

MINNEAPOLIS-ST. PAUL RELIEVER AIRPORTS
Activity Forecasts – Technical Report
July 2013 (Revised October 2014)

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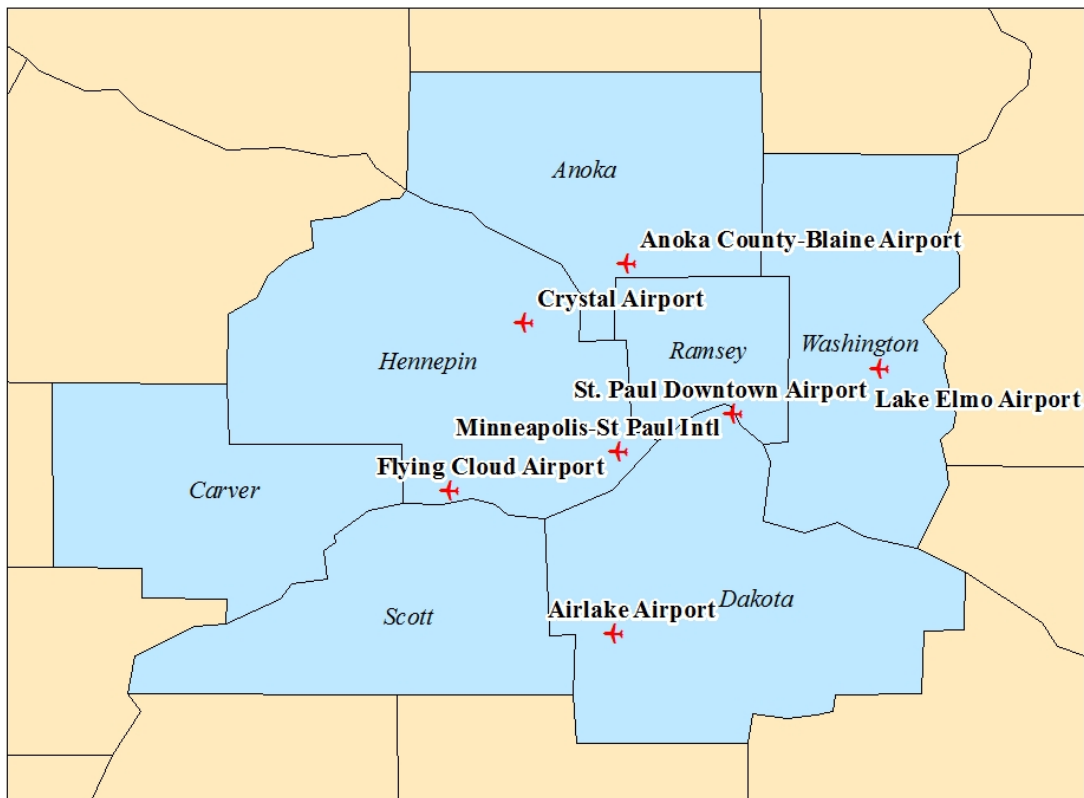
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1. Introduction

The purpose of this study is to forecast long-term General Aviation (GA) activity for three of the Reliever Airports owned and operated by the Metropolitan Airports Commission (MAC). The three airports under this study include Airlake Airport (LVN), Crystal Airport (MIC), and Lake Elmo Airport (21D). Forecasts are presented for 2015, 2020, 2025, 2030, and 2035. The forecasts for the three airports are unconstrained, except for runway length, and assume that the necessary facilities will be in place to accommodate demand. Since the forecasts are prepared within the context of the MAC airport system, the other MAC airports (Minneapolis-St. Paul International (MSP), Holman Field in St. Paul (STP), Flying Cloud Airport (FCM) and Anoka County Airport (ANE)) are also considered. Figure 1 shows the location of the MAC airports.

Figure 1: MAC Airports.



The report is organized as follows.

- The existing and projected socioeconomic conditions in the area are discussed in detail to lay the economic foundation of the subsequent forecasts. Historical trends and base year activities are presented in the next section.
- After the base year activity level is established, future activities are projected including the number of based aircraft by category, operations by category, and peak hour activity.

- The report concludes with three scenarios, including a high activity case, a low activity case, and an extended runway case.

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. Variances from assumptions related to the local and national economy and the aviation industry could have a significant effect on the forecasts presented herein.

2. Socioeconomic Background

This section first establishes catchment areas for each of the three study airports. Then it continues to examine important socioeconomic parameters such as population, employment, and income in the area. Projections of these socioeconomic parameters are derived from forecasts prepared by both the Metropolitan Council's Regional Development Framework forecast (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 Holman Field (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 Parameters

Socioeconomic projections are available from both the Met Council and W&P Economics. Each source has its strengths and weaknesses.

The projections prepared by the Met Council reflect a detailed knowledge of the existing and projected growth trends within the Minneapolis – St. Paul metropolitan area. However, when this report was written, the latest 30-year forecast was only available for the total seven-county area and not by individual county. In addition, the Met Council forecasts do not include projections of income or projections of national activity. Income is important because it is one of the most relevant factors related to regional general aviation activity. Also, much of the analysis is 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.

Based on the relative strengths and weaknesses of the two projections, a hybrid income projection is incorporated in this study. Per capita income projections by W&P were applied to the Met Council population forecasts to generate total regional income forecasts for each study area. 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 base year (2009) for which personal income data was available.

Population and employment projections are more straightforward. First, since the latest Met Council forecast is available only at the regional total level, the Met Council's previous county level projections were adjusted proportionately to sum to the latest regional total projection. Then an adjustment was made to match all the forecasts to the most recent base year levels (2010) published by the Bureau of Economic Analysis (BEA). As a final step, projections were adjusted proportionally to match the W&P population and employment forecasts. Tables A.1 and A.2 in Appendix A show the historical and projected population of the seven-county area. Historical and projected employment is shown in Tables A.3 and A.4 in the Appendix A.

Table 1 shows the income forecast that resulted from the hybrid calculation 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 2.7 percent through 2035, slightly more rapidly than in the United States as a whole.

3. Historical Trends

In addition to the three airports in this study, the MAC also operates Minneapolis – St. Paul International Airport, Holman Field (St. Paul Downtown Airport), Flying Cloud Airport, and Anoka County Airport. Table 2 shows historical based aircraft recorded at each of the seven airports from 1980 through 2012.

Table 1: Projected Income for the Seven-County Metropolitan Area.

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
2010	12,831,111	4,945,003	17,970,760	63,414,896	22,897,395	5,573,589	11,372,671	139,005,425	12,353,577,000	1.13%
2012	13,194,792	5,477,628	18,674,013	67,577,958	24,485,439	5,910,053	11,662,086	146,981,969	12,893,475,399	1.14%
2015	13,889,351	6,326,432	19,892,762	71,741,682	25,425,694	6,486,500	12,536,115	156,298,535	13,631,595,341	1.15%
2020	15,449,282	7,971,801	22,656,135	81,606,492	27,906,082	7,657,015	14,497,849	177,744,656	15,351,872,194	1.16%
2025	17,181,861	9,457,271	25,863,311	94,361,987	31,264,333	9,053,547	16,643,139	203,825,449	17,423,616,449	1.17%
2030	19,220,838	11,177,991	29,675,570	109,196,152	35,167,958	10,670,885	19,209,483	234,318,878	19,842,874,811	1.18%
2035	21,585,065	13,166,666	34,154,546	126,205,772	39,638,279	12,535,579	22,237,099	269,523,006	22,638,802,893	1.19%
	<i>Average Annual Growth Rate</i>									
2012- 2035	2.2%	3.9%	2.7%	2.8%	2.1%	3.3%	2.8%	2.7%	2.5%	

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

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

Table 2: Historical Based Aircraft Counts.

Year	General Aviation							Total without MSP	Total with MSP
	Flying Cloud	Crystal	Anoka County	Lake Elmo	Airlake	Holman	MSP		
1980	582	315	353	170		190	79	1,610	1,689
1981	580	297	360	220		205	69	1,662	1,731
1982	608	337	384	238		181	79	1,748	1,827
1983	615	327	362	236		164	87	1,704	1,791
1984	568	352	361	244	61	165	107	1,751	1,858
1985	568	338	390	145	63	147	n/a	1,651	n/a
1986	560	333	412	145	93	160	n/a	1,703	n/a
1987	565	345	408	150	153	168	n/a	1,789	n/a
1988	492	325	384	149	153	181	n/a	1,684	n/a
1989	485	320	405	171	140	188	n/a	1,709	n/a
1990	485	324	411	177	140	191	n/a	1,728	n/a
1991	487	327	414	179	140	193	n/a	1,740	n/a
1992	482	327	408	189	165	198	n/a	1,769	n/a
1993	482	327	408	189	179	198	n/a	1,783	n/a
1994	482	327	415	198	179	198	n/a	1,799	n/a
1995	482	327	415	198	179	198	n/a	1,799	n/a
1996	482	327	431	205	179	198	n/a	1,822	n/a
1997	482	327	441	210	179	203	n/a	1,842	n/a
1998	482	327	451	210	179	180	n/a	1,829	n/a
1999	509	309	472	250	178	146	29	1,864	1,893
2000	485	296	454	245	175	137	29	1,792	1,821
2001	461	280	447	235	170	131	13	1,724	1,737
2002	473	278	464	237	170	130	13	1,752	1,765
2003	463	288	490	237	190	124	16	1,792	1,808
2004	456	263	488	236	177	124	16	1,744	1,760
2005	451	265	482	239	163	124	15	1,724	1,739
2006	447	261	475	233	159	124	15	1,699	1,714
2007	450	251	459	227	175	124	15	1,686	1,701
2008	413	238	439	230	158	124	15	1,602	1,617
2009	403	219	433	229	147	89	15	1,535	1,550
2010	403	219	433	229	147	89	27	1,520	1,547
2011	389	199	423	216	131	83	27	1,468	1,495
2012	403	219	433	229	147	89	29	1,520	1,549

Source: MAC based aircraft counts.

The total number of aircraft based at Crystal declined from 1980 to 2012. The total counts stayed above 300 aircraft before 2000 but declined to around 220 recently. 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 experienced a rapid increase during the 1980's and peaked at 190 aircraft in 2003. They gradually decreased to 147 in 2012. 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 0.67 and 0.87 percent of the U.S. active fleet (see Table B.2 in Appendix B). Since 1999, the share has been gradually declining. After reaching the lowest percentage of 0.67 percent in 2011, it bounced back to 0.70 percent in 2012. 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.

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 3: Based Aircraft by Aircraft Type and County of Registration.

	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (a)	Total
Single Engine Piston (b)	154	19	319	495	120	56	179	151	1,493
Multi Engine Piston	17		24	23	6	1	11	17	99
Turboprop	1	1	12	30	3	1		4	52
Jet	3	1	26	58	3	2	1	5	99
Rotor	3		7	10	1		3	4	28
Other			4	5	1		7	3	20
Total	178	21	392	621	134	60	201	184	1,791

(a) 'Other' refers to counties outside the 7-county area.

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

Sources: MNDOT Registered Based Aircraft Database and HNTB analysis.

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 Lake – are also included for comparison purposes. Around 80 percent of the based aircraft at Crystal Airport are registered in Hennepin County, with another 5.5 percent registered in Ramsey County. More than 60 percent of the aircraft based at Airlake Airport are registered in Dakota County, along with 12 percent registered in Scott County and 8 percent registered in Hennepin County. About 61 percent of aircraft based at Lake Elmo Airport are registered in Washington County, along with 14 percent registered in Dakota County and 13 percent registered in Ramsey County. As shown, geography is a major determinant but not the only determinant of where aircraft are based.

Another factor that influences general aviation activity is the pilot population. Table I.1 in Appendix I shows historical and projected pilot population by category. There is a noticeable decline in the number of student pilots from 2001 until 2010 when the FAA issued a rule that increased the duration of validity of student pilot certificates for pilots under the age of 40 from 36 to 60 months. The FAA projects this decline to continue until around 2020. This trend impacts potential training activities and the number of new pilots. However, the number of sport and rotorcraft pilots has increased significantly in recent years. It is projected that the number of sport and rotorcraft pilots will increase at an annual rate of 6.0 percent and 3.0 percent respectively through 2032. This is consistent with the FAA's projection of increased based aircraft and operations of rotorcraft and sport aircraft. The total number of pilots less airline pilots increased at an annual rate of 0.03 percent from 2000 to 2010. This increase largely

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

results from the extension of student certificate validity in 2010. This number declined again in 2011. During the same 2000-2010 period, the U.S. population grew at an annual rate of 0.9 percent.

Both Boeing and the International Air Transport Association (IATA) predict a pilot shortage in the future. Recent regulation that increases the minimum requirement for commercial pilot certifications from 250 air hours to 1,500 hours further exacerbates the potential pilot shortage. This primarily affects regional airlines where most new professional pilots start their careers. In addition to commercial airports, MAC airports where business aviation activity comprises a significant part of the total operation, such as STP, may be impacted.

In this study, it is assumed the potential pilot shortage will not constrain future aviation activities at study airports, beyond the impacts that are already incorporated into the FAA forecasts.

Table 4: Based Aircraft by Based Airport and County of Registration.

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Crystal	6	1	10	174	12	1		15	219
Airlake		1	89	12		18	1	26	147
Lake Elmo	1		33	8	29		141	17	229
Anoka County/Blaine - Janes Field	168	1	37	87	74	2	15	49	433
Flying Cloud	1	17	27	275	6	33	2	42	403
MSP		1		15					16
St. Paul Downtown-Holman Field			47	25	5		7	5	89
Total MAC Airports	176	21	243	596	126	54	166	154	1,536
Forest Lake	2			2	6		19	8	37
South St. Paul Municipal-Fleming Field			149	23	2	6	16	22	218
Total	178	21	392	621	134	60	201	184	1,791

Sources: MNDOT Registered Based Aircraft Database and HNTB analysis.

4. Assumptions

The base case forecast was developed under the assumptions described in this section. These assumptions apply to all forecast categories in general. More detailed assumptions specific to a particular activity category are described in individual sections pertaining to these categories.

4.1 Unconstrained Forecasts

It is assumed that airport infrastructure at the MAC airports will be sufficient to accommodate projected traffic except where noted. Infrastructure improvements will be made when necessary without impeding projected activity. Destination airports are assumed to develop sufficient capacity to accommodate demand from the Twin Cities area.

In theory, unconstrained infrastructure capacity assumes 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 runway lengthening is addressed as a forecast scenario.

4.2 National and Local Economy

The forecast assumes that no major economic downturn, such as the Great Depression or Great Recession, will occur in the planning period. It is acknowledged that normal business cycles will continue to occur. Local and national total personal income is assumed to grow in accordance with the projection shown in Table 1.

4.3 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. No major bottlenecks will occur that impede normal aviation activity.

4.4 Regulatory Assumptions

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

4.5 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 cause major aviation fuel tax increases within the forecast period.

4.6 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.

4.7 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.

4.8 Microjets or Very Light Jets (VLJ)

The FAA does not prepare a forecast of microjets² separate from other business jets. However, based on projections prepared by Honeywell³, it is assumed that 20 percent of new jets entering the national GA fleet will be microjets. Since microjets share operational characteristics with both turboprops (in terms of runway requirements and size) and jets (in terms of propulsion), it is assumed that the pattern of use and geographic distribution will be similar to the average of jets and turboprops.

4.9 Ultralight Recreational Aircraft

The number and utilization of ultralight 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.

4.10 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 rate and charge increases.

4.11 Runway Extensions

The baseline forecast assumes the current runway lengths will continue to be available at study airports, but with no extensions. The impact of runway extensions at study airports is considered in a forecast scenario later in this report.

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 forecast follows several steps listed below:

1. Project the number of based aircraft registered in each county by aircraft category based on county socioeconomics and FAA aerospace forecast.
2. Allocate the projected based aircraft to each MAC-airport according to the existing distribution pattern for each aircraft category.
3. Estimate the number of aircraft on waiting list that would be added assuming airport capacity is unconstrained.
4. Redistribute aircraft from the constrained MAC airport (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. Although MSP has sufficient airfield capacity to accommodate growth, the existing

² Microjets, also referred to as very light jets or personal jets, refer to a category of small jet aircraft approved for single-pilot operation, typically seating 4-8 people, with a maximum takeoff weight of under 10,000 pounds.

³ Honeywell Aerospace, 2011 NBAA Media Briefing, Business Aviation Outlook, 2011. Note that this applies to new aircraft. In any given year, new aircraft entering the fleet will only account for a small percentage of the total fleet, so the percentage of microjets in the total fleet will be much less than 20 percent for some time to come.

facilities that can accommodate additional based GA aircraft are limited. As such, the number of based aircraft at MSP will be constrained to 29. For the purpose of this forecast, the number of based aircraft at STP is limited to 132 aircraft⁴.

Forecasts include based aircraft for each major category: single engine piston, multi-engine piston, turboprop, microjets, other jets, helicopters, and other. It was assumed that the share of each county's registered aircraft in each aircraft category based at each of the three airports under study will remain constant.

5.1 Forecast of Based Aircraft by County

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. Therefore, it is difficult to prepare credible forecasts based on trend or regression analyses.

Additionally, an income index and a based aircraft index were introduced to incorporate the local economic environment and national aircraft growth trends. The income index is used to adjust for differences in projected economic growth between the United States and the county under analysis. It is based on the hybrid income projection described earlier. 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. The calculations of the above indexes are presented in Appendix B. The total number of active U.S. aircraft was projected by the FAA Aerospace Forecast 2012 – 2032 with extrapolated 2035 projections.

As noted earlier, the FAA does not prepare microjet forecasts separate from other GA jets. Therefore, based on the Honeywell forecast referenced earlier, it was assumed that 20 percent of the new jet aircraft in the national forecast would be microjets.

Table C.1 in Appendix C details the current distribution of based aircraft by type, airport, and county of registration. Tables D.1 to D.8 in Appendix D project based aircraft at MAC airports by county of registration based on the methodology described above.

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

⁴ The forecasts included in the 2010 Long-Term Comprehensive Plan (LTCP) for STP indicated that the anticipated number of based aircraft will reach 132 by 2025 (122 civilian and 10 military aircraft).

growth, show an increase in based aircraft. Hennepin County is projected to show an increase in based aircraft as well, even with the projection for slightly slower economic growth. This is because Hennepin County has a higher concentration of more rapidly growing turboprop and jet aircraft. The total number of based aircraft in the area is expected to decrease through 2025, and increase slightly through 2035.

Table 5: Projected Based Aircraft by County of Registration.

Year	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
2012	176	21	243	596	126	54	166	167	1,549
2015	165	22	242	596	122	55	165	166	1,533
2020	145	24	238	583	113	55	161	161	1,480
2025	138	24	237	588	109	55	157	159	1,467
2030	134	24	239	603	106	56	155	160	1,477
2035	128	26	242	612	103	56	152	160	1,479

Source: MAC Aircraft Registry, FAA Aerospace Forecast, and HNTB analysis.

5.2 Unconstrained Distribution of Based Aircraft by Airport

The county forecasts of based aircraft estimated in Table 5 were distributed among the MAC airports according to existing distributions for each aircraft type. All the MAC airports were assumed to be unconstrained in this iteration. The details of these distributions are presented in Tables E.1 through E.5 in Appendix E. The unconstrained assumption only applies to this iteration. Impacts of capacity constraints are assessed later in Appendix F.

5.3 Aircraft on Waiting Lists

A waiting list of aircraft owners and operators who would like to base their aircraft at the airport in question if hangar facilities become available is provided at Airlake, Flying Cloud, and Anoka airports. Waiting lists in 2011 were used as a proxy for waiting lists in 2012. Crystal and Lake Elmo airports have excess capacity and therefore there is no waiting list at those airports. Since the forecasts in this analysis are unconstrained, this latent demand needs to be considered. More aircraft owners would presumably base their aircraft at the constrained airports if the facilities were 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 MAC airports under unconstrained conditions. Since no information is available on the types of aircraft on the waiting lists, they were assumed to mirror the existing distribution of based aircraft at each airport, mostly single engine piston aircraft.

As a result, Airlake would be expected to accommodate 18 additional aircraft in 2012. It is expected that owners of the aircraft on the waiting list would require some time to move their aircraft from the current location to the three study airports if additional facilities were to become available. Therefore it is assumed that of the 90 percent of the waiting list aircraft expected to move, half would move by 2015, and the remainder would move by 2020.

5.4 Redistribution of Based Aircraft from Constrained Airports

As noted earlier, facility constraints at MSP will constrain the number of based aircraft to 29 throughout the planning period. At STP, the number of based aircraft is limited to 132. Any based aircraft that could not be accommodated at MSP and/or STP would have to be accommodated elsewhere. Since the aircraft currently based at MSP and STP tend to be more sophisticated corporate-owned jet 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.1 to F.6 in Appendix F show the redistribution of based aircraft from constrained airports and the addition of aircraft on the waiting list to the based aircraft projections.

5.5 Based Aircraft Forecast Results

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

Table 6: Summary of Based Aircraft Forecast (Crystal Base Case).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
2012	199	12	1	0	0	7	0	219
2015	195	12	1	0	0	8	0	216
2020	184	11	1	0	0	9	0	205
2025	179	11	1	0	0	9	0	200
2030	178	10	1	0	0	10	0	199
2035	173	10	1	0	0	11	0	195
	Average Annual Growth Rate							
	-0.6%	-0.8%	0.0%	0.0%	0.0%	1.6%	0.0%	-0.5%

(a) Experimental and Light Sport.

Source: Appendix F.

Table 7: Summary of Based Aircraft Forecast (Airlake Base Case).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
2012	131	12	1	0	0	0	3	147
2015	137	13	1	0	0	0	3	154
2020	139	12	1	0	0	0	4	156
2025	137	11	1	0	0	0	4	153
2030	137	14	1	0	0	0	4	156
2035	136	14	2	0	0	0	4	156
Average Annual Growth Rate								
	0.2%	0.7%	3.1%	0.0%	0.0%	0.0%	1.3%	0.3%

(a) Experimental and Light Sport.

Source: Appendix F.

Table 8: Summary of Based Aircraft Forecast (Lake Elmo Base Case).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total	
2012	208	9	1	0	0	2	9	229	
2015	205	9	1	0	0	2	9	226	
2020	195	9	1	0	0	3	10	218	
2025	187	8	1	0	0	3	10	209	
2030	187	10	1	0	0	3	10	211	
2035	185	9	1	0	0	3	10	208	
			Average Annual Growth Rate						
	-0.5%	0.0%	0.0%	0.0%	0.0%	1.8%	0.5%	-0.4%	

(a) Experimental and Light Sport.

Source: Appendix F.

The number of based aircraft at Crystal is projected to decline slightly, from 219 aircraft in 2012 to 195 aircraft in 2035. The dominant aircraft in the fleet, piston engine aircraft, are projected to decline, consistent with the FAA aerospace forecast. Helicopters are expected to increase but not fast enough to offset the decline in the piston category.

The based fleet at Airlake is expected to increase in the near term through 2020 and decline slightly from 2020 to 2035. Addition of aircraft on the waiting list and constrained airports to the airport contributes to an increase of based aircraft in 2015 and 2020. Afterwards the total number of based aircraft declines from 2020 to 2025 and gradually decreases from 2025 to 2035.

Similarly, the based aircraft at Lake Elmo are projected to follow the same general growth pattern as Crystal. It is projected to decline throughout the planning period at an average annual rate of 0.4 percent.

Based aircraft projections at the remaining MAC airports are summarized in Tables G.1 through G.4 in Appendix G.

6. Aircraft Operations Forecast

Aircraft operations at the three study airports were based on the number of based aircraft in each category and FAA forecasts of active aircraft by category and hours flown. Base year operations were obtained from tower counts and field surveys. Operations counts for Crystal were obtained from the FAA Air Traffic Control Tower, while operations for Airlake and Lake Elmo were extrapolated from two field surveys, the first in December 2011 and the second in August 2012. Operations were adjusted to account for night operations. Tower counts at Crystal were based on operation type, i.e., air carrier, air taxi, general aviation, and military. To estimate operations by aircraft type, the FAA Traffic Flow Management System Counts (TFMSC) – which provides aircraft type information – was used and supplemented with MACNOMS radar data. For Airlake and Lake Elmo, aircraft information was extracted from survey data directly and also supplemented with MACNOMS radar data.

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 and Appendix H provides the back-up calculations. 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.

Table 9: Summary of Operations Forecast (Crystal Base Case).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	40,369	6,486	780	-	10	2,350	-	49,995
2015	37,497	6,378	809	4	12	2,639	-	47,338
2020	34,497	5,787	822	5	15	2,968	-	44,094
2025	34,491	5,954	812	6	18	2,978	-	44,259
2030	36,280	5,722	796	7	23	3,332	-	46,159
2035	37,134	6,046	781	9	27	3,685	-	47,682
Forecast of Touch & Go Operations								
2012	17,453	2,804	-	-	-	1,016	-	21,273
2015	16,211	2,757	-	-	-	1,141	-	20,109
2020	14,914	2,502	-	-	-	1,283	-	18,699
2025	14,912	2,574	-	-	-	1,288	-	18,773
2030	15,685	2,474	-	-	-	1,441	-	19,599
2035	16,054	2,614	-	-	-	1,593	-	20,261
Forecast of Non-Touch & Go Operations								
2012	22,916	3,682	780	-	10	1,334	-	28,722
2015	21,286	3,621	809	4	12	1,498	-	27,229
2020	19,583	3,285	822	5	15	1,685	-	25,395
2025	19,579	3,380	812	6	18	1,690	-	25,486
2030	20,595	3,248	796	7	23	1,891	-	26,560
2035	21,079	3,432	781	9	27	2,092	-	27,421

(a) Experimental and Light Sport.

Source: Table H.1 in Appendix H.

Table 10: Summary of Aircraft Operations Forecast (Airlake Base Case).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	22,098	595	431	18	129	1,173	1,553	25,997
2015	21,906	634	447	51	155	1,263	1,805	26,262
2020	21,671	579	454	63	192	1,445	2,003	26,408
2025	21,951	546	449	78	237	1,652	2,042	26,955
2030	23,219	735	440	96	292	1,890	2,111	28,783
2035	24,274	777	863	114	348	2,127	2,158	30,661
Forecast of Touch & Go Operations								
2012	9,715	63	-	-	-	64	545	10,387
2015	9,631	67	-	-	-	63	606	10,367
2020	9,527	61	-	-	-	63	883	10,535
2025	9,650	58	-	-	-	63	913	10,685
2030	10,208	78	-	-	-	64	944	11,294
2035	10,672	82	-	-	-	64	972	11,790
Forecast of Non-Touch & Go Operations								
2012	12,383	532	431	18	129	1,109	1,008	15,610
2015	12,276	567	447	51	155	1,200	1,200	15,896
2020	12,143	518	454	63	192	1,382	1,120	15,873
2025	12,301	488	449	78	237	1,589	1,128	16,270
2030	13,011	657	440	96	292	1,826	1,166	17,489
2035	13,603	694	863	114	348	2,063	1,185	18,871

(a) Experimental and Light Sport.

Source: Table H.2 in Appendix H.

Table 11: Summary of Aircraft Operations Forecast (Lake Elmo Base Case).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	23,189	112	56	2	2	449	2,899	26,709
2015	21,664	110	58	2	2	441	3,176	25,454
2020	20,092	109	59	3	3	662	3,304	24,232
2025	19,802	100	58	4	4	664	3,276	23,908
2030	20,946	132	57	5	5	668	3,388	25,200
2035	21,823	125	56	5	5	672	3,450	26,138
Forecast of Touch & Go Operations								
2012	2,356	20	-	-	-	125	860	3,361
2015	2,201	20	-	-	-	123	956	3,300
2020	2,041	19	-	-	-	184	1,162	3,407
2025	2,012	18	-	-	-	185	1,201	3,416
2030	2,128	24	-	-	-	186	1,242	3,580
2035	2,217	22	-	-	-	187	1,279	3,705
Forecast of Non-Touch & Go Operations								
2012	20,833	92	56	2	2	324	2,039	23,348
2015	19,463	90	58	2	2	318	2,220	22,155
2020	18,051	90	59	3	3	477	2,142	20,825
2025	17,790	82	58	4	4	479	2,075	20,492
2030	18,818	108	57	5	5	482	2,146	21,621
2035	19,606	103	56	5	5	485	2,172	22,432

(a) Experimental and Light Sport.

Source: Table H.3 in Appendix H.

Total aircraft operations at Crystal are forecast to decrease from 49,995 in 2012 to 47,781 in 2035, an average annual rate of -0.02 percent. Increases are projected in all categories except single-engine and multi-engine piston aircraft, for which the anticipated decrease in the based aircraft offsets slightly higher utilization forecasted by FAA.

Operations at Airlake are forecast to increase from 25,997 in 2012 to 30,661 in 2035, an average annual increase of 0.7 percent. Increases are projected in all categories. Operations from other aircraft are project to increase at a much faster pace than single-engine and multi-engine piston aircraft and helicopters.

Operations at Lake Elmo are projected to decrease slightly from 26,709 in 2012 to 26,138 in 2035, an average annual decrease of -0.09 percent. Increases are projected in all aircraft categories except single-engine pistons. Helicopters and other aircraft operations are projected to increase at a much faster pace than pistons and turboprops, consistent with FAA's projection on active fleet and utilization of helicopter, single-engine piston, multi-engine piston, turboprop and other aircraft.

7. Peak Hour Activity

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 airports. 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 obtained from the FAA Distributed Operations Network (OPSNET). The peak hour percentage in the peak month in 2012 is approximately 10 percent. As shown in Table 12, peak hour operations are projected to be 19 operations.

Table 12: Peak Activity Forecast (Crystal Base Case).

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	49,995	6,258	202	20
2015	47,338	5,926	191	19
2020	44,094	5,519	178	18
2025	44,259	5,540	179	18
2030	46,159	5,778	186	19
2035	47,682	5,969	193	19

(a) Table 9.

(b) The 2011 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.

Sources: As noted and HNTB analysis.

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. These records indicate that September and June are the peak months, each accounting for approximately 11 percent of annual gallons of fuel sold. ADPM operations were estimated by dividing by 30 days. The peak hour operations percentage was obtained from two field surveys conducted in December 2011 and August 2012. An estimated 9 percent of total operations occur during the peak hour. Peak hour operations at Airlake are projected to increase from 9 in 2012 to 11 in 2035.

Table 13: Peak Activity Forecast (Airlake Base Case).

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	25,997	2,964	99	9
2015	26,262	2,994	100	9
2020	26,408	3,010	100	9
2025	26,955	3,073	102	9
2030	28,783	3,281	109	10
2035	30,661	3,495	117	11

(a) Table 10.

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

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

(d) 9.25 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.

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 approximately 13 percent of annual activity. ADPM operations were estimated by dividing by 31 days. The peak hour operations percentage was also obtained from field survey data. Approximately 12 percent of total operations occur during the peak hour. Peak hour operations at Lake Elmo are projected to be 13 operations.

Table 14: Peak Activity Forecast (Lake Elmo Base Case).

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	26,709	3,339	108	13
2015	25,454	3,182	103	13
2020	24,232	3,029	98	12
2025	23,908	2,988	96	12
2030	25,200	3,150	102	12
2035	26,138	3,267	105	13

(a) Table 11.

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

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

(d) 12.30 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.

8. Scenarios

General aviation activity has historically been challenging 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 continued 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, 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 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 follow the average of the U.S. Department of Energy low fuel price scenario and base case scenario.
- Increased popularity of light sport aircraft is assumed to grow 1.5 times more than the FAA forecast levels. This would increase the number of based aircraft and operations.

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

Table 15 shows the high and low oil prices scenarios applied in this study. The high prices scenario employs the Department of Energy Annual Energy Outlook 2012 High Oil Prices projection. The low prices scenario employs the average of the Department of Energy Annual Energy Outlook 2012 Low Oil Prices projection and Reference Case projection. This is because the low prices projection from the Department of Energy appears optimistic based on current oil prices trajectory. Table J.1 in Appendix J presents the methodology to convert high and low oil prices to adjustment factors using price elasticity assumptions in the FAA's Benefit-Cost Analysis guidance.

Table 15: Oil Prices Forecast for the High Forecast Scenario.

	2009	2010	2015	2020	2025	2030	2035
Reference Case (2010 Dollars)							
DOE Projection (a)							
Jet Fuel Prices (per gallon)	1.72	2.19	3.21	3.41	3.57	3.72	3.93
Crude Oil Prices (per barrel)	62.37	79.39	116.91	126.68	132.56	138.49	144.98
High Oil Price Scenario							
DOE Projection (a)							
Jet Fuel Prices (per gallon)	1.72	2.19	4.76	4.80	4.85	4.91	4.98
Crude Oil Prices (per barrel)	62.37	79.39	182.10	187.79	193.48	196.92	200.36
Low Oil Price Scenario							
DOE Projection (a)							
Jet Fuel Prices (per gallon)	1.72	2.19	1.70	1.72	1.73	1.81	1.88
Crude Oil Prices (per barrel)	62.37	79.39	58.36	58.89	59.41	60.90	62.38
Adjusted Low Oil Price Scenario							
DOE Projection (a)							
Jet Fuel Prices (per gallon)	1.72	2.19	2.46	2.55	2.65	2.78	2.91
Crude Oil Prices (per barrel)	62.37	79.39	87.64	91.81	95.99	99.83	103.68

(a) Department of Energy Annual Energy Outlook 2012.

Table 16 shows the projected high income for the seven-county area assuming income from each county grows 50% more rapidly than under the base case scenario.

Table 16: Projected Income – High Range Forecast Scenario.

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
2010	12,831,111	4,945,003	17,970,760	63,414,896	22,897,395	5,573,589	11,372,671	139,005,425	12,353,577,000	1.13%
2012	13,376,633	5,743,941	19,025,640	69,659,489	25,279,461	6,078,285	11,806,794	150,970,241	12,893,475,399	1.17%
2015	14,432,829	7,079,048	20,888,186	76,097,451	26,735,580	6,967,569	13,134,105	165,324,290	13,631,595,341	1.21%
2020	16,864,283	9,840,710	25,240,662	91,793,073	30,647,840	8,853,557	16,217,072	199,351,141	15,351,872,194	1.30%
2025	19,701,183	12,591,295	30,600,220	113,314,635	36,180,136	11,275,704	19,816,605	243,227,868	17,423,616,449	1.40%
2030	23,208,101	16,027,713	37,365,941	140,035,055	42,956,244	14,297,165	24,400,136	297,810,246	19,842,874,811	1.50%
2035	27,490,111	20,304,946	45,825,483	172,755,207	51,146,720	18,044,723	30,168,711	364,924,877	22,638,802,893	1.61%
	<i>Average Annual Growth Rate</i>									
2012-2035	3.2%	5.6%	3.9%	4.0%	3.1%	4.8%	4.2%	3.9%	2.5%	

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

Sources: HNTB analysis.

Table J.2 in Appendix J shows the high based aircraft forecast scenario for Crystal Airport. Table J.3 in Appendix J shows the high operations forecast scenario. By 2035, the number of based aircraft is 51 percent higher than under the base case, as a result of higher economic growth, lower oil prices, and increased popularity of light sport aircraft. General aviation operations under the high scenario would be 53 percent higher than in the base case.

Table J.5 in Appendix J shows the high based aircraft forecast scenario for Airlake Airport. Table J.6 in Appendix J shows the high operations forecast scenario. By 2035, the number of based aircraft is 46 percent higher than under the base case. By 2035, total annual operations would be 40 percent higher than under the base case and the number of operations by other aircraft including light sport aircraft, is more than double the level in 2012.

Table J.8 in Appendix J shows the high based aircraft forecast scenario for Lake Elmo Airport. Table J.9 in Appendix J shows the high operations forecast scenario. By 2035, the number of based aircraft is 58 percent higher than under the base case. Total operations would be 50 percent higher than under the base case. Although operations from turboprop, helicopter, and other aircraft represent the fastest growing types, piston operations still account for the majority of daily operations.

8.2 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 expected to follow the U.S. Department of Energy high fuel price scenario.
- 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.

Table 17 shows the low projected income used under this scenario.

Table 17: Projected Income – Low Range Forecast Scenario.

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
2010	12,831,111	4,945,003	17,970,760	63,414,896	22,897,395	5,573,589	11,372,671	139,005,425	12,353,577,000	1.13%
2012	13,012,952	5,211,316	18,322,387	65,496,427	23,691,417	5,741,821	11,517,379	142,993,697	12,893,475,399	1.11%
2015	13,355,445	5,615,084	18,920,287	67,514,164	24,146,299	6,021,840	11,948,970	147,525,580	13,631,595,341	1.08%
2020	14,105,429	6,345,265	20,234,428	72,155,917	25,324,088	6,565,173	12,883,897	157,646,761	15,351,872,194	1.03%
2025	14,896,364	6,936,455	21,666,609	77,795,079	26,847,853	7,163,870	13,837,132	169,212,657	17,423,616,449	0.97%
2030	15,780,242	7,567,488	23,263,441	83,909,962	28,523,948	7,803,752	14,903,963	181,870,238	19,842,874,811	0.92%
2035	16,750,753	8,240,654	25,019,033	90,445,341	30,336,836	8,485,589	16,078,473	195,532,353	22,638,802,893	0.86%
	<i>Average Annual Growth Rate</i>									
2012-2035	1.1%	2.0%	1.4%	1.4%	1.1%	1.7%	1.5%	1.4%	2.5%	

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

Sources: HNTB analysis.

Table K.2 in Appendix K shows the low based aircraft forecast scenario for Crystal Airport. Table K.3 in Appendix K shows the low operations forecast scenario. By 2035, the number of based aircraft is 33 percent lower than under the base case, as a result of slower economic growth, higher oil prices, and exclusion of aircraft on waiting list. General aviation operations under the low scenario would be 34 percent lower than in the base case.

Table K.5 in Appendix K shows the low based aircraft forecast scenario for Airlake Airport. Table K.6 in Appendix K shows the low operations forecast scenario. By 2035, the number of based aircraft is 37 percent lower than under the base case. By 2035, total annual operations would be 40 percent lower than under the base. Operations from other aircraft including light sport aircraft is still expected to increase but operations from single-engine piston aircraft is projected to experience significant decline under this scenario.

Table K.8 in Appendix K shows the low based aircraft forecast scenario for Lake Elmo Airport. Table K.9 in Appendix K shows the low operations forecast scenario. By 2035, the number of based aircraft is 32 percent lower than under the base case. Total operations would also be 32 percent lower than under the base case. Similarly, operations from helicopter, turboprop and other aircraft are still expected to increase but their increase is offset by a significant operations drop in piston aircraft category.

8.3 Extended Runway Scenarios

Extended runway scenarios were prepared to evaluate the potential impact associated with runway lengthening under the preferred development alternatives. Specifically, the scenarios assume the following:

- Extension of the runway at Airlake to 5,000 feet.
- Extension of the primary runway at Lake Elmo to 3,300 feet.
- Extension of the primary runway at Lake Elmo to 3,600 feet.

None of the scenarios assume a runway extension at Crystal.

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

Table L.1, L.2, and L.3 in Appendix L show that the extended runway scenarios at Airlake and Lake Elmo do not impact the base case forecast for Crystal.

Table L.4, L.5, and L.6 in Appendix L show the extended runway forecast scenario for Airlake Airport. By 2035, 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 L.7, L.8, L.9, L.10 and L.11 in Appendix L show the extended runway forecast scenarios for Lake Elmo Airport. By 2035, the number of operations would be slightly higher than under

the base case because more turboprop, microjet, and small jet operations could be accommodated with an extended runway.

8.4 Scenarios Comparison

Table 18 compares the total number of aircraft and operations under different scenarios for Crystal Airport. The comparison is also illustrated in Figure 2 and Figure 3.

Table 18: Forecast Comparison by Scenario – Crystal.

Year	Total Based Aircraft			Total Number of Operations		
	Base Case (a)	High Range (b)	Low Range (c)	Base Case (e)	High Range (f)	Low Range (g)
2012	219	219	219	49,995	49,995	49,995
2015	216	246	173	47,338	53,923	38,116
2020	205	256	158	44,094	55,240	34,320
2025	200	264	146	44,259	58,052	32,532
2030	199	280	135	46,159	65,381	31,622
2035	195	294	127	47,682	71,780	31,045

(a) Table 6.

(b) Table J.2 in Appendix J.

(c) Table K.2 in Appendix K.

(d) Table L.1 in Appendix L.

(e) Table 9.

(f) Table J.3 in Appendix J.

(g) Table K.3 in Appendix K.

(h) Table L.2 in Appendix L.

Sources: As Noted and HNTB Analysis.

Figure 2: Forecast Comparison by Scenario – Based Aircraft at Crystal Airport.

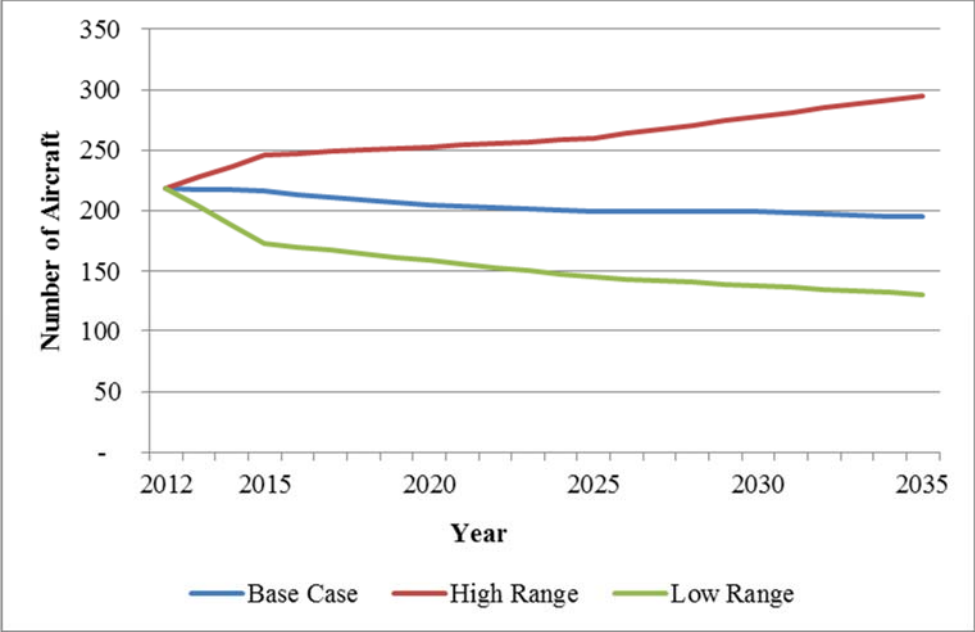


Figure 3: Forecast Comparison by Scenario – Operations at Crystal Airport.

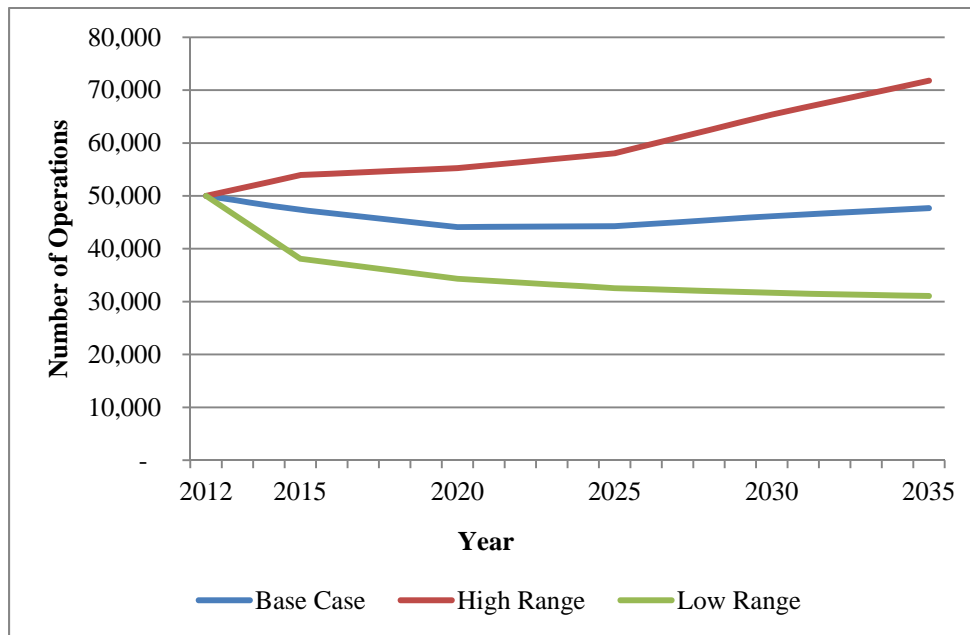


Table 19 compares the total number of aircraft and operations under different scenarios for Airlake Airport. The comparison is also illustrated in Figure 4 and Figure 5.

Table 19: Forecast Comparison by Scenario – Airlake.

Year	Total Based Aircraft				Total Number of Operations			
	Base Case (a)	High Range (b)	Low Range (c)	Extended Runway (d)	Base Case (e)	High Range (f)	Low Range (g)	Extended Runway (h)
2012	147	147	147	147	25,997	25,997	25,997	25,997
2015	154	180	117	154	26,262	29,662	20,490	26,262
2020	156	201	106	157	26,408	32,269	18,791	26,484
2025	153	210	97	154	26,955	34,638	17,999	27,000
2030	156	219	95	157	28,783	38,831	18,615	28,979
2035	156	232	88	158	30,661	42,895	18,397	31,003

(a) Table 7.

(b) Table J.5 in Appendix J.

(c) Table K.5 in Appendix K.

(d) Table L.4 in Appendix L.

(e) Table 10.

(f) Table J.6 in Appendix J.

(g) Table K.6 in Appendix K.

(h) Table L.5 in Appendix L.

Sources: As Noted and HNTB Analysis.

Figure 4: Forecast Comparison by Scenario – Based Aircraft at Airlake Airport.

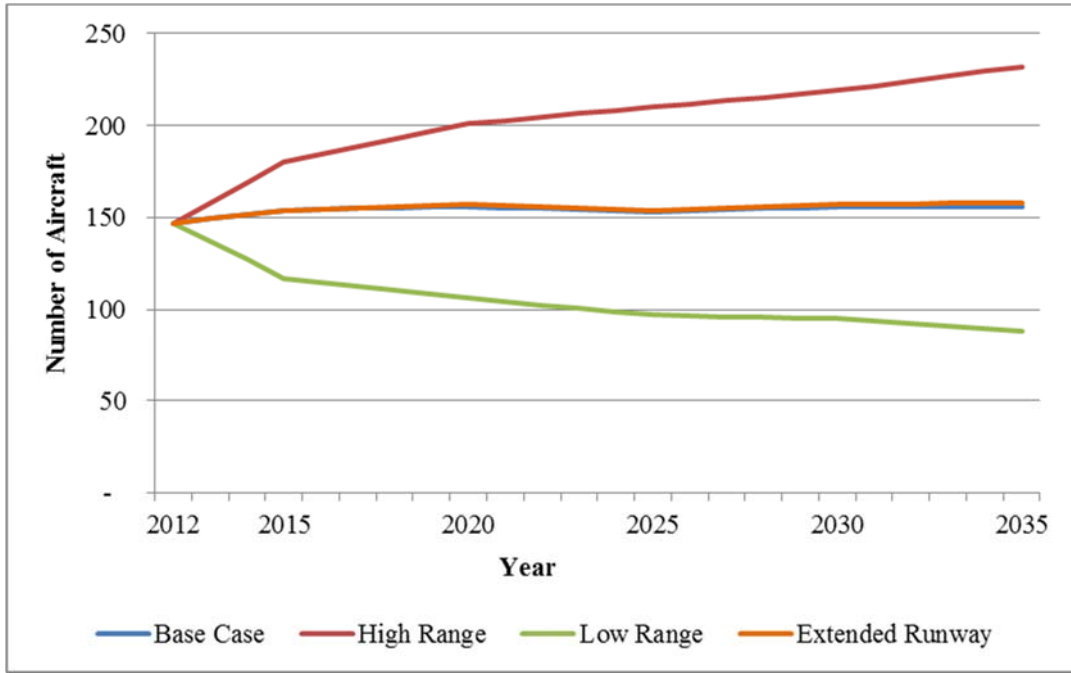


Figure 5: Forecast Comparison by Scenario – Operations at Airlake Airport.

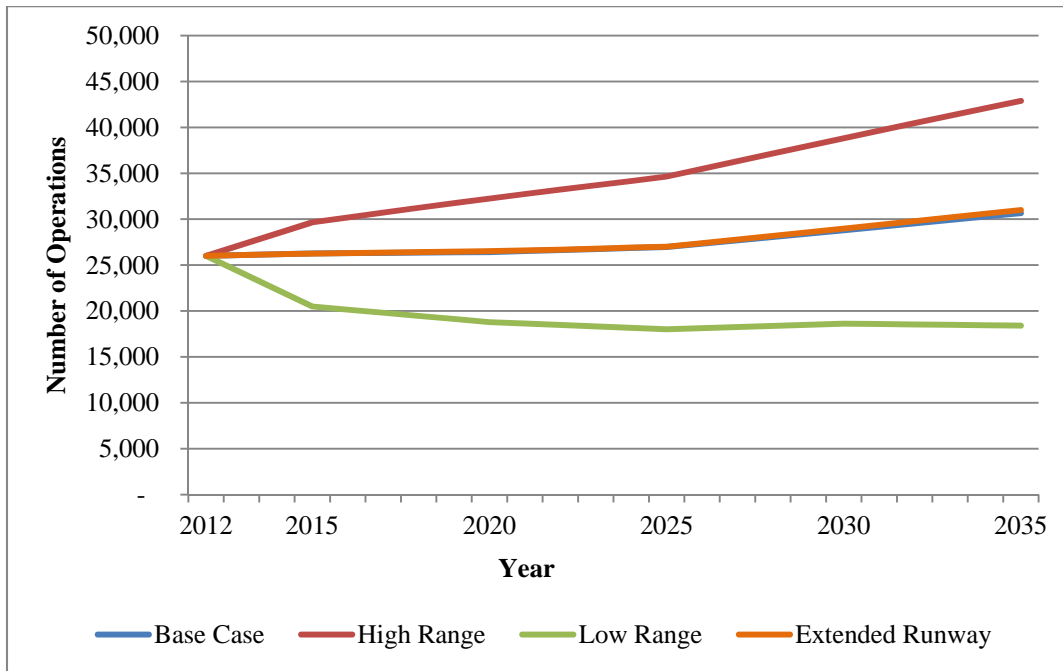


Table 20 compares the total number of aircraft and operations under different scenarios for Lake Elmo Airport. The comparison is also illustrated in Figure 6 and Figure 7.

Table 20: Forecast Comparison by Scenario – Lake Elmo.

Year	Total Based Aircraft				Total Number of Operations				
	Base Case (a)	High Range (b)	Low Range (c)	Extended Runways (3,300 and 3,600 feet) (d)	Base Case (e)	High Range (f)	Low Range (g)	Extended Runway (3,300 feet) (h)	Extended Runway (3,600 feet) (i)
2012	229	229	229	229	26,709	26,709	26,709	26,709	26,709
2015	226	272	182	226	25,454	29,322	20,944	25,454	25,454
2020	218	287	167	218	24,232	30,128	19,456	24,418	24,539
2025	209	300	154	209	23,908	32,460	18,629	24,125	24,261
2030	211	315	142	211	25,200	35,610	18,041	25,459	25,615
2035	208	332	133	208	26,138	39,119	17,835	26,442	26,620

- (a) Table 8.
- (b) Table J.8 in Appendix J.
- (c) Table K.8 in Appendix K.
- (d) Table L.7 in Appendix L.
- (e) Table 11.
- (f) Table J.9 in Appendix J.
- (g) Table K.9 in Appendix K.
- (h) Table L.8 in Appendix L.
- (i) Table L.10 in Appendix L.

Sources: As Noted and HNTB Analysis.

Figure 6: Forecast Comparison by Scenario – Based Aircraft at Lake Elmo Airport.

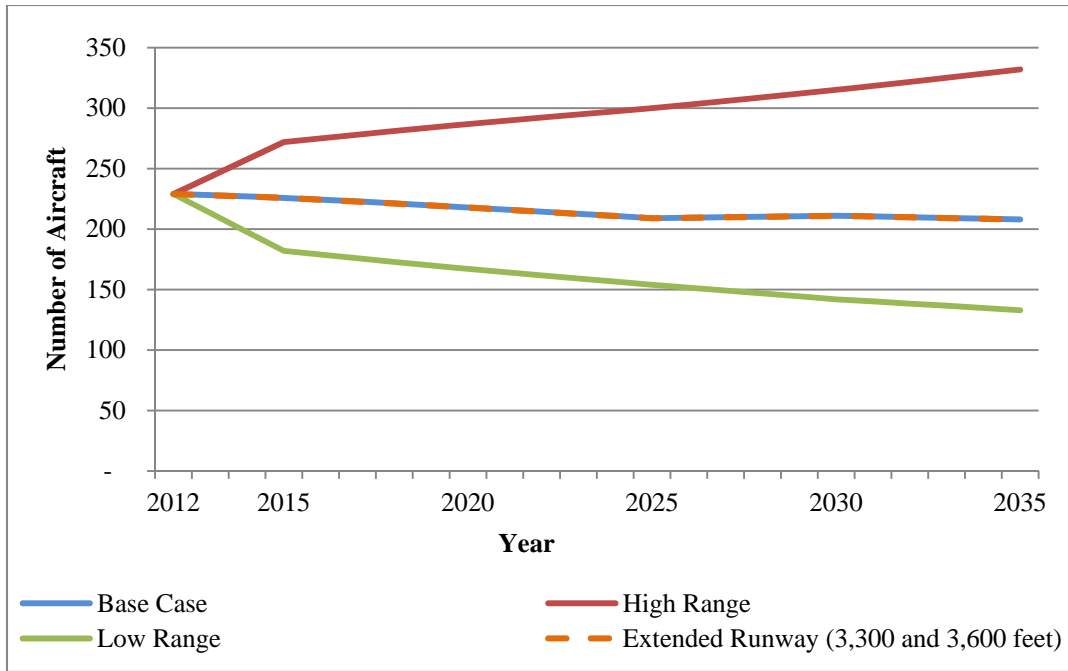
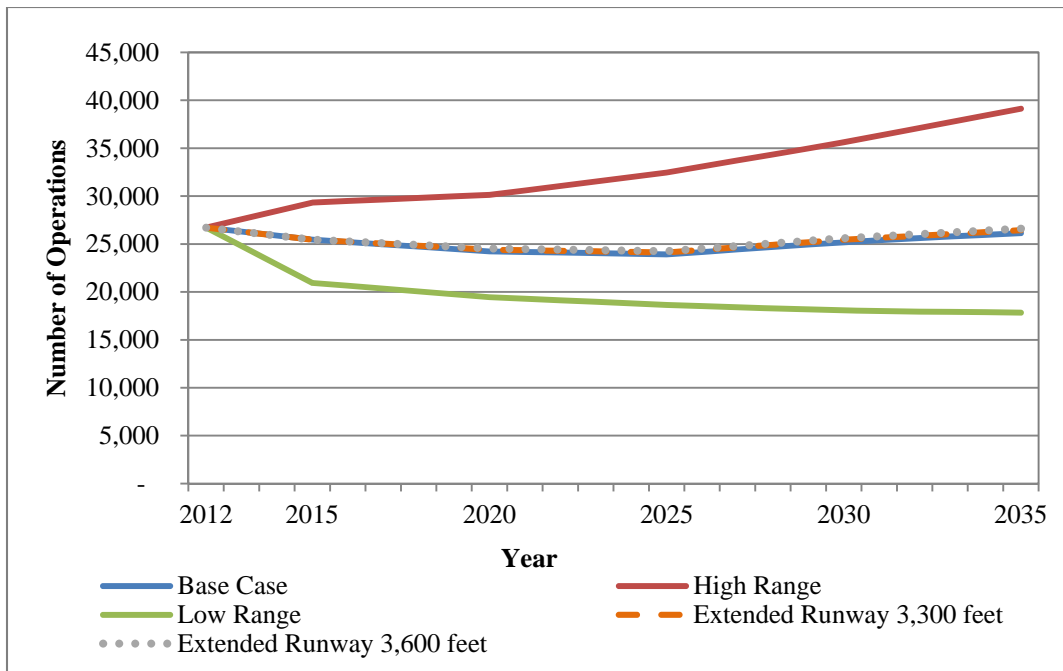


Figure 7: Forecast Comparison by Scenario – Operations at Lake Elmo Airport.



Appendices

Appendix A: Socioeconomics

Table A.1: 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	299,780	70,843	357,848	1,117,775	511,520	91,031	202,686	2,651,483	282,162,411	0.94%
2001	304,823	72,945	363,602	1,123,375	512,926	96,903	207,206	2,681,780	284,968,955	0.94%
2002	308,702	75,393	368,252	1,120,730	510,581	102,623	210,181	2,696,462	287,625,193	0.94%
2003	311,863	78,005	372,265	1,119,458	505,958	107,204	213,909	2,708,662	290,107,933	0.93%
2004	316,643	80,473	377,143	1,118,756	501,104	112,605	215,937	2,722,661	292,805,298	0.93%
2005	319,830	83,258	381,829	1,117,015	497,560	117,111	219,972	2,736,575	295,516,599	0.93%
2006	323,590	85,657	386,228	1,119,507	497,158	121,013	225,091	2,758,244	298,379,912	0.92%

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
2007	325,767	87,270	390,767	1,126,585	499,605	124,050	229,756	2,783,800	301,231,207	0.92%
2008	327,427	88,812	393,900	1,135,173	502,890	126,613	233,306	2,808,121	304,093,966	0.92%
2009	329,635	90,242	396,906	1,146,721	506,590	128,530	235,684	2,834,308	306,771,529	0.92%
2010	331,464	91,358	399,155	1,154,067	509,259	130,485	238,983	2,854,771	309,330,219	0.92%
Average Annual Growth Rate										
1980-2010	1.8%	3.0%	2.4%	0.7%	0.3%	3.7%	2.5%	1.2%	1.0%	
1980-1990	2.2%	2.7%	3.6%	0.9%	0.5%	2.8%	2.6%	1.4%	0.9%	
1990-2010	1.5%	3.2%	1.8%	0.5%	0.2%	4.1%	2.5%	1.1%	1.1%	

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

Source: United States Department of Commerce, Bureau of Economic Analysis, April 2012.

Table A.2: 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)										
2010	334,933	100,499	396,278	1,136,262	512,053	131,734	238,241	2,850,000	n/a	n/a
2012	(b) 342,497	110,229	405,694	1,149,128	513,659	138,832	248,761	2,908,800	n/a	n/a
2015	(b) 353,844	124,824	419,819	1,168,426	516,067	149,480	264,540	2,997,000	n/a	n/a
2020	372,755	149,149	443,360	1,200,590	520,082	167,225	290,839	3,144,000	n/a	n/a
2025	(b) 388,719	166,369	464,589	1,246,470	530,736	185,752	312,865	3,295,500	n/a	n/a
2030	404,683	183,589	485,818	1,292,349	541,390	204,279	334,891	3,447,000	n/a	n/a
2035	(c) 420,238	200,614	506,554	1,336,927	551,507	222,589	356,570	3,595,000	n/a	n/a
Average Annual Growth Rate										
2012-2035	0.9%	2.6%	1.0%	0.7%	0.3%	2.1%	1.6%	0.9%	n/a	n/a
Woods & Poole (W&P) Forecasts (d)										
2010	331,302	91,361	399,100	1,154,623	509,320	130,487	238,844	2,855,037	309,349,689	0.92%
2012	347,722	95,352	416,551	1,162,311	510,790	136,298	253,722	2,922,746	315,387,594	0.93%
2015	372,758	101,451	443,224	1,175,382	513,678	145,177	276,325	3,027,995	324,847,014	0.93%
2020	414,982	111,753	488,274	1,198,855	519,235	160,169	314,356	3,207,624	341,069,539	0.94%
2025	457,525	122,141	533,699	1,223,211	525,172	175,285	352,633	3,389,666	357,547,516	0.95%
2030	499,956	132,498	578,988	1,247,192	530,945	190,356	390,826	3,570,761	373,924,268	0.95%
2035	542,136	142,789	623,988	1,270,548	536,452	205,332	428,824	3,750,069	390,114,318	0.96%
Average Annual Growth Rate										
2012-2035	1.9%	1.8%	1.8%	0.4%	0.2%	1.8%	2.3%	1.1%	0.9%	
Metropolitan Council - Regional Development Framework (RFD) Forecasts Adjusted for Base Year and Scaled to W&P Forecast (e)										
2010	(f) 331,464	91,358	399,155	1,154,067	509,259	130,485	238,983	2,854,771	309,330,219	0.92%

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
2012	340,072	100,535	409,992	1,170,997	512,547	137,971	250,361	2,922,474	315,387,594	0.93%
2015	353,422	114,522	426,783	1,197,726	518,005	149,434	267,821	3,027,713	324,847,014	0.93%
2020	376,194	138,266	455,416	1,243,534	527,480	168,918	297,518	3,207,325	341,069,539	0.94%
2025	395,640	155,541	481,279	1,302,030	542,861	189,227	322,771	3,389,350	357,547,516	0.95%
2030	414,948	172,915	507,009	1,359,980	557,871	209,646	348,060	3,570,428	373,924,268	0.95%
2035	434,023	190,321	532,485	1,417,097	572,419	230,094	373,280	3,749,720	390,114,318	0.96%
<i>Average Annual Growth Rate</i>										
2012-2035	1.1%	2.8%	1.1%	0.8%	0.5%	2.2%	1.8%	1.1%	0.9%	

(a) Metropolitan Council, Regional Development Framework 2030 Forecasts, January 2012 adjusted to sum to regional forecasts published in the Metropolitan Council publication *What Lies Ahead: Population, Household, and Employment Forecasts to 2040*, April 2012.

(b) Interpolated.

(c) Extrapolated.

(d) Woods & Poole Economics, The Complete Economic and Demographic Data Source (CEDDS) 2012.

(e) Forecast growth rates for each county applied to actual 2010 base year data and then adjusted proportionately so that the sum for the seven counties is equal to the Woods & Poole projection for the seven-counties.

(f) United States Department of Commerce, Bureau of Economic Analysis, April 2012.

Sources: As noted and HNTB analysis.

Table A.3: Historical Employment.

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
1980	71,048	15,348	75,978	724,963	314,564	18,178	36,474	1,256,553	113,983,200	1.10%
1981	70,901	15,817	76,360	723,730	311,400	18,216	38,203	1,254,627	114,914,000	1.09%
1982	71,047	15,498	76,190	710,906	305,291	18,232	38,159	1,235,323	114,163,300	1.08%
1983	73,855	15,784	78,823	717,114	307,641	18,746	40,695	1,252,658	115,645,700	1.08%
1984	80,426	16,352	88,262	763,089	325,417	19,789	42,733	1,336,068	120,528,100	1.11%
1985	83,261	17,705	95,174	790,797	332,093	21,065	44,827	1,384,922	123,796,700	1.12%
1986	86,336	17,886	99,735	809,432	335,291	21,926	47,308	1,417,914	126,232,300	1.12%
1987	91,998	19,344	109,690	843,558	343,801	23,281	51,379	1,483,051	129,548,400	1.14%
1988	97,082	20,300	120,332	865,227	350,711	24,490	52,954	1,531,096	133,563,900	1.15%
1989	100,716	21,783	126,727	882,531	351,764	24,897	54,408	1,562,826	136,177,800	1.15%
1990	103,751	24,304	132,944	893,644	353,860	25,958	56,157	1,590,618	138,330,900	1.15%
1991	106,759	25,771	136,672	886,823	353,018	27,018	57,445	1,593,506	137,612,800	1.16%
1992	108,863	28,053	142,293	895,630	353,852	29,302	58,841	1,616,834	138,166,100	1.17%
1993	111,332	30,632	146,844	912,273	357,644	31,747	60,702	1,651,174	140,774,400	1.17%
1994	115,502	32,741	154,560	934,602	364,652	33,801	65,770	1,701,628	144,196,600	1.18%
1995	119,414	35,265	162,880	959,251	372,914	36,365	68,469	1,754,558	147,915,800	1.19%
1996	122,639	35,940	169,331	975,916	375,511	38,095	71,992	1,789,424	151,056,200	1.18%
1997	125,186	36,988	173,982	989,480	380,628	38,880	77,186	1,822,330	154,541,200	1.18%
1998	129,909	38,808	180,208	1,015,772	387,566	38,618	80,225	1,871,106	158,481,200	1.18%
1999	138,499	39,594	190,854	1,029,202	390,742	41,204	81,476	1,911,571	161,531,300	1.18%
2000	143,555	41,631	197,954	1,048,325	395,185	44,283	85,453	1,956,386	165,370,800	1.18%
2001	148,362	43,316	203,347	1,036,721	398,046	46,893	88,287	1,964,972	165,510,200	1.19%
2002	148,660	44,783	209,923	1,014,027	395,077	48,771	89,036	1,950,277	165,063,100	1.18%
2003	151,693	45,680	216,524	1,005,226	393,795	50,152	91,251	1,954,321	166,019,500	1.18%
2004	154,939	46,966	221,513	1,015,858	396,805	53,158	92,761	1,982,000	169,026,700	1.17%
2005	159,570	48,052	228,432	1,033,196	400,864	54,857	95,564	2,020,535	172,551,400	1.17%
2006	161,558	50,733	233,260	1,047,407	403,933	56,662	97,374	2,050,927	176,124,600	1.16%

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
2007	163,248	51,338	236,748	1,064,465	407,223	57,726	98,026	2,078,774	179,899,700	1.16%
2008	160,397	52,083	236,152	1,061,550	408,836	57,616	97,671	2,074,305	179,644,900	1.15%
2009	154,031	51,418	232,258	1,026,824	395,181	55,176	93,664	2,008,552	174,208,800	1.15%
2010	151,802	51,351	230,650	1,028,879	393,479	55,569	95,312	2,007,042	173,767,400	1.16%
Average Annual Growth Rate										
1980-2010	2.6%	4.1%	3.8%	1.2%	0.7%	3.8%	3.3%	1.6%	1.4%	
1980-1990	3.9%	4.7%	5.8%	2.1%	1.2%	3.6%	4.4%	2.4%	2.0%	
1990-2010	1.9%	3.8%	2.8%	0.7%	0.5%	3.9%	2.7%	1.2%	1.1%	

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

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

Table A.4: 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)										
2010	106,469	35,151	164,042	809,188	316,054	41,977	75,119	1,548,000	n/a	n/a
2012	(b) 109,532	37,057	168,970	826,361	322,192	43,580	79,307	1,587,000	n/a	n/a
2015	(b) 114,126	39,917	176,363	852,122	331,399	45,985	85,588	1,645,500	n/a	n/a
2020	121,783	44,683	188,684	895,055	346,744	49,993	96,057	1,743,000	n/a	n/a
2025	(b) 128,383	48,358	201,274	943,275	359,510	56,986	105,214	1,843,000	n/a	n/a
2030	134,982	52,033	213,864	991,496	372,275	63,979	114,371	1,943,000	n/a	n/a
2035	(c) 140,715	55,367	225,069	1,033,354	382,686	70,537	122,772	2,030,500	n/a	n/a
Average Annual Growth Rate										
2012-2035	1.1%	1.8%	1.3%	1.0%	0.8%	2.1%	1.9%	1.1%	n/a	n/a
Woods & Poole (W&P) Forecasts (d)										
2010	156,898	51,380	232,893	1,037,351	397,465	55,654	94,199	2,025,840	173,767,400	1.17%
2012	162,026	53,049	240,424	1,062,566	400,942	56,886	96,679	2,072,572	175,736,302	1.18%
2015	171,833	55,914	256,378	1,114,615	409,984	60,087	103,447	2,172,258	182,936,751	1.19%
2020	189,316	60,972	285,075	1,204,848	425,704	65,730	115,814	2,347,459	195,598,091	1.20%
2025	208,340	66,396	316,600	1,299,417	442,328	71,777	129,676	2,534,534	209,135,554	1.21%
2030	229,017	72,196	351,208	1,398,250	459,962	78,256	145,214	2,734,103	223,610,089	1.22%
2035	251,469	78,388	389,145	1,501,227	478,712	85,192	162,640	2,946,773	239,086,123	1.23%
Average Annual Growth Rate										
2012-2035	2.1%	1.9%	2.3%	1.6%	0.8%	1.9%	2.4%	1.6%		
Metropolitan Council - Regional Development Framework (RFD) Forecasts Adjusted for Base Year and Scaled to Woods & Poole Forecast (e)										
2010	(f) 151,802	51,351	230,650	1,028,879	393,479	55,569	95,312	2,007,042	173,767,400	1.16%

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
2012	155,813	54,013	237,037	1,048,317	400,205	57,560	100,396	2,053,340	175,736,302	1.17%
2015	164,059	58,794	250,015	1,092,389	415,979	61,376	109,490	2,152,101	182,936,751	1.18%
2020	178,523	67,114	272,764	1,170,088	443,836	68,043	125,309	2,325,677	195,598,091	1.19%
2025	192,107	74,142	297,009	1,258,743	469,737	79,172	140,106	2,511,016	209,135,554	1.20%
2030	206,612	81,605	322,821	1,353,415	497,565	90,925	155,790	2,708,733	223,610,089	1.21%
2035	222,078	89,531	350,289	1,454,374	527,369	103,360	172,429	2,919,430	239,086,123	1.22%
<i>Average Annual Growth Rate</i>										
2012-2035	1.6%	2.2%	1.7%	1.4%	1.2%	2.6%	2.4%	1.5%	1.3%	

(a) Metropolitan Council, Regional Development Framework 2030 Forecasts, January 2012 adjusted to sum to regional forecasts published in the Metropolitan Council publication *What Lies Ahead: Population, Household, and Employment Forecasts to 2040*, April 2012.

(b) Interpolated.

(c) Extrapolated.

(d) Woods & Poole Economics, The Complete Economic and Demographic Data Source (CEDDS) 2012.

(e) Forecast growth rates for each county applied to actual 2009 base year data and then adjusted proportionately so that the sum for the seven counties is equal to the Woods & Poole projection for the seven-counties.

(f) United States Department of Commerce, Bureau of Economic Analysis, April 2012.

Sources: As noted and HNTB analysis.

Table A.5: Historical Real Personal Income (Thousands of 2010 Dollars).

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
1980	4,574,812	920,790	5,142,219	28,652,607	12,353,074	1,077,773	2,872,536	55,593,810	5,325,199,573	1.04%
1981	4,599,482	946,485	5,321,113	28,966,093	12,523,126	1,097,852	3,005,452	56,459,604	5,461,707,991	1.03%
1982	4,685,689	959,033	5,507,130	29,553,205	12,766,409	1,120,296	3,127,539	57,719,301	5,517,728,742	1.05%
1983	4,907,216	980,426	5,783,466	30,368,639	13,113,665	1,155,203	3,295,001	59,603,616	5,663,666,148	1.05%
1984	5,319,287	1,088,685	6,439,976	32,691,567	13,998,063	1,269,570	3,638,143	64,445,290	6,041,648,334	1.07%
1985	5,573,712	1,165,748	6,905,351	34,278,114	14,492,186	1,353,543	3,881,750	67,650,403	6,271,949,908	1.08%
1986	5,826,020	1,234,334	7,251,796	35,680,983	14,930,258	1,430,909	4,109,424	70,463,723	6,489,689,344	1.09%
1987	6,080,651	1,322,239	7,802,759	37,151,256	15,309,676	1,507,920	4,364,017	73,538,517	6,694,747,219	1.10%
1988	6,329,679	1,380,563	8,400,631	38,525,859	15,629,555	1,579,905	4,587,346	76,433,538	6,979,710,590	1.10%
1989	6,611,018	1,520,940	9,009,510	40,092,432	15,972,119	1,659,150	4,721,367	79,586,536	7,245,594,852	1.10%
1990	6,772,517	1,590,206	9,370,402	40,926,825	16,471,024	1,715,955	4,952,199	81,799,126	7,420,749,265	1.10%
1991	6,895,721	1,627,740	9,585,491	40,656,463	16,429,564	1,755,555	5,096,103	82,046,638	7,436,918,846	1.10%
1992	7,301,931	1,775,446	10,263,167	42,263,254	16,711,553	1,899,496	5,545,323	85,760,170	7,730,933,244	1.11%
1993	7,675,401	1,909,072	10,634,134	42,517,424	16,701,146	2,018,417	5,842,689	87,298,283	7,880,054,740	1.11%
1994	8,156,337	2,068,796	11,313,075	44,037,622	17,239,428	2,171,992	6,332,159	91,319,411	8,145,666,970	1.12%
1995	8,526,886	2,259,135	11,904,348	46,342,603	17,851,726	2,347,855	6,679,984	95,912,538	8,424,801,071	1.14%
1996	9,015,329	2,465,665	12,750,863	48,175,180	18,628,905	2,578,415	7,059,886	100,674,243	8,788,077,042	1.15%
1997	9,457,243	2,658,693	13,587,627	51,149,387	18,955,948	2,819,454	7,482,429	106,110,781	9,173,332,982	1.16%
1998	10,247,375	2,952,299	14,909,091	55,171,706	20,188,912	3,097,509	8,167,274	114,734,166	9,751,658,450	1.18%
1999	10,900,058	3,176,104	15,644,529	57,716,786	20,488,899	3,416,807	8,664,437	120,007,620	10,104,757,899	1.19%
2000	11,736,615	3,506,741	16,566,585	61,253,478	21,551,917	3,929,809	9,323,016	127,868,162	10,702,131,436	1.19%
2001	11,872,978	3,754,655	16,615,847	60,309,951	21,881,165	4,097,038	9,603,253	128,134,887	10,862,010,148	1.18%
2002	12,189,942	3,796,152	16,960,079	59,958,323	22,305,113	4,157,480	9,689,681	129,056,769	10,900,671,454	1.18%
2003	12,377,258	3,874,443	17,375,687	60,656,333	22,173,031	4,297,160	9,970,270	130,724,183	11,046,822,803	1.18%
2004	12,610,899	4,085,396	17,787,361	62,584,628	22,937,457	4,564,054	10,473,416	135,043,210	11,386,109,295	1.19%
2005	12,567,889	4,305,123	17,874,762	62,570,783	22,609,779	4,820,395	10,396,312	135,145,043	11,628,276,519	1.16%

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
2006	12,758,650	4,478,892	18,128,641	64,844,792	23,157,077	4,984,709	10,847,347	139,200,108	12,102,793,784	1.15%
2007	13,013,594	4,789,023	18,607,369	65,926,317	23,394,499	5,270,919	11,217,695	142,219,416	12,434,451,081	1.14%
2008	13,062,518	4,992,866	18,683,213	66,944,570	23,859,905	5,471,952	11,449,306	144,464,331	12,727,999,640	1.14%
2009	12,569,662	4,723,405	17,661,058	61,586,846	22,365,246	5,334,487	11,018,868	135,259,572	12,075,873,997	1.12%
2010	12,831,111	4,945,003	17,970,760	63,414,896	22,897,395	5,573,589	11,372,671	139,005,425	12,353,577,000	1.13%
Average Annual Growth Rate										
1980-2010	3.5%	5.8%	4.3%	2.7%	2.1%	5.6%	4.7%	3.1%	2.8%	
1980-1990	4.0%	5.6%	6.2%	3.6%	2.9%	4.8%	5.6%	3.9%	3.4%	
1990-2010	3.2%	5.8%	3.3%	2.2%	1.7%	6.1%	4.2%	2.7%	2.6%	

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

Source: United States Department of Commerce, Bureau of Economic Analysis, April 2012.

Table A.6: Projected Real Personal Income (Thousands of 2010 Dollars).

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
Metropolitan Council - Regional Development Framework (RFD) Forecasts (in 2010 dollars) (a)										
2010	12,965,256	5,439,810	17,841,228	62,436,461	23,022,927	5,626,886	11,337,413	138,669,981	n/a	n/a
2012	13,433,565	5,994,445	18,703,194	67,905,757	24,957,035	5,760,763	11,291,021	148,045,779	n/a	n/a
2015	14,057,298	6,882,503	19,806,346	71,664,526	25,762,563	6,285,361	12,065,660	156,524,257	n/a	n/a
2020	15,474,678	8,582,968	22,324,848	80,677,199	27,983,919	7,342,985	13,809,728	176,196,325	n/a	n/a
2025	17,065,030	10,096,489	25,270,298	92,501,060	31,087,255	8,609,055	15,719,558	200,348,744	n/a	n/a
2030	18,949,419	11,845,545	28,781,407	106,253,609	34,710,996	10,072,189	18,009,742	228,622,907	n/a	n/a
2035	21,126,987	13,852,485	32,886,836	121,920,349	38,841,442	11,747,040	20,698,104	261,073,243	n/a	n/a
Average Annual Growth Rate										
2012-2035	2.0%	3.7%	2.5%	2.6%	1.9%	3.1%	2.7%	2.5%	n/a	n/a
Woods & Poole (W&P) Forecasts (b)										
2010	12,964,363	4,935,802	18,186,905	64,967,018	23,290,482	5,399,067	11,075,219	140,818,856	12,601,068,169	1.12%
2012	13,638,316	5,185,435	19,203,780	68,685,225	24,817,614	5,655,627	11,516,145	148,702,141	13,151,782,876	1.13%
2015	14,808,695	5,593,708	20,910,335	72,091,458	25,643,382	6,104,441	12,603,125	157,755,143	13,904,690,289	1.13%
2020	17,227,900	6,430,983	24,586,574	80,560,959	27,938,396	7,033,130	14,926,413	178,704,353	15,659,431,114	1.14%
2025	20,085,507	7,412,355	29,029,556	90,774,451	30,761,602	8,123,890	17,717,770	203,905,132	17,772,680,627	1.15%
2030	23,410,540	8,549,030	34,301,160	102,540,677	34,041,565	9,385,730	21,017,691	233,246,393	20,240,406,334	1.15%
2035	27,255,280	9,859,710	40,510,778	115,867,157	37,781,318	10,836,309	24,892,310	267,002,863	23,092,347,951	1.16%
Average Annual Growth Rate										
2012-2035	3.1%	2.8%	3.3%	2.3%	1.8%	2.9%	3.4%	2.6%	2.5%	
Metropolitan Council - Regional Development Framework (RFD) Forecasts Adjusted for Base Year and Scaled to W&P (d)										
2010	12,831,111	4,945,003	17,970,760	63,414,896	22,897,395	5,573,589	11,372,671	139,005,425	12,353,577,000	1.13%
2012	13,194,792	5,477,628	18,674,013	67,577,958	24,485,439	5,910,053	11,662,086	146,981,969	12,893,475,399	1.14%

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
2015	13,889,351	6,326,432	19,892,762	71,741,682	25,425,694	6,486,500	12,536,115	156,298,535	13,631,595,341	1.15%
2020	15,449,282	7,971,801	22,656,135	81,606,492	27,906,082	7,657,015	14,497,849	177,744,656	15,351,872,194	1.16%
2025	17,181,861	9,457,271	25,863,311	94,361,987	31,264,333	9,053,547	16,643,139	203,825,449	17,423,616,449	1.17%
2030	19,220,838	11,177,991	29,675,570	109,196,152	35,167,958	10,670,885	19,209,483	234,318,878	19,842,874,811	1.18%
2035	21,585,065	13,166,666	34,154,546	126,205,772	39,638,279	12,535,579	22,237,099	269,523,006	22,638,802,893	1.19%
<i>Average Annual Growth Rate</i>										
2012-2035	2.2%	3.9%	2.7%	2.8%	2.1%	3.3%	2.8%	2.7%	2.5%	

(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) 2012.

(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: Historical Real Per Capita Personal Income (in 2010 dollars).

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
1980	23,229	24,723	26,297	30,341	26,799	24,474	25,152	27,891	23,436	n/a
1981	22,972	24,934	26,590	30,374	26,951	24,424	25,800	27,978	23,802	n/a
1982	23,061	24,900	26,888	30,738	27,290	24,458	26,313	28,288	23,818	n/a
1983	23,896	25,270	27,854	31,410	27,946	25,110	27,401	29,016	24,225	n/a
1984	25,465	27,673	30,095	33,603	29,790	26,905	29,688	31,062	25,619	n/a
1985	26,123	28,992	31,211	34,779	30,582	27,631	31,114	32,092	26,361	n/a
1986	26,688	29,914	31,672	35,773	31,179	28,388	32,226	32,884	27,026	n/a
1987	27,044	30,936	32,340	36,943	31,856	28,685	33,270	33,751	27,632	n/a
1988	27,239	30,875	32,939	37,814	32,327	28,781	33,464	34,331	28,547	n/a
1989	27,797	32,846	33,923	39,050	32,889	29,389	33,358	35,215	29,356	n/a
1990	27,614	32,850	33,722	39,538	33,855	29,440	33,702	35,589	29,727	n/a
1991	27,411	32,393	33,409	38,971	33,648	29,100	33,452	35,169	29,398	n/a
1992	28,385	34,085	34,591	40,242	34,000	30,369	35,010	36,205	30,138	n/a
1993	29,326	35,069	34,769	40,125	33,925	30,866	35,054	36,284	30,317	n/a
1994	30,403	36,335	36,376	41,193	34,925	31,777	36,434	37,410	30,958	n/a
1995	31,208	37,877	37,293	43,032	36,002	33,075	37,305	38,754	31,639	n/a
1996	32,399	39,643	38,855	44,452	37,383	34,899	38,405	40,135	32,622	n/a
1997	33,420	41,582	40,483	46,940	37,722	36,261	39,756	41,764	33,646	n/a
1998	35,571	44,842	43,438	50,202	39,893	38,298	42,462	44,549	35,350	n/a
1999	37,126	46,584	44,632	52,014	40,239	40,154	43,895	45,917	36,212	n/a
2000	39,151	49,501	46,294	54,800	42,134	43,169	45,997	48,225	37,929	n/a
2001	38,951	51,473	45,697	53,686	42,660	42,279	46,347	47,780	38,116	n/a
2002	39,488	50,352	46,055	53,500	43,686	40,513	46,102	47,862	37,899	n/a
2003	39,688	49,670	46,676	54,183	43,824	40,084	46,610	48,262	38,078	n/a
2004	39,826	50,768	47,164	55,941	45,774	40,532	48,502	49,600	38,886	n/a
2005	39,296	51,708	46,813	56,017	45,441	41,161	47,262	49,385	39,349	n/a
2006	39,428	52,288	46,938	57,922	46,579	41,191	48,191	50,467	40,561	n/a

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US (a)
2007	39,947	54,876	47,618	58,519	46,826	42,490	48,824	51,088	41,278	n/a
2008	39,894	56,219	47,432	58,973	47,445	43,218	49,074	51,445	41,856	n/a
2009	38,132	52,342	44,497	53,707	44,149	41,504	46,753	47,722	39,365	n/a
2010	38,710	54,128	45,022	54,949	44,962	42,714	47,588	48,692	39,937	n/a
Average Annual Growth Rate										
1980-2010	1.7%	2.6%	1.8%	2.0%	1.7%	1.8%	2.2%	1.9%	1.8%	
1980-1990	1.7%	2.9%	2.5%	2.7%	2.4%	1.9%	3.0%	2.5%	2.4%	
1990-2010	1.7%	2.5%	1.5%	1.6%	1.4%	1.8%	1.7%	1.6%	1.5%	

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

Source: United States Department of Commerce, Bureau of Economic Analysis, April 2012.

Table A.8: Projected Per Capita Personal Income (in 2010 dollars).

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
Metropolitan Council - Regional Development Framework (RFD) Forecasts (a)										
2010	38,710	54,128	45,022	54,949	44,962	42,714	47,588	48,692	39,937	n/a
2012	39,222	54,382	46,102	59,093	48,587	41,494	45,389	56,470	41,701	n/a
2015	39,727	55,138	47,178	61,334	49,921	42,048	45,610	57,826	42,804	n/a
2020	41,514	57,546	50,354	67,198	53,807	43,911	47,482	61,836	45,913	n/a
2025	43,901	60,687	54,393	74,210	58,574	46,347	50,244	66,767	49,707	n/a
2030	46,825	64,522	59,243	82,217	64,115	49,306	53,778	72,501	54,130	n/a
2035	50,274	69,050	64,923	91,194	70,428	52,775	58,048	79,026	59,194	n/a
<i>Average Annual Growth Rate</i>										
2012-2035	1.1%	1.0%	1.5%	1.9%	1.6%	1.1%	1.1%	1.5%	1.5%	n/a
Woods & Poole (W&P) Forecasts (in 2010 dollars) (b)										
2010	39,131	54,025	45,570	56,266	45,729	41,377	46,370	54,745	40,734	n/a
2012	39,222	54,382	46,102	59,093	48,587	41,494	45,389	56,470	41,701	n/a
2015	39,727	55,138	47,178	61,334	49,921	42,048	45,610	57,826	42,804	n/a
2020	41,514	57,546	50,354	67,198	53,807	43,911	47,482	61,836	45,913	n/a
2025	43,901	60,687	54,393	74,210	58,574	46,347	50,244	66,767	49,707	n/a
2030	46,825	64,522	59,243	82,217	64,115	49,306	53,778	72,501	54,130	n/a
2035	50,274	69,050	64,923	91,194	70,428	52,775	58,048	79,026	59,194	n/a
<i>Average Annual Growth Rate</i>										
2012-2035	1.1%	1.0%	1.5%	1.9%	1.6%	1.1%	1.1%	1.5%	1.5%	
Woods & Poole Forecasts Adjusted for Base Year (d)										
2010	38,710	54,128	45,022	54,949	44,962	42,714	47,588	48,692	39,937	n/a
2012	38,800	54,485	45,547	57,710	47,772	42,835	46,581	50,294	40,885	n/a

Year	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	7-County Total	United States	Share of US
2015	39,300	55,242	46,611	59,898	49,084	43,407	46,808	51,623	41,966	n/a
2020	41,067	57,655	49,748	65,625	52,905	45,330	48,729	55,418	45,015	n/a
2025	43,428	60,802	53,739	72,473	57,592	47,845	51,563	60,137	48,734	n/a
2030	46,321	64,644	58,531	80,292	63,040	50,900	55,190	65,628	53,071	n/a
2035	49,733	69,182	64,142	89,059	69,247	54,480	59,572	71,878	58,031	n/a
<i>Average Annual Growth Rate</i>										
2012-2035	1.1%	1.0%	1.5%	1.9%	1.6%	1.1%	1.1%	1.6%	1.5%	

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

(b) Woods & Poole Economics, The Complete Economic and Demographic Data Source (CEDDS) 2012.

(c) Interpolated.

(d) Woods & Poole forecasts adjusted for 2010 base year.

Sources: As noted and HNTB analysis.

Appendix B: Historical Based Aircraft

Table B.1: 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	191,130	
1997	140,038	16,017	NA	156,055	5,619	5,178	6,785	14,680	4,092	192,409	
1998	144,234	18,729	NA	162,963	6,174	6,066	7,426	16,502	5,580	204,711	
1999	150,886	20,930	108	171,924	5,679	7,120	7,448	20,528	6,765	219,464	
2000	149,422	20,951	140	170,513	5,762	7,001	7,150	20,407	6,700	217,533	
2001	145,034	18,192	89	163,315	6,596	7,787	6,783	20,421	6,545	211,447	
2002	143,503	17,483	101	161,087	6,841	8,355	6,648	21,936	6,377	211,244	
2003	143,265	17,491	182	160,938	7,689	7,997	6,525	20,550	6,008	209,707	
2004	146,613	18,469	107	165,189	8,379	9,298	7,821	22,800	5,939	219,426	
2005	148,101	19,412	95	167,608	7,942	9,823	8,728	23,627	6,454	224,352	(c)

Year	Piston Single Engine	Piston Multi- Engine	Piston Other	Total Piston	Turbo- prop	Turbo- jet	Rotor- craft	Experimental (a)	Other (b)	TOTAL	
2006	145,036	18,708	NA	163,744	8,063	10,379	9,159	23,047	6,277	221,943	(c)
2007	147,569	19,337	NA	166,906	9,514	10,385	9,567	23,228	5,940	231,607	(c)
2008	145,497	17,515	NA	163,012	8,906	11,042	9,876	23,364	5,652	228,663	(c)
2009	140,649	16,474	NA	157,123	9,055	11,268	9,984	24,419	5,480	223,877	(c)
2010	139,519	15,900	NA	155,419	9,369	11,484	10,102	24,784	5,684	223,370	(c)

(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: 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	191,130	n/a	n/a
1997	192,409	n/a	n/a
1998	204,711	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	209,707	1,808	0.0086
2004	219,426	1,760	0.0080
2005	224,352	1,739	0.0078
2006	221,943	1,714	0.0077
2007	231,607	1,701	0.0073
2008	228,663	1,617	0.0071
2009	223,877	1,550	0.0069
2010	223,370	1,547	0.0069
2011	222,520	1,495	0.0067
2012	222,690	1,549	0.0070

(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: Historical Registered Aircraft at Met Council Counties.

Year	Seven County Income Share (a)	Based AC to US Active Ratio (b)	Regional Aircraft Ratio Divided by Income Share (c)	Index (d)
1980	0.0104	0.0080	0.7666	125.6
1981	0.0103	0.0081	0.7853	128.7
1982	0.0105	0.0087	0.8326	136.4
1983	0.0105	0.0084	0.7979	130.8
1984	0.0107	0.0084	0.7884	129.2
1985	0.0108	n/a	n/a	
1986	0.0109	n/a	n/a	
1987	0.0110	n/a	n/a	
1988	0.0110	n/a	n/a	
1989	0.0110	n/a	n/a	
1990	0.0110	n/a	n/a	
1991	0.0110	n/a	n/a	
1992	0.0111	n/a	n/a	
1993	0.0111	n/a	n/a	
1994	0.0112	n/a	n/a	
1995	0.0114	n/a	n/a	
1996	0.0115	n/a	n/a	
1997	0.0116	n/a	n/a	
1998	0.0118	n/a	n/a	
1999	0.0119	0.0086	0.7263	119.0
2000	0.0119	0.0084	0.7006	114.8
2001	0.0118	0.0082	0.6964	114.1
2002	0.0118	0.0084	0.7057	115.7
2003	0.0118	0.0086	0.7286	119.4
2004	0.0119	0.0080	0.6763	110.8
2005	0.0116	0.0078	0.6669	109.3
2006	0.0115	0.0077	0.6715	110.0
2007	0.0114	0.0073	0.6421	105.2
2008	0.0114	0.0071	0.6230	102.1
2009	0.0112	0.0069	0.6181	101.3
2010	0.0113	0.0069	0.6155	100.9
2011	0.0113	0.0067	0.5932	97.2
2012	0.0114	0.0070	0.6102	100.0
2015	0.0115	0.0070	0.6070	99.5
2020	0.0116	0.0067	0.5818	95.3

Year	Seven County Income Share (a)	Based AC to US Active Ratio (b)	Regional Aircraft Ratio Divided by Income Share (c)	Index (d)
2025	0.0117	0.0065	0.5576	91.4
2030	0.0118	0.0063	0.5344	87.6
2035	0.0119	0.0061	0.5121	83.9

(a) Seven county share of U.S. income from Table A.5 in Appendix A and Table 1.

(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 2012 equals 100.

Sources: As noted and HNTB analysis.

**Appendix C: Distribution of Based Aircraft by Airport,
County of Registration and Aircraft Category**

Table C.1: Distribution of Based Aircraft by Airport, County, and Aircraft Category.

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
Total Aircraft									
Crystal	6	1	10	174	12	1	0	15	219
Airlake	0	1	89	12	0	18	1	26	147
Lake Elmo	1	0	33	8	29	0	141	17	229
Anoka County/Blaine - Janes Field	168	1	37	87	74	2	15	49	433
Flying Cloud	1	17	27	275	6	33	2	42	403
MSP	0	1	0	15	0	0	0	13	29
St. Paul Downtown-Hollman Field	0	0	47	25	5	0	7	5	89
Total MAC Airports	176	21	243	596	126	54	166	167	1549
Total Aircraft - Distribution									
Crystal	0.0341	0.0476	0.0412	0.2919	0.0952	0.0185	0.0000	0.0898	
Airlake	0.0000	0.0476	0.3663	0.0201	0.0000	0.3333	0.0060	0.1557	
Lake Elmo	0.0057	0.0000	0.1358	0.0134	0.2302	0.0000	0.8494	0.1018	
Anoka County/Blaine - Janes Field	0.9545	0.0476	0.1523	0.1460	0.5873	0.0370	0.0904	0.2934	
Flying Cloud	0.0057	0.8095	0.1111	0.4614	0.0476	0.6111	0.0120	0.2515	
MSP	0.0000	0.0476	0.0000	0.0252	0.0000	0.0000	0.0000	0.0778	
St. Paul Downtown-Hollman Field	0.0000	0.0000	0.1934	0.0419	0.0397	0.0000	0.0422	0.0299	
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
Single Engine Piston									
Crystal	6	1	10	155	11	1	0	15	199
Airlake	0	1	77	10	0	18	1	24	131
Lake Elmo	1	0	29	8	29	0	126	15	208
Anoka County/Blaine - Janes Field	144	1	26	63	65	2	15	35	351
Flying Cloud	1	16	25	231	6	30	2	35	346
MSP	0	0	0	0	0	0	0	0	0

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
St. Paul Downtown-Holman Field	0	0	14	6	1	0	3	1	25
Total MAC Airports	152	19	181	473	112	51	147	125	1260
Single Engine Piston Aircraft - Distribution (a)									
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200	0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920	0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200	0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800	0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800	0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080	0.0198
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston									
Crystal	0	0	0	11	1	0	0	0	12
Airlake	0	0	11	0	0	0	0	1	12
Lake Elmo	0	0	1	0	0	0	6	2	9
Anoka County/Blaine - Janes Field	17	0	4	9	5	0	0	11	46
Flying Cloud	0	0	0	0	0	0	0	1	1
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	4	0	0	0	3	0	7
Total MAC Airports	17	0	20	20	6	0	9	15	87
Multi Engine Piston Aircraft - Distribution (a)									
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000	0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667	0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333	0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333	0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667	0.0115
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000	0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Turboprop									
Crystal	0	0	0	1	0	0	0	0	1
Airlake	0	0	1	0	0	0	0	0	1
Lake Elmo	0	0	1	0	0	0	0	0	1
Anoka County/Blaine - Janes Field	1	0	2	2	2	0	0	1	8
Flying Cloud	0	1	0	24	0	1	0	2	28
MSP	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	5	3	1	0	0	0	9
Total MAC Airports	1	1	9	30	3	1	0	3	48
Turboprop Aircraft - Distribution (a)									
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333	0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667	0.5833
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	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000	0.1875
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets									
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	0	0	0	0	0	1
Flying Cloud	0	0	0	0	0	0	0	0	0
MSP	0	0	0	0	0	0	0	0	0

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0
Total MAC Airports	1	0	0	0	0	0	0	0	1
Microjet Aircraft - Distribution (b)									
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193	0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860	0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421	0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526	0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
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	3	11	0	0	0	2	18
Flying Cloud	0	0	2	16	0	2	0	2	22
MSP	0	1	0	15	0	0	0	13	29
St. Paul Downtown-Holman Field	0	0	21	16	3	0	1	2	43
Total MAC Airports	2	1	26	58	3	2	1	19	112
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053	0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053	0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842	0.2589

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053	0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Helicopter									
Crystal	0	0	0	7	0	0	0	0	7
Airlake	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	2	0	2
Anoka County/Blaine - Janes Field	3	0	2	1	1	0	0	0	7
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	3	0	0	0	0	2	5
Total MAC Airports	3	0	5	10	1	0	2	4	25
Helicopter - Distribution (a)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000	0.2800
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	1.0000	0.0000	0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000	0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000	0.1600
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	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000	0.2000
Total MAC Airports	1.0000	0.0000	1.0000	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	0	2	0	0	0	1	3
Lake Elmo	0	0	2	0	0	0	7	0	9
Anoka County/Blaine - Janes Field	0	0	0	1	1	0	0	0	2
Flying Cloud	0	0	0	2	0	0	0	0	2
MSP	0	0	0	0	0	0	0	0	0

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other (c)	
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0
Total MAC Airports	0	0	2	5	1	0	7	1	16
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	0.0000	0.4000	0.0000	0.0000	0.0000	1.0000	0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000	0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	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 ultra-light aircraft.

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

Appendix D: Forecast of Based Aircraft by County and Aircraft Category

Table D.1: Forecast of Based Aircraft Registered in Anoka County and Based at MAC Airports.

Year	US Income (a)	Anoka County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Total Aircraft						
2010	\$12,353,577,000	\$12,831,111	100.0	223,370	100	
2012	\$12,893,475,399	\$13,194,792	98.5	222,690	100	176
2015	\$13,631,595,341	\$13,393,237	94.6	224,070	99	169
2020	\$15,351,872,194	\$13,889,351	87.1	228,430	95	152
2025	\$17,423,616,449	\$15,449,282	85.4	236,435	91	148
2030	\$19,842,874,811	\$17,181,861	83.4	247,720	88	145
2035	\$22,638,802,893	\$19,220,838	81.7	259,005	84	143
Single Engine Piston Aircraft						
2010	\$12,353,577,000	\$12,831,111	100	139,519	100	
2012	\$12,893,475,399	\$13,194,792	99	137,600	100	152
2015	\$13,631,595,341	\$13,393,237	95	135,010	99	142
2020	\$15,351,872,194	\$13,889,351	87	132,335	95	123
2025	\$17,423,616,449	\$15,449,282	85	132,150	91	116
2030	\$19,842,874,811	\$17,181,861	83	134,000	88	110
2035	\$22,638,802,893	\$19,220,838	82	135,850	84	104
Multi Engine Piston Aircraft						
2010	\$12,353,577,000	\$12,831,111	100	15,900	100	
2012	\$12,893,475,399	\$13,194,792	99	15,735	100	17
2015	\$13,631,595,341	\$13,393,237	95	15,570	99	16
2020	\$15,351,872,194	\$13,889,351	87	15,175	95	14
2025	\$17,423,616,449	\$15,449,282	85	14,815	91	13
2030	\$19,842,874,811	\$17,181,861	83	14,470	88	12
2035	\$22,638,802,893	\$19,220,838	82	14,125	84	11
Turboprop Aircraft						
2010	\$12,353,577,000	\$12,831,111	100.0	9,369	100	
2012	\$12,893,475,399	\$13,194,792	98.5	9,505	100	1
2015	\$13,631,595,341	\$13,393,237	94.6	9,720	99	1
2020	\$15,351,872,194	\$13,889,351	87.1	10,120	95	1
2025	\$17,423,616,449	\$15,449,282	85.4	10,625	91	1
2030	\$19,842,874,811	\$17,181,861	83.4	11,205	88	1
2035	\$22,638,802,893	\$19,220,838	81.7	11,785	84	1

Year	US Income (a)	Anoka County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Microjets (g)						
2010	\$12,353,577,000	\$12,831,111	100.0	500	100	
2012	\$12,893,475,399	\$13,194,792	98.5	627	100	1
2015	\$13,631,595,341	\$13,393,237	94.6	885	99	1
2020	\$15,351,872,194	\$13,889,351	87.1	1,470	95	2
2025	\$17,423,616,449	\$15,449,282	85.4	2,221	91	3
2030	\$19,842,874,811	\$17,181,861	83.4	3,163	88	4
2035	\$22,638,802,893	\$19,220,838	81.7	4,105	84	5
Other Jet Aircraft						
2010	\$12,353,577,000	\$12,831,111	100.0	10,984	100	
2012	\$12,893,475,399	\$13,194,792	98.5	11,423	100	2
2015	\$13,631,595,341	\$13,393,237	94.6	12,455	99	2
2020	\$15,351,872,194	\$13,889,351	87.1	14,795	95	2
2025	\$17,423,616,449	\$15,449,282	85.4	17,799	91	2
2030	\$19,842,874,811	\$17,181,861	83.4	21,567	88	3
2035	\$22,638,802,893	\$19,220,838	81.7	25,335	84	3
Helicopters						
2010	\$12,353,577,000	\$12,831,111	100.0	10,102	100	
2012	\$12,893,475,399	\$13,194,792	98.5	10,720	100	3
2015	\$13,631,595,341	\$13,393,237	94.6	11,750	99	3
2020	\$15,351,872,194	\$13,889,351	87.1	13,445	95	3
2025	\$17,423,616,449	\$15,449,282	85.4	15,320	91	3
2030	\$19,842,874,811	\$17,181,861	83.4	17,400	88	4
2035	\$22,638,802,893	\$19,220,838	81.7	19,480	84	4
Other Aircraft						
2010	\$12,353,577,000	\$12,831,111	100.0	36,996	100	
2012	\$12,893,475,399	\$13,194,792	98.5	37,080	100	0
2015	\$13,631,595,341	\$13,393,237	94.6	38,680	99	0
2020	\$15,351,872,194	\$13,889,351	87.1	41,090	95	0
2025	\$17,423,616,449	\$15,449,282	85.4	43,505	91	0
2030	\$19,842,874,811	\$17,181,861	83.4	45,915	88	0
2035	\$22,638,802,893	\$19,220,838	81.7	48,325	84	0
Total Aircraft						
2010						
2012						176
2015						165
2020						145

Year	US Income (a)	Anoka County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2025						138
2030						134
2035						128

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2010 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(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.

(g) Current number of microjets based on FAA's national aircraft registry. New microjets assumed to be 20 percent of net increase in national jet fleet based on Honeywell forecast.

Sources: As noted and HNTB analysis.

Table D.2: Forecast of Based Aircraft Registered in Carver County and Based at MAC Airports.

Year	US Income (a)	Carver County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Total Aircraft						
2010	\$12,353,577,000	\$4,945,003	100.0	223,370	100	
2012	\$12,893,475,399	\$5,477,628	106.1	222,690	100	21
2015	\$13,631,595,341	\$6,326,432	115.9	224,070	99	23
2020	\$15,351,872,194	\$7,971,801	129.7	228,430	95	25
2025	\$17,423,616,449	\$9,457,271	135.6	236,435	91	26
2030	\$19,842,874,811	\$11,177,991	140.7	247,720	88	27
2035	\$22,638,802,893	\$13,166,666	145.3	259,005	84	28
Single Engine Piston Aircraft						
2010	\$12,353,577,000	\$4,945,003	100.0	139,519	100	
2012	\$12,893,475,399	\$5,477,628	106.1	137,600	100	19
2015	\$13,631,595,341	\$6,326,432	115.9	135,010	99	20
2020	\$15,351,872,194	\$7,971,801	129.7	132,335	95	21
2025	\$17,423,616,449	\$9,457,271	135.6	132,150	91	21
2030	\$19,842,874,811	\$11,177,991	140.7	134,000	88	21
2035	\$22,638,802,893	\$13,166,666	145.3	135,850	84	22
Multi Engine Piston Aircraft						
2010	\$12,353,577,000	\$4,945,003	100.0	15,900	100	
2012	\$12,893,475,399	\$5,477,628	106.1	15,735	100	0
2015	\$13,631,595,341	\$6,326,432	115.9	15,570	99	0
2020	\$15,351,872,194	\$7,971,801	129.7	15,175	95	0
2025	\$17,423,616,449	\$9,457,271	135.6	14,815	91	0
2030	\$19,842,874,811	\$11,177,991	140.7	14,470	88	0
2035	\$22,638,802,893	\$13,166,666	145.3	14,125	84	0
Turboprop Aircraft						
2010	\$12,353,577,000	\$4,945,003	100.0	9,369	100	
2012	\$12,893,475,399	\$5,477,628	106.1	9,505	100	1
2015	\$13,631,595,341	\$6,326,432	115.9	9,720	99	1
2020	\$15,351,872,194	\$7,971,801	129.7	10,120	95	1
2025	\$17,423,616,449	\$9,457,271	135.6	10,625	91	1
2030	\$19,842,874,811	\$11,177,991	140.7	11,205	88	1
2035	\$22,638,802,893	\$13,166,666	145.3	11,785	84	1

Year	US Income (a)	Carver County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Microjets (g)						
2010	\$12,353,577,000	\$4,945,003	100.0	500	100	
2012	\$12,893,475,399	\$5,477,628	106.1	627	100	0
2015	\$13,631,595,341	\$6,326,432	115.9	885	99	0
2020	\$15,351,872,194	\$7,971,801	129.7	1,470	95	0
2025	\$17,423,616,449	\$9,457,271	135.6	2,221	91	0
2030	\$19,842,874,811	\$11,177,991	140.7	3,163	88	0
2035	\$22,638,802,893	\$13,166,666	145.3	4,105	84	0
Other Jet Aircraft						
2010	\$12,353,577,000	\$4,945,003	100.0	10,984	100	
2012	\$12,893,475,399	\$5,477,628	106.1	11,423	100	1
2015	\$13,631,595,341	\$6,326,432	115.9	12,455	99	1
2020	\$15,351,872,194	\$7,971,801	129.7	14,795	95	2
2025	\$17,423,616,449	\$9,457,271	135.6	17,799	91	2
2030	\$19,842,874,811	\$11,177,991	140.7	21,567	88	2
2035	\$22,638,802,893	\$13,166,666	145.3	25,335	84	3
Helicopters						
2010	\$12,353,577,000	\$4,945,003	100.0	10,102	100	
2012	\$12,893,475,399	\$5,477,628	106.1	10,720	100	0
2015	\$13,631,595,341	\$6,326,432	115.9	11,750	99	0
2020	\$15,351,872,194	\$7,971,801	129.7	13,445	95	0
2025	\$17,423,616,449	\$9,457,271	135.6	15,320	91	0
2030	\$19,842,874,811	\$11,177,991	140.7	17,400	88	0
2035	\$22,638,802,893	\$13,166,666	145.3	19,480	84	0
Other Aircraft						
2010	\$12,353,577,000	\$4,945,003	100.0	36,996	100	
2012	\$12,893,475,399	\$5,477,628	106.1	37,080	100	0
2015	\$13,631,595,341	\$6,326,432	115.9	38,680	99	0
2020	\$15,351,872,194	\$7,971,801	129.7	41,090	95	0
2025	\$17,423,616,449	\$9,457,271	135.6	43,505	91	0
2030	\$19,842,874,811	\$11,177,991	140.7	45,915	88	0
2035	\$22,638,802,893	\$13,166,666	145.3	48,325	84	0
Total Aircraft						
2010						
2012						21
2015						22

Year	US Income (a)	Carver County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2020						24
2025						24
2030						24
2035						26

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2010 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(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.

(g) Current number of microjets based on FAA's national aircraft registry. New microjets assumed to be 20 percent of net increase in national jet fleet based on Honeywell forecast.

Sources: As noted and HNTB analysis.

Table D.3: Forecast of Based Aircraft Registered in Dakota County and Based at MAC Airports.

Year	US Income (a)	Dakota County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Total Aircraft						
2010	\$12,353,577,000	\$17,970,760	100.0	223,370	100	
2012	\$12,893,475,399	\$18,674,013	99.6	222,690	100	243
2015	\$13,631,595,341	\$19,892,762	100.3	224,070	99	245
2020	\$15,351,872,194	\$22,656,135	101.4	228,430	95	242
2025	\$17,423,616,449	\$25,863,311	102.0	236,435	91	242
2030	\$19,842,874,811	\$29,675,570	102.8	247,720	88	244
2035	\$22,638,802,893	\$34,154,546	103.7	259,005	84	247
Single Engine Piston Aircraft						
2010	\$12,353,577,000	\$17,970,760	100.0	139,519	100	
2012	\$12,893,475,399	\$18,674,013	99.6	137,600	100	181
2015	\$13,631,595,341	\$19,892,762	100.3	135,010	99	178
2020	\$15,351,872,194	\$22,656,135	101.4	132,335	95	169
2025	\$17,423,616,449	\$25,863,311	102.0	132,150	91	163
2030	\$19,842,874,811	\$29,675,570	102.8	134,000	88	159
2035	\$22,638,802,893	\$34,154,546	103.7	135,850	84	156
Multi Engine Piston Aircraft						
2010	\$12,353,577,000	\$17,970,760	100.0	15,900	100	
2012	\$12,893,475,399	\$18,674,013	99.6	15,735	100	20
2015	\$13,631,595,341	\$19,892,762	100.3	15,570	99	20
2020	\$15,351,872,194	\$22,656,135	101.4	15,175	95	19
2025	\$17,423,616,449	\$25,863,311	102.0	14,815	91	18
2030	\$19,842,874,811	\$29,675,570	102.8	14,470	88	17
2035	\$22,638,802,893	\$34,154,546	103.7	14,125	84	16
Turboprop Aircraft						
2010	\$12,353,577,000	\$17,970,760	100.0	9,369	100	
2012	\$12,893,475,399	\$18,674,013	99.6	9,505	100	9
2015	\$13,631,595,341	\$19,892,762	100.3	9,720	99	9
2020	\$15,351,872,194	\$22,656,135	101.4	10,120	95	9
2025	\$17,423,616,449	\$25,863,311	102.0	10,625	91	9
2030	\$19,842,874,811	\$29,675,570	102.8	11,205	88	10
2035	\$22,638,802,893	\$34,154,546	103.7	11,785	84	10

Year	US Income (a)	Dakota County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Microjets (g)						
2010	\$12,353,577,000	\$17,970,760	100.0	500	100	
2012	\$12,893,475,399	\$18,674,013	99.6	627	100	0
2015	\$13,631,595,341	\$19,892,762	100.3	885	99	0
2020	\$15,351,872,194	\$22,656,135	101.4	1,470	95	0
2025	\$17,423,616,449	\$25,863,311	102.0	2,221	91	0
2030	\$19,842,874,811	\$29,675,570	102.8	3,163	88	0
2035	\$22,638,802,893	\$34,154,546	103.7	4,105	84	0
Other Jet Aircraft						
2010	\$12,353,577,000	\$17,970,760	100.0	10,984	100	
2012	\$12,893,475,399	\$18,674,013	99.6	11,423	100	26
2015	\$13,631,595,341	\$19,892,762	100.3	12,455	99	28
2020	\$15,351,872,194	\$22,656,135	101.4	14,795	95	33
2025	\$17,423,616,449	\$25,863,311	102.0	17,799	91	38
2030	\$19,842,874,811	\$29,675,570	102.8	21,567	88	44
2035	\$22,638,802,893	\$34,154,546	103.7	25,335	84	50
Helicopters						
2010	\$12,353,577,000	\$17,970,760	100.0	10,102	100	
2012	\$12,893,475,399	\$18,674,013	99.6	10,720	100	5
2015	\$13,631,595,341	\$19,892,762	100.3	11,750	99	5
2020	\$15,351,872,194	\$22,656,135	101.4	13,445	95	6
2025	\$17,423,616,449	\$25,863,311	102.0	15,320	91	7
2030	\$19,842,874,811	\$29,675,570	102.8	17,400	88	7
2035	\$22,638,802,893	\$34,154,546	103.7	19,480	84	8
Other Aircraft						
2010	\$12,353,577,000	\$17,970,760	100.0	36,996	100	
2012	\$12,893,475,399	\$18,674,013	99.6	37,080	100	2
2015	\$13,631,595,341	\$19,892,762	100.3	38,680	99	2
2020	\$15,351,872,194	\$22,656,135	101.4	41,090	95	2
2025	\$17,423,616,449	\$25,863,311	102.0	43,505	91	2
2030	\$19,842,874,811	\$29,675,570	102.8	45,915	88	2
2035	\$22,638,802,893	\$34,154,546	103.7	48,325	84	2
Total Aircraft						
2010						
2012						243
2015						242
2020						238
2025						237

Year	US Income (a)	Dakota County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2030						239
2035						242

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2010 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(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.

(g) Current number of microjets based on FAA's national aircraft registry. New microjets assumed to be 20 percent of net increase in national jet fleet based on Honeywell forecast.

Sources: As noted and HNTB analysis.

Table D.4: Forecast of Based Aircraft Registered in Hennepin County and Based at MAC Airports.

Year	US Income (a)	Hennepin County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Total Aircraft						
2010	\$12,353,577,000	\$63,414,896	100.0	223,370	100	
2012	\$12,893,475,399	\$67,577,958	102.1	222,690	100	596
2015	\$13,631,595,341	\$71,741,682	102.5	224,070	99	599
2020	\$15,351,872,194	\$81,606,492	103.6	228,430	95	591
2025	\$17,423,616,449	\$94,361,987	105.5	236,435	91	597
2030	\$19,842,874,811	\$109,196,152	107.2	247,720	88	610
2035	\$22,638,802,893	\$126,205,772	108.6	259,005	84	619
Single Engine Piston Aircraft						
2010	\$12,353,577,000	\$63,414,896	100.0	139,519	100	
2012	\$12,893,475,399	\$67,577,958	102.1	137,600	100	473
2015	\$13,631,595,341	\$71,741,682	102.5	135,010	99	464
2020	\$15,351,872,194	\$81,606,492	103.6	132,335	95	440
2025	\$17,423,616,449	\$94,361,987	105.5	132,150	91	429
2030	\$19,842,874,811	\$109,196,152	107.2	134,000	88	424
2035	\$22,638,802,893	\$126,205,772	108.6	135,850	84	417
Multi Engine Piston Aircraft						
2010	\$12,353,577,000	\$63,414,896	100.0	15,900	100	
2012	\$12,893,475,399	\$67,577,958	102.1	15,735	100	20
2015	\$13,631,595,341	\$71,741,682	102.5	15,570	99	20
2020	\$15,351,872,194	\$81,606,492	103.6	15,175	95	19
2025	\$17,423,616,449	\$94,361,987	105.5	14,815	91	18
2030	\$19,842,874,811	\$109,196,152	107.2	14,470	88	17
2035	\$22,638,802,893	\$126,205,772	108.6	14,125	84	16
Turboprop Aircraft						
2010	\$12,353,577,000	\$63,414,896	100.0	9,369	100	
2012	\$12,893,475,399	\$67,577,958	102.1	9,505	100	30
2015	\$13,631,595,341	\$71,741,682	102.5	9,720	99	31
2020	\$15,351,872,194	\$81,606,492	103.6	10,120	95	31
2025	\$17,423,616,449	\$94,361,987	105.5	10,625	91	32
2030	\$19,842,874,811	\$109,196,152	107.2	11,205	88	33
2035	\$22,638,802,893	\$126,205,772	108.6	11,785	84	33

Year	US Income (a)	Hennepin County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Microjets (g) (h)						
2010	\$12,353,577,000	\$63,414,896	100.0	500	100	
2012	\$12,893,475,399	\$67,577,958	102.1	627	100	0
2015	\$13,631,595,341	\$71,741,682	102.5	885	99	2
2020	\$15,351,872,194	\$81,606,492	103.6	1,470	95	3
2025	\$17,423,616,449	\$94,361,987	105.5	2,221	91	5
2030	\$19,842,874,811	\$109,196,152	107.2	3,163	88	7
2035	\$22,638,802,893	\$126,205,772	108.6	4,105	84	9
Other Jet Aircraft						
2010	\$12,353,577,000	\$63,414,896	100.0	10,984	100	
2012	\$12,893,475,399	\$67,577,958	102.1	11,423	100	58
2015	\$13,631,595,341	\$71,741,682	102.5	12,455	99	63
2020	\$15,351,872,194	\$81,606,492	103.6	14,795	95	73
2025	\$17,423,616,449	\$94,361,987	105.5	17,799	91	85
2030	\$19,842,874,811	\$109,196,152	107.2	21,567	88	101
2035	\$22,638,802,893	\$126,205,772	108.6	25,335	84	115
Helicopters						
2010	\$12,353,577,000	\$63,414,896	100.0	10,102	100	
2012	\$12,893,475,399	\$67,577,958	102.1	10,720	100	10
2015	\$13,631,595,341	\$71,741,682	102.5	11,750	99	11
2020	\$15,351,872,194	\$81,606,492	103.6	13,445	95	12
2025	\$17,423,616,449	\$94,361,987	105.5	15,320	91	13
2030	\$19,842,874,811	\$109,196,152	107.2	17,400	88	15
2035	\$22,638,802,893	\$126,205,772	108.6	19,480	84	16
Other Aircraft						
2010	\$12,353,577,000	\$63,414,896	100.0	36,996	100	
2012	\$12,893,475,399	\$67,577,958	102.1	37,080	100	5
2015	\$13,631,595,341	\$71,741,682	102.5	38,680	99	5
2020	\$15,351,872,194	\$81,606,492	103.6	41,090	95	5
2025	\$17,423,616,449	\$94,361,987	105.5	43,505	91	6
2030	\$19,842,874,811	\$109,196,152	107.2	45,915	88	6
2035	\$22,638,802,893	\$126,205,772	108.6	48,325	84	6
Total Aircraft						
2010						
2012						596
2015						596
2020						583
2025						588

Year	US Income (a)	Hennepin County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2030						603
2035						612

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2010 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(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.

(g) Current number of microjets based on FAA's national aircraft registry. New microjets assumed to be 20 percent of net increase in national jet fleet based on Honeywell forecast.

(h) One half of Hennepin County registered microjets assumed to be based at a MAC airport by 2015.

Sources: As noted and HNTB analysis.

Table D.5: Forecast of Based Aircraft Registered in Ramsey County and Based at MAC Airports.

Year	US Income (a)	Ramsey County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Total Aircraft						
2010	\$12,353,577,000	\$22,897,395	100.0	223,370	100	
2012	\$12,893,475,399	\$24,485,439	102.5	222,690	100	126
2015	\$13,631,595,341	\$25,425,694	100.6	224,070	99	124
2020	\$15,351,872,194	\$27,906,082	98.1	228,430	95	118
2025	\$17,423,616,449	\$31,264,333	96.8	236,435	91	116
2030	\$19,842,874,811	\$35,167,958	95.6	247,720	88	115
2035	\$22,638,802,893	\$39,638,279	94.5	259,005	84	113
Single Engine Piston Aircraft						
2010	\$12,353,577,000	\$22,897,395	100.0	139,519	100	
2012	\$12,893,475,399	\$24,485,439	102.5	137,600	100	112
2015	\$13,631,595,341	\$25,425,694	100.6	135,010	99	107
2020	\$15,351,872,194	\$27,906,082	98.1	132,335	95	98
2025	\$17,423,616,449	\$31,264,333	96.8	132,150	91	93
2030	\$19,842,874,811	\$35,167,958	95.6	134,000	88	89
2035	\$22,638,802,893	\$39,638,279	94.5	135,850	84	86
Multi Engine Piston Aircraft						
2010	\$12,353,577,000	\$22,897,395	100.0	15,900	100	
2012	\$12,893,475,399	\$24,485,439	102.5	15,735	100	6
2015	\$13,631,595,341	\$25,425,694	100.6	15,570	99	6
2020	\$15,351,872,194	\$27,906,082	98.1	15,175	95	5
2025	\$17,423,616,449	\$31,264,333	96.8	14,815	91	5
2030	\$19,842,874,811	\$35,167,958	95.6	14,470	88	5
2035	\$22,638,802,893	\$39,638,279	94.5	14,125	84	4
Turboprop Aircraft						
2010	\$12,353,577,000	\$22,897,395	100.0	9,369	100	
2012	\$12,893,475,399	\$24,485,439	102.5	9,505	100	3
2015	\$13,631,595,341	\$25,425,694	100.6	9,720	99	3
2020	\$15,351,872,194	\$27,906,082	98.1	10,120	95	3
2025	\$17,423,616,449	\$31,264,333	96.8	10,625	91	3
2030	\$19,842,874,811	\$35,167,958	95.6	11,205	88	3
2035	\$22,638,802,893	\$39,638,279	94.5	11,785	84	3

Year	US Income (a)	Ramsey County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Microjets (g) (h)						
2010	\$12,353,577,000	\$22,897,395	100.0	500	100	
2012	\$12,893,475,399	\$24,485,439	102.5	627	100	0
2015	\$13,631,595,341	\$25,425,694	100.6	885	99	1
2020	\$15,351,872,194	\$27,906,082	98.1	1,470	95	1
2025	\$17,423,616,449	\$31,264,333	96.8	2,221	91	2
2030	\$19,842,874,811	\$35,167,958	95.6	3,163	88	2
2035	\$22,638,802,893	\$39,638,279	94.5	4,105	84	3
Other Jet Aircraft						
2010	\$12,353,577,000	\$22,897,395	100.0	10,984	100	
2012	\$12,893,475,399	\$24,485,439	102.5	11,423	100	3
2015	\$13,631,595,341	\$25,425,694	100.6	12,455	99	3
2020	\$15,351,872,194	\$27,906,082	98.1	14,795	95	4
2025	\$17,423,616,449	\$31,264,333	96.8	17,799	91	4
2030	\$19,842,874,811	\$35,167,958	95.6	21,567	88	5
2035	\$22,638,802,893	\$39,638,279	94.5	25,335	84	5
Helicopters						
2010	\$12,353,577,000	\$22,897,395	100.0	10,102	100	
2012	\$12,893,475,399	\$24,485,439	102.5	10,720	100	1
2015	\$13,631,595,341	\$25,425,694	100.6	11,750	99	1
2020	\$15,351,872,194	\$27,906,082	98.1	13,445	95	1
2025	\$17,423,616,449	\$31,264,333	96.8	15,320	91	1
2030	\$19,842,874,811	\$35,167,958	95.6	17,400	88	1
2035	\$22,638,802,893	\$39,638,279	94.5	19,480	84	1
Other Aircraft						
2010	\$12,353,577,000	\$22,897,395	100.0	36,996	100	
2012	\$12,893,475,399	\$24,485,439	102.5	37,080	100	1
2015	\$13,631,595,341	\$25,425,694	100.6	38,680	99	1
2020	\$15,351,872,194	\$27,906,082	98.1	41,090	95	1
2025	\$17,423,616,449	\$31,264,333	96.8	43,505	91	1
2030	\$19,842,874,811	\$35,167,958	95.6	45,915	88	1
2035	\$22,638,802,893	\$39,638,279	94.5	48,325	84	1
Total Aircraft						
2010						
2012						126
2015						122
2020						113
2025						109

Year	US Income (a)	Ramsey County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2030						106
2035						103

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2010 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(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.

(g) Current number of microjets based on FAA's national aircraft registry. New microjets assumed to be 20 percent of net increase in national jet fleet based on Honeywell forecast.

(h) One half of Ramsey County registered microjets assumed to be based at a MAC airport by 2015.

Sources: As noted and HNTB analysis.

Table D.6: Forecast of Based Aircraft Registered in Scott County and Based at MAC Airports.

Year	US Income (a)	Scott County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Total Aircraft						
2010	\$12,353,577,000	\$5,573,589	100.0	223,370	100	
2012	\$12,893,475,399	\$5,910,053	101.6	222,690	100	54
2015	\$13,631,595,341	\$6,486,500	105.5	224,070	99	56
2020	\$15,351,872,194	\$7,657,015	110.5	228,430	95	57
2025	\$17,423,616,449	\$9,053,547	115.2	236,435	91	59
2030	\$19,842,874,811	\$10,670,885	119.2	247,720	88	62
2035	\$22,638,802,893	\$12,535,579	122.7	259,005	84	64
Single Engine Piston Aircraft						
2010	\$12,353,577,000	\$5,573,589	100.0	139,519	100	
2012	\$12,893,475,399	\$5,910,053	101.6	137,600	100	51
2015	\$13,631,595,341	\$6,486,500	105.5	135,010	99	52
2020	\$15,351,872,194	\$7,657,015	110.5	132,335	95	51
2025	\$17,423,616,449	\$9,053,547	115.2	132,150	91	51
2030	\$19,842,874,811	\$10,670,885	119.2	134,000	88	51
2035	\$22,638,802,893	\$12,535,579	122.7	135,850	84	51
Multi Engine Piston Aircraft						
2010	\$12,353,577,000	\$5,573,589	100.0	15,900	100	
2012	\$12,893,475,399	\$5,910,053	101.6	15,735	100	0
2015	\$13,631,595,341	\$6,486,500	105.5	15,570	99	0
2020	\$15,351,872,194	\$7,657,015	110.5	15,175	95	0
2025	\$17,423,616,449	\$9,053,547	115.2	14,815	91	0
2030	\$19,842,874,811	\$10,670,885	119.2	14,470	88	0
2035	\$22,638,802,893	\$12,535,579	122.7	14,125	84	0
Turboprop Aircraft						
2010	\$12,353,577,000	\$5,573,589	100.0	9,369	100	
2012	\$12,893,475,399	\$5,910,053	101.6	9,505	100	1
2015	\$13,631,595,341	\$6,486,500	105.5	9,720	99	1
2020	\$15,351,872,194	\$7,657,015	110.5	10,120	95	1
2025	\$17,423,616,449	\$9,053,547	115.2	10,625	91	1
2030	\$19,842,874,811	\$10,670,885	119.2	11,205	88	1
2035	\$22,638,802,893	\$12,535,579	122.7	11,785	84	1

Year	US Income (a)	Scott County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Microjets (g)						
2010	\$12,353,577,000	\$5,573,589	100.0	500	100	
2012	\$12,893,475,399	\$5,910,053	101.6	627	100	0
2015	\$13,631,595,341	\$6,486,500	105.5	885	99	0
2020	\$15,351,872,194	\$7,657,015	110.5	1,470	95	0
2025	\$17,423,616,449	\$9,053,547	115.2	2,221	91	0
2030	\$19,842,874,811	\$10,670,885	119.2	3,163	88	0
2035	\$22,638,802,893	\$12,535,579	122.7	4,105	84	0
Other Jet Aircraft						
2010	\$12,353,577,000	\$5,573,589	100.0	10,984	100	
2012	\$12,893,475,399	\$5,910,053	101.6	11,423	100	2
2015	\$13,631,595,341	\$6,486,500	105.5	12,455	99	2
2020	\$15,351,872,194	\$7,657,015	110.5	14,795	95	3
2025	\$17,423,616,449	\$9,053,547	115.2	17,799	91	3
2030	\$19,842,874,811	\$10,670,885	119.2	21,567	88	4
2035	\$22,638,802,893	\$12,535,579	122.7	25,335	84	4
Helicopters						
2010	\$12,353,577,000	\$5,573,589	100.0	10,102	100	
2012	\$12,893,475,399	\$5,910,053	101.6	10,720	100	0
2015	\$13,631,595,341	\$6,486,500	105.5	11,750	99	0
2020	\$15,351,872,194	\$7,657,015	110.5	13,445	95	0
2025	\$17,423,616,449	\$9,053,547	115.2	15,320	91	0
2030	\$19,842,874,811	\$10,670,885	119.2	17,400	88	0
2035	\$22,638,802,893	\$12,535,579	122.7	19,480	84	0
Other Aircraft						
2010	\$12,353,577,000	\$5,573,589	100.0	36,996	100	
2012	\$12,893,475,399	\$5,910,053	101.6	37,080	100	0
2015	\$13,631,595,341	\$6,486,500	105.5	38,680	99	0
2020	\$15,351,872,194	\$7,657,015	110.5	41,090	95	0
2025	\$17,423,616,449	\$9,053,547	115.2	43,505	91	0
2030	\$19,842,874,811	\$10,670,885	119.2	45,915	88	0
2035	\$22,638,802,893	\$12,535,579	122.7	48,325	84	0
Total Aircraft						
2010						
2012						54
2015						55
2020						55
2025						55

Year	US Income (a)	Scott County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2030						56
2035						56

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2010 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(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.

(g) Current number of microjets based on FAA's national aircraft registry. New microjets assumed to be 20 percent of net increase in national jet fleet based on Honeywell forecast.

Sources: As noted and HNTB analysis.

Table D.7: Forecast of Based Aircraft Registered in Washington County and Based at MAC Airports.

Year	US Income (a)	Washington County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Total Aircraft						
2010	\$12,353,577,000	\$11,372,671	100.0	223,370	100	
2012	\$12,893,475,399	\$11,662,086	98.3	222,690	100	166
2015	\$13,631,595,341	\$12,536,115	99.9	224,070	99	169
2020	\$15,351,872,194	\$14,497,849	102.6	228,430	95	170
2025	\$17,423,616,449	\$16,643,139	103.8	236,435	91	170
2030	\$19,842,874,811	\$19,209,483	105.2	247,720	88	173
2035	\$22,638,802,893	\$22,237,099	106.7	259,005	84	176
Single Engine Piston Aircraft						
2010	\$12,353,577,000	\$11,372,671	100.0	139,519	100	
2012	\$12,893,475,399	\$11,662,086	98.3	137,600	100	147
2015	\$13,631,595,341	\$12,536,115	99.9	135,010	99	146
2020	\$15,351,872,194	\$14,497,849	102.6	132,335	95	141
2025	\$17,423,616,449	\$16,643,139	103.8	132,150	91	136
2030	\$19,842,874,811	\$19,209,483	105.2	134,000	88	134
2035	\$22,638,802,893	\$22,237,099	106.7	135,850	84	132
Multi Engine Piston Aircraft						
2010	\$12,353,577,000	\$11,372,671	100.0	15,900	100	
2012	\$12,893,475,399	\$11,662,086	98.3	15,735	100	9
2015	\$13,631,595,341	\$12,536,115	99.9	15,570	99	9
2020	\$15,351,872,194	\$14,497,849	102.6	15,175	95	9
2025	\$17,423,616,449	\$16,643,139	103.8	14,815	91	8
2030	\$19,842,874,811	\$19,209,483	105.2	14,470	88	8
2035	\$22,638,802,893	\$22,237,099	106.7	14,125	84	7
Turboprop Aircraft						
2010	\$12,353,577,000	\$11,372,671	100.0	9,369	100	
2012	\$12,893,475,399	\$11,662,086	98.3	9,505	100	0
2015	\$13,631,595,341	\$12,536,115	99.9	9,720	99	0
2020	\$15,351,872,194	\$14,497,849	102.6	10,120	95	0
2025	\$17,423,616,449	\$16,643,139	103.8	10,625	91	0
2030	\$19,842,874,811	\$19,209,483	105.2	11,205	88	0
2035	\$22,638,802,893	\$22,237,099	106.7	11,785	84	0

Year	US Income (a)	Washington County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Microjets (g)						
2010	\$12,353,577,000	\$11,372,671	100.0	500	100	
2012	\$12,893,475,399	\$11,662,086	98.3	627	100	0
2015	\$13,631,595,341	\$12,536,115	99.9	885	99	0
2020	\$15,351,872,194	\$14,497,849	102.6	1,470	95	0
2025	\$17,423,616,449	\$16,643,139	103.8	2,221	91	0
2030	\$19,842,874,811	\$19,209,483	105.2	3,163	88	0
2035	\$22,638,802,893	\$22,237,099	106.7	4,105	84	0
Other Jet Aircraft						
2010	\$12,353,577,000	\$11,372,671	100.0	10,984	100	
2012	\$12,893,475,399	\$11,662,086	98.3	11,423	100	1
2015	\$13,631,595,341	\$12,536,115	99.9	12,455	99	1
2020	\$15,351,872,194	\$14,497,849	102.6	14,795	95	1
2025	\$17,423,616,449	\$16,643,139	103.8	17,799	91	2
2030	\$19,842,874,811	\$19,209,483	105.2	21,567	88	2
2035	\$22,638,802,893	\$22,237,099	106.7	25,335	84	2
Helicopters						
2010	\$12,353,577,000	\$11,372,671	100.0	10,102	100	
2012	\$12,893,475,399	\$11,662,086	98.3	10,720	100	2
2015	\$13,631,595,341	\$12,536,115	99.9	11,750	99	2
2020	\$15,351,872,194	\$14,497,849	102.6	13,445	95	2
2025	\$17,423,616,449	\$16,643,139	103.8	15,320	91	3
2030	\$19,842,874,811	\$19,209,483	105.2	17,400	88	3
2035	\$22,638,802,893	\$22,237,099	106.7	19,480	84	3
Other Aircraft						
2010	\$12,353,577,000	\$11,372,671	100.0	36,996	100	
2012	\$12,893,475,399	\$11,662,086	98.3	37,080	100	7
2015	\$13,631,595,341	\$12,536,115	99.9	38,680	99	7
2020	\$15,351,872,194	\$14,497,849	102.6	41,090	95	8
2025	\$17,423,616,449	\$16,643,139	103.8	43,505	91	8
2030	\$19,842,874,811	\$19,209,483	105.2	45,915	88	8
2035	\$22,638,802,893	\$22,237,099	106.7	48,325	84	8
Total Aircraft						
2010						
2012						166
2015						165
2020						161

Year	US Income (a)	Washington County Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2025						157
2030						155
2035						152

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2010 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(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.

(g) Current number of microjets based on FAA's national aircraft registry. New microjets assumed to be 20 percent of net increase in national jet fleet based on Honeywell forecast.

Sources: As noted and HNTB analysis.

Table D.8: Forecast of Based Aircraft Registered in Non-Met Council Counties and Based at MAC Airports.

Year	US Income (a)	Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Total Aircraft						
2010	\$12,353,577,000	\$12,353,577,000	100.0	223,370	100	
2012	\$12,893,475,399	\$12,893,475,399	100.0	222,690	100	154
2015	\$13,631,595,341	\$13,631,595,341	100.0	224,070	99	154
2020	\$15,351,872,194	\$15,351,872,194	100.0	228,430	95	151
2025	\$17,423,616,449	\$17,423,616,449	100.0	236,435	91	149
2030	\$19,842,874,811	\$19,842,874,811	100.0	247,720	88	150
2035	\$22,638,802,893	\$22,638,802,893	100.0	259,005	84	150
Single Engine Piston Aircraft						
2010	\$12,353,577,000	\$12,353,577,000	100.0	139,519	100	
2012	\$12,893,475,399	\$12,893,475,399	100.0	137,600	100	125
2015	\$13,631,595,341	\$13,631,595,341	100.0	135,010	99	122
2020	\$15,351,872,194	\$15,351,872,194	100.0	132,335	95	115
2025	\$17,423,616,449	\$17,423,616,449	100.0	132,150	91	110
2030	\$19,842,874,811	\$19,842,874,811	100.0	134,000	88	107
2035	\$22,638,802,893	\$22,638,802,893	100.0	135,850	84	104
Multi Engine Piston Aircraft						
2010	\$12,353,577,000	\$12,353,577,000	100.0	15,900	100	
2012	\$12,893,475,399	\$12,893,475,399	100.0	15,735	100	15
2015	\$13,631,595,341	\$13,631,595,341	100.0	15,570	99	15
2020	\$15,351,872,194	\$15,351,872,194	100.0	15,175	95	14
2025	\$17,423,616,449	\$17,423,616,449	100.0	14,815	91	13
2030	\$19,842,874,811	\$19,842,874,811	100.0	14,470	88	12
2035	\$22,638,802,893	\$22,638,802,893	100.0	14,125	84	11
Turboprop Aircraft						
2010	\$12,353,577,000	\$12,353,577,000	100.0	9,369	100	
2012	\$12,893,475,399	\$12,893,475,399	100.0	9,505	100	3
2015	\$13,631,595,341	\$13,631,595,341	100.0	9,720	99	3
2020	\$15,351,872,194	\$15,351,872,194	100.0	10,120	95	3
2025	\$17,423,616,449	\$17,423,616,449	100.0	10,625	91	3
2030	\$19,842,874,811	\$19,842,874,811	100.0	11,205	88	3
2035	\$22,638,802,893	\$22,638,802,893	100.0	11,785	84	3

Year	US Income (a)	Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
Microjets (g)						
2010	\$12,353,577,000	\$12,353,577,000	100.0	500	100	
2012	\$12,893,475,399	\$12,893,475,399	100.0	627	100	0
2015	\$13,631,595,341	\$13,631,595,341	100.0	885	99	0
2020	\$15,351,872,194	\$15,351,872,194	100.0	1,470	95	0
2025	\$17,423,616,449	\$17,423,616,449	100.0	2,221	91	0
2030	\$19,842,874,811	\$19,842,874,811	100.0	3,163	88	0
2035	\$22,638,802,893	\$22,638,802,893	100.0	4,105	84	0
Other Jet Aircraft						
2010	\$12,353,577,000	\$12,353,577,000	100.0	10,984	100	
2012	\$12,893,475,399	\$12,893,475,399	100.0	11,423	100	19
2015	\$13,631,595,341	\$13,631,595,341	100.0	12,455	99	21
2020	\$15,351,872,194	\$15,351,872,194	100.0	14,795	95	23
2025	\$17,423,616,449	\$17,423,616,449	100.0	17,799	91	27
2030	\$19,842,874,811	\$19,842,874,811	100.0	21,567	88	31
2035	\$22,638,802,893	\$22,638,802,893	100.0	25,335	84	35
Helicopters						
2010	\$12,353,577,000	\$12,353,577,000	100.0	10,102	100	
2012	\$12,893,475,399	\$12,893,475,399	100.0	10,720	100	4
2015	\$13,631,595,341	\$13,631,595,341	100.0	11,750	99	4
2020	\$15,351,872,194	\$15,351,872,194	100.0	13,445	95	5
2025	\$17,423,616,449	\$17,423,616,449	100.0	15,320	91	5
2030	\$19,842,874,811	\$19,842,874,811	100.0	17,400	88	6
2035	\$22,638,802,893	\$22,638,802,893	100.0	19,480	84	6
Other Aircraft						
2010	\$12,353,577,000	\$12,353,577,000	100.0	36,996	100	
2012	\$12,893,475,399	\$12,893,475,399	100.0	37,080	100	1
2015	\$13,631,595,341	\$13,631,595,341	100.0	38,680	99	1
2020	\$15,351,872,194	\$15,351,872,194	100.0	41,090	95	1
2025	\$17,423,616,449	\$17,423,616,449	100.0	43,505	91	1
2030	\$19,842,874,811	\$19,842,874,811	100.0	45,915	88	1
2035	\$22,638,802,893	\$22,638,802,893	100.0	48,325	84	1
Total Aircraft						
2010						
2012						167
2015						166
2020						161
2025						159

Year	US Income (a)	Income (b)	Income Index (c)	US Active Aircraft (d)	Based AC Index (e)	Based AC (f)
2030						160
2035						160

(a) Table 1.

(b) Table 1.

(c) County income as share of U.S. income, with 2010 share indexed to equal 100.

(d) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(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.

(g) Current number of microjets based on FAA's national aircraft registry. New microjets assumed to be 20 percent of net increase in national jet fleet based on Honeywell forecast.

Sources: As noted and HNTB analysis.

Appendix E: Projected Unconstrained Distribution of Based Aircraft by Airport and County

Table E.1: Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2015.

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Single Engine Piston (a)									
Crystal	6	1	10	152	11	1	-	15	195
Airlake	-	1	76	10	-	18	1	23	129
Lake Elmo	1	-	29	8	28	-	125	15	205
Anoka County/Blaine - Janes Field	135	1	26	62	62	2	15	34	336
Flying Cloud	1	17	25	227	6	31	2	34	341
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	14	6	1	-	3	1	25
Total MAC Airports (b)	142	20	178	464	107	52	146	122	1,231
Single Engine Piston Aircraft - Distribution (c)									
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200	0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920	0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200	0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800	0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800	0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080	0.0198
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (a)									
Crystal	-	-	-	11	1	-	-	-	12
Airlake	-	-	11	-	-	-	-	1	12
Lake Elmo	-	-	1	-	-	-	6	2	9
Anoka County/Blaine - Janes Field	16	-	4	9	5	-	-	11	45
Flying Cloud	-	-	-	-	-	-	-	1	1

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	4	-	-	-	3	-	7
Total MAC Airports (b)	16	-	20	20	6	-	9	15	86
Multi Engine Piston Aircraft - Distribution (c)									
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000	0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667	0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333	0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333	0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667	0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000	0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Turboprop (a)									
Crystal	-	-	-	1	-	-	-	-	1
Airlake	-	-	1	-	-	-	-	-	1
Lake Elmo	-	-	1	-	-	-	-	-	1
Anoka County/Blaine - Janes Field	1	-	2	2	2	-	-	1	8
Flying Cloud	-	1	-	25	-	1	-	2	29
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	5	3	1	-	-	-	9
Total MAC Airports (b)	1	1	9	31	3	1	-	3	49
Turboprop Aircraft - Distribution (c)									
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333	0.1667

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667	0.5833
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	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000	0.1875
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (a)									
Crystal	-	-	-	0	-	-	-	-	0
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	1	-	-	0	0	-	-	-	2
Flying Cloud	-	-	-	1	-	-	-	-	1
MSP	-	-	-	0	-	-	-	-	0
St. Paul Downtown-Holman Field	-	-	-	0	1	-	-	-	1
Total MAC Airports (b)	1	-	-	2	1	-	-	-	4
Microjet Aircraft - Distribution (c)									
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193	0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860	0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421	0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526	0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Other Jets (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	2	-	3	12	-	-	-	2	19

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	-	-	2	17	-	2	-	2	24
MSP	-	1	-	16	-	-	-	14	32
St. Paul Downtown-Holman Field	-	-	23	17	3	-	1	2	46
Total MAC Airports (b)	2	1	28	63	3	2	1	21	121
Other Jet Aircraft - Distribution (c)									
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053	0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053	0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842	0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053	0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Helicopter (a)									
Crystal	-	-	-	8	-	-	-	-	8
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	2	-	2
Anoka County/Blaine - Janes Field	3	-	2	1	1	-	-	-	7
Flying Cloud	-	-	-	2	-	-	-	2	4
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	3	-	-	-	-	2	5
Total MAC Airports (b)	3	-	5	11	1	-	2	4	26
Helicopter - Distribution (c)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000	0.2800
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	1.0000	0.0000	0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000	0.2800

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000	0.1600
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	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000	0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Other (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	2	-	-	-	1	3
Lake Elmo	-	-	2	-	-	-	7	-	9
Anoka County/Blaine - Janes Field	-	-	-	1	1	-	-	-	2
Flying Cloud	-	-	-	2	-	-	-	-	2
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	-	-	-	-	-	-	-
Total MAC Airports (b)	-	-	2	5	1	-	7	1	16
Other Aircraft - Distribution (c)									
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	0.4000	0.0000	0.0000	0.0000	1.0000	0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000	0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total Aircraft (d)									
Crystal	6	1	10	172	12	1	-	15	215
Airlake	-	1	88	12	-	18	1	25	145
Lake Elmo	1	-	33	8	28	-	140	17	226

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Anoka County/Blaine - Janes Field	158	1	37	87	71	2	15	48	419
Flying Cloud	1	18	27	274	6	34	2	41	402
MSP	-	1	-	17	-	-	-	14	32
St. Paul Downtown-Holman Field	-	-	48	27	6	-	7	5	93
Total MAC Airports	165	22	242	596	122	55	165	166	1,533
Total Aircraft - Distribution									
Crystal	0.0340	0.0478	0.0406	0.2883	0.0943	0.0185	0.0000	0.0882	0.1406
Airlake	0.0000	0.0478	0.3625	0.0198	0.0000	0.3337	0.0060	0.1532	0.0948
Lake Elmo	0.0057	0.0000	0.1344	0.0132	0.2271	0.0000	0.8494	0.1002	0.1473
Anoka County/Blaine - Janes Field	0.9547	0.0478	0.1521	0.1463	0.5855	0.0371	0.0903	0.2914	0.2735
Flying Cloud	0.0057	0.8110	0.1105	0.4598	0.0470	0.6107	0.0120	0.2492	0.2624
MSP	0.0000	0.0455	0.0000	0.0278	0.0000	0.0000	0.0000	0.0866	0.0208
St. Paul Downtown-Holman Field	0.0000	0.0000	0.1999	0.0449	0.0461	0.0000	0.0423	0.0312	0.0606
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

- (a) Total MAC based aircraft in county multiplied by distribution going to each airport.
(b) Appendix D.
(c) Table C.1 in Appendix C.
(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis

Table E.2: Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2020.

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Single Engine Piston (a)									
Crystal	5	1	9	144	10	1	-	14	184
Airlake	-	1	72	9	-	18	1	22	123
Lake Elmo	1	-	27	7	25	-	121	14	195
Anoka County/Blaine - Janes Field	117	1	24	59	57	2	14	32	306
Flying Cloud	1	18	23	215	5	30	2	32	326
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	13	6	1	-	3	1	23
Total MAC Airports (b)	123	21	169	440	98	51	141	115	1,158
Single Engine Piston Aircraft - Distribution (d)									
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200	0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920	0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200	0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800	0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800	0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080	0.0198
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (a)									
Crystal	-	-	-	10	1	-	-	-	11
Airlake	-	-	10	-	-	-	-	1	11
Lake Elmo	-	-	1	-	-	-	6	2	9
Anoka County/Blaine - Janes Field	14	-	4	9	4	-	-	10	41
Flying Cloud	-	-	-	-	-	-	-	1	1
MSP	-	-	-	-	-	-	-	-	-

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
St. Paul Downtown-Holman Field	-	-	4	-	-	-	3	-	7
Total MAC Airports (b)	14	-	19	19	5	-	9	14	80
Multi Engine Piston Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000	0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667	0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333	0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333	0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667	0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000	0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Turboprop (a)									
Crystal	-	-	-	1	-	-	-	-	1
Airlake	-	-	1	-	-	-	-	-	1
Lake Elmo	-	-	1	-	-	-	-	-	1
Anoka County/Blaine - Janes Field	1	-	2	2	2	-	-	1	8
Flying Cloud	-	1	-	25	-	1	-	2	29
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	5	3	1	-	-	-	9
Total MAC Airports (b)	1	1	9	31	3	1	-	3	49
Turboprop Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333	0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667	0.5833

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
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	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000	0.1875
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (a)									
Crystal	-	-	-	0	-	-	-	-	0
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	2	-	-	0	0	-	-	-	3
Flying Cloud	-	-	-	2	-	-	-	-	2
MSP	-	-	-	0	-	-	-	-	0
St. Paul Downtown-Holman Field	-	-	-	1	1	-	-	-	1
Total MAC Airports (b)	2	-	-	3	1	-	-	-	6
Microjet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193	0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860	0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421	0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526	0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Other Jets (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	2	-	4	14	-	-	-	2	22
Flying Cloud	-	-	3	20	-	3	-	2	28

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
MSP	-	2	-	19	-	-	-	16	37
St. Paul Downtown-Holman Field	-	-	27	20	4	-	1	2	54
Total MAC Airports (b)	2	2	33	73	4	3	1	23	141
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053	0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053	0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842	0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053	0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Helicopter (a)									
Crystal	-	-	-	8	-	-	-	-	8
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	2	-	2
Anoka County/Blaine - Janes Field	3	-	2	1	1	-	-	-	8
Flying Cloud	-	-	-	2	-	-	-	3	5
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	4	-	-	-	-	3	6
Total MAC Airports (b)	3	-	6	12	1	-	2	5	29
Helicopter - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000	0.2800
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	1.0000	0.0000	0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000	0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000	0.1600

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
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	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000	0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Other (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	2	-	-	-	1	3
Lake Elmo	-	-	2	-	-	-	8	-	10
Anoka County/Blaine - Janes Field	-	-	-	1	1	-	-	-	2
Flying Cloud	-	-	-	2	-	-	-	-	2
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	-	-	-	-	-	-	-
Total MAC Airports (b)	-	-	2	5	1	-	8	1	17
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	0.0000	0.4000	0.0000	0.0000	0.0000	1.0000	0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000	0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total Aircraft (d)									
Crystal	5	1	9	164	11	1	-	14	204
Airlake	-	1	83	11	-	18	1	24	138
Lake Elmo	1	-	31	7	25	-	137	16	217
Anoka County/Blaine - Janes Field	139	1	36	86	65	2	14	46	389

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	1	19	26	266	5	34	2	40	392
MSP	-	2	-	19	-	-	-	16	37
St. Paul Downtown-Holman Field	-	-	52	29	7	-	7	6	101
Total MAC Airports	145	24	238	583	113	55	161	161	1,480
Total Aircraft - Distribution									
Crystal	0.0335	0.0461	0.0392	0.2807	0.0940	0.0182	0.0000	0.0857	0.1381
Airlake	0.0000	0.0461	0.3483	0.0194	0.0000	0.3273	0.0060	0.1496	0.0935
Lake Elmo	0.0056	0.0000	0.1306	0.0128	0.2246	0.0000	0.8500	0.0981	0.1469
Anoka County/Blaine - Janes Field	0.9554	0.0461	0.1533	0.1477	0.5771	0.0364	0.0894	0.2834	0.2631
Flying Cloud	0.0056	0.7785	0.1087	0.4560	0.0465	0.6182	0.0119	0.2492	0.2652
MSP	0.0000	0.0833	0.0000	0.0330	0.0000	0.0000	0.0000	0.0977	0.0250
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2199	0.0504	0.0579	0.0000	0.0427	0.0363	0.0682
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

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

(b) Appendix D.

(c) Table C.1 in Appendix C.

(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis

Table E.3: Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2025.

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Single Engine Piston (a)									
Crystal	5	1	9	141	9	1	-	13	179
Airlake	-	1	69	9	-	18	1	21	120
Lake Elmo	1	-	26	7	24	-	117	13	188
Anoka County/Blaine - Janes Field	110	1	23	57	54	2	14	31	292
Flying Cloud	1	18	23	210	5	30	2	31	318
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	13	5	1	-	3	1	23
Total MAC Airports (b)	116	21	163	429	93	51	136	110	1,119
Single Engine Piston Aircraft - Distribution (d)									
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200	0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920	0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200	0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800	0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800	0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080	0.0198
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (a)									
Crystal	-	-	-	10	1	-	-	-	11
Airlake	-	-	10	-	-	-	-	1	11
Lake Elmo	-	-	1	-	-	-	5	2	8
Anoka County/Blaine - Janes Field	13	-	4	8	4	-	-	10	39
Flying Cloud	-	-	-	-	-	-	-	1	1

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	4	-	-	-	3	-	7
Total MAC Airports (b)	13	-	18	18	5	-	8	13	77
Multi Engine Piston Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000	0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667	0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333	0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333	0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667	0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000	0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Turboprop (a)									
Crystal	-	-	-	1	-	-	-	-	1
Airlake	-	-	1	-	-	-	-	-	1
Lake Elmo	-	-	1	-	-	-	-	-	1
Anoka County/Blaine - Janes Field	1	-	2	2	2	-	-	1	8
Flying Cloud	-	1	-	26	-	1	-	2	30
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	5	3	1	-	-	-	9
Total MAC Airports (b)	1	1	9	32	3	1	-	3	50
Turboprop Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333	0.1667

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667	0.5833
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	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000	0.1875
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (a)									
Crystal	-	-	-	0	-	-	-	-	0
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	3	-	-	1	1	-	-	-	4
Flying Cloud	-	-	-	3	-	-	-	-	3
MSP	-	-	-	1	-	-	-	-	1
St. Paul Downtown-Holman Field	-	-	-	1	1	-	-	-	2
Total MAC Airports (b)	3	-	-	5	2	-	-	-	10
Microjet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193	0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860	0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421	0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526	0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Other Jets (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	2	-	4	16	-	-	-	3	25

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	-	-	3	23	-	3	-	3	32
MSP	-	2	-	22	-	-	-	18	42
St. Paul Downtown-Holman Field	-	-	31	23	4	-	2	3	63
Total MAC Airports (b)	2	2	38	85	4	3	2	27	163
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053	0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053	0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842	0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053	0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Helicopter (a)									
Crystal	-	-	-	9	-	-	-	-	9
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	3	-	3
Anoka County/Blaine - Janes Field	3	-	3	1	1	-	-	-	8
Flying Cloud	-	-	-	3	-	-	-	3	5
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	4	-	-	-	-	3	7
Total MAC Airports (b)	3	-	7	13	1	-	3	5	32
Helicopter - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000	0.2800
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	1.0000	0.0000	0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000	0.2800

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000	0.1600
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	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000	0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Other (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	2	-	-	-	1	3
Lake Elmo	-	-	2	-	-	-	8	-	10
Anoka County/Blaine - Janes Field	-	-	-	1	1	-	-	-	2
Flying Cloud	-	-	-	2	-	-	-	-	2
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	-	-	-	-	-	-	-
Total MAC Airports (b)	-	-	2	6	1	-	8	1	18
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	0.0000	0.4000	0.0000	0.0000	0.0000	1.0000	0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000	0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total Aircraft (d)									
Crystal	5	1	9	161	10	1	-	13	200
Airlake	-	1	80	11	-	18	1	23	135
Lake Elmo	1	-	30	7	24	-	133	15	210

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Anoka County/Blaine - Janes Field	132	1	37	87	63	2	14	45	379
Flying Cloud	1	19	25	266	5	34	2	39	391
MSP	-	2	-	23	-	-	-	18	43
St. Paul Downtown-Holman Field	-	-	57	33	7	-	8	6	111
Total MAC Airports	138	24	238	588	109	55	157	160	1,469
Total Aircraft - Distribution									
Crystal	0.0332	0.0461	0.0378	0.2735	0.0930	0.0182	0.0000	0.0825	0.1360
Airlake	0.0000	0.0461	0.3376	0.0195	0.0000	0.3273	0.0059	0.1445	0.0919
Lake Elmo	0.0055	0.0000	0.1265	0.0123	0.2209	0.0000	0.8444	0.0950	0.1429
Anoka County/Blaine - Janes Field	0.9558	0.0461	0.1538	0.1472	0.5747	0.0364	0.0884	0.2790	0.2582
Flying Cloud	0.0055	0.7785	0.1069	0.4528	0.0457	0.6182	0.0118	0.2446	0.2662
MSP	0.0000	0.0833	0.0000	0.0385	0.0000	0.0000	0.0000	0.1155	0.0293
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2374	0.0562	0.0657	0.0000	0.0495	0.0389	0.0754
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

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

(b) Appendix D.

(c) Table C.1 in Appendix C.

(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis

Table E.4: Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2030.

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Single Engine Piston (a)									
Crystal	4	1	9	139	9	1	-	13	176
Airlake	-	1	68	9	-	18	1	21	117
Lake Elmo	1	-	25	7	23	-	115	13	184
Anoka County/Blaine - Janes Field	104	1	23	56	52	2	14	30	282
Flying Cloud	1	18	22	207	5	30	2	30	314
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	12	5	1	-	3	1	22
Total MAC Airports (b)	110	21	159	424	89	51	134	107	1,095
Single Engine Piston Aircraft - Distribution (d)									
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200	0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920	0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200	0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800	0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800	0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080	0.0198
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (a)									
Crystal	-	-	-	9	1	-	-	-	10
Airlake	-	-	9	-	-	-	-	1	10
Lake Elmo	-	-	1	-	-	-	5	2	8
Anoka County/Blaine - Janes Field	12	-	3	8	4	-	-	9	36
Flying Cloud	-	-	-	-	-	-	-	1	1
MSP	-	-	-	-	-	-	-	-	-

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
St. Paul Downtown-Holman Field	-	-	3	-	-	-	3	-	6
Total MAC Airports (b)	12	-	17	17	5	-	8	12	71
Multi Engine Piston Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000	0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667	0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333	0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333	0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667	0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000	0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Turboprop (a)									
Crystal	-	-	-	1	-	-	-	-	1
Airlake	-	-	1	-	-	-	-	-	1
Lake Elmo	-	-	1	-	-	-	-	-	1
Anoka County/Blaine - Janes Field	1	-	2	2	2	-	-	1	8
Flying Cloud	-	1	-	26	-	1	-	2	30
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	6	3	1	-	-	-	10
Total MAC Airports (b)	1	1	10	33	3	1	-	3	52
Turboprop Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333	0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667	0.5833

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
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	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000	0.1875
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (a)									
Crystal	-	-	-	0	-	-	-	-	0
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	4	-	-	1	1	-	-	-	6
Flying Cloud	-	-	-	4	-	-	-	-	4
MSP	-	-	-	1	-	-	-	-	1
St. Paul Downtown-Holman Field	-	-	-	1	1	-	-	-	3
Total MAC Airports (b)	4	-	-	7	2	-	-	-	13
Microjet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193	0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860	0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421	0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526	0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Other Jets (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	3	-	5	19	-	-	-	3	30
Flying Cloud	-	-	3	28	-	4	-	3	39

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
MSP	-	2	-	26	-	-	-	21	49
St. Paul Downtown-Holman Field	-	-	36	28	5	-	2	3	74
Total MAC Airports (b)	3	2	44	101	5	4	2	31	192
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053	0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053	0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842	0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053	0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Helicopter (a)									
Crystal	-	-	-	11	-	-	-	-	11
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	3	-	3
Anoka County/Blaine - Janes Field	4	-	3	2	1	-	-	-	9
Flying Cloud	-	-	-	3	-	-	-	3	6
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	4	-	-	-	-	3	7
Total MAC Airports (b)	4	-	7	15	1	-	3	6	36
Helicopter - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000	0.2800
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	1.0000	0.0000	0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000	0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000	0.1600

Airport	County of Registration								
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Total
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	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000	0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Other (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	2	-	-	-	1	3
Lake Elmo	-	-	2	-	-	-	8	-	10
Anoka County/Blaine - Janes Field	-	-	-	1	1	-	-	-	2
Flying Cloud	-	-	-	2	-	-	-	-	2
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	-	-	-	-	-	-	-
Total MAC Airports (b)	-	-	2	6	1	-	8	1	18
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	0.0000	0.4000	0.0000	0.0000	0.0000	1.0000	0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000	0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total Aircraft (d)									
Crystal	4	1	9	160	10	1	-	13	197
Airlake	-	1	78	11	-	18	1	23	132
Lake Elmo	1	-	30	7	23	-	131	15	206
Anoka County/Blaine - Janes Field	128	1	36	89	60	2	14	43	374

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	1	19	25	270	5	35	2	39	396
MSP	-	2	-	27	-	-	-	21	50
St. Paul Downtown-Holman Field	-	-	61	38	8	-	8	7	121
Total MAC Airports	134	24	238	603	106	56	155	161	1,477
Total Aircraft - Distribution									
Crystal	0.0324	0.0461	0.0369	0.2648	0.0919	0.0179	0.0000	0.0798	0.1337
Airlake	0.0000	0.0461	0.3267	0.0188	0.0000	0.3214	0.0059	0.1400	0.0892
Lake Elmo	0.0054	0.0000	0.1243	0.0119	0.2174	0.0000	0.8442	0.0922	0.1396
Anoka County/Blaine - Janes Field	0.9568	0.0461	0.1510	0.1483	0.5690	0.0357	0.0882	0.2685	0.2531
Flying Cloud	0.0054	0.7785	0.1065	0.4486	0.0450	0.6250	0.0118	0.2436	0.2682
MSP	0.0000	0.0833	0.0000	0.0448	0.0000	0.0000	0.0000	0.1317	0.0340
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2546	0.0628	0.0767	0.0000	0.0499	0.0442	0.0822
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

- (a) Total MAC based aircraft in county multiplied by distribution going to each airport.
(b) Appendix D.
(c) Table C.1 in Appendix C.
(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis.

Table E.5: Projected Unconstrained Distribution of Based Aircraft by Airport and County: 2035.

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Single Engine Piston (a)									
Crystal	4	1	9	137	8	1	-	12	172
Airlake	-	1	66	9	-	18	1	20	115
Lake Elmo	1	-	25	7	22	-	113	12	181
Anoka County/Blaine - Janes Field	99	1	22	56	50	2	13	29	272
Flying Cloud	1	19	22	204	5	30	2	29	310
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	12	5	1	-	3	1	22
Total MAC Airports (b)	104	22	156	417	86	51	132	104	1,072
Single Engine Piston Aircraft - Distribution (d)									
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200	0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920	0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200	0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800	0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800	0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080	0.0198
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Multi-Engine Piston (a)									
Crystal	-	-	-	9	1	-	-	-	10
Airlake	-	-	9	-	-	-	-	1	10
Lake Elmo	-	-	1	-	-	-	5	1	7
Anoka County/Blaine - Janes Field	11	-	3	7	3	-	-	8	32
Flying Cloud	-	-	-	-	-	-	-	1	1
MSP	-	-	-	-	-	-	-	-	-

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
St. Paul Downtown-Holman Field	-	-	3	-	-	-	2	-	5
Total MAC Airports (b)	11	-	16	16	4	-	7	11	65
Multi Engine Piston Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000	0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667	0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333	0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333	0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667	0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000	0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Turboprop (a)									
Crystal	-	-	-	1	-	-	-	-	1
Airlake	-	-	1	-	-	-	-	-	1
Lake Elmo	-	-	1	-	-	-	-	-	1
Anoka County/Blaine - Janes Field	1	-	2	2	2	-	-	1	8
Flying Cloud	-	1	-	26	-	1	-	2	30
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	6	3	1	-	-	-	10
Total MAC Airports (b)	1	1	10	33	3	1	-	3	52
Turboprop Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000	0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000	0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333	0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667	0.5833

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
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	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000	0.1875
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Microjets (a)									
Crystal	-	-	-	0	-	-	-	-	0
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	5	-	-	1	1	-	-	-	7
Flying Cloud	-	-	-	5	-	-	-	-	5
MSP	-	-	-	1	-	-	-	-	1
St. Paul Downtown-Holman Field	-	-	-	2	2	-	-	-	4
Total MAC Airports (b)	5	-	-	9	3	-	-	-	17
Microjet Aircraft - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000	0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000	0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193	0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860	0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421	0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526	0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000
Other Jets (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	-	-	-
Anoka County/Blaine - Janes Field	3	-	6	22	-	-	-	4	34
Flying Cloud	-	-	4	32	-	4	-	4	43

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
MSP	-	3	-	30	-	-	-	24	57
St. Paul Downtown-Holman Field	-	-	40	32	5	-	2	4	83
Total MAC Airports (b)	3	3	50	115	5	4	2	35	217
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053	0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053	0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842	0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053	0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Helicopter (a)									
Crystal	-	-	-	11	-	-	-	-	11
Airlake	-	-	-	-	-	-	-	-	-
Lake Elmo	-	-	-	-	-	-	3	-	3
Anoka County/Blaine - Janes Field	4	-	3	2	1	-	-	-	10
Flying Cloud	-	-	-	3	-	-	-	3	6
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	5	-	-	-	-	3	8
Total MAC Airports (b)	4	-	8	16	1	-	3	6	38
Helicopter - Distribution (d)									
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000	0.2800
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	1.0000	0.0000	0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000	0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000	0.1600

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
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	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000	0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Other (a)									
Crystal	-	-	-	-	-	-	-	-	-
Airlake	-	-	-	2	-	-	-	1	3
Lake Elmo	-	-	2	-	-	-	8	-	10
Anoka County/Blaine - Janes Field	-	-	-	1	1	-	-	-	2
Flying Cloud	-	-	-	2	-	-	-	-	2
MSP	-	-	-	-	-	-	-	-	-
St. Paul Downtown-Holman Field	-	-	-	-	-	-	-	-	-
Total MAC Airports (b)	-	-	2	6	1	-	8	1	18
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	0.0000	0.4000	0.0000	0.0000	0.0000	1.0000	0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000	0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000	0.1250
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)	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total Aircraft (d)									
Crystal	4	1	9	158	9	1	-	12	195
Airlake	-	1	76	11	-	18	1	22	130
Lake Elmo	1	-	29	7	22	-	129	13	202
Anoka County/Blaine - Janes Field	123	1	37	91	58	2	13	42	366

Airport	County of Registration								Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	
Flying Cloud	1	20	25	272	5	35	2	39	398
MSP	-	3	-	31	-	-	-	24	58
St. Paul Downtown-Holman Field	-	-	66	42	9	-	7	8	131
Total MAC Airports	128	26	242	612	103	56	152	160	1,479

Total Aircraft - Distribution									
Crystal	0.0321	0.0445	0.0356	0.2583	0.0917	0.0179	0.0000	0.0780	0.1318
Airlake	0.0000	0.0445	0.3160	0.0183	0.0000	0.3214	0.0059	0.1373	0.0877
Lake Elmo	0.0053	0.0000	0.1203	0.0115	0.2162	0.0000	0.8496	0.0843	0.1364
Anoka County/Blaine - Janes Field	0.9572	0.0445	0.1512	0.1479	0.5622	0.0357	0.0886	0.2613	0.2474
Flying Cloud	0.0053	0.7510	0.1049	0.4448	0.0447	0.6250	0.0118	0.2425	0.2691
MSP	0.0000	0.1154	0.0000	0.0505	0.0000	0.0000	0.0000	0.1497	0.0391
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2719	0.0686	0.0851	0.0000	0.0440	0.0470	0.0884
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

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

(b) Appendix D.

(c) Table C.1 in Appendix C.

(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis.

Appendix F: Projected Constrained Distribution of Based Aircraft by Airport and County

Table F.1: Estimated Distribution of Aircraft on Waiting Lists.

	Total post 2012 (a)	90% of total (b)	Estimated Distribution by Type (c)							Total
			SEP	MEP	TP	Microjets	Other Jets	HEL	Other	
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	20	18	17	1	0	0	0	0	0	18
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	27	24	20	3	0	0	1	0	0	24
Flying Cloud MSP	27	24	21	0	2	0	1	0	0	24
St. Paul Downtown-Holman Field	7	6	2	0	1	0	3	0	0	6
Distribution of Existing Based Aircraft by Type (d)										
Crystal			199	12	1	0	0	7	0	219
Airlake			131	12	1	0	0	0	3	147
Lake Elmo			208	9	1	0	0	2	9	229
Anoka County/Blaine - Janes Field			351	46	8	1	18	7	2	433
Flying Cloud MSP			346	1	28	0	22	4	2	403
St. Paul Downtown-Holman Field			25	7	9	0	43	5	0	89

(a) Metropolitan Airports Commission. Waiting list in 2011 is used as a proxy for waiting list in 2012.

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

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
Single Engine Piston (b)										
Crystal	6	1	10	152	10	1	-	15	0	195
Airlake	-	1	76	10	-	18	1	23	8	137
Lake Elmo	1	-	28	8	28	-	125	15	0	205
Anoka County/Blaine - Janes Field	134	1	25	62	62	2	15	34	10	345
Flying Cloud	1	17	25	226	6	31	2	34	10	352
MSP	-	-	-	-	-	-	-	-	0	0
St. Paul Downtown-Holman Field	-	-	14	6	1	-	3	1	1	26
Total MAC Airports	142	20	178	464	107	52	146	122		1260
Single Engine Piston Aircraft - Distribution (c)										
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200		0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920		0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200		0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800		0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800		0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080		0.0198
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	11	1	0	0	0	0	12
Airlake	0	0	11	0	0	0	0	1	1	13
Lake Elmo	0	0	1	0	0	0	6	2	0	9
Anoka County/Blaine - Janes Field	16	0	4	9	5	0	0	11	1	46
Flying Cloud	0	0	0	0	0	0	0	1	0	1

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	4	0	0	0	3	0	0	7
Total MAC Airports	16	0	20	20	6	0	9	15		88
Multi Engine Piston Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000		0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667		0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333		0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333		0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667		0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000		0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Turboprop (b)										
Crystal	0	0	0	1	0	0	0	0	0	1
Airlake	0	0	1	0	0	0	0	0	0	1
Lake Elmo	0	0	1	0	0	0	0	0	0	1
Anoka County/Blaine - Janes Field	1	0	2	2	2	0	0	1	0	8
Flying Cloud	0	1	0	25	0	1	0	2	1	30
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	5	3	1	0	0	0	1	10
Total MAC Airports	1	1	9	31	3	1	0	3		51
Turboprop Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000		0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333		0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667		0.5833

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
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	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000		0.1875
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	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	1	0	0	0	0	0	0	0	0	1
Flying Cloud	0	0	0	1	0	0	0	0	0	1
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	1	1	0	0	0	0	2
Total MAC Airports	1	0	0	2	1	0	0	0	0	4
Microjet Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000		0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193		0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860		0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421		0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526		0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000		1.0000
Other Jets (b)										
Crystal	-	-	-	-	-	-	-	-	0	0
Airlake	-	-	-	-	-	-	-	-	0	0
Lake Elmo	-	-	-	-	-	-	-	-	0	0
Anoka County/Blaine - Janes Field	2	-	3	13	-	-	-	2	1	21
Flying Cloud	-	-	2	18	-	2	-	3	1	26

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
MSP	-	1	-	14	-	-	-	14	0	29
St. Paul Downtown-Holman Field	-	-	23	18	3	-	1	2	4	51
Total MAC Airports	2	1	28	63	3	2	1	21		127

Other Jet Aircraft - Distribution (c)

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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053		0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053		0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842		0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053		0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000

Helicopter (b)

Crystal	0	0	0	8	0	0	0	0	0	8
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	2	0	0	2
Anoka County/Blaine - Janes Field	3	0	2	1	1	0	0	0	0	7
Flying Cloud	0	0	0	2	0	0	0	2	0	4
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	3	0	0	0	0	2	0	5
Total MAC Airports	3	0	5	11	1	0	2	4		26

Helicopter - Distribution (c)

Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000		0.2800
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	1.0000	0.0000		0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000		0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000		0.1600

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
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	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000		0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Other (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	2	0	0	0	1	0	3
Lake Elmo	0	0	2	0	0	0	7	0	0	9
Anoka County/Blaine - Janes Field	0	0	0	1	1	0	0	0	0	2
Flying Cloud	0	0	0	2	0	0	0	0	0	2
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	2	5	1	0	7	1		16
Other Aircraft - Distribution (c)										
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	0.4000	0.0000	0.0000	0.0000	1.0000		0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000		0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000		0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Total Aircraft (d)										
Crystal	6	1	10	172	11	1	0	15	0	216
Airlake	0	1	88	12	0	18	1	25	9	154
Lake Elmo	1	0	32	8	28	0	140	17	0	226
Anoka County/Blaine - Janes Field	157	1	36	88	71	2	15	48	12	430
Flying Cloud	1	18	27	274	6	34	2	42	12	416

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
MSP	0	1	0	14	0	0	0	14	0	29
St. Paul Downtown-Holman Field	0	0	49	28	6	0	7	5	6	101
Total MAC Airports	165	22	242	596	122	55	165	166	39	1572
Total Aircraft - Distribution										
Crystal	0.0364	0.0455	0.0413	0.2886	0.0902	0.0182	0.0000	0.0904		0.1374
Airlake	0.0000	0.0455	0.3636	0.0201	0.0000	0.3273	0.0061	0.1506		0.0980
Lake Elmo	0.0061	0.0000	0.1322	0.0134	0.2295	0.0000	0.8485	0.1024		0.1438
Anoka County/Blaine - Janes Field	0.9515	0.0455	0.1488	0.1477	0.5820	0.0364	0.0909	0.2892		0.2735
Flying Cloud	0.0061	0.8182	0.1116	0.4597	0.0492	0.6182	0.0121	0.2530		0.2646
MSP	0.0000	0.0455	0.0000	0.0235	0.0000	0.0000	0.0000	0.0843		0.0184
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2025	0.0470	0.0492	0.0000	0.0424	0.0301		0.0642
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000

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

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

(c) Table C.1 in Appendix C.

(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis

Table F.3: 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		
Single Engine Piston (b)										
Crystal	5	1	9	144	10	1	0	14	0	184
Airlake	0	1	72	9	0	18	1	22	16	139
Lake Elmo	1	0	27	7	25	0	121	14	0	195
Anoka County/Blaine - Janes Field	116	1	24	59	57	2	14	32	17	322
Flying Cloud	1	18	24	215	5	30	2	32	20	347
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	13	6	1	0	3	1	2	26
Total MAC Airports	123	21	169	440	98	51	141	115		1213
Single Engine Piston Aircraft - Distribution (c)										
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200		0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920		0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200		0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800		0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800		0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080		0.0198
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	10	1	0	0	0	0	11
Airlake	0	0	10	0	0	0	0	1	1	12
Lake Elmo	0	0	1	0	0	0	6	2	0	9
Anoka County/Blaine - Janes Field	14	0	4	9	4	0	0	10	3	44
Flying Cloud	0	0	0	0	0	0	0	1	0	1
MSP	0	0	0	0	0	0	0	0	0	0

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0	0	4	0	0	0	3	0	0	7
Total MAC Airports	14	0	19	19	5	0	9	14		84
Multi Engine Piston Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000		0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667		0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333		0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333		0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667		0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000		0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Turboprop (b)										
Crystal	0	0	0	1	0	0	0	0	0	1
Airlake	0	0	1	0	0	0	0	0	0	1
Lake Elmo	0	0	1	0	0	0	0	0	0	1
Anoka County/Blaine - Janes Field	1	0	2	2	2	0	0	1	0	8
Flying Cloud	0	1	0	25	0	1	0	2	2	31
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	5	3	1	0	0	0	1	10
Total MAC Airports	1	1	9	31	3	1	0	3		52
Turboprop Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000		0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333		0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667		0.5833
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0.0000	0.0000	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000		0.1875
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	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	2	0	0	0	0	0	0	0	0	2
Flying Cloud	0	0	0	2	0	0	0	0	0	2
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	1	1	0	0	0	0	2
Total MAC Airports	2	0	0	3	1	0	0	0		6
Microjet Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000		0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193		0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860		0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421		0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526		0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000		1.0000
Other Jets (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
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	4	15	0	0	0	3	2	26
Flying Cloud	0	1	3	22	0	3	0	3	2	34
MSP	0	1	0	14	0	0	0	14	0	29

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0	0	26	21	4	0	1	3	10	65
Total MAC Airports	2	2	33	73	4	3	1	23		155
Other Jet Aircraft - Distribution (c)										
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053		0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053		0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842		0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053		0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Helicopter (b)										
Crystal	0	0	0	9	0	0	0	0	0	9
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	3	0	0	3
Anoka County/Blaine - Janes Field	3	0	3	1	1	0	0	0	0	8
Flying Cloud	0	0	0	3	0	0	0	3	0	6
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	4	0	0	0	0	2	0	6
Total MAC Airports	3	0	7	13	1	0	3	5		32
Helicopter - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000		0.2800
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	1.0000	0.0000		0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000		0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000		0.1600
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000		0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Other (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	3	0	0	0	1	0	4
Lake Elmo	0	0	2	0	0	0	8	0	0	10
Anoka County/Blaine - Janes Field	0	0	0	1	1	0	0	0	0	2
Flying Cloud	0	0	0	2	0	0	0	0	0	2
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	2	6	1	0	8	1		18
Other Aircraft - Distribution (c)										
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	0.4000	0.0000	0.0000	0.0000	1.0000		0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000		0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000		0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Total Aircraft (d)										
Crystal	5	1	9	164	11	1	0	14	0	205
Airlake	0	1	83	13	0	18	1	24	17	157
Lake Elmo	1	0	31	7	25	0	138	16	0	218
Anoka County/Blaine - Janes Field	138	1	37	87	65	2	14	46	22	412
Flying Cloud	1	20	27	269	5	34	2	41	24	423
MSP	0	1	0	14	0	0	0	14	0	29

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
St. Paul Downtown-Holman Field	0	0	52	31	7	0	7	6	13	116
Total MAC Airports	145	24	239	585	113	55	162	161	76	1560
Total Aircraft - Distribution										
Crystal	0.0345	0.0417	0.0377	0.2803	0.0973	0.0182	0.0000	0.0870		0.1314
Airlake	0.0000	0.0417	0.3473	0.0222	0.0000	0.3273	0.0062	0.1491		0.1006
Lake Elmo	0.0069	0.0000	0.1297	0.0120	0.2212	0.0000	0.8519	0.0994		0.1397
Anoka County/Blaine - Janes Field	0.9517	0.0417	0.1548	0.1487	0.5752	0.0364	0.0864	0.2857		0.2641
Flying Cloud	0.0069	0.8333	0.1130	0.4598	0.0442	0.6182	0.0123	0.2547		0.2712
MSP	0.0000	0.0417	0.0000	0.0239	0.0000	0.0000	0.0000	0.0870		0.0186
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2176	0.0530	0.0619	0.0000	0.0432	0.0373		0.0744
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000

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

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

(c) Table C.1 in Appendix C.

(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis

Table F.4: Projected Constrained Distribution of Based Aircraft by Airport and County: 2025.

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
Single Engine Piston (b)										
Crystal	5	1	9	141	9	1	0	13	0	179
Airlake	0	1	71	9	0	18	1	21	16	137
Lake Elmo	1	0	26	7	24	0	116	13	0	187
Anoka County/Blaine - Janes Field	109	1	23	57	54	2	14	31	18	309
Flying Cloud	1	18	23	211	5	30	2	31	20	341
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	11	4	1	0	3	1	0	20
Total MAC Airports	116	21	163	429	93	51	136	110		1173
Single Engine Piston Aircraft - Distribution (c)										
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200		0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920		0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200		0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800		0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800		0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080		0.0198
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	10	1	0	0	0	0	11
Airlake	0	0	9	0	0	0	0	1	1	11
Lake Elmo	0	0	1	0	0	0	5	2	0	8
Anoka County/Blaine - Janes Field	13	0	4	8	4	0	0	9	3	41
Flying Cloud	0	0	0	0	0	0	0	1	0	1
MSP	0	0	0	0	0	0	0	0	0	0

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
St. Paul Downtown-Holman Field	0	0	4	0	0	0	3	0	0	7
Total MAC Airports	13	0	18	18	5	0	8	13		79
Multi Engine Piston Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000		0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667		0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333		0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333		0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667		0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000		0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Turboprop (b)										
Crystal	0	0	0	1	0	0	0	0	0	1
Airlake	0	0	1	0	0	0	0	0	0	1
Lake Elmo	0	0	1	0	0	0	0	0	0	1
Anoka County/Blaine - Janes Field	1	0	2	2	2	0	0	1	0	8
Flying Cloud	0	1	0	26	0	1	0	2	2	30
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	5	3	1	0	0	0	1	9
Total MAC Airports	1	1	9	32	3	1	0	3		50
Turboprop Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000		0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333		0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667		0.5833
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0.0000	0.0000	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000		0.1875
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	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	0	1	1	0	0	0	0	5
Flying Cloud	0	0	0	3	0	0	0	0	0	3
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	1	1	0	0	0	0	2
Total MAC Airports	3	0	0	5	2	0	0	0		10
Microjet Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000		0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193		0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860		0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421		0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526		0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000		1.0000
Other Jets (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	1	0	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	4	18	0	0	0	5	2	31
Flying Cloud	0	1	3	27	0	3	0	4	2	40
MSP	0	1	0	14	0	0	0	14	0	29

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
St. Paul Downtown-Holman Field	0	0	30	26	4	0	2	4	11	77
Total MAC Airports	2	2	38	85	4	3	2	27		178
Other Jet Aircraft - Distribution (c)										
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053		0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053		0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842		0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053		0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Helicopter (b)										
Crystal	0	0	0	9	0	0	0	0	0	9
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	3	0	0	3
Anoka County/Blaine - Janes Field	3	0	3	1	1	0	0	0	0	8
Flying Cloud	0	0	0	3	0	0	0	3	0	6
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	4	0	0	0	0	2	0	6
Total MAC Airports	3	0	7	13	1	0	3	5		32
Helicopter - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000		0.2800
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	1.0000	0.0000		0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000		0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000		0.1600
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000		0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Other (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	3	0	0	0	1	0	4
Lake Elmo	0	0	2	0	0	0	8	0	0	10
Anoka County/Blaine - Janes Field	0	0	0	1	1	0	0	0	0	2
Flying Cloud	0	0	0	2	0	0	0	0	0	2
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	2	6	1	0	8	1		18
Other Aircraft - Distribution (c)										
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	0.4000	0.0000	0.0000	0.0000	1.0000		0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000		0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000		0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Total Aircraft (d)										
Crystal	5	1	9	161	10	1	0	13	0	200
Airlake	0	1	82	12	0	18	1	23	17	154
Lake Elmo	1	0	30	7	24	0	132	15	0	209
Anoka County/Blaine - Janes Field	131	1	36	88	63	2	14	46	23	404
Flying Cloud	1	20	26	272	5	34	2	41	24	425
MSP	0	1	0	14	0	0	0	14	0	29

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
St. Paul Downtown-Holman Field	0	0	54	34	7	0	8	7	12	122
Total MAC Airports	138	24	237	588	109	55	157	159	76	1543
Total Aircraft - Distribution										
Crystal	0.0362	0.0417	0.0380	0.2738	0.0917	0.0182	0.0000	0.0818		0.1296
Airlake	0.0000	0.0417	0.3460	0.0204	0.0000	0.3273	0.0064	0.1447		0.0998
Lake Elmo	0.0072	0.0000	0.1266	0.0119	0.2202	0.0000	0.8408	0.0943		0.1355
Anoka County/Blaine - Janes Field	0.9493	0.0417	0.1519	0.1497	0.5780	0.0364	0.0892	0.2893		0.2618
Flying Cloud	0.0072	0.8333	0.1097	0.4626	0.0459	0.6182	0.0127	0.2579		0.2754
MSP	0.0000	0.0417	0.0000	0.0238	0.0000	0.0000	0.0000	0.0881		0.0188
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2278	0.0578	0.0642	0.0000	0.0510	0.0440		0.0791
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000

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

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

(c) Table C.1 in Appendix C.

(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis

Table F.5: Projected Constrained Distribution of Based Aircraft by Airport and County: 2030.

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
Single Engine Piston (b)										
Crystal	4	1	9	141	9	1	0	13	0	178
Airlake	0	1	72	9	0	18	1	20	15	136
Lake Elmo	1	0	27	7	23	0	116	13	0	187
Anoka County/Blaine - Janes Field	104	1	24	57	51	2	14	30	17	300
Flying Cloud	1	18	23	209	5	30	2	30	20	338
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	4	1	1	0	1	1	0	8
Total MAC Airports	110	21	159	424	89	51	134	107		1147
Single Engine Piston Aircraft - Distribution (c)										
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200		0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920		0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200		0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800		0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800		0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080		0.0198
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	9	1	0	0	0	0	10
Airlake	0	0	12	0	0	0	0	1	1	14
Lake Elmo	0	0	1	0	0	0	7	2	0	10
Anoka County/Blaine - Janes Field	12	0	3	8	4	0	0	8	2	37
Flying Cloud	0	0	0	0	0	0	0	1	0	1
MSP	0	0	0	0	0	0	0	0	0	0

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0	0	1	0	0	0	1	0	0	2
Total MAC Airports	12	0	17	17	5	0	8	12		74
Multi Engine Piston Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000		0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667		0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333		0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333		0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667		0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000		0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Turboprop (b)										
Crystal	0	0	0	1	0	0	0	0	0	1
Airlake	0	0	1	0	0	0	0	0	0	1
Lake Elmo	0	0	1	0	0	0	0	0	0	1
Anoka County/Blaine - Janes Field	1	0	2	2	2	0	0	1	0	8
Flying Cloud	0	1	0	27	0	1	0	2	2	33
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	6	3	1	0	0	0	1	11
Total MAC Airports	1	1	10	33	3	1	0	3		55
Turboprop Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000		0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333		0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667		0.5833
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0.0000	0.0000	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000		0.1875
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	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	4	0	0	1	1	0	0	0	0	6
Flying Cloud	0	0	0	5	0	0	0	0	0	5
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	1	1	0	0	0	0	2
Total MAC Airports	4	0	0	7	2	0	0	0		13
Microjet Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000		0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193		0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860		0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421		0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526		0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000		1.0000
Other Jets (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	2	0	0	0	0	0	0	2
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	5	22	0	0	0	6	2	38
Flying Cloud	0	1	3	33	0	4	0	5	2	48
MSP	0	1	0	14	0	0	0	14	0	29

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0	0	34	32	5	0	2	6	13	92
Total MAC Airports	3	2	44	101	5	4	2	31		209
Other Jet Aircraft - Distribution (c)										
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053		0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053		0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842		0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053		0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Helicopter (b)										
Crystal	0	0	0	10	0	0	0	0	0	10
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	3	0	0	3
Anoka County/Blaine - Janes Field	4	0	3	2	1	0	0	0	0	10
Flying Cloud	0	0	0	3	0	0	0	3	0	6
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	4	0	0	0	0	3	0	7
Total MAC Airports	4	0	7	15	1	0	3	6		36
Helicopter - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000		0.2800
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	1.0000	0.0000		0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000		0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000		0.1600
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000		0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Other (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	3	0	0	0	1	0	4
Lake Elmo	0	0	2	0	0	0	8	0	0	10
Anoka County/Blaine - Janes Field	0	0	0	1	1	0	0	0	0	2
Flying Cloud	0	0	0	2	0	0	0	0	0	2
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	2	6	1	0	8	1		18
Other Aircraft - Distribution (c)										
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	0.4000	0.0000	0.0000	0.0000	1.0000		0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000		0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000		0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Total Aircraft (d)										
Crystal	4	1	9	161	10	1	0	13	0	199
Airlake	0	1	87	12	0	18	1	22	16	157
Lake Elmo	1	0	31	7	23	0	134	15	0	211
Anoka County/Blaine - Janes Field	128	1	37	93	60	2	14	45	21	401
Flying Cloud	1	20	26	279	5	35	2	41	24	433
MSP	0	1	0	14	0	0	0	14	0	29

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0	0	49	37	8	0	4	10	14	122
Total MAC Airports	134	24	239	603	106	56	155	160	75	1552
Total Aircraft - Distribution										
Crystal	0.0299	0.0417	0.0377	0.2670	0.0943	0.0179	0.0000	0.0813		0.1282
Airlake	0.0000	0.0417	0.3640	0.0199	0.0000	0.3214	0.0065	0.1375		0.1012
Lake Elmo	0.0075	0.0000	0.1297	0.0116	0.2170	0.0000	0.8645	0.0938		0.1360
Anoka County/Blaine - Janes Field	0.9552	0.0417	0.1548	0.1542	0.5660	0.0357	0.0903	0.2813		0.2584
Flying Cloud	0.0075	0.8333	0.1088	0.4627	0.0472	0.6250	0.0129	0.2563		0.2790
MSP	0.0000	0.0417	0.0000	0.0232	0.0000	0.0000	0.0000	0.0875		0.0187
St. Paul Downtown-Holman Field	0.0000	0.0000	0.2050	0.0614	0.0755	0.0000	0.0258	0.0625		0.0786
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000

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

(b) Unconstrained aircraft from Appendix E with aircraft that cannot be accommodated at MSP and STP redistributed. See text for details.

(c) Table C.1 in Appendix C.

(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis

Table F.6: Projected Constrained Distribution of Based Aircraft by Airport and County: 2035.

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
Single Engine Piston (b)										
Crystal	4	1	9	138	8	1	0	12	0	173
Airlake	0	1	72	9	0	18	1	20	15	136
Lake Elmo	1	0	27	7	22	0	116	12	0	185
Anoka County/Blaine - Janes Field	98	1	24	57	51	2	13	30	17	293
Flying Cloud	1	19	24	206	5	30	2	30	20	337
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	104	22	156	417	86	51	132	104		1124
Single Engine Piston Aircraft - Distribution (c)										
Crystal	0.0395	0.0526	0.0552	0.3277	0.0982	0.0196	0.0000	0.1200		0.1579
Airlake	0.0000	0.0526	0.4254	0.0211	0.0000	0.3529	0.0068	0.1920		0.1040
Lake Elmo	0.0066	0.0000	0.1602	0.0169	0.2589	0.0000	0.8571	0.1200		0.1651
Anoka County/Blaine - Janes Field	0.9474	0.0526	0.1436	0.1332	0.5804	0.0392	0.1020	0.2800		0.2786
Flying Cloud	0.0066	0.8421	0.1381	0.4884	0.0536	0.5882	0.0136	0.2800		0.2746
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	0.0773	0.0127	0.0089	0.0000	0.0204	0.0080		0.0198
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	9	1	0	0	0	0	10
Airlake	0	0	12	0	0	0	0	1	1	14
Lake Elmo	0	0	1	0	0	0	7	1	0	9
Anoka County/Blaine - Janes Field	11	0	3	7	3	0	0	8	2	34
Flying Cloud	0	0	0	0	0	0	0	1	0	1
MSP	0	0	0	0	0	0	0	0	0	0

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0	0	0	0	0	0	0	0	0	0
Total MAC Airports	11	0	16	16	4	0	7	11		68
Multi Engine Piston Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.5500	0.1667	0.0000	0.0000	0.0000		0.1379
Airlake	0.0000	0.0000	0.5500	0.0000	0.0000	0.0000	0.0000	0.0667		0.1379
Lake Elmo	0.0000	0.0000	0.0500	0.0000	0.0000	0.0000	0.6667	0.1333		0.1034
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2000	0.4500	0.8333	0.0000	0.0000	0.7333		0.5287
Flying Cloud	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0667		0.0115
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	0.2000	0.0000	0.0000	0.0000	0.3333	0.0000		0.0805
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Turboprop (b)										
Crystal	0	0	0	1	0	0	0	0	0	1
Airlake	0	0	2	0	0	0	0	0	0	2
Lake Elmo	0	0	1	0	0	0	0	0	0	1
Anoka County/Blaine - Janes Field	1	0	4	2	2	0	0	1	0	10
Flying Cloud	0	1	0	29	0	1	0	2	2	35
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	3	1	1	0	0	0	1	6
Total MAC Airports	1	1	10	33	3	1	0	3		55
Turboprop Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0333	0.0000	0.0000	0.0000	0.0000		0.0208
Airlake	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Lake Elmo	0.0000	0.0000	0.1111	0.0000	0.0000	0.0000	0.0000	0.0000		0.0208
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.2222	0.0667	0.6667	0.0000	0.0000	0.3333		0.1667
Flying Cloud	0.0000	1.0000	0.0000	0.8000	0.0000	1.0000	0.0000	0.6667		0.5833
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0.0000	0.0000	0.5556	0.1000	0.3333	0.0000	0.0000	0.0000		0.1875
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	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	5	0	0	1	1	0	0	0	0	7
Flying Cloud	0	0	0	6	0	0	0	0	0	6
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	0	2	2	0	0	0	0	4
Total MAC Airports	5	0	0	9	3	0	0	0		17
Microjet Aircraft - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.0167	0.0000	0.0000	0.0000	0.0000		0.0104
Airlake	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Lake Elmo	0.0000	0.0000	0.0556	0.0000	0.0000	0.0000	0.0000	0.0000		0.0104
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.1688	0.1282	0.3333	0.0000	0.0000	0.2193		0.1637
Flying Cloud	0.0000	0.5000	0.0385	0.5379	0.0000	1.0000	0.0000	0.3860		0.3899
MSP	0.0000	0.5000	0.0000	0.1293	0.0000	0.0000	0.0000	0.3421		0.1295
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6816	0.1879	0.6667	0.0000	0.0000	0.0526		0.2857
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000		1.0000
Other Jets (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	2	0	0	0	0	0	0	2
Lake Elmo	0	0	0	0	0	0	0	0	0	0
Anoka County/Blaine - Janes Field	3	0	6	26	0	0	0	7	2	44
Flying Cloud	0	2	4	38	0	4	0	7	3	58
MSP	0	1	0	14	0	0	0	14	0	29

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0	0	38	37	5	0	2	7	15	104
Total MAC Airports	3	3	50	115	5	4	2	35		237
Other Jet Aircraft - Distribution (c)										
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	0.1154	0.1897	0.0000	0.0000	0.0000	0.1053		0.1607
Flying Cloud	0.0000	0.0000	0.0769	0.2759	0.0000	1.0000	0.0000	0.1053		0.1964
MSP	0.0000	1.0000	0.0000	0.2586	0.0000	0.0000	0.0000	0.6842		0.2589
St. Paul Downtown-Holman Field	0.0000	0.0000	0.8077	0.2759	1.0000	0.0000	1.0000	0.1053		0.3839
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000
Helicopter (b)										
Crystal	0	0	0	11	0	0	0	0	0	11
Airlake	0	0	0	0	0	0	0	0	0	0
Lake Elmo	0	0	0	0	0	0	3	0	0	3
Anoka County/Blaine - Janes Field	4	0	3	2	1	0	0	0	0	10
Flying Cloud	0	0	0	3	0	0	0	3	0	6
MSP	0	0	0	0	0	0	0	0	0	0
St. Paul Downtown-Holman Field	0	0	5	0	0	0	0	3	0	8
Total MAC Airports	4	0	8	16	1	0	3	6		38
Helicopter - Distribution (c)										
Crystal	0.0000	0.0000	0.0000	0.7000	0.0000	0.0000	0.0000	0.0000		0.2800
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	1.0000	0.0000		0.0800
Anoka County/Blaine - Janes Field	1.0000	0.0000	0.4000	0.1000	1.0000	0.0000	0.0000	0.0000		0.2800
Flying Cloud	0.0000	0.0000	0.0000	0.2000	0.0000	0.0000	0.0000	0.5000		0.1600
MSP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

Airport	County of Registration								Wait List (a)	Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other		
St. Paul Downtown-Holman Field	0.0000	0.0000	0.6000	0.0000	0.0000	0.0000	0.0000	0.5000		0.2000
Total MAC Airports	1.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Other (b)										
Crystal	0	0	0	0	0	0	0	0	0	0
Airlake	0	0	0	3	0	0	0	1	0	4
Lake Elmo	0	0	2	0	0	0	8	0	0	10
Anoka County/Blaine - Janes Field	0	0	0	1	1	0	0	0	0	2
Flying Cloud	0	0	0	2	0	0	0	0	0	2
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	2	6	1	0	8	1		18
Other Aircraft - Distribution (c)										
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	0.4000	0.0000	0.0000	0.0000	1.0000		0.1875
Lake Elmo	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000	0.0000		0.5625
Anoka County/Blaine - Janes Field	0.0000	0.0000	0.0000	0.2000	1.0000	0.0000	0.0000	0.0000		0.1250
Flying Cloud	0.0000	0.0000	0.0000	0.4000	0.0000	0.0000	0.0000	0.0000		0.1250
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	0.0000	0.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000		1.0000
Total Aircraft (d)										
Crystal	4	1	9	159	9	1	0	12	0	195
Airlake	0	1	88	12	0	18	1	22	16	158
Lake Elmo	1	0	31	7	22	0	134	13	0	208
Anoka County/Blaine - Janes Field	122	1	40	96	59	2	13	46	21	400
Flying Cloud	1	22	28	284	5	35	2	43	25	445
MSP	0	1	0	14	0	0	0	14	0	29

Airport	County of Registration									Total
	Anoka	Carver	Dakota	Hennepin	Ramsey	Scott	Washington	Other	Wait List (a)	
St. Paul Downtown-Holman Field	0	0	46	40	8	0	2	10	16	122
Total MAC Airports	128	26	242	612	103	56	152	160	78	1557
Total Aircraft - Distribution										
Crystal	0.0313	0.0385	0.0372	0.2598	0.0874	0.0179	0.0000	0.0750		0.1252
Airlake	0.0000	0.0385	0.3636	0.0196	0.0000	0.3214	0.0066	0.1375		0.1015
Lake Elmo	0.0078	0.0000	0.1281	0.0114	0.2136	0.0000	0.8816	0.0813		0.1336
Anoka County/Blaine - Janes Field	0.9531	0.0385	0.1653	0.1569	0.5728	0.0357	0.0855	0.2875		0.2569
Flying Cloud	0.0078	0.8462	0.1157	0.4641	0.0485	0.6250	0.0132	0.2688		0.2858
MSP	0.0000	0.0385	0.0000	0.0229	0.0000	0.0000	0.0000	0.0875		0.0186
St. Paul Downtown-Holman Field	0.0000	0.0000	0.1901	0.0654	0.0777	0.0000	0.0132	0.0625		0.0784
Total MAC Airports	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000		1.0000

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

(b) Unconstrained aircraft from Appendix E with aircraft that cannot be accommodated at MSP and STP redistributed. See text for details.

(c) Table C.1 in Appendix C.

(d) Sum of forecasts for individual aircraft categories.

Sources: As noted and HNTB analysis

Appendix G: Based Aircraft Forecast by Category

Table G.1: Summary of Based Aircraft Forecast: Anoka County Airport.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2012	351	46	8	1	18	7	2	433
2015	345	46	8	1	21	7	2	430
2020	322	44	8	2	26	8	2	412
2025	309	41	8	5	31	8	2	404
2030	300	37	8	6	38	10	2	401
2035	293	34	10	7	44	10	2	400
	Average Annual Growth Rate							
	-0.8%	-1.3%	1.0%	8.8%	4.0%	1.6%	0.0%	-0.3%

Source: Appendix F.

Table G.2: Summary of Based Aircraft Forecast: Flying Cloud.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2012	346	1	28	0	22	4	2	403
2015	352	1	30	1	26	4	2	416
2020	347	1	31	2	34	6	2	423
2025	341	1	30	3	40	6	2	423
2030	338	1	33	5	48	6	2	433
2035	337	1	35	6	58	6	2	445
	Average Annual Growth Rate							
	-0.1%	0.0%	1.0%	0.0%	4.3%	1.8%	0.0%	0.3%

Source: Appendix F.

Table G.3: Summary of Based Aircraft Forecast: MSP.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2012	0	0	0	0	29	0	0	29
2015	0	0	0	0	29	0	0	29
2020	0	0	0	0	29	0	0	29
2025	0	0	0	0	29	0	0	29
2030	0	0	0	0	29	0	0	29
2035	0	0	0	0	29	0	0	29
Average Annual Growth Rate								
	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Appendix F.

Table G.4: Summary of Based Aircraft Forecast: St. Paul Downtown.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2012	25	7	9	0	43	5	0	89
2015	26	7	10	2	51	5	0	101
2020	26	7	10	2	65	6	0	116
2025	20	7	9	2	77	6	0	121
2030	8	2	11	2	92	7	0	122
2035	0	0	6	4	104	8	0	122
	Average Annual Growth Rate							
	-100.0%	-100.0%	-1.7%	0.0%	3.9%	2.4%	0.0%	0.9%

Source: Appendix F.

Appendix H: Aircraft Operations Forecast

Table H.1: Aircraft Operations Forecast: Crystal.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
Based Aircraft Forecast (a)								
2012	199	12	1	0	0	7	0	219
2015	195	12	1	0	0	8	0	216
2020	184	11	1	0	0	9	0	205
2025	179	11	1	0	0	9	0	200
2030	178	10	1	0	0	10	0	199
2035	173	10	1	0	0	11	0	195
FAA Forecast of Active Aircraft (b)								
2012	137,600	15,735	9,505	627	11,423	10,720	37,080	222,690
2015	135,010	15,570	9,720	885	12,455	11,750	38,680	224,070
2020	132,335	15,175	10,120	1,470	14,795	13,445	41,090	228,430
2025	132,150	14,815	10,625	2,221	17,799	15,320	43,505	236,435
2030	134,000	14,470	11,205	3,163	21,567	17,400	45,915	247,720
2035	135,850	14,125	11,785	4,105	25,335	19,480	48,325	259,005
FAA Forecast of Hours Flown (000's) (c)								

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2012	11,391	1,776	2,409	1,000	3,037	3,362	1,754	24,728
2015	10,594	1,728	2,554	1,205	3,660	3,620	2,034	25,396
2020	10,125	1,667	2,704	1,489	4,520	4,142	2,363	27,009
2025	10,391	1,675	2,802	1,838	5,582	4,736	2,587	29,610
2030	11,145	1,729	2,897	2,267	6,883	5,416	2,823	33,159
2035	11,899	1,784	2,991	2,695	8,184	6,096	3,059	36,708

Forecast of Total Aircraft Operations (d)

2012	40,369	6,486	780	-	10	2,350	-	49,995
2015	37,497	6,378	809	4	12	2,639	-	47,338
2020	34,497	5,787	822	5	15	2,968	-	44,094
2025	34,491	5,954	812	6	18	2,978	-	44,259
2030	36,280	5,722	796	7	23	3,332	-	46,159
2035	37,134	6,046	781	9	27	3,685	-	47,682

Forecast of Touch & Go Operations (e)

2012	17,453	2,804	-	-	-	1,016	-	21,273
2015	16,211	2,757	-	-	-	1,141	-	20,109

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2020	14,914	2,502	-	-	-	1,283	-	18,699
2025	14,912	2,574	-	-	-	1,288	-	18,773
2030	15,685	2,474	-	-	-	1,441	-	19,599
2035	16,054	2,614	-	-	-	1,593	-	20,261
Forecast of Non Touch & Go Operations (f)								
2012	22,916	3,682	780	-	10	1,334	-	28,722
2015	21,286	3,621	809	4	12	1,498	-	27,229
2020	19,583	3,285	822	5	15	1,685	-	25,395
2025	19,579	3,380	812	6	18	1,690	-	25,486
2030	20,595	3,248	796	7	23	1,891	-	26,560
2035	21,079	3,432	781	9	27	2,092	-	27,421

(a) Table 6.

(b) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(c) FAA Aerospace Forecasts: Fiscal Years 2012-2032. Microjet hours flown estimated at 1000 hours per aircraft.

(d) Base year data from August and December 2012 operations counts. 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). Other category includes light sport and experimental 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: Aircraft Operations Forecast: Airlake.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
Based Aircraft Forecast (a)								
2012	131	12	1	0	0	0	3	147
2015	137	13	1	0	0	0	3	154
2020	139	12	1	0	0	0	4	156
2025	137	11	1	0	0	0	4	153
2030	137	14	1	0	0	0	4	156
2035	136	14	2	0	0	0	4	156
FAA Forecast of Active Aircraft (b)								
2012	137,600	15,735	9,505	627	11,423	10,720	37,080	222,690
2015	135,010	15,570	9,720	885	12,455	11,750	38,680	224,070
2020	132,335	15,175	10,120	1,470	14,795	13,445	41,090	228,430
2025	132,150	14,815	10,625	2,221	17,799	15,320	43,505	236,435
2030	134,000	14,470	11,205	3,163	21,567	17,400	45,915	247,720
2035	135,850	14,125	11,785	4,105	25,335	19,480	48,325	259,005

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
FAA Forecast of Hours Flown (000's) (c)								
2012	11,391	1,776	2,409	1,000	3,037	3,362	1,754	24,728
2015	10,594	1,728	2,554	1,205	3,660	3,620	2,034	25,396
2020	10,125	1,667	2,704	1,489	4,520	4,142	2,363	27,009
2025	10,391	1,675	2,802	1,838	5,582	4,736	2,587	29,610
2030	11,145	1,729	2,897	2,267	6,883	5,416	2,823	33,159
2035	11,899	1,784	2,991	2,695	8,184	6,096	3,059	36,708
Forecast of Total Aircraft Operations (d)								
2012	22,098	595	431	18	129	1,173	1,553	25,997
2015	21,906	634	447	51	155	1,263	1,805	26,262
2020	21,671	579	454	63	192	1,445	2,003	26,408
2025	21,951	546	449	78	237	1,652	2,042	26,955
2030	23,219	735	440	96	292	1,890	2,111	28,783
2035	24,274	777	863	114	348	2,127	2,158	30,661
Forecast of Touch & Go Operations (e)								
2012	9,715	63	-	-	-	64	545	10,387
2015	9,631	67	-	-	-	63	606	10,367

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2020	9,527	61	-	-	-	63	883	10,535
2025	9,650	58	-	-	-	63	913	10,685
2030	10,208	78	-	-	-	64	944	11,294
2035	10,672	82	-	-	-	64	972	11,790
Forecast of Non Touch & Go Operations (f)								
2012	12,383	532	431	18	129	1,109	1,008	15,610
2015	12,276	567	447	51	155	1,200	1,200	15,896
2020	12,143	518	454	63	192	1,382	1,120	15,873
2025	12,301	488	449	78	237	1,589	1,128	16,270
2030	13,011	657	440	96	292	1,826	1,166	17,489
2035	13,603	694	863	114	348	2,063	1,185	18,871

(a) Table 7.

(b) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(c) FAA Aerospace Forecasts: Fiscal Years 2012-2032. Microjet hours flown estimated at 1000 hours per aircraft.

(d) Base year data from August and December 2012 operations counts. 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). Other category includes light sport and experimental 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: Aircraft Operations Forecast: Lake Elmo.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
Based Aircraft Forecast (a)								
2012	208	9	1	0	0	2	9	229
2015	205	9	1	0	0	2	9	226
2020	195	9	1	0	0	3	10	218
2025	187	8	1	0	0	3	10	209
2030	187	10	1	0	0	3	10	211
2035	185	9	1	0	0	3	10	208
FAA Forecast of Active Aircraft (b)								
2012	137,600	15,735	9,505	627	11,423	10,720	37,080	222,690
2015	135,010	15,570	9,720	885	12,455	11,750	38,680	224,070
2020	132,335	15,175	10,120	1,470	14,795	13,445	41,090	228,430
2025	132,150	14,815	10,625	2,221	17,799	15,320	43,505	236,435
2030	134,000	14,470	11,205	3,163	21,567	17,400	45,915	247,720
2035	135,850	14,125	11,785	4,105	25,335	19,480	48,325	259,005
FAA Forecast of Hours Flown (000's) (c)								

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2012	11,391	1,776	2,409	1,000	3,037	3,362	1,754	24,728
2015	10,594	1,728	2,554	1,205	3,660	3,620	2,034	25,396
2020	10,125	1,667	2,704	1,489	4,520	4,142	2,363	27,009
2025	10,391	1,675	2,802	1,838	5,582	4,736	2,587	29,610
2030	11,145	1,729	2,897	2,267	6,883	5,416	2,823	33,159
2035	11,899	1,784	2,991	2,695	8,184	6,096	3,059	36,708

Forecast of Total Aircraft Operations (d)

2012	23,189	112	56	2	2	449	2,899	26,709
2015	21,664	110	58	2	2	441	3,176	25,454
2020	20,092	109	59	3	3	662	3,304	24,232
2025	19,802	100	58	4	4	664	3,276	23,908
2030	20,946	132	57	5	5	668	3,388	25,200
2035	21,823	125	56	5	5	672	3,450	26,138

Forecast of Touch & Go Operations (e)

2012	2,356	20	-	-	-	125	860	3,361
2015	2,201	20	-	-	-	123	956	3,300

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other	Total
2020	2,041	19	-	-	-	184	1,162	3,407
2025	2,012	18	-	-	-	185	1,201	3,416
2030	2,128	24	-	-	-	186	1,242	3,580
2035	2,217	22	-	-	-	187	1,279	3,705
Forecast of Non Touch & Go Operations (f)								
2012	20,833	92	56	2	2	324	2,039	23,348
2015	19,463	90	58	2	2	318	2,220	22,155
2020	18,051	90	59	3	3	477	2,142	20,825
2025	17,790	82	58	4	4	479	2,075	20,492
2030	18,818	108	57	5	5	482	2,146	21,621
2035	19,606	103	56	5	5	485	2,172	22,432

(a) Table 8.

(b) FAA Aerospace Forecasts: Fiscal Years 2012-2032.

(c) FAA Aerospace Forecasts: Fiscal Years 2012-2032. Microjet hours flown estimated at 1000 hours per aircraft.

(d) Base year data from August and December 2012 operations counts. 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). Other category includes light sport and experimental 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.

Appendix I: Number of Active Pilots

Active Pilots.

RECREA- TIONAL	SPORT PILOT	PRIVATE	COMMERCIAL	AIRLINE TRANSPORT	ROTOR- CRAFT ONLY	GLIDER ONLY	TOTAL PILOTS	TOTAL LESS AT PILOTS	INSTRUMENT RATED PILOTS ¹
340	N/A	251,561	121,858	141,596	7,775	9,387	625,581	483,985	311,944
316	NA	243,823	120,502	144,702	7,727	8,473	619,963	475,261	315,276
317	NA	245,230	125,920	144,708	7,770	21,826 2/	609,936	465,228	317,389
310	NA	241,045	123,990	143,504	7,916	20,950	625,011	481,507	315,413
291	NA	235,994	122,592	142,160	8,586	21,100	618,633	476,473	313,545
278	134	228,619	120,614	141,992	9,518	21,369	609,737	467,745	311,500
239	939	219,233	117,610	141,935	10,690	21,597	597,109	455,174	309,333
239	2,031	211,096	115,127	143,953	12,290	21,274	590,349	446,396	309,865
252	2,623	222,596	124,746	146,838	14,647	21,055	613,746	466,908	325,247
234	3,248	211,619	125,738	144,600	15,298	21,268	594,285	449,685	323,495
212	3,682	202,020	123,705	142,198	15,377	21,275	627,588	485,390	318,001
227	4,066	194,441	120,865	142,511	15,220	21,141	617,128	474,617	314,122
230	4,800	193,000	119,200	142,500	15,225	21,165	613,460	470,960	312,550
230	5,550	192,200	114,250	143,100	15,365	21,200	608,035	464,935	312,100
230	5,850	191,300	118,600	143,700	15,630	21,220	611,580	467,880	312,300
230	6,150	190,550	118,950	144,500	16,000	21,260	611,755	467,255	312,950
230	6,500	189,800	119,000	145,200	16,445	21,275	611,785	466,585	313,850
230	6,850	189,250	119,050	145,900	16,955	21,315	612,315	466,415	314,900
230	7,200	188,850	119,200	146,600	17,550	21,350	613,350	466,750	316,050
230	7,600	188,750	119,450	147,400	18,150	21,390	615,075	467,675	317,250
230	8,000	188,800	119,750	148,100	18,800	21,405	617,035	468,935	318,500
225	8,400	189,100	120,150	148,900	19,450	21,445	619,490	470,590	319,750
225	8,800	189,600	120,650	149,800	20,100	21,480	622,515	472,715	321,150

AS OF DEC. 31	STUDENTS	RECREA- TIONAL	SPORT PILOT	PRIVATE	COMMERCIAL	AIRLINE TRANSPORT	ROTOR- CRAFT ONLY	GLIDER ONLY	TOTAL PILOTS	TOTAL LESS AT PILOTS	INSTRUMENT RATED PILOTS ¹
2024	112,225	225	9,650	191,250	122,000	151,600	21,550	21,535	630,035	478,435	324,200
2025	112,685	225	10,100	192,250	122,750	152,600	22,300	21,570	634,480	481,880	325,850
2026	113,230	220	10,600	193,250	123,550	153,600	23,100	21,610	639,160	485,560	327,600
2027	113,830	220	11,100	194,300	124,450	154,700	23,900	21,645	644,145	489,445	329,400
2028	114,430	220	11,600	195,400	125,450	155,700	24,750	21,680	649,230	493,530	331,250
2029	114,965	220	12,150	196,300	126,500	156,800	25,600	21,700	654,235	497,435	333,200
2030	115,520	220	12,700	197,350	127,600	158,000	26,450	21,735	659,575	501,575	335,300
2031	116,100	220	13,300	198,250	128,800	159,100	27,350	21,770	664,890	505,790	337,450
2032	116,720	220	13,900	199,300	130,100	160,300	28,250	21,805	670,595	510,295	339,700
Avg Annual Growth											
2000-11	2.2%	-3.6%	NA	-2.3%	-0.1%	0.1%	6.3%	7.7%	-0.1%	-0.2%	0.1%
2011-12	-1.1%	1.3%	18.1%	-0.7%	-1.4%	0.0%	0.0%	0.1%	-0.6%	-0.8%	-0.5%
2011-21	-0.6%	-0.1%	7.5%	-0.3%	-0.1%	0.4%	2.5%	0.1%	0.0%	-0.1%	0.2%
2011-32	-0.1%	-0.1%	6.0%	0.1%	0.4%	0.6%	3.0%	0.1%	0.4%	0.3%	0.4%

* Source: FAA U.S. Civil Airmen Statistics.

¹Instrument rated pilots should not be added to other categories in deriving total.

²In July 2010, the FAA issued a rule that increased the duration of validity for student pilot certificates for pilots under the age of 40 from 36 to 60 months.

This resulted in the increase in active student pilots to 119,119 from 72,280 at the end of 2009.

Note: An active pilot is a person with a pilot certificate and a valid medical certificate.

Appendix J: High Range Forecast Scenarios

Table J.1: Oil Prices Adjustment Factors – Low Oil Price.

	Fuel & Oil (a)	Total (b)	2010	2011	2012	2015	2020	2025	2030	2035
Unadjusted Case										
DOE Projections										
			79.39	86.894	91.3964	116.91	126.68	132.56	139.49	144.98
			217.43	222.98	227.24	240.92	265.9	291.34	321.41	354.58
			82.97	90.81	95.52	122.18	132.40	138.54	145.78	151.52
Single Engine Piston (f)	33.2	282.2	282.7	285.9	287.8	298.6	302.8	305.3	308.2	310.5
Multi Engine Piston (f)	104.0	568.9	570.4	580.3	586.3	620.2	633.2	641.0	650.2	657.5
Turboprop (f)	236.9	1484.2	1487.6	1510.3	1523.9	1601.1	1630.6	1648.4	1669.4	1686.0
Microjet (f)	492.5	2668.5	2675.4	2722.7	2751.0	2911.5	2973.0	3009.9	3053.5	3088.1
Jet (f)	698.4	3990.1	3999.9	4066.8	4107.0	4334.6	4421.7	4474.2	4536.0	4585.0
Helicopter (f)	37.6	616.5	617.0	620.6	622.8	635.1	639.8	642.6	645.9	648.6
Adjusted Case										
DOE Projections										
			79.39	86.89	91.40	87.64	91.81	95.99	99.83	103.68
			217.43	222.98	227.24	240.92	265.9	291.34	321.41	354.58
			82.97	90.81	95.52	91.59	95.95	100.32	104.33	108.36
Single Engine Piston (f)	33.2	282.2	282.7	285.9	287.8	286.2	288.0	289.7	291.4	293.0
Multi Engine Piston (f)	104.0	568.9	570.4	580.3	586.3	581.3	586.9	592.4	597.5	602.6
Turboprop (f)	236.9	1484.2	1487.6	1510.3	1523.9	1512.5	1525.1	1537.8	1549.4	1561.1
Microjet (f)	492.5	2668.5	2675.4	2722.7	2751.0	2727.4	2753.6	2779.9	2804.0	2828.3
Jet (f)	698.4	3990.1	3999.9	4066.8	4107.0	4073.5	4110.7	4148.0	4182.2	4216.6
Helicopter (f)	37.6	616.5	617.0	620.6	622.8	621.0	623.0	625.0	626.8	628.7
Price Elasticity (g)										
Single Engine Piston						-2.00	-2.00	-2.00	-2.00	-2.00

	Fuel & Oil (a)	Total (b)	2010	2011	2012	2015	2020	2025	2030	2035
Multi Engine Piston						-1.00	-1.00	-1.00	-1.00	-1.00
Turboprop						-1.00	-1.00	-1.00	-1.00	-1.00
Microjet						-0.80	-0.80	-0.80	-0.80	-0.80
Jet						-0.80	-0.80	-0.80	-0.80	-0.80
Helicopter						-1.00	-1.00	-1.00	-1.00	-1.00
Adjustment Factors (h)										
Single Engine Piston						1.089	1.105	1.110	1.119	1.123
Multi Engine Piston						1.067	1.079	1.082	1.088	1.091
Turboprop						1.059	1.069	1.072	1.077	1.080
Microjet						1.054	1.063	1.066	1.071	1.073
Jet						1.051	1.060	1.062	1.067	1.069
Helicopter						1.023	1.027	1.028	1.030	1.032

(a) Average hourly fuel and oil costs from Economic Values for FAA Investment and Regulatory Decisions, A Guide, GRA, Inc., October 2007.

(b) Total hourly costs from Economic Values for FAA Investment and Regulatory Decisions, A Guide, GRA, Inc., October 2007.

(c) The average between the Department of Energy Annual Energy Outlook 2012 Low Scenario and Reference Case.

(d) FAA Aerospace Forecast: Fiscal Years 2012-2032.

(e) Refiners' Acquisition Cost converted to 2012 prices using CPI index.

(f) Fuel and oil component of hourly cost assumed to increase with real Refiners' Acquisition Cost. Other hourly costs assumed to remain constant.

(g) Estimated price elasticity from FAA Airport Benefit-Cost Analysis Guidance, December 15, 1999. Table C.2 in Appendix C.

(h) Calculated using following formula:

$$AF = (AC/UC)^E$$

where:

AF = Adjustment Factor

AC = Adjusted hourly cost

UC = Unadjusted hourly cost

E = elasticity.

Sources: As noted and HNTB analysis.

Table J.2: Summary of High Range Based Aircraft Forecast – Crystal.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
2012	199	12	1	0	0	7	0	219
2015	222	14	1	0	0	9	0	246
2020	228	14	1	0	0	13	0	256
2025	237	14	1	0	0	12	0	264
2030	249	14	2	0	0	15	0	280
2035	261	14	2	0	0	17	0	294
	Average Annual Growth Rate							
	1.2%	0.7%	3.1%	0.0%	0.0%	3.2%	0.0%	1.3%

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table J.3: Summary of High Range Aircraft Operations Forecast – Crystal.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	40,369	6,486	780	-	10	2,350	-	49,995
2015	42,689	7,441	809	4	12	2,968	-	53,923
2020	42,747	7,365	822	5	15	4,287	-	55,240
2025	45,667	7,578	812	6	18	3,971	-	58,052
2030	50,751	8,011	1,591	7	23	4,998	-	65,381
2035	56,023	8,465	1,562	9	27	5,695	-	71,780
Forecast of Touch & Go Operations								
2012	17,453	2,804	-	-	-	1,016	-	21,273
2015	18,456	3,217	-	-	-	1,283	-	22,956
2020	18,481	3,184	-	-	-	1,853	-	23,518
2025	19,743	3,276	-	-	-	1,717	-	24,736
2030	21,941	3,463	-	-	-	2,161	-	27,565
2035	24,221	3,659	-	-	-	2,462	-	30,342

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Non-Touch & Go Operations								
2012	22,916	3,682	780	-	10	1,334	-	28,722
2015	24,233	4,224	809	4	12	1,685	-	30,967
2020	24,266	4,181	822	5	15	2,433	-	31,722
2025	25,923	4,302	812	6	18	2,254	-	33,315
2030	28,809	4,548	1,591	7	23	2,837	-	37,815
2035	31,802	4,805	1,562	9	27	3,233	-	41,438

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table J.4: Peak Activity Forecast: Crystal – High Range Scenario.

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	49,995	6,258	202	20
2015	53,923	6,750	218	22
2020	55,240	6,915	223	22
2025	58,052	7,267	234	23
2030	65,381	8,184	264	26
2035	71,780	8,985	290	29

(a) Table J.3.

(b) The 2011 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 J.5: Summary of High Range Based Aircraft Forecast (a) – Airlake.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
2012	131	12	1	0	0	0	3	147
2015	157	14	1	0	0	0	8	180
2020	174	16	1	0	0	0	10	201
2025	182	17	1	0	0	0	10	210
2030	187	18	4	0	0	0	10	219
2035	198	19	4	0	0	0	11	232
Average Annual Growth Rate								
	1.8%	2.0%	6.2%	0.0%	0.0%	0.0%	5.8%	2.0%

(a) Assumes no runway extension.

(b) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table J.6: Summary of High Range Aircraft Operations Forecast (a) – Airlake.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Total Aircraft Operations								
2012	22,098	595	431	18	129	1,173	1,553	25,997
2015	25,104	683	447	51	155	1,152	2,069	29,662
2020	27,127	772	454	63	192	1,152	2,508	32,269
2025	29,161	844	449	78	237	1,156	2,712	34,638
2030	31,694	945	1,759	96	292	1,164	2,881	38,831
2035	35,341	1,054	1,727	114	348	1,170	3,141	42,895
Forecast of Touch & Go Operations								
2012	9,715	63	-	-	-	64	545	10,387
2015	11,037	72	-	-	-	63	726	11,898
2020	11,926	82	-	-	-	63	880	12,951
2025	12,820	89	-	-	-	63	952	13,925
2030	13,934	100	-	-	-	64	1,011	15,108
2035	15,537	112	-	-	-	64	1,102	16,815

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Non-Touch & Go Operations								
2012	12,383	532	431	18	129	1,109	1,008	15,610
2015	14,068	610	447	51	155	1,090	1,343	17,764
2020	15,201	690	454	63	192	1,089	1,628	19,318
2025	16,341	755	449	78	237	1,093	1,760	20,713
2030	17,760	845	1,759	96	292	1,101	1,870	23,723
2035	19,804	942	1,727	114	348	1,107	2,039	26,080

(a) Assumes no runway extension.

(b) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table J.7: Peak Activity Forecast: Airlake Airport – High Range Scenario.

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	25,997	2,964	99	9
2015	29,662	3,381	113	10
2020	32,269	3,679	123	11
2025	34,638	3,949	132	12
2030	38,831	4,427	148	14
2035	42,895	4,890	163	15

(a) Table J.6.

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

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

(d) 9.25 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.

Table J.8: Summary of High Range Based Aircraft Forecast (a) – Lake Elmo.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
2012	208	9	1	0	0	2	9	229
2015	235	10	1	0	0	3	23	272
2020	242	12	1	0	0	4	28	287
2025	254	13	1	0	0	4	28	300
2030	264	14	3	0	0	4	30	315
2035	275	14	4	0	0	5	34	332
	Average Annual Growth Rate							
	1.2%	1.9%	6.2%	0.0%	0.0%	4.1%	5.9%	1.6%

(a) Assumes no runway extension.

(b) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table J.9: Summary of High Range Aircraft Operations Forecast (a) – Lake Elmo.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Total Aircraft Operations								
2012	23,189	112	56	2	2	449	2,899	26,709
2015	24,834	122	58	2	2	662	3,641	29,322
2020	24,935	145	59	3	3	882	4,101	30,128
2025	26,897	162	58	4	4	885	4,450	32,460
2030	29,571	184	171	5	5	891	4,783	35,610
2035	32,440	195	224	5	5	1,120	5,129	39,119
Forecast of Touch & Go Operations								
2012	2,356	20	-	-	-	125	860	3,361
2015	2,523	22	-	-	-	184	1,080	3,809
2020	2,533	26	-	-	-	246	1,216	4,021
2025	2,733	29	-	-	-	246	1,320	4,328
2030	3,004	33	-	-	-	248	1,419	4,704
2035	3,296	35	-	-	-	312	1,522	5,164

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Non-Touch & Go Operations								
2012	20,833	92	56	2	2	324	2,039	23,348
2015	22,311	101	58	2	2	477	2,561	25,513
2020	22,401	119	59	3	3	636	2,884	26,106
2025	24,165	133	58	4	4	639	3,130	28,132
2030	26,567	152	171	5	5	643	3,364	30,906
2035	29,144	160	224	5	5	808	3,607	33,955

(a) Assumes no runway extension.

(b) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table J.10: Peak Activity Forecast: Lake Elmo Airport – High Range Scenario.

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	26,709	3,339	108	13
2015	29,322	3,665	118	15
2020	30,128	3,766	121	15
2025	32,460	4,058	131	16
2030	35,610	4,451	144	18
2035	39,119	4,890	158	19

(a) Table J.9.

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

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

(d) 12.30 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.

Appendix K: Low Range Forecast Scenarios

Table K.1: Oil Prices Adjustment Factors – High Oil Prices.

	Fuel & Oil (a)	Total (b)	2010	2011	2012	2015	2020	2025	2030	2035
Unadjusted Case										
DOE Projections										
	Crude Oil Prices (in 2010 dollars per barrel) (c)		79.39	86.894	91.3964	116.91	126.68	132.56	139.49	144.98
	Consumer Price Index (d)		217.43	222.98	227.24	240.92	265.9	291.34	321.41	354.58
	Crude Oil Prices (in 2012 dollars per barrel) (e)		82.97	90.81	95.52	122.18	132.40	138.54	145.78	151.52
Single Engine Piston (f)	33.2	282.2	282.7	285.9	287.8	298.6	302.8	305.3	308.2	310.5
Multi Engine Piston (f)	104.0	568.9	570.4	580.3	586.3	620.2	633.2	641.0	650.2	657.5
Turboprop (f)	236.9	1484.2	1487.6	1510.3	1523.9	1601.1	1630.6	1648.4	1669.4	1686.0
Microjet (f)	492.5	2668.5	2675.4	2722.7	2751.0	2911.5	2973.0	3009.9	3053.5	3088.1
Jet (f)	698.4	3990.1	3999.9	4066.8	4107.0	4334.6	4421.7	4474.2	4536.0	4585.0
Helicopter (f)	37.6	616.5	617.0	620.6	622.8	635.1	639.8	642.6	645.9	648.6
Adjusted Case										
DOE Projections										
	Crude Oil Prices (in 2010 dollars per barrel) (c)		79.39	94.67	100.38	182.10	187.79	193.48	196.92	200.36
	Consumer Price Index (d)		217.43	222.98	227.24	240.92	265.9	291.34	321.41	354.58
	Crude Oil Prices (in 2012 dollars per barrel) (e)		82.97	98.94	104.91	190.32	196.26	202.21	205.80	209.40
Single Engine Piston (f)	33.2	282.2	282.7	289.2	291.6	326.3	328.7	331.1	332.6	334.0
Multi Engine Piston (f)	104.0	568.9	570.4	590.7	598.3	706.9	714.4	722.0	726.6	731.1
Turboprop (f)	236.9	1484.2	1487.6	1533.8	1551.1	1798.3	1815.5	1832.7	1843.1	1853.5
Microjet (f)	492.5	2668.5	2675.4	2771.6	2807.5	3321.6	3357.4	3393.2	3414.8	3436.5
Jet (f)	698.4	3990.1	3999.9	4136.2	4187.1	4916.1	4966.9	5017.6	5048.3	5079.0
Helicopter (f)	37.6	616.5	617.0	624.4	627.1	666.4	669.1	671.9	673.5	675.2
Price Elasticity (g)										
Single Engine Piston						-2.00	-2.00	-2.00	-2.00	-2.00

	Fuel & Oil (a)	Total (b)	2010	2011	2012	2015	2020	2025	2030	2035
Multi Engine Piston						-1.00	-1.00	-1.00	-1.00	-1.00
Turboprop						-1.00	-1.00	-1.00	-1.00	-1.00
Microjet						-0.80	-0.80	-0.80	-0.80	-0.80
Jet						-0.80	-0.80	-0.80	-0.80	-0.80
Helicopter						-1.00	-1.00	-1.00	-1.00	-1.00
Adjustment Factors (h)										
Single Engine Piston						0.838	0.849	0.850	0.859	0.864
Multi Engine Piston						0.877	0.886	0.888	0.895	0.899
Turboprop						0.890	0.898	0.899	0.906	0.910
Microjet						0.900	0.907	0.909	0.914	0.918
Jet						0.904	0.911	0.912	0.918	0.921
Helicopter						0.953	0.956	0.956	0.959	0.961

(a) Average hourly fuel and oil costs from Economic Values for FAA Investment and Regulatory Decisions, A Guide, GRA, Inc., October 2007.

(b) Total hourly costs from Economic Values for FAA Investment and Regulatory Decisions, A Guide, GRA, Inc., October 2007.

(c) Department of Energy Annual Energy Outlook 2012.

(d) FAA Aerospace Forecast: Fiscal Years 2012-2032.

(e) Refiners' Acquisition Cost converted to 2012 prices using CPI index.

(f) Fuel and oil component of hourly cost assumed to increase with real Refiners' Acquisition Cost. Other hourly costs assumed to remain constant.

(g) Estimated price elasticity from FAA Airport Benefit-Cost Analysis Guidance, December 15, 1999. Table C.2 in Appendix C.

(h) Calculated using following formula:

$$AF = (AC/UC)^E$$

where:

AF = Adjustment Factor

AC = Adjusted hourly cost

UC = Unadjusted hourly cost

E = elasticity.

Sources: As noted and HNTB analysis.

Table K.2: Summary of Low Range Based Aircraft Forecast – Crystal.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
2012	199	12	1	0	0	7	0	219
2015	156	10	1	0	0	6	0	173
2020	141	9	1	0	0	7	0	158
2025	130	8	1	0	0	7	0	146
2030	120	7	1	0	0	7	0	135
2035	113	6	1	0	0	7	0	127
Average Annual Growth Rate								
	-2.4%	-3.0%	0.0%	0.0%	0.0%	0.8%	0.0%	-2.3%

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table K.3: Summary of Aircraft Operations Forecast: Crystal – Low Range Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	40,369	6,486	780	-	10	2,350	-	49,995
2015	29,997	5,315	809	4	12	1,979	-	38,116
2020	26,435	4,735	822	5	15	2,308	-	34,320
2025	25,049	4,330	812	6	18	2,316	-	32,532
2030	24,458	4,005	796	7	23	2,332	-	31,622
2035	24,255	3,628	781	9	27	2,345	-	31,045
Forecast of Touch & Go Operations								
2012	17,453	2,804	-	-	-	1,016	-	21,273
2015	12,969	2,298	-	-	-	856	-	16,122
2020	11,429	2,047	-	-	-	998	-	14,474
2025	10,830	1,872	-	-	-	1,001	-	13,703
2030	10,574	1,732	-	-	-	1,008	-	13,314
2035	10,486	1,568	-	-	-	1,014	-	13,068

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Non-Touch & Go Operations								
2012	22,916	3,682	780	-	10	1,334	-	28,722
2015	17,028	3,017	809	4	12	1,123	-	21,994
2020	15,006	2,688	822	5	15	1,310	-	19,847
2025	14,220	2,458	812	6	18	1,315	-	18,829
2030	13,884	2,274	796	7	23	1,324	-	18,308
2035	13,769	2,059	781	9	27	1,331	-	17,976

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table K.4: Peak Activity Forecast: Crystal – Low Range Scenario.

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	49,995	6,258	202	20
2015	38,116	4,771	154	15
2020	34,320	4,296	139	14
2025	32,532	4,072	131	13
2030	31,622	3,958	128	13
2035	31,045	3,886	125	12

(a) Table K.3.

(b) The 2011 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 K.5: Summary of Based Aircraft Forecast: Airlake (a) – Low Range Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
2012	131	12	1	0	0	0	3	147
2015	103	10	1	0	0	0	3	117
2020	94	8	1	0	0	0	3	106
2025	86	7	1	0	0	0	3	97
2030	84	7	1	0	0	0	3	95
2035	78	6	1	0	0	0	3	88
	Average Annual Growth Rate							
	-2.2%	-3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-2.2%

(a) Assumes no runway extension.

(b) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table K.6: Summary of Aircraft Operations Forecast: Airlake (a) – Low Range Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Total Aircraft Operations								
2012	22,098	595	431	18	129	1,173	1,553	25,997
2015	16,470	488	447	51	155	1,152	1,726	20,490
2020	14,655	386	454	63	192	1,152	1,888	18,791
2025	13,780	348	449	78	237	1,156	1,952	17,999
2030	14,237	367	440	96	292	1,164	2,019	18,615
2035	13,922	333	432	114	348	1,170	2,078	18,397
Forecast of Touch & Go Operations								
2012	9,715	63	-	-	-	64	545	10,387
2015	7,241	52	-	-	-	63	606	7,961
2020	6,443	41	-	-	-	63	663	7,209
2025	6,058	37	-	-	-	63	685	6,843
2030	6,259	39	-	-	-	64	708	7,070
2035	6,121	35	-	-	-	64	729	6,949

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Non-Touch & Go Operations								
2012	12,383	532	431	18	129	1,109	1,008	15,610
2015	9,229	436	447	51	155	1,090	1,121	12,529
2020	8,212	345	454	63	192	1,089	1,225	11,582
2025	7,722	311	449	78	237	1,093	1,267	11,156
2030	7,978	329	440	96	292	1,101	1,310	11,545
2035	7,801	298	432	114	348	1,107	1,349	11,448

(a) Assumes no runway extension.

(b) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table K.7: Peak Activity Forecast: Airlake Airport – Low Range Scenario.

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	25,997	2,964	99	9
2015	20,490	2,336	78	7
2020	18,791	2,142	71	7
2025	17,999	2,052	68	6
2030	18,615	2,122	71	7
2035	18,397	2,097	70	6

(a) Table K.6.

(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) 9.25 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.

Table K.8: Summary of Based Aircraft Forecast: Lake Elmo (a) – Low Range Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
2012	208	9	1	0	0	2	9	229
2015	162	8	1	0	0	2	9	182
2020	149	6	1	0	0	2	9	167
2025	136	6	1	0	0	2	9	154
2030	126	5	1	0	0	2	8	142
2035	117	5	1	0	0	2	8	133
Average Annual Growth Rate								
	-2.5%	-2.5%	0.0%	0.0%	0.0%	0.0%	-0.5%	-2.3%

(a) Assumes no runway extension.

(b) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table K.9: Summary of Aircraft Operations Forecast: Lake Elmo (a) – Low Range Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Total Aircraft Operations								
2012	23,189	112	56	2	2	449	2,899	26,709
2015	17,120	98	58	2	2	441	3,223	20,944
2020	15,352	73	59	3	3	441	3,524	19,456
2025	14,402	75	58	4	4	443	3,644	18,629
2030	14,114	66	57	5	5	446	3,349	18,041
2035	13,802	70	56	5	5	448	3,448	17,835
Forecast of Touch & Go Operations								
2012	2,356	20	-	-	-	125	860	3,361
2015	1,739	17	-	-	-	123	956	2,836
2020	1,560	13	-	-	-	123	1,046	2,741
2025	1,463	13	-	-	-	123	1,081	2,681
2030	1,434	12	-	-	-	124	994	2,563
2035	1,402	12	-	-	-	125	1,023	2,562

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (b)	Total
Forecast of Non-Touch & Go Operations								
2012	20,833	92	56	2	2	324	2,039	23,348
2015	15,380	80	58	2	2	318	2,267	18,109
2020	13,793	60	59	3	3	318	2,479	16,714
2025	12,939	61	58	4	4	319	2,563	15,948
2030	12,680	54	57	5	5	322	2,356	15,477
2035	12,399	57	56	5	5	323	2,425	15,272

(a) Assumes no runway extension.

(b) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table K.10: Peak Activity Forecast: Lake Elmo Airport – Low Range Scenario.

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	26,709	3,339	108	13
2015	20,944	2,618	84	10
2020	19,456	2,432	78	10
2025	18,629	2,329	75	9
2030	18,041	2,255	73	9
2035	17,835	2,229	72	9

(a) Table K.9.

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

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

(d) 12.30 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.

Appendix L: Extended Runway Scenarios

Table L.1: Summary of Based Aircraft Forecast: Crystal – Extended Runway Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total	
2012	199	12	1	0	0	7	0	219	
2015	195	12	1	0	0	8	0	216	
2020	184	11	1	0	0	9	0	205	
2025	179	11	1	0	0	9	0	200	
2030	178	10	1	0	0	10	0	199	
2035	173	10	1	0	0	11	0	195	
			Average Annual Growth Rate						
	-0.6%	-0.8%	0.0%	0.0%	0.0%	1.6%	0.0%	-0.5%	

(a) Experimental and light sport aircraft.

(b) No change from Base Case.

Source: HNTB Analysis.

Table L.2: Summary of Aircraft Operations Forecast: Crystal – Extended Runway Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	40,369	6,486	780	-	10	2,350	-	49,995
2015	37,497	6,378	809	4	12	2,639	-	47,338
2020	34,497	5,787	822	5	15	2,968	-	44,094
2025	34,491	5,954	812	6	18	2,978	-	44,259
2030	36,280	5,722	796	7	23	3,332	-	46,159
2035	37,134	6,046	781	9	27	3,685	-	47,682
Forecast of Touch & Go Operations								
2012	17,453	2,804	-	-	-	1,016	-	21,273
2015	16,211	2,757	-	-	-	1,141	-	20,109
2020	14,914	2,502	-	-	-	1,283	-	18,699
2025	14,912	2,574	-	-	-	1,288	-	18,773
2030	15,685	2,474	-	-	-	1,441	-	19,599
2035	16,054	2,614	-	-	-	1,593	-	20,261

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Non-Touch & Go Operations								
2012	22,916	3,682	780	-	10	1,334	-	28,722
2015	21,286	3,621	809	4	12	1,498	-	27,229
2020	19,583	3,285	822	5	15	1,685	-	25,395
2025	19,579	3,380	812	6	18	1,690	-	25,486
2030	20,595	3,248	796	7	23	1,891	-	26,560
2035	21,079	3,432	781	9	27	2,092	-	27,421

(a) Experimental and light sport aircraft.

(b) No change from Base Case.

Source: HNTB Analysis.

Table L.3: Peak Activity Forecast: Crystal – Extended Runway Scenario.

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	49,995	6,258	202	20
2015	47,338	5,926	191	19
2020	44,094	5,519	178	18
2025	44,259	5,540	179	18
2030	46,159	5,778	186	19
2035	47,682	5,969	193	19

(a) Table 9.

(b) The 2011 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.

(e) No change from Base Case.

Sources: As noted and HNTB analysis.

Table L.4: Summary of Based Aircraft Forecast: Airlake – Extended Runway Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
2012	131	12	1	0	0	0	3	147
2015	137	13	1	0	0	0	3	154
2020	139	12	1	0	1	0	4	157
2025	137	11	1	0	1	0	4	154
2030	136	14	1	0	2	0	4	157
2035	136	14	2	0	2	0	4	158
	Average Annual Growth Rate							
	0.2%	0.7%	3.1%	0.0%	NA	0.0%	1.3%	0.3%

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table L.5: Summary of Aircraft Operations Forecast: Airlake – Extended Runway Scenario.

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	22,098	595	431	18	129	1,173	1,553	25,997
2015	21,906	634	447	51	155	1,263	1,805	26,262
2020	21,671	579	454	77	255	1,445	2,003	26,484
2025	21,951	546	449	99	262	1,652	2,042	27,000
2030	23,050	735	440	237	532	1,890	2,096	28,979
2035	24,274	777	863	265	539	2,127	2,158	31,003
Forecast of Touch & Go Operations								
2012	9,715	63	-	-	-	64	545	10,387
2015	9,631	67	-	-	-	63	606	10,367
2020	9,527	61	-	-	-	63	883	10,535
2025	9,650	58	-	-	-	63	913	10,685
2030	10,133	78	-	-	-	64	944	11,219
2035	10,672	82	-	-	-	64	972	11,790

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Non-Touch & Go Operations								
2012	12,383	532	431	18	129	1,109	1,008	15,610
2015	12,276	567	447	51	155	1,200	1,200	15,896
2020	12,143	518	454	77	255	1,382	1,120	15,949
2025	12,301	488	449	99	262	1,589	1,128	16,316
2030	12,916	657	440	237	532	1,826	1,151	17,760
2035	13,603	694	863	265	539	2,063	1,185	19,212

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table L.6: Peak Activity Forecast: Airlake – Extended Runway Scenario.

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	25,997	2,964	99	9
2015	26,262	2,994	100	9
2020	26,484	3,019	101	9
2025	27,000	3,078	103	9
2030	28,979	3,304	110	10
2035	31,003	3,534	118	11

(a) Table 10.

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

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

(d) 9.25 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.

Table L.7: Summary of Based Aircraft Forecast: Lake Elmo – Extended Runway Scenarios (3,300 and 3,600 feet).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total	
2012	208	9	1	0	0	2	9	229	
2015	205	9	1	0	0	2	9	226	
2020	195	9	1	0	0	3	10	218	
2025	187	8	1	0	0	3	10	209	
2030	187	10	1	0	0	3	10	211	
2035	185	9	1	0	0	3	10	208	
			Average Annual Growth Rate						
	-0.5%	0.0%	0.0%	0.0%	0.0%	1.8%	0.5%	-0.4%	

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table L.8: Summary of Aircraft Operations Forecast: Lake Elmo – Extended Runway Scenario (3,300 feet).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	23,189	112	56	2	2	449	2,899	26,709
2015	21,664	110	58	2	2	441	3,176	25,454
2020	20,092	109	216	33	3	662	3,304	24,418
2025	19,802	100	223	56	4	664	3,276	24,125
2030	20,946	132	231	90	5	668	3,388	25,459
2035	21,823	125	238	128	5	672	3,450	26,442
Forecast of Touch & Go Operations								
2012	2,356	20	-	-	-	125	860	3,361
2015	2,201	20	-	-	-	123	956	3,300
2020	2,041	19	-	-	-	184	1,162	3,407
2025	2,012	18	-	-	-	185	1,201	3,416
2030	2,128	24	-	-	-	186	1,242	3,580
2035	2,217	22	-	-	-	187	1,279	3,705

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Non-Touch & Go Operations								
2012	20,833	92	56	2	2	324	2,039	23,348
2015	19,463	90	58	2	2	318	2,220	22,155
2020	18,051	90	216	33	3	477	2,142	21,012
2025	17,790	82	223	56	4	479	2,075	20,709
2030	18,818	108	231	90	5	482	2,146	21,880
2035	19,606	103	238	128	5	485	2,172	22,737

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table L.9: Peak Activity Forecast: Lake Elmo – Extended Runway Scenario (3,300 feet).

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	26,709	3,339	108	13
2015	25,454	3,182	103	13
2020	24,418	3,052	98	12
2025	24,125	3,016	97	12
2030	25,459	3,182	103	13
2035	26,442	3,305	107	13

(a) Table L.8.

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

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

(d) 12.30 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.

Table L.10: Summary of Aircraft Operations Forecast: Lake Elmo – Extended Runway Scenario (3,600 feet).

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Total Aircraft Operations								
2012	23,189	112	56	2	2	449	2,899	26,709
2015	21,664	110	58	2	2	441	3,176	25,454
2020	20,092	109	323	33	16	662	3,304	24,539
2025	19,802	100	335	56	28	664	3,276	24,261
2030	20,946	132	346	90	45	668	3,388	25,615
2035	21,823	125	358	128	64	672	3,450	26,620
Forecast of Touch & Go Operations								
2012	2,356	20	-	-	-	125	860	3,361
2015	2,201	20	-	-	-	123	956	3,300
2020	2,041	19	-	-	-	184	1,162	3,407
2025	2,012	18	-	-	-	185	1,201	3,416
2030	2,128	24	-	-	-	186	1,242	3,580
2035	2,217	22	-	-	-	187	1,279	3,705

Year	Single Engine Piston	Multi-Engine Piston	Turboprop	Microjets	Other Jets	Helicopter	Other (a)	Total
Forecast of Non-Touch & Go Operations								
2012	20,833	92	56	2	2	324	2,039	23,348
2015	19,463	90	58	2	2	318	2,220	22,155
2020	18,051	90	323	33	16	477	2,142	21,132
2025	17,790	82	335	56	28	479	2,075	20,845
2030	18,818	108	346	90	45	482	2,146	22,035
2035	19,606	103	358	128	64	485	2,172	22,915

(a) Experimental and light sport aircraft.

Source: HNTB Analysis.

Table L.11: Peak Activity Forecast: Lake Elmo – Extended Runway Scenario (3,600 feet).

Year	Annual Operations (a)	Peak Month Operations (b)	ADPM Operations (c)	Peak Hour Operations (d)
2012	26,709	3,339	108	13
2015	25,454	3,182	103	13
2020	24,539	3,067	99	12
2025	24,261	3,033	98	12
2030	25,615	3,202	103	13
2035	26,620	3,327	107	13

(a) Table L.10.

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

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

(d) 12.30 percent of ADPM operations based on field surveys conducted in December 2011 and August 2012.

Sources: As noted and HNTB analysis.