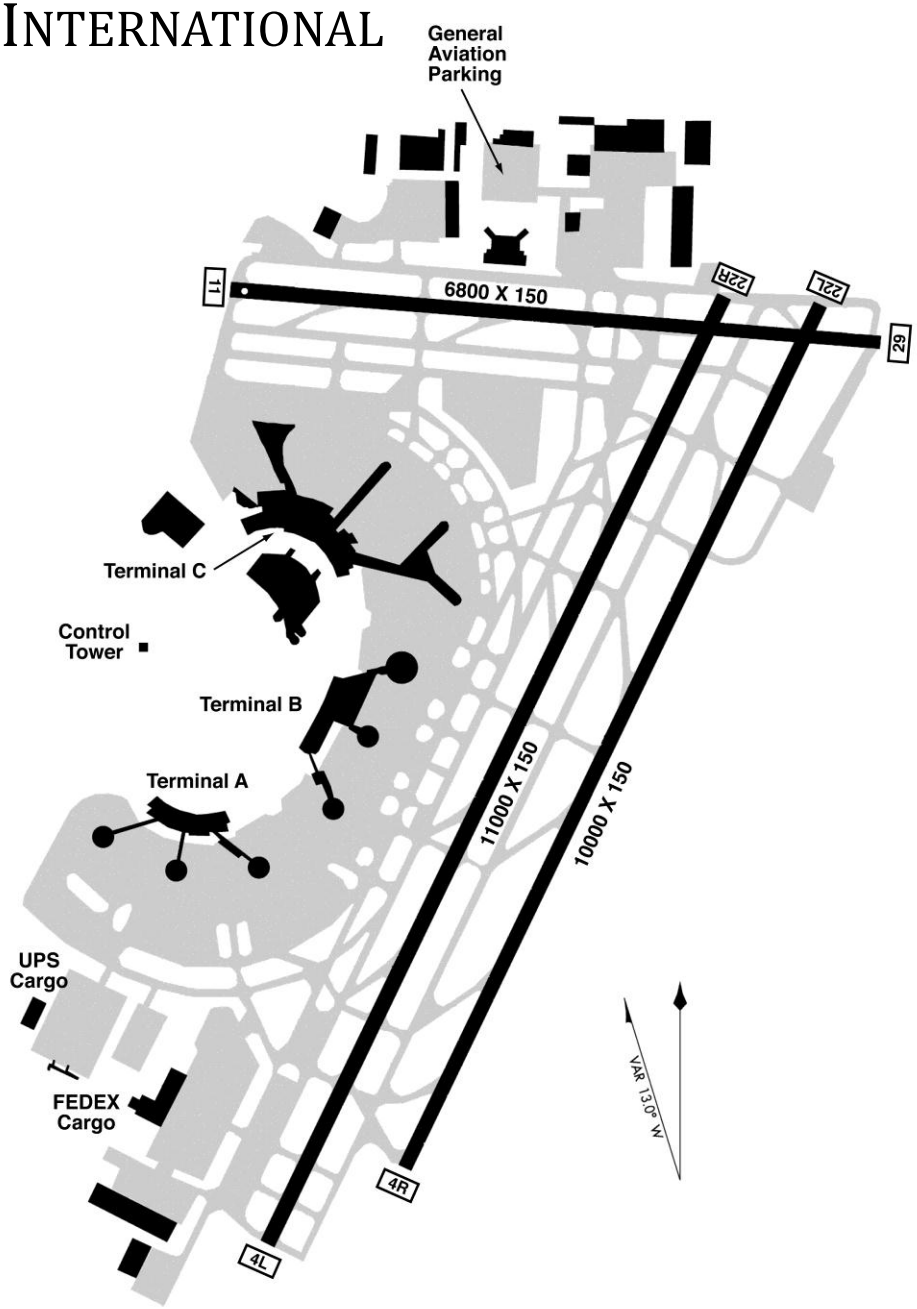
EWR NEWARK LIBERTY INTERNATIONAL



Airport capacity profile estimates were created using a standard set of performance characteristics and do not take into account non-runway constraints, unless otherwise noted. The capacity estimates developed for this report are not intended to replace the results of any detailed analysis that would precede an environmental, investment, or policy decision.

The list of Future Improvements and their expected effects on capacity does not imply FAA commitment to, or approval of, any item on the list.

EWR NEWARK LIBERTY INTERNATIONAL

DEFINITION

- The capacity profile shows the hourly throughput that an airport is able to sustain during periods of high demand, represented as the range between the model-estimated capacity and the ATC facility reported rate (called rate). Each weather condition has a unique capacity rate range.
- To maximize capacity in good weather, EWR tends to operate in an arrival or departure priority mode, as opposed to a balanced operation. An arrival or departure priority operation is only feasible when the airport's flight schedule is unbalanced for sustained periods of time.
- The operational limits put in place under the Schedule Orders and proposed in the NPRM for EWR involve a trade-off between airport throughput and a tolerable level of delay. The Government Accountability Office (GAO) recommended, and FAA agrees, that operational limits for EWR should be established under realistic weather and operating scenarios, not optimal conditions. This can result in less throughput under good weather conditions but helps prevent excessive delays during adverse weather periods.
- The following charts compare actual hourly traffic with the estimated capacity curves for EWR. Some hourly traffic points fall outside the estimated capacity curves. There are many reasons why this may occur without affecting operational safety. For example, more aircraft may have been able to use Runway 11/29 than were assumed in the analysis. Also, actual weather may have been better for part of the hour than that recorded for the hour, allowing more efficient ATC procedures than were modeled.

RECENT CAPACITY IMPROVEMENTS AT EWR

- Implementation of Traffic Management Advisor (TMA) helps to improve the flow of arrivals to the runways.

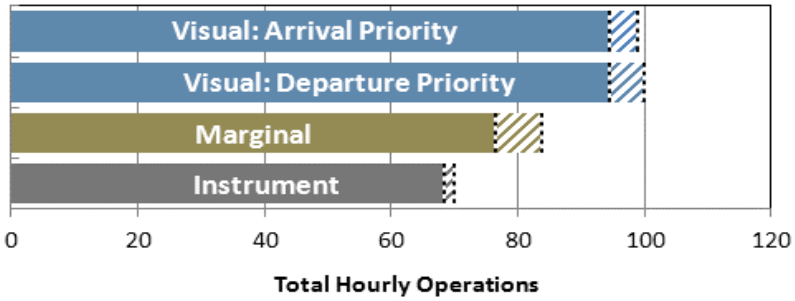
FUTURE IMPROVEMENTS AT EWR

- *Improved Runway Delivery Accuracy*: The combined effects of several new capabilities, including ADS-B Out, CDTI, and TBM in the terminal area, will improve the ability of controllers by 2020 to deliver aircraft to the runway with the desired separation from the preceding aircraft. This will reduce the average spacing between arrivals and boost arrival capacity.
- *Improved Parallel Runway Operations*: Paired approaches are anticipated to be available at EWR by 2020. The aircraft will maintain visual separation, allowing them to execute parallel approaches in Visual weather conditions.
- *Wake Turbulence Mitigation for Arrivals – System (*WTMA-S) is anticipated to be available at EWR by 2020. WTMA-S will employ a wind forecasting algorithm to allow reduced separation between closely-spaced parallel arrivals to Runways 4L and 4R under specific wind conditions.
- *Wake Turbulence Mitigation for Departures (*WTMD) is anticipated to be available at EWR by 2020 for Runways 4L and 4R. WTMD will eliminate the need for wake vortex separation behind a B757 or Heavy aircraft departing on the adjacent runway when specific wind conditions exist that reduce the vortex hazard.
- Additional information on these improvements may be found in this report under "Future Operation Assumptions."

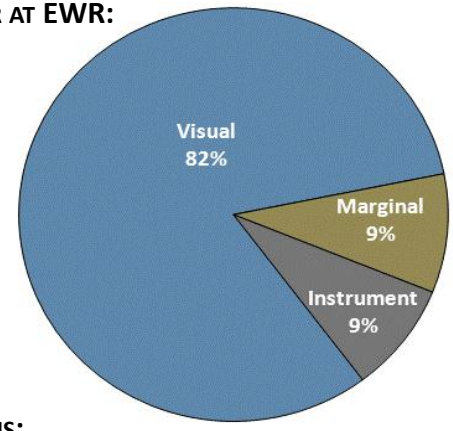
DATA SOURCES

- Actual hourly EWR operations, weather and configuration data were obtained from the FAA ASPM database, and represent operational hours from 7am to 11pm local time for all of Fiscal Years 2009 and 2010. Actual configuration usage is determined by multiple operational factors, including weather conditions.
- Facility reported rates were provided by ATC personnel at EWR.
- Model-estimated rates are derived from operational information provided by ATC.

CURRENT OPERATIONS CAPACITY RATE RANGE



ANNUAL WEATHER AT EWR:



VISUAL CONDITIONS:

- Ceiling and visibility allow for visual approaches: at least 3000 feet ceiling and 4 miles visibility

MARGINAL CONDITIONS:

- Ceiling and visibility below visual approach minima but better than Instrument conditions

INSTRUMENT CONDITIONS:

- Ceiling and visibility below 1000 feet ceiling or 3 miles visibility

VISUAL

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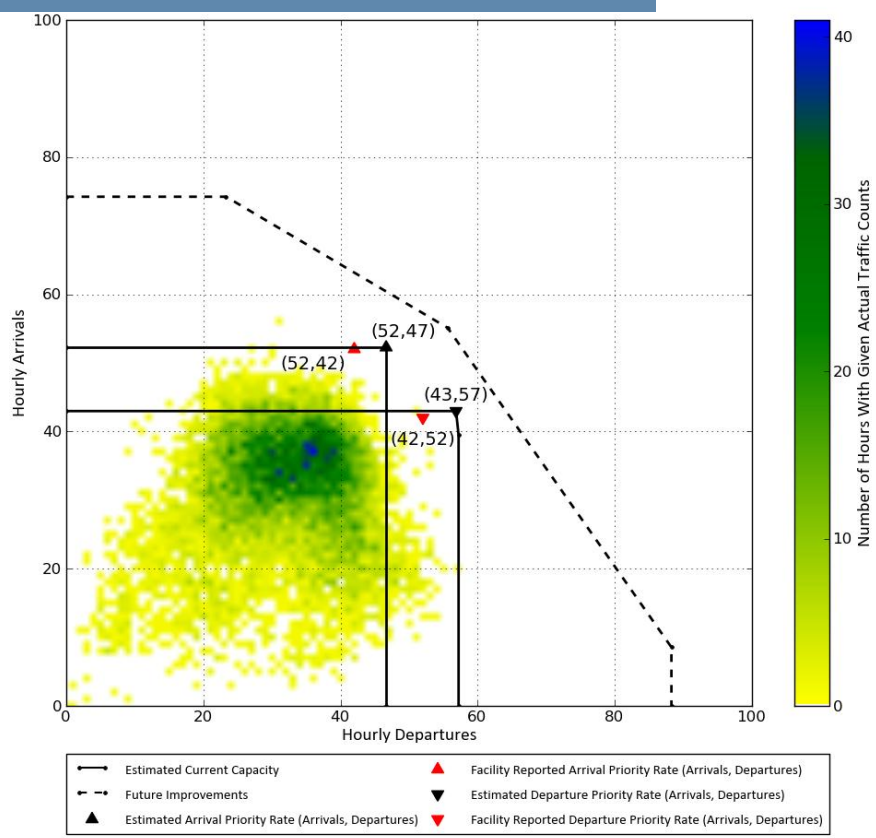
EWR Scenario		Arrival Runways	Departure Runways	Procedures	Hourly Rate	
					ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	ARRIVAL PRIORITY	11, 22L	22R	Visual Approaches, Visual Separation	94	99
	DEPARTURE PRIORITY	22L	22R, 29	Visual Approach, Visual Separation	94	100
FUTURE IMPROVEMENTS Improved Runway Delivery Accuracy Improved Parallel Operations WTMD		4L, 4R	4L, 4R	Paired Approaches, Visual separation	N/A	111

VISUAL WEATHER CONDITIONS



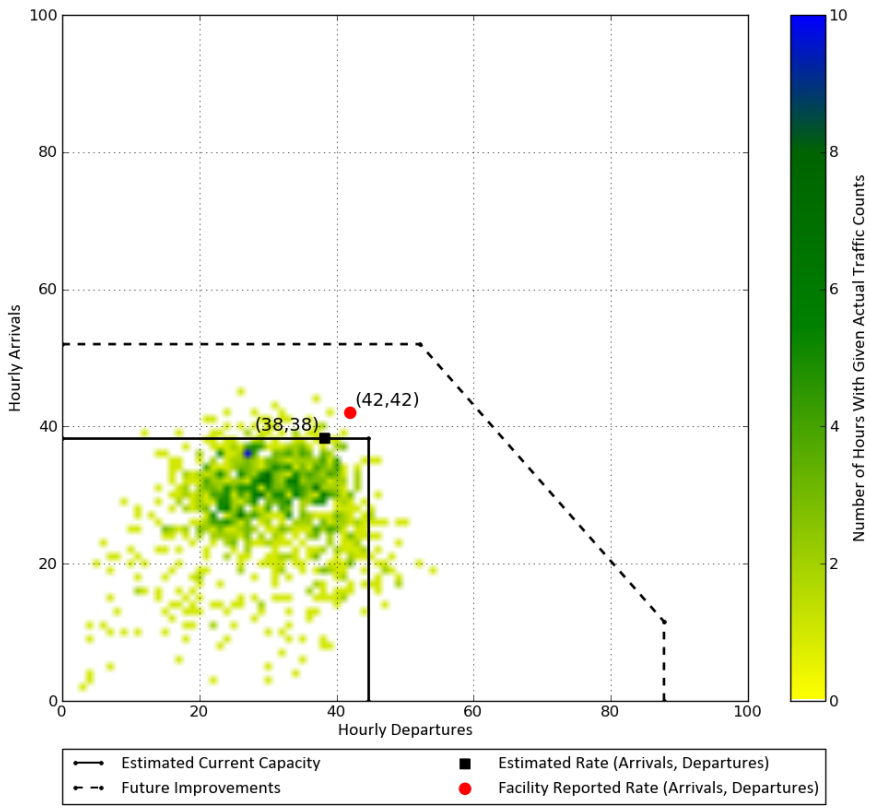
- The capacity rate range in Visual conditions is currently 94-99 operations per hour in arrival priority, and 94-100 in departure priority.
- EWR operates in variations of this configuration approximately 64% of the time in Visual weather conditions (totaling 52% annually).
- Only limited operations occur on Runway 11/29 due to length and potential conflict with approaches to Teterboro (TEB). In addition, winds affect how often Runway 11/29 is available for use.
- Limited same runway departure fanning is conducted from Runway 22R. This procedure enables higher departure throughput by reducing the minimum time required between successive departures.
- This capacity profile does not take into consideration operating configurations at nearby airports such as LGA, JFK, and PHL. In particular, the NY/NY/PHL airspace is complex and highly interconnected. Departure or arrival patterns at one airport can impact capacity at nearby airports.
- Peak arrival capacity is estimated to increase as future improvements are implemented. Peak departure capacity may also increase, but some of these gains may be mutually exclusive.

MARGINAL

NEWARK LIBERTY INTERNATIONAL

EWR Scenario	Arrival Runways	Departure Runways	Procedures	Hourly Rate	
				ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	4R	4L	Instrument Approach, Visual Separation	84	76
FUTURE IMPROVEMENTS Improved Runway Delivery Accuracy WTMA-S WTMD	4L, 4R	4L, 4R	Dependent Instrument Approaches, Visual Separation	N/A	104

MARGINAL WEATHER CONDITIONS



- The capacity rate range in Marginal conditions is currently 76-84 operations per hour.
- EWR operates in variations of this configuration approximately 51% of the time in Marginal weather conditions (totaling 5% annually).
- Reduced separation (2.5 NM) between arrivals is authorized for instrument approaches to Runway 4R at EWR.
- This capacity profile does not take into consideration operating configurations at nearby airports such as LGA, JFK, and PHL. In particular, the NY/NY/PHL airspace is complex and highly interconnected. Departure or arrival patterns at one airport can impact capacity at nearby airports.
- Peak departure capacity is estimated to increase as future improvements are implemented.

INSTRUMENT

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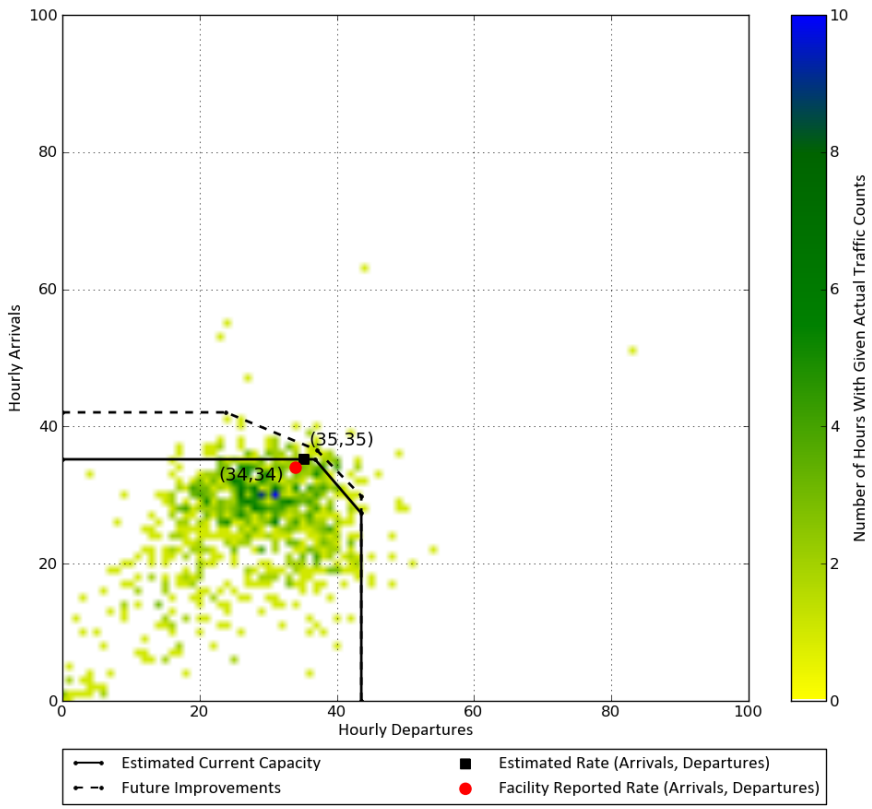
EWR Scenario	Arrival Runways	Departure Runways	Procedures	Hourly Rate	
				ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	4R	4L	Instrument Approach, Radar Separation	68	70
FUTURE IMPROVEMENTS Improved Runway Delivery Accuracy WTMA-S	4L, 4R	4L	Dependent Instrument Approaches, Radar Separation	N/A	74

INSTRUMENT WEATHER CONDITIONS



- The capacity rate range in Instrument conditions is currently 68-70 operations per hour.
- EWR operates in variations of this configuration approximately 56% of the time in Instrument weather conditions (totaling 5% annually).
- Reduced separation (2.5 NM) between arrivals is authorized for instrument approaches to Runway 4R at EWR.
- This capacity profile does not take into consideration operating configurations at nearby airports such as LGA, JFK, and PHL. In particular, the NY/NY/PHL airspace is complex and highly interconnected. Departure or arrival patterns at one airport can impact capacity at nearby airports.