

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Activity Forecasts – Technical Report

1. Introduction

The purpose of this analysis is to provide aviation activity forecasts for use in the Long-Term Comprehensive Plans (LTCPs) for Crystal Airport (MIC), Airlake Airport (LVN) and Lake Elmo Airport (21D). Forecasts are presented for an approximate 20-year time horizon, and include 2010, 2015, 2020, and 2025. The forecasts for the three airports are unconstrained, except runway length, and assume that the necessary facilities will be in place to accommodate demand except where noted.

The report first discusses the existing and projected socioeconomic conditions in the area, and current general aviation activity. This background information is used to prepare the assumptions that form the foundation of the subsequent forecasts. Based aircraft forecasts for the Metropolitan Airports Commission (MAC) airports are then presented and allocated among the individual airports. Operations and peak activity forecasts for Crystal, Airlake, and Lake Elmo are derived from the based aircraft forecasts. The report concludes with an extended runway scenario and a set of high and low activity scenarios for each airport.

The assumptions inherent in the following calculations are based on data provided by the MAC, federal and local sources, and professional experience. Forecasting, however, is not an exact science. Departures from forecast levels in the local and national economy and in the aviation industry would have a significant effect on the forecasts presented herein.

2. Socioeconomic Background

This section examines historical and projected income, employment, and population data for the catchment areas for the three airports. Projections of future income, employment and population levels are derived from projections prepared by both the Metropolitan Council's Regional Development Framework forecasts (Met Council) and Woods and Poole Economics (W&P).

2.1. Catchment Areas

Crystal Airport is located in Hennepin County, while Airlake is located in Dakota County and Lake Elmo is located in Washington County. In each instance most of the based aircraft owners reside in the same county as the airport they use. Nevertheless, there is some overlap between the airport catchment areas. Jet and turboprop aircraft owners that require longer runways and more extensive maintenance and fueling facilities tend to gravitate towards airports such as Holman Field in St. Paul (STP) and Flying Cloud Airport (FCM). Likewise, operators of small single engine piston aircraft often shy away from larger more commercial airports such as Minneapolis-St. Paul International (MSP) and STP because of congestion and costs, even though these airports may be closer to their place of residence. Based aircraft were projected from a system standpoint to take

these factors into account, and then allocated to the individual airports operated by the MAC including Crystal, Airlake, and Lake Elmo. Separate socioeconomic forecasts for each county in the metropolitan area are required for this methodology.

2.2. Socioeconomic Forecasts

As noted earlier, both the Met Council and W&P socioeconomic forecasts were examined for use in this study. Each source has its strengths and weaknesses.

The Met Council forecasts are prepared locally and reflect a detailed knowledge of the existing and projected growth trends within the Minneapolis-St. Paul metropolitan area. However, they were prepared using 2000 as a base year and do not incorporate the economic slowdown in the early part of this decade. Likewise, they do not include projections of income or projections of national activity. Income is important because an analysis of historical registered aircraft data by county indicated that registered aircraft were more closely correlated with income than with population or employment. Also, much of the analysis will be based on FAA projections of national general aviation activity. For this analysis to be valid, the local and national socioeconomic projections need to be based on a consistent set of assumptions.

The W&P forecasts are more recent than the Met Council forecasts. They also include personal income and prepare metropolitan and national forecasts using a common set of assumptions. However, the W&P forecasts do not incorporate a detailed knowledge of local growth trends and development constraints.

A hybrid income forecast that incorporates the strengths and minimizes the weaknesses of the two data sources was prepared for use in this study. Per capital income projections by W&P were applied to Met Council population forecasts to generate income forecasts for each county. These forecasts were then adjusted, on a prorated basis, to sum to the W&P income forecasts for the seven-county Met Council metropolitan area. A final adjustment was made to match all the forecasts to the most recent common base year – 2003 – for which personal income was available.

Table 1 shows the income forecast that resulted from the adjustments discussed above. As in most metropolitan areas, the outer counties such as Carver, Dakota, Scott, and Washington, are projected to grow more quickly than the inner counties such as Hennepin and Ramsey. Total real income in the seven-county metropolitan area is projected to grow at an average annual rate of 2.3 percent through 2025, slightly more rapidly than in the United States as a whole.

Appendix A provides more detailed historical and projected socioeconomic data, including population, employment, and per capita income as well as total personal income. The original Met Council and W& P forecasts are shown in the appendix, along the hybrid forecasts prepared for this study.

3. Historical Trends

The MAC is responsible for the operation of four airports in addition to those under study. These include Minneapolis-St. Paul International Airport (MSP), Holman Field (St. Paul Downtown), Flying Cloud Airport, and Anoka County Airport. Table 2 shows historical based aircraft recorded at each of the seven airports from 1980 through 2005.

Based aircraft at Crystal Airport have declined since the mid-1980s. Based aircraft at Lake Elmo declined abruptly in the mid-1980s, then gradually increased until 1999, at which point they began to gradually decrease again. Based aircraft at Airlake increased rapidly during the 1980s, and then more gradually during the 1990s. The number of based aircraft at Airlake began a gradual decline after 1998. Total based aircraft at the MAC airports gradually increased until 1999, after which they began a gradual decrease. Perhaps most notable is the sharp decrease in based aircraft at MSP and Holman Field, as commercial operations or larger business aircraft displaced a greater number of smaller general aviation aircraft.

The numbers in Table 2 are the best available but nevertheless should be viewed with caution. In some cases, notably MSP from 1985 through 1998, based aircraft data are missing. In other cases, the numbers remained unchanged over periods of several years indicating infrequent updates.

Historically, the number of aircraft based at MAC airports has accounted for between 0.8 and 0.9 percent of the U.S. active fleet (see Table B.2 in Appendix B). Since 1999, the share has been gradually declining. A small part of this decline is attributable to the decline in the share of U.S. income accounted for by the Minneapolis-St. Paul seven-county metropolitan area (see Table B.3 in Appendix B). The decline in share does not necessarily mean that the number of general aviation aircraft in the Twin Cities area is growing more slowly than in the United States. Some new aircraft could be based at non-MAC airports such as South St. Paul or Forest Lake, or at airports outside the seven county area. Additionally, some ultra light (Part 103) aircraft do not need to be based at an airport. In fact, ultra light aircraft are not permitted to operate at MAC airports and are therefore often stored elsewhere. An extrapolation of the recent trend in local aircraft share through the forecast period is also presented in Table B.3.

Table 3 shows the current distribution of aircraft based at MAC airports by type and county of registration. The more populous counties, such as Hennepin and Ramsey, have the highest number of registered aircraft. In addition, more sophisticated aircraft such as jets and turboprops tend to be concentrated in the inner counties where most major businesses are located, rather than in the outer counties.

Table 4 shows the distribution of general aviation aircraft by the county in which they are registered and the airport at which they are based.¹ Two airports located within the seven-county metropolitan area but not under MAC control – South St. Paul and Forest

¹ The totals differ slightly from those in Table 2, because the counts were tabulated at different times of the year.

Lake – are also included for comparison purposes. More than 80 percent of the based aircraft at Crystal Airport are registered in Hennepin County, with another 8 percent registered in Ramsey County. Almost 65 percent of the aircraft based at Airlake Airport are registered in Dakota County, along with 15 percent registered in Scott County and 10 percent registered in Hennepin County. About 59 percent of aircraft based at Lake Elmo Airport are registered in Washington County, and another 23 percent are registered in Ramsey County. As shown, geography is a major determinant but not the only determinant of where aircraft are based.

Table C.1 in Appendix C provides the information in Table 4 broken out by aircraft category.

4. Assumptions

This section describes the general forecast assumptions that were applied in this forecast. More detailed assumptions specific to a particular activity category are described in the sections pertaining to those categories. The major assumptions are described below.

4.1 Unconstrained Forecasts

The activity forecasts contained herein are physically and operationally unconstrained. For the purposes of this study, “physically unconstrained” means that there are sufficient airport airfield, hangar, apron, and landside facilities at Crystal, Airlake, and Lake Elmo to accommodate all aviation activity dictated by demand. In theory, unconstrained would also mean no runway length restrictions. The base case forecast, however, assumes no changes in the runway lengths at Crystal, Airlake, or Lake Elmo. The impact of changes in runway length on the activity forecasts is explored in some of the scenarios.

Except as noted, it is assumed that destination airports will be developed sufficiently to accommodate demand from the Twin Cities area.

4.2 Development at Other MAC Airports

The Flying Cloud and Anoka County Airports are assumed to be unconstrained and it is assumed that the main runway at Flying Cloud will be extended to 5,000 feet. General aviation facilities at MSP and Holman Field are expected to remain constrained and therefore no growth in based aircraft above current levels is assumed at these two airports.

4.3 Regulatory Assumptions

No regulatory restrictions affecting the types of aircraft operated at Crystal, Airlake, and Lake Elmo are assumed. There will be no nighttime restrictions on aircraft operations at these airports.

4.4 Catchment Area

It is assumed that ground transportation network will not change sufficiently over the forecast period to materially affect the ground travel time between the MAC airports and the locations of the airport users.

4.5 Economic Assumptions

The local and national economies are assumed to grow in accordance with the projections in Table 1. The forecasts assume no major economic downturn, such as occurred during the depression of the 1930s. The local and national economies will periodically increase and decrease the pace of growth in accordance with business cycles. However, it is assumed that, over the next twenty years, the high-growth and low-growth periods will offset each other so that the adjusted economic forecasts described in Section 2 will be realized.

4.6 Fuel Assumptions

In accordance with FAA forecasts, fuel costs are assumed to increase significantly (15 percent) in 2006, and then gradually decline between 1 and 2 percent per year until 2011, at which point they would resume a gradual increase of 1 to 2 percent per year thereafter. Also, no major increases in fuel taxes are assumed.

4.7 Environmental Factors

No major changes in the physical environment are assumed. It is assumed that global climate changes will not be sufficient enough to force restrictions on the burning of hydrocarbons or major fuel tax increases within the forecast period.

4.8 National Airspace System

It is assumed that the FAA will successfully implement any required changes and improvements for the national airspace system to accommodate the unconstrained forecast of aviation demand.

4.9 Fractional Ownership

Consistent with FAA projections, the share of business jet aviation accounted for by fractional ownership is expected to increase. Fractional ownership operations are expected to continue to be business related and to focus primarily on jet and turboprop aircraft. As such most of the growth in registered aircraft related to fractional ownership is expected to occur at the main business centers in Hennepin and Ramsey Counties.

4.10 Microjets

Microjets or very light jets (VLJs), such as the Eclipse and Mustang, are expected to increase by 400 to 500 per year nationally, consistent with the FAA forecast. Because of their shorter runway requirements, microjets could be used at Airlake. Some of the

microjets could be used at Crystal and, should the runway be lengthened to 3,200 or 3,900 feet, at Lake Elmo. It is anticipated that most microjets would be used for business purposes, and therefore most of the demand would originate in the inner counties such as Hennepin and Ramsey.

4.11 Ultra Light Recreational Aircraft

The number and utilization of ultra light recreational aircraft is assumed to increase at the FAA projected rate. Because these aircraft are light and easily transported, it is anticipated that most of them will continue to be based off-airport. As noted earlier, they may not be operated at MAC airports.

4.12. General Aviation Taxes and Fees

It is assumed that future fuel taxes and other fees related to general aviation will remain unchanged except for adjustments for inflation. It is assumed that there will be no reduction in based aircraft at MAC-owned reliever airports due to the latest increases in rates and charges.

5. Based Aircraft Forecast

Since the catchment areas for the three airports under analysis overlap each other and the other MAC airports, the based aircraft forecast was prepared from a system standpoint.

The process consisted of the following major steps:

1. Project the number of MAC-airport based aircraft registered in each county by aircraft category.
2. Distribute the county projections of based aircraft to each MAC airport according to the existing distribution patterns for each aircraft category.
3. Estimate the number of aircraft on waiting lists that would be added under unconstrained conditions.
4. Redistribute aircraft from the two constrained MAC airports (MSP and STP) to the remaining unconstrained airports based on the existing distribution patterns to the airports and assuming that Airlake and Lake Elmo could accommodate turboprops and microjets because of lengthened runways.

April 2006 based aircraft data from Mn/DOT was used as a proxy for calendar year 2005 data to represent the base year. The detailed information on aircraft type and county of registration necessary for the forecast analysis was not available for 2005. Although the April 2006 totals for the three airports differ from the 2005 totals, the difference is 3 percent or less in each case. It should also be noted that, within any given year, the based aircraft totals at an airport will fluctuate.

5.1 Forecast of Based Aircraft by County

Appendix D shows the methodology used to project MAC based aircraft in each of the seven counties of the Metropolitan Council. Aircraft were projected separately for each of the major categories: single engine piston, multi-engine piston, turboprop, jets, helicopters, and other. Jets were further subdivided into microjets and other jets.

Based aircraft were projected to increase as a share of the FAA forecast of active aircraft in each category, essentially a top-down approach. There are two major reasons for using the top-down approach. First, the fortunes of the general aviation industry are subject to a number of factors, many of which cannot be easily incorporated into an economic forecasting model. These factors include technology, tax policy, regulatory policy, recreational trends, and growth in competing transportation modes and communications technology. When they prepare their national forecast, the FAA holds a workshop in conjunction with the Transportation Research Board to which a number of industry experts are invited. The FAA exploits the knowledge and expertise of these industry representatives to help prepare forecast assumptions on the future of general aviation. Using the top-down approach provides a means of incorporating this assembled expertise into the Crystal, Airlake, and Lake Elmo forecasts. Second, as noted earlier, historical data on registered and based aircraft in the Twin Cities area has gaps and inconsistencies. The problems in the historical data make it difficult to prepare credible forecasts based on trend or regression analyses.

The FAA forecasts only extend to 2017, so they were linearly extrapolated to 2025 for this study. These forecasts were then adjusted by an income index and a based aircraft index to generate a forecast of based aircraft for each county. The income index is used to adjust for differences in projected economic growth between the United States and the county under analysis. The based aircraft index represents the change in the share of active U.S. aircraft based at MAC airports over time net of income effects (see Table B.3 in Appendix B). Since 1999, the share of U.S. active aircraft based at MAC airports has been declining slightly. Some owners have been moving their aircraft to non-MAC airports either inside or outside the seven-county area. Others have bought ultra light aircraft which often are not based at an airport.

As an example, the number of single engine piston aircraft registered in Anoka County and based at MAC airports is projected to decline slightly (see Table D.1 in Appendix D). This decline results because the FAA projected increase in U.S. single engine piston aircraft would be offset by the declines in the income index and the based aircraft index.

Since microjets are a new phenomenon, there is no historical activity upon which to base future growth. In this instance, each county's share of U.S. microjets was assumed to be the average of its share of turboprops and other jets.

Table 5 summarizes the forecasts of based aircraft at MAC airports by county of registration. As shown, counties such as Scott and Carver, which are projected to experience rapid economic growth, show a more rapid increase in based aircraft than the

other counties. There are some exceptions, however. Ramsey County is projected to show an increase in total based aircraft compared to a decrease in Anoka County, despite the fact that Anoka County is expected to experience more rapid income growth. This results because Ramsey County has a higher concentration of more rapidly growing turboprop and jet aircraft.

5.2. Unconstrained Distribution of Based Aircraft by Airport

The county forecasts of based aircraft estimated in Appendix D were distributed among the MAC airports according to existing distributions for each aircraft type. Appendix E shows the results of these distributions. All the MAC airports were assumed to be unconstrained in this iteration.

5.3 Aircraft on Waiting Lists

Crystal, Airlake, and Lake Elmo Airports all have waiting lists of aircraft owners and operators who would like to base their aircraft at the airport in question if hangar facilities become available. Since the forecasts in this analysis are unconstrained, this latent demand needs to be considered, since they would presumably base their aircraft at these airports were the facilities available.

A number of the people on the waiting lists made their requests many years ago and very likely have lost interest or found an alternative facility for their aircraft by now. Consequently, anyone who signed on to the waiting lists more than five years ago was eliminated from the analysis. Also, it is unlikely that everyone who signed on to a waiting list within the past five years would base their aircraft at the airport in question should the desired facilities become available. Based on consultation with MAC staff, it was assumed that 90 percent of the aircraft owners and operators who signed up for a waiting list within the past five years would base their aircraft at one of the three study airports under unconstrained conditions.

The official waiting list at Crystal is very small, reflecting the current belief that no additional hangar facilities will be built at the Airport. The forecast assumes unconstrained conditions, however, and under those circumstances it would be reasonable to expect that the waiting list at Crystal would be more similar to Airlake and Lake Elmo. The potential waiting list at Crystal was therefore based on the average ratio of waiting list owners and operators to based aircraft at Airlake and Lake Elmo. The accommodation of waiting list aircraft at Crystal was assumed to be phased through 2015, to reflect additional time required to mobilize the construction of hangar facilities and for aircraft owners to become aware of their availability.

Table F.1 in Appendix F shows the estimate of additional based aircraft at the three airports that would result from accommodating aircraft on the waiting list. Crystal would be expected to accommodate 62 additional aircraft, Airlake would be expected to accommodate 55 additional aircraft and Lake Elmo would be expected to accommodate 39 additional aircraft. Except for two anticipated microjets at Crystal, no information is

available on the types of aircraft on the waiting list, so they were assumed to mirror the existing distribution of based aircraft at each airport, mostly single engine piston aircraft.

5.4 Redistribution of Based Aircraft from Constrained Airports

As noted earlier, two of the MAC airports – MSP and STP – are anticipated to be limited in their physical ability to accommodate more based aircraft. Any based aircraft that could not be accommodated at these two airports would have to be accommodated elsewhere. Since the aircraft currently based at these two airports tend to be more sophisticated corporate-owned aircraft, it is likely that their owners would seek out an airport with enhanced facilities which would most likely be found at another MAC airport.

Based on the historical experience at MSP and other airports, it was assumed that single-engine piston aircraft would be most likely to be diverted and that jet aircraft would be least likely to be diverted. The diverted based aircraft were assumed to be relocated to the remaining unconstrained airports in proportion to the existing distributions by aircraft type.

Tables F.2 through F.5 in Appendix F detail the addition of aircraft on the waiting list and the redistribution of aircraft from MSP and STP. The ability of the three airports to accommodate redistributed aircraft is highly dependent on the runway requirements of these aircraft. For example, the published requirements for microjets range from 1800 feet (takeoff) and 2300 feet (landing) for the Excel Sportjet, to 2155 feet (takeoff) and 2040 feet (landing) for the Eclipse, to 3400 feet (takeoff) and 2520 feet (landing) for the Adam A700. As a comparison, the Beech King Air (C90GT) turboprop requires about 2700 feet for takeoff and 2300 feet for landing.

5.5. Based Aircraft Forecast Results

Tables 6, 7 and 8 show the results of the based aircraft forecasts for Crystal, Airlake and Lake Elmo Airports.

The number of based aircraft at Crystal Airport is expected to grow from 260 in 2005 to 330 in 2025. Most of the growth would be from aircraft on the waiting list. The slow anticipated growth in the other categories is attributable to several factors. The Airport is located in Hennepin County, which is projected to be one of the slower growing counties. Most of the current based aircraft consist of slow-growing piston powered aircraft. Finally, because of its short runways it is unlikely to be able to accommodate many of the based turboprop and jet aircraft diverted from MSP or STP.

The growth of based aircraft at Airlake Airport is expected to be more robust than at Crystal. Under unconstrained conditions, the large number of aircraft on the waiting list would provide a significant initial increase in based aircraft. Longer term, the number of based aircraft would continue to grow because Dakota County is expected to grow more rapidly than the remainder of the Twin Cities or the United States. There would also be

some increase as a result of the diversion of based aircraft from MSP and STP. As shown in Table 7, total based aircraft are projected to increase from 158 in 2005 to 239 in 2025.

The number of based aircraft at Lake Elmo Airport is expected to increase from 236 in 2005 to 312 in 2025 (see Table 8). Lake Elmo Airport is expected to grow for many of the same reasons as Airlake. It is located in rapidly-growing Washington County, and has a long waiting list.

Appendix G shows the based aircraft forecasts for the other four MAC airports that result from the analysis in Appendix F.

6. Aircraft Operations Forecasts

The forecasts of aircraft operations were derived from the based aircraft forecasts. Estimates of base year operation levels were provided by the MAC. Operations counts for Crystal were obtained from the FAA Air Traffic Control Tower, while operations for Airlake and Lake Elmo were estimated using operations to based aircraft ratios.

The aircraft operations forecasts assume that average aircraft utilization will increase, consistent with FAA forecasts. In each aircraft category, operations per active aircraft were projected to increase at the same rate as hours flown per based aircraft, implicitly assuming that the number of operations per hours flown remain constant. The percentage of touch and go operations in each aircraft category was assumed to remain constant. Tables H.1 through H.3 in Appendix H show the calculations of future aircraft operations for each of the three airports.

Tables 9, 10, and 11 summarize the aircraft operations forecasts for Crystal, Airlake, and Lake Elmo. In each case the number of operations is projected to grow more quickly than the number of based aircraft. The FAA projects average aircraft utilization to increase as a result of increased flying by business and corporate users.

Total aircraft operations at Crystal are forecast to increase from 72,205 in 2005 to 115,730 in 2025, an average annual increase of 2.4 percent. Increases are projected in all categories except turboprops, for which the FAA projects a decrease in utilization. Microjet operations are projected to increase significantly in percentage terms, and are expected to account for almost 10 percent of total operations in 2025.

Operations at Airlake are forecast to increase from 57,001 in 2005 to 105,500 in 2025, an average annual increase of 3.1 percent. Increases are projected among all categories, reflecting the increase in based aircraft. Substantial increases are projected in microjets and other jets. By 2025, these two categories are projected to account for over 4 percent of total operations at Airlake, compared to slightly over 1 percent currently.

Operations at Lake Elmo are projected to increase from 57,667 in 2005 to 91,119 in 2025, an average annual increase of 2.3 percent. Increases are projected in all aircraft categories. Since no increase in runway length is assumed, some operations by microjets

and but no operations by other jets are anticipated. By 2025, combined jet operations are projected to account for about 1 percent of total operations at Lake Elmo.

7. Peak Activity Forecasts

Tables 12, 13, and 14 show the peak month, average day peak month (ADPM), and peak hour operations forecasts for Crystal, Airlake, and Lake Elmo. In each case the relationship between peak activity and annual activity was assumed to remain constant.

The percentage of operations occurring in August, the peak month at Crystal Airport, was estimated from FAA air traffic control tower records. ADPM operations were estimated by dividing by 31 days. Peak hour operations were assumed to be 16 percent of ADPM operations, consistent with the assumptions in the previous Crystal Airport LTCP, published in 1994. As shown in Table 12, peak hour operations are projected to increase from 44 in 2005 to 70 in 2025.

Table 13 presents peak activity forecasts for Airlake Airport. Since Airlake does not have an air traffic control tower, the peak month percentage was estimated based on fuel flow records provided by the MAC. Based on these records, September and June are the peak months, each accounting for 11.4 percent of annual gallons of fuel sold. ADPM operations were estimated by dividing by 30 days. Consistent with the previous Airlake LTCP, peak hour operations were assumed to be 17 percent of ADPM operations. Peak hour operations at Airlake are projected to increase from 37 in 2005 to 68 in 2025.

Table 14 presents the peak activity forecasts for Lake Elmo Airport. Like Airlake, Lake Elmo has no tower, and peak month operations were therefore estimated using MAC records of fuel flow. Based on these records, July is the peak month, accounting for 12.5 percent of annual activity. ADPM operations were estimated by dividing by 31 days. Consistent with the previous Lake Elmo LTCP, published in 1992, peak hour operations were estimated at 12.7 percent of ADPM operations. Peak hour operations at Lake Elmo are projected to increase from 30 in 2005 to 47 in 2025.

8. Forecast Scenarios

General aviation activity has historically been difficult to forecast, since the relationships with economic growth and pricing factors are more tenuous than in other aviation sectors, such as commercial aviation. This uncertainty is likely to carry over into the near future, given the volatility of fuel prices and the anticipated emergence of microjets. These uncertainties will also be affected by any decisions to lengthen runways at one or more of the airports. To address these uncertainties, and to identify the potential upper and lower bounds of future activity at Crystal, Airlake, and Lake Elmo, detailed runway extension, high and low scenarios are presented. These scenarios use the same forecast approach that was used in the base case, but alter the assumptions to reflect either a more aggressive or more conservative outlook.

8.1 Extended Runway Scenarios

The extended runway scenario was prepared to evaluate the potential impact associated with runway lengthening under the preferred development alternatives. Specifically, the scenario assumes the following:

- Extension of the runway at Airlake to 5000 feet with existing 1 mile minimums.
- Extension of the crosswind runway at Lake Elmo to 3200 feet.
- Removal of all runways at Crystal except (14L-32R) which would remain at its current length.

All other forecast assumptions are the same as in the base case.

Table 15 shows the extended runway forecast scenario for Crystal Airport. Since the scenario involves runway extensions at Airlake and Lake Elmo but not at Crystal, the forecast for Crystal is the same as in the base case. Even with the removal of the other runways, Crystal has enough capacity to accommodate the projected demand and, therefore, there is no reduction in forecast activity.

Table 16 shows the extended runway forecast scenario for Airlake Airport. By 2025, the number of based aircraft and operations is slightly higher than under the base case, principally because of the additional jets that could be accommodated with the longer runway.

Table 17 shows the extended runway forecast scenario for Lake Elmo Airport. By 2025, the number of based aircraft and operations would be slightly higher than under the base case because more microjets could be accommodated with the extended runway.

8.2 High Forecast Scenarios

The high forecast scenarios for the three airports are based on the following assumptions:

- Income in each county is assumed to grow 50 percent more rapidly than under the base case.
- Fuel costs are assumed to be the same as in the base case.
- Fractional ownership operations are assumed to significantly boost their investment in microjets, thereby increasing the number of jets based at Crystal, Airlake and Lake Elmo, and the number of itinerant operations per aircraft.
- Microjets are assumed to become very popular, and the number of future aircraft in this category will grow at double the projected FAA rate. The use of microjets for air taxi operations will result in a high utilization rate which will increase the ratio of aircraft operations to based aircraft.
- Increased popularity of ultra light recreational (Part 103) aircraft is assumed to cause a doubling of numbers over the FAA forecast levels. This would increase the number of based aircraft, although operations would remain unaffected.

- The runway at Airlake is assumed to be extended to 5000 feet and the runway at Lake Elmo is assumed to be extended to 3900 feet.

Other assumptions, including capacity constraints at MSP and STP, are assumed to be the same as in the base case.

Table 18 shows the high forecast scenario for Crystal Airport. By 2025 the number of based aircraft is 15 percent higher than under the base case, as a result of higher economic growth and increased microjet popularity. The number of turboprops and microjets remains relatively small, as the runway length would still be a constraining factor. General aviation operations under the high scenario would be 20 percent higher than in the base case.

Table 19 shows the high forecast scenario for Airlake Airport. By 2025, the number of based aircraft is 21 percent higher than under the base case and the number of jets is more than twice as great. By 2025, total annual operations would be 27 percent higher than under the base case. Of these operations, more than 10 percent would be jets, mostly microjets.

Table 20 shows the high forecast scenario for Lake Elmo Airport. By 2025, the number of based aircraft would be 18 percent higher than under the base case. Although microjets would only account for slightly over 1 percent of the total, there would still be five times as many as under the base case. Total operations would be 27 percent higher than under the base case, and jet operations would account for almost 9 percent of total operations.

8.3 Low Forecast Scenarios

The low forecast scenarios for each airport were prepared using the following assumptions:

- Income in each county is assumed to grow 50 percent more slowly than under the base case.
- Fuel costs are assumed to be the same as in the base case.
- Fractional ownership operations are assumed to focus mostly on larger business jets, and therefore have little impact on activity at Crystal, Airlake and Lake Elmo.
- Microjets are assumed to fail to excite the market, and only increase at about 100 per year nationally.
- No runway development is assumed at any of the three airports.
- It is assumed that operators currently on waiting lists will become discouraged because of low income and high costs and choose to dispose of their aircraft or to remain at their existing location. Therefore, there would be no additional growth resulting from aircraft currently on waiting lists.

Other assumptions, including capacity constraints at MSP and STP, are assumed to be the same as in the base case.

Table 21 shows the low scenario forecast for Crystal Airport. Although a moderate increase in based helicopters and microjets is projected, based fixed-wing piston powered aircraft are projected to decline. As a result, by 2025 total based aircraft would be 32 percent lower than under the base case. Total operations would be 33 percent lower than under the base case.

The low scenario forecast for Airlake Airport is presented in Table 22. None of the based aircraft categories would be expected to increase, and there would be a decline in fixed-wing piston powered aircraft. Total based aircraft in 2025 would be 41 percent lower than under the base case. Total operations would be 42 percent lower than under the base case, and jets would account for less than 3 percent of the total.

Table 23 presents the low scenario forecast for Lake Elmo Airport. By 2025 total based aircraft are expected to be 30 percent lower than under the base case. Total operations would be 30 percent lower than in the base case by 2025.

9. Summary

The base case forecasts for the three airports anticipate moderate growth in based aircraft at Crystal, Airlake and Lake Elmo. Operations are projected to grow more rapidly than based aircraft at each of the three airports, reflecting anticipated increased utilization of aircraft.

The forecast scenarios indicate that future economic growth, fuel prices, technology, and national policy will have a major impact on the development of general aviation. Runway extensions would also affect the forecasts though not to the same extent as economic growth. Therefore, it is prudent to closely monitor actual aviation activity and modify the phasing of facility improvements at the three airports if that activity materially departs from forecast levels.

Table 1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Income

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
2000	9,986,412	2,985,484	14,169,374	52,112,908	18,484,297	3,324,987	7,991,782	109,055,244	9,116,558,222	1.20%
2003	10,520,698	3,311,438	14,664,654	51,634,272	19,033,353	3,672,368	8,516,902	111,353,685	9,388,118,544	1.19%
2010	12,545,853	4,591,469	17,606,023	58,399,571	21,640,483	5,238,307	10,442,533	130,464,239	10,824,058,031	1.21%
2015	13,881,232	5,987,606	19,857,081	64,207,508	23,556,888	6,330,352	12,106,115	145,926,782	11,982,463,283	1.22%
2020	15,339,561	7,527,787	22,359,311	70,639,301	25,669,665	7,526,976	13,946,703	163,009,304	13,272,837,742	1.23%
2025	16,628,101	8,889,431	25,011,490	78,385,001	28,570,179	8,602,345	16,048,479	182,135,026	14,713,492,048	1.24%
2030	18,028,465	10,416,459	27,976,030	86,989,735	31,803,654	9,792,853	18,394,463	203,401,658	16,325,754,327	1.25%
<i>Average Annual Growth Rate</i>										
2003-2030	2.0%	4.3%	2.4%	2.0%	1.9%	3.7%	2.9%	2.3%	2.1%	

(a) Seven-county Metropolitan Council share of U.S.

Sources: Table A.6 in Appendix A and HNTB analysis.

Table 2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Historical Based Aircraft at MAC Airports

Year	General Aviation							Total	Total with
	Flying Cloud	Crystal	Anoka County	Lake Elmo	Airlake	Holman	MSP	without MSP	MSP
1980	582	315	353	170		190	79	1610	1689
1981	580	297	360	220		205	69	1662	1731
1982	608	337	384	238		181	79	1748	1827
1983	615	327	362	236		164	87	1704	1791
1984	568	352	361	244	61	165	107	1751	1858
1985	568	338	390	145	63	147	n/a	1651	n/a
1986	560	333	412	145	93	160	n/a	1703	n/a
1987	565	345	408	150	153	168	n/a	1789	n/a
1988	492	325	384	149	153	181	n/a	1684	n/a
1989	485	320	405	171	140	188	n/a	1709	n/a
1990	485	324	411	177	140	191	n/a	1728	n/a
1991	487	327	414	179	140	193	n/a	1740	n/a
1992	482	327	408	189	165	198	n/a	1769	n/a
1993	482	327	408	189	179	198	n/a	1783	n/a
1994	482	327	415	198	179	198	n/a	1799	n/a
1995	482	327	415	198	179	198	n/a	1799	n/a
1996	482	327	431	205	179	198	n/a	1822	n/a
1997	482	327	441	210	179	203	n/a	1842	n/a
1998	482	327	451	210	179	180	n/a	1829	n/a
1999	509	309	472	250	178	146	29	1864	1893
2000	485	296	454	245	175	137	29	1792	1821
2001	461	280	447	235	170	131	13	1724	1737
2002	473	278	464	237	170	130	13	1752	1765
2003	463	288	490	237	190	124	16	1792	1808
2004	456	263	488	236	177	124	16	1744	1760
2005	451	265	482	239	163	124	15	1724	1739
2006	447	261	475	233	159	124		1699	1714

Source: Metropolitan Airports Commission.

Table 3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Aircraft Based at MAC Airports by County of Registration and Aircraft Type: 2006

	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Total
Single Engine Piston (a)	173	24	135	521	204	54	151	106	1368
Multi Engine Piston	21	2	16	53	19	4	13	8	136
Turboprop	2	1	1	39	7	1	0	5	56
Jet	2	0	7	54	19	0	1	8	91
Rotor	2	0	0	10	6	0	2	7	27
Other	1	0	1	0	1	0	2	0	5
Total	201	27	160	677	256	59	169	134	1683

(a) Light sport aircraft are included in the single engine piston category.

Sources: Minnesota Department of Transportation Based Aircraft Reports (April 2006) and HNTB analysis.

Table 4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Crystal	9	3	2	211	22	1	0	12	260
Airlake	0	3	103	15	3	23	0	11	158
Lake Elmo	2	0	10	9	55	0	140	20	236
Anoka County/Blaine - Janes Field	189	0	8	98	117	1	18	35	466
Flying Cloud	0	21	30	314	6	34	3	45	453
MSP	0	0	0	13	0	0	0	2	15
St. Paul Downtown-Holman Field	1	0	7	17	53	0	8	9	95
Total MAC Airports	201	27	160	677	256	59	169	134	1683
Forest Lake	1	0	0	0	2	0	15	5	23
South St. Paul Municipal-Fleming Field	1	0	124	16	24	7	23	19	214
Total	203	27	284	693	282	66	207	158	1920

Sources: Minnesota Department of Transportation Based Aircraft Reports (April 2006) and HNTB analysis.

Table 5

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Projected Based Aircraft at MAC Airports by County of Registration

Year	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
2005 (a)	201	27	160	677	256	59	169	134	1683
2010	208	30	167	697	264	69	180	140	1756
2015	209	37	172	713	265	75	186	144	1801
2020	208	41	175	726	267	79	193	149	1838
2025	202	44	176	745	272	81	197	150	1867

(a) April 2006 based aircraft data from Mn/DOT was used as a proxy for calendar year 2005 data. The detailed information on aircraft type and county of registration necessary for the forecast analysis was not available for 2005. Although the April 2006 totals for the three airports differ from the 2005 totals, the difference is 3 percent or less in each case. It should also be noted that, within any given year, the based aircraft totals at an airport will fluctuate. The year 2006 could not be used as the base year because aircraft operations totals were not available at the time of the analysis.

Source: Appendix D.

Table 6

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Based Aircraft Forecast: Crystal (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
2005 (c)	235	16	1	0	0	8	0	260
2010	262	18	1	2	0	10	0	293
2015	286	19	1	5	0	12	0	323
2020	284	20	1	8	0	14	0	327
2025	282	21	1	11	0	15	0	330
	Average Annual Growth Rate							
	0.9%	1.4%	0.0%	-	-	3.2%	-	1.2%

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

(c) April 2006 based aircraft data from Mn/DOT was used as a proxy for calendar year 2005 data. The detailed information on aircraft type and county of registration necessary for the forecast analysis was not available for 2005. Although the April 2006 totals for the three airports differ from the 2005 totals, the difference is 3 percent or less in each case. It should also be noted that, within any given year, the based aircraft totals at an airport will fluctuate. The year 2006 could not be used as the base year because aircraft operations totals were not available at the time of the analysis.

Source: Appendix F.

Table 7

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Based Aircraft Forecast: Airlake (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
2005 (c)	144	11	1	0	0	1	1	158
2010	207	15	1	0	0	1	1	225
2015	213	15	2	0	0	2	2	234
2020	216	15	2	0	0	2	2	237
2025	217	15	2	1	0	2	2	239
Average Annual Growth Rate								
	2.1%	1.6%	3.5%	-	-	3.5%	3.5%	2.1%

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

(c) April 2006 based aircraft data from Mn/DOT was used as a proxy for calendar year 2005 data. The detailed information on aircraft type and county of registration necessary for the forecast analysis was not available for 2005. Although the April 2006 totals for the three airports differ from the 2005 totals, the difference is 3 percent or less in each case. It should also be noted that, within any given year, the based aircraft totals at an airport will fluctuate. The year 2006 could not be used as the base year because aircraft operations totals were not available at the time of the analysis.

Source: Appendix F.

Table 8

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Based Aircraft Forecast: Lake Elmo (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
2005 (c)	221	11	0	0	0	2	2	236
2010	271	14	0	0	0	3	3	291
2015	280	14	0	0	0	3	3	300
2020	285	15	0	0	0	4	4	308
2025	288	16	0	0	0	4	4	312
Average Annual Growth Rate								
	1.3%	1.9%	-	-	-	3.5%	3.5%	1.4%

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

(c) April 2006 based aircraft data from Mn/DOT was used as a proxy for calendar year 2005 data. The detailed information on aircraft type and county of registration necessary for the forecast analysis was not available for 2005. Although the April 2006 totals for the three airports differ from the 2005 totals, the difference is 3 percent or less in each case. It should also be noted that, within any given year, the based aircraft totals at an airport will fluctuate. The year 2006 could not be used as the base year because aircraft operations totals were not available at the time of the analysis.

Source: Appendix F.

Table 9

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Aircraft Operations Forecast: Crystal (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Total Aircraft Operations								
2005	60,826	5,795	2,811	-	122	2,651	-	72,205
2010	71,017	6,855	2,674	2,073	140	3,189	-	85,948
2015	81,291	7,605	2,543	5,164	179	3,782	-	100,564
2020	84,641	8,409	2,422	8,256	204	4,410	-	108,342
2025	87,861	9,250	2,321	11,347	229	4,722	-	115,730
Forecast of Touch & Go Operations								
2005	23,156	768	-	-	-	1,202	-	25,126
2010	27,036	909	-	-	-	1,445	-	29,390
2015	30,947	1,008	-	-	-	1,714	-	33,669
2020	32,223	1,115	-	-	-	1,999	-	35,337
2025	33,449	1,227	-	-	-	2,141	-	36,817
Forecast of Non-Touch & Go Operations								
2005	37,670	5,027	2,811	-	122	1,449	-	47,079
2010	43,981	5,946	2,674	2,073	140	1,744	-	56,558
2015	50,344	6,597	2,543	5,164	179	2,068	-	66,895
2020	52,418	7,294	2,422	8,256	204	2,411	-	73,005
2025	54,412	8,023	2,321	11,347	229	2,581	-	78,913

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

Source: Table H.1 in Appendix H.

Table 10

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Aircraft Operations Forecast: Airlake (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Total Aircraft Operations								
2005	50,773	2,877	2,453	-	664	234	-	57,001
2010	76,433	4,125	2,333	397	761	225	-	84,275
2015	82,472	4,335	4,439	894	973	445	-	93,558
2020	87,694	4,554	4,227	1,391	1,110	445	-	99,421
2025	92,099	4,771	4,051	2,887	1,248	445	-	105,500
Forecast of Touch & Go Operations								
2005	22,477	197	-	-	-	62	-	22,736
2010	33,837	282	-	-	-	59	-	34,178
2015	36,510	297	-	-	-	117	-	36,924
2020	38,822	312	-	-	-	117	-	39,251
2025	40,772	326	-	-	-	117	-	41,215
Forecast of Non-Touch & Go Operations								
2005	28,296	2,680	2,453	-	664	172	-	34,265
2010	42,596	3,843	2,333	397	761	166	-	50,097
2015	45,962	4,038	4,439	894	973	328	-	56,634
2020	48,872	4,242	4,227	1,391	1,110	328	-	60,170
2025	51,327	4,445	4,051	2,887	1,248	328	-	64,285

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

Source: Table H.2 in Appendix H.

Table 11

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Aircraft Operations Forecast: Lake Elmo (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Total Aircraft Operations								
2005	54,471	1,976	597	-	-	623	-	57,667
2010	69,949	2,644	639	54	-	899	-	74,186
2015	75,786	2,779	675	121	-	889	-	80,249
2020	80,884	3,128	707	188	-	1,185	-	86,091
2025	85,446	3,496	738	255	-	1,184	-	91,119
Forecast of Touch & Go Operations								
2005	22,148	212	-	-	-	80	-	22,440
2010	28,441	284	-	-	-	115	-	28,840
2015	30,814	298	-	-	-	114	-	31,226
2020	32,887	336	-	-	-	151	-	33,374
2025	34,742	375	-	-	-	151	-	35,268
Forecast of Non-Touch & Go Operations								
2005	32,323	1,764	597	-	-	543	-	35,227
2010	41,508	2,360	639	54	-	784	-	45,346
2015	44,972	2,481	675	121	-	775	-	49,023
2020	47,997	2,792	707	188	-	1,034	-	52,717
2025	50,704	3,121	738	255	-	1,033	-	55,851

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

Source: Table H.3 in Appendix H.

Table 12

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Peak Activity Forecast: Crystal

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2005	72,205	8,444	272	44
2010	85,948	10,051	324	52
2015	100,564	11,760	379	61
2020	108,342	12,669	409	65
2025	115,730	13,533	437	70

(a) Table 9.

(b) The 2005 percentage of peak month operations, based on ATCT counts, is assumed to continue through the forecast period.

(c) Peak month (August) operations divided by 31 days.

(d) Assumed to be 16 percent of ADPM operations based on Crystal Airport LTCP, November 1994.

Sources: As noted and HNTB analysis.

Table 13

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Peak Activity Forecast: Airlake Airport

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2005	57,001	6,498	217	37
2010	84,275	9,607	320	54
2015	93,558	10,666	356	60
2020	99,421	11,334	378	64
2025	105,500	12,027	401	68

(a) Table 10.

(b) The share of operations occurring in the peak month is based on MAC fuel flow records for 2004. This percentage is assumed to remain constant through the forecast period.

(c) Peak month (September) operations divided by 30 days.

(d) Assumed to be 17 percent of ADPM operations based on Airlake Airport LTCP, October 1997.

Sources: As noted and HNTB analysis.

Table 14

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Peak Activity Forecast: Lake Elmo Airport

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2005	57,667	7,208	233	30
2010	74,186	9,273	299	38
2015	80,249	10,031	324	41
2020	86,091	10,761	347	44
2025	91,119	11,390	367	47

(a) Table 11.

(b) The share of operations occurring in the peak month is based on MAC fuel flow records for 2004. This percentage is assumed to remain constant through the forecast period.

(c) Peak month (July) operations divided by 31 days.

(d) Assumed to be 12.7 percent of ADPM operations based on Lake Elmo Airport LTCP, April 1992.

Sources: As noted and HNTB analysis.

Table 15

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Extended Runway Scenario: Crystal (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	235	16	1	0	0	8	0	260
2010	262	18	1	2	0	10	0	293
2015	286	19	1	5	0	12	0	323
2020	284	20	1	8	0	14	0	327
2025	282	21	1	11	0	15	0	330
Forecast of Total Aircraft Operations								
2005	60,826	5,795	2,811	0	122	2,651	-	72,205
2010	71,017	6,855	2,674	2,073	140	3,189	-	85,948
2015	81,291	7,605	2,543	5,164	179	3,782	-	100,564
2020	84,641	8,409	2,422	8,256	204	4,410	-	108,342
2025	87,861	9,250	2,321	11,347	229	4,722	-	115,730
Forecast of Touch&Go Operations								
2005	23,156	768	-	-	-	1,202	-	25,126
2010	27,036	909	-	-	-	1,445	-	29,390
2015	30,947	1,008	-	-	-	1,714	-	33,669
2020	32,223	1,115	-	-	-	1,999	-	35,337
2025	33,449	1,227	-	-	-	2,141	-	36,817
Forecast of Non Touch&Go Operations								
2005	37,670	5,027	2,811	-	122	1,449	-	47,079
2010	43,981	5,946	2,674	2,073	140	1,744	-	56,558
2015	50,344	6,597	2,543	5,164	179	2,068	-	66,895
2020	52,418	7,294	2,422	8,256	204	2,411	-	73,005
2025	54,412	8,023	2,321	11,347	229	2,581	-	78,913

(a) Assumes main runway at Crystal remains at current length; main runway at Airlake extended to 5000 feet, and main runway at Lake Elmo extended to 3200 feet.

(b) Balloons, gliders, and ultralight aircraft.

Source: HNTB analysis.

Table 16

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Extended Runway Scenario: Airlake (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	144	11	1	0	0	1	1	158
2010	207	15	1	0	0	1	1	225
2015	213	15	2	0	0	2	2	234
2020	216	15	2	0	1	2	2	238
2025	217	15	2	1	2	2	2	241
Forecast of Total Aircraft Operations								
2005	50,773	2,877	2,453	0	664	234	-	57,001
2010	76,433	4,125	2,333	397	761	225	-	84,275
2015	82,472	4,335	4,439	894	973	445	-	93,558
2020	87,694	4,554	4,227	1,391	1,390	445	-	99,701
2025	92,099	4,771	4,051	2,887	1,808	445	-	106,060
Forecast of Touch&Go Operations								
2005	22,477	197	-	-	-	62	-	22,736
2010	33,837	282	-	-	-	59	-	34,178
2015	36,510	297	-	-	-	117	-	36,924
2020	38,822	312	-	-	-	117	-	39,251
2025	40,772	326	-	-	-	117	-	41,215
Forecast of Non Touch&Go Operations								
2005	28,296	2,680	2,453	-	664	172	-	34,265
2010	42,596	3,843	2,333	397	761	166	-	50,097
2015	45,962	4,038	4,439	894	973	328	-	56,634
2020	48,872	4,242	4,227	1,391	1,390	328	-	60,450
2025	51,327	4,445	4,051	2,887	1,808	328	-	64,845

(a) Assumes main runway at Crystal remains at current length; main runway at Airlake extended to 5000 feet, and main runway at Lake Elmo extended to 3200 feet.

(b) Balloons, gliders, and ultralight aircraft.

Source: HNTB analysis.

Table 17

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Extended Runway Scenario: Lake Elmo (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	221	11	0	0	0	2	2	236
2010	271	14	0	0	0	3	3	291
2015	280	14	0	0	0	3	3	300
2020	285	15	0	0	0	4	4	308
2025	288	16	0	1	0	4	4	313
Forecast of Total Aircraft Operations								
2005	54,471	1,976	597	0	-	623	-	57,667
2010	69,949	2,644	639	63	121	899	-	74,316
2015	75,786	2,779	675	142	155	889	-	80,426
2020	80,884	3,128	707	222	177	1,185	-	86,301
2025	85,446	3,496	738	1,301	199	1,184	-	92,363
Forecast of Touch&Go Operations								
2005	22,148	212	-	-	-	80	-	22,440
2010	28,441	284	-	-	-	115	-	28,840
2015	30,814	298	-	-	-	114	-	31,226
2020	32,887	336	-	-	-	151	-	33,374
2025	34,742	375	-	-	-	151	-	35,268
Forecast of Non Touch&Go Operations								
2005	32,323	1,764	597	-	-	543	-	35,227
2010	41,508	2,360	639	63	121	784	-	45,476
2015	44,972	2,481	675	142	155	775	-	49,200
2020	47,997	2,792	707	222	177	1,034	-	52,927
2025	50,704	3,121	738	1,301	199	1,033	-	57,095

(a) Assumes main runway at Crystal remains at current length; main runway at Airlake extended to 5000 feet, and main runway at Lake Elmo extended to 3200 feet.

(b) Balloons, gliders, and ultralight aircraft.

Source: HNTB analysis.

Table 18

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

High Forecast Scenario: Crystal (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	235	16	1	0	0	8	0	260
2010	274	18	1	2	0	10	0	305
2015	310	21	1	6	0	13	0	351
2020	317	23	1	10	0	15	0	366
2025	321	23	3	15	0	17	0	379
Forecast of Total Aircraft Operations								
2005	60,826	5,795	2,811	0	122	2,651	-	72,205
2010	74,270	6,855	2,674	2146	140	3,189	-	89,273
2015	88,113	8,405	2,543	6329	179	4,097	-	109,666
2020	94,477	9,670	2,422	10511	204	4,725	-	122,009
2025	100,012	10,131	6,963	15694	229	5,352	-	138,380
Forecast of Touch&Go Operations								
2005	23,156	768	-	-	-	1,202	-	25,126
2010	28,275	909	-	-	-	1,445	-	30,629
2015	33,544	1,115	-	-	-	1,857	-	36,516
2020	35,967	1,282	-	-	-	2,142	-	39,391
2025	38,074	1,343	-	-	-	2,426	-	41,843
Forecast of Non Touch&Go Operations								
2005	37,670	5,027	2,811	-	122	1,449	-	47,079
2010	45,995	5,946	2,674	2,146	140	1,744	-	58,644
2015	54,569	7,290	2,543	6,329	179	2,240	-	73,150
2020	58,510	8,388	2,422	10,511	204	2,583	-	82,618
2025	61,938	8,788	6,963	15,694	229	2,926	-	96,537

(a) Assumes main runway at Crystal remains at current length; main runway at Airlake extended to 5000 feet, and main runway at Lake Elmo extended to 3900 feet.

(b) Balloons, gliders, and ultralight aircraft.

Source: HNTB analysis.

Table 19

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

High Forecast Scenario: Airlake (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	144	11	1	0	0	1	1	158
2010	221	16	1	1	0	1	1	241
2015	235	17	2	2	0	2	2	260
2020	246	18	2	6	1	2	2	277
2025	253	18	2	10	3	2	2	290
Forecast of Total Aircraft Operations								
2005	50,773	2,877	2,453	0	664	234	-	57,001
2010	81,603	4,400	2,333	795	761	225	-	90,117
2015	90,990	4,913	4,439	1,788	973	445	-	103,548
2020	99,873	5,465	4,227	2,781	1,390	445	-	114,182
2025	107,378	5,726	4,051	13,775	2,088	445	-	133,461
Forecast of Touch&Go Operations								
2005	22,477	197	-	-	-	62	-	22,736
2010	36,126	301	-	-	-	59	-	36,486
2015	40,281	336	-	-	-	117	-	40,734
2020	44,214	374	-	-	-	117	-	44,705
2025	47,536	392	-	-	-	117	-	48,045
Forecast of Non Touch&Go Operations								
2005	28,296	2,680	2,453	-	664	172	-	34,265
2010	45,477	4,099	2,333	795	761	166	-	53,631
2015	50,709	4,577	4,439	1,788	973	328	-	62,814
2020	55,659	5,091	4,227	2,781	1,390	328	-	69,477
2025	59,842	5,334	4,051	13,775	2,088	328	-	85,416

(a) Assumes main runway at Crystal remains at current length; main runway at Airlake extended to 5000 feet, and main runway at Lake Elmo extended to 3900 feet.

(b) Balloons, gliders, and ultralight aircraft.

Source: HNTB analysis.

Table 20

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

High Forecast Scenario: Lake Elmo (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	221	11	0	0	0	2	2	236
2010	285	14	0	0	0	3	3	305
2015	311	16	0	0	0	4	4	335
2020	322	18	1	3	0	5	4	353
2025	334	18	1	6	0	5	5	369
Forecast of Total Aircraft Operations								
2005	54,471	1,976	597	0	-	623	-	57,667
2010	73,563	2,644	639	702	672	899	-	79,119
2015	84,176	3,176	675	1,579	859	1,185	-	91,650
2020	91,384	3,754	915	5,456	980	1,481	-	103,970
2025	99,093	3,933	957	9,332	1,101	1,480	-	115,896
Forecast of Touch&Go Operations								
2005	22,148	212	-	-	-	80	-	22,440
2010	29,911	284	-	-	-	115	-	30,310
2015	34,226	341	-	-	-	151	-	34,718
2020	37,157	403	-	-	-	189	-	37,749
2025	40,291	422	-	-	-	189	-	40,902
Forecast of Non Touch&Go Operations								
2005	32,323	1,764	597	-	-	543	-	35,227
2010	43,652	2,360	639	702	672	784	-	48,809
2015	49,950	2,835	675	1,579	859	1,034	-	56,932
2020	54,227	3,351	915	5,456	980	1,292	-	66,221
2025	58,802	3,511	957	9,332	1,101	1,291	-	74,994

(a) Assumes main runway at Crystal remains at current length; main runway at Airlake extended to 5000 feet, and main runway at Lake Elmo extended to 3900 feet.

(b) Balloons, gliders, and ultralight aircraft.

Sources: HNTB analysis.

Table 21

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Low Forecast Scenario: Crystal (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	235	16	1	0	0	8	0	260
2010	225	15	1	2	0	10	0	253
2015	213	14	1	2	0	12	0	242
2020	203	14	1	4	0	12	0	234
2025	192	13	1	5	0	13	0	224
Forecast of Total Aircraft Operations								
2005	60,826	5,795	2,811	0	122	2,651	-	72,205
2010	60,988	5,712	2,674	2016	140	3,189	-	74,719
2015	60,542	5,603	2,543	2037	179	3,782	-	74,686
2020	60,501	5,886	2,422	4057	204	3,780	-	76,850
2025	59,820	5,726	2,321	5077	229	4,093	-	77,266
Forecast of Touch&Go Operations								
2005	23,156	768	-	-	-	1,202	-	25,126
2010	23,218	757	-	-	-	1,445	-	25,420
2015	23,048	743	-	-	-	1,714	-	25,505
2020	23,033	781	-	-	-	1,713	-	25,527
2025	22,773	759	-	-	-	1,855	-	25,387
Forecast of Non Touch&Go Operations								
2005	37,670	5,027	2,811	-	122	1,449	-	47,079
2010	37,770	4,955	2,674	2,016	140	1,744	-	49,299
2015	37,494	4,860	2,543	2,037	179	2,068	-	49,181
2020	37,468	5,105	2,422	4,057	204	2,067	-	51,323
2025	37,047	4,967	2,321	5,077	229	2,238	-	51,879

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

Sources: HNTB analysis.

Table 22

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Low Forecast Scenario: Airlake (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	144	11	1	0	0	1	1	158
2010	142	10	1	0	0	1	1	155
2015	139	10	1	0	0	2	1	153
2020	135	9	1	0	0	2	1	148
2025	128	9	1	0	0	2	1	141
Forecast of Total Aircraft Operations								
2005	50,773	2,877	2,453	0	664	234	-	57,001
2010	52,433	2,750	2,333	88	761	225	-	58,590
2015	53,820	2,890	2,219	199	973	445	-	60,546
2020	54,808	2,733	2,114	309	1,110	445	-	61,519
2025	54,326	2,863	2,025	419	1,248	445	-	61,325
Forecast of Touch&Go Operations								
2005	22,477	197	-	-	-	62	-	22,736
2010	23,212	188	-	-	-	59	-	23,459
2015	23,826	198	-	-	-	117	-	24,141
2020	24,264	187	-	-	-	117	-	24,568
2025	24,050	196	-	-	-	117	-	24,363
Forecast of Non Touch&Go Operations								
2005	28,296	2,680	2,453	-	664	172	-	34,265
2010	29,221	2,562	2,333	88	761	166	-	35,131
2015	29,994	2,692	2,219	199	973	328	-	36,405
2020	30,544	2,546	2,114	309	1,110	328	-	36,951
2025	30,276	2,667	2,025	419	1,248	328	-	36,962

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

Sources: HNTB analysis.

Table 23

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Low Forecast Scenario: Lake Elmo (a)

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Based Aircraft Forecast								
2005	221	11	0	0	0	2	2	236
2010	219	11	0	0	0	3	3	236
2015	213	10	0	0	0	3	3	229
2020	204	10	0	0	0	3	3	220
2025	200	10	0	0	0	4	3	217
Forecast of Total Aircraft Operations								
2005	54,471	1,976	597	0	-	623	-	57,667
2010	56,527	2,078	639	54	-	899	-	60,197
2015	57,651	1,985	675	121	-	889	-	61,321
2020	57,896	2,085	707	188	-	888	-	61,764
2025	59,337	2,185	738	255	-	1,184	-	63,700
Forecast of Touch&Go Operations								
2005	22,148	212	-	-	-	80	-	22,440
2010	22,984	223	-	-	-	115	-	23,322
2015	23,441	213	-	-	-	114	-	23,768
2020	23,540	224	-	-	-	113	-	23,877
2025	24,126	235	-	-	-	151	-	24,512
Forecast of Non Touch&Go Operations								
2005	32,323	1,764	597	0	-	543	-	35,227
2010	33,543	1,855	639	54	-	784	-	36,875
2015	34,210	1,772	675	121	-	775	-	37,553
2020	34,356	1,861	707	188	-	775	-	37,887
2025	35,211	1,950	738	255	-	1,033	-	39,188

(a) Assumes no runway extensions at Crystal, Airlake, or Lake Elmo.

(b) Balloons, gliders, and ultralight aircraft.

Source: HNTB analysis.

Table A.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Historical Population

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)		
1980	196,934	37,246	195,537	944,339	460,972	44,037	114,207	1,993,272	227,224,719	0.88%		
1981	200,223	37,960	200,120	953,632	464,661	44,949	116,489	2,018,034	229,465,744	0.88%		
1982	203,185	38,516	204,814	961,435	467,807	45,803	118,856	2,040,416	231,664,432	0.88%		
1983	205,362	38,799	207,632	966,876	469,240	46,005	120,247	2,054,161	233,792,014	0.88%		
1984	208,888	39,342	213,995	972,868	469,887	47,187	122,543	2,074,710	235,824,907	0.88%		
1985	213,359	40,208	221,244	985,599	473,859	48,987	124,760	2,108,016	237,923,734	0.89%		
1986	218,309	41,263	228,968	997,454	478,857	50,405	127,522	2,142,778	240,132,831	0.89%		
1987	224,834	42,741	241,271	1,005,648	480,597	52,568	131,170	2,178,829	242,288,936	0.90%		
1988	232,370	44,715	255,030	1,018,825	483,483	54,895	137,085	2,226,403	244,499,004	0.91%		
1989	237,833	46,304	265,585	1,026,682	485,633	56,454	141,537	2,260,028	246,819,222	0.92%		
1990	245,255	48,409	277,866	1,035,132	486,531	58,285	146,940	2,298,418	249,622,814	0.92%		
1991	251,565	50,251	286,916	1,043,220	488,277	60,328	152,340	2,332,897	252,980,941	0.92%		
1992	257,253	52,089	296,694	1,050,216	491,517	62,549	158,392	2,368,710	256,514,224	0.92%		
1993	261,729	54,436	305,852	1,059,615	492,298	65,393	166,677	2,406,000	259,918,588	0.93%		
1994	268,278	56,936	311,008	1,069,030	493,614	68,352	173,796	2,441,014	263,125,821	0.93%		
1995	273,226	59,644	319,218	1,076,932	495,857	70,987	179,062	2,474,926	266,278,393	0.93%		
1996	278,260	62,197	328,159	1,083,757	498,326	73,883	183,824	2,508,406	269,394,284	0.93%		
1997	282,976	63,939	335,640	1,089,694	502,514	77,754	188,208	2,540,725	272,646,925	0.93%		
1998	288,089	65,838	343,231	1,099,002	506,075	80,878	192,341	2,575,454	275,854,104	0.93%		
1999	293,599	68,181	350,520	1,109,634	509,175	85,094	197,391	2,613,594	279,040,168	0.94%		
2000	299,829	70,878	357,882	1,117,658	511,348	91,112	202,651	2,651,358	282,192,162	0.94%		
2001	305,573	73,295	363,839	1,123,247	512,141	97,552	207,329	2,682,976	285,102,075	0.94%		
2002	310,319	76,102	368,955	1,120,443	509,518	103,852	210,455	2,699,644	287,941,220	0.94%		
2003	314,403	79,106	373,521	1,120,433	504,728	108,910	214,054	2,715,155	290,788,976	0.93%		
				Average Annual Growth Rate								
1980-2003	2.1%	3.3%	2.9%	0.7%	0.4%	4.0%	2.8%	1.4%	1.1%			
1980-1990	2.2%	2.7%	3.6%	0.9%	0.5%	2.8%	2.6%	1.4%	0.9%			
1990-2003	1.9%	3.8%	2.3%	0.6%	0.3%	4.9%	2.9%	1.3%	1.2%			

(a) Seven-county Metropolitan Council share of U.S.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table A.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Population

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
Metropolitan Council - Regional Development Framework (RFD) Forecasts (a)										
2000	298,084	70,205	355,904	1,116,206	511,035	89,498	201,130	2,642,062	n/a	n/a
2003 (b)	316,140	81,517	375,721	1,145,529	522,035	107,001	218,342	2,766,283	n/a	n/a
2010	358,270	107,910	421,960	1,213,950	547,700	147,840	258,502	3,056,132	n/a	n/a
2015 (b)	379,040	133,605	451,055	1,261,990	559,280	170,870	287,273	3,243,113	n/a	n/a
2020	399,810	159,300	480,150	1,310,030	570,860	193,900	316,043	3,430,093	n/a	n/a
2025 (b)	406,535	175,340	498,580	1,347,415	584,880	207,785	340,807	3,561,342	n/a	n/a
2030	413,260	191,380	517,010	1,384,800	598,900	221,670	365,570	3,692,590	n/a	n/a
Average Annual Growth Rate										
2003-2030	1.0%	3.2%	1.2%	0.7%	0.5%	2.7%	1.9%	1.1%	n/a	n/a
Woods & Poole (W&P) Forecasts (c)										
2000	299,700	70,870	357,810	1,117,680	511,360	91,100	202,620	2,651,140	282,177,840	0.94%
2002	310,120	76,040	368,900	1,121,890	510,790	103,780	210,420	2,701,940	287,974,000	0.94%
2003 (b)	314,980	78,455	376,605	1,124,135	508,865	107,725	215,315	2,726,080	290,788,976	0.94%
2004	319,840	80,870	384,310	1,126,380	506,940	111,670	220,210	2,750,220	293,545,240	0.94%
2010	355,400	92,490	451,170	1,162,370	512,430	130,390	260,580	2,964,830	311,066,043	0.95%
2015	385,950	102,320	507,870	1,195,890	518,580	146,310	294,800	3,151,720	326,524,524	0.97%
2020	417,140	112,390	565,430	1,231,660	525,750	162,460	329,510	3,344,340	342,578,784	0.98%
2025	449,310	122,750	624,350	1,270,220	534,120	178,990	365,000	3,544,740	359,419,734	0.99%
2030	483,190	133,570	685,690	1,313,130	544,240	196,230	401,950	3,758,000	377,478,700	1.00%
Average Annual Growth Rate										
2003-2030	1.6%	2.0%	2.2%	0.6%	0.2%	2.2%	2.3%	1.2%		
Metropolitan Council - Regional Development Framework (RFD) Forecasts Adjusted for Base Year and Scaled to W&P (d)										
2000	298,084	70,205	355,904	1,116,206	511,035	89,498	201,130	2,642,062	282,177,840	0.94%
2003	314,403	79,106	373,521	1,120,433	504,728	108,910	214,054	2,715,155	290,788,976	0.93%
2010	350,432	102,994	412,578	1,167,793	520,818	147,999	249,251	2,951,865	311,066,043	0.95%
2015	371,311	127,712	441,697	1,215,853	532,639	171,314	277,413	3,137,938	326,524,524	0.96%
2020	392,860	152,741	471,632	1,266,012	545,337	195,001	306,133	3,329,716	342,578,784	0.97%
2025	407,783	171,620	499,929	1,329,244	570,359	213,314	336,991	3,529,240	359,419,734	0.98%
2030	423,829	191,523	530,040	1,396,777	597,135	232,674	369,588	3,741,567	377,516,811	0.99%
Average Annual Growth Rate										
2003-2030	1.1%	3.3%	1.3%	0.8%	0.6%	2.9%	2.0%	1.2%		

(a) Metropolitan Council, Regional Development Framework 2030 Forecasts, January 2004.

(b) Interpolated.

(c) Woods & Poole Economics, The Complete Economic and Demographic Data Source (CEDDS) 2005.

(d) Forecast growth rates for each county applied to actual 2003 base year data and then adjusted proportionately so that the sum for the seven counties is equal to the Woods and Poole projection for the seven-counties.

Sources: As noted and HNTB analysis.

Table A.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Historical Employment

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)	
1980	71,250	15,375	76,173	726,794	315,451	18,189	36,572	1,259,804	114,231,200	1.10%	
1981	71,162	15,860	76,664	726,485	312,531	18,278	38,320	1,259,300	115,304,000	1.09%	
1982	71,292	15,540	76,468	713,831	306,446	18,298	38,283	1,240,158	114,557,300	1.08%	
1983	74,117	15,820	79,088	720,189	308,835	18,809	40,821	1,257,679	116,056,700	1.08%	
1984	80,808	16,400	88,692	767,297	326,963	19,872	42,907	1,342,939	121,091,100	1.11%	
1985	83,765	17,772	95,754	796,146	333,929	21,181	45,079	1,393,626	124,509,700	1.12%	
1986	86,853	17,955	100,331	815,034	337,165	22,056	47,560	1,426,954	126,970,300	1.12%	
1987	92,616	19,427	110,435	850,058	345,939	23,435	51,691	1,493,601	130,400,400	1.15%	
1988	97,741	20,399	121,207	872,162	352,956	24,674	53,311	1,542,450	134,506,900	1.15%	
1989	101,414	21,904	127,684	889,872	354,128	25,081	54,815	1,574,898	137,199,800	1.15%	
1990	104,479	24,435	133,888	901,274	356,281	26,151	56,536	1,603,044	139,380,900	1.15%	
1991	107,472	25,900	137,606	893,801	355,350	27,208	57,844	1,605,181	138,605,800	1.16%	
1992	109,571	28,192	143,206	902,511	356,107	29,476	59,225	1,628,288	139,162,100	1.17%	
1993	112,016	30,810	147,745	919,139	359,840	31,925	61,093	1,662,568	141,779,400	1.17%	
1994	116,186	32,959	155,510	941,673	366,900	33,997	66,184	1,713,409	145,223,600	1.18%	
1995	120,102	35,477	163,862	966,633	375,292	36,571	68,914	1,766,851	148,982,800	1.19%	
1996	123,382	36,117	170,393	983,582	377,989	38,314	72,478	1,802,255	152,150,200	1.18%	
1997	125,877	37,155	174,971	996,767	383,013	39,100	77,642	1,834,525	155,608,200	1.18%	
1998	130,644	39,013	181,302	1,023,599	390,128	38,829	80,646	1,884,161	159,628,200	1.18%	
1999	139,474	39,878	192,330	1,038,891	393,937	41,487	81,993	1,927,990	162,955,300	1.18%	
2000	144,501	41,954	199,367	1,057,734	398,286	44,544	85,883	1,972,269	166,758,800	1.18%	
2001	149,589	43,660	205,024	1,046,186	401,445	47,128	88,983	1,982,015	167,014,700	1.19%	
2002	150,112	44,743	211,050	1,020,181	397,554	48,609	89,376	1,961,625	166,699,000	1.18%	
2003	152,667	45,845	217,163	1,009,981	395,579	50,175	91,507	1,962,917	167,174,400	1.17%	
				Average Annual Growth Rate							
1980-2003	3.4%	4.9%	4.7%	1.4%	1.0%	4.5%	4.1%	1.9%	1.7%		
1980-1990	3.9%	4.7%	5.8%	2.2%	1.2%	3.7%	4.5%	2.4%	2.0%		
1990-2003	3.0%	5.0%	3.8%	0.9%	0.8%	5.1%	3.8%	1.6%	1.4%		

(a) Seven-county Metropolitan Council share of U.S.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table A.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Employment

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
Metropolitan Council - Regional Development Framework (RFD) Forecasts (a)										
2000	106,814	26,657	148,261	856,838	329,145	32,009	63,521	1,563,245	n/a	n/a
2003 (b)	112,588	30,606	157,636	890,754	342,011	35,849	70,718	1,640,161	n/a	n/a
2010	126,060	39,820	179,510	969,890	372,030	44,810	87,510	1,819,630	n/a	n/a
2015 (b)	132,095	45,590	189,425	1,007,750	388,205	49,320	98,460	1,910,845	n/a	n/a
2020	138,130	51,360	199,340	1,045,610	404,380	53,830	109,410	2,002,060	n/a	n/a
2025 (b)	143,575	55,140	206,745	1,075,420	416,910	57,360	118,980	2,074,130	n/a	n/a
2030	149,020	58,920	214,150	1,105,230	429,440	60,890	128,550	2,146,200	n/a	n/a
Average Annual Growth Rate										
2003-2030	1.0%	2.5%	1.1%	0.8%	0.8%	2.0%	2.2%	1.0%	n/a	n/a
Woods & Poole (W&P) Forecasts (c)										
2000	144,500	41,950	199,370	1,057,730	398,290	44,540	85,880	1,972,260	166,758,780	1.18%
2002	150,110	44,370	209,930	1,025,000	399,020	47,930	89,330	1,965,690	167,033,560	1.18%
2003 (b)	153,625	45,680	217,730	1,036,435	403,615	49,415	92,350	1,998,850	169,546,190	1.18%
2004	157,140	46,990	225,530	1,047,870	408,210	50,900	95,370	2,032,010	172,058,820	1.18%
2010	178,160	54,840	272,150	1,116,530	435,750	59,750	113,490	2,230,670	187,135,170	1.19%
2015	195,580	61,360	310,830	1,173,720	458,640	67,090	128,590	2,395,810	199,698,510	1.20%
2020	212,950	67,870	349,400	1,230,830	481,460	74,400	143,680	2,560,590	212,262,140	1.21%
2025	230,260	74,380	387,860	1,287,830	504,200	81,680	158,770	2,724,980	224,825,650	1.21%
2030	247,510	80,860	426,230	1,344,680	526,850	88,940	173,850	2,888,920	237,389,280	1.22%
Average Annual Growth Rate										
2003-2030	1.8%	2.1%	2.5%	1.0%	1.0%	2.2%	2.4%	1.4%		
Metropolitan Council - Regional Development Framework (RFD) Forecasts Adjusted for Base Year and Scaled to W&P (d)										
2000	144,500	41,950	199,370	1,057,730	398,290	44,540	85,880	1,972,260	166,758,800	1.18%
2003	152,667	45,845	217,163	1,009,981	395,579	50,175	91,507	1,962,917	167,174,400	1.17%
2010	171,462	59,831	248,059	1,103,098	431,626	62,910	113,585	2,190,570	184,517,327	1.19%
2015	183,509	69,964	267,354	1,170,648	460,016	70,721	130,528	2,352,741	196,904,918	1.19%
2020	195,505	80,302	286,643	1,237,490	488,202	78,641	147,775	2,514,559	209,292,794	1.20%
2025	208,565	88,483	305,123	1,306,297	516,588	86,005	164,933	2,675,993	221,680,553	1.21%
2030	221,614	96,794	323,555	1,374,381	544,747	93,466	182,430	2,836,986	234,068,430	1.21%
Average Annual Growth Rate										
2003-2030	1.4%	2.8%	1.5%	1.1%	1.2%	2.3%	2.6%	1.4%	1.3%	

(a) Metropolitan Council, Regional Development Framework 2030 Forecasts, January 2004.

(b) Interpolated.

(c) Woods & Poole Economics, The Complete Economic and Demographic Data Source (CEDDS) 2005.

(d) Forecast growth rates for each county applied to actual 2003 base year data and then adjusted proportionately so that the sum for the seven counties is equal to the Woods and Poole projection for the seven-counties.

Sources: As noted and HNTB analysis.

Table A.5

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Historical Real Personal Income (thousands of 2004 dollars)

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
1980	4,098,430	824,896	4,611,556	25,738,780	11,097,246	962,680	2,573,448	49,907,037	4,777,005,851	1.04%
1981	4,143,934	852,384	4,800,367	26,162,114	11,305,415	987,018	2,707,452	50,958,682	4,924,887,652	1.03%
1982	4,245,054	868,162	4,993,698	26,819,751	11,580,443	1,011,855	2,832,065	52,351,027	4,999,880,552	1.05%
1983	4,434,570	885,760	5,232,509	27,460,543	11,852,311	1,042,250	2,979,043	53,886,986	5,114,245,551	1.05%
1984	4,823,640	987,460	5,836,518	29,610,402	12,669,379	1,150,575	3,294,805	58,372,780	5,472,533,190	1.07%
1985	5,054,667	1,059,086	6,250,796	31,010,485	13,091,225	1,228,235	3,513,355	61,207,849	5,678,393,430	1.08%
1986	5,273,670	1,120,602	6,557,146	32,225,590	13,470,889	1,295,593	3,714,128	63,657,618	5,853,923,915	1.09%
1987	5,470,755	1,191,922	7,011,903	33,362,088	13,752,562	1,356,776	3,925,712	66,071,719	6,003,223,042	1.10%
1988	5,662,784	1,236,849	7,521,351	34,471,086	13,973,592	1,413,656	4,105,581	68,384,899	6,219,077,963	1.10%
1989	5,885,199	1,355,159	8,035,342	35,670,975	14,203,776	1,476,790	4,204,209	70,831,450	6,428,400,752	1.10%
1990	5,976,402	1,407,323	8,282,248	36,171,917	14,533,894	1,514,286	4,369,158	72,255,228	6,537,865,838	1.11%
1991	6,067,166	1,442,496	8,429,466	35,843,251	14,469,174	1,542,900	4,480,501	72,274,955	6,529,868,354	1.11%
1992	6,376,300	1,556,855	8,963,992	37,074,757	14,631,962	1,657,412	4,831,445	75,092,724	6,746,940,488	1.11%
1993	6,667,322	1,661,767	9,243,399	37,033,572	14,543,366	1,752,510	5,077,621	75,979,557	6,839,801,214	1.11%
1994	7,072,401	1,796,044	9,820,004	38,277,788	15,000,864	1,880,083	5,487,849	79,335,033	7,043,712,371	1.13%
1995	7,371,130	1,956,998	10,320,916	40,118,885	15,502,595	2,021,863	5,779,304	83,071,690	7,263,217,121	1.14%
1996	7,750,277	2,123,748	11,003,888	41,548,078	16,102,350	2,202,903	6,078,771	86,810,015	7,535,788,976	1.15%
1997	8,148,167	2,289,670	11,739,495	44,003,450	16,398,271	2,411,174	6,453,322	91,443,549	7,860,172,613	1.16%
1998	8,824,257	2,545,701	12,867,504	47,388,630	17,449,449	2,652,210	7,050,111	98,777,862	8,363,592,036	1.18%
1999	9,349,713	2,727,687	13,441,522	49,335,232	17,665,707	2,916,363	7,461,257	102,897,482	8,648,738,362	1.19%
2000	9,986,412	2,985,484	14,169,374	52,112,908	18,484,297	3,324,987	7,991,782	109,055,244	9,116,558,222	1.20%
2001	10,069,756	3,135,609	14,178,568	51,857,296	18,730,706	3,455,068	8,228,984	109,655,985	9,242,262,190	1.19%
2002	10,328,814	3,226,822	14,408,185	51,375,435	18,966,987	3,541,112	8,340,842	110,188,197	9,272,771,870	1.19%
2003	10,520,698	3,311,438	14,664,654	51,634,272	19,033,353	3,672,368	8,516,902	111,353,685	9,388,118,544	1.19%
	Average Annual Growth Rate									
1980-2003	4.2%	6.2%	5.2%	3.1%	2.4%	6.0%	5.3%	3.6%	3.0%	
1980-1990	3.8%	5.5%	6.0%	3.5%	2.7%	4.6%	5.4%	3.8%	3.2%	
1990-2003	4.4%	6.8%	4.5%	2.8%	2.1%	7.1%	5.3%	3.4%	2.8%	

(a) Seven-county Metropolitan Council share of U.S.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table A.6

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Income

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
Metropolitan Council - Regional Development Framework (RFD) Forecasts (a)										
2000	9,932,563	2,957,473	14,093,897	52,044,177	18,472,552	3,266,519	7,933,016	108,700,197	n/a	n/a
2003	10,532,486	3,384,861	14,969,606	53,916,152	19,671,029	3,606,546	8,656,070	114,736,749	n/a	n/a
2010	12,770,299	4,771,890	18,273,191	62,001,905	22,740,147	5,230,592	10,790,945	136,578,968	n/a	n/a
2015	14,108,118	6,213,440	20,578,262	68,064,608	24,716,354	6,311,432	12,491,039	152,483,252	n/a	n/a
2020	15,542,556	7,787,797	23,100,434	74,653,537	26,850,671	7,481,506	14,346,098	169,762,599	n/a	n/a
2025	16,504,619	9,008,960	25,313,643	81,150,332	29,275,292	8,376,039	16,171,468	185,800,354	n/a	n/a
2030	17,501,887	10,324,857	27,692,644	88,082,293	31,873,412	9,325,977	18,128,671	202,929,741	n/a	n/a
Average Annual Growth Rate										
2003-2030	1.9%	4.2%	2.3%	1.8%	1.8%	3.6%	2.8%	2.1%	n/a	n/a
Woods & Poole (W&P) Forecasts (b)										
2000	9,986,410	2,985,487	14,169,376	52,112,904	18,484,300	3,324,989	7,991,785	109,055,250	9,116,561,040	1.20%
2002	10,174,906	3,148,862	14,379,545	51,957,004	18,851,457	3,514,098	8,288,056	110,313,929	9,303,807,747	1.19%
2003 (c)	10,493,846	3,257,736	15,004,835	52,909,200	19,174,783	3,630,963	8,536,081	113,007,444	9,504,286,231	1.19%
2004	10,812,786	3,366,611	15,630,124	53,861,396	19,498,108	3,747,827	8,784,106	115,700,958	9,704,764,715	1.19%
2010	12,668,000	4,090,002	19,538,144	59,367,481	21,275,760	4,613,209	10,877,689	132,430,286	10,957,993,897	1.21%
2015	14,365,312	4,758,499	23,170,305	64,499,548	22,917,692	5,404,258	12,818,346	147,933,959	12,130,733,146	1.22%
2020	16,216,257	5,494,479	27,203,329	70,187,534	24,728,900	6,268,414	14,957,404	165,056,318	13,437,074,576	1.23%
2025	18,241,210	6,306,888	31,699,171	76,501,134	26,734,576	7,215,281	17,319,464	184,017,726	14,895,555,401	1.24%
2030	20,463,478	7,206,036	36,727,663	83,523,614	28,964,411	8,255,680	19,932,760	205,073,642	16,527,767,660	1.24%
Average Annual Growth Rate										
2003-2030	2.5%	3.0%	3.4%	1.7%	1.5%	3.1%	3.2%	2.2%	2.1%	
Metropolitan Council - Regional Development Framework (RFD) Forecasts Adjusted for Base Year and Scaled to W&P (d)										
2000	9,986,412	2,985,484	14,169,374	52,112,908	18,484,297	3,324,987	7,991,782	109,055,244	9,116,558,222	1.20%
2003	10,520,698	3,311,438	14,664,654	51,634,272	19,033,353	3,672,368	8,516,902	111,353,685	9,388,118,544	1.19%
2010	12,545,853	4,591,469	17,606,023	58,399,571	21,640,483	5,238,307	10,442,533	130,464,239	10,824,058,031	1.21%
2015	13,881,232	5,987,606	19,857,081	64,207,508	23,556,888	6,330,352	12,106,115	145,926,782	11,982,463,283	1.22%
2020	15,339,561	7,527,787	22,359,311	70,639,301	25,669,665	7,526,976	13,946,703	163,009,304	13,272,837,742	1.23%
2025	16,628,101	8,889,431	25,011,490	78,385,001	28,570,179	8,602,345	16,048,479	182,135,026	14,713,492,048	1.24%
2030	18,028,465	10,416,459	27,976,030	86,989,735	31,803,654	9,792,853	18,394,463	203,401,658	16,325,754,327	1.25%
Average Annual Growth Rate										
2003-2030	2.0%	4.3%	2.4%	2.0%	1.9%	3.7%	2.9%	2.3%	2.1%	

(a) Metropolitan Council, Regional Development Framework 2030 Forecasts for population (Table A.2) multiplied by W&P forecasts for per capita income (Table A.8).

(b) Woods & Poole Economics, The Complete Economic and Demographic Data Source (CEDDS) 2005.

(c) Interpolated.

(d) Population forecasts adjusted for base year and scaled (Table A.2) multiplied by per capita income forecasts adjusted for base year (Table A.8).

Sources: As noted and HNTB analysis.

Table A.7

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Historical Real Per Capita Personal Income (2004 dollars)

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
1980	20,811	22,147	23,584	27,256	24,074	21,861	22,533	25,038	21,023	119.1%
1981	20,697	22,455	23,987	27,434	24,330	21,959	23,242	25,252	21,462	117.7%
1982	20,893	22,540	24,382	27,896	24,755	22,091	23,828	25,657	21,582	118.9%
1983	21,594	22,829	25,201	28,401	25,259	22,655	24,774	26,233	21,875	119.9%
1984	23,092	25,099	27,274	30,436	26,963	24,383	26,887	28,135	23,206	121.2%
1985	23,691	26,340	28,253	31,464	27,627	25,073	28,161	29,036	23,866	121.7%
1986	24,157	27,158	28,638	32,308	28,131	25,704	29,125	29,708	24,378	121.9%
1987	24,332	27,887	29,062	33,175	28,616	25,810	29,928	30,324	24,777	122.4%
1988	24,370	27,661	29,492	33,834	28,902	25,752	29,949	30,715	25,436	120.8%
1989	24,745	29,267	30,255	34,744	29,248	26,159	29,704	31,341	26,045	120.3%
1990	24,368	29,072	29,807	34,944	29,872	25,981	29,734	31,437	26,191	120.0%
1991	24,118	28,706	29,380	34,358	29,633	25,575	29,411	30,981	25,812	120.0%
1992	24,786	29,888	30,213	35,302	29,769	26,498	30,503	31,702	26,302	120.5%
1993	25,474	30,527	30,222	34,950	29,542	26,800	30,464	31,579	26,315	120.0%
1994	26,362	31,545	31,575	35,806	30,390	27,506	31,576	32,501	26,769	121.4%
1995	26,978	32,811	32,332	37,253	31,264	28,482	32,275	33,565	27,277	123.1%
1996	27,853	34,146	33,532	38,337	32,313	29,816	33,068	34,608	27,973	123.7%
1997	28,795	35,810	34,976	40,381	32,632	31,010	34,288	35,991	28,829	124.8%
1998	30,630	38,666	37,489	43,120	34,480	32,793	36,654	38,354	30,319	126.5%
1999	31,845	40,007	38,347	44,461	34,695	34,272	37,799	39,370	30,995	127.0%
2000	33,307	42,121	39,592	46,627	36,148	36,493	39,436	41,132	32,306	127.3%
2001	32,954	42,781	38,969	46,167	36,573	35,418	39,690	40,871	32,417	126.1%
2002	33,285	42,401	39,051	45,853	37,225	34,098	39,632	40,816	32,204	126.7%
2003	33,462	41,861	39,261	46,084	37,710	33,719	39,789	41,012	32,285	127.0%
	Average Annual Growth Rate									
1980-2003	2.1%	2.8%	2.2%	2.3%	2.0%	1.9%	2.5%	2.2%	1.9%	0.3%
1980-1990	1.6%	2.8%	2.4%	2.5%	2.2%	1.7%	2.8%	2.3%	2.2%	0.1%
1990-2003	2.5%	2.8%	2.1%	2.2%	1.8%	2.0%	2.3%	2.1%	1.6%	0.4%

(a) Seven-county Metropolitan Council share of U.S.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table A.8

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Per Capita Income

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
Metropolitan Council - Regional Development Framework (RFD) Forecasts (a)										
2000	33,321	42,126	39,600	46,626	36,147	36,498	39,442	41,135	n/a	n/a
2003	33,316	41,524	39,842	47,067	37,681	33,706	39,645	41,454	n/a	n/a
2010	35,644	44,221	43,306	51,075	41,519	35,380	41,744	44,667	n/a	n/a
2015	37,221	46,506	45,623	53,934	44,193	36,937	43,481	46,938	n/a	n/a
2020	38,875	48,888	48,111	56,986	47,035	38,584	45,393	49,354	n/a	n/a
2025	40,598	51,380	50,771	60,227	50,054	40,311	47,451	51,913	n/a	n/a
2030	42,351	53,950	53,563	63,607	53,220	42,071	49,590	54,570	n/a	n/a
Average Annual Growth Rate										
2003-2030	0.9%	1.0%	1.1%	1.1%	1.3%	0.8%	0.8%	1.0%	n/a	n/a
Woods & Poole (W&P) Forecasts (b)										
2000	33,321	42,126	39,600	46,626	36,147	36,498	39,442	41,135	32,308	127.32%
2002	32,810	41,411	38,980	46,312	36,906	33,861	39,388	40,828	32,308	126.37%
2003 (c)	33,316	41,524	39,842	47,067	37,681	33,706	39,645	41,454	32,684	126.83%
2004	33,807	41,630	40,671	47,818	38,462	33,562	39,890	42,070	33,061	127.25%
2010	35,644	44,221	43,306	51,075	41,519	35,380	41,744	44,667	35,227	126.80%
2015	37,221	46,506	45,623	53,934	44,193	36,937	43,481	46,938	37,151	126.34%
2020	38,875	48,888	48,111	56,986	47,035	38,584	45,393	49,354	39,223	125.83%
2025	40,598	51,380	50,771	60,227	50,054	40,311	47,451	51,913	41,443	125.26%
2030	42,351	53,950	53,563	63,607	53,220	42,071	49,590	54,570	43,785	124.63%
Average Annual Growth Rate										
2003-2030	0.9%	1.0%	1.1%	1.1%	1.3%	0.8%	0.8%	1.0%	1.1%	
Woods & Poole Forecasts Adjusted for Base Year (d)										
2000	33,321	42,126	39,600	46,626	36,147	36,498	39,442	41,135	32,308	127.32%
2003	33,462	41,861	39,261	46,084	37,710	33,719	39,789	41,012	32,285	127.03%
2010	35,801	44,580	42,673	50,008	41,551	35,394	41,896	44,667	34,797	128.37%
2015	37,384	46,884	44,956	52,809	44,227	36,952	43,639	46,938	36,697	127.91%
2020	39,046	49,285	47,408	55,797	47,071	38,600	45,558	49,354	38,744	127.39%
2025	40,777	51,797	50,030	58,970	50,092	40,327	47,623	51,913	40,937	126.81%
2030	42,537	54,388	52,781	62,279	53,260	42,088	49,770	54,570	43,245	126.19%
Average Annual Growth Rate										
2003-2030	0.9%	1.0%	1.1%	1.1%	1.3%	0.8%	0.8%	1.1%	1.1%	

(a) Assumed to be the same as the Woods & Poole forecasts.

(b) Woods & Poole Economics, The Complete Economic and Demographic Data Source (CEDDS) 2005.

(c) Interpolated.

(d) Woods & Poole forecasts adjusted for 2003 base year.

Sources: As noted and HNTB analysis.

Table B.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Active General Aviation Aircraft in the United States

Year	Piston Single Engine	Piston Multi- Engine	Piston Other	Total Piston	Turbo- prop	Turbo- jet	Rotor- craft	Experimental (a)	Other (b)	TOTAL
1980	168,435	24,366	212	193,013	4,090	2,992	6,001	NA	4,945	211,045
1981	167,898	25,356	114	193,368	4,660	3,171	6,974	NA	5,049	213,226
1982	164,173	24,882	140	189,195	5,186	3,996	6,169	NA	5,233	209,779
1983	166,427	24,909	143	191,479	5,453	3,898	6,539	NA	5,923	213,293
1984	171,922	25,258	262	197,442	5,809	4,320	7,096	NA	6,275	220,943
1985	153,400	22,100	100	175,600	5,000	4,100	6,000	NA	5,800	196,500 (c)
1986	160,300	22,100	100	182,500	5,600	4,200	6,500	NA	6,500	205,300 (c)
1987	159,700	21,700	100	181,500	4,900	4,000	5,900	NA	6,300	202,700 (c)
1988	153,700	21,200	100	175,000	4,900	3,900	6,000	NA	6,400	196,200 (c)
1989	158,900	21,800	100	180,800	5,900	4,100	7,000	NA	7,200	205,000 (c)
1990	154,000	21,100	100	175,200	5,300	4,100	6,900	NA	6,600	198,000 (c)
1991	152,836	20,551	131	173,518	4,941	4,126	6,238	NA	8,051	196,874 (d)
1992	144,837	17,966	77	162,881	4,786	4,004	5,979	NA	8,000	185,650 (d)
1993	133,516	15,626	14	149,156	4,116	3,663	4,721	10,426	5,037	177,120 (d)
1994	127,351	14,801	NA	142,152	4,092	3,914	4,728	12,144	5,906	172,936 (d)
1995	137,049	15,739	NA	152,788	4,995	4,559	5,830	15,176	4,741	188,089 (d)
1996	137,401	16,150	NA	153,551	5,716	4,424	6,570	16,625	4,244	191,129
1997	140,038	16,017	NA	156,055	5,619	5,178	6,785	14,680	4,092	192,414
1998	144,234	18,729	NA	162,963	6,174	6,066	7,426	16,502	5,580	204,710
1999	150,886	21,038	NA	171,924	5,679	7,120	7,448	20,528	6,765	219,464
2000	149,422	21,091	140	170,653	5,762	7,001	7,150	20,407	6,700	217,533
2001	145,034	18,281	NA	163,315	6,596	7,787	6,783	20,421	6,545	211,447
2002	143,503	17,584	NA	161,087	6,841	8,355	6,648	21,936	6,377	211,244
2003	143,265	17,491	NA	160,756	7,689	7,997	6,526	20,550	6,088	209,606
2004	143,831	17,456	NA	161,287	7,806	8,280	6,965	21,995	6,057	212,390
2005	144,530	17,481	NA	162,011	8,030	8,628	7,595	22,300	6,027	214,591

(a) Amateur, exhibition and other.

(b) Gliders and lighter-than-air craft.

(c) Revised to correct for nonresponse bias on FAA G.A. Activity Survey.

(d) Revised due to change in estimating procedures for the 1996 FAA G.A. Activity Survey.

Sources: Federal Aviation Administration and Aircraft Owners and Pilots Association.

Table B.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Historical Ratio of MAC Based Aircraft to U.S. Active Fleet

Year	US Active Aircraft (a)	MAC Based Aircraft (b)	Ratio Based AC to US Active Fleet (c)
1980	211,045	1,689	0.0080
1981	213,226	1,731	0.0081
1982	209,779	1,827	0.0087
1983	213,293	1,791	0.0084
1984	220,943	1,858	0.0084
1985	196,500	n/a	n/a
1986	205,300	n/a	n/a
1987	202,700	n/a	n/a
1988	196,200	n/a	n/a
1989	205,000	n/a	n/a
1990	198,000	n/a	n/a
1991	196,874	n/a	n/a
1992	185,650	n/a	n/a
1993	177,120	n/a	n/a
1994	172,936	n/a	n/a
1995	188,089	n/a	n/a
1996	191,129	n/a	n/a
1997	192,414	n/a	n/a
1998	204,710	n/a	n/a
1999	219,464	1,893	0.0086
2000	217,533	1,821	0.0084
2001	211,447	1,737	0.0082
2002	211,244	1,765	0.0084
2003	209,606	1,808	0.0086
2004	212,390	1,760	0.0083
2005	214,591	1,739	0.0081

(a) Table B.1

(b) Based aircraft at MAC airports from Table 2.

(c) Ratio of based aircraft at MAC airports to U.S. Active Fleet.

Sources: As noted and HNTB analysis.

Table B.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Historical Registered Aircraft at Met Council Counties

Year	Seven Couty Income Share (a)	Based AC to US Active Ratio (b)	Regional Aircraft Ratio Divided by Income Share (c)	Index (d)
1999	0.0119	0.0086	0.7250	
2000	0.0120	0.0084	0.6998	
2001	0.0119	0.0082	0.6924	
2002	0.0119	0.0084	0.7031	
2003	0.0119	0.0086	0.7272	106.4
2004	0.0119	0.0083	0.6986	
2005	0.0119	0.0081	0.6832	100.0
2010	0.0123		0.6779	99.2
2015	0.0124		0.6621	96.9
2020	0.0124		0.6467	94.6
2025	0.0123		0.6316	92.4

(a) Seven county share of U.S. income from Table A.5 in Appendix A and Table 1. Share in 2004 and 2005 assumed to be the same as in 2003.

(b) Table B.2 in Appendix B.

(c) Ratio of Based Aircraft to US Active Aircraft divided by income share. Assumed to continue to change at historical trends.

(d) Ratio of Based Aircraft to US Active Aircraft divided by income share converted in index in which 2005 equals 100.

Sources: As noted and HNTB analysis.

Table C.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County and Aircraft Category

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
	Turboprop								
Crystal	0	0	0	1	0	0	0	0	1
Airlake	0	0	0	0	0	1	0	0	1
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	2	0	0	4	1	0	0	2	9
Flying Cloud	0	1	1	32	0	0	0	1	35
MSP	0	0	0	0	0	0	0	1	1
St. Paul Downtown-Holman Field	0	0	0	2	6	0	0	1	9
Total MAC Airports	2	1	1	39	7	1	0	5	56
	Turboprop Aircraft - Distribution (a)								
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000	0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000	0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000	0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000	0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000

Table C.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County and Aircraft Category

Airport	County of Registration								Total	
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)		
Microjets										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	0	0	0	0	0	0	0	0	0	0
Flying Cloud	0	0	0	0	0	0	0	0	0	0
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0	0
Total MAC Airports	0	0	0	0	0	0	0	0	0	0
Microjet Aircraft - Distribution (b)										
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.0000	0.3250	0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.0000	0.1625	0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.0000	0.1625	0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.0000	0.3500	0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	0.0000	1.0000	1.0000

Table C.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County and Aircraft Category

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
	Other Jets								
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	2	0	1	10	3	0	0	2	18
Flying Cloud	0	0	3	20	0	0	0	1	24
MSP	0	0	0	13	0	0	0	1	14
St. Paul Downtown-Holman Field	0	0	3	11	16	0	1	4	35
Total MAC Airports	2	0	7	54	19	0	1	8	91
	Other Jet Aircraft - Distribution (a)								
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500	0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250	0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250	0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000	0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000

Table C.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County and Aircraft Category

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
	Helicopter								
Crystal	0	0	0	7	0	0	0	1	8
Airlake	0	0	0	0	0	0	0	1	1
Lake Elmo	0	0	0	0	0	0	2	0	2
Anoka County/Blaine - Janes Field	2	0	0	1	3	0	0	0	6
Flying Cloud	0	0	0	2	0	0	0	2	4
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	3	0	0	3	6
Total MAC Airports	2	0	0	10	6	0	2	7	27
	Helicopter - Distribution (a)								
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429	0.2963
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429	0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000	0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857	0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286	0.2222
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000

Table C.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County and Aircraft Category

Airport	County of Registration								Total	
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)		
				Other (c)						
Crystal	0	0	0	0	0	0	0	0	0	
Airlake	0	0	1	0	0	0	0	0	1	
Lake Elmo	0	0	0	0	0	0	2	0	2	
Anoka County/Blaine - Janes Field	1	0	0	0	1	0	0	0	2	
Flying Cloud	0	0	0	0	0	0	0	0	0	
MSP	0	0	0	0	0	0	0	0	0	
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0	
Total MAC Airports	1	0	1	0	1	0	2	0	5	
				Other Aircraft - Distribution (a)						
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.4000	
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.4000	
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total MAC Airports	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	

(a) Distribution of registered aircraft in each county by airport at which they are based. Registered aircraft that are not based at a MAC airport are excluded.

(b) Assumed to be average distribution of turboprops and other jets.

(c) Balloons, gliders and ultralight aircraft.

Sources: Minnesota Department of Transportation Based Aircraft Reports and HNTB analysis.

Table D.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Anoka County and Based at MAC Airports

Year	US Income (a)	Anoka Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Single Engine Piston Aircraft						
2003	\$9,388,118,544	\$10,520,698	98.9	143,265	106	
2005	\$9,798,386,969	\$11,099,313	100.0	144,530	100	173
2010	\$10,824,058,031	\$12,545,853	102.3	147,150	99	179
2015	\$11,982,463,283	\$13,881,232	102.3	149,075	97	177
2020	\$13,272,837,742	\$15,339,561	102.0	150,563	95	174
2025	\$14,713,492,048	\$16,628,101	99.8	152,050	92	168
Multi Engine Piston Aircraft						
2003	\$9,388,118,544	\$10,520,698	98.9	17,491	106	
2005	\$9,798,386,969	\$11,099,313	100.0	17,481	100	21
2010	\$10,824,058,031	\$12,545,853	102.3	17,575	99	21
2015	\$11,982,463,283	\$13,881,232	102.3	17,660	97	21
2020	\$13,272,837,742	\$15,339,561	102.0	17,735	95	21
2025	\$14,713,492,048	\$16,628,101	99.8	17,810	92	20
Turboprop Aircraft						
2003	\$9,388,118,544	\$10,520,698	98.9	7,689	106	
2005	\$9,798,386,969	\$11,099,313	100.0	8,030	100	2
2010	\$10,824,058,031	\$12,545,853	102.3	9,030	99	2
2015	\$11,982,463,283	\$13,881,232	102.3	10,030	97	2
2020	\$13,272,837,742	\$15,339,561	102.0	11,030	95	3
2025	\$14,713,492,048	\$16,628,101	99.8	12,030	92	3
Microjets						
2003	\$9,388,118,544	\$10,520,698	98.9	-	106	
2005	\$9,798,386,969	\$11,099,313	100.0	-	100	0
2010	\$10,824,058,031	\$12,545,853	102.3	1,800	99	0
2015	\$11,982,463,283	\$13,881,232	102.3	4,050	97	1
2020	\$13,272,837,742	\$15,339,561	102.0	6,300	95	1
2025	\$14,713,492,048	\$16,628,101	99.8	8,550	92	2
Other Jet Aircraft						
2003	\$9,388,118,544	\$10,520,698	98.9	7,997	106	
2005	\$9,798,386,969	\$11,099,313	100.0	8,628	100	2

Table D.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Anoka County and Based at MAC Airports

Year	US Income (a)	Anoka Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2010	\$10,824,058,031	\$12,545,853	102.3	9,775	99	2
2015	\$11,982,463,283	\$13,881,232	102.3	11,555	97	3
2020	\$13,272,837,742	\$15,339,561	102.0	13,468	95	3
2025	\$14,713,492,048	\$16,628,101	99.8	15,380	92	3
Helicopters						
2003	\$9,388,118,544	\$10,520,698	98.9	6,526	106	
2005	\$9,798,386,969	\$11,099,313	100.0	7,595	100	2
2010	\$10,824,058,031	\$12,545,853	102.3	9,915	99	3
2015	\$11,982,463,283	\$13,881,232	102.3	11,945	97	3
2020	\$13,272,837,742	\$15,339,561	102.0	13,795	95	4
2025	\$14,713,492,048	\$16,628,101	99.8	15,645	92	4
Other Aircraft						
2003	\$9,388,118,544	\$10,520,698	98.9	26,638	106	
2005	\$9,798,386,969	\$11,099,313	100.0	28,327	100	1
2010	\$10,824,058,031	\$12,545,853	102.3	38,785	99	1
2015	\$11,982,463,283	\$13,881,232	102.3	43,805	97	2
2020	\$13,272,837,742	\$15,339,561	102.0	46,868	95	2
2025	\$14,713,492,048	\$16,628,101	99.8	49,930	92	2
Total Aircraft						
2003						
2005						201
2010						208
2015						209
2020						208
2025						202

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2005 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(e) Table B.3 in Appendix B.

(f) Projected to increase at same rate as U.S. Active Aircraft in that category adjusted by income index and based aircraft index.

Sources: As noted and HNTB analysis.

Table D.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Carver County and Based at MAC Airports

Year	US Income (a)	Carver Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Single Engine Piston Aircraft						
2003	\$9,388,118,544	\$3,311,438	94.0	143,265	106	
2005	\$9,798,386,969	\$3,677,161	100.0	144,530	100	24
2010	\$10,824,058,031	\$4,591,469	113.0	147,150	99	27
2015	\$11,982,463,283	\$5,987,606	133.2	149,075	97	32
2020	\$13,272,837,742	\$7,527,787	151.1	150,563	95	36
2025	\$14,713,492,048	\$8,889,431	161.0	152,050	92	38
Multi Engine Piston Aircraft						
2003	\$9,388,118,544	\$3,311,438	94.0	17,491	106	
2005	\$9,798,386,969	\$3,677,161	100.0	17,481	100	2
2010	\$10,824,058,031	\$4,591,469	113.0	17,575	99	2
2015	\$11,982,463,283	\$5,987,606	133.2	17,660	97	3
2020	\$13,272,837,742	\$7,527,787	151.1	17,735	95	3
2025	\$14,713,492,048	\$8,889,431	161.0	17,810	92	3
Turboprop Aircraft						
2003	\$9,388,118,544	\$3,311,438	94.0	7,689	106	
2005	\$9,798,386,969	\$3,677,161	100.0	8,030	100	1
2010	\$10,824,058,031	\$4,591,469	113.0	9,030	99	1
2015	\$11,982,463,283	\$5,987,606	133.2	10,030	97	2
2020	\$13,272,837,742	\$7,527,787	151.1	11,030	95	2
2025	\$14,713,492,048	\$8,889,431	161.0	12,030	92	2
Microjets						
2003	\$9,388,118,544	\$3,311,438	94.0	-	106	
2005	\$9,798,386,969	\$3,677,161	100.0	-	100	0
2010	\$10,824,058,031	\$4,591,469	113.0	1,800	99	0
2015	\$11,982,463,283	\$5,987,606	133.2	4,050	97	0
2020	\$13,272,837,742	\$7,527,787	151.1	6,300	95	0
2025	\$14,713,492,048	\$8,889,431	161.0	8,550	92	1
Other Jet Aircraft						
2003	\$9,388,118,544	\$3,311,438	94.0	7,997	106	
2005	\$9,798,386,969	\$3,677,161	100.0	8,628	100	0

Table D.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Carver County and Based at MAC Airports

Year	US Income (a)	Carver Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2010	\$10,824,058,031	\$4,591,469	113.0	9,775	99	0
2015	\$11,982,463,283	\$5,987,606	133.2	11,555	97	0
2020	\$13,272,837,742	\$7,527,787	151.1	13,468	95	0
2025	\$14,713,492,048	\$8,889,431	161.0	15,380	92	0
Helicopters						
2003	\$9,388,118,544	\$3,311,438	94.0	6,526	106	
2005	\$9,798,386,969	\$3,677,161	100.0	7,595	100	0
2010	\$10,824,058,031	\$4,591,469	113.0	9,915	99	0
2015	\$11,982,463,283	\$5,987,606	133.2	11,945	97	0
2020	\$13,272,837,742	\$7,527,787	151.1	13,795	95	0
2025	\$14,713,492,048	\$8,889,431	161.0	15,645	92	0
Other Aircraft						
2003	\$9,388,118,544	\$3,311,438	94.0	26,638	106	
2005	\$9,798,386,969	\$3,677,161	100.0	28,327	100	0
2010	\$10,824,058,031	\$4,591,469	113.0	38,785	99	0
2015	\$11,982,463,283	\$5,987,606	133.2	43,805	97	0
2020	\$13,272,837,742	\$7,527,787	151.1	46,868	95	0
2025	\$14,713,492,048	\$8,889,431	161.0	49,930	92	0
Total Aircraft						
2003						
2005						27
2010						30
2015						37
2020						41
2025						44

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2005 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(e) Table B.3 in Appendix B.

(f) Projected to increase at same rate as U.S. Active Aircraft in that category adjusted by income index and based aircraft index.

Sources: As noted and HNTB analysis.

Table D.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Dakota County and Based at MAC Airports

Year	US Income (a)	Dakota Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Single Engine Piston Aircraft						
2003	\$9,388,118,544	\$14,664,654	98.7	143,265	106	
2005	\$9,798,386,969	\$15,505,045	100.0	144,530	100	135
2010	\$10,824,058,031	\$17,606,023	102.8	147,150	99	140
2015	\$11,982,463,283	\$19,857,081	104.7	149,075	97	141
2020	\$13,272,837,742	\$22,359,311	106.5	150,563	95	142
2025	\$14,713,492,048	\$25,011,490	107.4	152,050	92	141
Multi Engine Piston Aircraft						
2003	\$9,388,118,544	\$14,664,654	98.7	17,491	106	
2005	\$9,798,386,969	\$15,505,045	100.0	17,481	100	16
2010	\$10,824,058,031	\$17,606,023	102.8	17,575	99	16
2015	\$11,982,463,283	\$19,857,081	104.7	17,660	97	16
2020	\$13,272,837,742	\$22,359,311	106.5	17,735	95	16
2025	\$14,713,492,048	\$25,011,490	107.4	17,810	92	16
Turboprop Aircraft						
2003	\$9,388,118,544	\$14,664,654	98.7	7,689	106	
2005	\$9,798,386,969	\$15,505,045	100.0	8,030	100	1
2010	\$10,824,058,031	\$17,606,023	102.8	9,030	99	1
2015	\$11,982,463,283	\$19,857,081	104.7	10,030	97	1
2020	\$13,272,837,742	\$22,359,311	106.5	11,030	95	1
2025	\$14,713,492,048	\$25,011,490	107.4	12,030	92	1
Microjets						
2003	\$9,388,118,544	\$14,664,654	98.7	-	106	
2005	\$9,798,386,969	\$15,505,045	100.0	-	100	0
2010	\$10,824,058,031	\$17,606,023	102.8	1,800	99	1
2015	\$11,982,463,283	\$19,857,081	104.7	4,050	97	2
2020	\$13,272,837,742	\$22,359,311	106.5	6,300	95	3
2025	\$14,713,492,048	\$25,011,490	107.4	8,550	92	4
Other Jet Aircraft						
2003	\$9,388,118,544	\$14,664,654	98.7	7,997	106	
2005	\$9,798,386,969	\$15,505,045	100.0	8,628	100	7

Table D.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Dakota County and Based at MAC Airports

Year	US Income (a)	Dakota Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2010	\$10,824,058,031	\$17,606,023	102.8	9,775	99	8
2015	\$11,982,463,283	\$19,857,081	104.7	11,555	97	10
2020	\$13,272,837,742	\$22,359,311	106.5	13,468	95	11
2025	\$14,713,492,048	\$25,011,490	107.4	15,380	92	12
Helicopters						
2003	\$9,388,118,544	\$14,664,654	98.7	6,526	106	
2005	\$9,798,386,969	\$15,505,045	100.0	7,595	100	0
2010	\$10,824,058,031	\$17,606,023	102.8	9,915	99	0
2015	\$11,982,463,283	\$19,857,081	104.7	11,945	97	0
2020	\$13,272,837,742	\$22,359,311	106.5	13,795	95	0
2025	\$14,713,492,048	\$25,011,490	107.4	15,645	92	0
Other Aircraft						
2003	\$9,388,118,544	\$14,664,654	98.7	26,638	106	
2005	\$9,798,386,969	\$15,505,045	100.0	28,327	100	1
2010	\$10,824,058,031	\$17,606,023	102.8	38,785	99	1
2015	\$11,982,463,283	\$19,857,081	104.7	43,805	97	2
2020	\$13,272,837,742	\$22,359,311	106.5	46,868	95	2
2025	\$14,713,492,048	\$25,011,490	107.4	49,930	92	2
Total Aircraft						
2003						
2005						160
2010						167
2015						172
2020						175
2025						176

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2005 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(e) Table B.3 in Appendix B.

(f) Projected to increase at same rate as U.S. Active Aircraft in that category adjusted by income index and based aircraft index.

Sources: As noted and HNTB analysis.

Table D.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Hennepin County and Based at MAC Airports

Year	US Income (a)	Hennepin Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Single Engine Piston Aircraft						
2003	\$9,388,118,544	\$51,634,272	100.6	143,265	106	
2005	\$9,798,386,969	\$53,567,215	100.0	144,530	100	521
2010	\$10,824,058,031	\$58,399,571	98.7	147,150	99	519
2015	\$11,982,463,283	\$64,207,508	98.0	149,075	97	510
2020	\$13,272,837,742	\$70,639,301	97.4	150,563	95	500
2025	\$14,713,492,048	\$78,385,001	97.4	152,050	92	494
Multi Engine Piston Aircraft						
2003	\$9,388,118,544	\$51,634,272	100.6	17,491	106	
2005	\$9,798,386,969	\$53,567,215	100.0	17,481	100	53
2010	\$10,824,058,031	\$58,399,571	98.7	17,575	99	52
2015	\$11,982,463,283	\$64,207,508	98.0	17,660	97	51
2020	\$13,272,837,742	\$70,639,301	97.4	17,735	95	50
2025	\$14,713,492,048	\$78,385,001	97.4	17,810	92	49
Turboprop Aircraft						
2003	\$9,388,118,544	\$51,634,272	100.6	7,689	106	
2005	\$9,798,386,969	\$53,567,215	100.0	8,030	100	39
2010	\$10,824,058,031	\$58,399,571	98.7	9,030	99	43
2015	\$11,982,463,283	\$64,207,508	98.0	10,030	97	46
2020	\$13,272,837,742	\$70,639,301	97.4	11,030	95	49
2025	\$14,713,492,048	\$78,385,001	97.4	12,030	92	53
Microjets						
2003	\$9,388,118,544	\$51,634,272	100.6	-	106	
2005	\$9,798,386,969	\$53,567,215	100.0	-	100	0
2010	\$10,824,058,031	\$58,399,571	98.7	1,800	99	10
2015	\$11,982,463,283	\$64,207,508	98.0	4,050	97	22
2020	\$13,272,837,742	\$70,639,301	97.4	6,300	95	32
2025	\$14,713,492,048	\$78,385,001	97.4	8,550	92	43
Other Jet Aircraft						
2003	\$9,388,118,544	\$51,634,272	100.6	7,997	106	
2005	\$9,798,386,969	\$53,567,215	100.0	8,628	100	54

Table D.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Hennepin County and Based at MAC Airports

Year	US Income (a)	Hennepin Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2010	\$10,824,058,031	\$58,399,571	98.7	9,775	99	60
2015	\$11,982,463,283	\$64,207,508	98.0	11,555	97	69
2020	\$13,272,837,742	\$70,639,301	97.4	13,468	95	78
2025	\$14,713,492,048	\$78,385,001	97.4	15,380	92	87
Helicopters						
2003	\$9,388,118,544	\$51,634,272	100.6	6,526	106	
2005	\$9,798,386,969	\$53,567,215	100.0	7,595	100	10
2010	\$10,824,058,031	\$58,399,571	98.7	9,915	99	13
2015	\$11,982,463,283	\$64,207,508	98.0	11,945	97	15
2020	\$13,272,837,742	\$70,639,301	97.4	13,795	95	17
2025	\$14,713,492,048	\$78,385,001	97.4	15,645	92	19
Other Aircraft						
2003	\$9,388,118,544	\$51,634,272	100.6	26,638	106	
2005	\$9,798,386,969	\$53,567,215	100.0	28,327	100	0
2010	\$10,824,058,031	\$58,399,571	98.7	38,785	99	0
2015	\$11,982,463,283	\$64,207,508	98.0	43,805	97	0
2020	\$13,272,837,742	\$70,639,301	97.4	46,868	95	0
2025	\$14,713,492,048	\$78,385,001	97.4	49,930	92	0
Total Aircraft						
2003						
2005						677
2010						697
2015						713
2020						726
2025						745

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2005 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(e) Table B.3 in Appendix B.

(f) Projected to increase at same rate as U.S. Active Aircraft in that category adjusted by income index and based aircraft index.

Sources: As noted and HNTB analysis.

Table D.5

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Ramsey County and Based at MAC Airports

Year	US Income (a)	Ramsey Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Single Engine Piston Aircraft						
2003	\$9,388,118,544	\$19,033,353	100.4	143,265	106	
2005	\$9,798,386,969	\$19,778,247	100.0	144,530	100	204
2010	\$10,824,058,031	\$21,640,483	99.0	147,150	99	204
2015	\$11,982,463,283	\$23,556,888	97.4	149,075	97	199
2020	\$13,272,837,742	\$25,669,665	95.8	150,563	95	193
2025	\$14,713,492,048	\$28,570,179	96.2	152,050	92	191
Multi Engine Piston Aircraft						
2003	\$9,388,118,544	\$19,033,353	100.4	17,491	106	
2005	\$9,798,386,969	\$19,778,247	100.0	17,481	100	19
2010	\$10,824,058,031	\$21,640,483	99.0	17,575	99	19
2015	\$11,982,463,283	\$23,556,888	97.4	17,660	97	18
2020	\$13,272,837,742	\$25,669,665	95.8	17,735	95	17
2025	\$14,713,492,048	\$28,570,179	96.2	17,810	92	17
Turboprop Aircraft						
2003	\$9,388,118,544	\$19,033,353	100.4	7,689	106	
2005	\$9,798,386,969	\$19,778,247	100.0	8,030	100	7
2010	\$10,824,058,031	\$21,640,483	99.0	9,030	99	8
2015	\$11,982,463,283	\$23,556,888	97.4	10,030	97	8
2020	\$13,272,837,742	\$25,669,665	95.8	11,030	95	9
2025	\$14,713,492,048	\$28,570,179	96.2	12,030	92	9
Microjets						
2003	\$9,388,118,544	\$19,033,353	100.4	-	106	
2005	\$9,798,386,969	\$19,778,247	100.0	-	100	0
2010	\$10,824,058,031	\$21,640,483	99.0	1,800	99	3
2015	\$11,982,463,283	\$23,556,888	97.4	4,050	97	6
2020	\$13,272,837,742	\$25,669,665	95.8	6,300	95	9
2025	\$14,713,492,048	\$28,570,179	96.2	8,550	92	12
Other Jet Aircraft						
2003	\$9,388,118,544	\$19,033,353	100.4	7,997	106	
2005	\$9,798,386,969	\$19,778,247	100.0	8,628	100	19

Table D.5

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Ramsey County and Based at MAC Airports

Year	US Income (a)	Ramsey Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2010	\$10,824,058,031	\$21,640,483	99.0	9,775	99	21
2015	\$11,982,463,283	\$23,556,888	97.4	11,555	97	24
2020	\$13,272,837,742	\$25,669,665	95.8	13,468	95	27
2025	\$14,713,492,048	\$28,570,179	96.2	15,380	92	30
Helicopters						
2003	\$9,388,118,544	\$19,033,353	100.4	6,526	106	
2005	\$9,798,386,969	\$19,778,247	100.0	7,595	100	6
2010	\$10,824,058,031	\$21,640,483	99.0	9,915	99	8
2015	\$11,982,463,283	\$23,556,888	97.4	11,945	97	9
2020	\$13,272,837,742	\$25,669,665	95.8	13,795	95	10
2025	\$14,713,492,048	\$28,570,179	96.2	15,645	92	11
Other Aircraft						
2003	\$9,388,118,544	\$19,033,353	100.4	26,638	106	
2005	\$9,798,386,969	\$19,778,247	100.0	28,327	100	1
2010	\$10,824,058,031	\$21,640,483	99.0	38,785	99	1
2015	\$11,982,463,283	\$23,556,888	97.4	43,805	97	1
2020	\$13,272,837,742	\$25,669,665	95.8	46,868	95	2
2025	\$14,713,492,048	\$28,570,179	96.2	49,930	92	2
Total Aircraft						
2003						
2005						256
2010						264
2015						265
2020						267
2025						272

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2005 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(e) Table B.3 in Appendix B.

(f) Projected to increase at same rate as U.S. Active Aircraft in that category adjusted by income index and based aircraft index.

Sources: As noted and HNTB analysis.

Table D.6

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Scott County and Based at MAC Airports

Year	US Income (a)	Scott Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Single Engine Piston Aircraft						
2003	\$9,388,118,544	\$3,672,368	93.0	143,265	106	
2005	\$9,798,386,969	\$4,119,779	100.0	144,530	100	54
2010	\$10,824,058,031	\$5,238,307	115.1	147,150	99	63
2015	\$11,982,463,283	\$6,330,352	125.6	149,075	97	68
2020	\$13,272,837,742	\$7,526,976	134.9	150,563	95	72
2025	\$14,713,492,048	\$8,602,345	139.1	152,050	92	73
Multi Engine Piston Aircraft						
2003	\$9,388,118,544	\$3,672,368	93.0	17,491	106	
2005	\$9,798,386,969	\$4,119,779	100.0	17,481	100	4
2010	\$10,824,058,031	\$5,238,307	115.1	17,575	99	5
2015	\$11,982,463,283	\$6,330,352	125.6	17,660	97	5
2020	\$13,272,837,742	\$7,526,976	134.9	17,735	95	5
2025	\$14,713,492,048	\$8,602,345	139.1	17,810	92	5
Turboprop Aircraft						
2003	\$9,388,118,544	\$3,672,368	93.0	7,689	106	
2005	\$9,798,386,969	\$4,119,779	100.0	8,030	100	1
2010	\$10,824,058,031	\$5,238,307	115.1	9,030	99	1
2015	\$11,982,463,283	\$6,330,352	125.6	10,030	97	2
2020	\$13,272,837,742	\$7,526,976	134.9	11,030	95	2
2025	\$14,713,492,048	\$8,602,345	139.1	12,030	92	2
Microjets						
2003	\$9,388,118,544	\$3,672,368	93.0	-	106	
2005	\$9,798,386,969	\$4,119,779	100.0	-	100	0
2010	\$10,824,058,031	\$5,238,307	115.1	1,800	99	0
2015	\$11,982,463,283	\$6,330,352	125.6	4,050	97	0
2020	\$13,272,837,742	\$7,526,976	134.9	6,300	95	0
2025	\$14,713,492,048	\$8,602,345	139.1	8,550	92	1
Other Jet Aircraft						
2003	\$9,388,118,544	\$3,672,368	93.0	7,997	106	
2005	\$9,798,386,969	\$4,119,779	100.0	8,628	100	0

Table D.6

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Scott County and Based at MAC Airports

Year	US Income (a)	Scott Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2010	\$10,824,058,031	\$5,238,307	115.1	9,775	99	0
2015	\$11,982,463,283	\$6,330,352	125.6	11,555	97	0
2020	\$13,272,837,742	\$7,526,976	134.9	13,468	95	0
2025	\$14,713,492,048	\$8,602,345	139.1	15,380	92	0
Helicopters						
2003	\$9,388,118,544	\$3,672,368	93.0	6,526	106	
2005	\$9,798,386,969	\$4,119,779	100.0	7,595	100	0
2010	\$10,824,058,031	\$5,238,307	115.1	9,915	99	0
2015	\$11,982,463,283	\$6,330,352	125.6	11,945	97	0
2020	\$13,272,837,742	\$7,526,976	134.9	13,795	95	0
2025	\$14,713,492,048	\$8,602,345	139.1	15,645	92	0
Other Aircraft						
2003	\$9,388,118,544	\$3,672,368	93.0	26,638	106	
2005	\$9,798,386,969	\$4,119,779	100.0	28,327	100	0
2010	\$10,824,058,031	\$5,238,307	115.1	38,785	99	0
2015	\$11,982,463,283	\$6,330,352	125.6	43,805	97	0
2020	\$13,272,837,742	\$7,526,976	134.9	46,868	95	0
2025	\$14,713,492,048	\$8,602,345	139.1	49,930	92	0
Total Aircraft						
2003						
2005						59
2010						69
2015						75
2020						79
2025						81

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2005 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(e) Table B.3 in Appendix B.

(f) Projected to increase at same rate as U.S. Active Aircraft in that category adjusted by income index and based aircraft index.

Sources: As noted and HNTB analysis.

Table D.7

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Washington County and Based at MAC Airports

Year	US Income (a)	Washington Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Single Engine Piston Aircraft						
2003	\$9,388,118,544	\$8,516,902	98.0	143,265	106	
2005	\$9,798,386,969	\$9,067,083	100.0	144,530	100	151
2010	\$10,824,058,031	\$10,442,533	104.3	147,150	99	159
2015	\$11,982,463,283	\$12,106,115	109.2	149,075	97	165
2020	\$13,272,837,742	\$13,946,703	113.6	150,563	95	169
2025	\$14,713,492,048	\$16,048,479	117.9	152,050	92	173
Multi Engine Piston Aircraft						
2003	\$9,388,118,544	\$8,516,902	98.0	17,491	106	
2005	\$9,798,386,969	\$9,067,083	100.0	17,481	100	13
2010	\$10,824,058,031	\$10,442,533	104.3	17,575	99	14
2015	\$11,982,463,283	\$12,106,115	109.2	17,660	97	14
2020	\$13,272,837,742	\$13,946,703	113.6	17,735	95	14
2025	\$14,713,492,048	\$16,048,479	117.9	17,810	92	14
Turboprop Aircraft						
2003	\$9,388,118,544	\$8,516,902	98.0	7,689	106	
2005	\$9,798,386,969	\$9,067,083	100.0	8,030	100	0
2010	\$10,824,058,031	\$10,442,533	104.3	9,030	99	0
2015	\$11,982,463,283	\$12,106,115	109.2	10,030	97	0
2020	\$13,272,837,742	\$13,946,703	113.6	11,030	95	0
2025	\$14,713,492,048	\$16,048,479	117.9	12,030	92	0
Microjets						
2003	\$9,388,118,544	\$8,516,902	98.0	-	106	
2005	\$9,798,386,969	\$9,067,083	100.0	-	100	0
2010	\$10,824,058,031	\$10,442,533	104.3	1,800	99	0
2015	\$11,982,463,283	\$12,106,115	109.2	4,050	97	0
2020	\$13,272,837,742	\$13,946,703	113.6	6,300	95	0
2025	\$14,713,492,048	\$16,048,479	117.9	8,550	92	0
Other Jet Aircraft						
2003	\$9,388,118,544	\$8,516,902	98.0	7,997	106	
2005	\$9,798,386,969	\$9,067,083	100.0	8,628	100	1

Table D.7

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Washington County and Based at MAC Airports

Year	US Income (a)	Washington Cty Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2010	\$10,824,058,031	\$10,442,533	104.3	9,775	99	1
2015	\$11,982,463,283	\$12,106,115	109.2	11,555	97	1
2020	\$13,272,837,742	\$13,946,703	113.6	13,468	95	2
2025	\$14,713,492,048	\$16,048,479	117.9	15,380	92	2
Helicopters						
2003	\$9,388,118,544	\$8,516,902	98.0	6,526	106	
2005	\$9,798,386,969	\$9,067,083	100.0	7,595	100	2
2010	\$10,824,058,031	\$10,442,533	104.3	9,915	99	3
2015	\$11,982,463,283	\$12,106,115	109.2	11,945	97	3
2020	\$13,272,837,742	\$13,946,703	113.6	13,795	95	4
2025	\$14,713,492,048	\$16,048,479	117.9	15,645	92	4
Other Aircraft						
2003	\$9,388,118,544	\$8,516,902	98.0	26,638	106	
2005	\$9,798,386,969	\$9,067,083	100.0	28,327	100	2
2010	\$10,824,058,031	\$10,442,533	104.3	38,785	99	3
2015	\$11,982,463,283	\$12,106,115	109.2	43,805	97	3
2020	\$13,272,837,742	\$13,946,703	113.6	46,868	95	4
2025	\$14,713,492,048	\$16,048,479	117.9	49,930	92	4
Total Aircraft						
2003						
2005						169
2010						180
2015						186
2020						193
2025						197

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2005 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(e) Table B.3 in Appendix B.

(f) Projected to increase at same rate as U.S. Active Aircraft in that category adjusted by income index and based aircraft index.

Sources: As noted and HNTB analysis.

Table D.8

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Non-Met Council Counties and Based at MAC Airports

Year	US Income (a)	US Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Single Engine Piston Aircraft						
2003	\$9,388,118,544	\$9,388,118,544	100.0	143,265	106	
2005	\$9,798,386,969	\$9,798,386,969	100.0	144,530	100	106
2010	\$10,824,058,031	\$10,824,058,031	100.0	147,150	99	107
2015	\$11,982,463,283	\$11,982,463,283	100.0	149,075	97	106
2020	\$13,272,837,742	\$13,272,837,742	100.0	150,563	95	105
2025	\$14,713,492,048	\$14,713,492,048	100.0	152,050	92	103
Multi Engine Piston Aircraft						
2003	\$9,388,118,544	\$9,388,118,544	100.0	17,491	106	
2005	\$9,798,386,969	\$9,798,386,969	100.0	17,481	100	8
2010	\$10,824,058,031	\$10,824,058,031	100.0	17,575	99	8
2015	\$11,982,463,283	\$11,982,463,283	100.0	17,660	97	8
2020	\$13,272,837,742	\$13,272,837,742	100.0	17,735	95	8
2025	\$14,713,492,048	\$14,713,492,048	100.0	17,810	92	8
Turboprop Aircraft						
2003	\$9,388,118,544	\$9,388,118,544	100.0	7,689	106	
2005	\$9,798,386,969	\$9,798,386,969	100.0	8,030	100	5
2010	\$10,824,058,031	\$10,824,058,031	100.0	9,030	99	6
2015	\$11,982,463,283	\$11,982,463,283	100.0	10,030	97	6
2020	\$13,272,837,742	\$13,272,837,742	100.0	11,030	95	7
2025	\$14,713,492,048	\$14,713,492,048	100.0	12,030	92	7
Microjets						
2003	\$9,388,118,544	\$9,388,118,544	100.0	-	106	
2005	\$9,798,386,969	\$9,798,386,969	100.0	-	100	0
2010	\$10,824,058,031	\$10,824,058,031	100.0	1,800	99	1
2015	\$11,982,463,283	\$11,982,463,283	100.0	4,050	97	3
2020	\$13,272,837,742	\$13,272,837,742	100.0	6,300	95	5
2025	\$14,713,492,048	\$14,713,492,048	100.0	8,550	92	6
Other Jet Aircraft						
2003	\$9,388,118,544	\$9,388,118,544	100.0	7,997	106	
2005	\$9,798,386,969	\$9,798,386,969	100.0	8,628	100	8

Table D.8

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Forecast of Based Aircraft Registered in Non-Met Council Counties and Based at MAC Airports

Year	US Income (a)	US Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2010	\$10,824,058,031	\$10,824,058,031	100.0	9,775	99	9
2015	\$11,982,463,283	\$11,982,463,283	100.0	11,555	97	10
2020	\$13,272,837,742	\$13,272,837,742	100.0	13,468	95	12
2025	\$14,713,492,048	\$14,713,492,048	100.0	15,380	92	13
Helicopters						
2003	\$9,388,118,544	\$9,388,118,544	100.0	6,526	106	
2005	\$9,798,386,969	\$9,798,386,969	100.0	7,595	100	7
2010	\$10,824,058,031	\$10,824,058,031	100.0	9,915	99	9
2015	\$11,982,463,283	\$11,982,463,283	100.0	11,945	97	11
2020	\$13,272,837,742	\$13,272,837,742	100.0	13,795	95	12
2025	\$14,713,492,048	\$14,713,492,048	100.0	15,645	92	13
Other Aircraft						
2003	\$9,388,118,544	\$9,388,118,544	100.0	26,638	106	
2005	\$9,798,386,969	\$9,798,386,969	100.0	28,327	100	0
2010	\$10,824,058,031	\$10,824,058,031	100.0	38,785	99	0
2015	\$11,982,463,283	\$11,982,463,283	100.0	43,805	97	0
2020	\$13,272,837,742	\$13,272,837,742	100.0	46,868	95	0
2025	\$14,713,492,048	\$14,713,492,048	100.0	49,930	92	0
Total Aircraft						
2003						
2005						134
2010						140
2015						144
2020						149
2025						150

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2005 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(e) Table B.3 in Appendix B.

(f) Projected to increase at same rate as U.S. Active Aircraft in that category adjusted by income index and based aircraft index.

Sources: As noted and HNTB analysis.

Table E.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2010

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Total Aircraft (a)									
Crystal	9	3	2	212	22	1	0	12	261
Airlake	0	3	106	15	3	27	0	11	165
Lake Elmo	2	0	10	9	55	0	150	20	246
Anoka County/Blaine - Janes Field	196	0	8	100	118	1	19	35	477
Flying Cloud	0	23	32	324	6	40	3	46	474
MSP	0	0	0	15	0	0	0	2	17
St. Paul Downtown-Holman Field	1	0	7	19	59	0	8	12	106
Total MAC Airports	208	29	165	694	263	69	180	138	1746
Total Aircraft - Distribution									
Crystal	0.0433	0.1034	0.0121	0.3055	0.0837	0.0145	0.0000	0.0870	0.1495
Airlake	0.0000	0.1034	0.6424	0.0216	0.0114	0.3913	0.0000	0.0797	0.0945
Lake Elmo	0.0096	0.0000	0.0606	0.0130	0.2091	0.0000	0.8333	0.1449	0.1409
Anoka County/Blaine - Janes Field	0.9423	0.0000	0.0485	0.1441	0.4487	0.0145	0.1056	0.2536	0.2732
Flying Cloud	0.0000	0.7931	0.1939	0.4669	0.0228	0.5797	0.0167	0.3333	0.2715
MSP	0.0000	0.0000	0.0000	0.0216	0.0000	0.0000	0.0000	0.0145	0.0097
St. Paul Downtown-Holman Field	0.0048	0.0000	0.0424	0.0274	0.2243	0.0000	0.0444	0.0870	0.0607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Single Engine Piston (b)									
Crystal	9	3	2	188	20	1	0	11	234
Airlake	0	3	94	15	3	26	0	10	151
Lake Elmo	2	0	10	9	53	0	136	18	228
Anoka County/Blaine - Janes Field	167	0	5	74	100	1	15	29	391
Flying Cloud	0	20	24	231	5	35	3	37	355
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	1	0	4	2	23	0	5	1	36
Total MAC Airports (c)	179	27	140	519	204	63	159	107	1395
Single Engine Piston Aircraft - Distribution (d)									
Crystal	0.0520	0.1250	0.0148	0.3628	0.0980	0.0185	0.0000	0.1038	0.1718
Airlake	0.0000	0.1250	0.6741	0.0288	0.0147	0.4074	0.0000	0.0943	0.1053
Lake Elmo	0.0116	0.0000	0.0741	0.0173	0.2598	0.0000	0.8543	0.1698	0.1615
Anoka County/Blaine - Janes Field	0.9306	0.0000	0.0370	0.1420	0.4902	0.0185	0.0927	0.2736	0.2807
Flying Cloud	0.0000	0.7500	0.1704	0.4453	0.0245	0.5556	0.0199	0.3491	0.2544
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0058	0.0000	0.0296	0.0038	0.1127	0.0000	0.0331	0.0094	0.0263
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (b)									
Crystal	0	0	0	14	2	0	0	0	16
Airlake	0	0	11	0	0	0	0	0	11
Lake Elmo	0	0	0	0	2	0	8	2	12
Anoka County/Blaine - Janes Field	21	0	2	9	9	0	4	2	47
Flying Cloud	0	2	3	27	1	5	0	4	42
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	2	5	0	2	0	9
Total MAC Airports (c)	21	2	16	52	19	5	14	8	137
Multi Engine Piston Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.2642	0.1053	0.0000	0.0000	0.0000	0.1176
Airlake	0.0000	0.0000	0.6875	0.0000	0.0000	0.0000	0.0000	0.0000	0.0809
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.1053	0.0000	0.5385	0.2500	0.0809
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1250	0.1698	0.4737	0.0000	0.3077	0.2500	0.3456
Flying Cloud	0.0000	1.0000	0.1875	0.5283	0.0526	1.0000	0.0000	0.5000	0.3088
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0377	0.2632	0.0000	0.1538	0.0000	0.0662
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Turboprop (b)									
Crystal	0	0	0	1	0	0	0	0	1
Airlake	0	0	0	0	0	1	0	0	1
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	2	0	0	4	1	0	0	2	9
Flying Cloud	0	1	1	35	0	0	0	1	38

Table E.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2010

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
MSP	0	0	0	0	0	0	0	1	1
St. Paul Downtown-Holman Field	0	0	0	2	7	0	0	1	10
Total MAC Airports (c)	2	1	1	43	8	1	0	6	60
Turboprop Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000	0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000	0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000	0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000	0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (b)									
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	0	0	0	1	0	0	0	0	1
Flying Cloud	0	0	1	6	0	0	0	0	7
MSP	0	0	0	1	0	0	0	0	1
St. Paul Downtown-Holman Field	0	0	0	1	2	0	0	1	4
Total MAC Airports (c)	0	0	1	10	3	0	0	1	13
Microjet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000	0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.3250	0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.1625	0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.1625	0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.3500	0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	1.0000	1.0000
Other Jets (b)									
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	2	0	1	11	3	0	0	2	19
Flying Cloud	0	0	3	22	0	0	0	1	26
MSP	0	0	0	14	0	0	0	1	15
St. Paul Downtown-Holman Field	0	0	3	12	18	0	1	5	39
Total MAC Airports (c)	2	0	8	60	21	0	1	9	99
Other Jet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500	0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250	0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250	0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000	0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Helicopter (b)									
Crystal	0	0	0	9	0	0	0	1	10
Airlake	0	0	0	0	0	0	0	1	1
Lake Elmo	0	0	0	0	0	0	3	0	3
Anoka County/Blaine - Janes Field	3	0	0	1	4	0	0	0	8
Flying Cloud	0	0	0	3	0	0	0	3	6
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	4	0	0	4	8
Total MAC Airports (c)	3	0	0	13	8	0	3	9	36
Helicopter - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429	0.2963

Table E.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2010

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429	0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000	0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857	0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286	0.2222
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Other (b)									
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	1	0	0	0	0	0	1
Lake Elmo	0	0	0	0	0	0	3	0	3
Anoka County/Blaine - Janes Field	1	0	0	0	1	0	0	0	2
Flying Cloud	0	0	0	0	0	0	0	0	0
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0
Total MAC Airports (c)	1	0	1	0	1	0	3	0	6
Other Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.4000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.4000
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total MAC Airports (c)	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

(a) Sum of forecasts for individual aircraft categories.

(b) Total MAC based aircraft in county multiplied by distribution going to each airport.

(c) Appendix D.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis

Table E.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2015

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Total Aircraft (a)									
Crystal	9	4	2	210	22	1	0	13	261
Airlake	0	4	108	15	3	30	0	12	172
Lake Elmo	2	0	10	9	54	0	155	20	250
Anoka County/Blaine - Janes Field	197	0	8	104	119	1	19	37	485
Flying Cloud	0	29	33	334	6	43	3	46	494
MSP	0	0	0	20	0	0	0	2	22
St. Paul Downtown-Holman Field	1	0	8	23	64	0	8	13	117
Total MAC Airports	209	37	169	715	268	75	185	143	1801
Total Aircraft - Distribution									
Crystal	0.0431	0.1081	0.0118	0.2937	0.0821	0.0133	0.0000	0.0909	0.1449
Airlake	0.0000	0.1081	0.6391	0.0210	0.0112	0.4000	0.0000	0.0839	0.0955
Lake Elmo	0.0096	0.0000	0.0592	0.0126	0.2015	0.0000	0.8378	0.1399	0.1388
Anoka County/Blaine - Janes Field	0.9426	0.0000	0.0473	0.1455	0.4440	0.0133	0.1027	0.2587	0.2693
Flying Cloud	0.0000	0.7838	0.1953	0.4671	0.0224	0.5733	0.0162	0.3217	0.2743
MSP	0.0000	0.0000	0.0000	0.0280	0.0000	0.0000	0.0000	0.0140	0.0122
St. Paul Downtown-Holman Field	0.0048	0.0000	0.0473	0.0322	0.2388	0.0000	0.0432	0.0909	0.0650
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Single Engine Piston (b)									
Crystal	9	4	2	185	20	1	0	11	232
Airlake	0	4	95	15	3	28	0	10	155
Lake Elmo	2	0	10	9	52	0	141	18	232
Anoka County/Blaine - Janes Field	165	0	5	72	98	1	15	29	385
Flying Cloud	0	24	24	227	5	38	3	37	358
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	1	0	4	2	22	0	5	1	35
Total MAC Airports (c)	177	32	141	510	199	68	165	106	1397
Single Engine Piston Aircraft - Distribution (d)									
Crystal	0.0520	0.1250	0.0148	0.3628	0.0980	0.0185	0.0000	0.1038	0.1718
Airlake	0.0000	0.1250	0.6741	0.0288	0.0147	0.4074	0.0000	0.0943	0.1053
Lake Elmo	0.0116	0.0000	0.0741	0.0173	0.2598	0.0000	0.8543	0.1698	0.1615
Anoka County/Blaine - Janes Field	0.9306	0.0000	0.0370	0.1420	0.4902	0.0185	0.0927	0.2736	0.2807
Flying Cloud	0.0000	0.7500	0.1704	0.4453	0.0245	0.5556	0.0199	0.3491	0.2544
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0058	0.0000	0.0296	0.0038	0.1127	0.0000	0.0331	0.0094	0.0263
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (b)									
Crystal	0	0	0	13	2	0	0	0	15
Airlake	0	0	11	0	0	0	0	0	11
Lake Elmo	0	0	0	0	2	0	8	2	12
Anoka County/Blaine - Janes Field	21	0	2	9	9	0	4	2	47
Flying Cloud	0	3	3	27	1	5	0	4	43
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	2	5	0	2	0	9
Total MAC Airports (c)	21	3	16	51	18	5	14	8	137
Multi Engine Piston Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.2642	0.1053	0.0000	0.0000	0.0000	0.1176
Airlake	0.0000	0.0000	0.6875	0.0000	0.0000	0.0000	0.0000	0.0000	0.0809
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.1053	0.0000	0.5385	0.2500	0.0809
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1250	0.1698	0.4737	0.0000	0.3077	0.2500	0.3456
Flying Cloud	0.0000	1.0000	0.1875	0.5283	0.0526	1.0000	0.0000	0.5000	0.3088
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0377	0.2632	0.0000	0.1538	0.0000	0.0662
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Turboprop (b)									
Crystal	0	0	0	1	0	0	0	0	1
Airlake	0	0	0	0	0	2	0	0	2
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	2	0	0	5	1	0	0	2	10
Flying Cloud	0	2	1	38	0	0	0	1	42
MSP	0	0	0	0	0	0	0	1	1
St. Paul Downtown-Holman Field	0	0	0	2	7	0	0	1	10
Total MAC Airports (c)	2	2	1	46	8	2	0	6	66

Table E.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2015

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Turboprop Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000	0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000	0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000	0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000	0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (b)									
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	1	0	0	3	1	0	0	1	6
Flying Cloud	0	0	1	13	0	0	0	0	14
MSP	0	0	0	3	0	0	0	0	3
St. Paul Downtown-Holman Field	0	0	0	3	5	0	0	1	9
Total MAC Airports (c)	1	0	2	22	6	0	0	3	32
Microjet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000	0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.3250	0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.1625	0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.1625	0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.3500	0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	1.0000	1.0000
Other Jets (b)									
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	1	13	4	0	0	3	24
Flying Cloud	0	0	4	26	0	0	0	1	31
MSP	0	0	0	17	0	0	0	1	18
St. Paul Downtown-Holman Field	0	0	4	14	20	0	1	5	44
Total MAC Airports (c)	3	0	10	69	24	0	1	10	117
Other Jet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500	0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250	0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250	0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000	0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Helicopter (b)									
Crystal	0	0	0	11	0	0	0	2	13
Airlake	0	0	0	0	0	0	0	2	2
Lake Elmo	0	0	0	0	0	0	3	0	3
Anoka County/Blaine - Janes Field	3	0	0	2	5	0	0	0	10
Flying Cloud	0	0	0	3	0	0	0	3	6
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	5	0	0	5	10
Total MAC Airports (c)	3	0	0	15	9	0	3	11	44
Helicopter - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429	0.2963
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429	0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000	0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857	0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286	0.2222
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000

Table E.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2015

Airport	County of Registration								Total	
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
				Other (b)						
Crystal	0	0	0	0	0	0	0	0	0	
Airlake	0	0	2	0	0	0	0	0	2	
Lake Elmo	0	0	0	0	0	0	3	0	3	
Anoka County/Blaine - Janes Field	2	0	0	0	1	0	0	0	3	
Flying Cloud	0	0	0	0	0	0	0	0	0	
MSP	0	0	0	0	0	0	0	0	0	
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0	
Total MAC Airports (c)	2	0	2	0	1	0	3	0	8	
				Other Aircraft - Distribution (d)						
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.4000	
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.4000	
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total MAC Airports	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	

(a) Sum of forecasts for individual aircraft categories.

(b) Total MAC based aircraft in county multiplied by distribution going to each airport.

(c) Appendix D.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis

Table E.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2020

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Total Aircraft (a)									
Crystal	9	5	2	207	21	1	0	13	258
Airlake	0	5	109	14	3	31	0	12	174
Lake Elmo	2	0	11	9	52	0	160	20	254
Anoka County/Blaine - Janes Field	196	0	9	105	116	1	20	39	486
Flying Cloud	0	32	35	340	6	45	3	48	509
MSP	0	0	0	23	0	0	0	4	27
St. Paul Downtown-Holman Field	1	0	10	27	70	0	10	15	133
Total MAC Airports	208	42	176	725	268	78	193	151	1841
Total Aircraft - Distribution									
Crystal	0.0433	0.1190	0.0114	0.2855	0.0784	0.0128	0.0000	0.0861	0.1401
Airlake	0.0000	0.1190	0.6193	0.0193	0.0112	0.3974	0.0000	0.0795	0.0945
Lake Elmo	0.0096	0.0000	0.0625	0.0124	0.1940	0.0000	0.8290	0.1325	0.1380
Anoka County/Blaine - Janes Field	0.9423	0.0000	0.0511	0.1448	0.4328	0.0128	0.1036	0.2583	0.2640
Flying Cloud	0.0000	0.7619	0.1989	0.4690	0.0224	0.5769	0.0155	0.3179	0.2765
MSP	0.0000	0.0000	0.0000	0.0317	0.0000	0.0000	0.0000	0.0265	0.0147
St. Paul Downtown-Holman Field	0.0048	0.0000	0.0568	0.0372	0.2612	0.0000	0.0518	0.0993	0.0722
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Single Engine Piston (b)									
Crystal	9	5	2	181	19	1	0	11	228
Airlake	0	5	96	14	3	29	0	10	157
Lake Elmo	2	0	11	9	50	0	144	18	234
Anoka County/Blaine - Janes Field	162	0	5	71	95	1	16	29	379
Flying Cloud	0	27	24	223	5	40	3	37	359
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	1	0	4	2	22	0	6	1	36
Total MAC Airports (c)	174	36	142	500	193	72	169	105	1393
Single Engine Piston Aircraft - Distribution (d)									
Crystal	0.0520	0.1250	0.0148	0.3628	0.0980	0.0185	0.0000	0.1038	0.1718
Airlake	0.0000	0.1250	0.6741	0.0288	0.0147	0.4074	0.0000	0.0943	0.1053
Lake Elmo	0.0116	0.0000	0.0741	0.0173	0.2598	0.0000	0.8543	0.1698	0.1615
Anoka County/Blaine - Janes Field	0.9306	0.0000	0.0370	0.1420	0.4902	0.0185	0.0927	0.2736	0.2807
Flying Cloud	0.0000	0.7500	0.1704	0.4453	0.0245	0.5556	0.0199	0.3491	0.2544
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0058	0.0000	0.0296	0.0038	0.1127	0.0000	0.0331	0.0094	0.0263
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (b)									
Crystal	0	0	0	13	2	0	0	0	15
Airlake	0	0	11	0	0	0	0	0	11
Lake Elmo	0	0	0	0	2	0	8	2	12
Anoka County/Blaine - Janes Field	21	0	2	8	8	0	4	2	45
Flying Cloud	0	3	3	26	1	5	0	4	42
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	2	4	0	2	0	8
Total MAC Airports (c)	21	3	16	50	17	5	14	8	133
Multi Engine Piston Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.2642	0.1053	0.0000	0.0000	0.0000	0.1176
Airlake	0.0000	0.0000	0.6875	0.0000	0.0000	0.0000	0.0000	0.0000	0.0809
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.1053	0.0000	0.5385	0.2500	0.0809
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1250	0.1698	0.4737	0.0000	0.3077	0.2500	0.3456
Flying Cloud	0.0000	1.0000	0.1875	0.5283	0.0526	1.0000	0.0000	0.5000	0.3088
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0377	0.2632	0.0000	0.1538	0.0000	0.0662
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Turboprop (b)									
Crystal	0	0	0	1	0	0	0	0	1
Airlake	0	0	0	0	0	2	0	0	2
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	0	5	1	0	0	3	12
Flying Cloud	0	2	1	40	0	0	0	1	44
MSP	0	0	0	0	0	0	0	1	1
St. Paul Downtown-Holman Field	0	0	0	3	8	0	0	1	12
Total MAC Airports (c)	3	2	1	49	9	2	0	7	72

Table E.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2020

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Turboprop Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000	0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000	0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000	0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000	0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (b)									
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	1	0	0	5	1	0	0	2	9
Flying Cloud	0	0	2	19	0	0	0	1	22
MSP	0	0	0	4	0	0	0	1	5
St. Paul Downtown-Holman Field	0	0	1	4	8	0	0	2	15
Total MAC Airports (c)	1	0	3	32	9	0	0	5	51
Microjet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000	0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.3250	0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.1625	0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.1625	0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.3500	0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	1.0000	1.0000
Other Jets (b)									
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	2	14	4	0	0	3	26
Flying Cloud	0	0	5	29	0	0	0	2	36
MSP	0	0	0	19	0	0	0	2	21
St. Paul Downtown-Holman Field	0	0	5	16	23	0	2	6	52
Total MAC Airports (c)	3	0	11	78	27	0	2	12	135
Other Jet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500	0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250	0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250	0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000	0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Helicopter (b)									
Crystal	0	0	0	12	0	0	0	2	14
Airlake	0	0	0	0	0	0	0	2	2
Lake Elmo	0	0	0	0	0	0	4	0	4
Anoka County/Blaine - Janes Field	4	0	0	2	5	0	0	0	11
Flying Cloud	0	0	0	3	0	0	0	3	6
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	5	0	0	5	10
Total MAC Airports (c)	4	0	0	17	10	0	4	12	47
Helicopter - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429	0.2963
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429	0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000	0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857	0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286	0.2222
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000

Table E.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2020

Airport	County of Registration								Total	
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
				Other (b)						
Crystal	0	0	0	0	0	0	0	0	0	
Airlake	0	0	2	0	0	0	0	0	2	
Lake Elmo	0	0	0	0	0	0	4	0	4	
Anoka County/Blaine - Janes Field	2	0	0	0	2	0	0	0	4	
Flying Cloud	0	0	0	0	0	0	0	0	0	
MSP	0	0	0	0	0	0	0	0	0	
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0	
Total MAC Airports (c)	2	0	2	0	2	0	4	0	10	
				Other Aircraft - Distribution (d)						
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.4000	
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.4000	
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total MAC Airports	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	

(a) Sum of forecasts for individual aircraft categories.

(b) Total MAC based aircraft in county multiplied by distribution going to each airport.

(c) Appendix D.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis

Table E.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2025

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Total Aircraft (a)									
Crystal	9	5	2	207	21	1	0	13	258
Airlake	0	5	108	14	3	32	0	12	174
Lake Elmo	2	0	10	9	52	0	164	19	256
Anoka County/Blaine - Janes Field	190	0	9	107	118	1	20	38	483
Flying Cloud	0	34	36	351	6	46	3	48	524
MSP	0	0	0	26	0	0	0	4	30
St. Paul Downtown-Holman Field	1	0	10	30	75	0	10	17	143
Total MAC Airports	202	44	175	744	275	80	197	151	1868
Total Aircraft - Distribution									
Crystal	0.0446	0.1136	0.0114	0.2782	0.0764	0.0125	0.0000	0.0861	0.1381
Airlake	0.0000	0.1136	0.6171	0.0188	0.0109	0.4000	0.0000	0.0795	0.0931
Lake Elmo	0.0099	0.0000	0.0571	0.0121	0.1891	0.0000	0.8325	0.1258	0.1370
Anoka County/Blaine - Janes Field	0.9406	0.0000	0.0514	0.1438	0.4291	0.0125	0.1015	0.2517	0.2586
Flying Cloud	0.0000	0.7727	0.2057	0.4718	0.0218	0.5750	0.0152	0.3179	0.2805
MSP	0.0000	0.0000	0.0000	0.0349	0.0000	0.0000	0.0000	0.0265	0.0161
St. Paul Downtown-Holman Field	0.0050	0.0000	0.0571	0.0403	0.2727	0.0000	0.0508	0.1126	0.0766
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Single Engine Piston (b)									
Crystal	9	5	2	179	19	1	0	11	226
Airlake	0	5	95	14	3	30	0	10	157
Lake Elmo	2	0	10	9	50	0	148	17	236
Anoka County/Blaine - Janes Field	156	0	5	70	94	1	16	28	370
Flying Cloud	0	29	24	220	5	41	3	36	358
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	1	0	4	2	22	0	6	1	36
Total MAC Airports (c)	168	38	141	494	191	73	173	103	1383
Single Engine Piston Aircraft - Distribution (d)									
Crystal	0.0520	0.1250	0.0148	0.3628	0.0980	0.0185	0.0000	0.1038	0.1718
Airlake	0.0000	0.1250	0.6741	0.0288	0.0147	0.4074	0.0000	0.0943	0.1053
Lake Elmo	0.0116	0.0000	0.0741	0.0173	0.2598	0.0000	0.8543	0.1698	0.1615
Anoka County/Blaine - Janes Field	0.9306	0.0000	0.0370	0.1420	0.4902	0.0185	0.0927	0.2736	0.2807
Flying Cloud	0.0000	0.7500	0.1704	0.4453	0.0245	0.5556	0.0199	0.3491	0.2544
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0058	0.0000	0.0296	0.0038	0.1127	0.0000	0.0331	0.0094	0.0263
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (b)									
Crystal	0	0	0	13	2	0	0	0	15
Airlake	0	0	11	0	0	0	0	0	11
Lake Elmo	0	0	0	0	2	0	8	2	12
Anoka County/Blaine - Janes Field	20	0	2	8	8	0	4	2	44
Flying Cloud	0	3	3	26	1	5	0	4	42
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	2	4	0	2	0	8
Total MAC Airports (c)	20	3	16	49	17	5	14	8	132
Multi Engine Piston Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.2642	0.1053	0.0000	0.0000	0.0000	0.1176
Airlake	0.0000	0.0000	0.6875	0.0000	0.0000	0.0000	0.0000	0.0000	0.0809
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.1053	0.0000	0.5385	0.2500	0.0809
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1250	0.1698	0.4737	0.0000	0.3077	0.2500	0.3456
Flying Cloud	0.0000	1.0000	0.1875	0.5283	0.0526	1.0000	0.0000	0.5000	0.3088
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0377	0.2632	0.0000	0.1538	0.0000	0.0662
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Turboprop (b)									
Crystal	0	0	0	1	0	0	0	0	1
Airlake	0	0	0	0	0	2	0	0	2
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	0	5	1	0	0	3	12
Flying Cloud	0	2	1	43	0	0	0	1	47
MSP	0	0	0	0	0	0	0	1	1
St. Paul Downtown-Holman Field	0	0	0	3	8	0	0	1	12
Total MAC Airports (c)	3	2	1	53	9	2	0	7	75

Table E.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2025

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Turboprop Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000	0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000	0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000	0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000	0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (b)									
Crystal	0	0	0	1	0	0	0	0	1
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	2	0	0	6	2	0	0	2	12
Flying Cloud	0	0	3	26	0	0	0	1	30
MSP	0	0	0	5	0	0	0	1	6
St. Paul Downtown-Holman Field	0	0	1	5	10	0	0	2	18
Total MAC Airports (c)	2	1	4	43	12	1	0	6	67
Microjet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000	0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.3250	0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.1625	0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.1625	0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.3500	0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	1.0000	1.0000
Other Jets (b)									
Crystal	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	2	16	5	0	0	3	29
Flying Cloud	0	0	5	32	0	0	0	2	39
MSP	0	0	0	21	0	0	0	2	23
St. Paul Downtown-Holman Field	0	0	5	18	25	0	2	7	57
Total MAC Airports (c)	3	0	12	87	30	0	2	13	148
Other Jet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500	0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250	0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250	0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000	0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Helicopter (b)									
Crystal	0	0	0	13	0	0	0	2	15
Airlake	0	0	0	0	0	0	0	2	2
Lake Elmo	0	0	0	0	0	0	4	0	4
Anoka County/Blaine - Janes Field	4	0	0	2	6	0	0	0	12
Flying Cloud	0	0	0	4	0	0	0	4	8
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	6	0	0	6	12
Total MAC Airports (c)	4	0	0	19	11	0	4	13	53
Helicopter - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429	0.2963
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429	0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000	0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857	0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286	0.2222
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000

Table E.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2025

Airport	County of Registration								Total	
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
				Other (b)						
Crystal	0	0	0	0	0	0	0	0	0	
Airlake	0	0	2	0	0	0	0	0	2	
Lake Elmo	0	0	0	0	0	0	4	0	4	
Anoka County/Blaine - Janes Field	2	0	0	0	2	0	0	0	4	
Flying Cloud	0	0	0	0	0	0	0	0	0	
MSP	0	0	0	0	0	0	0	0	0	
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0	
Total MAC Airports (c)	2	0	2	0	2	0	4	0	10	
				Other Aircraft - Distribution (d)						
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.4000	
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.4000	
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total MAC Airports	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	

(a) Sum of forecasts for individual aircraft categories.

(b) Total MAC based aircraft in county multiplied by distribution going to each airport.

(c) Appendix D.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis

Table F.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Estimated Distribution of Aircraft on Waiting Lists

	Total post 2000 (a)	90% of total (b)	Estimated Distribution by Type (c)						
			SEP	MEP	TP	Microjets	HEL	Other	Total
Crystal	69	62	54	4	0	2	2	0	62
Airlake	61	55	51	4	0	0	0	0	55
Lake Elmo	43	39	37	2	0	0	0	0	39
Distribution of Existing Based Aircraft by Type (d)									
Crystal			235	16	1	0	8	0	260
Airlake			144	11	1	0	1	1	158
Lake Elmo			221	11	0	0	2	2	236

(a) Metropolitan Airports Commission. Potential Crystal waiting list estimated using average ratio of Airlake and Lake Elmo aircraft on waiting list to based aircraft.

(b) Assumed that 90 percent of aircraft on waiting list would be attracted under unconstrained conditions. See text for details.

(c) Distribution of aircraft on waiting list by type assumed to be the same as for existing based aircraft at each airport.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis.

Table F.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2010

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
Total Aircraft (b)										
Crystal	9	3	2	212	23	1	0	12	31	293
Airlake	0	3	109	15	3	27	0	11	57	225
Lake Elmo	2	0	10	9	58	0	152	20	40	291
Anoka County/Blaine - Janes Field	196	0	8	100	122	1	19	36	0	482
Flying Cloud	0	24	33	328	6	40	3	48	0	482
MSP	0	0	0	14	0	0	0	1	0	15
St. Paul Downtown-Holman Field	1	0	5	19	52	0	6	12	0	95
Total MAC Airports	208	30	167	697	264	69	180	140	128	1883
Total Aircraft - Distribution										
Crystal	0.0433	0.1000	0.0120	0.3042	0.0871	0.0145	0.0000	0.0857		0.1556
Airlake	0.0000	0.1000	0.6527	0.0215	0.0114	0.3913	0.0000	0.0786		0.1195
Lake Elmo	0.0096	0.0000	0.0599	0.0129	0.2197	0.0000	0.8444	0.1429		0.1545
Anoka County/Blaine - Janes Field	0.9423	0.0000	0.0479	0.1435	0.4621	0.0145	0.1056	0.2571		0.2560
Flying Cloud	0.0000	0.8000	0.1976	0.4706	0.0227	0.5797	0.0167	0.3429		0.2560
MSP	0.0000	0.0000	0.0000	0.0201	0.0000	0.0000	0.0000	0.0071		0.0080
St. Paul Downtown-Holman Field	0.0048	0.0000	0.0299	0.0273	0.1970	0.0000	0.0333	0.0857		0.0505
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Single Engine Piston (c)										
Crystal	9	3	2	188	21	1	0	11	27	262
Airlake	0	3	97	15	3	26	0	10	53	207
Lake Elmo	2	0	10	9	56	0	138	18	38	271
Anoka County/Blaine - Janes Field	167	0	5	74	104	1	15	29		395
Flying Cloud	0	21	24	231	5	35	3	38		357
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	1	0	2	2	15	0	3	1		24
Total MAC Airports	179	27	140	519	204	63	159	107		1516
Single Engine Piston Aircraft - Distribution (d)										
Crystal	0.0520	0.1250	0.0148	0.3628	0.0980	0.0185	0.0000	0.1038		0.1718
Airlake	0.0000	0.1250	0.6741	0.0288	0.0147	0.4074	0.0000	0.0943		0.1053
Lake Elmo	0.0116	0.0000	0.0741	0.0173	0.2598	0.0000	0.8543	0.1698		0.1615
Anoka County/Blaine - Janes Field	0.9306	0.0000	0.0370	0.1420	0.4902	0.0185	0.0927	0.2736		0.2807
Flying Cloud	0.0000	0.7500	0.1704	0.4453	0.0245	0.5556	0.0199	0.3491		0.2544
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0058	0.0000	0.0296	0.0038	0.1127	0.0000	0.0331	0.0094		0.0263
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Multi-Engine Piston (c)										
Crystal	0	0	0	14	2	0	0	0	2	18
Airlake	0	0	11	0	0	0	0	0	4	15
Lake Elmo	0	0	0	0	2	0	8	2	2	14
Anoka County/Blaine - Janes Field	21	0	2	9	9	0	4	2		47
Flying Cloud	0	2	3	27	1	5	0	4		42
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	2	5	0	2	0		9
Total MAC Airports	21	2	16	52	19	5	14	8		145
Multi Engine Piston Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.2642	0.1053	0.0000	0.0000	0.0000		0.1176
Airlake	0.0000	0.0000	0.6875	0.0000	0.0000	0.0000	0.0000	0.0000		0.0809
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.1053	0.0000	0.5385	0.2500		0.0809
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1250	0.1698	0.4737	0.0000	0.3077	0.2500		0.3456
Flying Cloud	0.0000	1.0000	0.1875	0.5283	0.0526	1.0000	0.0000	0.5000		0.3088
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0377	0.2632	0.0000	0.1538	0.0000		0.0662
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Turboprop (c)										
Crystal	0	0	0	1	0	0	0	0		1
Airlake	0	0	0	0	0	1	0	0		1
Lake Elmo	0	0	0	0	0	0	0	0		0
Anoka County/Blaine - Janes Field	2	0	0	4	1	0	0	3		10
Flying Cloud	0	1	1	36	0	0	0	2		40
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	2	7	0	0	1		10
Total MAC Airports	2	1	1	43	8	1	0	6		62

Table F.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2010

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	

Table F.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2010

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Turboprop Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000		0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000		0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000		0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000		0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000		0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000		1.0000
Microjets (c)										
Crystal	0	0	0	0	0	0	0	0	2	2
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	0	0	0	1	0	0	0	0	0	1
Flying Cloud	0	0	1	8	0	0	0	0	0	9
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	1	3	0	0	1	1	5
Total MAC Airports	0	0	1	10	3	0	0	1	1	17
Microjet Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000		0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.3250		0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.1625		0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.1625		0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.3500		0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	1.0000		1.0000
Other Jets (c)										
Crystal	0	0	0	0	0	0	0	0		0
Airlake	0	0	0	0	0	0	0	0		0
Lake Elmo	0	0	0	0	0	0	0	0		0
Anoka County/Blaine - Janes Field	2	0	1	11	3	0	0	2		19
Flying Cloud	0	0	4	23	0	0	0	1		28
MSP	0	0	0	14	0	0	0	1		15
St. Paul Downtown-Holman Field	0	0	3	12	18	0	1	5		39
Total MAC Airports	2	0	8	60	21	0	1	9		101
Other Jet Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500		0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250		0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250		0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000		0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Helicopter (c)										
Crystal	0	0	0	9	0	0	0	1		10
Airlake	0	0	0	0	0	0	0	1		1
Lake Elmo	0	0	0	0	0	0	3	0		3
Anoka County/Blaine - Janes Field	3	0	0	1	4	0	0	0		8
Flying Cloud	0	0	0	3	0	0	0	3		6
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	0	4	0	0	4		8
Total MAC Airports	3	0	0	13	8	0	3	9		36
Helicopter - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429		0.2963
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429		0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000		0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857		0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286		0.2222

Table F.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2010

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
	Other (c)									
Crystal	0	0	0	0	0	0	0	0		0
Airlake	0	0	1	0	0	0	0	0		1
Lake Elmo	0	0	0	0	0	0	3	0		3
Anoka County/Blaine - Janes Field	1	0	0	0	1	0	0	0		2
Flying Cloud	0	0	0	0	0	0	0	0		0
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0		0
Total MAC Airports	1	0	1	0	1	0	3	0		6
	Other Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.2000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.4000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000		0.4000
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total MAC Airports	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000		1.0000

(a) Assumed to increase at same rate as total based aircraft in category.

(b) Sum of forecasts for individual aircraft categories.

(c) Unconstrained aircraft from Appendix E with aircraft that cannot be accommodated at MSP or Holman Field redistributed. See text for details.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis

Table F.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2015

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Total Aircraft (b)										
Crystal	9	4	2	209	23	1	0	13	62	323
Airlake	0	4	111	15	3	30	0	12	59	234
Lake Elmo	2	0	10	9	58	0	160	20	41	300
Anoka County/Blaine - Janes Field	198	0	8	106	124	1	19	39	0	495
Flying Cloud	0	29	35	338	6	43	3	47	0	501
MSP	0	0	0	14	0	0	0	1	0	15
St. Paul Downtown-Holman Field	0	0	6	22	51	0	4	12	0	95
Total MAC Airports	209	37	172	713	265	75	186	144	162	1963
Total Aircraft - Distribution										
Crystal	0.0431	0.1081	0.0116	0.2931	0.0868	0.0133	0.0000	0.0903		0.1645
Airlake	0.0000	0.1081	0.6453	0.0210	0.0113	0.4000	0.0000	0.0833		0.1192
Lake Elmo	0.0096	0.0000	0.0581	0.0126	0.2189	0.0000	0.8602	0.1389		0.1528
Anoka County/Blaine - Janes Field	0.9474	0.0000	0.0465	0.1487	0.4679	0.0133	0.1022	0.2708		0.2522
Flying Cloud	0.0000	0.7838	0.2035	0.4741	0.0226	0.5733	0.0161	0.3264		0.2552
MSP	0.0000	0.0000	0.0000	0.0196	0.0000	0.0000	0.0000	0.0069		0.0076
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0349	0.0309	0.1925	0.0000	0.0215	0.0833		0.0484
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Single Engine Piston (c)										
Crystal	9	4	2	185	21	1	0	11	53	286
Airlake	0	4	98	15	3	28	0	10	55	213
Lake Elmo	2	0	10	9	56	0	146	18	39	280
Anoka County/Blaine - Janes Field	166	0	5	72	105	1	15	29		393
Flying Cloud	0	24	24	228	5	38	3	38		360
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	2	1	9	0	1	0		13
Total MAC Airports	177	32	141	510	199	68	165	106		1545
Single Engine Piston Aircraft - Distribution (d)										
Crystal	0.0520	0.1250	0.0148	0.3628	0.0980	0.0185	0.0000	0.1038		0.1718
Airlake	0.0000	0.1250	0.6741	0.0288	0.0147	0.4074	0.0000	0.0943		0.1053
Lake Elmo	0.0116	0.0000	0.0741	0.0173	0.2598	0.0000	0.8543	0.1698		0.1615
Anoka County/Blaine - Janes Field	0.9306	0.0000	0.0370	0.1420	0.4902	0.0185	0.0927	0.2736		0.2807
Flying Cloud	0.0000	0.7500	0.1704	0.4453	0.0245	0.5556	0.0199	0.3491		0.2544
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0058	0.0000	0.0296	0.0038	0.1127	0.0000	0.0331	0.0094		0.0263
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Multi-Engine Piston (c)										
Crystal	0	0	0	13	2	0	0	0	4	19
Airlake	0	0	11	0	0	0	0	0	4	15
Lake Elmo	0	0	0	0	2	0	8	2	2	14
Anoka County/Blaine - Janes Field	21	0	2	9	8	0	4	2		46
Flying Cloud	0	3	3	27	1	5	0	4		43
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	2	5	0	2	0		9
Total MAC Airports	21	3	16	51	18	5	14	8		146
Multi Engine Piston Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.2642	0.1053	0.0000	0.0000	0.0000		0.1176
Airlake	0.0000	0.0000	0.6875	0.0000	0.0000	0.0000	0.0000	0.0000		0.0809
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.1053	0.0000	0.5385	0.2500		0.0809
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1250	0.1698	0.4737	0.0000	0.3077	0.2500		0.3456
Flying Cloud	0.0000	1.0000	0.1875	0.5283	0.0526	1.0000	0.0000	0.5000		0.3088
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0377	0.2632	0.0000	0.1538	0.0000		0.0662
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Turboprop (c)										
Crystal	0	0	0	1	0	0	0	0		1
Airlake	0	0	0	0	0	2	0	0		2
Lake Elmo	0	0	0	0	0	0	0	0		0
Anoka County/Blaine - Janes Field	2	0	0	5	1	0	0	3		11
Flying Cloud	0	2	1	38	0	0	0	2		43
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	2	7	0	0	1		10
Total MAC Airports	2	2	1	46	8	2	0	6		67

Table F.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2015

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Turboprop Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000	0.0000	0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000	0.0000	0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000	0.0000	0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000	0.0000	0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	0.0000	1.0000
Microjets (c)										
Crystal	0	0	0	0	0	0	0	0	5	5
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	1	0	0	4	1	0	0	2	0	8
Flying Cloud	0	0	2	15	0	0	0	0	0	17
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	3	5	0	0	1	0	9
Total MAC Airports	1	0	2	22	6	0	0	3	0	39
Microjet Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.3250	0.0000	0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.1625	0.0000	0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.1625	0.0000	0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.3500	0.0000	0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	1.0000	0.0000	1.0000
Other Jets (c)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	1	14	4	0	0	3	0	25
Flying Cloud	0	0	5	27	0	0	0	1	0	33
MSP	0	0	0	14	0	0	0	1	0	15
St. Paul Downtown-Holman Field	0	0	4	14	20	0	1	5	0	44
Total MAC Airports	3	0	10	69	24	0	1	10	0	117
Other Jet Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500	0.0000	0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250	0.0000	0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250	0.0000	0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000	0.0000	0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000
Helicopter (e)										
Crystal	0	0	0	10	0	0	0	2	0	12
Airlake	0	0	0	0	0	0	0	2	0	2
Lake Elmo	0	0	0	0	0	0	3	0	0	3
Anoka County/Blaine - Janes Field	3	0	0	2	4	0	0	0	0	9
Flying Cloud	0	0	0	3	0	0	0	2	0	5
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	5	0	0	5	0	10
Total MAC Airports	3	0	0	15	9	0	3	11	0	41
Helicopter - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429	0.0000	0.2963
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429	0.0000	0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000	0.0000	0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857	0.0000	0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286	0.0000	0.2222
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000

Table F.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2015

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
	Other (c)									
Crystal	0	0	0	0	0	0	0	0	0	
Airlake	0	0	2	0	0	0	0	0	2	
Lake Elmo	0	0	0	0	0	0	3	0	3	
Anoka County/Blaine - Janes Field	2	0	0	0	1	0	0	0	3	
Flying Cloud	0	0	0	0	0	0	0	0	0	
MSP	0	0	0	0	0	0	0	0	0	
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0	
Total MAC Airports	2	0	2	0	1	0	3	0	8	
	Other Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.4000	
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.4000	
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total MAC Airports	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	

(a) Assumed to increase at same rate as total based aircraft in category.

(b) Sum of forecasts for individual aircraft categories.

(c) Unconstrained aircraft from Appendix E with aircraft that cannot be accommodated at MSP or Holman Field redistributed. See text for details.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis

Table F.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2020

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
Total Aircraft (b)										
Crystal	9	5	2	210	24	1	0	13	63	327
Airlake	0	5	112	14	3	31	0	12	60	237
Lake Elmo	2	0	11	9	59	0	166	20	41	308
Anoka County/Blaine - Janes Field	197	0	9	107	126	1	20	40	0	500
Flying Cloud	0	31	35	348	7	46	3	50	0	520
MSP	0	0	0	14	0	0	0	1	0	15
St. Paul Downtown-Holman Field	0	0	6	24	48	0	4	13	0	95
Total MAC Airports	208	41	175	726	267	79	193	149	164	2002
Total Aircraft - Distribution										
Crystal	0.0433	0.1220	0.0114	0.2893	0.0899	0.0127	0.0000	0.0872		0.1633
Airlake	0.0000	0.1220	0.6400	0.0193	0.0112	0.3924	0.0000	0.0805		0.1184
Lake Elmo	0.0096	0.0000	0.0629	0.0124	0.2210	0.0000	0.8601	0.1342		0.1538
Anoka County/Blaine - Janes Field	0.9471	0.0000	0.0514	0.1474	0.4719	0.0127	0.1036	0.2685		0.2498
Flying Cloud	0.0000	0.7561	0.2000	0.4793	0.0262	0.5823	0.0155	0.3356		0.2597
MSP	0.0000	0.0000	0.0000	0.0193	0.0000	0.0000	0.0000	0.0067		0.0075
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0343	0.0331	0.1798	0.0000	0.0207	0.0872		0.0475
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Single Engine Piston (c)										
Crystal	9	5	2	182	22	1	0	11	52	284
Airlake	0	5	99	14	3	29	0	10	56	216
Lake Elmo	2	0	11	9	56	0	150	18	39	285
Anoka County/Blaine - Janes Field	163	0	5	71	106	1	16	29		391
Flying Cloud	0	26	25	224	6	41	3	37		362
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0		0
Total MAC Airports	174	36	142	500	193	72	169	105		1538
Single Engine Piston Aircraft - Distribution (d)										
Crystal	0.0520	0.1250	0.0148	0.3628	0.0980	0.0185	0.0000	0.1038		0.1718
Airlake	0.0000	0.1250	0.6741	0.0288	0.0147	0.4074	0.0000	0.0943		0.1053
Lake Elmo	0.0116	0.0000	0.0741	0.0173	0.2598	0.0000	0.8543	0.1698		0.1615
Anoka County/Blaine - Janes Field	0.9306	0.0000	0.0370	0.1420	0.4902	0.0185	0.0927	0.2736		0.2807
Flying Cloud	0.0000	0.7500	0.1704	0.4453	0.0245	0.5556	0.0199	0.3491		0.2544
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0058	0.0000	0.0296	0.0038	0.1127	0.0000	0.0331	0.0094		0.0263
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Multi-Engine Piston (c)										
Crystal	0	0	0	14	2	0	0	0	4	20
Airlake	0	0	11	0	0	0	0	0	4	15
Lake Elmo	0	0	0	0	3	0	8	2	2	15
Anoka County/Blaine - Janes Field	21	0	2	8	7	0	4	2		44
Flying Cloud	0	3	3	27	1	5	0	4		43
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	1	4	0	2	0		7
Total MAC Airports	21	3	16	50	17	5	14	8		144
Multi Engine Piston Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.2642	0.1053	0.0000	0.0000	0.0000		0.1176
Airlake	0.0000	0.0000	0.6875	0.0000	0.0000	0.0000	0.0000	0.0000		0.0809
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.1053	0.0000	0.5385	0.2500		0.0809
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1250	0.1698	0.4737	0.0000	0.3077	0.2500		0.3456
Flying Cloud	0.0000	1.0000	0.1875	0.5283	0.0526	1.0000	0.0000	0.5000		0.3088
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0377	0.2632	0.0000	0.1538	0.0000		0.0662
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000

Table F.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2020

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
Turboprop (c)										
Crystal	0	0	0	1	0	0	0	0	0	1
Airlake	0	0	0	0	0	2	0	0	0	2
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	0	5	1	0	0	4		13
Flying Cloud	0	2	1	40	0	0	0	2		45
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	3	8	0	0	1		12
Total MAC Airports	3	2	1	49	9	2	0	7		73
Turboprop Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000		0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000		0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000		0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000		0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000		0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000		0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000		1.0000
Microjets (c)										
Crystal	0	0	0	1	0	0	0	0	7	8
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	1	0	0	6	1	0	0	1		9
Flying Cloud	0	0	2	21	0	0	0	2		25
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	1	4	8	0	0	2		15
Total MAC Airports	1	0	3	32	9	0	0	5		57
Microjet Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000		0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.3250		0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.1625		0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.1625		0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.3500		0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	1.0000		1.0000
Other Jets (c)										
Crystal	0	0	0	0	0	0	0	0		0
Airlake	0	0	0	0	0	0	0	0		0
Lake Elmo	0	0	0	0	0	0	0	0		0
Anoka County/Blaine - Janes Field	3	0	2	15	4	0	0	4		28
Flying Cloud	0	0	4	33	0	0	0	2		39
MSP	0	0	0	14	0	0	0	1		15
St. Paul Downtown-Holman Field	0	0	5	16	23	0	2	5		51
Total MAC Airports	3	0	11	78	27	0	2	12		133
Other Jet Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500		0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250		0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250		0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000		0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000

Table F.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2020

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Helicopter (c)										
Crystal	0	0	0	12	0	0	0	2		14
Airlake	0	0	0	0	0	0	0	2		2
Lake Elmo	0	0	0	0	0	0	4	0		4
Anoka County/Blaine - Janes Field	4	0	0	2	5	0	0	0		11
Flying Cloud	0	0	0	3	0	0	0	3		6
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	0	5	0	0	5		10
Total MAC Airports	4	0	0	17	10	0	4	12		47
Helicopter - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429		0.2963
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429		0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000		0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857		0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286		0.2222
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Other (c)										
Crystal	0	0	0	0	0	0	0	0		0
Airlake	0	0	2	0	0	0	0	0		2
Lake Elmo	0	0	0	0	0	0	4	0		4
Anoka County/Blaine - Janes Field	2	0	0	0	2	0	0	0		4
Flying Cloud	0	0	0	0	0	0	0	0		0
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0		0
Total MAC Airports	2	0	2	0	2	0	4	0		10
Other Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.2000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.4000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000		0.4000
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total MAC Airports	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000		1.0000

(a) Assumed to increase at same rate as total based aircraft in category.

(b) Sum of forecasts for individual aircraft categories.

(c) Unconstrained aircraft from Appendix E with aircraft that cannot be accommodated at MSP or Holman Field redistributed. See text for details.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis

Table F.5

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2025

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Total Aircraft (b)										
Crystal	9	5	2	209	25	1	0	13	66	264
Airlake	0	5	112	15	3	32	0	12	60	179
Lake Elmo	2	0	10	9	59	0	171	19	42	270
Anoka County/Blaine - Janes Field	191	0	9	112	131	1	21	40	0	505
Flying Cloud	0	34	37	361	7	47	3	50	0	539
MSP	0	0	0	14	0	0	0	1	0	15
St. Paul Downtown-Holman Field	0	0	6	25	47	0	2	15	0	95
Total MAC Airports	202	44	176	745	272	81	197	150	168	1867
Total Aircraft - Distribution										
Crystal	0.0446	0.1136	0.0114	0.2805	0.0919	0.0123	0.0000	0.0867		0.1414
Airlake	0.0000	0.1136	0.6364	0.0201	0.0110	0.3951	0.0000	0.0800		0.0959
Lake Elmo	0.0099	0.0000	0.0568	0.0121	0.2169	0.0000	0.8680	0.1267		0.1446
Anoka County/Blaine - Janes Field	0.9455	0.0000	0.0511	0.1503	0.4816	0.0123	0.1066	0.2667		0.2705
Flying Cloud	0.0000	0.7727	0.2102	0.4846	0.0257	0.5802	0.0152	0.3333		0.2887
MSP	0.0000	0.0000	0.0000	0.0188	0.0000	0.0000	0.0000	0.0067		0.0080
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0341	0.0336	0.1728	0.0000	0.0102	0.1000		0.0509
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Single Engine Piston (c)										
Crystal	9	5	2	180	22	1	0	11	52	282
Airlake	0	5	99	14	3	30	0	10	56	217
Lake Elmo	2	0	10	9	56	0	154	17	40	288
Anoka County/Blaine - Janes Field	157	0	5	70	104	1	16	28		381
Flying Cloud	0	28	25	221	6	41	3	37		361
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0		0
Total MAC Airports	168	38	141	494	191	73	173	103		1529
Single Engine Piston Aircraft - Distribution (d)										
Crystal	0.0520	0.1250	0.0148	0.3628	0.0980	0.0185	0.0000	0.1038		0.1718
Airlake	0.0000	0.1250	0.6741	0.0288	0.0147	0.4074	0.0000	0.0943		0.1053
Lake Elmo	0.0116	0.0000	0.0741	0.0173	0.2598	0.0000	0.8543	0.1698		0.1615
Anoka County/Blaine - Janes Field	0.9306	0.0000	0.0370	0.1420	0.4902	0.0185	0.0927	0.2736		0.2807
Flying Cloud	0.0000	0.7500	0.1704	0.4453	0.0245	0.5556	0.0199	0.3491		0.2544
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0058	0.0000	0.0296	0.0038	0.1127	0.0000	0.0331	0.0094		0.0263
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Multi-Engine Piston (c)										
Crystal	0	0	0	14	3	0	0	0	4	21
Airlake	0	0	11	0	0	0	0	0	4	15
Lake Elmo	0	0	0	0	3	0	9	2	2	16
Anoka County/Blaine - Janes Field	20	0	2	8	10	0	5	2		47
Flying Cloud	0	3	3	27	1	5	0	4		43
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0		0
Total MAC Airports	20	3	16	49	17	5	14	8		142
Multi Engine Piston Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.2642	0.1053	0.0000	0.0000	0.0000		0.1176
Airlake	0.0000	0.0000	0.6875	0.0000	0.0000	0.0000	0.0000	0.0000		0.0809
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.1053	0.0000	0.5385	0.2500		0.0809
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1250	0.1698	0.4737	0.0000	0.3077	0.2500		0.3456
Flying Cloud	0.0000	1.0000	0.1875	0.5283	0.0526	1.0000	0.0000	0.5000		0.3088
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0377	0.2632	0.0000	0.1538	0.0000		0.0662
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Turboprop (c)										
Crystal	0	0	0	1	0	0	0	0		1
Airlake	0	0	0	0	0	2	0	0		2
Lake Elmo	0	0	0	0	0	0	0	0		0
Anoka County/Blaine - Janes Field	3	0	0	6	1	0	0	4		14
Flying Cloud	0	2	1	44	0	0	0	2		49
MSP	0	0	0	0	0	0	0	0		0
St. Paul Downtown-Holman Field	0	0	0	2	8	0	0	1		11
Total MAC Airports	3	2	1	53	9	2	0	7		77

Table F.5

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2025

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Turboprop Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0256	0.0000	0.0000	0.0000	0.0000	0.0000	0.0179
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0179
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1026	0.1429	0.0000	0.0000	0.4000	0.0000	0.1607
Flying Cloud	0.0000	1.0000	1.0000	0.8205	0.0000	0.0000	0.0000	0.2000	0.0000	0.6250
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	0.0000	0.0179
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0513	0.8571	0.0000	0.0000	0.2000	0.0000	0.1607
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	0.0000	1.0000
Microjets (c)										
Crystal	0	0	0	1	0	0	0	0	10	11
Airlake	0	0	0	1	0	0	0	0	0	1
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	2	0	0	7	3	0	0	3	0	15
Flying Cloud	0	1	3	29	0	1	0	1	0	35
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	1	5	9	0	0	2	0	17
Total MAC Airports	2	1	4	43	12	1	0	6	0	79
Microjet Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0128	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0089
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0714	0.1439	0.1504	0.0000	0.0000	0.3250	0.0000	0.1793
Flying Cloud	0.0000	0.0000	0.7143	0.5954	0.0000	0.0000	0.0000	0.1625	0.0000	0.4444
MSP	0.0000	0.0000	0.0000	0.1204	0.0000	0.0000	0.0000	0.1625	0.0000	0.0859
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2143	0.1275	0.8496	0.0000	0.5000	0.3500	0.0000	0.2727
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	0.5000	1.0000	0.0000	1.0000
Other Jets (c)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	2	19	5	0	0	3	0	32
Flying Cloud	0	0	5	36	0	0	0	2	0	43
MSP	0	0	0	14	0	0	0	1	0	15
St. Paul Downtown-Holman Field	0	0	5	18	25	0	2	7	0	57
Total MAC Airports	3	0	12	87	30	0	2	13	0	147
Other Jet Aircraft - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1429	0.1852	0.1579	0.0000	0.0000	0.2500	0.0000	0.1978
Flying Cloud	0.0000	0.0000	0.4286	0.3704	0.0000	0.0000	0.0000	0.1250	0.0000	0.2637
MSP	0.0000	0.0000	0.0000	0.2407	0.0000	0.0000	0.0000	0.1250	0.0000	0.1538
St. Paul Downtown-Holman Field	0.0000	0.0000	0.4286	0.2037	0.8421	0.0000	1.0000	0.5000	0.0000	0.3846
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000
Helicopter (c)										
Crystal	0	0	0	13	0	0	0	2	0	15
Airlake	0	0	0	0	0	0	0	2	0	2
Lake Elmo	0	0	0	0	0	0	4	0	0	4
Anoka County/Blaine - Janes Field	4	0	0	2	6	0	0	0	0	12
Flying Cloud	0	0	0	4	0	0	0	4	0	8
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	0	5	0	0	5	0	10
Total MAC Airports	4	0	0	19	11	0	4	13	0	51
Helicopter - Distribution (d)										
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.1429	0.0000	0.2963
Airlake	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1429	0.0000	0.0370
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0741
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.1000	0.5000	0.0000	0.0000	0.0000	0.0000	0.2222
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.2857	0.0000	0.1481
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.4286	0.0000	0.2222
Total MAC Airports	1.0000	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000

Table F.5

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Projected Constrained Distribution of Based Aircraft by Airport and County: 2025

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
	Other (c)									
Crystal	0	0	0	0	0	0	0	0	0	
Airlake	0	0	2	0	0	0	0	0	2	
Lake Elmo	0	0	0	0	0	0	4	0	4	
Anoka County/Blaine - Janes Field	2	0	0	0	2	0	0	0	4	
Flying Cloud	0	0	0	0	0	0	0	0	0	
MSP	0	0	0	0	0	0	0	0	0	
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0	
Total MAC Airports	2	0	2	0	2	0	4	0	10	
	Other Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Airlake	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2000	
Lake Elmo	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.4000	
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.4000	
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
St. Paul Downtown-Holman Field	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Total MAC Airports	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000	

(a) Assumed to increase at same rate as total based aircraft in category.

(b) Sum of forecasts for individual aircraft categories.

(c) Unconstrained aircraft from Appendix E with aircraft that cannot be accommodated at MSP or Holman Field redistributed. See text for details.

(d) Table C.1 in Appendix C.

Sources: As noted and HNTB analysis

Table G.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Based Aircraft Forecast: Anoka County Airport

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2005	384	47	9	0	18	6	2	466
2010	395	47	10	1	19	8	2	482
2015	393	46	11	8	25	9	3	495
2020	391	44	13	9	28	11	4	500
2025	381	47	14	15	32	12	4	505
	Average Annual Growth Rate							
	0.0%	0.0%	2.2%	-	2.9%	3.5%	3.5%	0.4%

Source: Appendix F.

Table G.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Based Aircraft Forecast: Flying Cloud

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2005	348	42	35	0	24	4	0	453
2010	357	42	40	9	28	6	0	482
2015	360	43	43	17	33	5	0	501
2020	362	43	45	25	39	6	0	520
2025	361	43	49	35	43	8	0	539
	Average Annual Growth Rate							
	0.2%	0.1%	1.7%	-	3.0%	3.5%	-	0.9%

Source: Appendix F.

Table G.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Based Aircraft Forecast: MSP

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2005	0	0	1	0	14	0	0	15
2010	0	0	0	0	15	0	0	15
2015	0	0	0	0	15	0	0	15
2020	0	0	0	0	15	0	0	15
2025	0	0	0	0	15	0	0	15
Average Annual Growth Rate								
	-	-	-100.0%	-	0.3%	-	-	0.0%

Source: Appendix F.

Table G.4

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Based Aircraft Forecast: St. Paul Downtown

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total	
2005	36	9	9	0	35	6	0	95	
2010	24	9	10	5	39	8	0	95	
2015	13	9	10	9	44	10	0	95	
2020	0	7	12	15	51	10	0	95	
2025	0	0	11	17	57	10	0	95	
			Average Annual Growth Rate						
	-100.0%	-100.0%	1.0%	-	2.5%	2.6%	-	0.0%	

Source: Appendix F.

Table H.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Aircraft Operations Forecast: Crystal

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
Based Aircraft Forecast (a)								
2005	235	16	1	0	0	8	0	260
2010	262	18	1	2	0	10	0	293
2015	286	19	1	5	0	12	0	323
2020	284	20	1	8	0	14	0	327
2025	282	21	1	11	0	15	0	330
FAA Forecast of Active Aircraft (b)								
2005	144,530	17,481	8,030	-	8,628	7,595	28,327	214,591
2010	147,150	17,575	9,030	1,800	9,775	9,915	38,785	234,030
2015	149,075	17,660	10,030	4,050	11,555	11,945	43,805	248,120
2020	150,563	17,735	11,030	6,300	13,468	13,795	46,868	259,758
2025	152,050	17,810	12,030	8,550	15,380	15,645	49,930	271,395
FAA Forecast of Hours Flown (000's) (c)								
2005	16,794	2,363	1,967	-	3,008	2,440	1,721	28,293
2010	17,906	2,498	2,104	1,800	3,447	3,065	2,495	33,315
2015	19,022	2,638	2,223	4,050	4,407	3,650	2,987	38,977
2020	20,145	2,783	2,328	6,300	5,030	4,213	3,372	44,170
2025	21,267	2,928	2,433	8,550	5,652	4,775	3,757	49,362
Forecast of Total Aircraft Operations (d)								
2005	60,826	5,795	2,811	0	122	2,651	-	72,205
2010	71,017	6,855	2,674	2073	140	3,189	-	85,948
2015	81,291	7,605	2,543	5164	179	3,782	-	100,564
2020	84,641	8,409	2,422	8256	204	4,410	-	108,342
2025	87,861	9,250	2,321	11347	229	4,722	-	115,730
Forecast of Touch&Go Operations (e)								
2005	23,156	768	-	-	-	1,202	-	25,126
2010	27,036	909	-	-	-	1,445	-	29,390
2015	30,947	1,008	-	-	-	1,714	-	33,669
2020	32,223	1,115	-	-	-	1,999	-	35,337
2025	33,449	1,227	-	-	-	2,141	-	36,817
Forecast of Non Touch&Go Operations (f)								
2005	37,670	5,027	2,811	-	122	1,449	-	47,079
2010	43,981	5,946	2,674	2,073	140	1,744	-	56,558
2015	50,344	6,597	2,543	5,164	179	2,068	-	66,895
2020	52,418	7,294	2,422	8,256	204	2,411	-	73,005
2025	54,412	8,023	2,321	11,347	229	2,581	-	78,913

(a) Table 6.

(b) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(c) FAA Aerospace Forecasts: Fiscal Years 2006-2017. Microjet hours flown estimated at 1000 hours per aircraft.

(d) Base year data from ANOMS. Future operations projected to increase at same rate as based aircraft adjusted by estimated change in utilization rate (estimated as FAA ratio of hours flown to active aircraft).

(e) Share of operations in each category consisting of touch and go operations assumed to remain constant.

(f) Total operations less touch and go operations.

Sources: As noted and HNTB analysis.

Table H.2

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Aircraft Operations Forecast: Airlake

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
Based Aircraft Forecast (a)								
2005	144	11	1	0	0	1	1	158
2010	207	15	1	0	0	1	1	225
2015	213	15	2	0	0	2	2	234
2020	216	15	2	0	0	2	2	237
2025	217	15	2	1	0	2	2	239
FAA Forecast of Active Aircraft (b)								
2005	144,530	17,481	8,030	-	8,628	7,595	28,327	214,591
2010	147,150	17,575	9,030	1,800	9,775	9,915	38,785	234,030
2015	149,075	17,660	10,030	4,050	11,555	11,945	43,805	248,120
2020	150,563	17,735	11,030	6,300	13,468	13,795	46,868	259,758
2025	152,050	17,810	12,030	8,550	15,380	15,645	49,930	271,395
FAA Forecast of Hours Flown (000's) (c)								
2005	16,794	2,363	1,967	-	3,008	2,440	1,721	28,293
2010	17,906	2,498	2,104	1,800	3,447	3,065	2,495	33,315
2015	19,022	2,638	2,223	4,050	4,407	3,650	2,987	38,977
2020	20,145	2,783	2,328	6,300	5,030	4,213	3,372	44,170
2025	21,267	2,928	2,433	8,550	5,652	4,775	3,757	49,362
Forecast of Total Aircraft Operations (d)								
2005	50,773	2,877	2,453	0	664	234	-	57,001
2010	76,433	4,125	2,333	397	761	225	-	84,275
2015	82,472	4,335	4,439	894	973	445	-	93,558
2020	87,694	4,554	4,227	1,391	1,110	445	-	99,421
2025	92,099	4,771	4,051	2,887	1,248	445	-	105,500
Forecast of Touch&Go Operations (e)								
2005	22,477	197	-	-	-	62	0	22,736
2010	33,837	282	-	-	-	59	0	34,178
2015	36,510	297	-	-	-	117	0	36,924
2020	38,822	312	-	-	-	117	0	39,251
2025	40,772	326	-	-	-	117	0	41,215
Forecast of Non Touch&Go Operations (f)								
2005	28,296	2,680	2,453	-	664	172	-	34,265
2010	42,596	3,843	2,333	397	761	166	-	50,097
2015	45,962	4,038	4,439	894	973	328	-	56,634
2020	48,872	4,242	4,227	1,391	1,110	328	-	60,170
2025	51,327	4,445	4,051	2,887	1,248	328	-	64,285

(a) Table 7.

(b) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(c) FAA Aerospace Forecasts: Fiscal Years 2006-2017. Microjet hours flown estimated at 1000 hours per aircraft.

(d) Base year data from ANOMS. Future operations projected to increase at same rate as based aircraft adjusted by estimated change in utilization rate (estimated as FAA ratio of hours flown to active aircraft).

(e) Share of operations in each category consisting of touch and go operations assumed to remain constant.

(f) Total operations less touch and go operations.

Sources: As noted and HNTB analysis.

Table H.3

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Summary of Aircraft Operations Forecast: Lake Elmo

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
Based Aircraft Forecast (a)								
2005	221	11	0	0	0	2	2	236
2010	271	14	0	0	0	3	3	291
2015	280	14	0	0	0	3	3	300
2020	285	15	0	0	0	4	4	308
2025	288	16	0	0	0	4	4	312
FAA Forecast of Active Aircraft (b)								
2005	144,530	17,481	8,030	-	8,628	7,595	28,327	214,591
2010	147,150	17,575	9,030	1,800	9,775	9,915	38,785	234,030
2015	149,075	17,660	10,030	4,050	11,555	11,945	43,805	248,120
2020	150,563	17,735	11,030	6,300	13,468	13,795	46,868	259,758
2025	152,050	17,810	12,030	8,550	15,380	15,645	49,930	271,395
FAA Forecast of Hours Flown (000's) (c)								
2005	16,794	2,363	1,967	-	3,008	2,440	1,721	28,293
2010	17,906	2,498	2,104	1,800	3,447	3,065	2,495	33,315
2015	19,022	2,638	2,223	4,050	4,407	3,650	2,987	38,977
2020	20,145	2,783	2,328	6,300	5,030	4,213	3,372	44,170
2025	21,267	2,928	2,433	8,550	5,652	4,775	3,757	49,362
Forecast of Total Aircraft Operations (d)								
2005	54,471	1,976	597	0	-	623	-	57,667
2010	69,949	2,644	639	54	-	899	-	74,186
2015	75,786	2,779	675	121	-	889	-	80,249
2020	80,884	3,128	707	188	-	1,185	-	86,091
2025	85,446	3,496	738	255	-	1,184	-	91,119
Forecast of Touch&Go Operations (e)								
2005	22,148	212	-	-	-	80	-	22,440
2010	28,441	284	-	-	-	115	-	28,840
2015	30,814	298	-	-	-	114	-	31,226
2020	32,887	336	-	-	-	151	-	33,374
2025	34,742	375	-	-	-	151	-	35,268
Forecast of Non Touch&Go Operations (f)								
2005	32,323	1,764	597	-	-	543	-	35,227
2010	41,508	2,360	639	54	-	784	-	45,346
2015	44,972	2,481	675	121	-	775	-	49,023
2020	47,997	2,792	707	188	-	1,034	-	52,717
2025	50,704	3,121	738	255	-	1,033	-	55,851

(a) Table 8.

(b) FAA Aerospace Forecasts: Fiscal Years 2006-2017.

(c) FAA Aerospace Forecasts: Fiscal Years 2006-2017. Microjet hours flown estimated at 1000 hours per aircraft.

(d) Base year data from ANOMS. Future operations projected to increase at same rate as based aircraft adjusted by estimated change in utilization rate (estimated as FAA ratio of hours flown to active aircraft).

(e) Share of operations in each category consisting of touch and go operations assumed to remain constant.

(f) Total operations less touch and go operations.

Sources: As noted and HNTB analysis.

Table C.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County

Airport	County of Registration								Total	
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Total Aircraft										
Crystal	9	3	2	211	22	1		12	260	
Airlake		3	100	15	3	24		10	155	
Lake Elmo	2		10	9	55		140	20	236	
Forest Lake	1				2		15	5	23	
Anoka County/Blaine - Janes Field	189		8	98	117	1	18	35	466	
Flying Cloud		21	30	307	6	32	3	54	453	
MSP				13				2	15	
South St. Paul Municipal-Fleming Field	1		115	16	24	7	23	28	214	
St. Paul Downtown-Hollman Field	1		7	17	53		8	9	95	
Other	57	60	155	620	333	116	83		1424	
Total	260	87	427	1306	615	181	290		3166	
Total MAC Airports	201	27	157	670	256	58	169	142	1505	
Single Engine Piston										
Crystal	9	3	2	189	20	1	0	11	235	
Airlake		3	91	15	3	22		10	144	
Lake Elmo	2		10	9	53		129	18	221	
Forest Lake					2		15	5	22	
Anoka County/Blaine - Janes Field	161		5	74	100	1	14	29	384	
Flying Cloud	0	18	23	232	5	30	3	37	348	
MSP	0	0	0	0	0	0	0	0	0	
South St. Paul Municipal-Fleming Field	1		115	14	23	6	19	18	196	
St. Paul Downtown-Holman Field	1		4	2	23		5	1	36	
Other	45	50	116	458	233	98	62		1062	
Total	219	74	366	993	462	158	247	129	2648	
Total MAC Airports	173	24	135	521	204	54	151	106	1368	
Multi-Engine Piston										
Crystal				14	2				16	
Airlake			11						11	
Lake Elmo					2		7	2	11	
Forest Lake									0	
Anoka County/Blaine - Janes Field	21		2	9	9		4	2	47	
Flying Cloud		2	3	28	1	4		4	42	
MSP	0	0	0	0	0	0	0	0	0	
South St. Paul Municipal-Fleming Field	0		6	2		1	4	1	14	

Table C.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Anoka County/Blaine - Janes Field	2		1	10	3			2	18
Flying Cloud			3	20				1	24
MSP				13				1	14
South St. Paul Municipal-Fleming Field									0
St. Paul Downtown-Holman Field			3	11	16		1	4	35
Other	3	0	0	34	14	1	0		52
Total	5	0	7	88	33	1	1	8	143
Total MAC Airports	2	0	7	54	19	0	1	8	91
Helicopter									
Crystal				7				1	8
Airlake								1	1
Lake Elmo							2		2
Forest Lake	1								1
Anoka County/Blaine - Janes Field	2			1	3				6
Flying Cloud				2				2	4
MSP									0
South St. Paul Municipal-Fleming Field			1						1
St. Paul Downtown-Holman Field					3			3	6
Other	7	2	5	27	14	4	1		60
Total	10	2	6	37	20	4	3	7	89
Total MAC Airports	2	0	0	10	6	0	2	7	27
Other									
Crystal									0
Airlake			1						1
Lake Elmo							2		2
Forest Lake									0
Anoka County/Blaine - Janes Field	1				1				2
Flying Cloud									0
MSP									0
South St. Paul Municipal-Fleming Field					1				1
St. Paul Downtown-Holman Field									0
Other	5	6	13	51	50	4	20		149
Total	6	6	14	51	52	4	22	0	155
Total MAC Airports	1	0	1	0	1	0	2	0	5

Total Crosscheck

Table C.1

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS

Distribution of Based Aircraft by Airport and County

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Crystal	9	3	2	211	22	1	0	12	260
Airlake	0	3	103	15	3	23	0	11	158
Lake Elmo	2	0	10	9	55	0	140	20	236
Forest Lake	1	0	0	0	2	0	15	5	23
Anoka County/Blaine - Janes Field	189	0	8	98	117	1	18	35	466
Flying Cloud	0	21	30	314	6	34	3	45	453
MSP	0	0	0	13	0	0	0	2	15
South St. Paul Municipal-Fleming Field	1	0	124	16	24	7	23	19	214
St. Paul Downtown-Holman Field	1	0	7	17	53	0	8	9	95
Other	57	60	144	613	333	115	83		1405
Total	260	87	428	1306	615	181	290	158	3325
Total MAC Airports	201	27	160	677	256	59	169	134	1683