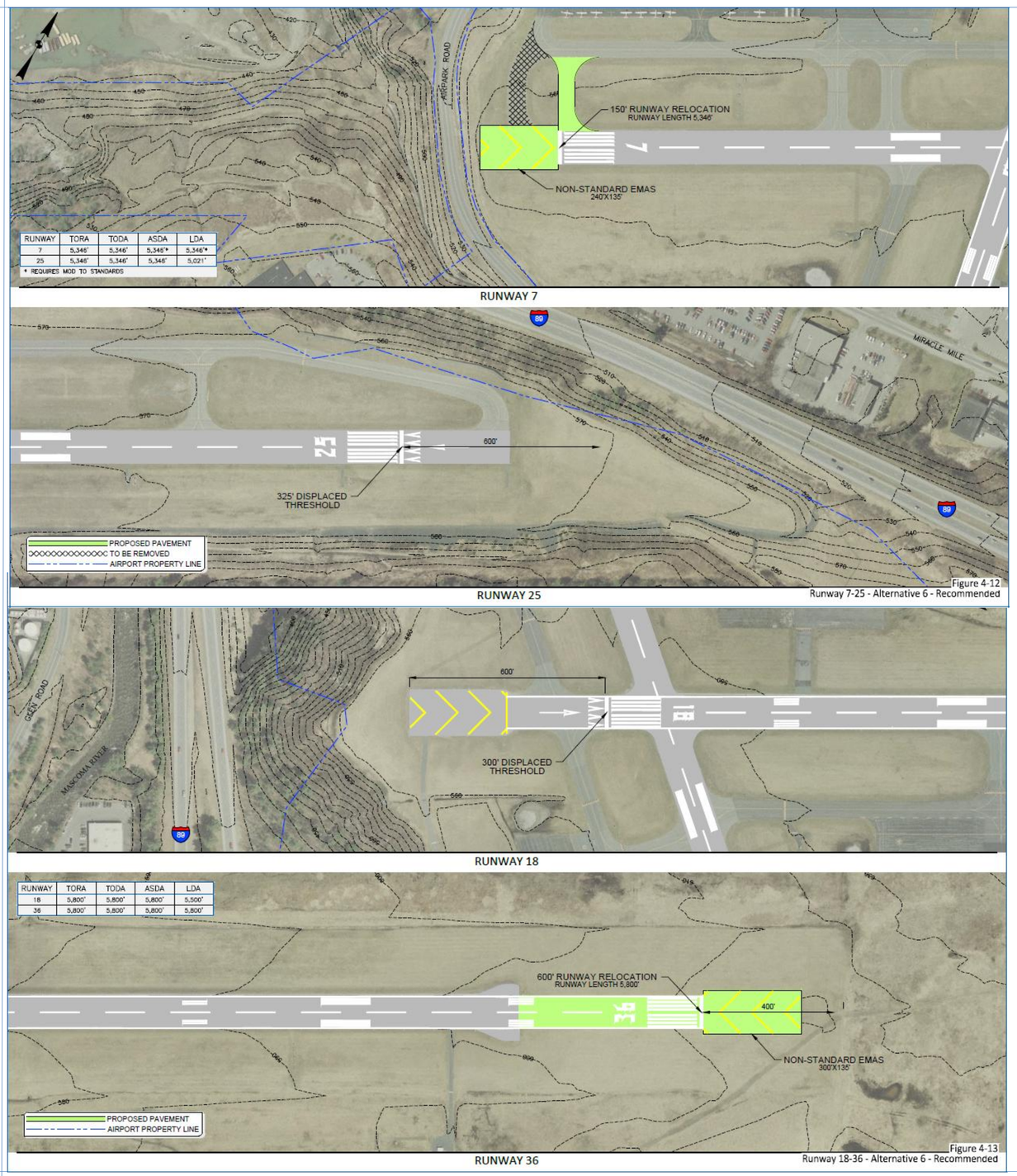


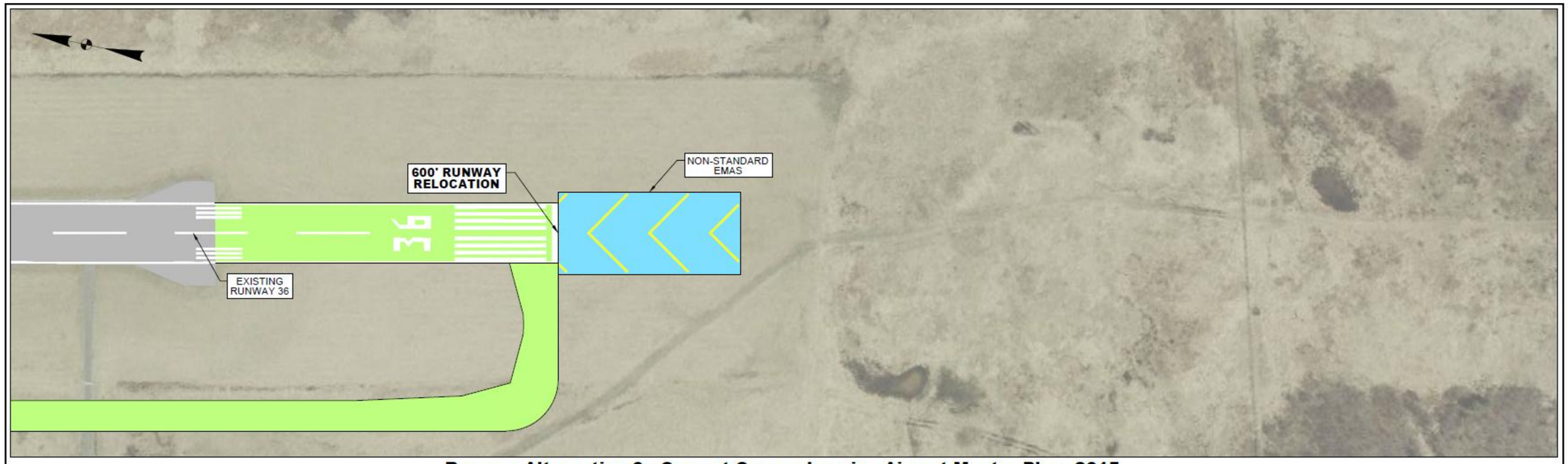
Table 4-1: Runway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Development Cost	Overall Score
Alt 1 (No Build)	0	0	5	4	None	9
Alt 2 (Standard RSAs)	0	5	5	0	+$105,000,000	10
Alt 3 (Standard EMAS)	3	5	5	3	$68,700,000	16
Alt 4 (Non-Standard EMAS)	3	3	5	3	$34,500,000	14
Alt 5 (EMAS and Thresholds)	4	4	5	4	$48,200,000	17
Alt 6 (EMAS and Thresholds)	4	4	5	4	$34,900,000	17

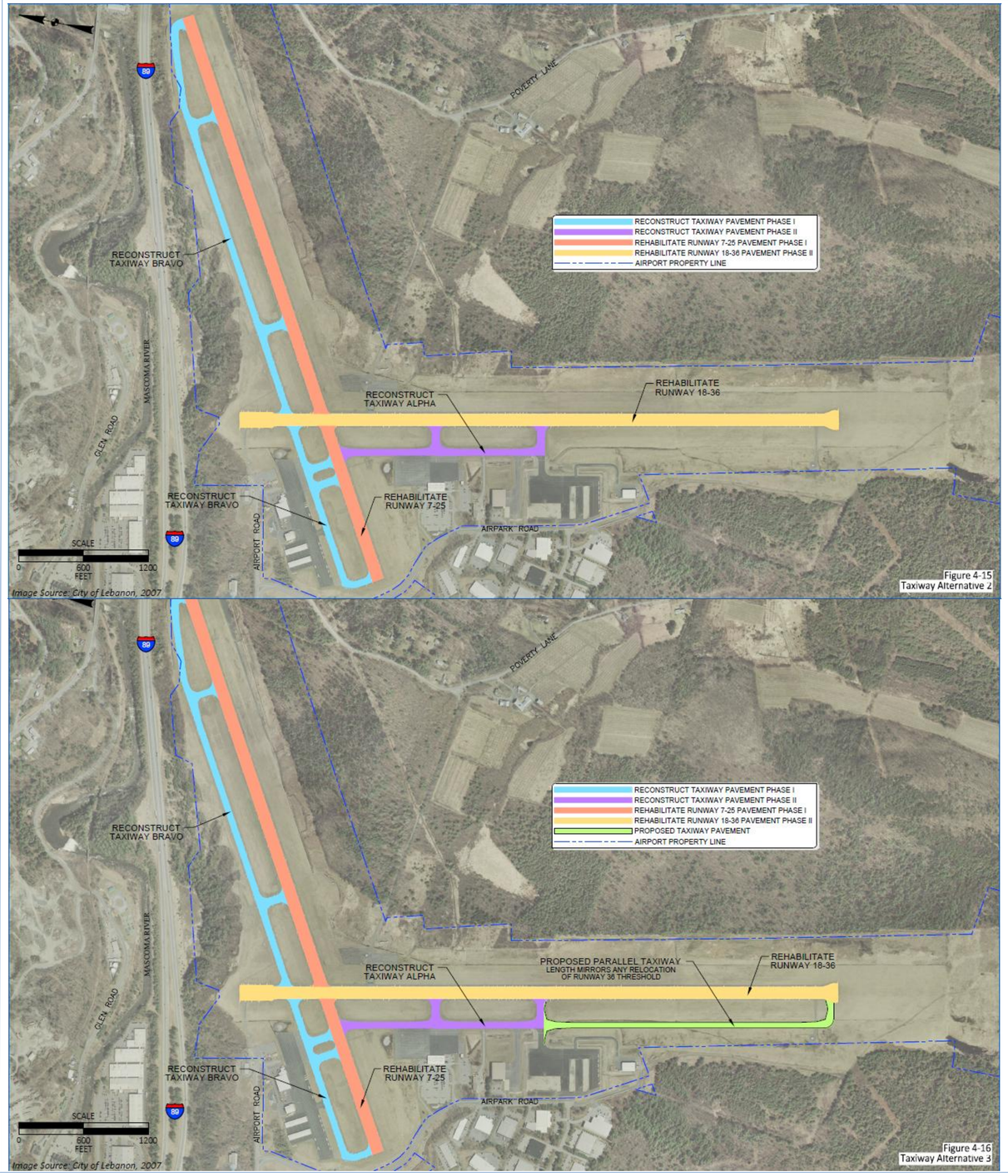
(Local Share $1,745,000)

Based on the evaluation criteria, the Consultant Recommendation is Runway Alternative 6. Please use your comment sheet to provide questions or comments on this proposed development.

Preliminary Comparison of Impacts



Taxiway Alternatives



Alt 2

- Rehabilitate or Reconstruct Taxiways Alpha and Bravo
- Rehabilitate or Reconstruct Runway 7-25 and Runway 18-36

Alt 3

- Same as above with extension of Taxiway Alpha to Runway 36

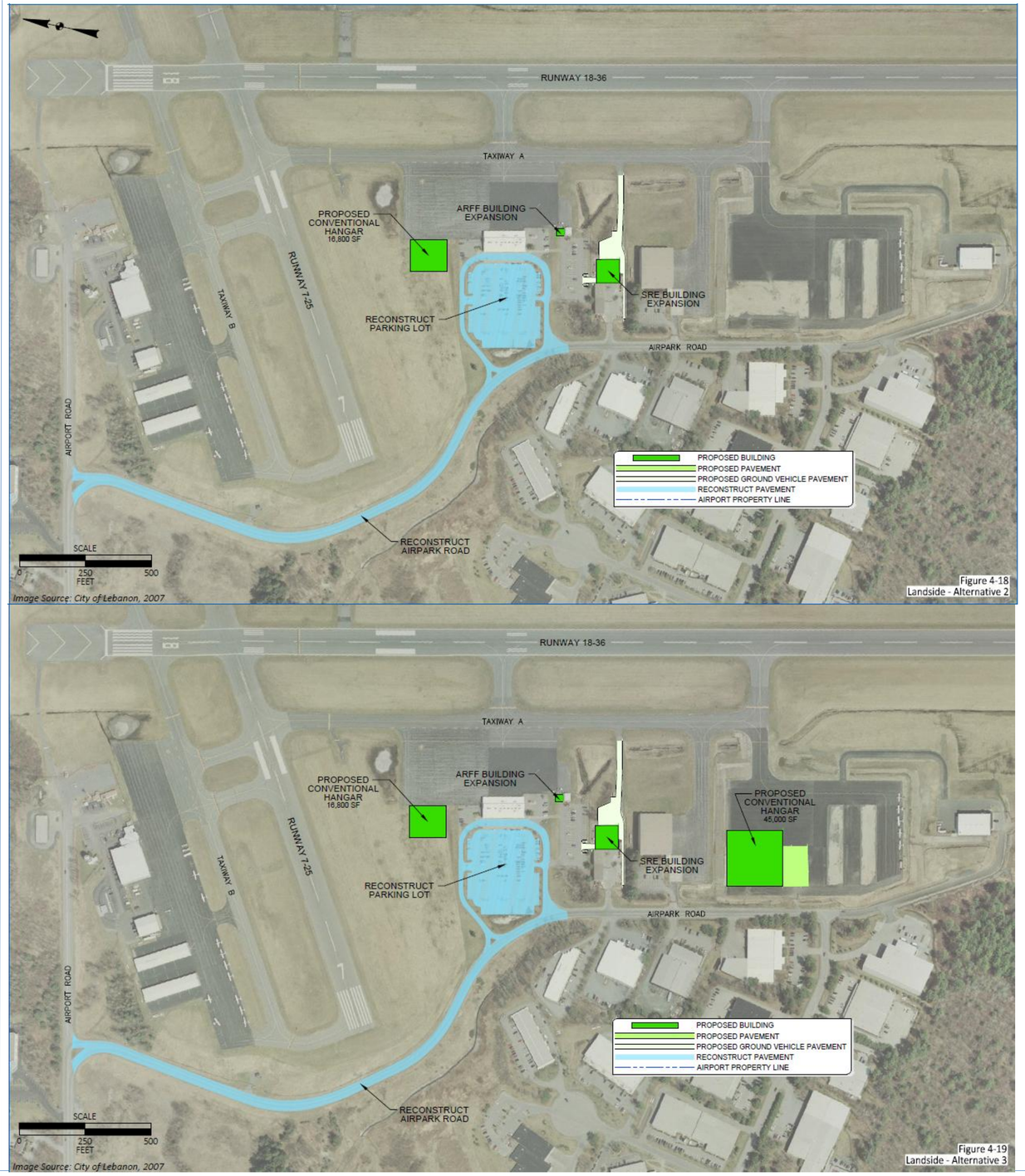
Table 4-2: Taxiway Alternatives Summary

Alternative	Airport Vision	FAA Safety Standards	Operational Requirements	Environmental Impacts	Overall Score
Alt 1 * (No Build)	0	0	2	4	6
Alt 2 (Rehab or Reconstruction)	3	5	3	5	13
Alt 3 (Rehab or Reconstruction with Alpha Extension)	4	5	5	3	17

*No Build not shown

Denotes Consultant Recommendation

Landside Alternatives



Alt 2

- Rehabilitate or Reconstruct Parking Lot and Airpark Road
- Expansions to ARFF and SRE sites
- Additional Conventional Hangar

Alt 3

- Same as above with additional proposed Conventional Hangar

Table 4-3: Landside Alternatives Summary

Alternative	Airport Vision	Land Use Capability	Environmental Impacts	Potential for Expansion	Operational Efficiency	Revenue Generation Capability	Overall Score
Alt 1 * (No Build)	0	3	3	5	5	0	16
Alt 2 (One Hangar)	3	5	4	5	5	3	25
Alt 3 (Two Hangars)	5	5	4	4	5	5	28

*No Build not shown

Denotes Consultant Recommendation

Recommended Development Strategy

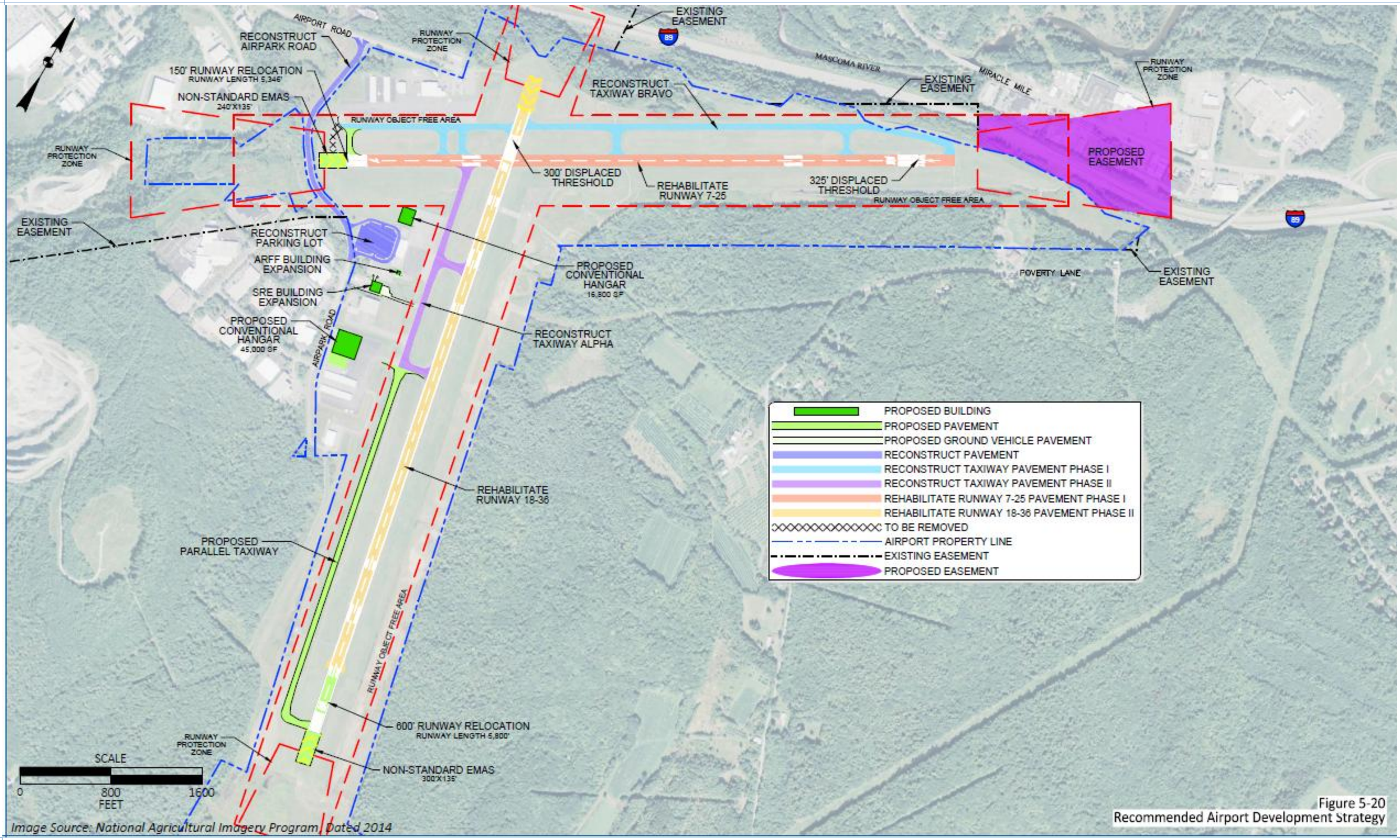
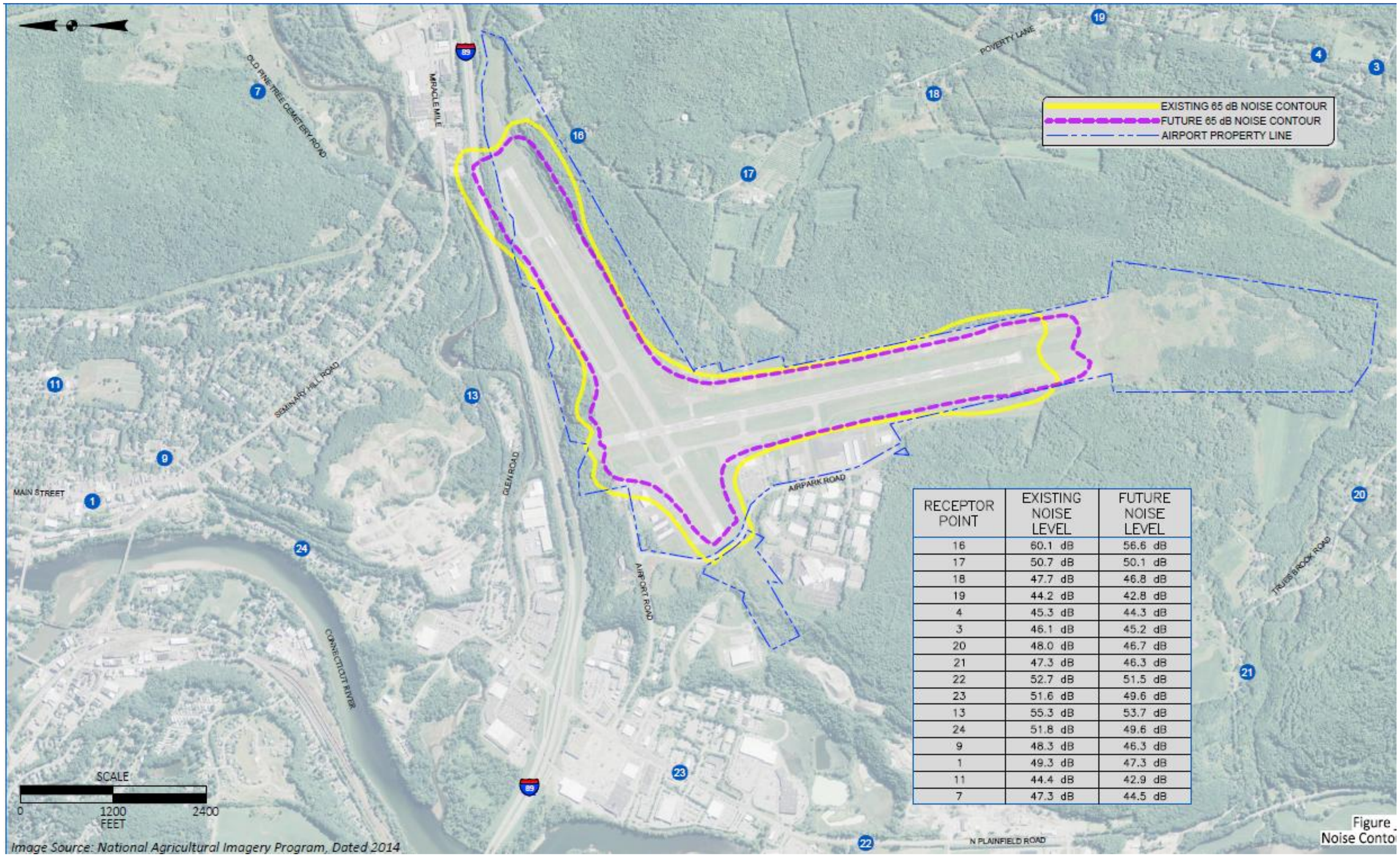


Image Source: National Agricultural Imagery Program, Dated 2014

Figure 5-20
Recommended Airport Development Strategy

Integrated Noise Model



RECEPTOR POINT	EXISTING NOISE LEVEL	FUTURE NOISE LEVEL
16	60.1 dB	56.6 dB
17	50.7 dB	50.1 dB
18	47.7 dB	46.8 dB
19	44.2 dB	42.8 dB
4	45.3 dB	44.3 dB
3	46.1 dB	45.2 dB
20	48.0 dB	46.7 dB
21	47.3 dB	46.3 dB
22	52.7 dB	51.5 dB
23	51.6 dB	49.6 dB
13	55.3 dB	53.7 dB
24	51.8 dB	49.6 dB
9	48.3 dB	46.3 dB
1	49.3 dB	47.3 dB
11	44.4 dB	42.9 dB
7	47.3 dB	44.5 dB

Figure
Noise Conto

Integrated Noise Model Cont'd

- Day-Night Level (DNL) is the Standard Federal Metric for Determining Cumulative Exposure to Noise

- DNL = 24 Hour Average Sound Level

  - Measured in Decibels (dB)
  - 10 dB Penalty for Nighttime (10:00pm – 7:00am) Operations
  - Use of Integrated Noise Model (INM) to calculate DNL is Required

- FAA Considers 65 db DNL as Threshold of Significance

- The Existing and Future 65 db Noise Contours are shown in Yellow and Purple, respectively, along with those of multiple receptor points chosen within the City of Lebanon and listed in the corresponding table.

Sustainability at LEB

Comprehensive Airport Master Plan

What is sustainability and how does it relate to airports?

Airport Sustainability is a holistic approach to managing an airport so as to ensure the integrity of the **Economic viability**, **Operational efficiency**, **Natural resource conservation**, and **Social responsibility** (EONS).

– Airports Council International

What has the Airport done to address its sustainability?

- Supported the Upper Valley / Lake Sunapee Regional Planning Council in conducting an energy audit at the Airport in 2012.
- Identified terminal air conditioning units and boilers, installed in 1980, as inefficient and in need of replacement. This project would greatly improve the reliability and quality of cooling and heating, while lowering energy consumption and costs as well as reducing related greenhouse gas emissions.

Terminal Air Conditioning Unit

Terminal Boilers

Wings & Wheels - 2015

- Hosts community events throughout the year such as *Wings & Wheels – A Celebration of Lebanon*, in addition to conducting tours for local organizations such as schools and Boy/Girl Scout groups.
- Generates an economic impact of $4.43 million through direct employee compensation (2013), $2.97 million in indirect labor, $7.6 million in indirect output at state businesses (in addition to state tax revenues), and $2.41 million in passenger spending - Lebanon Municipal Airport Economic Impact Study, 2008 and New Hampshire State Airport System Plan, 2015.
- Retrofitted up to 30 exterior, incandescent flood lights to LEDs between 2013 and 2014.
- Modified mowing procedures around the runway safety areas to create grassland bird habitat to support species growth, while maintaining compliance with FAA regulations.
- Replaced 38 150-watt, steady burning obstruction lights with two 640-watt slow flashing lights.

What can the Airport do to improve its sustainability performance?

To improve its sustainability performance, the Airport could adopt the following sustainability ideas:

- **Switch to using warm-mix asphalt instead of hot mix asphalt for paving operations**

  Warm-mix asphalt, as opposed to hot mix asphalt, uses less energy during production and placement. Therefore, it generates less greenhouse gas and other air pollutant emissions. The Airport can potentially apply warm-mix asphalt in its parking lot, taxiways, runways, and aprons.

- **Establish an on-airport beehive (a.k.a. apiary) to produce and sell honey and honey-based products**

  Apiaries have proven successful at a number of airports such as Chicago O'Hare and Seattle-Tacoma. This activity offers the opportunity to engage local agricultural operations such as beekeepers, and would foster a harmonious partnership with the nearby apple orchards for propagation of their crop and the creation of apple blossom honey. The Airport can sell goods produced using products of the apiary within the terminal or at the local farmers' market at Colburn Park.

- **Install energy-efficient lighting in the terminal**

  To improve energy efficiency within the terminal, retrofit existing incandescent or fluorescent lighting to higher efficiency or LED lighting systems. Further, install occupancy sensors, where feasible, to manage energy in spaces that do not require constant lighting.

- **Install a solar array to power Airport facilities**

  To reduce the Airport's energy consumption and reliance on fossil fuels, build a solar photovoltaic (PV) farm on land not needed for aeronautical purposes. One of the ways the Airport can accomplish this is through a solar power purchase agreement (SPPA), where a third-party developer would incur the upfront costs and the Airport would agree to purchase the electricity for a predetermined period.

Apiary

Solar PV Installation

- **Maximize the use of the Airport's non-aeronautical properties**

  The development of non-aeronautical properties at the Airport could fulfill a variety of the Airport's objectives, as long as it does not compromise the Airport's safety. These properties have the potential to generate revenue through parcel leasing, provide community gathering spaces, and/or enhance natural resources through the creation of habitat for grassland birds.

- **Install water conserving plumbing fixtures throughout the terminal**

  The Airport can conserve a significant amount of water and reduce the amount of wastewater generated at the terminal by installing low-flow, waterless, or pressure assisted plumbing fixtures. These types of plumbing fixtures are relatively inexpensive and generally necessitate no more maintenance beyond that required for conventional fixtures.

- **Conduct a waste audit and use the results to facilitate waste reduction and recycling**

  A baseline waste audit can help the Airport understand the types and amounts of waste that is generated at its facilities. Such knowledge can be applied to increase opportunities for recycling and potentially improve operational efficiencies by simplifying waste collection and reducing contract costs associated with waste hauling and disposal.

Public Comment

Please Share Your Perspective!

Place Your Comments in the Comment Box.

E-mail to:
dstoddard@mjinc.com

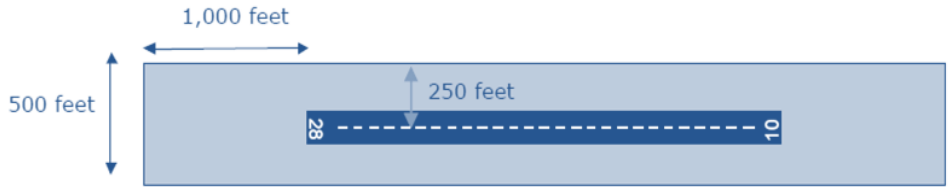
Mail to:
McFarland Johnson
LEB Comprehensive Airport Master Plan
49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

Visit:
http://fly.lebnh.net/masterplan

Provide Comments by January 19, 2016

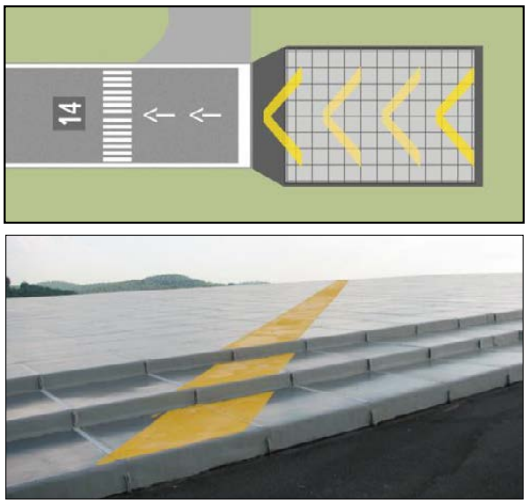
Information Sheet

Runway Safety Area (RSA): RSAs are defined by the FAA as rectangular surfaces surrounding a runway that are suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. RSAs consist of a relatively flat graded area free of objects and vegetation that could damage aircraft. According to FAA guidelines, the RSA should be capably, under dry conditions, of supporting aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft. The FAA design standards for RSAs belonging to runways serving C-II aircraft are a width of 500 feet (250 feet from each side of the runway centerline) and a length that extends 1,000 feet beyond the runway end.



RSA Surrounding a Runway

Engineered Materials Arresting System (EMAS): The engineered materials in an EMAS are best described as concrete blocks injected with air bubbles. These aerated blocks are installed at the end of a runway and are designed to collapse under the weight of an aircraft to safely stop it without injury to persons on board and with minimal structural damage to the aircraft. Because of the safety features involved, a standard EMAS provides a level of safety that is equivalent to an RSA built to dimensional standards. These systems were suggested as an alternative to traditional RSA designs, as they require less of a development "footprint" but still comply with FAA safety standards.



Capital Project Funding: Capital Improvement Projects are funded on the following shared basis: 90% Federal (FAA), 5% State (NHDOT) and 5% Local (Airport Revenue, Passenger Facility Charges, City of Lebanon). Capital projects are phased over time, so proposed developments span the 20-year planning period and enable local funding to be financed over a longer timeframe.

Comment Sheet

Your input and participation in this process is very important. Please use the space below to provide comments on any aspect of the Comprehensive Airport Master Plan. When finished, please place your sheet in the comment box located near the entrance. If you need more time, you may write your comments at home and return them to the address below. All comments must be postmarked or emailed by January 19, 2016. Thank you for your participation.

McFarland Johnson
LEB Comprehensive Airport Master Plan
49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

Public Workshop *Sign In Sheet*

Comprehensive Airport Master Plan

Name	Address	Email	Phone
David McLaughlin	38 Hall Road W. Lebanon		
Margaret CAMPBELL	2 Jones Ave West Leb 03784		
Marge & Tony Gow	112 Poverty Lane Lebanon NH		
Peter Brown	36 Westview Lane, Leb	jjpmbrown@aol.com	
Ken Rafferty	71 Hanover ST, Lebanon 03766		
Susan Valiante	Lebanon, NH		
Patty Maxfield	25e Poverty Ln. Leb		
Bob Maxfield	"		
Otis Wood	98 Poverty Lane	owood@farnumhill ciders.com	
Sue Hamy	266 Poverty Ln		
Harrison Wood	98 Poverty Lane		
Carissa Connelly	98 Poverty Lane	carissa.m.connelly@gmail.com	
Louisa Spencer	98 Poverty Lane	lspencer@povertylaneorchards.com	

Public Workshop *Sign In Sheet*

Comprehensive Airport Master Plan

Name	Address	Email	Phone
Councilor Bill Finn	107 Cross Rd.	Ward 2 CouncilorFinn@Gmail.com	
Nora Doyle-Burr	Valley News	ndoyleburr@Vnews.com	
Bruce Temple	City of Lebanon		448-3112
RICK DYMENT	LEB AIRPORT	rick.dyment@lebanonnh.com	298-8878
Leonard Rahilly	266 Poverty Lane 6B	fieldrahilly@comcast.net	448-2196
KEITH BORGSTROM	61 RIVER RD., LYME, NH	KEITH.C.BORGSTROM@DARTMOUTH.EDU	603-795-2611
Diane Root	2 Jones Ave, W. Leb, NH	DROOTTRR@aol.com	603-298-7597
Carol Dustin	5 Allen St. Lebanon	CWDustin@gmail.com	
Charles Henry	37 Poverty Lane		603 252-1986
Nancy Archibald	5 Stone Hill Rd		4481362
JOHN MANCHESTER	HANOVER		603-643-4291
Melissa Henry Billings	118 Wellington Lebanon	billings252@gmail.com	448 5683
Sue Prentiss	1 Batchelde Ave	smumprentiss1@	

Public Workshop *Sign In Sheet*

Comprehensive Airport Master Plan

Name	Address	Email	Phone
STEPHEN WOOD	98 Poverty Lane		
amelia sereen			
Paula Mantle			
Dennis Uttrale			
Steve Wood			
wife			
~~Son~~			
Son			
girlfriend			

Lebanon Airport

January 5, 2016

McFarland Johnson

TAC/CAC/AUAC *Sign In Sheet*

Comprehensive Airport Master Plan

Name	Address	Email	Phone
Nate Miller	UVLSRPC	nmiller@uvlsrpc.org	448-1680
Greg Soho	Granite Air Center, LLC 58 Airport Rd	gsoho@graniteair.com	298-6555
Pete Gunderman	42 Vincent Dr Lebanon		643-7766
Paul Boucher	Lebanon Chamber of Commerce	lebanonchamber@lebanonchamber.com	448-1203
Don Gilbert	1800 Church Hill Rd, Winstead VT	DGilbert@whitemountains.com	603-398-9000
Erik Brine	1 Chamberlain Rd Hanover	erik.brine@hypertherm.com	603 359 8897
David Brooks	City of Lebanon	david.brooks@lebcity.com	603-448-1457
Carol Nieuwola	NHDOT/7 Hazen Dr./Concord	cnieuwola@dot.state.nh.us	603-271-1675
Tricia Lambert	NHDOT/7 Hazen D. Concord	tlambert@dot.state.nh.us	603-271-1674
Bobbi Gross	27 Gilson Rd, W. Leb	bobbigross@earthlink.net	643-4267
Patrick Church	Lebanon	burgenconnect@att.net	

TAC/CAC/AUAC *Sign In Sheet*

Comprehensive Airport Master Plan

Name	Address	Email	Phone
Shelley Hachey	City Hall	Shelleyhachey@comcast.com	464-3504
Amanda Carlo	Leb Airport	amanda.carlo@capeair.com	
Michael Welch	Leb Airport	michael.welch@capeair.com	
Ed LaRocque	Leb AIRPORT	Ed.LaRocque@capeair.com	
Susan Weiba Valiante	Lebanon NH	svaliante@aol.com	

CMT *Sign In Sheet*

Comprehensive Airport Master Plan

Name	Address	Email	Phone
Deanna Stoddard	McFarland Johnson	dstoddard@mjinc.com	
Bruce Temple	Lebanon DPW	bruce.temple@lebanonj.com	
RICK DYMENT	" AIRPORT	rick.dyment@lebcity.com	603 298-8878
Paula Maville	City Hall	Paula.Maville@lebcity.com	448-4200
Shelley Hadfield	"	shelley.hadfield@lebcity.com	469-3584

Comment Sheet

Your input and participation in this process is very important. Please use the space below to provide comments on any aspect of the Comprehensive Airport Master Plan. When finished, please place your sheet in the comment box located near the entrance. If you need more time, you may write your comments at home and return them to the address below. All comments must be postmarked or emailed by January 19, 2016. Thank you for your participation.

McFarland Johnson
LEB Comprehensive Airport Master Plan
49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

As a West Leb resident living off Seminary Hill Road, I continue to be concerned about noise levels and traffic/automobile congestion. Everything possible should be done to support noise abatement projects and to address any additional vehicular traffic arising from increased airport use. Cost containment also a very important consideration.

Comment Sheet

Your input and participation in this process is very important. Please use the space below to provide comments on any aspect of the Comprehensive Airport Master Plan. When finished, please place your sheet in the comment box located near the entrance. If you need more time, you may write your comments at home and return them to the address below. All comments must be postmarked or emailed by January 19, 2016. Thank you for your participation.

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49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

I appreciate all the efforts being made to minimize the negative impact of airport projects and to increase sustainability & environmental friendliness. Having said that, I remain discouraged that Lebanon is being forced to undertake projects that will cost taxpayers 10's of millions of dollars. (Yes, I know, Lebanon's portion is relatively small, but it's all tax dollars, even at the federal level.) The airport serves a small, relatively elite segment of people, yet the ordinary citizens of Lebanon must fund these projects and have no ability to change the fundamental nature of the airport (For instance, many of us would love to close the airport & put in a solar farm instead.)

It feels that the push for "bigger, better, more" is inevitably going to carry the day, so while input is nice, I doubt anyone's input is going to alter the final outcome.

Comment Sheet

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LEB Comprehensive Airport Master Plan
49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

Thank you for the community presentation. I have put myself in the "no build" crowd. However, I was impressed with Alternative #6. Its impact on the land and surroundings is much less than other alternatives. The fact that the FAA has "blessed" the alternative is excellent. If we can have safety plus minimal impact, that might work well.

Apparently our consultants were listening!

Peter Brown
36 Westview Lane
Lebanon

Comment Sheet

Your input and participation in this process is very important. Please use the space below to provide comments on any aspect of the Comprehensive Airport Master Plan. When finished, please place your sheet in the comment box located near the entrance. If you need more time, you may write your comments at home and return them to the address below. All comments must be postmarked or emailed by January 19, 2016. Thank you for your participation.

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LEB Comprehensive Airport Master Plan
49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

I appreciate all the hard work done by McFarland Johnson in presenting all the possible options in a clear and understandable manner. Given that option #1 is not really an option, I would support option #6 --

Comment Sheet

Your input and participation in this process is very important. Please use the space below to provide comments on any aspect of the Comprehensive Airport Master Plan. When finished, please place your sheet in the comment box located near the entrance. If you need more time, you may write your comments at home and return them to the address below. All comments must be postmarked or emailed by January 19, 2016. Thank you for your participation.

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LEB Comprehensive Airport Master Plan
49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

Tax payers / residents cannot afford the airport + tax $.

Get rid of airport

Comment Sheet

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McFarland Johnson
LEB Comprehensive Airport Master Plan
49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

Abbas

Deanna K. Stoddard

From: Aaron Buck [aarontbuck@outlook.com]
Sent: Monday, January 11, 2016 1:26 PM
To: Deanna K. Stoddard; rick.dyment@lebcity.com; paula.maville@lebcity.com
Subject: Lebanon Airport Plans

Hello McFarland Johnson and Lebanon City officials,

I am writing to express my strong support of plans to invest in Lebanon Airport as required to maintain modern safety standards, including maintenance of runways and rights of ways. I am both a neighbor of the airport and resident and business person in Lebanon, residing at 10 Deer Run Lane near the south end of the runway. I do not find air traffic noise to be a nuisance, rather, a vital sign of a strong regional economy. As a Lebanon taxpayer and Democrat I am dismayed at public officials and private landowner interests in Lebanon who have chosen to put their own small interests ahead of the greater Lebanon and regional community, by blocking adequate maintenance and investment in the Airport. This "Not In My Backyard" mentality, represents the WORST aspects of personal interest ahead of the common good. The airport is my backyard, and I strongly support maintenance, upgrades, investment, and expansion of this important community resource as it is essential for greater economic vitality of the region. I personally use the airport for business travel, and the Upper Valley business, college, and medical communities rely on the airport for ease of access . I believe that Lebanon should make the most of federal co-funding opportunities to ensure that the airport continues to be a vital part of our community for decades to come.

Thank you for your attention to these comments.

Aaron Buck
10 Deer Run Lane
Lebanon, NH 03766
603.727.9388

Deanna K. Stoddard

From: Otis Wood [owood@povertylaneorchards.com]
Sent: Tuesday, January 19, 2016 12:34 PM
To: Deanna K. Stoddard; rick.dyment@lebcity.com; Paula.Maville@lebcity.com
Subject: Airport Public Input Comments

Hello,

Below are several comments in response to the January 5th Public Input Session. Thank you for your attention.

-It appears to be viewed as a great success that we've moved away from demolishing the hill at the end of runway 36 to allow for runway and RSA expansion. This is not enough for nearby residents, for whom conservation is a priority and the hill removal seemed ludicrous from the outset. The clear-cutting of the 30 acres between runway 7-25 and poverty lane was a terrible concession and loss for many airport neighbors. Now the favored Runway Alternative 5 calls for further tree-clearing at the end of runway 36, which was not even mentioned in the public input session on January 5. This or any other further environmental destruction will be met with absolute outrage. The airport is not an economic drain and constant point of contention for having too many trees around it. Stop cutting them down and many residents will be appeased.

It is also concerning that the "environmental impact" evaluation criterion is an umbrella term for both social and conservation considerations. So noise, traffic, light pollution and other quality of life impacts qualify as "environmental." Thus, most of the objections to intrusive airport development raised by lebanon residents are encapsulated in only one of the five evaluation criteria. This does little to abate the general feeling amongst residents that our voices are of little consequence to officials compared to ever-changing federal demands and the economic goals of a facility from which we benefit very little.

-I urge the city to stop blindly following FAA regulations. Many concerned residents have been insisting for years that there has been insufficient dialogue with the FAA, that the city has been taking FAA statutes as gospel. This airport's geography can barely comply with regulations now, and it is unlikely that these will be the last round of standards imposed. Due to a short-sighted agreement with the FAA by our predecessors, there is no end in sight to our required compliance with their demands. We feel bullied by the federal government. We do not want to forever comply utterly to nationwide regulations at the expense of resident quality of life. This does not feel like democracy. The FAA has shown that it is willing to compromise by allowing for Runway Alternative 5, despite its non-standard EMAS. We hope that representatives of the City of Lebanon can, with the help of some good old-fashioned bravery, open a dialogue with the FAA that better serves those that live here.

Sincerely,

Otis Wood

Deanna K. Stoddard

From: Deanna K. Stoddard
Sent: Tuesday, January 19, 2016 3:16 PM
To: 'Louisa Spencer'; rick.dyment@lebcity.com; paula.maville@lebcity.com
Subject: RE: OOPS: COMPLETE Airport Master Plan Comment

No problem, Louisa.

Thanks!

From: Louisa Spencer [mailto:lspencer@farnumhillciders.com]
Sent: Tuesday, January 19, 2016 2:56 PM
To: Deanna K. Stoddard; rick.dyment@lebcity.com; paula.maville@lebcity.com
Subject: OOPS: COMPLETE Airport Master Plan Comment

Hello again: my previous email was sent by mistake! Here's one with complete sentences.

In "Alternative 6," the draft Comprehensive Master Plan for Lebanon Airport has clearly arrived at much lower cost estimates and much less destructive recommendations than the original ones. But Alternative 6 is still painfully wrong for our town in our time. Alternative 1, "no-build," is the most future-oriented, pragmatic choice for true long-term sustainability. There are many arguments for this, but two areas stand out.

1) Regressive use of resources: Virtually all the recommended building/rebuilding is planned for private jet traffic at the airport. Per passenger mile, a trip in a private jet produces about 10 times as much CO2 as the same trip by commercial airliner. (Not counting trips with no passengers at all.) Meanwhile LEB already meets or exceeds the standards that accommodate not just Cape Air's airplanes, but also smaller private jets. (Larger jets that technically require the proposed changes are landing here anyway - they do not seem to see LEB as the FAA does.)
So Alternative 6 pushes us backward, toward moving drastically fewer people at drastically greater cost in resources, the environment, and quality of life to everyone else. The draft planning document makes it crystal clear that no larger commercial planes, similar in size to the larger private jets that now use the airport, can make money in LEB. The most responsible choice is to accept reclassification to B-II and stop planning for C-II aircraft.

2) **Over-optimism about future profits:** Alternative 6 suggestions for profiting from development on the ground also ignore the lessons Lebanon has already learned: the City's speculative building at the airport has been a repeated loser. Private aviation is susceptible to economic fluctuations. Lebanon should not bet on it. The most responsible choice for Lebanon is to explore ways of closing the airport's relatively small budget gap with non-aviation activities like solar power generation or other 21st century choices.

Right now, the City should seriously assess how to "optimize" our air service for real. We need a hard-headed analysis of what "reduction to B-II" might do to the airport's deficit in future. We should explore how we might realistically reduce that deficit over time with activities that move Lebanon into the future. Then we can make genuinely responsible judgments.

There are many more unsound assumptions underlying Alternative 6, but enough for now.
The report was very thorough, well-organized and good looking, but its logic was confined to a very small box.

Best, Louisa Spencer

On Tue, Jan 19, 2016 at 2:20 PM, Louisa Spencer <lspencer@farnumhillciders.com> wrote:
COMMENT on LATES

The draft Comprehensive Master Plan for Lebanon Airport has clearly arrived at much lower cost estimates and a much less destructive suggestion in "Alternative 6"(A6). But Alternative 6" is still painfully wrong for our town in our time. "Alternative 1," no-build, is the most future-oriented, pragmatic choice for true sustainability. There are many arguments for this, but two stand out.

1) Virtually all the recommended building/rebuilding is planned for private jet traffic at the airport. Per passenger mile, a one-way trip in a private jet produces 10 times as much CO2 as a commercial airliner. (Not counting trips with no passengers at all.) Meanwhile LEB already meets the standards that accommodate not just Cape Air's present service, but also smaller private jets. (Larger jets that technically require the proposed changes are landing here anyway - they do not seem to see LEB as the FAA does.) So Alternative 6 pushes us back in time, toward moving drastically fewer people -- at drastically greater cost in resources, the environment, and quality of life to everyone else. The draft planning document makes it crystal clear that no larger commercial planes, comparable in size to the larger private jets that now use the airport, can ever make money in LEB. The most responsible choice is to accept reclassification as

2) Recommendations aimed at profiting from development on the ground, also ignores the lessons Lebanon has already learned: speculative building at the airport has been a repeated loser. Private aviation is susceptible to economic fluctuations. Lebanon should not bet on it. The most responsible choice for Lebanon is to explore ways of closing the airport's relatively small budget gap with non-aviation activities like solar power generation or other 21st century choices.

I hope to get a more wide-ranging analysis

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Comment Sheet

Your input and participation in this process is very important. Please use the space below to provide comments on any aspect of the Comprehensive Airport Master Plan. When finished, please place your sheet in the comment box located near the entrance. If you need more time, you may write your comments at home and return them to the address below. All comments must be postmarked or emailed by January 19, 2016. Thank you for your participation.

McFarland Johnson
LEB Comprehensive Airport Master Plan
49 Court Street, Metrocenter, PO Box 1980
Binghamton, NY 13902-1980

After listening to the [redacted] presentation, I feel that the consultants did an excellent job in creating a proposal that balances the interests of the business and residential community along with the environmental and economic factors... Nicely done! I support their proposed plans.

Bobbi Gross
W. Lebanon

Appendix K

Construction Description	Cost
Rwy 36 Relocation	$3,332,900.00
Construct RWY 36 EMAS	$7,190,339.06
Rehabilitate Runway 18-36	$3,159,409.38
Construct Taxiway A Extension	$4,409,230.81
Rehabilitate Existing Taxiway A	$1,448,452.15
Rehabilitate Runway 7-25	$1,866,866.88
Construct RWY 7 EMAS	$6,017,446.88
Re-Construct Airpark Road	$758,281.25
Re-Construct Parking Lot	$1,191,724.56
16,800 SF Conventional Hangar	$2,415,000.00
45,000 SF Conventional Hangar	$6,468,750.00
SRE Building Expansion	$697,290.24
ARFF building Expansion	$122,187.50
TOTAL	**$39,077,878.70**
Re-construct Taxiway B (west os 18-36)	$1,866,866.88
WITH TAXIWAY B RE-CONSTRUCTION	$40,944,745.57

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Alternatives #5 & #6

RW Relocation (600' on RW 36 End) & Threshold Displacement (300' on RW 18 End)
Improvement assumptions include:

Pavement Section - Pavement & Gravels
Area = 100'± x 600'± = 60,000 SF
Pavement Markings USE: Lump Sum = $200,000
ADD & Relocate RW Lights USE: Lump Sum = $750,000
Relocate NAVAID USE: Lump Sum = $500,000

No Major Drainage Improvements (in Misc Work)
No Major Lighting Improvements (in Misc Work)

Work Item	Qty.	Unit	Unit Price	Item Cost
Pavement Section	60,000	SF	$13.00	$780,000.00
Pavement Markings	1	LS	$200,000.00	$200,000.00
Relocate & ADD RW Lights	600	LF	$1,300.00	$780,000.00
Relocate NAVAID - RW 18 Loc	1	LS	$500,000.00	$500,000.00
Wetland Mitigation	1	Acres	$168,300.00	$84,150.00
Subtotal				$2,344,150.00
Misc. Work/Contingency	25%	%	$2,260,000.00	$565,000.00
Engineering/Permitting	15%	%	$2,825,000.00	$423,750.00
			Total	$3,332,900.00

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

RWY 36 EMAS
Improvement assumptions include:

EMAS Base & Runup - Pavement & Gravels
Area = 165'± x 255'± = 42,075 SF
EMAS Mat'ls & Install
Area = 135'± x 300'± = 40,500 SF

No Major Roadway Drainage Improvements (in Misc Work)
No NAVAID Work on this End

Work Item	Qty.	Unit	Unit Price	Item Cost
Pavement Section - EMAS Base	42,075	SF	$13.00	$546,975.00
EMAS	40,500	SF	$110.00	$4,455,000.00
Subtotal				$5,001,975.00
Misc. Work/Contingency	25%	%	$5,001,975.00	$1,250,493.75
Engineering/Permitting	15%	%	$6,252,468.75	$937,870.31
			Total	$7,190,339.06

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Mill and Repave Runway 18-36
Improvement assumptions include:

Pavement Section - Pavement
Area = 100'± x 5130'± = 513,000 SF (57,000 SY)
New Pavement Markings - USE Lump Sum: $200,000

No Major Drainage Improvements (in Misc Work)
No Major Lighting Improvements (in Misc Work)

Work Item	Qty.	Unit	Unit Price	Item Cost
Pave Runway 4" depth	513,000	SF	$ 3.20	$1,641,600.00
Mill Runway	57,000	SY	$ 6.25	$356,250.00
Pavement Markings	1	LS	$ 200,000.00	$ 200,000.00
Subtotal				$2,197,850.00
Misc. Work/Contingency	25%	%	$2,197,850.00	$549,462.50
Engineering/Permitting	15%	%	$2,747,312.50	$412,096.88
			Total	$3,159,409.38

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Construct Parallel Taxiway A
Improvement assumptions include:

Pavement Section - Pavement & Subbase
Area = 50'± x 3255'± = 162,750 SF (18,100 SY)
Stub area = 65'± x 220'± = 14,300 SF
Extend Taxiway A = 26,530 SF (From Cad)
Pavement Markings USE: Lump Sum = $10,000 3,255 LF @ $2.50/LF
New Taxiway Lights # of lights = 32.55 Both sides 3,255 LF/200 spacing
New Conduit/Wireing 3,255 LF @ 17.00/LF

No Major Drainage Improvements (in Misc Work)

Work Item	Qty.	Unit		Unit Price		Item Cost
Pavement Section	162,750	SF	$	13.00		$2,115,750.00
Taxiway Stub	14,300	SF	$	13.00		$185,900.00
Extend Taxiway A	26,530	SF	$	13.00		$344,890.00
New Taxiway Lights	40	EA	$	3,000.00		$120,000.00
New Conduit/Wireing	6,510	LF	$	17.00		$110,670.00
Pavement Markings	1	LS	$	10,000.00	$	10,000.00
Wetland Mitigation	1	Acre	$	168,300.00		$180,081.00
Subtotal						$3,067,291.00
Misc. Work/Contingency	25%	%		$3,067,291.00		$766,822.75
Engineering/Permitting	15%	%		$3,834,113.75		$575,117.06
			Total			$4,409,230.81

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Mill and Repave Taxiway A

Improvement assumptions include:

Pavement Section - Pavement

Area = 50'± x 1870'± = 93,500 SF (10,340 SY)

2 Taxiway Stubs = 65'± x 220'± = 28,600 SF (3,180 SY)

Pavement Markings USE: Lump Sum = $6,000 2310 LF @ $2.50/LF

High Speed Taxiway Exit = 46,310 SF (Cad Measured)

No Major Drainage Improvements (in Misc Work)

No Major Lighting Improvements (in Misc Work)

Work Item	Qty.	Unit		Unit Price		Item Cost
Pave Taxiway 4" depth	93,500	SF	$	3.20		$299,200.00
Mill Taxiway	13,520	SY	$	6.25		$84,500.00
Remove 2 Taxiway stubs	1,059	CY	$	15.00		$15,888.89
High Speed Taxiway Exit	46,310	SF	$	13.00		$602,030.00
Pavement Markings	1	LS	$	6,000.00	$	6,000.00
Subtotal						$1,007,618.89
Misc. Work/Contingency	25%	%		$1,007,618.89		$251,904.72
Engineering/Permitting	15%	%		$1,259,523.61		$188,928.54
			Total			$1,448,452.15

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Rehabilitate Runway 7-25

Improvement assumptions include:

Due to the RW Threshold Displacement:

New Pavement Markings - USE Lump Sum: $200,000

New REIL - USE Lump Sum: $50,000

New PAPI - USE Lump Sum: $100,000

New RW Lights (Re-use Conduit & New Edge, End, Cable) - USE Lump Sum: $320,000

Pavement Section - Pavement

Area = 100'± x 5345'± = 534,500 SF (59,390 SY)

No Major Drainage Improvements (in Misc Work)

Work Item	Qty.	Unit	Unit Price	Item Cost
RW Pavement Markings	1	LS	$200,000.00	$200,000.00
Install New REIL	1	LS	$50,000.00	$50,000.00
Install New PAPI	1	LS	$100,000.00	$100,000.00
RW Light	1	LS	$320,000.00	$320,000.00
Mill Runway	59,390	SY	$6.25	$371,187.50
Pave Runway 4" depth	534,500	SF	$3.20	$1,710,400.00
Subtotal				$2,751,587.50
Misc. Work/Contingency	25%	%	$2,751,587.50	$687,896.88
Engineering/Permitting	15%	%	$3,439,484.38	$515,922.66
			Total	$3,955,407.03

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

RWY 7 EMAS
Improvement assumptions include:

EMAS Base & Runup - Pavement & Gravels
Area = 165'± x 255'± + 35'± x 165± = 47,850 SF
EMAS Mat'ls & Install
Area = 135'± x 240'± = 32,400 SF

No Major Roadway Drainage Improvements (in Misc Work)
No NAVAID Work on this End

Work Item	Qty.	Unit	Unit Price	Item Cost
Pavement Section - EMAS Base	47,850	SF	$13.00	$622,050.00
EMAS	32,400	SF	$110.00	$3,564,000.00
Subtotal				$4,186,050.00
Misc. Work/Contingency	25%	%	$4,186,050.00	$1,046,512.50
Engineering/Permitting	15%	%	$5,232,562.50	$784,884.38
			Total	$6,017,446.88

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Re-Construct Parallel Taxiway B (only west of Rwy 18-36)
Improvement assumptions include:

Pavement Section - Pavement & Subbase
Area = 50'± x 1535'± = 76,750 SF (8,527 SY)
2 Stub areas = 50'± x 225'± = 22,500 SF (2,500 SY)
Remove 2 Taxiway Stubs = 50'± x 225'± = 22,500 SF

Pavement Markings	USE: Lump Sum = $5,000		1535 LF @ $2.50/LF
New Taxiway Lights	# of lights =	15.35 Both sides	1535 LF/200 spacing
New Conduit/Wireing			1,535 LF @ 17.00/LF

No Major Drainage Improvements (in Misc Work)

Work Item	Qty.	Unit		Unit Price		Item Cost
Pavement Section	76,750	SF	$	13.00		$997,750.00
Taxiway Stub	11,250	SF	$	13.00		$146,250.00
Remove 2 Taxiway Stubs	2,500	CY	$	15.00		$37,500.00
New Taxiway Lights	20	EA	$	3,000.00		$60,000.00
New Conduit/Wireing	3,070	LF	$	17.00		$52,190.00
Pavement Markings	1	LS	$	5,000.00	$	5,000.00
Subtotal						$1,298,690.00
Misc. Work/Contingency	25%	%		$1,298,690.00		$324,672.50
Engineering/Permitting	15%	%		$1,623,362.50		$243,504.38
			Total			$1,866,866.88

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Re-Construct Airpark Road
Improvement assumptions include:

Pavement Section - Pavement & Subbase
Area = 40'± x 1000'± = 40,000 SF (4,450 SY)
Pavement Markings USE: Lump Sum = $7,500 3000 LF @ $2.50/LF

No Major Drainage Improvements (in Misc Work)

Work Item	Qty.	Unit		Unit Price		Item Cost
Pavement Section	40,000	SF	$	13.00		$520,000.00
Pavement Markings	1	LS	$	7,500.00	$	7,500.00
Subtotal						$527,500.00
Misc. Work/Contingency	25%	%		$527,500.00		$131,875.00
Engineering/Permitting	15%	%		$659,375.00		$98,906.25
			Total			$758,281.25

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Re-Construct Parking Lot
Improvement assumptions include:

Pavement Section - Pavement & Subbase
Area = 107,140 SF (11,905 SY) AREA FROM CAD
Pavement Markings USE: Lump Sum = $10,000 10 rows @ 260 LF = 2,600 LF
18 rows @ 320 LF = 5,760 LF

No Major Drainage Improvements (in Misc Work)

Work Item	Qty.	Unit	Unit Price	Item Cost
Pavement Section	107,140	SF	$ 7.64	$819,025.78
Pavement Markings	1	LS	$ 10,000.00	$ 10,000.00
Subtotal				$829,025.78
Misc. Work/Contingency	25%	%	$829,025.78	$207,256.44
Engineering/Permitting	15%	%	$1,036,282.22	$155,442.33
			Total	$1,191,724.56

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Construct 16,800 SF Conventional Hangar
Improvement assumptions include:

Hangar

Area = 16,800 SF — Use $100 SF (estimate from Schuylkill Airport was $69/SF)

Work Item	Qty.	Unit		Unit Price	Item Cost
Hangar	16,800	SF	$	100.00	$1,680,000.00
Subtotal					$1,680,000.00
Misc. Work/Contingency	25%	%		$1,680,000.00	$420,000.00
Engineering/Permitting	15%	%		$2,100,000.00	$315,000.00
			Total		$2,415,000.00

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

Construct 45,000 SF Conventional Hangar
Improvement assumptions include:

Hangar

Area = 45,000 SF — Use $100 SF (estimate from Schuylkill Airport was $69/SF)

Work Item	Qty.	Unit		Unit Price	Item Cost
Hangar	45,000	SF	$	100.00	$4,500,000.00
Subtotal					$4,500,000.00
Misc. Work/Contingency	25%	%		$4,500,000.00	$1,125,000.00
Engineering/Permitting	15%	%		$5,625,000.00	$843,750.00
			Total		$6,468,750.00

LEB - Lebanon Municipal Airport - Comprehensive Master Plan
Alternative Opinions of Probable Costs

ARFF Building Expansion
Improvement assumptions include:

Hangar

Area = 850 SF — Use $100 SF (estimate from Schuylkill Airport was $69/SF)

Work Item	Qty.	Unit		Unit Price	Item Cost
Hangar	850	SF	$	100.00	$85,000.00
Subtotal					$85,000.00
Misc. Work/Contingency	25%	%		$85,000.00	$21,250.00
Engineering/Permitting	15%	%		$106,250.00	$15,937.50
			Total		$122,187.50