

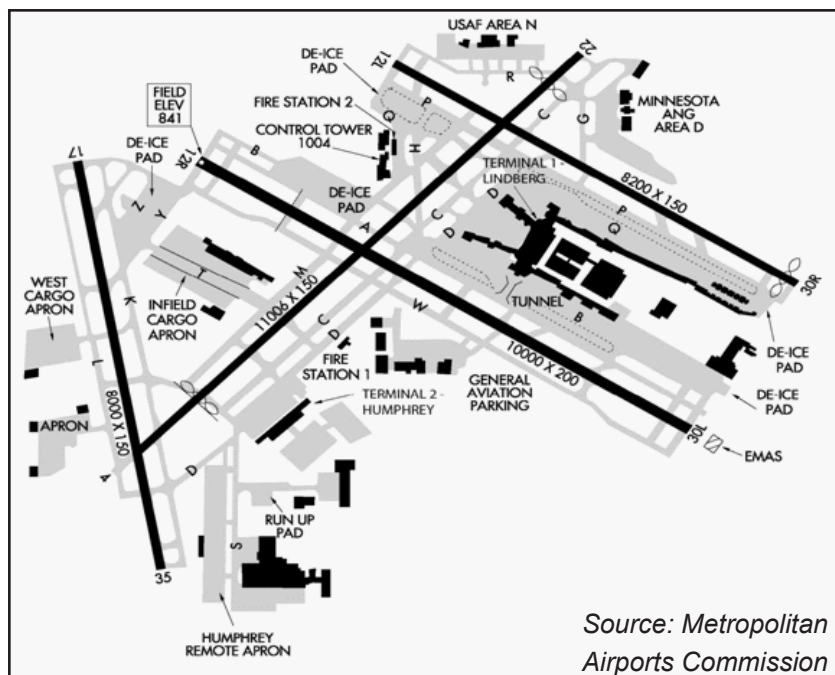
# Q

## Appendix Q: Airport Capacity Criteria

Airport airside capacity is the single most important element for the regional airport system. The efficient use of the airport capacity is affected by the level of delay that is experienced for each aircraft operation on an annual basis. The Council's Metro Development Framework has adopted a delay benchmark for MSP as an indicator of how the overall system is performing. In addition, the Council, as part of its system planning utilizes various FAA planning guidelines for assessing system needs. These FAA guidelines were used in review of the MSP 2030 LTCP Update. The following material describes how the guidelines are being applied in the regional aviation planning process prior to 2020.

### Application of FAA Order 5090.3c Planning Guidelines

Chapter 3 of this Order identifies types of fundamental airport development and activity levels for planning capacity development to meet the requirements of the *National Plan of Integrated Airports* (NPIAS). Minneapolis-St. Paul International Airport (MSP) is included as a primary commercial airport in the NPIAS and must meet its requirements.



Source: Metropolitan  
Airports Commission

**Figure Q-1: Minneapolis - St. Paul International Airport Layout**

**Fundamental Development** is the basic configuration recommended for an airport in the national system. This development would include, but not be limited to, land acquisition, aircraft movement areas (runways, taxiways), landing and navigation aids and aircraft parking areas.

The MSP 2030 LTCP has been prepared with a fundamental airfield configuration as depicted in Figure Q-1; **“additional runway capacity is not recommend”**. Some minor airfield improvements to taxiways, etc. may be needed in later phases of the proposed plan assuming the demand forecasts materializes.

The main focus of the LTCP update is to provide more passenger gates, additional vehicle parking, and improved ground access.

Activity Levels for planning capacity at a NPIAS airport, for runways and most other airport/airfield development, is identified at two key levels:

- At 60% of the airport's total annual capacity; an additional runway or supplemental airport planning process should begin.
- At 75% of the airport's total annual capacity; development programming should be in-place so implementation can be initiated.

Capacity estimates for the MSP LTCP development phases, in relation to the forecasts, are depicted in Table Q-2 below. Essentially all levels of activity are over the 60% criterion, and most are above the 75% criterion.

**Table Q-2: Aircraft Operational Demand vs Percent of Airside Capacity Used**

Air Demand		Estimated MSP Capacity Levels <sup>1</sup>		
		723,000 <sup>2</sup>	640,000 <sup>3</sup>	583,000 <sup>4</sup>
<b>2030 Forecast Scenarios</b>		<b>Ann. Op's</b>		
#3 - High Economic Growth	688,431	(95.2%)	(>100%)	(>100%)
#2 - Low Fuel Cost	697,815	(96.5%)	(>100%)	(>100%)
Base Case	630,837	(87.2%)	(98.6)	(>100%)
#4 - Low Connecting Ratio	571,934	(79%)	(89%)	(98.1%)
#1 - High Fuel Cost	514,042	(71%)	(80%)	(88.1%)
<b>MSP Historical High Op's</b>	541,093	(75%)	(84%)	(92.8%)
<b>2009 Actual Operations</b>	432,604	(60%)	(67%)	(74.2%)
<sup>1</sup> - Total Annual Operations assumed in preparing 2030 LTCP capacity estimates. <sup>2</sup> - MSP 2015 Terminal Expansion Environmental Assessment, by MAC in 2005. (annual average delay per operation 12.7 minutes). <sup>3</sup> - Major Airport Dual-Track Planning Strategy – MSP LTCP for 2010 (Approved 1996) (annual Delay 10 minutes) <sup>4</sup> - MSP Part 150 for 2007 Noise Contour.				

With numerous demand/capacity ratios over 80% in the above comparisons it appears that MSP development alternatives beyond 2020 would need to be evaluated immediately. Such evaluations, however, can be moved from the short term (2010-2015) to the mid-term (2015-2020) because of the following factors:

- Five-year continuous operational declines and actual level of operations,
- Poor performance of the U.S. Economy and projected slow growth in the short-term,
- MSP 2030 capacity estimates **do not** include potential benefit of proposed NextGen program (questions of actual future throughput still remain to be answered),
- Capacity improvements with Runway 17/35 are in-place for more than historical high operations activity,
- FAA use of 90% threshold (for single air-service airport metro areas) for **implementing** development alternatives; see *FAA Future Capacity Needs in the National Airspace System, 2004*,
- FAA has not indicated a need for new capacity at MSP until 2025 unless, assumed benefits of Air Traffic Control improvements, and reduced delays at other [hub] airports do not occur; see *FAA Future Capacity Needs in the National Airspace System, 2007* (Appendix C1 [Table Q-3] is attached,

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it identifies some of the NextGen improvements expected at MSP, and are items to be monitored as part of the capacity/delay portion of the airport alternatives issue).

Results of the Future Airport Capacity Task (FACT) team efforts conducted an assessment of the future capacity of the Nation's airports and metropolitan areas. The goal of FACT was to determine which airports and metropolitan areas have the greatest need for additional capacity.

The most recent report, FACT 2, conducted an analysis to identify U.S. airports that can be expected to require additional capacity in the future if demand reaches forecast levels. MSP was not mentioned in the 2007 or 2015 planning horizons as an airport that requires capacity enhancements. In 2025, MSP benefits from "ATC improvements and reduced delays at other airports" according to the FACT 2, 2007 analysis. Therefore, MSP and the metropolitan area are not identified as an area in need of airside capacity improvements.

Given the above situation it appears that implementing Development Phases I and II at MSP is appropriate, assuming no major legislative changes to the planning process, and the following planning activities are executed:

- MC completes TPP Update in 2010.
- Mn/DOT Aeronautics Updates the SASP in 2011-2012.
- MAC Updates the MSP LTCP in 2015.
- MC Updates TPP in 2018.

If by 2018 a mid-course [2020] correction does not appear warranted, for Major-Airport Capacity at MSP, development Phases III and IV of the 2030 MSP Concept Plan would likely be continued. The Council approval of the MSP 2030 LTCP, indicated that the MAC should initiate a capacity study in advance of the airport reaching 540,00 annual operations.

If a mid-course correction appears warranted it will likely require also looking at a number of alternative airport development approaches to meet system capacity needs.

- The FAA has identified a number of approaches for potential further investigation:
- New Runways
- New Commercial Service Airports
- Regional Solutions
- Congestion Management
- High-Density Corridors and Multimodal Planning
- NextGen Improvements

**Table Q-3: Capacity Assumptions – OEP Airports : Detailed Improvements Modeled in 2015 and 2025**

	Atlanta	Boston	Baltimore	Cleveland	Charlotte	Cincinnati	Regan Nat'l	Denver	Dallas	Detroit	Newark	Ft Lauderdale	Honolulu	Dulles Int'l	Houston Int'l	NY - JFK	Las Vegas	Los Angeles	NY - LGA	Orlando	Midway	Memphis	Miami	MSP	O'Hare	Portland	Philadelphia	Phoenix	Pittsburg	San Diego	Seattle	San Francisco	Salt Lake City	St. Louis	Tampa
Reduced Separation Standards use visual separation in MMC use 2/3/4/5 NM in IMC	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x*	x	x	x	x	◇*	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Improved threshold delivery accuracy	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇	◇
1.5 NM Departure/Arrival separation (IMC) spacing <2500 ft or same runway	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Independent parallel approaches (IMC) spacing 2500-4299 ft												x												▲		x		x		x			▲		
Triple independent Parallel approaches (IMC)	▲					▲		▲	▲	x				◇	▲						◇					◇							x		
"Mixed triple" independent/dependent parallel Approaches (IMC)					x																														
Paired approaches, e.g. SOIA MMC (spacing 700-2499 ft)	x	◇			▲						◇						x	x					x			◇					◇	▲			
IMC (spacing 1200 – 2499 ft)		x																																	
Dependent Approaches MMC/IMC (700 – 2500 ft spacing) 1.5 NM diagonal behind Small, Large wake vortex sep. behind B757/Heavy											x							x		x			x									x	◇	x	
LAHSO (all weather) if > 7000 ft to intersection		▲											x				x						x												
Simultaneous Converging Approaches (IMC)																	x							x											
Standard Departure/Departure separations (no departure constraints)		x										x				◇	x									x				x		x			
Independent parallel departures (IMC) no wake vortex separation behind Small/Large (700 – 2500 ft spacing)											x						x			x			x									x	◇	x	
New/extended runways (since 2002)	▲	◇	x	▲	x	▲		▲	▲			◇		◇	▲					▲			▲	▲	◇		◇				◇			▲	x

▲	Included in 2006 capacity
◇	2015 capacity improvement
x	2025 capacity improvement

x	Visual separations applied in VMC and MMC (2025)*
◇	Visual separations applied in VMC (2015)*

CAPACITY NEEDS IN THE NATIONAL AIRSPACE SYSTEM:  
Future Airport Capacity Task (FACT) 2

May 2007

PLANNED IMPROVEMENTS