



Section 6 — Alternatives Development and Evaluation

6.1 Introduction

The master plan process is one of evaluating existing conditions (Section 3), developing a forecast of anticipated operational activity (Section 4), and identifying the facilities needed to accommodate future demand (Section 5). After the facility requirements have been identified, a series of alternative solutions to satisfy them must be identified and evaluated.

This section includes the evaluation of alternative scenarios for proposed development at Lehigh Valley International Airport. Alternatives were developed specifically for each Airport opportunity area including airfield, terminal, potential roadways/ground access facilities, cargo, general aviation facilities, and support facilities. The alternatives were evaluated and ranked based on criteria to choose preferred alternatives for each area. The preferred concepts were then combined for a preferred airport-wide development concept that was reviewed, evaluated for conflicts, and serves as the preferred alternative development plan for the Airport.

Throughout the alternatives development process, the strategic goals of the LNAA and the ultimate preferred development concept, phasing considerations related to timing, and affordability, will be considered. The result is a list of the individual projects within timeframes for implementation. These are presented in the following timeframes:

- 0 to 5 years, or 2018 to 2023
- 6 to 10 years, or 2024 to 2028
- 11 to 22 years, or 2029 to 2040
- 23 years and beyond, or 2041+

6.2 Process for Evaluation of Alternatives

The alternative development concepts for each opportunity area will undergo a comparative analysis process consisting of various factors. The factors considered for alternative development are grouped in four basic categories:

Economic and Strategic Factors

- **Compatibility with LNAA Strategic Goals:** In 2017, the LNAA identified five (5) strategic goals to achieve its vision and fulfill their mission:
 - Develop air cargo facilities to increase LVIA's role as part of a logistics hub in the Lehigh Valley;
 - Generate additional non-aeronautical revenue on airport property suitable for lease or sale to ensure land is put to its highest and best use to generate new revenue sources;
 - Develop business and general aviation facilities and services to rejuvenate the full range of aviation services and attract corporate customers to serve local businesses to meet their air travel needs;
 - Provide for the timely and cost-effective delivery of capital improvements; and



- Demonstrate industry leadership in managing the airport system, as a leader by innovation, seeking new ways to satisfy travelers, partners, and communities.

Operational and Maintenance Factors

- **Facility Requirements and Design Standards:** This determines the ability of the alternative to satisfy identified demand and meet FAA design standards.
- **Development and Maintenance:** This considers development costs, general operations and maintenance costs, potential to leverage other resources, assesses ability to maximize financial return, and considers immediacy of benefit.
- **Implementation Feasibility:** This evaluates challenges for implementation by including an analysis of best planning practices such as whether each alternative:
 - Conforms to best practices for safety and security
 - Provides for the highest and best use of on- and off-airport property
 - Allows for forecasted growth throughout the planning period
 - Provides flexibility to adjust for unforeseen changes
 - Is technically feasible

Natural Resources and Sustainability Factors

- **Environmental Impacts or Challenges:** Assesses if the environment will be impacted by proposed development. Includes changes to impervious surfaces that affect stormwater runoff; potential effects on fish, wildlife, and plants/changes to habitats; changes in energy consumption; and changes in GHG emissions.
- **Sustainability:** Assesses how the alternatives contribute to sustainability and long-term planning. This considers the use or re-use of existing buildings and facilities, surface transportation management, and material use.

Social and Community Factors

- **Off-airport considerations:** Assesses the overall potential to impact airport noise levels, land use considerations, local roadway network, the Airport as a regional transportation asset, etc.
- **Passenger/User Experience:** Provides for improved passenger experience through efficiency, options, and contributes to an overall positive experience.





The alternatives developed considered the above factors along with criteria specific to their opportunity area. Regardless of opportunity area, they were evaluated based on either a qualitative or quantitative assessment, where applicable, to highlight the benefits/pros and challenges/cons of each opportunity.

Some alternatives do not fit the evaluation structure. For example, a taxiway is required to be located per FAA standards providing only one alternative to consider, or a specific alternative was fully vetted in a previous planning effort and that analysis is still relevant. In these cases, the primary factor to consider is the timing and phasing of the project. When multiple alternatives were considered, the rating system used a scale of zero to three, with a score of zero indicating “no standards met and/or all impacts negative” and a score



of three indicating “all standards met and/or all impacts positive.” This simplified, non-weighted score was then correlated with a circle symbol to easily visually convey an overall assessment of each alternative, see Table 6.2.1.

Table 6.2.1: Alternative Evaluation Scoring and Rating Standards

Rating	Evaluation of Impact	Score
	0	No standards met and/or all impacts negative
	1	Few standards met and/or Most impacts negative
	2	Most standards met and/or Most impacts positive
	3	All standards met and/or all impacts positive

Source: C&S Engineers, Inc.

6.3 Alternative Development Opportunities by Area

Individual alternatives for each opportunity area were developed based on advisory input from meetings with LNAA and project stakeholders. A summary of these meetings is below:

- Project Advisory Group (PAG) meeting on August 15, 2017 consisting of community members and LNAA staff.
- A preliminary alternatives development discussion with LNAA staff on August 16, 2017.
- Follow on discussions of preliminary alternatives were also held with LNAA staff in September, October and November 2017.
- A Project Advisory Group meeting (#4) was held in December 2017 to review alternatives.

The ideas and input suggested during these meetings have been incorporated into the development alternatives discussion.

Utility Assessment Considerations

In consideration of utility capacities in the areas of the airport where alternatives are proposed, the following summarizes utilities as they relate to the general areas of the Airport for development. This information will be used as input for the evaluation of alternatives and serves to inform the implementation of the preferred alternative program. Utility considerations that are impacted by specific development projects are noted within the discussion regarding each opportunity area, as necessary.