



# Federal Aviation Administration

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## Memorandum

Date: May 18, 2006

From: Traffic Management Officer

To: Laura Holthus, CH2M

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Subject: DTW Runway Capacity and Operating Configurations

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A general rule of thumb for calculating theoretical runway capacity at DTW is an average of 36 an hour for arrivals and 55 an hour for departures. If the runway is shared with arrivals and departures the average theoretical capacity would be 16-20 per each (or 32-40 an hour total) due to the additional spacing on final between arrivals to accommodate departure traffic off the same runway.

The averages are appropriate for planning purposes since various factors effect the capacities, including the mix of type aircraft, runway conditions (i.e., ice, snow, rain etc.), strong winds, and wake turbulence (disruptions of airflow to smaller aircraft that are following larger, heavier aircraft. Added spacing between the two aircraft is needed to mitigate the effects of wake turbulence which can be serious).

For your use, the following provides a more detailed description of the various operating configurations and arrival/departure rates.

The Detroit Metro Airport (DTW) utilizes three main operating flow configurations; North, South, and West Flow. The North and South Flow Configurations are the optimum capacity choices for our operation. The West Flow has lesser capacity alternatives and is utilized either due to strong west winds or certain runway closures that make a North or South Flow configuration less attractive.

The North and South Flows are in operation a majority of the year (25% and 70% respectively), and the balance (5%) is on a West Flow. Optimum arrival rates (AAR) and departure rates (ADR) are achieved on North and South Flow configurations, with lesser capacity numbers on a West Flow. There are variances to each configuration based upon runway availability and whether or not there is an instrument landing system for each available runway. (Note: Runway 21R/3L is the only runway at DTW without an instrument approach and therefore is used (with a few exceptions) only for departures). Obviously, there are other variances (besides runway closures) that will have an impact on capacity. Even when all runways are available, weather can affect the numbers. During good weather, VFR or Visual Flight Rules can be used which has a

favorable impact on capacity, whereas IFR or Instrument Flight Rules associated with lower ceiling and visibility weather conditions will decrease capacity. Listed below are the commonly used configurations, their associated runways, their use (for arrival, departure or both) and their associated rates. A runway labeled with an asterisk (\*), denotes that the runway is used for both arrivals and departures during a bank. Arrival and departure rates are listed for both VFR and IFR weather conditions.

<u>Configuration</u>	<u>Arrival Runway(s)</u>	<u>Departure Runway(s)</u>	<u>AAR/ADR (Rates)</u>
North Flow	4L 3R 4R*	4R 3L	72/92 (IFR) 92/92 (VFR)
South Flow	22R 21L 22L*	22L 21R	72/92 (IFR) 92/92 (VFR)
West Flow	27L 27R	27L 27R	48/48 (IFR and VFR)
West Flow Landing 27L/27R and Departing Runway 22R			72/55 (IFR and VFR)