

**T.F. GREEN AIRPORT
MASTER PLAN UPDATE**

FORECASTING

Draft

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Forecasting

The Need for Forecasting

Aviation traffic forecasts serve as the foundation for airport master plans and provide a basis for long-term facilities planning. Forecasting is the prediction of future events or conditions based upon statistical analysis and an in-depth knowledge of existing industry and regional socioeconomic trends. Forecasting theories, therefore, have an underlying premise: that knowledge of the reasons why passengers use a specific airport today can be a predictor of future travel preferences, and an indicator of future demand at that airport.

Forecasts of annual passenger volumes and aircraft operations (i.e. landings and takeoffs) are essential when planning the timely provision of facilities to accommodate demand. Passengers create a demand for facilities ranging from parking lots and ground access roads to ticket counter space, restrooms, and comfortable waiting rooms. Growth in aircraft operations places demands on airfield, terminal, and landside facilities such as fuel capacity, apron parking, and adequate runways and taxiways.

In order to determine the ultimate sizing of facilities and timing of how to most efficiently use airport land, airport facility planners need a reference point from which to begin their analyses. Forecasts of passenger boardings (enplanements) and aircraft operations provide that reference point. With many of the prior Master Plan's capital project recommendations already having been implemented, T.F. Green's rapid growth has placed increasing strains on existing infrastructure. Thus, the Rhode Island Airport Corporation (RIAC) has commissioned a master plan to consider future options for airport improvements to accommodate potential future demands.

The Federal Aviation Administration (FAA) is responsible for setting standards and guidelines for the preparation of airport master plans and forecasts. Several air traffic forecasts have been developed for specific purposes in the recent past. These include the 1998-2000 Part 150 Noise Study, 2000 Airport Revenue Bond Issue, FAA Terminal Area Forecast (TAF), and a 1995 Master Plan forecast, which was essentially completed before the full impact of Southwest Airlines and the resulting rapid growth was experienced. None of these forecasts were intended to stand alone as the basis for a new 20-year projection of facility planning. Even the most recent master plan could not anticipate the Southwest effect, nor foresee the long-term effect of the roadway project in Boston (the "Big Dig") on T.F. Green's passenger growth potential.

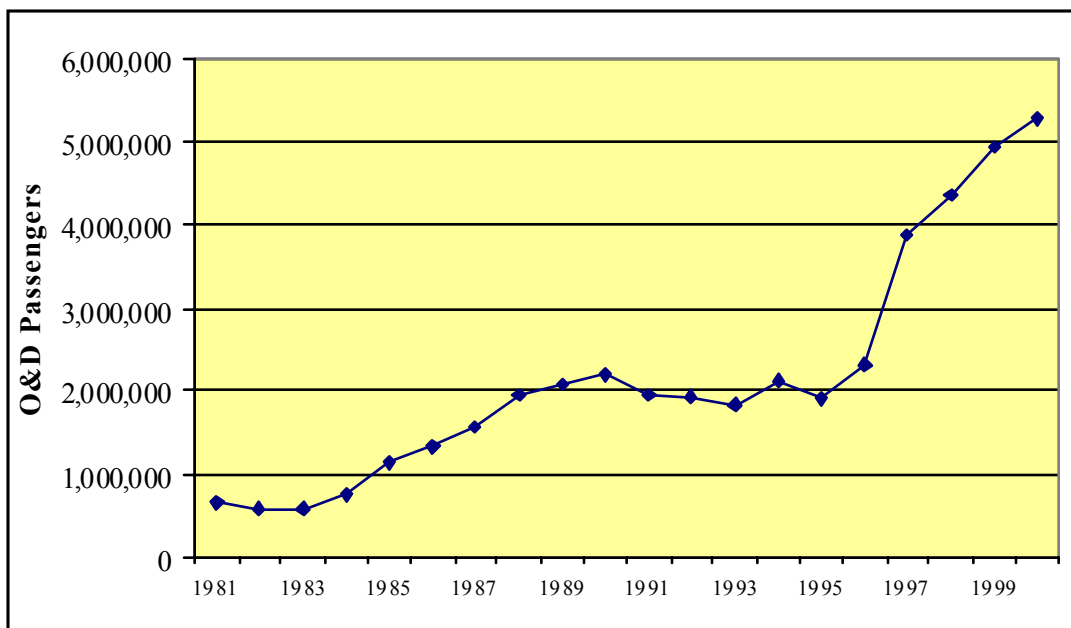
The Experience at T.F. Green

Most methods for forecasting traffic at an airport depend on the previous history of traffic at the airport or in the region. They assume that the historical record provides relevant information about the future such as:

- Traffic will continue to grow at a rate that has some relationship to historical growth.
- The relationship between historical traffic and non-aviation variables (e.g. gross domestic product) is stable and will continue in the future. Furthermore, the future values of these “outside” variables can be predicted with reasonable accuracy.

These assumptions provide the basis for a “traditional” forecasting approach. At T.F. Green, however, an approach based upon a strict historical projection of numbers simply does not offer the sole basis for predicting the future. As shown in the figure below, T.F. Green has experienced several distinct phases of growth. Between 1980 and 1983 traffic stagnated with negative growth. The years 1983 to 1990 saw rapid expansion of origin and destination (O&D) passenger traffic. Passenger totals grew at an average annual rate of over 21 percent during that time as the airport benefited from changes in the airline industry that started in 1978 with Federal deregulation of the airlines.

After 1990, traffic growth abruptly stopped as the economy entered into recession, and remained stagnant for another six years. Until 1996, the airport was a very limited facility, with a large share of the local market using other airports, such as Boston Logan International Airport (BOS). Limited facilities and minimal air service reduced T.F. Green to the status of a secondary gateway. In 1996, shortly following completion of Green’s new terminal building, Southwest Airlines chose T.F. Green as its first station in New England. Passenger traffic responded to the widely recognized “Southwest Effect”, and grew rapidly. Since then, the airport has become a low fare gateway to southern New England, and offers an attractive and congestion-free alternative to BOS for many travelers.



Source: EK and U.S. Department of Transportation.

Forecast Considerations

The forecasting effort must determine 1) For how long will the post-1996 period of extraordinary growth continue?; 2) At what level will the market reach maturity?; and 3) How rapidly will traffic grow after it reaches its post “Southwest Effect” stage of maturity? Also critical to the forecasting effort are questions about the effects of airline industry trends of mergers, such as: 1) Will a merger between United and US Airways result in a decrease in markets served from T.F. Green?; 2) Will such a merger result in increased fares at the airport?; and 3) Could a United/US Airways merger result in a decreased demand for airport facilities, or would new airlines fill any gap caused by a merger?

In addition, quantifying the Southwest Effect at Providence is a challenge. Moreover, the forecasting process is further complicated by the proximity of BOS and the types and frequencies of service offered by airlines out of BOS. As its population grows, the Rhode Island-Southern Massachusetts area appears to be increasingly functioning as a single urban entity. T.F. Green Airport plays a growing role as a reliever to the increasingly congested Boston Logan International Airport. As BOS approaches demand saturation, much of the urban area’s traffic will be accommodated through adjacent airports, including T.F. Green, Manchester, and possibly Portland, Maine and Worcester, Massachusetts. Even if the region’s traffic grows slowly, the overflow from BOS could generate relatively high growth rates at the regional airports. Improvements to regional rail connections at Warwick may help to accommodate this overflow from Logan at T.F. Green. This process could spur growth at T.F. Green even in the absence of additional low fare services.

The forecasting effort must address the following issues in order to determine what future demand for air services at T.F. Green Airport will be.

- How large an operation might Southwest eventually offer at T.F. Green? It is relatively easy to forecast the expansion of a traditional network carrier at a spoke city. They usually expand using a mix of larger aircraft and an increased frequency of flights into their hub airports. However, Southwest has no hubs, and is not limited by that constraint. To obtain the greatest productivity from its staff, it operates a larger scale of activity than a network carrier at a spoke airport.
- At T.F. Green, Southwest may eventually attain maturity, and traffic may then expand only at a nominal rate. The traffic forecasts will depend upon when this occurs and at what level of activity.
- Southwest’s rapid expansion can have many implications for T.F. Green. The airline will likely continue to grow at T.F. Green, at least for the immediate future. As it adds new destinations, it creates new opportunities for direct flights from T.F. Green. However, this also places T.F. Green in increasing competition for airline resources. Southwest must choose between further building up T.F. Green, or deploying aircraft to altogether new cities.

- As Southwest expands in New England, passengers obtain an expanding choice of airports. Southwest's services at Hartford and Manchester draw some passengers who might otherwise board at T.F. Green.
- The other major airlines at T.F. Green have matched Southwest's low fares and have expanded along with the low fare carrier.
- In 1998, US Airways launched its Metrojet product to compete with Southwest Airlines in selected markets, including Providence-Baltimore. The point to point competition by two low fare carriers has further boosted traffic at T.F. Green. However, the future of Metrojet may be closely linked to United Airlines' proposed acquisition of USAirways.

While predicting the future behavior of Southwest is key for T.F. Green, the forecasts must consider additional market issues such as:

- T.F. Green's expanding role as a gateway to southern New England, blurring the boundaries between Providence and the southern Boston metropolitan area.
- The relationship between T.F. Green and competing airports, particularly Boston, Hartford, and Manchester. This must specifically address the current and potential role of the airport as a reliever to BOS.
- Facility constraints at T.F. Green. Gate or apron constraints may limit the potential scale of activity, while runway length restrictions could bar the Airport from competing in certain markets or routes (e.g. nonstop transcontinental services)
- The overall prosperity of the U.S. economy. Air travel is particularly sensitive to economic fluctuations. However, services by low fare airlines may be affected differently from those of the traditional airlines.
- The conduct and financial health of the airline industry. America's airlines face important questions about earnings, labor contracts, infrastructure limits, fleet renewal and competitive practices. These factors could determine the degree of future price competition and could therefore have a decisive impact on traffic growth.

How RIAC Will Develop Forecasts

The 20-year forecasts for the T.F. Green Airport will highlight the important decisions facing the Providence-Warwick community. Through quantifying the future level of activity, and then identifying the link between traffic, facilities, required capital expenditures and the environmental impacts for adjacent areas, the forecasts will assist all stakeholders in making informed decisions about the future of the airport.

The forecasts will include projections for passenger traffic and aircraft operations. They will consider commercial flights, general aviation, corporate flying and military flying. The forecasts will also show the types of aircraft most likely to use T.F. Green in the future.

To develop the forecasts, RIAC will use a wide range of formal mathematical models and processes to identify the key economic and demographic factors shaping aviation in Rhode Island. They will be combined with information and insights about the unique circumstances facing T.F. Green. These include Rhode Island's population growth, state income levels, recent traffic growth at the airport, the relationship of Providence and Rhode Island to the Greater Boston Region, ground transportation improvements and the broader economic factors affecting Southern New England. Although the forecasts will build on techniques used widely and at countless airports worldwide, they will incorporate important issues affecting the local and New England levels.

The forecast will start by considering the past history of aviation activity at the airport, and will examine how traffic has responded to various factors. These include national economic growth and the growth of air traffic, both in New England and throughout the nation; the population and income of Rhode Island; changes in airport and ground transportation facilities; airport and ground congestion in Boston; and the decisions of different airlines on what communities they serve and the flights they offer.

The next step would consider how the different factors would change in the future. For example, in late 2000, the high technology industry suffered a slowdown, and many of its problems spread to the rest of the economy. Many companies reduced their corporate travel, and many families cut back on flying for pleasure. This has affected traffic at many airports. Part of the forecasting process will be to judge whether, or how quickly, the economy will rebound and how this might affect southern New England residents and visitors' desires to travel. The forecasts will consider the trends of the aviation industry; how airline mergers, regional jets, growth by low fare airlines such as Southwest, and other processes could change traffic, both nationally and at T.F. Green. Projections on the populations of Rhode Island and southern New England will contribute to the process. The forecasting exercise will also involve looking at regional transportation factors, such as the Acela high speed train service, the Warwick rail station, and the Big Dig.

Selecting the best forecast methodologies will help RIAC and the community plan its future efficiently. By developing a series of "what if" scenario forecasts that define and quantify the questions which the airport and the community at large are now facing, RIAC hopes that the forecasting effort will help define the future role of the airport, and provide a tool for the entire community to make important choices about its future.