2009 ANNUAL REPORT TO THE LEGISLATURE

PREPARED BY THE
METROPOLITAN AIRPORTS COMMISSION
AVIATION NOISE AND SATELLITE PROGRAMS OFFICE

MARCH 2010

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1. INTRODUCTION

1.0 Overview

The Metropolitan Airports Commission (MAC) was created in 1943 by the State of Minnesota Legislature to promote air transportation in the 7-county metropolitan area. The MAC airport system is comprised of seven airports: Minneapolis-St. Paul International and six reliever airports. The reliever airports include Airlake, Anoka County-Blaine, Crystal, Flying Cloud, Lake Elmo and St. Paul Downtown. **Figure 1-1** shows each MAC airport location within the 7-county metropolitan area.

In 1989, the Minnesota Legislature adopted the Metropolitan Airport Planning Act. This legislation required the MAC and the Metropolitan Council (MC) to complete a comprehensive and coordinated program to plan for major airport development in the Twin Cities. The planning activities were designed to compare the option of future expansion of Minneapolis-St. Paul International Airport (MSP) with the option of building a new airport.

The analysis was completed in 1996, and the MAC and the MC formally submitted their recommendations to the Legislature on March 18, 1996. On April 2, 1996, legislation was passed by both the House and Senate, and subsequently signed by Governor Arne Carlson, which terminated further study of a new airport and directed the MAC to implement the MSP 2010 Long Term Comprehensive Plan.

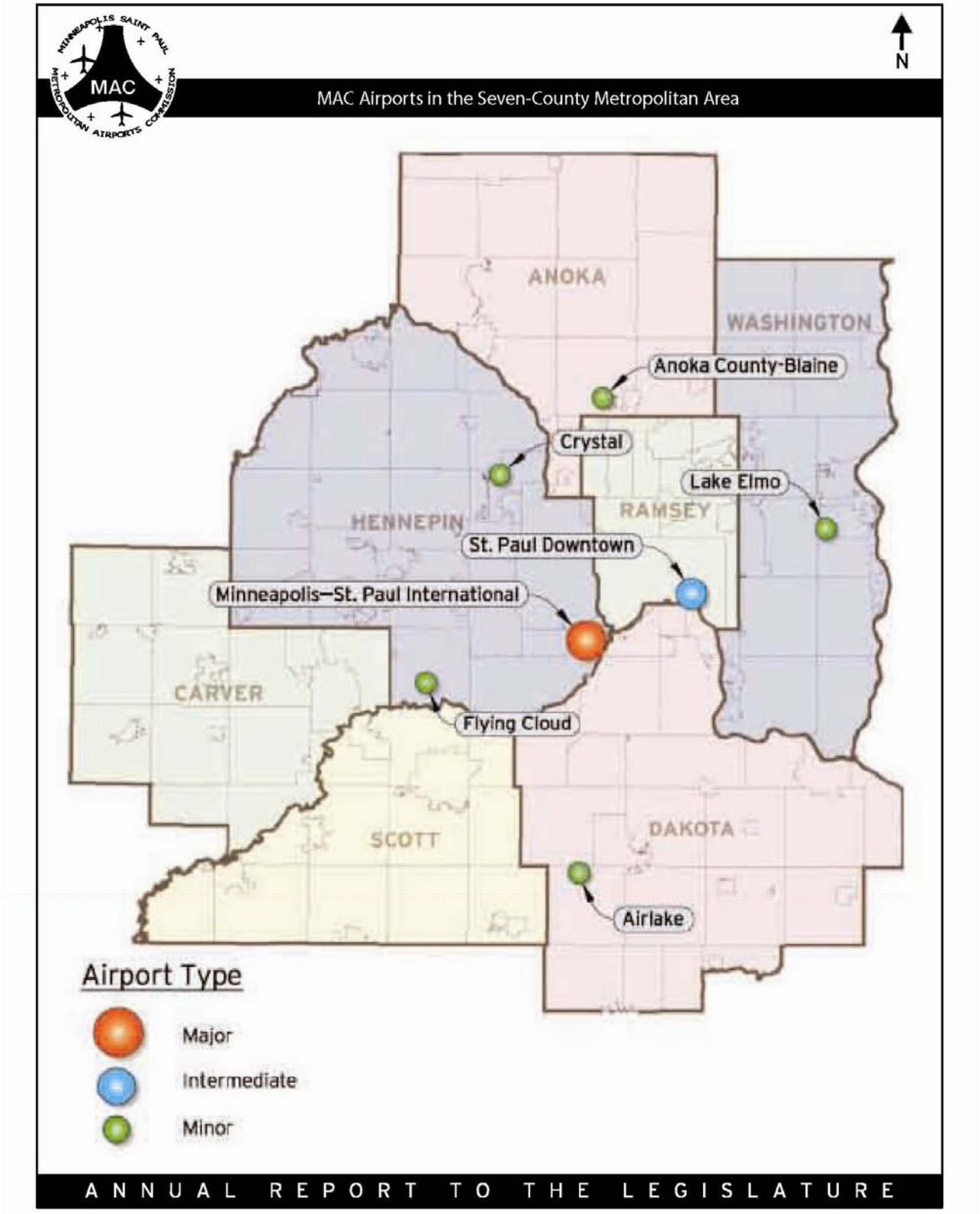
This legislation also requires the MAC to prepare an annual report to the Legislature that describes recent airport activity, current and anticipated capacity and delay for the airfield and terminal, and technological developments that could improve airport efficiency. In 2006, the 1996 legislation was amended to require the MAC to include an update on the six reliever airports in the annual report and to submit the report to the Legislature by March 30 each year.

The 2009 Annual Report to the Legislature is divided into three main sections:

1. Introduction
2. Minneapolis-St. Paul International Airport
3. Reliever Airports

The main sections are further subdivided into sub-sections pertinent to the various facilities.

Figure 1-1: MAC Airports in the Seven-County Metropolitan Area



1.1 The Metropolitan Airports Commission Strategic Plan

The Metropolitan Airports Commission's (MAC) core mission is to provide and promote safe, convenient, environmentally sound and cost-competitive aviation services for its customers. To that end, in 2009 the MAC adopted its Strategic Plan for 2010-2015, which includes a specific outline of its organizational vision and goals for MSP and reliever airports. Several initiatives included in the plan address customer service enhancements. The report also introduces the MAC's new vision statement and commitment: "To give our customers the best airport experience in North America."

The 2010 key initiatives include:

1. Provide a great customer experience
2. Match employee talent with changing business needs
3. Assure financial viability
4. Leverage resources and technology
5. Strengthen partnerships and relationships

2. MINNEAPOLIS-ST. PAUL INTERNATIONAL AIRPORT (MSP)

2.0 OVERVIEW

This portion of the report highlights the facilities and activities at Minneapolis-St. Paul International Airport (MSP) and includes the following topics:

- A description of MSP facilities
- A description of MSP activity and service trends
- A comparison of 1993 MAC forecasts with actual activity
- Current airfield capacity and average length of delay statistics
- Technological developments affecting aviation and their affect on airport operations and capacity

2.1 MSP AIRPORT FACILITIES

2.1.1 Airfield

The MSP airfield is approximately 3,400 acres in size and consists of two parallel runways, one north-south runway and one crosswind runway. Runway 4-22 is 11,006 feet long (with environmental approvals for an extension to 12,000 feet); Runway 12R-30L is 10,000 feet long; Runway 12L-30R is 8,200 feet long; and Runway 17-35 is 8,000 feet long. **Figure 2-1** shows MSP's current general airport layout, and **Table 2.1** summarizes the major airport components.

Deicing pads are located at the end of each parallel runway. Runway 17-35 has a 7-position deicing pad only at its north end to accommodate departures to the south because current operating restrictions normally preclude departures to the north over Minneapolis. All the deicing pads have facilities nearby for recharging deicing trucks and for providing a rest area for deicing crews. A combined deicing operations and maintenance facility adjacent to the 12L deicing pad provides the capability to coordinate deicing operations on all pads.

There are two cargo aprons (50 acres total) located at MSP: Infield Cargo Apron and West Cargo Apron. The Infield Cargo Apron is situated between Runway 12R-30L and Runway 17-35 and supports a FedEx cargo sort facility and a UPS facility. The West Cargo Apron accommodates a multi-tenant cargo facility and three aircraft maintenance hangars on the western edge of the airfield. The two maintenance complexes and cargo facility that were formerly occupied by Northwest Airlines at the south Lindbergh Terminal area adjacent to the inbound/outbound roadway have been demolished, and site restoration was completed in 2009.

2.1.2 Lindbergh Terminal (Terminal 1-Lindbergh)

The Lindbergh Terminal, the largest terminal at MSP, originally built in 1962 and named the 'Charles A. Lindbergh Terminal' in 1985. Due to recent changes in roadway signage, this terminal is now being referred to as Terminal 1.

Figure 2-1: Minneapolis-St. Paul International Airport Layout

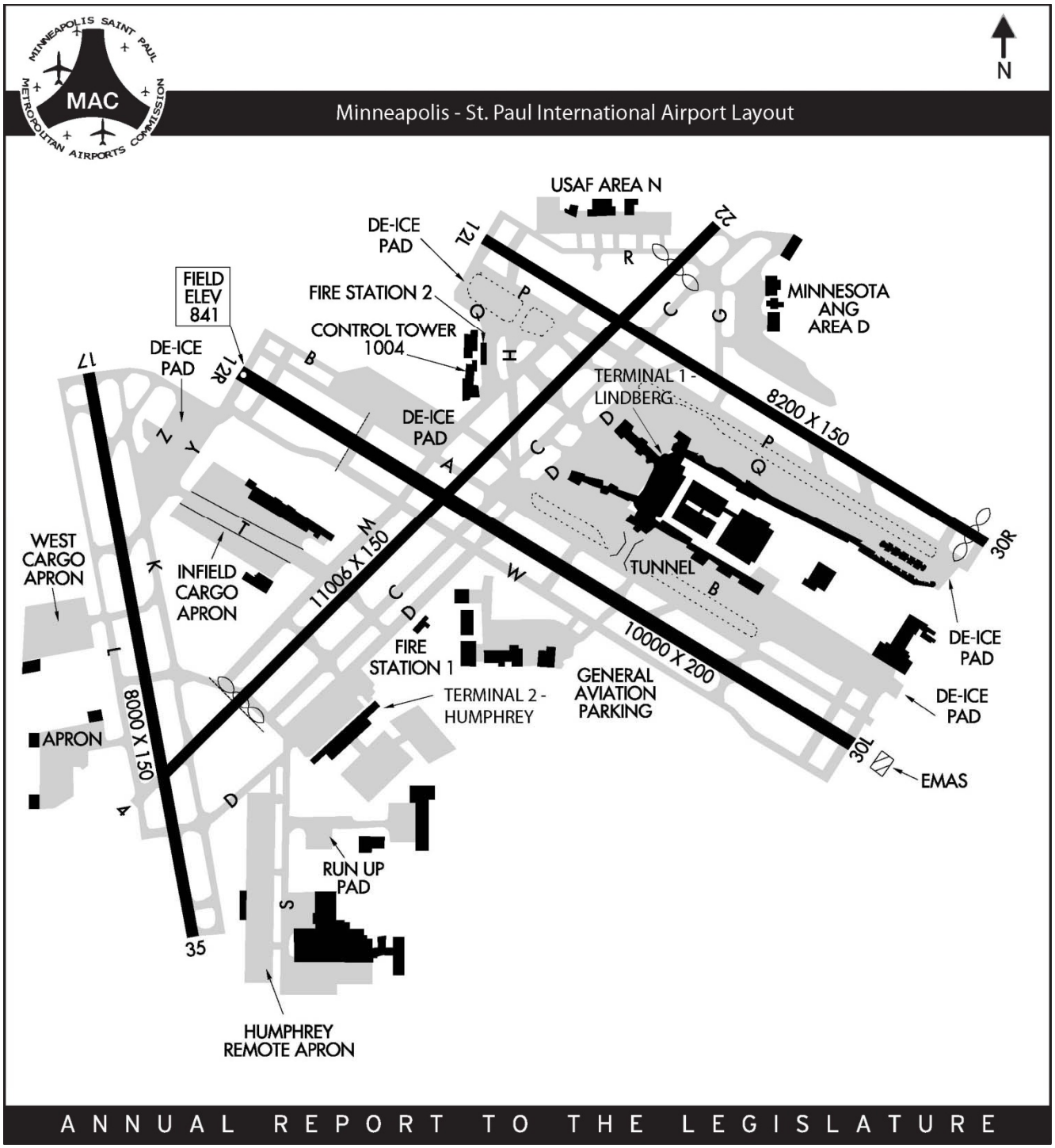
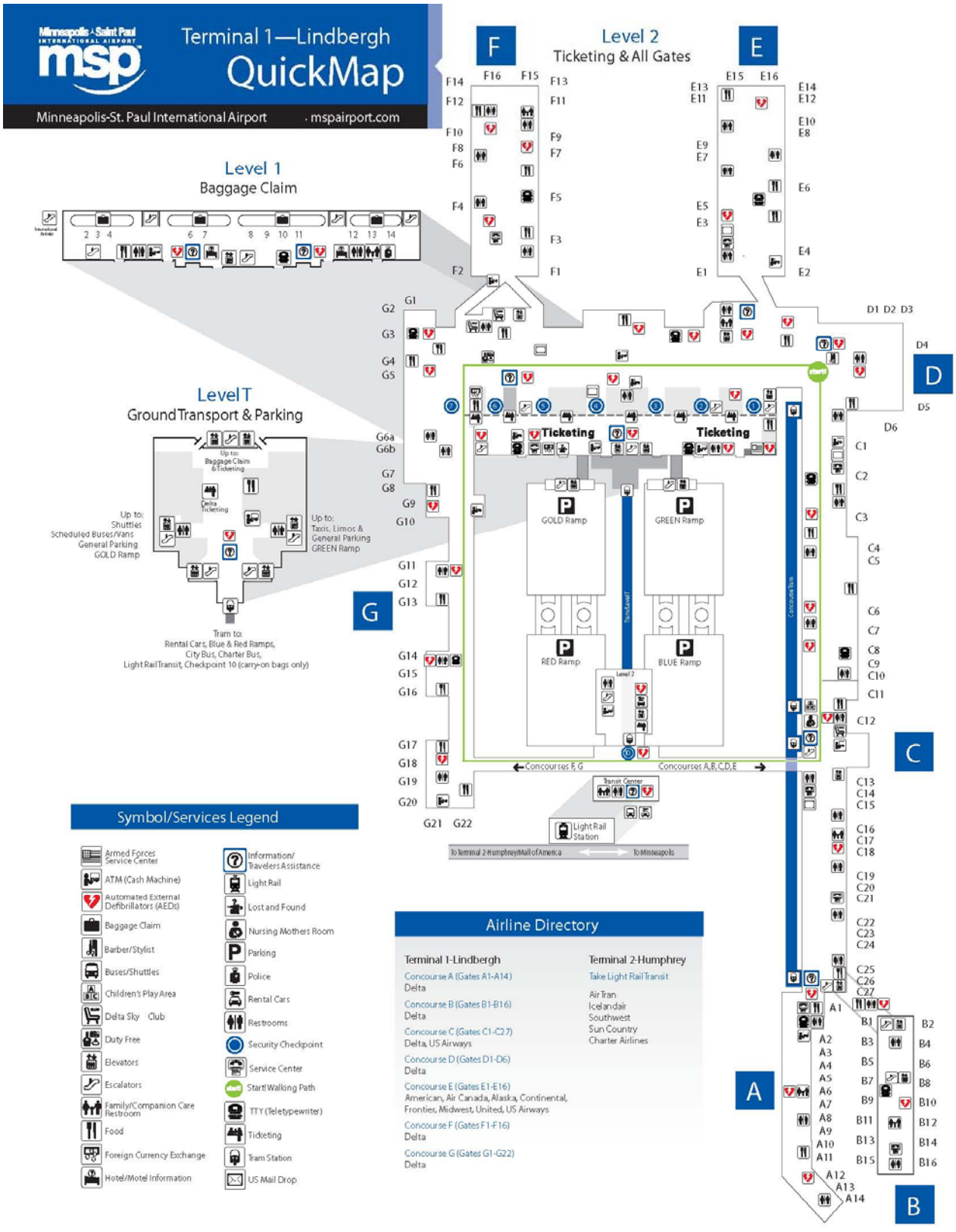


Figure 2-2: Terminal 1-Lindbergh



This terminal is located between the north parallel runway (12L) and the south parallel runway (12R), east of Runway 4-22. **Figure 2-2** displays the terminal layout with single-loaded and double-loaded concourses, and 117 gate positions. Of those, 10 gates support international arrivals into the International Arrival Facility. A concourse tram and moving sidewalks assist passenger travel along Concourse C. Moving sidewalks also facilitate passenger movement on Concourses A, B and G, and through the skyway connector between Concourses C and G. Four parking ramps provide short- and long-term parking for passengers and space for rental cars. A tram assists passenger movements from the terminal to the two most distant parking ramps, light rail transit and auto rental facilities.

2.1.3 Humphrey Terminal (Terminal 2-Humphrey)

The Humphrey Terminal was opened in 1977 and named for Hubert H. Humphrey. This terminal is located southwest of the parallel runways and consists of 10 gates currently used by Sun Country, Air Tran, Iceland Air, Southwest Airlines and charter companies. Recent changes in highway signage refer to the Humphrey Terminal as Terminal 2. The terminal layout is depicted in **Figure 2-3**, and includes an International Arrival Facility, and public parking spaces for approximately 9,200 vehicles. The Orange Ramp was completed in February 2009, which added 4,575 parking spaces.

In January of 2010 the MAC began constructing a climate-controlled skyway connecting the new Orange parking ramp and the light rail station to the terminal. The new skyway is scheduled to be open in December 2010.

2.1.4 Terminal Way-Finding Signage

MSP is the only major U.S. airport that has its passenger terminals located on two separate roadway systems. Between late March and mid April 2010, a series of new signs will be installed along roadways and highways leading to the exits for each terminal at MSP. The signs will designate the terminals as Terminal 1 and Terminal 2 rather than Lindbergh and Humphrey, respectively. Additionally, for the first time in MSP history, the names of the airlines located at each terminal will be listed on highway signs so passengers have the information they need to select the right highway exit and terminal for their airline. The change to a numerical designation and airline names on the signs is necessary so that drivers can quickly scan the signs and make their decision without slowing down traffic.

Off the highway, the official names of the terminals will continue to be used to retain the historic references in addition to the supplemental names as follows: Terminal 1-Lindbergh and Terminal 2-Humphrey.

Table 2.1

EXISTING AIRPORT FACILITIES

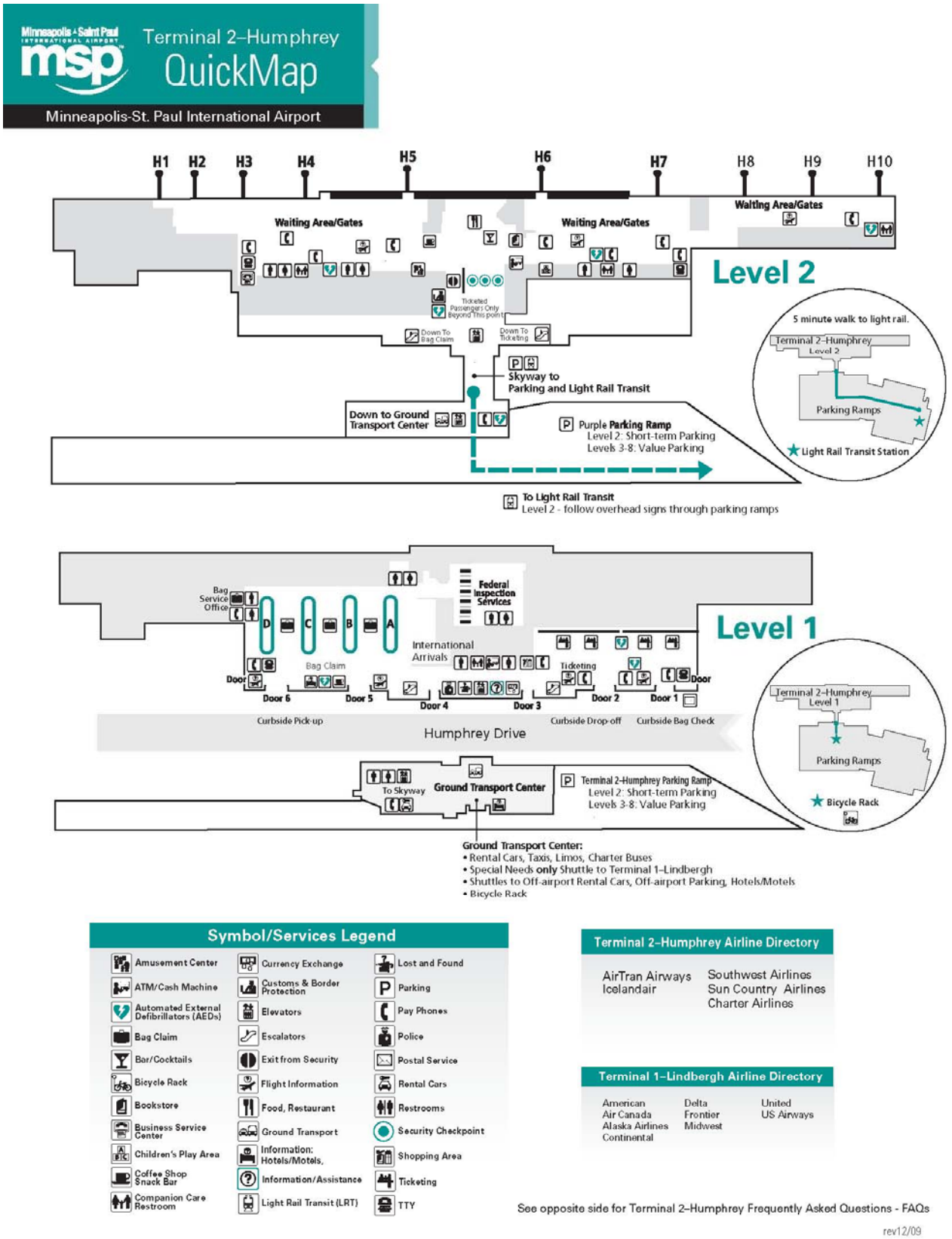
Airport Components		Quantity	
RUNWAYS			
	East-West Parallel (Runways 12L-30R and 12R-30L)	2	
	North-South (Runway 17-35)	1	
	Crosswind (Runway 4-22)	1	
	Total Runways	**4**	
	Other Runway Information:		
	Longest Runway (Runway 4-22)	11,006 ft.	(1)
TERMINAL BUILDING FACILITIES			
	Terminal 1-Lindbergh million sq. ft.	2.8	
	Terminal 2-Humphrey million sq. ft.	.4	
	Total Terminal Square Footage (millions)	**3.2**	
	Terminal 1-Lindbergh Gates	117	
	Terminal 2-Humphrey Gates	10	
	Total Gates	**127**	
PUBLIC AUTO PARKING			
	Terminal 1-Lindbergh	14,400	
	Terminal 2-Humphrey	9,200	
	Total Public Auto Parking Spaces	**23,600**	

Note:

(1) Runway 4-22 is the longest runway (11,006 ft.) and has environmental approval to be extended to 12,000 feet.

Source: Metropolitan Airports Commission Airport Development.

Figure 2-3: Terminal 2-Humphrey



2.1.5 Light Rail and Bus Transit

The Metro Transit Hiawatha Line provides a light rail transit (LRT) option for MSP travelers and visitors commuting between terminals and off-airport locations from downtown Minneapolis to the Mall of America.

The Terminal 1-Lindbergh Station[1] at MSP is located below ground at the south end of the Terminal 1-Lindbergh parking garage, and the Terminal 2-Humphrey Station[2] is located directly east of Terminal 2-Humphrey. No fare is required for travel between the two MSP LRT stations. A bus station at ground level above the Terminal 1-Lindbergh LRT station provides additional mass transit service and connectivity between the LRT and bus systems.

Metro Transit estimates that more than 3,400 boardings occurred at the airport terminal stations on an average weekday in 2009. This ridership is approximately 3 percent higher than the estimated 3,300 boardings that occurred in 2008.

2.1.6 MSP Long Term Comprehensive Plan Update

The MAC is in the process of completing an updated MSP Long Term Comprehensive Plan (LTCP). The previous plan was published in 1996 and included projects that dramatically improved airfield efficiency, particularly with the addition of Runway 17-35 and associated infrastructure in 2005. The updated LTCP is necessary for planning purposes, and it reflects significant changes in the aviation industry and impacts of recent economic conditions on aviation. This plan identifies and prioritizes facility improvements for MSP out to the year 2030 based upon revised aircraft operations and passenger activity forecasts.

For initial planning of the document, several goals were established:

1. Provide sufficient, environmentally-friendly facilities to serve existing and future demand;
2. Provide improved energy efficiencies;
3. Encourage increased use of public transportation;
4. Minimize confusion associated with having two terminals and multiple access points;
5. Allow for flexibility in growth;
6. Utilize and maintain existing facilities to the fullest extent possible; and
7. Enhance aircraft operational safety and efficiency.

Forecasts for the year 2030 indicate an increase in passenger boardings of more than 73 percent and aircraft operations of about 40 percent. Based upon these forecasts, the LTCP Update primarily focuses on terminal and landside facilities that have become outdated. Proposed modifications to the airfield in the updated LTCP address taxiway

[1] The LRT Lindbergh Station name will be adjusted in accordance with the new way-finding signage being implemented for MSP in 2010.
[2] The LRT Humphrey Station name will be adjusted in accordance with the new way-finding signage being implemented for MSP in 2010.

improvements intended to augment airfield circulation. The implementation of the development plan is divided into four 5-year phases as follows:

PHASE I: 2010 – 2015

Construct 17 new gates at Terminal 2-Humphrey
New explosive detection system at Terminal 2-Humphrey
Terminal 2-Humphrey Auto Rental Facility
Terminal 2-Humphrey parking expansion
Terminal 2-Humphrey roadway system improvements

PHASE II: 2015 – 2020

Curbside expansion at Terminal 1-Lindbergh
Terminal 1-Lindbergh remodeling
Expansion of Concourse G in Terminal 1-Lindbergh
Terminal 1-Lindbergh parking expansion

PHASE III: 2020 – 2025

Construct 10 new gates at Terminal 2-Humphrey
Terminal 2-Humphrey roadway access improvements
Terminal 2-Humphrey Orange Ramp parking expansion
Terminal 1-Lindbergh in/outbound roadway improvements
Continued expansion of Concourse G at Terminal 1-Lindbergh
MSP Hotel
Delta overnight package express relocation
Airline flight kitchen replacement

PHASE IV: 2025 – 2030

Crossover taxiway construction
Terminal 1-Lindbergh parking expansion
Loading dock facility relocation
Post Office retail operation relocation

Public review and comments on the LTCP Update were solicited in February 2010. Public comments that were received will be addressed and included in the final document, and it is anticipated that the LTCP document will be finalized by mid-year 2010.

2.2 AIRPORT ACTIVITY AND SERVICE TRENDS

Thirteen commercial passenger airlines service MSP; nine are located at Terminal 1-Lindbergh and four are located at Terminal 2-Humphrey. This section presents an overview of the passenger and aircraft operations activity in 2009.

As a result of the economic challenges facing the aviation industry during the past several years, passenger levels in 2009 dropped for the fourth straight year. In 2009, the airlines reported a total passenger level of 32,378,599, which is 4.9 percent lower than the level of 34,056,443 passengers that was reported in 2008. Total passengers at MSP peaked in 2005 when the passenger level reached 37,663,664.

Total aircraft operations at MSP were also reported lower in 2009 when compared to 2008. The number of landings and takeoffs reported by the Federal Aviation Administration (FAA) in 2009 totaled 432,604, which is 3.9 percent lower than the reported level of 449,972 operations in 2008. Total operations at MSP peaked in 2004 when the level reached 540,727.

When the passenger and aircraft operations activity of major air carriers is compared with the activity of regional air carriers over the past five years, the trend indicates a shift from travel on major air carriers to the regional air service companies that operate aircraft with 76 or fewer seats. This shift is evident in 2009 with a nearly 8.6 percent decline in passengers traveling on major air carriers, while regional air carriers reported an increase of approximately 9.1 percent. Additionally, aircraft operations flown by the major air carriers in 2009 decreased by nearly 6.9 percent during the same time that aircraft operations flown in regional air carrier aircraft rose by nearly 4.5 percent.

Overall, when comparing air carrier passenger activity at MSP with other airports, Airports Council International is reporting that the level of domestic passengers on all North American airlines dropped 1.2 percent in 2009 when compared to 2008.

The merger of Delta Air Lines with Northwest Airlines was completed on January 31, 2010 after first being announced in April 2008. Delta Air Lines and its regional partners currently operate 430 flights per day from MSP and serve 138 destinations worldwide.

Sun Country Airlines continues to grow its markets and expand its services. Sun Country operates from Terminal 2-Humphrey and served more than 20 year-round and seasonal destinations in 2009. This home-grown air carrier was ranked one of the “top ten domestic airlines” for Travel+Leisure’s World’s Best Service Award in July 2009 for the fourth consecutive year. The airline began promoting its newest product, Sun Country Vacations, in December 2009.

Southwest Airlines began service from MSP to Chicago Midway in March 2009 after nearly 20 years of recruitment efforts by the MAC. Southwest now occupies two gates in Terminal 2-Humphrey and has expanded its daily roundtrip service to three destinations: Chicago Midway, Denver, and St. Louis.

2.2.1 Domestic Passenger Originations/Destinations

Figure 2-4 reviews historical passenger originations/destinations (O&D) data for MSP. O&D passengers are those who begin or end their trip at the airport (vs. passengers who are connecting at the airport en route to another destination). O&D passenger demand is driven primarily by local socioeconomic factors.

Following is a summary of O&D activity at MSP. The MSP O&D data for 2009 are estimated based on passenger activity during the first three quarters of 2009.

- The number of O&D passenger in 2009 is estimated to be 16.1 million, which is a 4.6 percent decrease when compared to the 16.9[3] million passengers in 2008 that traveled through MSP.

- Between 1990 and 2009, O&D passengers at MSP rose from 9.5 million to nearly 16.1 million, which is an increase of 69.4 percent. This represents an estimated annual compounded growth rate of 2.7 percent.

2.2.2 Domestic Connections

There were fewer connecting revenue passengers at MSP in 2009 when compared to 2008. In 2009, it is estimated that approximately 7.2 million passengers connected through MSP, which is an 11.1 percent decrease from the reported level of 8.1 million connecting passengers in 2008. These data include both air carrier and regional carrier revenue passengers.

2.2.3 Annual Revenue Passengers

Total annual revenue passenger levels are shown in **Figure 2-5** and include O&D and connecting passengers.

- In 2009 there were 31.3 million total annual revenue passengers at MSP. Between 1990 and 2009, total annual revenue passengers grew by more than 12 million passengers, which represents an annual compounded growth rate of nearly 2.5 percent.

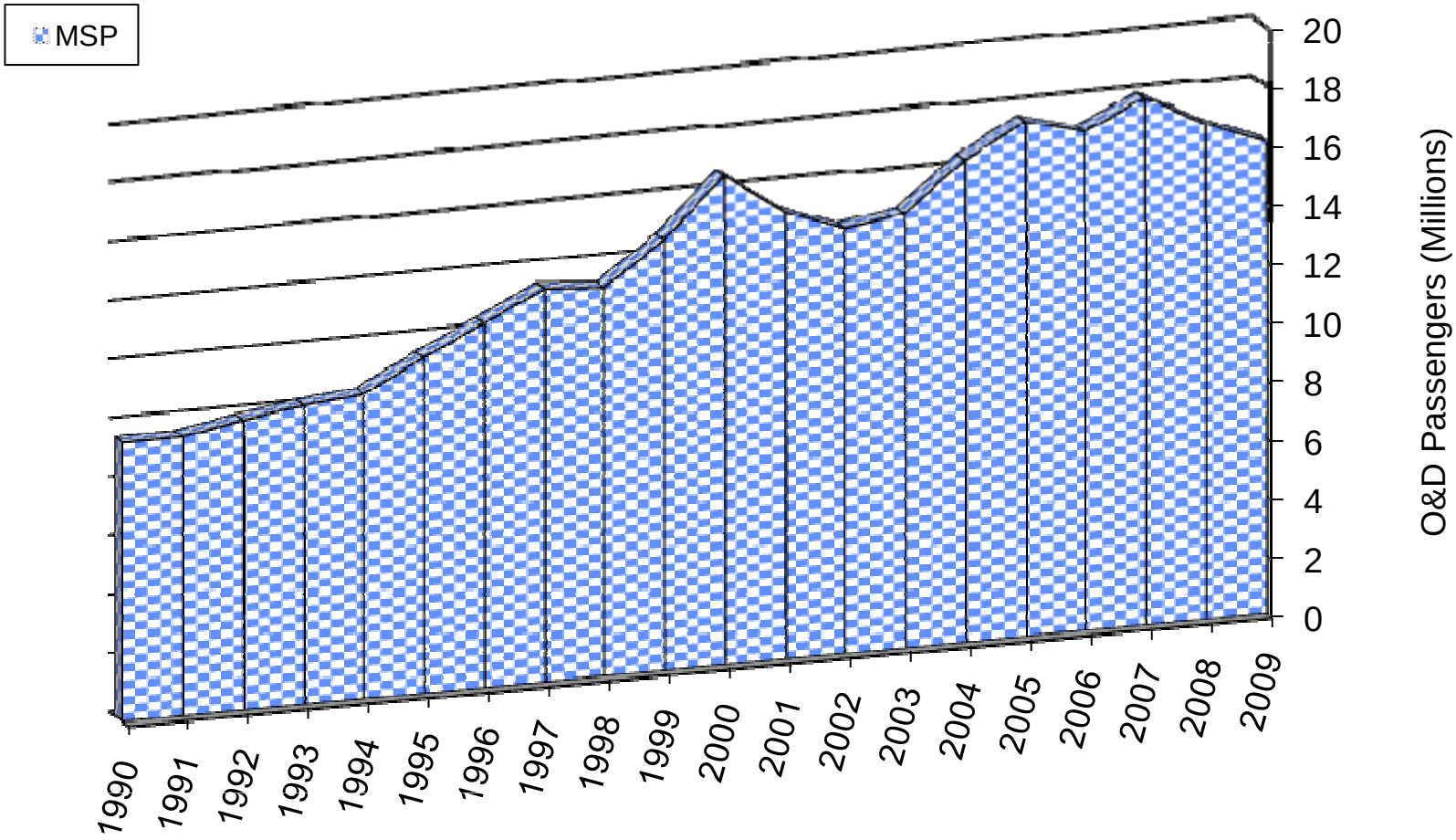
- The total annual revenue passenger level in 2009 dropped by 5 percent when compared to the level of 32.9 million revenue passengers at MSP in 2008.

2.2.4 Annual Aircraft Operations

Annual MSP aircraft operations are presented in **Figure 2-6**. In 1990, MSP had 382,960 annual operations according to FAA Tower counts. Total annual operations at MSP generally increased through 2000 then declined after the events of September 11, 2001. During 2001, there were 501,252 total operations at MSP, which amounted to a 4 percent decline from the previous year.

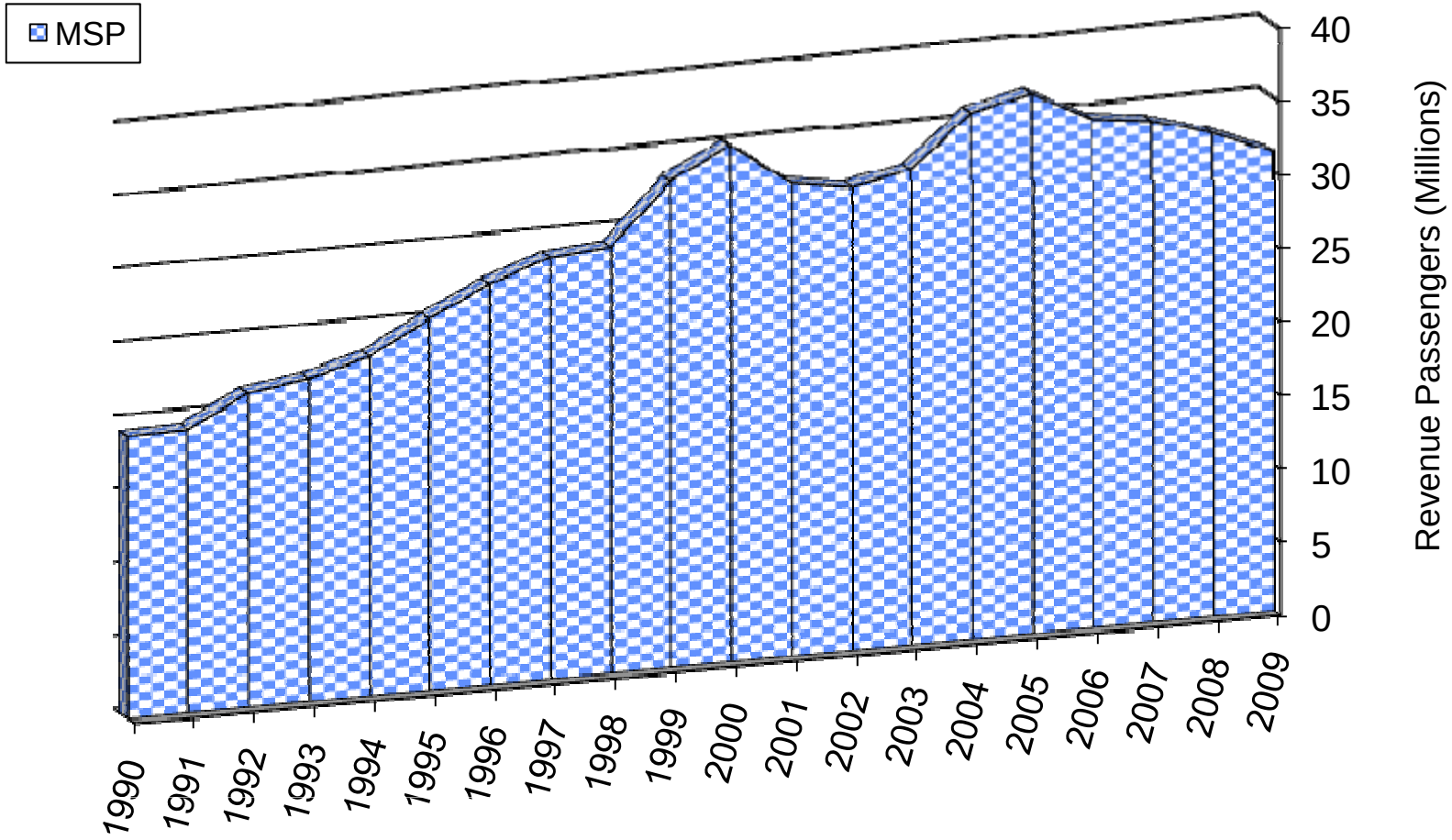
[3] This total is based upon actual data reported from U.S. DOT. The O&D estimation of 17.4 million passengers that was stated in the 2008 Annual Report to the Legislature was based upon data for the first three quarters of 2008 because those were the data available at the time the report was prepared.

Figure 2-4:
Annual Passenger Originations/Destinations* Totals
1990-2009



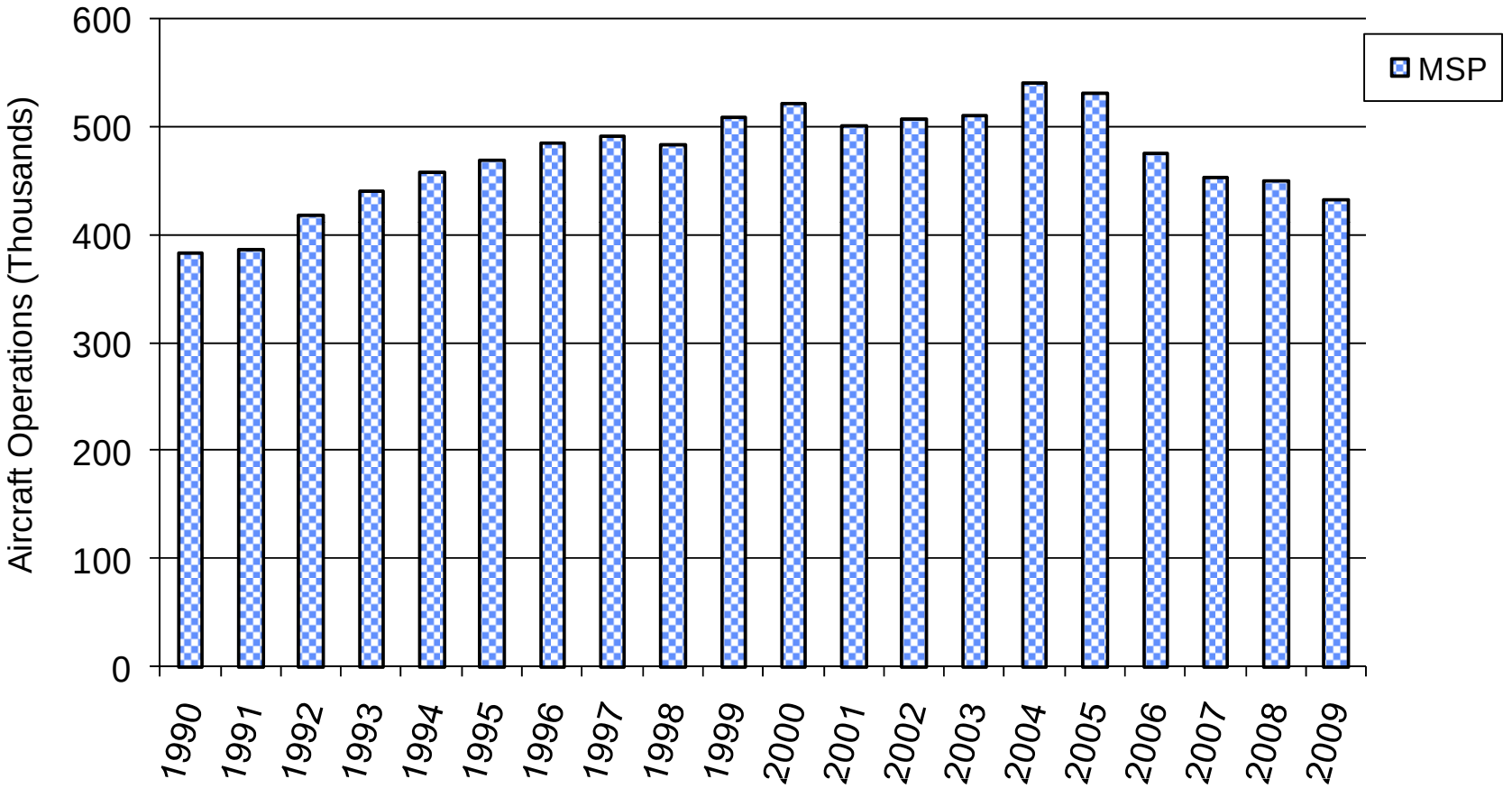
*2009 O&D passengers estimated from first three quarters of 2009.
Sources: U.S. DOT; HNTB analysis.

Figure 2-5:
Total Annual Revenue Passengers
1990-2009



Sources: Metropolitan Airports Commission.

Figure 2-6:
Annual Aircraft Operations
1990-2009



Sources: Metropolitan Airports Commission Year End Operations Report Updated 2/8/10 and FAA OpsNet.

As mentioned previously, 2004 was the peak year for annual operations at MSP. During that year there were 540,727 arrivals and departures, but there has been a steady decline for the past five consecutive years as a result of higher fuel prices and the overall struggling economy. Many airlines have been forced to cut flights and reduce fleets to decrease operating costs, and have raised ticket prices and initiated fees for passenger services (e.g., baggage fees, ticket counter customer service, in-flight food and beverages, etc.) to increase revenues.

The total annual aircraft operations level of 432,604 in 2009 is the lowest since 1993.

2.2.5 Nonstop Markets

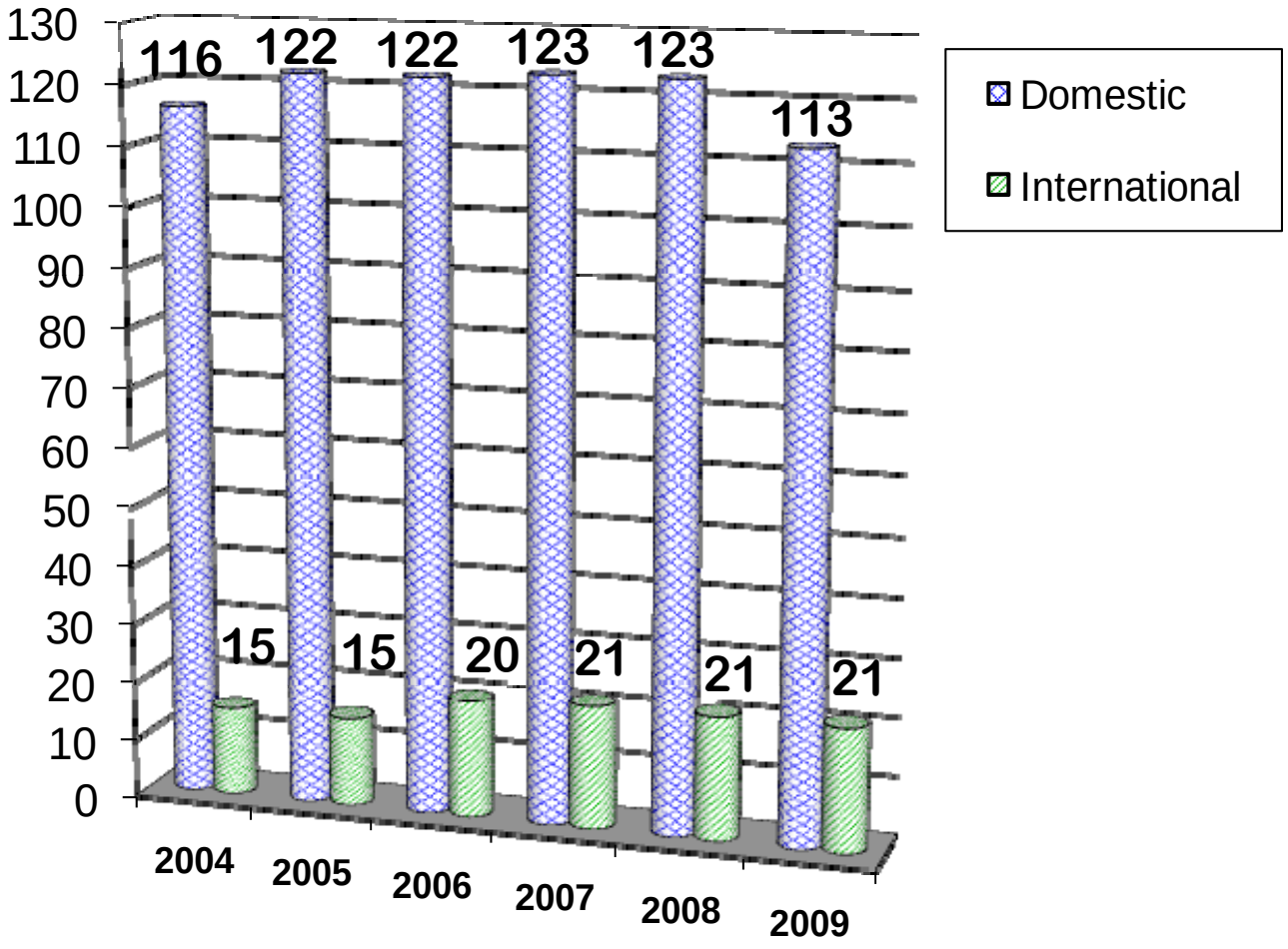
Figure 2-7 shows the number of nonstop domestic and international (including Canadian) markets served from MSP from 2004 through 2009. The domestic markets include those receiving an annual average of at least five weekly nonstop flights. The international markets include those receiving an annual average of at least one weekly nonstop flight. Some of these markets are served only seasonally.

Based on Official Airline Guide data, there were 134 nonstop markets served by MSP in 2009: 113 domestic and 21 international that met the criteria mentioned above. This total is fewer than the 144 total nonstop markets in 2008. The reduction is primarily due to reduced service for several domestic markets that resulted in those markets falling below the criteria of five weekly flights. International nonstop markets remained unchanged from 2008.

Figure 2-8 displays how the nonstop markets from MSP are served in various types of aircraft. Of the MSP nonstop markets served in 2009, approximately 22 percent were served exclusively by *Mainline Aircraft* (jets) compared with 32.2 percent in 2008. Regional carriers in 2009 serviced 33 percent of MSP markets in *Regional Aircraft*, *Turboprop Aircraft*, and *Mixed Regional & Turboprop* aircraft fleets compared with 31.6 percent in 2008. The remaining 45 percent of MSP nonstop markets in 2009 were served by a combination of aircraft in a fleet category of *Mixed Mainline & Regional Aircraft*, which is an increase from 36.2 percent in 2008.

Table 2.2 compares MSP to other major metropolitan areas in terms of the number of nonstop markets served by each airport per population of the Metropolitan Statistical Area. On a per capita basis, Denver is the only similarly-sized metropolitan area in the nation with more nonstop flight markets than MSP (**Figure 2-9)**.

Figure 2-7:
Number of Nonstop Markets
2004-2009

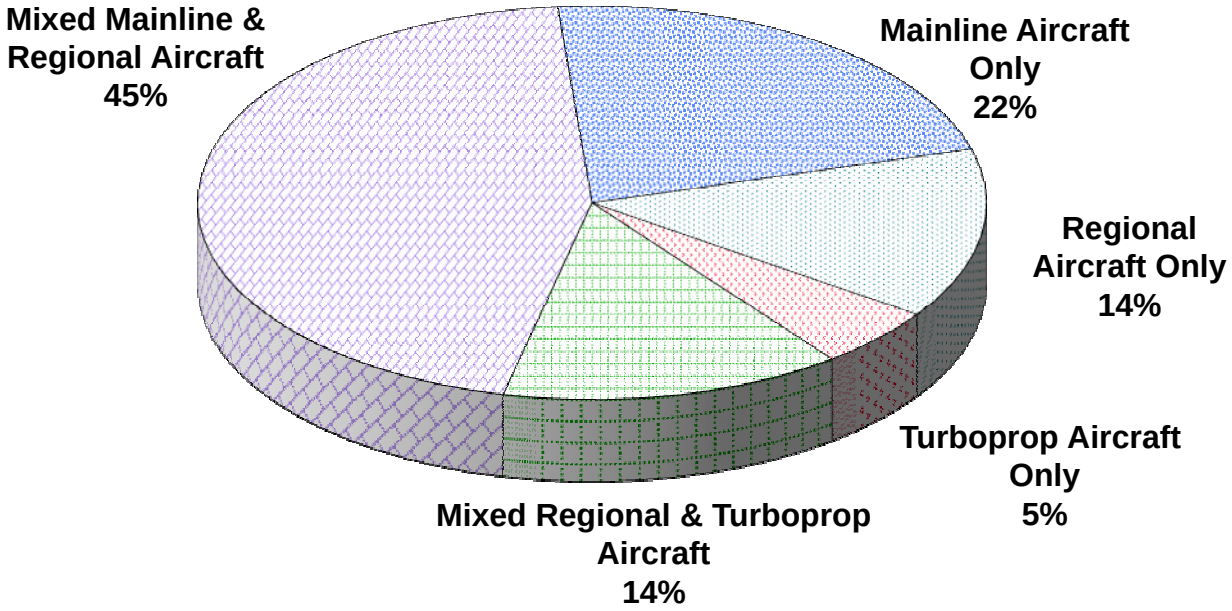


Sources: T100 via DataBase Products, Official Airline Guide via BACK Aviation Solutions, 2009; InterVISTAS , MAC and HNTB analysis.

Figure 2-8:
2009 Nonstop Markets by Aircraft Type

M S P
134 Nonstop Markets

Mainline Aircraft = Air Carrier Jet Aircraft
Mixed Mainline & Regional = Combination of Air Carrier & Regional Carrier Service
Regional Aircraft = Regional Air Carrier Jet Aircraft
Turboprop Aircraft = Turboprop Aircraft
Mixed Regional & Turboprop = Combination of Regional Jet & Turboprop Aircraft



Sources: Official Airline Guide via BACK Aviation Solutions, 2009; InterVISTAS and MAC analysis.

Table 2.2
NONSTOP MARKETS BY METROPOLITAN AREA

Metropolitan Area	Population [1] (Millions)	Nonstop Markets [2] [3]	Markets/Pop. (Million) Ratio
New York	22.2	216	9.7
Los Angeles	17.8	134	7.5
Chicago	9.8	176	18.0
Washington-Baltimore	8.3	136	16.4
Boston	7.5	90	12.0
San Francisco-Oakland	7.4	89	12.1
Dallas-Fort Worth	6.7	154	23.1
Philadelphia	6.4	118	18.4
Houston	5.8	166	28.5
Atlanta	5.7	207	36.1
Miami-Fort Lauderdale	5.4	122	22.5
Detroit	5.4	137	25.6
Phoenix	4.3	98	22.9
Seattle-Tacoma	4.1	93	22.8
Minneapolis-St. Paul	**3.6**	**134**	**37.6**
Denver	3.0	144	47.2
San Diego	3.0	39	13.0
Cleveland	2.9	66	22.9
St. Louis	2.9	65	22.6
Tampa-St. Petersburg	2.7	59	21.6

Notes:

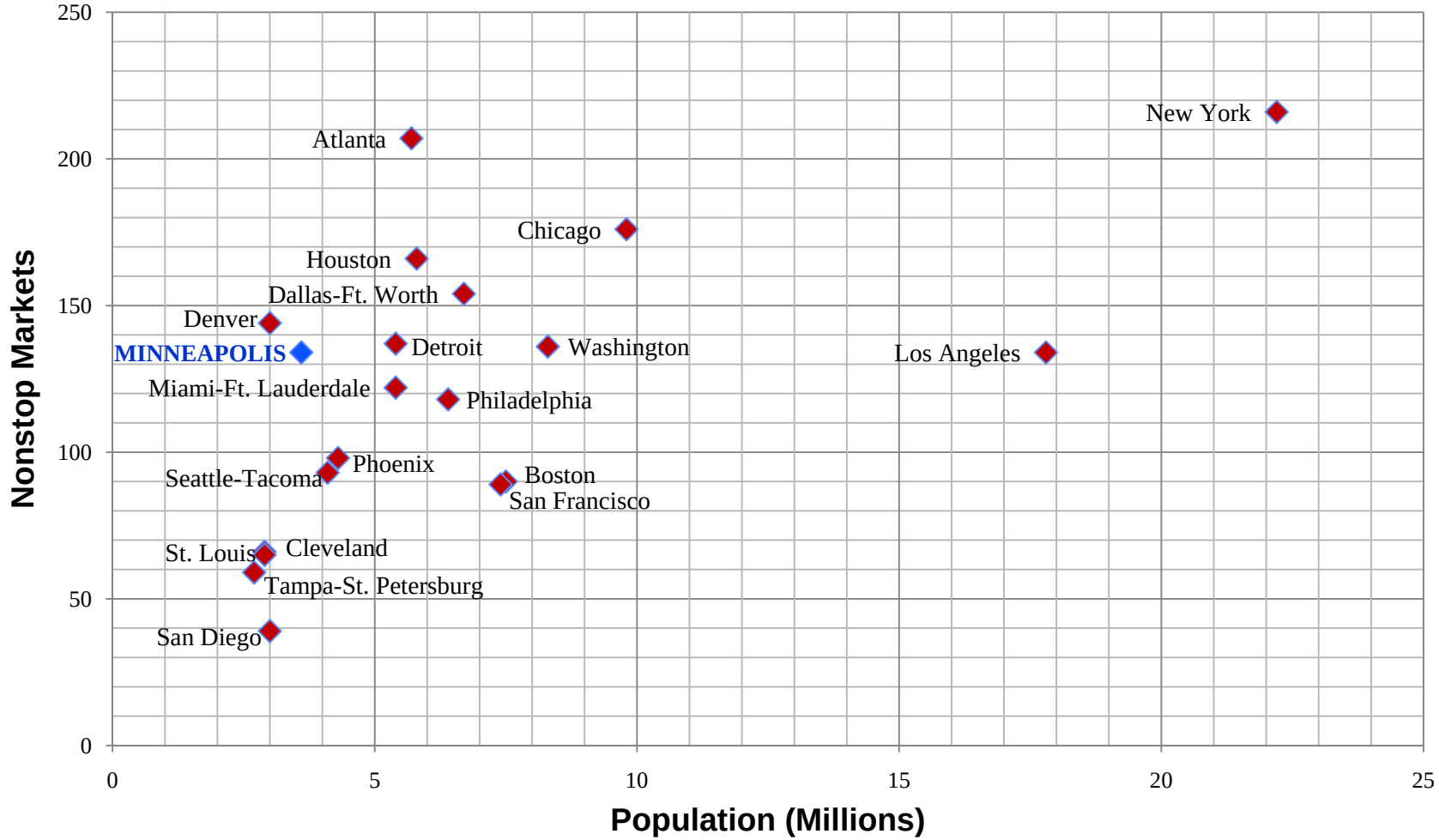
[1] U.S. Census Bureau; Annual Estimates of the Population of Metropolitan and Micropolitan Statistical Areas: April 1, 2000 to July 1, 2008 (CBSA-EST2007-01); Annual Estimates of the Population of Combined Statistical Areas: April 1, 2000 to July 1, 2008 (CBSA-EST2007-02).

[2] Metropolitan areas served by more than one airport are counted once.

[3] Markets include those receiving an average of at least five weekly nonstop domestic flights or one weekly nonstop international flight during the period from January through July 2009, except MSP markets were derived from data obtained Jan-Dec 2009.

Sources: U.S. Census Bureau, 2009 USDOT T-100 data; OAG via BACK, 2009; InterVISTAS and HNTB analysis.

Figure 2-9:
Population vs. Nonstop Service
2009



Sources: Metropolitan Airports Commission chart and HNTB data analysis.

2.3 COMPARISON OF 1993 MAC FORECAST WITH ACTUAL ACTIVITY

As required by the Metropolitan Planning Act of 1989, the Dual Track forecasts were revised in 1993, using 1992 as a base year. Forecasts were developed with assumptions that took into account factors affecting economic growth, including fuel prices, low-cost carriers, airfares, airline hubbing ratio, regional carrier penetration into air carrier markets, and changes in the structure of air travel demand. These forecasts are being revised as part of the MSP Long Term Comprehensive Plan Update (see Section 2.1.6); however, the information below compares the actual 2009 activity with the 1993 forecast as defined by the following scenario assumptions:

- Higher than projected economic growth
- A continuation of the high level of connecting activity at MSP by Northwest Airlines/Delta Air Lines
- High international travel demand resulting from an increasingly globalized economy

The most conservative scenario was defined by the following assumptions:

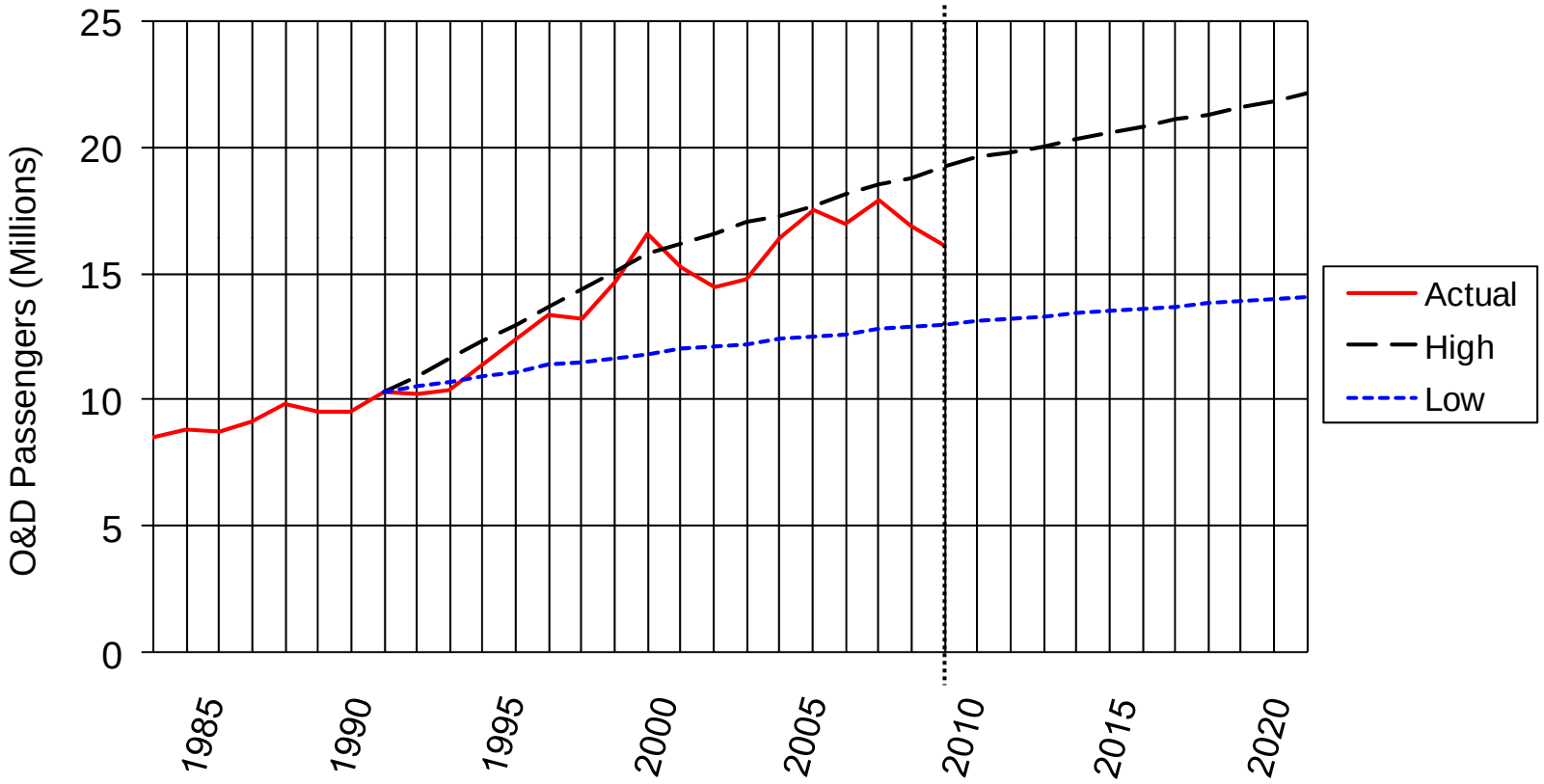
- Lower than projected economic growth
- A reduction in connecting activity by Northwest Airlines/Delta Air Lines to the minimum level allowed by the hub covenant contained in the Northwest loan agreement
- A greater transfer of routes from air carriers to regional carriers

A comparison of the enplanement, passenger origination, and aircraft operations forecasts with actual 1993-2009 activity follows. It should be noted that activity levels fluctuate from year to year around a long-term average, and it is important to distinguish between these short-term fluctuations and long-term trends when evaluating a forecast.

Figures 2-10–2-12 show O&D, total revenue passengers, and annual aircraft operations, respectively.

- Actual passenger originations were slightly below the high forecast level in 1993 through 1999, but increased to a level above the high forecast during 2000 (**Figure 2-10**). Passenger originations and destinations in 1998 were reduced because of the loss of service resulting from the Northwest Airlines strike in August and September. O&D totals were also down in 1999 due to the strike, but rebounded midway through the year to pre-strike levels. At the end of 2001, O&D numbers decreased 8.4 percent from a high of 16.6 million after passengers reduced air travel in response to the events of September 11. In 2002, due to the lingering effects of September 11, and the economic downturn, O&D passenger numbers continued their decline. By the end of the year, they were down 5.3 percent from 2001, to 14.4 million. In 2005, O&D passengers rebounded to pre-September 11, 2001 levels and peaked in 2007 at 17.9 million. In recent years, the O&D passenger levels have declined to 16.9 million in 2008

Figure 2-10:
Minneapolis-St. Paul International Airport
Forecast vs. Actual 2009 Passenger Originations/Destinations



Sources: U.S. DOT, Metropolitan Airports Commission and HNTB analysis.

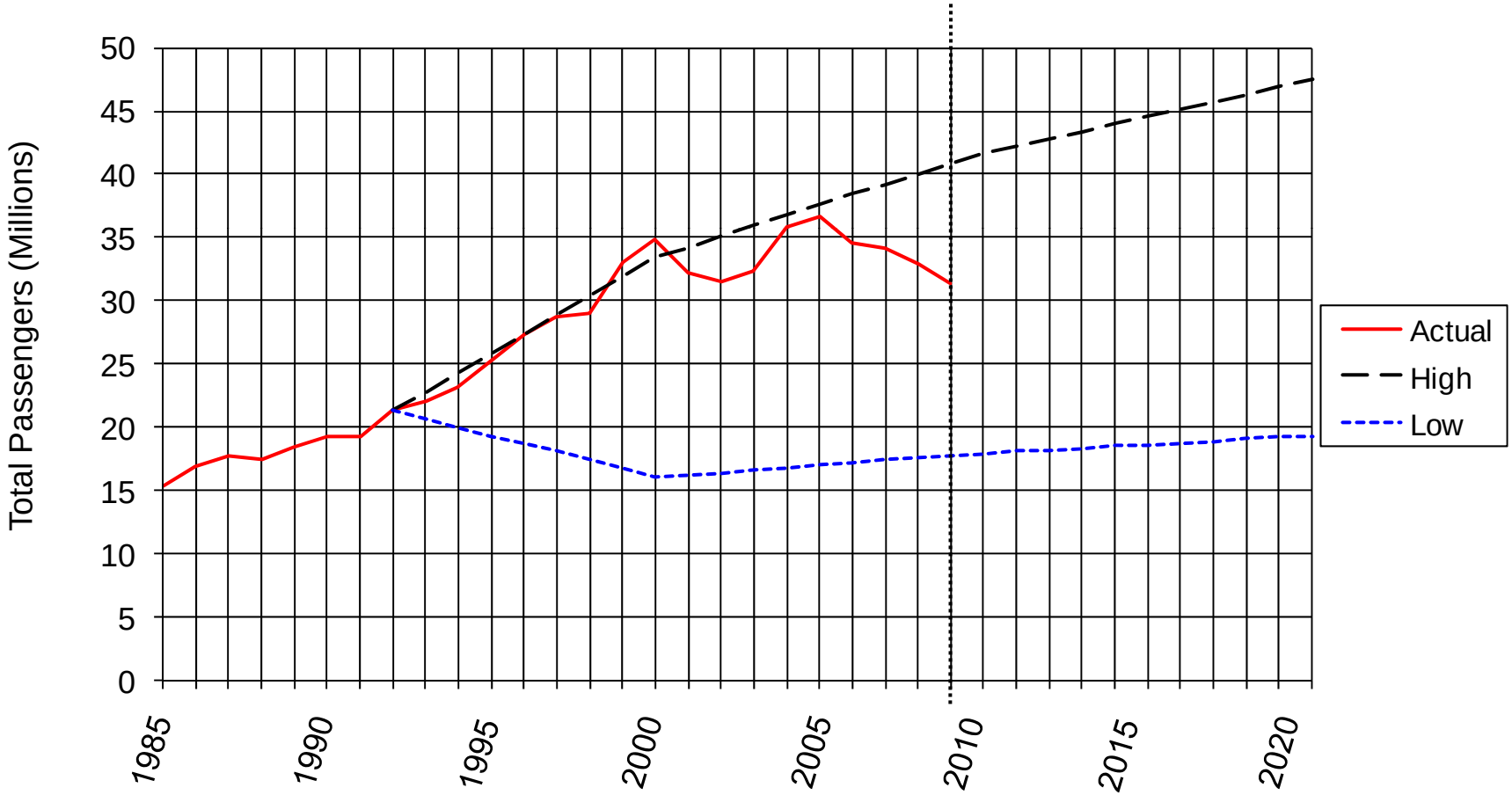
Note: 2009 O&D Passenger estimates are based on the first three quarters of 2009.

and 16.1 million in 2009. The 2009 level of 16.1 million O&D passengers is approximately 16.3 percent below the high forecast of 19.2 million O&D passengers.

- As shown in **Figure 2-11**, MSP total revenue passenger activity grew at close to historical rates in 1993, but growth accelerated between 1994 and 1995 and approached the high forecast in 1996. In 1999 and 2000, total passengers exceeded the high forecast. Much of the passenger growth at MSP between 1994 and 2000 was the result of one-time factors. These include Northwest Airlines' hub consolidation at MSP and Detroit in 1992 and 1993; the liberalization of Canadian markets, which opened up MSP as a hub for cross-border traffic beginning in 1995; and the lapse of the passenger ticket tax during most of 1996. Also, airlines have developed much more sophisticated reservation systems that allow them to generate more revenue by filling otherwise empty seats with passengers flying on discount fares. The passenger growth rate in 1998 decreased from that of previous years because of the loss of service resulting from the Northwest strike; however, discount fares helped Northwest Airlines regain lost passenger volumes in 1999. A decline in the number of total revenue passengers occurred after September 11, 2001 that resulted in MSP experiencing an 8.3 percent decrease from 2000 levels. In 2002, MSP experienced another decline in total revenue passengers due to the after-effects of September 11 coupled with the sluggish economy. Passenger levels rose in 2003 and 2004, and reached 36.7 million in 2005, but then dropped in 2006 to 34.6 million and continued to drop in the consecutive years that followed. Revenue passenger levels of 31.3 million in 2009 are 23.3 percent below the high forecast level of 40.8 million.

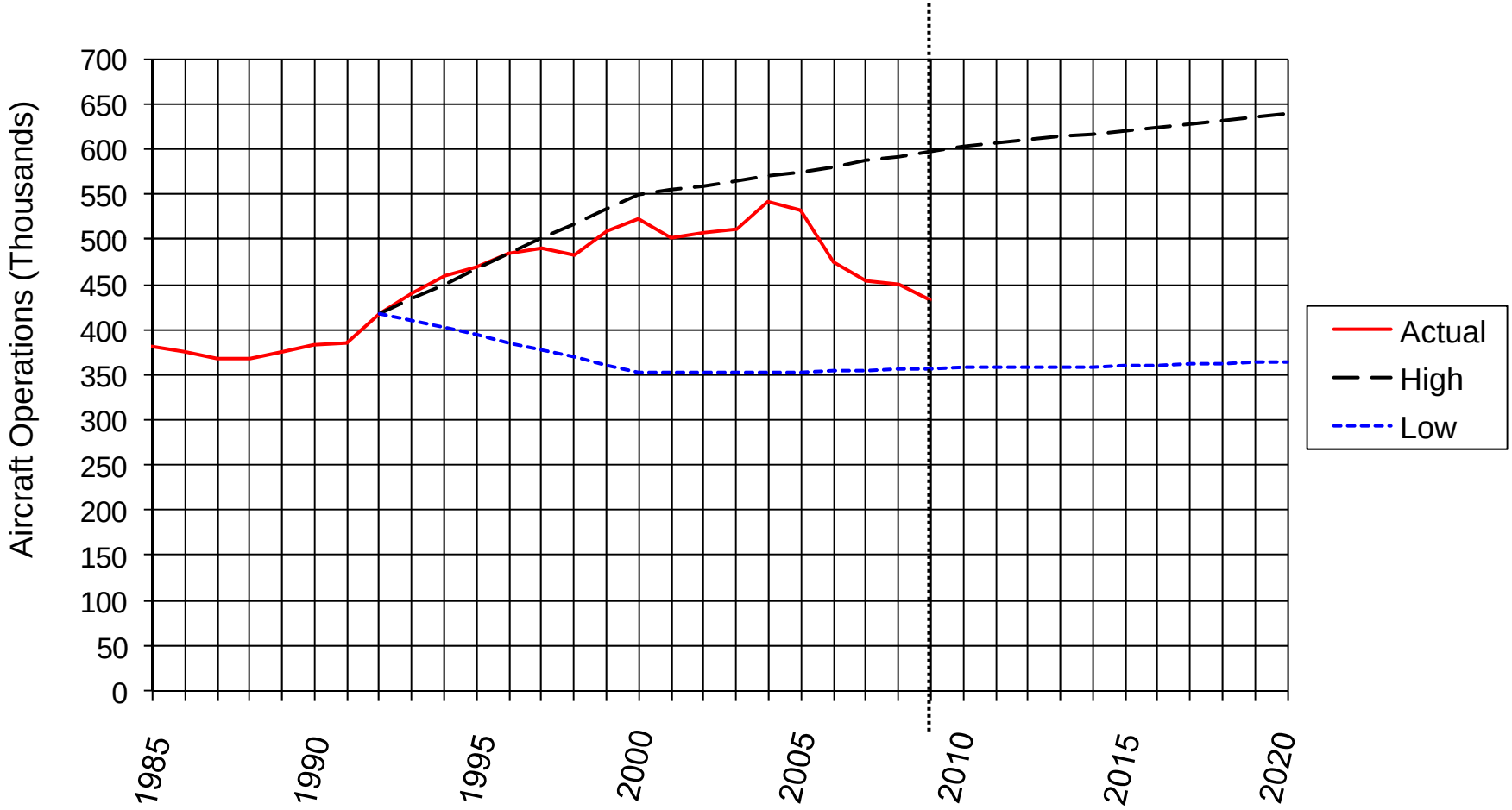
- **Figure 2-12** compares total aircraft operations (as counted by the FAA Air Traffic Control Tower at MSP) with the high and low forecasts. There was an initial burst of aircraft operations in 1993 and 1994 as a result of a significant build-up of regional carrier flights by Northwest Airlink. Factors that stimulated passenger traffic, such as the economy in the 1990s, Northwest Airlines' hub consolidation, the liberalization of Canadian markets, and the temporary lapse of the passenger ticket tax, helped maintain a high number of aircraft operations. Numbers of total aircraft operations decreased in 1998 due to the Northwest strike in August and September. As stated previously, the Northwest schedule rebounded to pre-strike levels in October 1998. Immediately after September 11, 2001, air carriers reduced aircraft operations at MSP by nearly 20 percent in response to low passenger demand. As a result, MSP aircraft operations in 2001 decreased by 4 percent from 2000 levels. The economic downturn and lingering effects of September 11 also affected the growth rate of total aircraft operations at MSP in 2002. Operations in 2002 increased by only 1.2 percent over the total number of aircraft operations in 2001. In 2004, operations increased by 6.4 percent over 2003; however, operations have declined each year since 2004, and in 2009 the level of 432,604 is 27.7 percent below the high forecast of 598,000.

Figure 2-11:
Minneapolis-St. Paul International Airport
Forecast vs. Actual 2009 Total Revenue Passengers



Sources: MSP Base and Combination 2 Forecasts; and Metropolitan Airports Commission.

Figure 2-12:
Minneapolis-St. Paul International Airport
Forecast vs. Actual 2009 Total Aircraft Operations



Sources: MSP Base and Combination 2 Forecasts; Metropolitan Airports Commission Year End Operations Report Updated 2/8/10 and FAA OPSNET.

2.4 AIRPORT CAPACITY AND DELAY

This section describes the airfield capacity at MSP. Aircraft delay analysis also is provided.

2.4.1 Airfield Capacity

Airfield capacity is typically described in terms of hourly capacity and annual capacity under good weather and poor weather conditions. **Table 2.3** shows existing and future hourly capacity for MSP.

Table 2.3

MSP AIRFIELD CAPACITY

Hourly Airfield Capacity	Existing	Future
Optimum Rate [(1)]	160	167
Marginal Rate [(2)]	155	167
IFR Rate [(3)]	125	137

Notes: [(1)] Ceiling and visibility above minima for visual approaches.
[(2)] Below visual approach minima but better than instrument conditions.
[(3)] Instrument conditions (ceiling < 1000 feet or visibility < 3 miles).

Source: FAA Benchmark Report, 2004.

- As shown in Table 2.3, existing hourly capacity at MSP is about 160 operations in good weather and 125 operations in poor weather. Specific conditions that define poor weather include the airport's most commonly used instrument configuration, where operations are conducted below visual approach minima (e.g., instrument approaches).

- According to the FAA 2004 Benchmark study, it is possible that improvements in technology could occur in the future that will support higher capacity levels. These improvements include advanced Traffic Management Advisor (TMA) technology to allow controllers to sequence aircraft more efficiently, and Cockpit Display of Traffic Information (CDTI) and CDTI Enhanced Flight Rules (CEFR) which will enable specially-equipped aircraft to maintain visual approaches even in marginal weather conditions. MSP's hourly capacity could increase by a total of 4.4 percent to 167 operations in good weather and by a total of 9.6 percent to 137 operations in adverse weather with utilization of these technologies.

- According to the FAA's 1993 Capacity Enhancement Plan for MSP, with the north-south runway in place, annual capacity would be 580,000 operations, assuming a 4-minute average delay level. Based on analysis reported in the 2015 Terminal Expansion Project Draft Environmental Assessment, the airfield could accommodate up to 723,000 annual operations with an average delay of 12.7 minutes per operation. (It should be noted that this level of delay is considered to be the maximum tolerable based on a review of the nation's most congested airports.)

- Forecasted aircraft operations developed for the MSP Long Term Comprehensive Plan Update estimate total aircraft operations to reach 630,837 in 2030. Therefore, MSP's current airfield location and configuration have the capacity necessary to meet projected demand through 2030.

- In 2009, the MAC Stewards of Tomorrow's Airport Resources (STAR) Program focused on development of RNAV departure procedures for Runway 17 and Runways 12L and 12R. These procedures are designed to help increase airspace efficiency and reduce airport delay, fuel burn, emissions and noise impacts. Testing of these procedures was conducted in phases with voluntary cooperation by three participant airlines that had aircraft equipped with the necessary technology. The MAC worked closely with FAA Air Traffic Control on development of these procedures and received input and endorsement from the MSP Noise Oversight Committee prior to submitting the final procedures in late 2009 for FAA approval. It is anticipated that the procedures will be published and implemented for public use in 2010.

2.4.2 Airfield Delay

Delay can be measured in several ways. This section reviews various delay measures as they are reported by the FAA and apply to MSP.

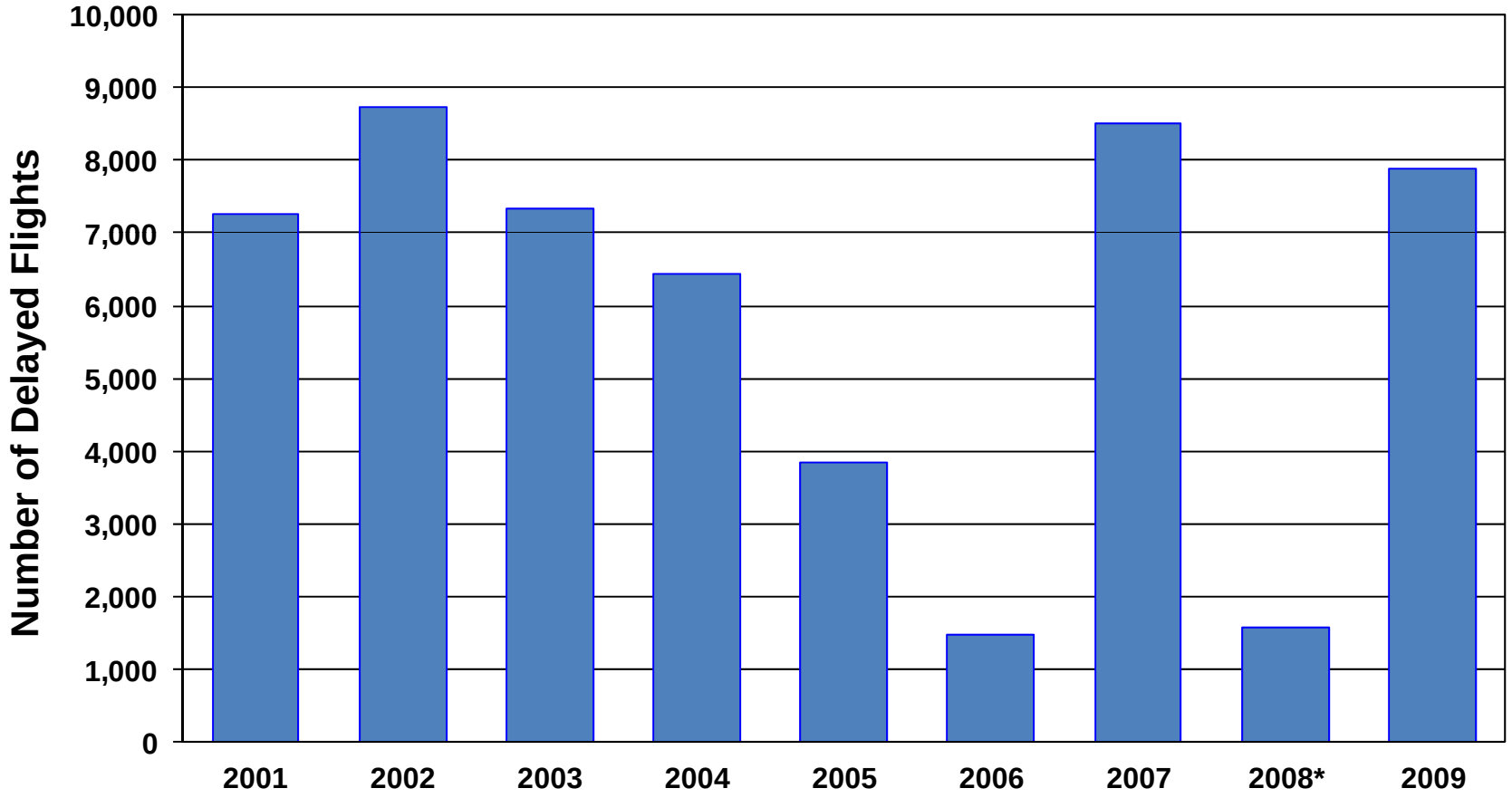
Number of Delayed Flights as Reported by FAA

The FAA Air Traffic Operations Network (OPSNET) database counts flights that were reported by Air Traffic Control (ATC) to be delayed for more than 15 minutes. Delays of less than 15 minutes are not counted, nor are delays not initiated by ATC. In addition, since delays are reported by facility, a flight that was delayed by 13 minutes by one facility and 12 minutes by another facility (for a total delay of 25 minutes) was not included in the OPSNET database prior to October 1, 2008. These data limitations should be kept in mind when reviewing OPSNET delay data.

In 2008, the FAA made significant modifications to its reporting rules that will affect historical data comparisons. The FAA now combines arrival and enroute delays into one category, and now reports delays for aircraft which accumulate 15 minutes or more holding delay at each facility throughout the entire route of flight.

Figure 2-13 depicts the number of MSP flights delayed by ATC. Delays peaked in 2002 when a total of 8,733 flights were reported delayed. Over the next five years, the

Figure 2-13:
MSP Flights Delayed by ATC*
2001-2009



*This total is reported differently in 2008 due to FAA adjusting the way air traffic control calculates delays for arriving and departing flights.

Sources: FAA OPSNET, and Metropolitan Airports Commission analysis.

number of delayed flights steadily decreased, reaching a low of 1,474 in 2006 (which was the first full year of operation with the Runway 17-35). In 2007, the closure of Runway 12R-30L for two months due to reconstruction contributed to the jump in number of reported delays. The number of delayed flights dropped significantly in 2008 to 1,579, but dramatically increased in 2009 due to the closure of Runway 12L-30R for two months for reconstruction work.

Percentage of Flights Arriving On Time

The data series used to calculate on-time performance for arrivals is the FAA's Aviation System Performance Metrics (ASPM) database. Within this data set, aircraft must be airborne in order for them to be considered delayed; therefore, cancelled and/or diverted flights are not considered late in this system. Scheduled times typically include some cushion for delay, especially for arrivals operating during peak periods. A delayed flight can be attributed to mechanical problems, lack of crew or poor weather, and is not limited to capacity constraints.

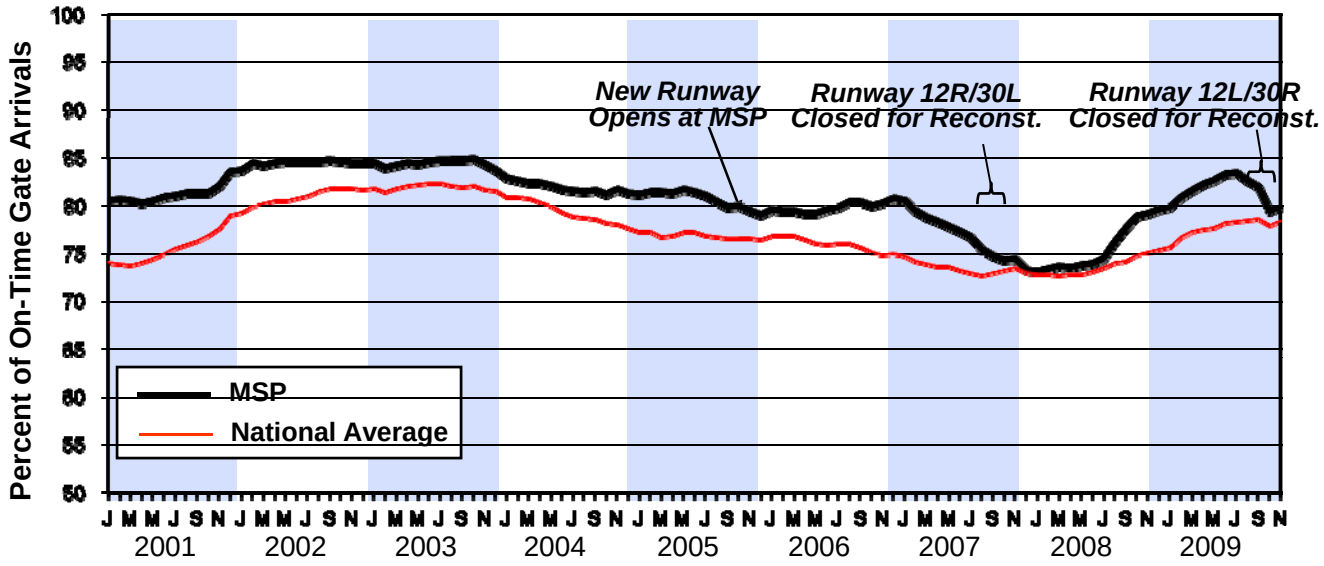
Figure 2-14 shows average on-time gate arrival performance for domestic air carrier flights at MSP based on the delay data extracted from the FAA ASPM database. The top graph compares MSP's rolling 12-month average for on-time performance and compares it with the national average. Between 2001 and 2008, the highest on-time performance for MSP occurred in 2002 and 2003, when overall annual on-time performance averaged about 84 percent. In 2004 and 2005, on-time performance slowly declined to about 80 percent, and remained at roughly 80 percent through 2006. In general, MSP's on-time performance has tracked fairly closely to the national average. MSP saw its on-time performance decline in 2007 to a low of 73 percent due to reconstruction of Runway 12R-30L from August 13, 2007 to October 18, 2007 and poor weather at MSP in December 2007. In 2008 MSP's on-time percentages remained steady at about 74 percent for the first six months. By year-end the annual average in 2008 rose to 79.6 percent. In 2009, MSP's annual rolling average for on-time gate arrivals reached a high of 83.4 percent by July, but then dipped to 80.6 percent by the end of the year. Again, the reconstruction of Runway 12L-30R from August 18 to October 30, 2009 may be a contributor to this decline in on-time performance.

Average Delay Per Aircraft Operation

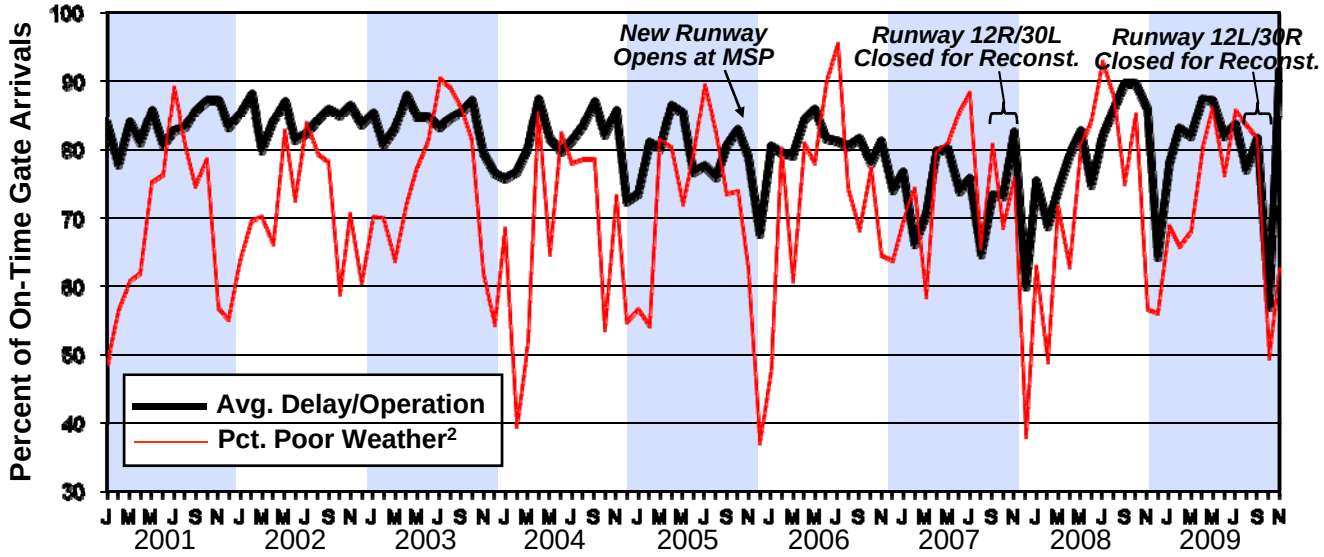
Finally, average delay per operation attributable to the airport is examined. Airport-attributable delay can be estimated by comparing a flight's actual air and taxi times with estimated unconstrained times. The total cumulative amount of delay experienced by all scheduled flights in the database is then divided by the total number of flights in the database for the same time period. The output is usually expressed in minutes of delay per operation.

In editions of this report prior to 2005, delay was estimated by using the FAA's Consolidated Operations and Delay Analysis System (CODAS) and the U.S. Department of Transportation (DOT) Airline Service Quality Performance (ASQP) database to compare optimal vs. actual taxi and flight times for MSP. Subsequent to 2005, the FAA's Aviation System Performance Metrics (ASPM) database was used.

Figure 2-14:
On-Time Gate Arrivals, MSP vs. National Average[1]
(12-Month Rolling Average)



Comparison of MSP Monthly On-Time Gate Arrivals[1] and Percent of Good Weather



1. Percentage of flights arriving within 15 minutes of scheduled arrival time. National average consists of the top 55 airports in ASPM database through Oct. 2004 and top 75 airports for rest of period.
2. Defined as when conditions may allow visual approaches; actual separation standards used at time of observation are not available in ASPM database.

Sources: FAA-APO Aviation System Performance Metrics (ASPM) database, HNTB analysis.

The FAA replaced CODAS with this new program, providing delay information to industry professionals and government agencies. ASPM data come from ARINC's Out-Off-On-In (OOOI), Enhanced Traffic Management System (ETMS), ASQP, weather data, airport arrival and departure rates (15-minute interval), airport runway configurations and cancellations. Creation of the ASPM database provides a more comprehensive analysis of airport delay and capacity. The FAA also uses the results to create performance benchmarks for airports based on facility enhancements that occur each year. The FAA's main objective was to develop a clear and well-supported methodology to calculate aircraft delays that will be accepted by both government and industry as valid, accurate and reliable. Currently, there is general industry acceptance of the ASPM metric.

The ASPM information presented in **Figure 2-15** shows average delay per operation. The top graph compares MSP's 12-month rolling average with the average for 75 high-delay airports tracked by the FAA. Between 2001 and 2005, MSP's average delay per operation ranged between 6.5 minutes and 7.1 minutes, while the average delay for the 75 airports tracked by the FAA ranged from about 4.8 minutes to 5.6 minutes. After MSP's new runway opened in late October 2005, average delay per aircraft began to decrease dramatically, reaching a low of about 5.5 minutes toward the end of 2006. In The 12-month rolling average delay per operation began to increase steadily, reaching about 7.5 minutes by the end of 2007, while average delay for the 75 airports tracked by the FAA remained fairly constant at about 6.0 minutes. During 2008, MSP's average delay per operation dropped from 7.6 minutes in January to 5.6 in December, and continued to decrease for the first seven months of 2009. MSP tracked below the average delay for the 75 airports being tracked by the FAA from March 2009 through August 2009, reaching an all-time low, since 2001, of 5.0 minutes in July before gradually rising to 5.6 minutes in December 2009.

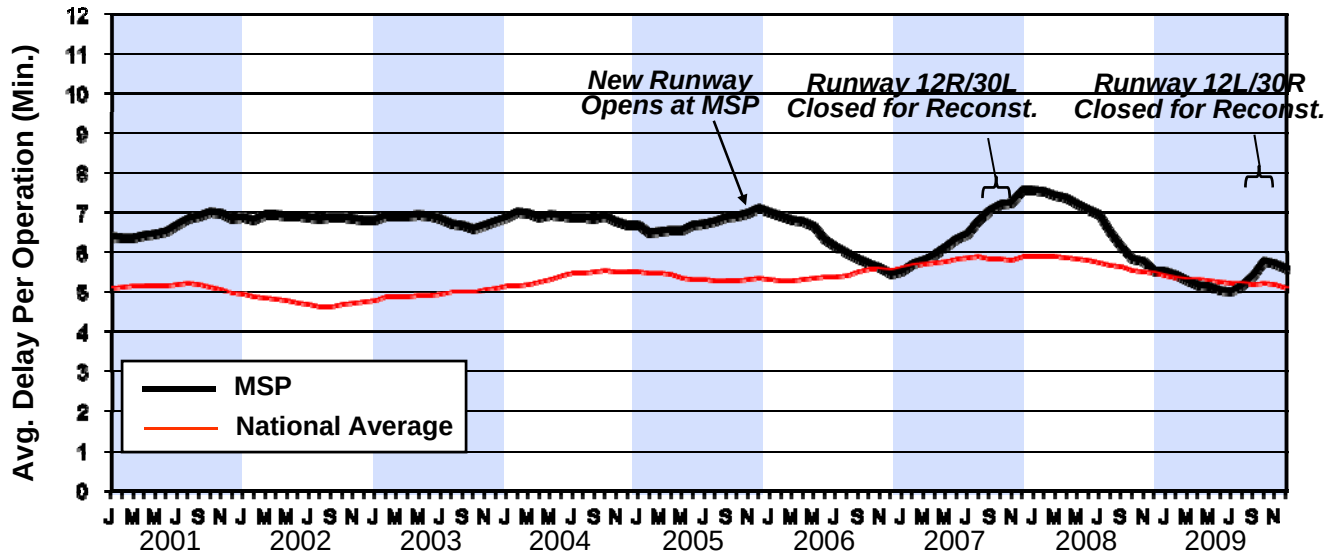
There are many factors that contribute to airfield delay, including poor weather conditions, runway closures (typically due to construction), changes in airline schedules, changes in Air Traffic Control procedures, airline fleet mix changes, airline practices, and other factors. In addition, how delays are defined or reported can change over time. For these reasons, it is often difficult to determine and report the precise causes for delays or to be definitive about delay trends.

The bottom graph of **Figure 2-15** compares MSP's month-by-month average delay per operation with the percentage of time the airport operated in poor weather conditions (which typically increases delays). As shown, the highest delays were experienced in summer 2007 when Runway 12R-30L was closed for reconstruction, and again in December 2007 when the airport was operating in poor weather conditions more than 60 percent of the time.

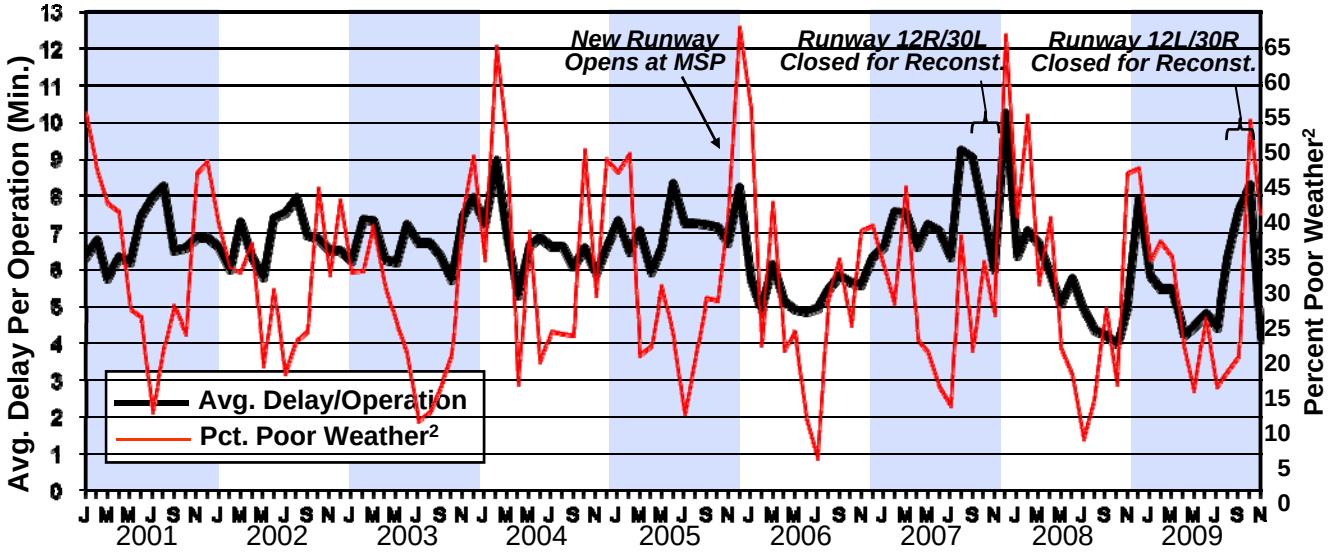
Poor weather conditions contributed significantly to the level of delay exceeding 7.1 minutes in February 2008, 7.9 minutes in December 2008, and 8.3 minutes in October 2009. When compared to other large hub U.S. airports as shown in **Table 2.4**, MSP ranked 12th overall in 2009 in terms of highest average delay per operation, which is unchanged from its ranking in 2008.

Figure 2-15:
MSP Average Delay Per Aircraft Operation Compared to National Average[1]

(12-Month Rolling Average)



Comparison of MSP Average Delay Per Aircraft Operation and Percent Poor Weather[2]



1) An operation is either a landing or a takeoff. National average consists of top 55 airports in ASPM database through Oct. 2004 and top 75 airports for rest of period.
2) Poor weather is defined as when aircraft must make instrument approaches; actual separation standards used at time of observation are not available in ASPM database.

Sources: FAA-APO Aviation System Performance Metrics (ASPM) database, HNTB analysis.

Table 2.4

TOP 15 LARGE HUB AIRPORTS
WITH HIGHEST AVERAGE TOTAL DELAY PER OPERATION

Rank	Airport	2009 Total Airport Operations	2009 Average Minutes of Delay per Operation	2008 Avg. Minutes of Delay per Operation	2008 Rank	Change from 2008 to 2009
1	JFK	422,244	10.7	12.3	1	1.7
2	LGA	357,177	10.4	12.2	2	1.8
3	EWR	415,206	10.0	11.8	3	1.9
4	PHL	472,668	9.5	9.1	4	-0.4
5	ATL	970,258	8.9	8.6	5	-0.3
6	DTW	432,589	6.4	6.4	8	0.0
7	ORD	827,899	6.3	7.1	6	0.8
8	SLC	372,680	6.0	5.6	13	-0.4
9	CLT	509,464	5.8	6.8	7	1.0
10	DEN	611,888	5.7	5.8	10	0.1
11	BOS	361,379	5.6	6.2	9	0.6
12	**MSP**	**432,604**	**5.6**	**5.6**	**12**	**0.0**
13	IAH	538,875	5.3	5.5	14	0.2
14	DFW	638,782	5.2	5.6	11	0.4
15	DCA	274,158	4.9	5.1	17	0.2

Source: FAA OPSNET for airport operations data, FAA ASPM for average minutes of delay (taxi-in, taxi-out, and airborne delay), and HNTB Analysis.

2.5 TECHNOLOGICAL AND CAPACITY ENHANCEMENTS

The FAA continuously investigates potential capacity-enhancing development/ technology in an effort to increase airport efficiency and reduce delay. When advancement is identified, efforts are made to implement the technology at the busiest airports. This section describes these efforts as they apply to MSP.

- In 1993, the FAA published the *Minneapolis-Saint Paul International Airport Capacity Enhancement Plan*. The purpose of the plan was to identify potential cost-effective projects which would appreciably increase airport capacity. The plan was followed by the 1996 *Airport Capacity Enhancement Terminal Airspace Study*, which identified potential methods of improving airspace capacity.

- Airport Surface Detection Equipment (ASDE-3) was installed at MSP in 1996 to allow air traffic controllers to "see" aircraft maneuvering on the ground during poor visibility conditions. Installation of an upgraded system called ASDE-X was completed in 2009. This new system includes some components of the current ASDE-3, and it will add remote units around MSP's airfield to provide for more precise aircraft positioning. ASDE-X will provide seamless coverage for complete aircraft identification information, and it will allow for the Next Generation (NexGen) of navigation technology (Automatic Dependence Surveillance - Broadcast "ADS-B") to broadcast critical information using the Global Navigation Satellite System.

- Capacity improvements at MSP will be aided by the use of Flight Management System/Area Navigation Routes (FMS/ RNAV). The equipment will provide a more consistent flow of aircraft during the arrival and departure phases of flight. In 2009 development of RNAV departure procedures for Runway 17, and Runways 12L and 12R were completed by the MAC in coordination with the FAA and three air carrier service airlines at MSP. The MSP Noise Oversight Committee endorsed the final procedures in July 2009; the MAC board approved the procedures in December; and the final procedures were submitted for FAA approval and implementation in late 2009. It is anticipated that the procedures will be published and available for public use in 2011.

- In an effort to increase the operational efficiency and capacity of MSP during inclement weather, the MAC has implemented additional CAT II and CAT III capabilities at the airport. Cat II approaches (currently on Runway 30L) allow approaches down to 1200 feet visibility and 100-foot cloud ceiling. CAT III(a) approaches (Runway 12R) allow descent down to 700 feet and no ceiling. CAT III(b) approaches (currently on Runways 12L and 35) allow descent down to 600 feet visibility, and no ceiling.

- Future increases in MSP capacity levels will depend, in part, on the introduction of new aircraft avionics. An enhanced tool called Automatic Dependent Surveillance-Broadcast/Cockpit Display of Traffic Information (ADS-B/CDTI)

identifies the location of other aircraft and displays their position in the cockpit. This technology allows pilots to maintain the desired separation between aircraft more precisely; however, it requires aircraft to be properly equipped to use this device. The FAA has awarded a contract to start the installation of the ground equipment necessary to install this system at MSP. Minneapolis is in Segment 1, which is expected to have the ground equipment certified by September 2010. The FAA has issued a Notice of Proposed Rule Making (NPRM) that calls for all aircraft which will operate in a terminal area, such as MSP, to have on-board aircraft equipment by 2020.

- Alternative airspace improvements were studied in the *Airport Capacity Enhancement Terminal Airspace Study*. The report found that the existing airspace around MSP could be reconfigured to accommodate the then-proposed north-south runway. In addition, airspace efficiency could be improved either by adding a new jet arrival fix or a new parallel jet arrival stream. These improvements were implemented with the opening of Runway 17-35 in October 2005.

- In 2009, installation of the Multilateration Flight Tracking (MLAT) System and upgrades to the Airport Noise and Operations monitoring System (ANOMS) were completed and are now in the testing phases. ANOMS was originally installed in 1992, and is used extensively for reporting and analyzing aircraft operations and related noise levels around MSP as well as for analyzing new operation procedures to reduce environmental impacts. Data limitations with ANOMS included a minimum hold period of three days before the flight tracks were received and available for analysis. The MLAT system testing is expected to be completed in 2010, and the upgraded system will have increased functionality and same-day flight track data availability. The MAC's goal is to provide access to flight track data through its website with only a 10-minute delay.

2.5.1 Precision Instrument Approaches

In addition to how an airport's runways are separated and configured, airfield capacity can be greatly affected by how the runways are equipped for inclement weather. The number and type of precision instrument approaches at MSP is summarized in **Table 2.5**.

Table 2.5

PRECISION INSTRUMENT APPROACHES

MSP	CAT I	CAT II	CAT III
Runways:	30R	30L	12L (b) 12R (a) 35 (b)

Notes: The term decision height is defined as the height at which a decision must be made during a precision approach to either continue the landing maneuver or execute a missed approach.

Precision approaches are categorized based on decision height and the horizontal visibility that a pilot has along the runway. Visibility values are expressed in statute miles, or in terms of runway visual range (RVR), if RVR measuring equipment is installed at an airport.

The different classes of precision instrument approaches are:

i. Category I (CAT I) – provides approaches to a decision height down to 200 feet and a basic visibility of ¾ statute miles or as low as 1,800 feet RVR.
ii. Category II (CAT II) – provides approaches to a decision height down to 100 feet and an RVR down to 1,200 feet.
iii. Category IIIa (CAT IIIa) – provides approaches without a decision height (down to the ground) or a decision height below 100 feet and an RVR down to 700 feet.
iv. Category IIIb (CAT IIIb) – provides approaches without a decision height or a decision height below 50 feet and an RVR down to 150 feet.
v. Category IIIc (CAT IIIc) – provides approaches without a decision height and RVR. This will permit landings in "0/0 conditions," that is, weather conditions with no ceiling and visibility as during periods of heavy fog.

Source: December 2006 U.S. Terminal Procedures, NOAA.

2.6 STEWARDS OF TOMORROW'S AIRPORT RESOURCES (STAR) PROGRAM

The Metropolitan Airports Commission (MAC) has been a longtime leader in addressing environmental concerns through a wide spectrum of initiatives, ranging from a standard-setting noise mitigation program to the preservation of Minnesota wetlands.

The MAC views environmental sustainability as an integral part of its mission, and is committed to setting the standard in environmental stewardship in the development and operation of its airport system. Sustainable solutions are those that address long-term environmental, operational, financial and social needs.

Recognizing that MSP is a large and complex operation with many stakeholders, the MAC is focused on optimizing and improving all MAC-controlled operation and development actions at MSP in an effort to minimize impacts to the environment, and to implement sustainable solutions. Additionally, the MAC continues to conduct outreach and advocacy to influence, to the degree possible, non-MAC-controlled activities at MSP to further aid in the reduction of environmental impacts.

At the March 17, 2008 MAC Commission meeting, the Stewards of Tomorrow's Airport Resources (STAR) Program was introduced. The intent of the STAR Program is to maintain a focus on the MAC's commitment to the environment and the community through the development of initiatives that are environmentally sound and contribute to the financial viability and operational efficiency at MSP and the reliever airports. Sustainable practices to date focus on the following areas:

- Energy Conservation/Renewable Energy
- Green Buildings, Facilities and Infrastructure
- Water Quality and Conservation
- Air Quality
- Waste Management and Recycling
- Noise Abatement
- Natural Resources Management
- Financial Stability

In 2009, the MAC STAR Program accomplishments included energy conservation projects and education, environmental enhancements for facilities, water quality and conservation efforts, and air quality improvements. Some of the most notable achievements in 2009 include:

1. The energy conservation program is estimated to have saved over 6,034 MWH of electricity annually at MSP, which is equivalent to the energy needs of approximately 502 homes or removing 329 cars per year, and results in utility savings of approximately $453,000. In addition to these cost reductions, the MAC received utility company rebates totaling approximately $40,000 in 2009.

2. Development of RNAV departure procedures for Runway 17 and Runways 12L and 12R. These procedures are designed to help increase airspace efficiency and reduce delays, fuel burn, emissions and noise impacts. The MSP Noise Oversight Committee endorsed the procedures in July 2009 and the MAC Commission approved the procedures in December. The final procedures were submitted for FAA approval and implementation in late 2009, and it is anticipated that the procedures will be published and available for public use in 2010.

3. Introduction of the first all-electric MAC fleet vehicle. This vehicle is currently being tested and evaluated by various departments to determine its feasibility within each department.

4. Installation of wind turbines as part of a test program for generating electrical power. Currently, the power being generated is being used to supplement the electrical needs of Fire Station No.1.

5. Installation of low-flow and automated fixtures as well as self-generating hydropower faucets in terminal facilities. These automatic fixtures create their own power when water flows through generators.

3. RELIEVER AIRPORTS

3.0 OVERVIEW

The Metropolitan Airports Commission (MAC) owns and operates six reliever airports throughout the metropolitan area that surrounds Minneapolis-St. Paul International Airport (MSP). Reliever airports are defined by the FAA as airports designated to relieve congestion at Commercial Service Airports and to provide improved general aviation access to the overall community. This system of airports generates an estimated $1.4 billion annually for the Twin Cities economy while reducing general aviation operations at MSP. The reliever airports are Airlake, Anoka County-Blaine, Crystal, Flying Cloud, Lake Elmo and St. Paul Downtown.

This portion of the report highlights the facilities and activities at each of the reliever airports, and organizes the information into the following three sections:

- Description of Reliever Airport Facilities
- Historic and Existing Activity Levels
- Development Programs

3.1 DESCRIPTION OF RELIVER AIRPORT FACILITIES

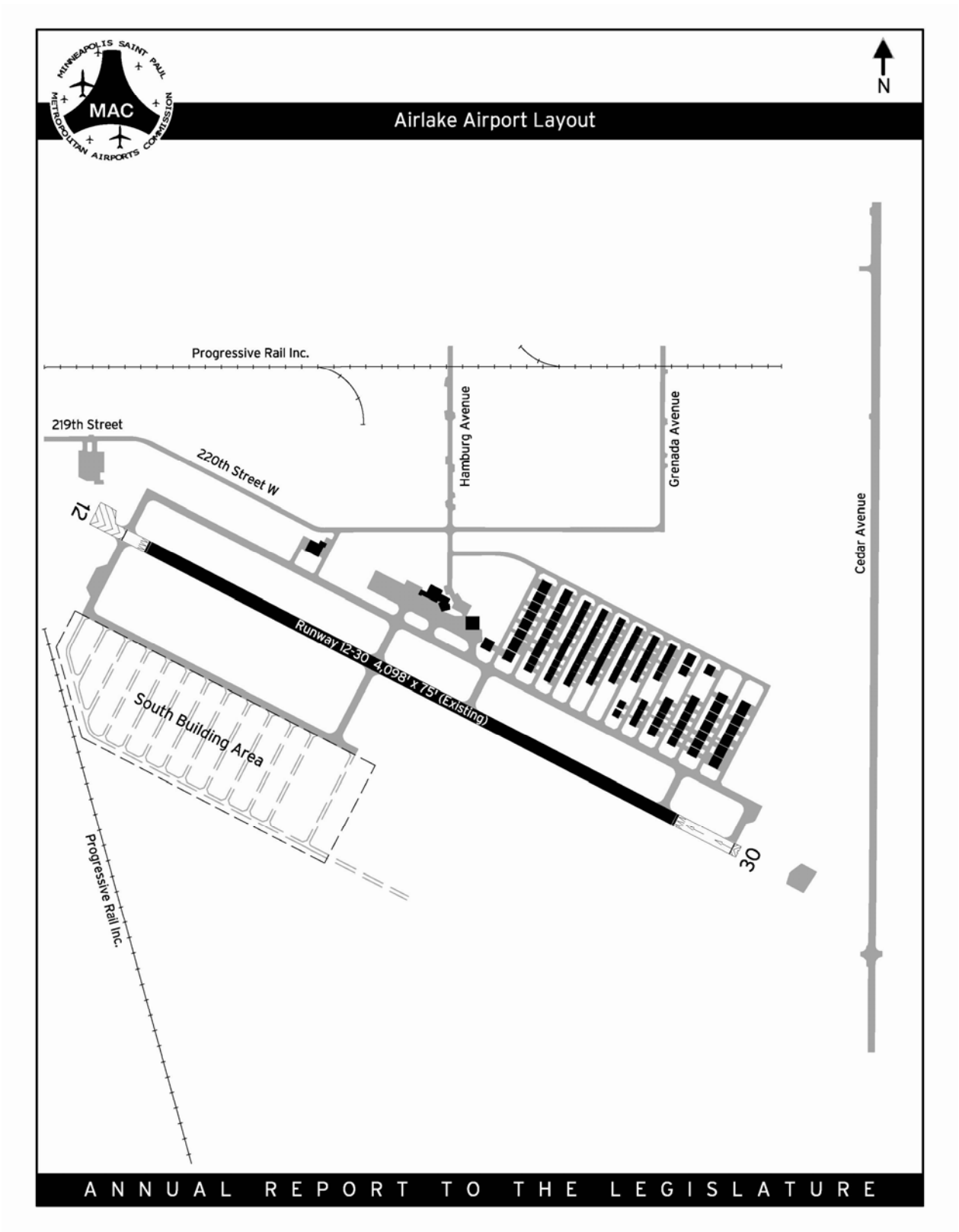
According to the Metropolitan Council Aviation Policy Plan, December 1996, all but one of the MAC reliever airports are classified as minor airports. This means that primary runway lengths are between 2,500 and 5,000 feet. St. Paul Downtown is classified as an intermediate airport, which means its primary runway is between 5,000 and 8,000 feet long.

Airport users at the MAC reliever airports include air taxi, business aviation, general aviation, flight training, recreational aviation, and military aviation. Each of the reliever airports is open for public use 24-hours per day, in keeping with federal regulations. The following sections outline the existing airport facilities at each location.

3.1.1 Airlake Airport (LVN)

Airlake Airport (LVN) consists of approximately 595 acres, and the airfield includes one northwest-southeast runway and one full-length parallel taxiway. Runway 12-30 is 4,098 feet long by 75 feet wide. The airport has a precision instrument approach to Runway 30 and a non-precision approach to Runway 12. **Figure 3-1** shows the general airport layout and facilities. A Fixed Base Operator (FBO) at the airport provides fueling and other aircraft maintenance services. The airport had approximately 158 based aircraft and an estimated 39,021 aircraft operations in 2009. There is no air traffic control tower located at the airport. Aircraft operators utilize common traffic advisory procedures while flying to and from the airport.

Figure 3-1: Airlake Airport (LVN) Layout



3.1.2 Anoka County-Blaine Airport (ANE)

Anoka County-Blaine Airport (ANE), also known as Janes Field, consists of approximately 1,900 acres, and the airfield includes one east-west runway and one north-south runway. Both runways have full-length parallel taxiways. Runway 9-27 is 5,000 feet long by 100 feet wide and Runway 18-36 is 4,855 feet long by 100 feet wide. The airport has a precision instrument approach to Runway 27 and non-precision instrument approaches to Runways 9, 18 and 27. **Figure 3-2** shows the general airport layout and facilities. Two FBOs at the airport provide fueling, flight training, and other maintenance services for aircraft and helicopters. The airport had 439 based aircraft and 69,406 aircraft operations in 2009. A non-federal air traffic control tower is located at the airport and operates each day in the winter from 7 a.m. to 9 p.m., and 7 a.m. to 10 p.m. in the summer. The change in operating hours coincides with daylight saving time.

3.1.3 Crystal Airport (MIC)

Crystal Airport (MIC) consists of approximately 436 acres and includes two northwest-southeast runways and two southwest-northeast runways. Runway 14R-32L has a full-length parallel taxiway. Runway 14L-32R is 3,263 feet long by 75 feet wide, Runway 14R-32L is 3,266 feet long by 75 feet wide and Runway 6L-24R is 2,499 feet long by 75 feet wide. The turf runway (6R-24L) is 2,122 feet long by 150 feet wide, and is closed during the winter months. The airport has two non-precision instrument approaches. **Figure 3-3** shows the general airport layout and facilities. Three FBOs at the airport provide fueling, flight training, and other aircraft maintenance services. The airport had 238 based aircraft and 48,877 annual aircraft operations in 2009. An FAA-operated air traffic control tower is located at the airport and operates each day in the winter from 7 a.m. to 9 p.m., and 7 a.m. to 10 p.m. in the summer. The change in operating hours coincides with daylight saving time.

3.1.4 Flying Cloud Airport (FCM)

Flying Cloud Airport (FCM) consists of approximately 860 acres and includes two east-west runways and one north-south runway. All runways have full-length parallel taxiways. Runway 10R-28L was extended to 5,000 feet long and widened to 100 feet in 2009; Runway 10L-28R was extended to 3,900 feet in 2008 and is 75 feet wide; and Runway 18-36 is 2,691 feet long by 75 feet wide. The airport has a precision instrument approach to Runway 10R and non-precision instrument approaches to Runways 10L, 28L, 28R, 18, and 36. It also has a published precision instrument approach procedure for helicopters. **Figure 3-4** shows the general airport layout and facilities. Six FBOs at the airport provide fueling, flight training, and other maintenance services for aircraft and helicopters. The airport had 413 based aircraft and 119,139 aircraft operations in 2009. An FAA-operated air traffic control tower is located at the airport, and operates each day in the winter from 7 a.m. to 9 p.m., and 7 a.m. to 10 p.m. in the summer. The change in operating hours coincides with daylight saving time.

Figure 3-2: Anoka County-Blaine Airport (ANE) Layout

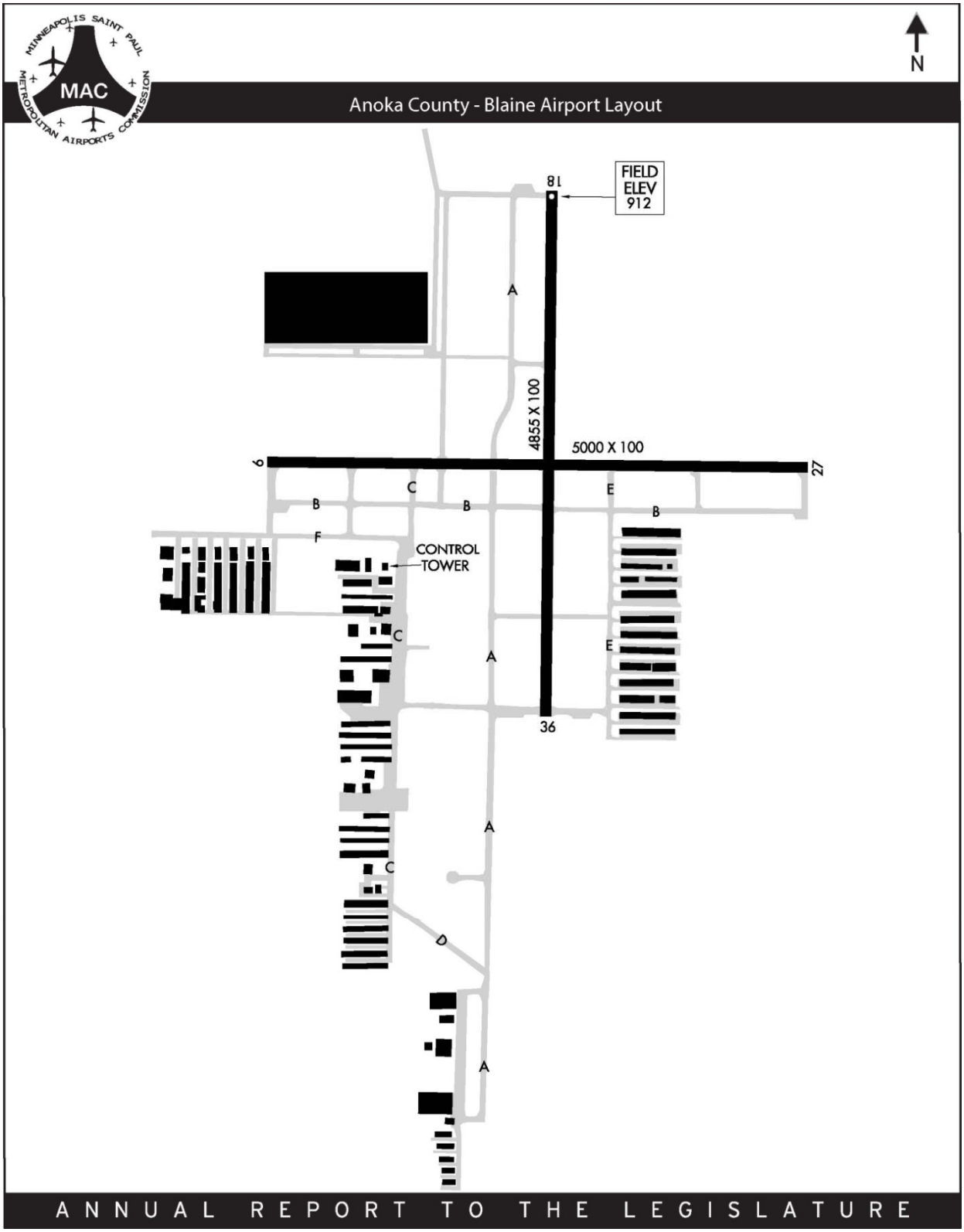


Figure 3-3: Crystal Airport (MIC) Layout

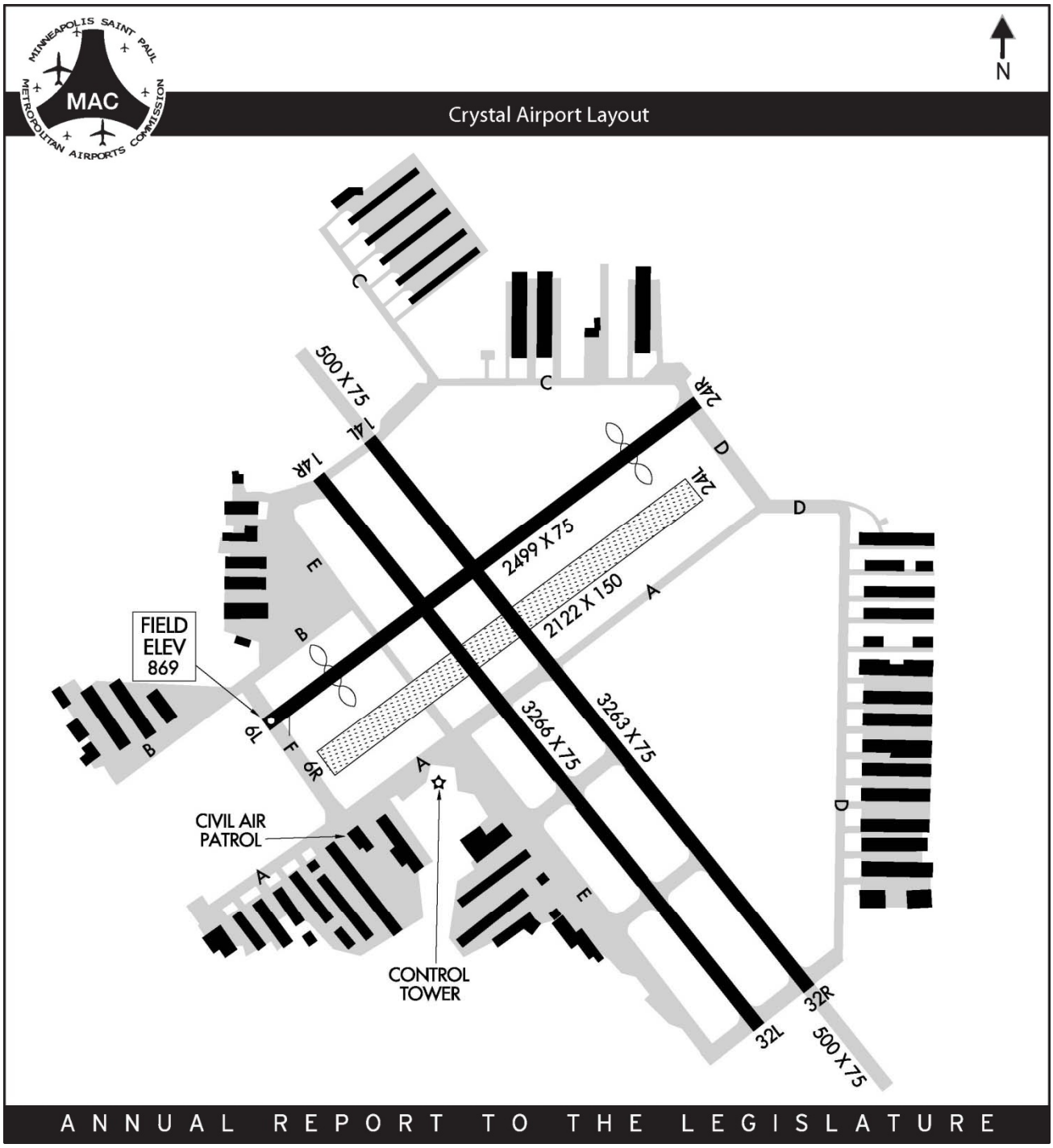
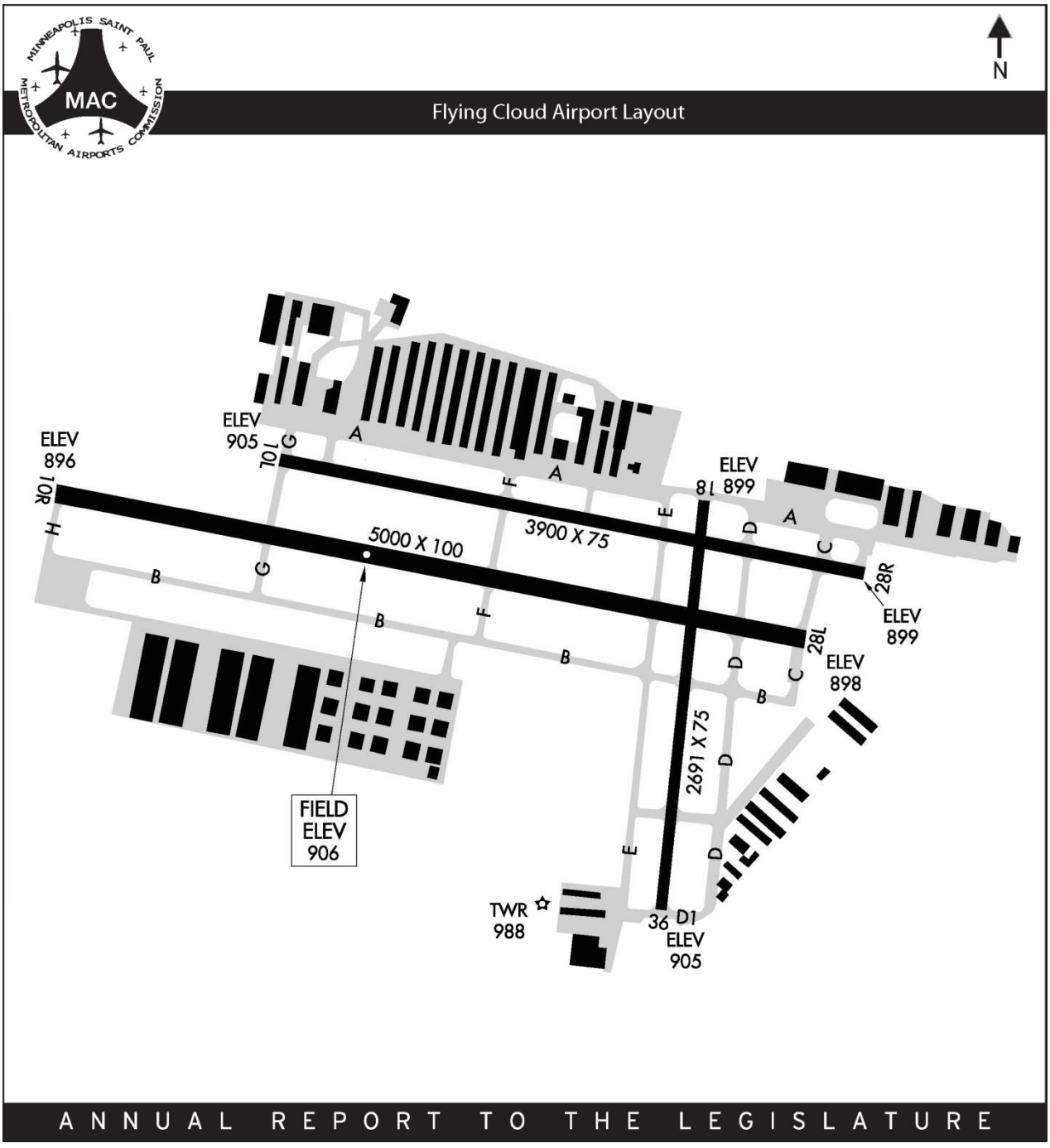


Figure 3-4: Flying Cloud Airport (FCM) Layout



3.1.5 Lake Elmo Airport (21D)

Lake Elmo Airport (21D) consists of approximately 640 acres and includes one northwest-southeast runway and one southwest-northeast runway. Both runways have full-length parallel taxiways. Runway 14-32 is 2,850 feet long by 75 feet wide, and Runway 4-22 is 2,497 feet long by 75 feet wide. The airport has two non-precision instrument approaches to the airport. **Figure 3-5** shows the general airport layout and facilities. One FBO at the airport provides fueling, flight training, and other aircraft maintenance services. The airport had 230 based aircraft and an estimated 37,600 aircraft operations in 2009. There is no air traffic control tower located at the airport. Aircraft operators utilize common traffic advisory procedures while flying to and from the airport.

3.1.6 St. Paul Downtown Airport (STP)

St. Paul Downtown Airport (STP) is also commonly referred to as Holman Field. The land area measures approximately 576 acres, and the airfield consists of two northwest-southeast runways and one east-west runway. Runway 14-32 has a full-length parallel taxiway. Both of the other runways have partial parallel taxiways. Runway 14-32 is 6,491 feet long by 150 feet wide; Runway 13-31 is 4,004 feet long by 150 feet wide; and Runway 9-27 is 3,642 feet long by 100 feet wide. The airport has precision instrument approaches to Runways 14 and 32 and non-precision instrument approaches to Runways 14, 31, and 32. It also has a published precision instrument approach procedure for helicopters. **Figure 3-6** shows the general airport layout and facilities. Two FBOs at the airport provide fueling, flight training, and other maintenance services for aircraft. The airport had 124 based aircraft and 110,846 aircraft operations in 2009. An FAA-operated air traffic control tower is located at the airport, and operates from 7 a.m. to 10 p.m. on weekends and 6 a.m. to 10 p.m. on weekdays.

3.2 HISTORIC AND FORECAST ACTIVITY LEVELS

This section presents an overview of aircraft activity at the reliever airports.

Aircraft operators must choose an airport at which to base their aircraft. Airports in Minnesota are required to submit a report to the State that identifies the aircraft based at their facilities for 180 days or more. **Table 3.1** shows historical based aircraft counts for each of the reliever airports from 1980 through 2009. Total based aircraft grew slowly between 1984 and 1999, peaking at 1,864 aircraft in 1999. Since that time, total based aircraft have declined to 1,520 in 2009. This is a decrease of 18.5 percent when compared to 1999 totals. While the number of based aircraft has decreased at each of the six airports during the past nine years, the largest reductions occurred at FCM and MIC. The data in **Table 3.1** are the best available but should be viewed purely as estimates. Numbers that remained unchanged over periods of several years suggest that there were data limitations and that updated information was not available.

Figure 3-5: Lake Elmo Airport (21D) Layout

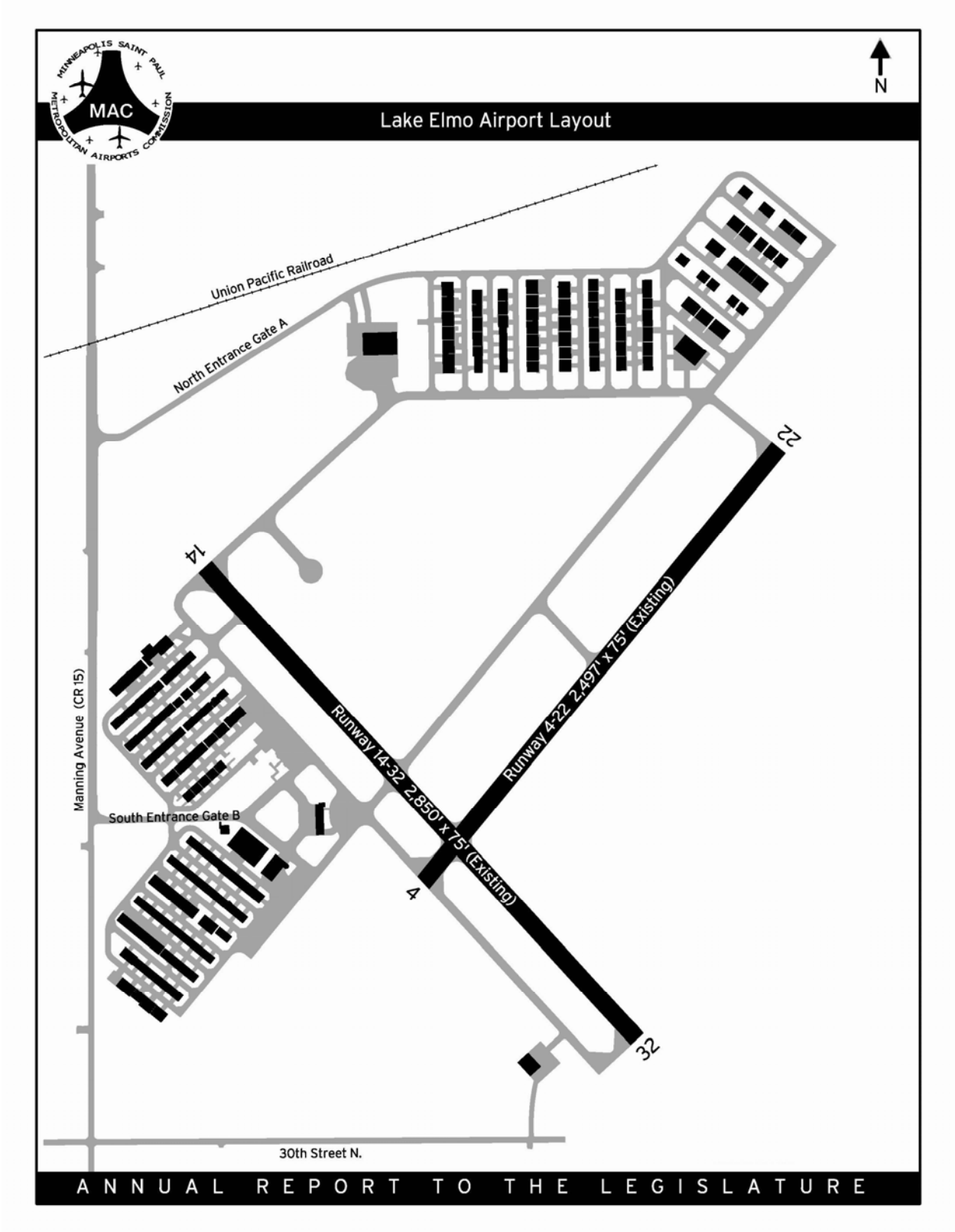
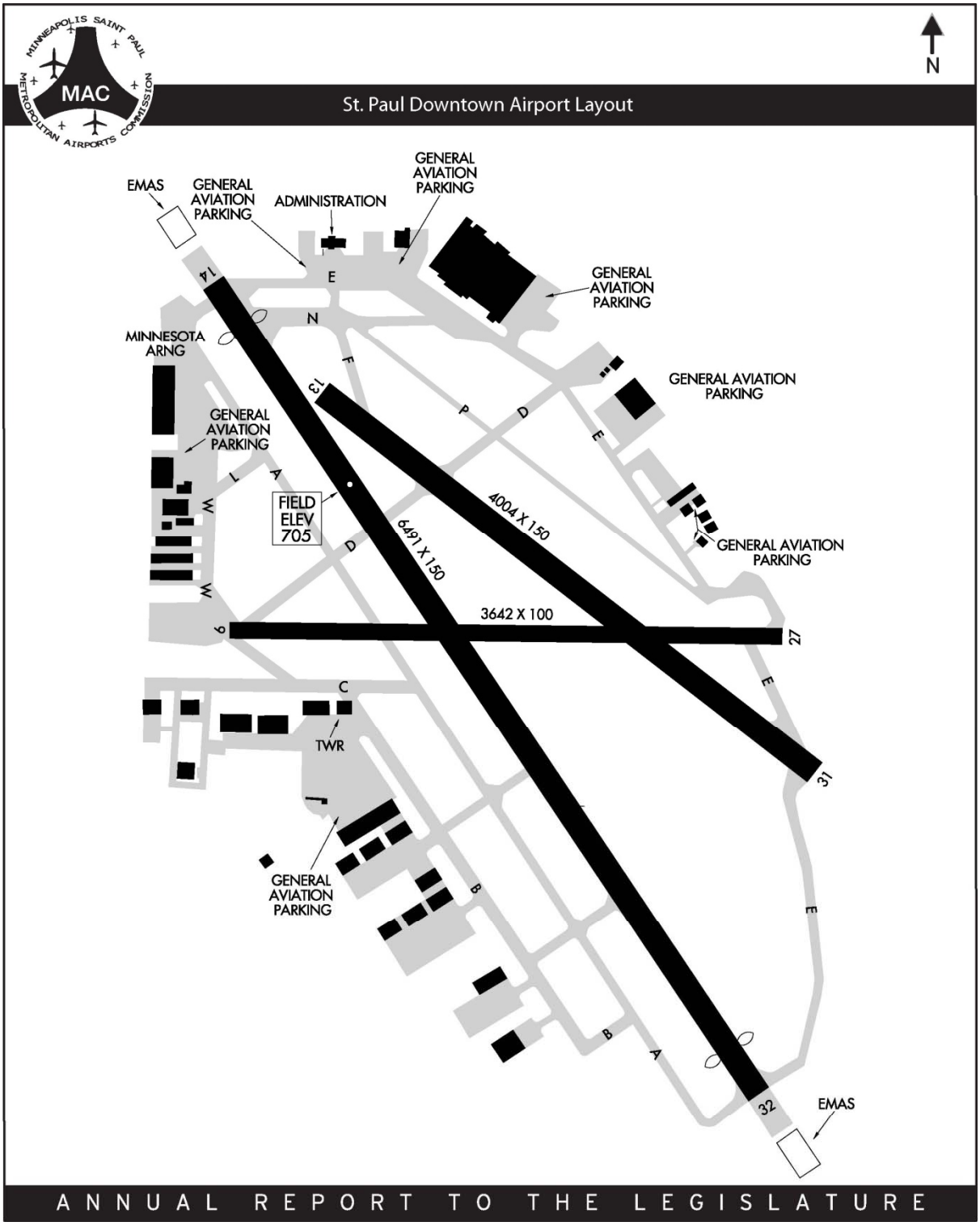


Figure 3-6: St. Paul Downtown Airport (STP) Layout



Historically, the total number of aircraft based at MAC reliever airports has accounted for less than 1 percent of the U.S. active fleet. Since 1999, the share has been gradually declining. Total based aircraft at all six reliever airports combined in 2009 are estimated at 1,520; which is a reduction of approximately 5 percent when compared to the base aircraft total in 2008.

Table 3.1

HISTORICAL VIEW OF BASED AIRCRAFT AT MAC RELIEVER AIRPORTS

Year	Airlake (LVN)	Anoka County (ANE)	Crystal (MIC)	Flying Cloud (FCM)	Lake Elmo (21D)	St. Paul (STP)	Total
1980	N/A	353	315	582	170	190	1,610
1981	N/A	360	297	580	220	205	1,662
1982	N/A	384	337	608	238	181	1,748
1983	N/A	362	327	615	236	164	1,704
1984	61	361	352	568	244	165	1,751
1985	63	390	338	568	145	147	1,651
1986	93	412	333	560	145	160	1,703
1987	153	408	345	565	150	168	1,789
1988	153	384	325	492	149	181	1,684
1989	140	405	320	485	171	188	1,709
1990	140	411	324	485	177	191	1,728
1991	140	414	327	487	179	193	1,740
1992	165	408	327	482	189	198	1,769
1993	179	408	327	482	189	198	1,783
1994	179	415	327	482	198	198	1,799
1995	179	415	327	482	198	198	1,799
1996	179	431	327	482	205	198	1,822
1997	179	441	327	482	210	203	1,842
1998	179	451	327	482	210	180	1,829
1999	178	472	309	509	250	146	1,864
2000	175	454	296	485	245	137	1,792
2001	170	447	280	461	235	131	1,724
2002	170	464	278	473	237	130	1,752
2003	190	490	288	463	237	124	1,792
2004	177	488	263	456	236	124	1,744
2005	163	482	265	451	239	124	1,724
2006	159	475	261	447	233	124	1,699
2007	162	437	244	421	229	93	1,586
2008	158	439	238	413	230	124	1,602
2009	147	433	219	403	229	89	1,520

Source: Metropolitan Airports Commission Records, and MSP Reliever Airports Activity Forecasts Technical Report, April 2009.

Historical data on aircraft operations at the reliever airports are presented in **Table 3.2**. An operation is either an arrival or a departure. Therefore, one arrival and one departure together equal two operations. Aircraft operations totals reported for each airport are generally obtained from the air traffic control towers located at each airport. Of the six reliever airports, ANE, FCM, MIC, and STP have control towers. However, aircraft operations are only counted while the towers at those airports are operational. It should be noted that these respective airports are open 24-hours per day, but the control towers are closed during late night and early morning hours. The aircraft operations totals in **Table 3.2** do not include operations that occurred while the towers were closed.

At airports where there is no air traffic control tower, such as LVN and 21D, the operations totals are estimated through various methods and available data. The operations totals presented for LVN and 21D are airport staff estimations calculated from airport inspection data and comparative analyses with airports that have similar conditions.

The combined total for aircraft operations estimated at the reliever airports in 2009 is 389,843. This total represents a decrease of 8 percent when compared with total operations in 2008. Individually, each of the reliever airports showed a decrease in operations from 2008 to 2009. The most notable change in operations occurred at STP, with a decrease of 18,005 operations, which equates to a 16.4 percent reduction in operations from 2008 to 2009. The reduction at STP is primarily attributed to overall negative economic conditions that caused Jet Choice, one of the major aircraft operating businesses at STP, to go out of business in 2009.

Table 3.2

HISTORICAL VIEW OF OPERATIONS AT MAC RELIEVER AIRPORTS

Year	Airlake (LVN)	Anoka County (ANE)	Crystal (MIC)	Flying Cloud (FCM)	Lake Elmo (21D)	St. Paul (STP)	Total
1980	N/A	190,000	183,840	218,975	100,000	134,286	827,101
1981	N/A	150,000	154,436	194,229	90,000	107,305	695,970
1982	N/A	150,000	123,577	145,718	90,000	77,509	586,804
1983	20,000	140,000	136,314	166,266	90,000	97,118	649,698
1984	23,000	145,000	140,704	165,542	92,000	103,118	669,364
1985	35,000	160,000	143,665	176,246	82,000	112,019	708,930
1986	40,000	165,000	152,773	191,350	70,000	124,786	743,909
1987	52,000	180,000	165,367	209,423	63,000	135,397	805,187
1988	64,000	200,000	172,074	186,699	65,000	151,869	839,642
1989	66,000	212,000	177,679	207,661	65,000	166,436	894,776
1990	67,980	215,000	189,910	227,410	66,950	190,507	957,757
1991	74,745	195,650	173,150	186,503	69,650	168,450	868,148
1992	81,087	195,650	179,546	198,306	69,650	152,378	876,617
1993	81,087	195,650	183,554	218,643	69,950	131,388	880,272
1994	82,500	199,000	185,991	239,038	71,000	146,839	924,368
1995	75,397	181,866	171,478	216,309	64,887	133,686	843,623
1996	75,397	192,600	187,957	212,695	68,400	139,056	876,105
1997	72,382	143,063	175,728	198,199	65,664	135,079	790,115
1998	76,725	143,981	179,186	210,908	69,604	158,705	839,109
1999	76,725	149,769	178,342	192,746	70,996	158,808	827,386
2000	76,418	156,546	176,554	186,078	70,687	158,216	824,499
2001	70,229	136,892	156,801	185,593	64,962	142,794	757,271
2002	69,176	138,935	127,095	176,408	64,529	171,628	747,771
2003	58,108	132,145	98,612	155,837	54,205	131,794	630,701
2004	53,309	109,853	75,023	159,648	49,855	127,478	575,166
2005	51,678	101,272	72,205	157,710	48,329	131,708	562,902
2006	48,014	92,947	65,528	144,178	44,903	135,156	530,726
2007	41,292	80,517	53,038	118,178	38,617	117,977	449,619
2008	39,021	69,403	49,244	119,139	37,612	109,512	423,931
2009	35,802	68,534	42,311	117,180	34,509	91,507	389,843

Source: Metropolitan Airports Commission Records, and MSP Reliever Airports Activity Forecasts Technical Report, April 2009.

Table 3.3 and **Table 3.4** show forecasts for based aircraft and operations at the six MAC reliever airports through 2025. More detailed analyses of forecasted based aircraft and forecasted operations were done as part of the Long Term Comprehensive Plan (LTCP) efforts for LVN, MIC, and 21D in 2006 and for ANE, FCM, and STP in 2008.

Table 3.3

SUMMARY OF BASED AIRCRAFT FORECAST AT MAC RELIEVER AIRPORTS 2005-2025

Year	Airlake (LVN)	Anoka County (ANE)	Crystal (MIC)	Flying Cloud (FCM)	Lake Elmo (21D)	St. Paul (STP)	Total
2010	162	437	244	421	229	93	1,586
2015	195	455	261	420	253	105	1,689
2020	211	452	269	411	261	117	1,721
2025	203	433	254	406	247	128	1,671

Source: MSP Reliever Airports Activity Forecasts Technical Report, April 2009.

Table 3.4

SUMMARY OF FORECAST OPERATIONS AT MAC RELIVER AIRPORTS 2005-2025

Year	Airlake (LVN)	Anoka County (ANE)	Crystal (MIC)	Flying Cloud (FCM)	Lake Elmo (21D)	St. Paul (STP)	Total
2010	58,590	72,424	74,719	99,540	60,197	111,870	477,340
2015	60,546	73,328	74,686	97,154	61,321	117,399	484,434
2020	61,519	75,973	76,850	106,030	61,764	130,056	512,192
2025	61,325	79,560	77,266	113,876	63,700	137,310	533,037

Source: Metropolitan Airports Commission MIC Long Term Comprehensive Plan Update, June 2008; and MSP Reliever Airports Activity Forecasts Technical Report, April 2009.

3.3 DEVELOPMENT PROGRAMS

This section outlines the status of major development programs at each of the reliever airports. It is important to note that the MAC is investigating opportunities for non-aeronautical development at the reliever airports as a way to help make the reliever airport system as financially self-sustaining as possible.

3.3.1 Airlake Airport (LVN)

The MAC completed the LTCP update for LVN in 2008. The plan recommends that the south hangar area be completed so hangar construction can begin. There continues to be a waiting list for new hangar space at the airport. The MAC is reviewing alternatives for getting proposals from developers to complete the site preparation and construct new hangars.

The LTCP also recommends that the airfield's only runway (Runway 12-30) be extended to 5,000 feet at some point in the future to coincide with industrial/commercial development in Lakeville and potentially in Eureka Township. The runway extension shown in the plan requires relocation of a portion of Cedar Avenue. The MAC is working with Dakota County on the proposed realignment of this road. An Environmental Impact Statement (EIS) is required before the project can begin.

In addition to the LTCP recommendations, the MAC will continue its ongoing pavement maintenance and rehabilitation program for LVN.

3.3.2 Anoka County – Blaine Airport (ANE)

A major airport expansion program for ANE commenced in 2005 that included an extension of Runway 9-27 and the installation of an Instrument Landing System (ILS). The runway was extended from 4,000 feet to 5,000 feet and widened from 75 feet to 100 feet. As a result, the entire runway pavement was reconstructed. The parallel taxiway was also extended and fully reconstructed. A medium-intensity approach lighting system (MALSR) was also installed for Runway 27.

A new hangar area was developed in the northwest corner of the airport. The project involved the construction of taxiways and connectors, a new FBO apron, site preparation for a new building area, security fencing, detention basins for storm water, and a water main loop from the new building area to the air traffic control tower. An access road was constructed from Radisson Road to the new building area. This area now houses a new FBO and an aircraft storage hangar. This expansion program was funded through a public-private partnership between the MAC and Anoka County. The County contracted with a developer to construct and operate the FBO, and the FBO will build new hangars for aircraft maintenance, storage and lease.

A Long Term Comprehensive Plan (LTCP) was prepared for ANE, and draft documents were made available for public review and comment in late 2009. This plan analyzed existing facilities, forecasted future activity, and outlined development needed to meet the projected demand. Based upon the forecasts and existing airfield configuration, no airside or landside expansions are proposed in the draft LTCP. Currently, there is no demonstrated need for longer runway lengths, additional runways or additional hangar areas.

The recommendations included in the LTCP for ANE are as follows:

1. Xylite Street relocation to facilitate future construction of the East Building area annex
2. Improvements to the existing security gate system
3. Consideration for an extension to Taxiway C to the south
4. Continuation of existing pavement reconstruction and rehabilitation as part of the MAC's ongoing pavement maintenance program
5. Potential development of non-aeronautical land uses on airport property that are not needed for aviation purposes
6. Continuation of cooperative community interactions including, but not limited to, coordination with the existing Anoka County Airport Advisory Commission

The MAC will begin working with local communities to enact airport safety zoning once the LTCP process is complete.

3.3.3 Crystal Airport (MIC)

The MAC completed the LTCP update for MIC in 2008. The plan studied many alternatives for the airport, and included an analysis of impacts if MIC were closed. The adopted LTCP recommends the airport remain open, but recognizes that two runways could be closed without impacting the airfield needs of the reliever airport system. The LTCP for MIC suggests keeping the original paved runway and one paved crosswind runway intact. The MAC is evaluating the process for implementing the runway closure recommendations.

The MAC will continue its ongoing pavement maintenance and rehabilitation program for MIC.

3.3.4 Flying Cloud Airport (FCM)

A sanitary sewer and water installation project was undertaken at FCM in 2002 to serve the east and south hangar areas. An extension to the sanitary sewer and water system in the north hangar area was completed in 2008.

Pavement rehabilitation projects have been ongoing at FCM over the past few years. Runway 10R-28L was reconstructed in 2005. In 2008, an EIS was completed for two runway extensions and a new building area development. The first phase of construction, which included the extension of Runway 10L-28R to 3,900 feet, was completed in 2008. Phase 2 was completed in 2009, which included extending Runway

10R-28L to 5,000 feet and widening it to 100 feet. The expansion program also included a new hangar area development on the south side of the parallel runways, grading and excavating for a 24' perimeter road serving the west end of the airport; taxiway additions and other airfield modifications, and the upgrading/relocation of numerous navigational aids. Locked and coded security gate improvements were also completed during that expansion project in 2009.

The LTCP for FCM should be completed by mid-2010. This plan has analyzed existing facilities, forecasted future activity, and outlined development needed to meet projected demands. Draft LTCP documents were made available for public review and comment in November 2009. Plan recommendations include the following:

1. Shift Runway 18-36 to the north 58 feet and extend the total runway length from 2,691 feet to 2,800 feet in order to comply with FAA standards pertaining to Runway Safety Area (RSA) and Object Free Area (OFA) requirements
2. Continuation of pavement reconstruction and rehabilitation as part of the ongoing pavement maintenance program
3. Continue to work with FCM tenants along Taxiway A to eliminate taxiway obstructions in compliance with FAA standards pertaining to OFA requirements
4. Continue discussions with the FAA related to ultimate relocation of the air traffic control tower
5. Potential development of non-aeronautical land uses on airport property not needed for aviation purposes
6. Continue cooperative interactions with the City of Eden Prairie through, but not limited to, the existing Flying Cloud Airport Advisory Commission

In 2009, the MAC convened a Joint Airport Zoning Board (JAZB) whose purpose is to develop a Flying Cloud Airport Zoning Ordinance for review and approval by the Commissioner of Transportation, then subsequent adoption by the JAZB and local municipalities in accordance with State of Minnesota statutes. The JAZB meets bi-monthly and will continue the process of developing the ordinance through 2010.

3.3.5 Lake Elmo Airport (21D)

The MAC completed the LTCP update for 21D in 2008. The plan recommends that a new hangar area be constructed in the near future. The MAC is analyzing alternatives for soliciting proposals from developers to complete the site preparations and hangar construction.

The LTCP also recommends that the crosswind runway be reconstructed and extended from 2,499 feet to 3,200 feet to better accommodate the existing aircraft at the airport. The plan acknowledges the long-term future proposal to relocate and extend the primary runway, but there was no justification to do so within the 20-year period outlined in the plan.

An automated weather observation system (AWOS) was also recommended for installation at 21D. The Minnesota Department of Transportation (MnDOT) Office of

Aeronautics has already completed the installation, and the system is operational. It is owned and maintained by MnDOT.

3.3.6 St. Paul Downtown Airport (STP)

Construction of a perimeter floodwall and its components were completed in 2008, and related aesthetic improvements were completed in 2009. Prior to a flood event, the deployable wall elements will be installed across runway safety areas along the river; this will effectively shorten the runways, but the airfield will remain open at a reduced capability during a flood event. This will avoid the costly and disruptive relocation of airport operators as well as extensive property damage. In 2006, the MAC completed a compensatory excavation project that widened the Mississippi River channel so the new floodwall would not result in any off-airport increase in flood impacts.

A three-year runway safety area enhancement program was completed in 2008, which included construction of an Engineered Materials Arresting System (EMAS) off each end of Runway 14-32. The installation of the actual EMAS blocks was performed by MAC personnel, saving the MAC over $3 million. Additionally, reconstruction of portions of Taxiways D, N, and W was completed in 2008.

The MAC began working with local communities in 2008 to enact airport safety zoning around STP. A Joint Airport Zoning Board (JAZB) was formed, and its first meeting was held in May 2008. The goal of the JAZB is to develop a zoning ordinance for STP for review and approval by the Commissioner of Transportation, and for subsequent adoption by the JAZB and local municipalities. This process continued through 2009 and is expected to be completed in 2010.

In 2009, preparation of the STP LTCP was initiated, and draft documents were made available for public review and comment. This plan analyzed existing facilities, forecasted future activity, and outlined development needs in order to meet projected demand. Based upon the forecasts and existing airfield configuration, no airside or landside expansions are proposed in the draft LTCP. There is currently no demonstrated need for longer runways, additional runways or additional hangar areas.

The STP LTCP recommendations include:

1. Continuation of the MAC's ongoing pavement maintenance program
2. Ongoing maintenance, training, compensatory excavation monitoring, and permit compliance for the floodwall
3. Continuation of research and potential development of non-aeronautical land uses on airport property not needed for aviation purposes
4. Continuation of cooperative interactions with the Cities of St. Paul, South St. Paul and West St. Paul through, but not limited to, the existing Downtown St. Paul Airport Advisory Council (DAAC)