

## Evaluating Terminal Renewal and Replacement Options

As needs change and deterioration occurs, many airport terminals may no longer function as originally intended. Several factors can support the need for redevelopment of a terminal facility.

For example, building age and physical condition can prompt the need for terminal renovation. New regulations may direct airports to reorganize terminals to maximize the utilization of all available space. Terminals also are commonly refurbished to improve functionality and the travelers' experience. With changes in airport security, some terminal floor plans are

unable to make accommodations for additional terminal operations such as security screening checkpoints. Furthermore, some airports may choose to plan terminal redevelopment to improve overall aesthetic appeal.

As time progresses, a combination of these motivating factors can result in terminals that, although structurally sound, are ultimately outdated. Terminals may go through a series of renewals that upgrade structural or aesthetic components, mechanical processes, and informational technology systems. Such improvements can be costly, require extra airport space to accommodate construction, and can disrupt airport operations. Therefore, many factors need to be assessed and thoroughly evaluated before determining whether to replace or simply renew an airport terminal.

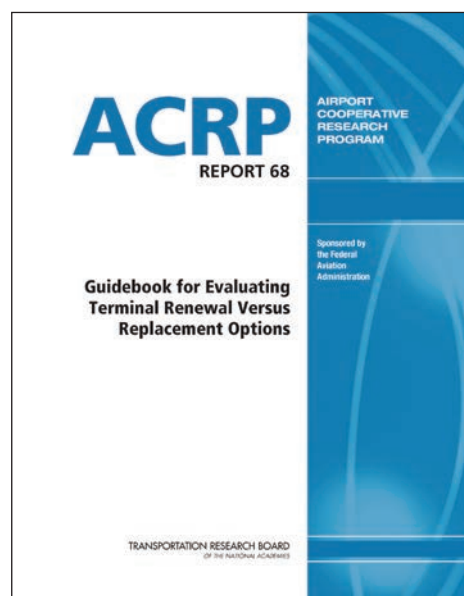
*ACRP Report 68: Guidebook for Evaluating Terminal Renewal Versus Replacement Options* (2012) is a resource to assist airports in evaluating the costs and benefits associated with renewing or replacing a terminal. The guidebook outlines an objective, four-step process to help identify and assess available options to facilitate informed decision making.

Airport personnel from the Port Authority of New York and New Jersey (PANYNJ) utilized *ACRP Report 68* for the redevelopment planning of Terminal A at Newark Liberty International Airport (EWR). Planning for the redevelopment of this terminal, which had been conducted at various times over a 10-year period, was resumed in June 2012. The airport team was tasked with comparing the costs and benefits associated with renewal or replacement of Terminal A. The terminal, which was constructed more than four decades ago, was in need of a complete update of mechanical, electrical, and information systems. The airport could choose to either renovate the existing facility or completely relocate the terminal to a new location.

The four-step evaluation process recommended by *ACRP Report 68* includes:

- Step 1: Determine Need for Terminal Redevelopment
- Step 2: Refine Terminal Redevelopment Objectives and Generate Options
- Step 3: Evaluate Options
- Step 4: Document Results of the Analyses

In accordance with Step 1 goals, the PANYNJ team first determined the need for a terminal redevelopment program, which would extend the facility's life one to three decades. As outlined in the guidebook, the team identified the gap between current facility operations and facility requirements identified in the program definition report (PDR). The team reviewed available funding and developed a plan to successfully meet future expectations. Facility improvement requirements also were identified to



Right:  
Rendering of proposed  
future Terminal A  
at Newark Liberty  
International Airport.

Photo courtesy of  
EWR.



**Evaluating Terminal Renewal**—continued

Since 2006, an industry-driven, applied research program that develops near-term, practical solutions to problems faced by airport operators.

assure that high-quality service was maintained and operating expenses were controlled. PANYNJ also identified immediate terminal needs to be addressed, including the determination that the current terminal structure was inflexible for check-in processing, passenger security screening, TSA baggage screening, hold rooms, and concessions.

Following the goals of Step 2, the team next refined the terminal redevelopment objectives and generated concept options for terminal planning and development. According to PANYNJ, the main priority for the Terminal A redevelopment team was to obtain a new perspective on the project. As outlined in the guidebook, the team developed multiple terminal configurations for both the renewal and replacement of the terminal. As advised in *ACRP Report 68*, the team utilized brainstorming sessions in the form of workshops with stakeholders to review and refine these options.

When options are evaluated in Step 3, the guidebook urges practitioners to make decisions based on business-driven considerations rather than solely on costs by assessing both qualitative and quantitative factors for each option. With regard to qualitative factors, the PANYNJ team established the amount that each option helped accomplish airport facility goals and sustainability initiatives.

The team also developed a comparative matrix, similar to Table 9-2 in *ACRP Report 68*, to assess the performance of each option. Information in the matrix included level of service, impact on airport operations during construction, and primary space functions. To assess quantitative factors, cost estimates for all three options were evaluated, along with preliminary construction schedules.

PANYNJ documented the results of the analysis, as recommended by Step 4, commonly referred to as the “Terminal Redevelopment Plan.” The team documented all workshops and developed summary reports of each workshop, which were delivered to key stakeholders. The team also prepared a cumulative summary presentation to all workshop members on the preferred replacement option for the terminal, which included developmental updates and costs for the replacement project slated to begin in 2018. The replacement Terminal A will be located adjacent to the existing terminal and construction will be staged to allow for a partial opening of 19 gates in the new terminal building. The current Terminal A tenant airlines will be relocated prior to the demolition of the existing facility.

Terminal facilities are essential in the operation and management of all airports. However, as airport terminals near the

**“The process is repeatable and scalable to airports of different sizes. The Guidebook is intended to assist its users in identifying the need for terminal redevelopment and selecting among competing options for renewing versus replacing existing terminal facilities.”**

*ACRP Report 68:  
Guidebook for Evaluating Terminal Renewal  
Versus Replacement Options*

end of their design lives, several factors must first be assessed when deciding whether to replace or renew an existing terminal. *ACRP Report 68*, which was successfully used by PANYNJ at the Newark Liberty International Airport, provides a clear, objective four-step process to assist airports in identifying the need for redevelopment and assessing the advantages and disadvantages of each option. Catherine Cronin, senior program manager at Newark Liberty International Airport for PANYNJ, remarked that *ACRP Report 68* “provided a beneficial roadmap to our program investigations and helped us reach sound conclusions allowing us to move forward with our program.”

Left:  
Rendering of proposed future Terminal A at  
Newark Liberty International Airport.

Photo courtesy of EWR.



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