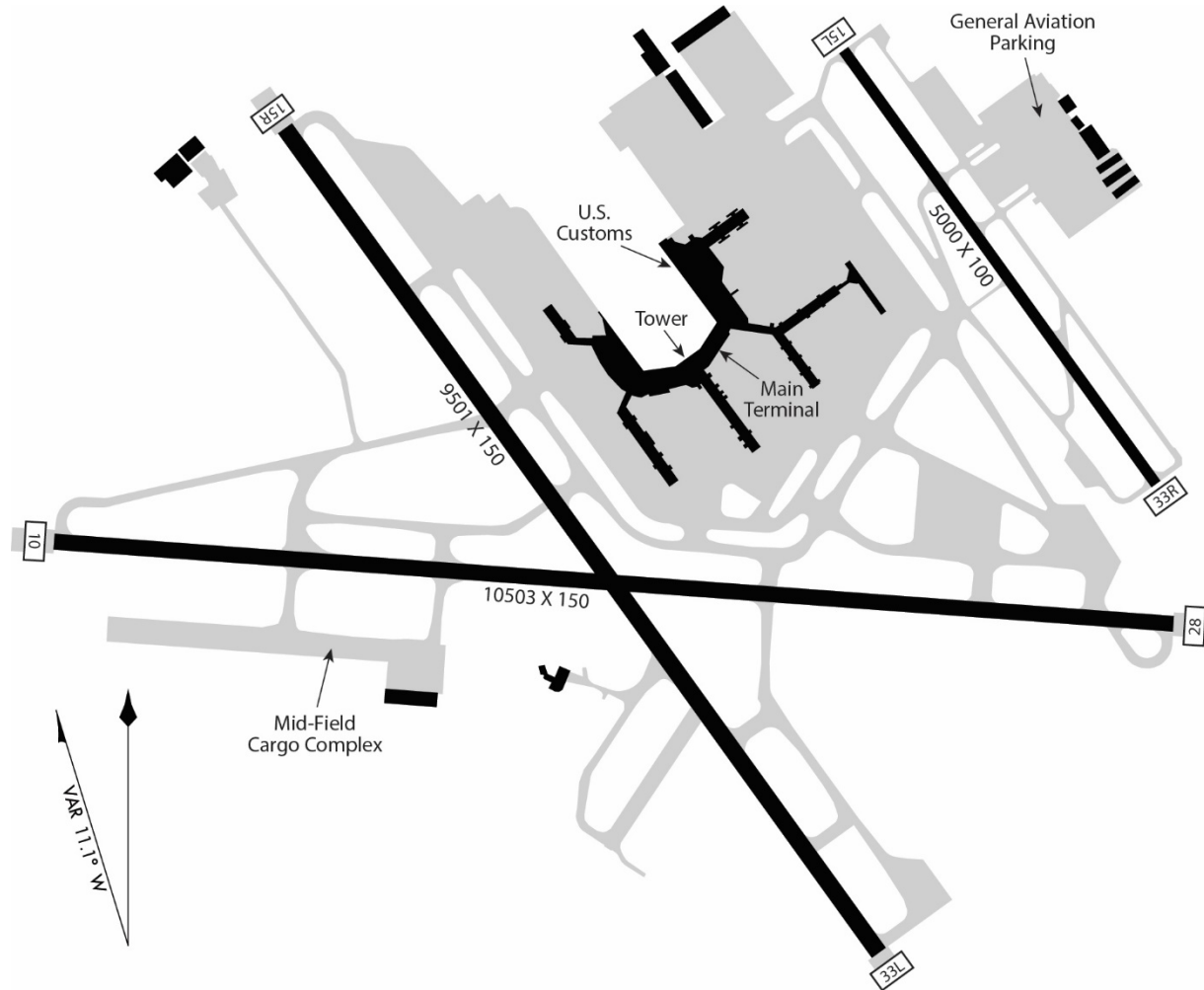


AIRPORT CAPACITY PROFILE: BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL



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.

BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL OVERVIEW

About this Airport Capacity Profile

- The capacity profile shows the hourly throughput that an airport is expected to be 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 (visual, marginal, and instrument) has a unique capacity rate range.
- For each weather scenario, capacity estimates are based on information provided by ATC, including reported arrival and departure rates.

Recent Capacity Improvements at BWI

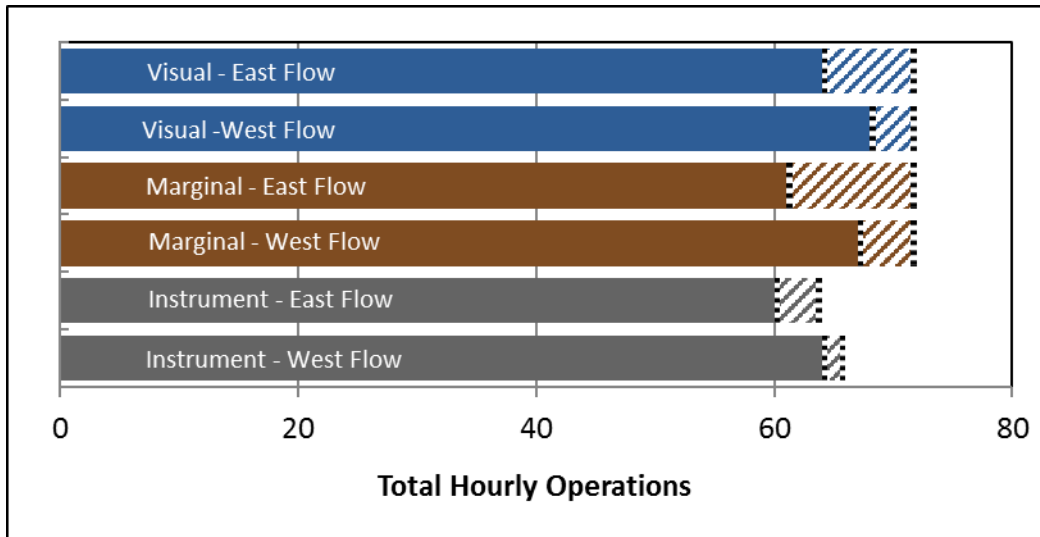
- Time-Based Flow Management (TBFM) helps to improve the flow of arrivals to the runways.

Future Improvements at BWI

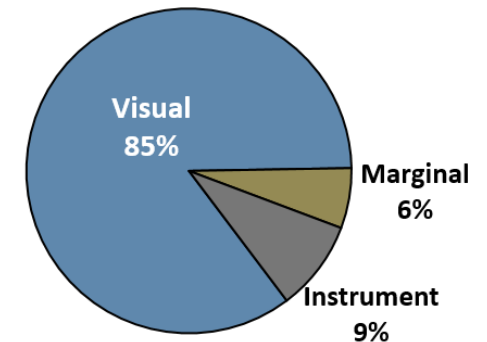
- *Improved Runway Delivery Accuracy*: The combined effects of several new capabilities, including Automatic Dependent Surveillance-Broadcast (ADS-B) Out, Cockpit Display of Traffic Information (CDTI), and Terminal Sequencing and Spacing (TSAS) in the terminal area, will improve the ability of controllers 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.

BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL OVERVIEW - 2

CURRENT OPERATIONS CAPACITY RATE RANGE



ANNUAL WEATHER CONDITIONS



VISUAL CONDITIONS:

- Ceiling and visibility allow for visual approaches: at least 2,500 feet ceiling and 5 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

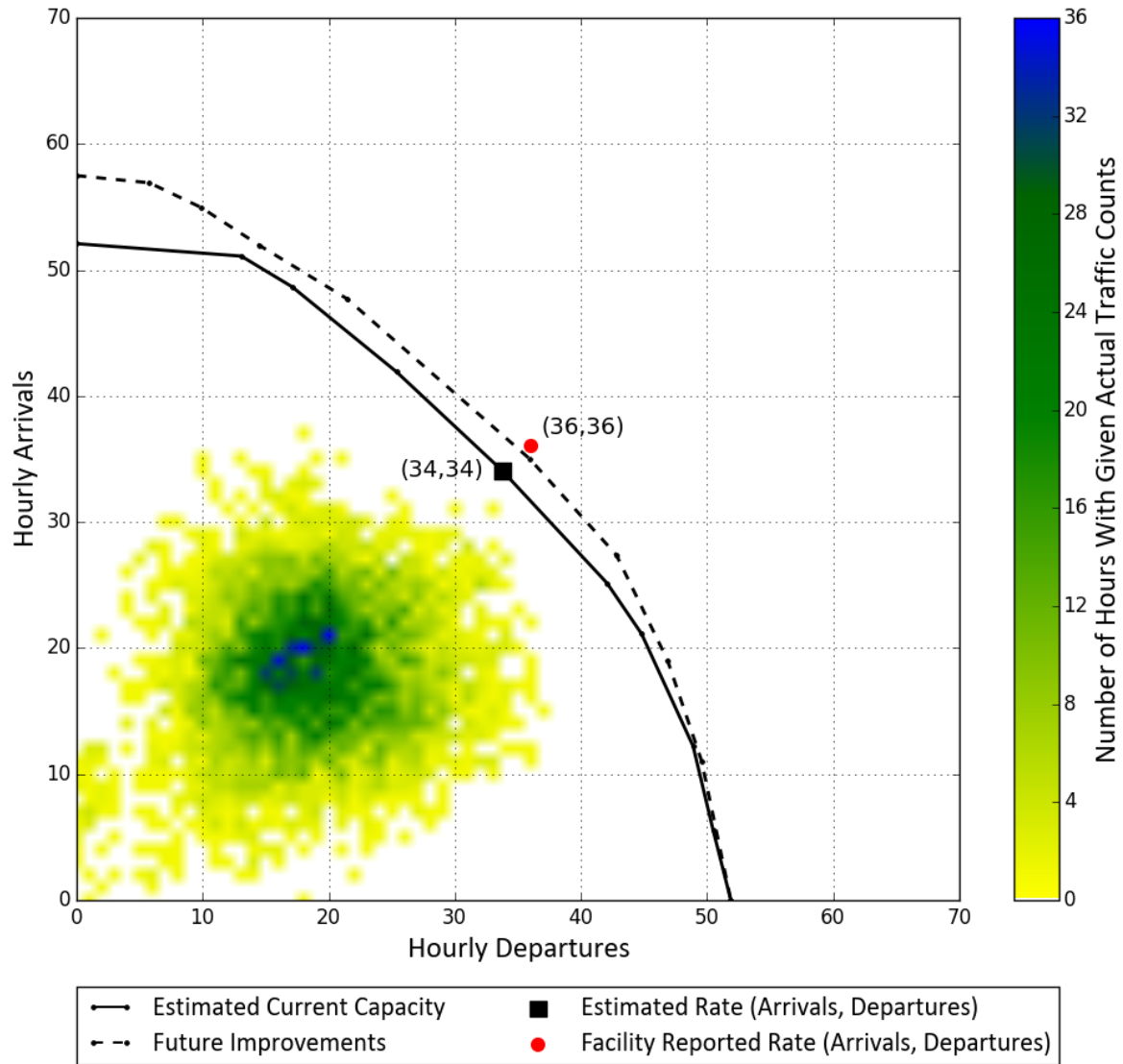
Data Sources

- Actual hourly BWI 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 Year 2015. Actual configuration usage is determined by multiple operational factors, including weather conditions.
- Facility reported rates were provided by ATC personnel at BWI.
- Model-estimated rates are derived from operational information provided by ATC.

Type Operations	Arrival Runways	Departure Runways	Hourly Rate	
			ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	33L, 33R	28, 33R	72	68
FUTURE IMPROVEMENTS	33L, 33R	28, 33R	N/A	71

- **Future improvements:** Improved Runway Delivery Accuracy
- The capacity rate range in West flow Visual conditions is 68-72 operations per hour.
- Use of Runway 15L-33R is limited to aircraft of Runway Design Code B-III or smaller.
- To ensure adequate separation at the runway intersection, an arrival must be at least 2 nautical miles from the threshold of Runway 33L to release a departure on Runway 28.

VISUAL WEATHER CONDITIONS

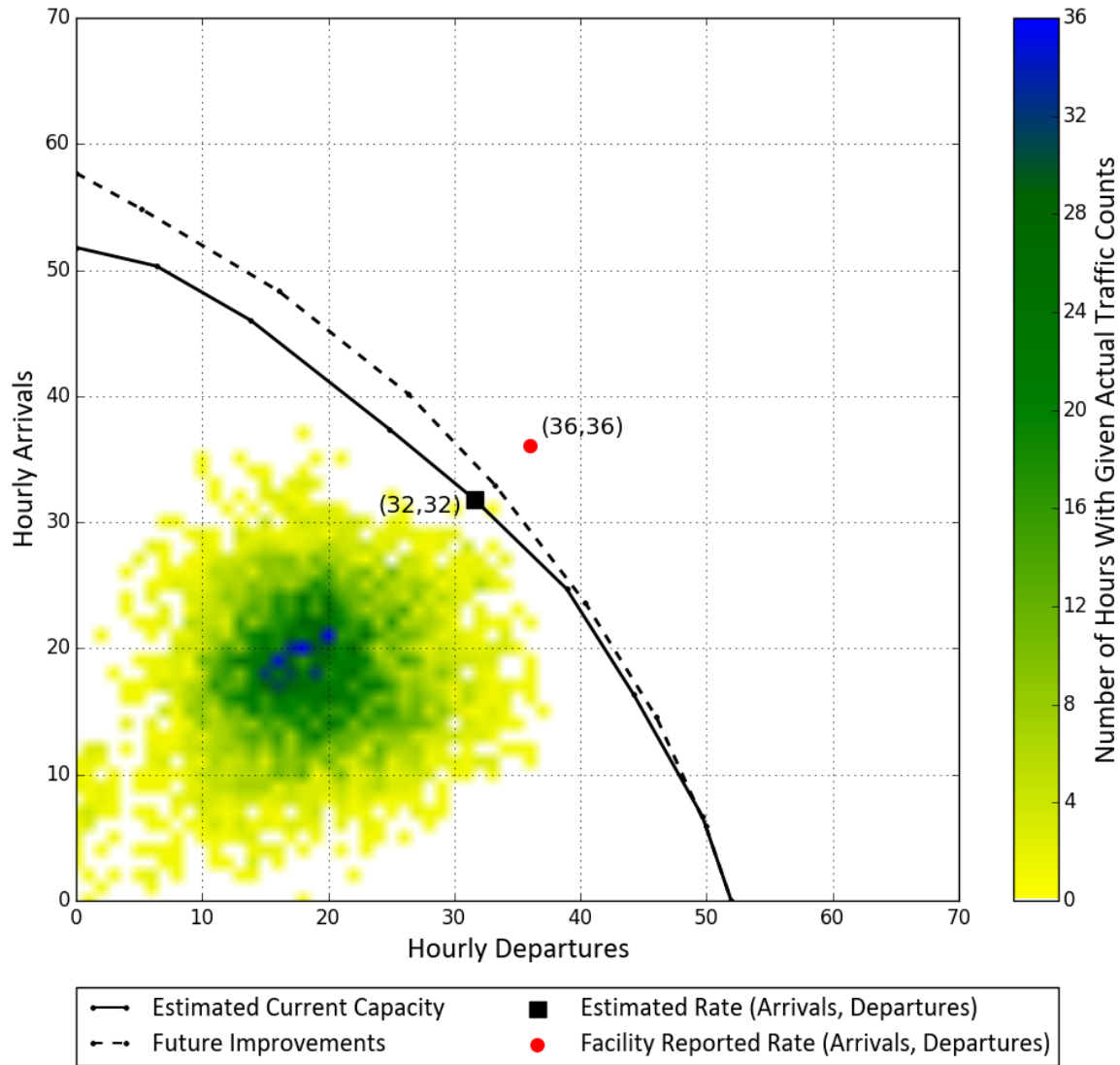


Actual traffic counts shown are for all Visual hours, all configurations.

Type Operations	Arrival Runways	Departure Runways	Hourly Rate	
			ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	10, 15L	15R, 15L	72	64
FUTURE IMPROVEMENTS	10, 15L	15R, 15L	N/A	66

- **Future improvements:** Improved Runway Delivery Accuracy
- The capacity rate range in East flow Visual conditions is 64-72 operations per hour.
- Use of Runway 15L-33R is limited to aircraft of Runway Design Code B-III or smaller.
- To ensure adequate separation at the runway intersection, an arrival must be at least 2 nautical miles from the threshold of Runway 10 to release a departure on Runway 15R.
- Instead of using an arrival-departure window, the converging operation between arrivals on Runway 10 and departures on Runway 15L is managed as if the runways physically intersected.

VISUAL WEATHER CONDITIONS

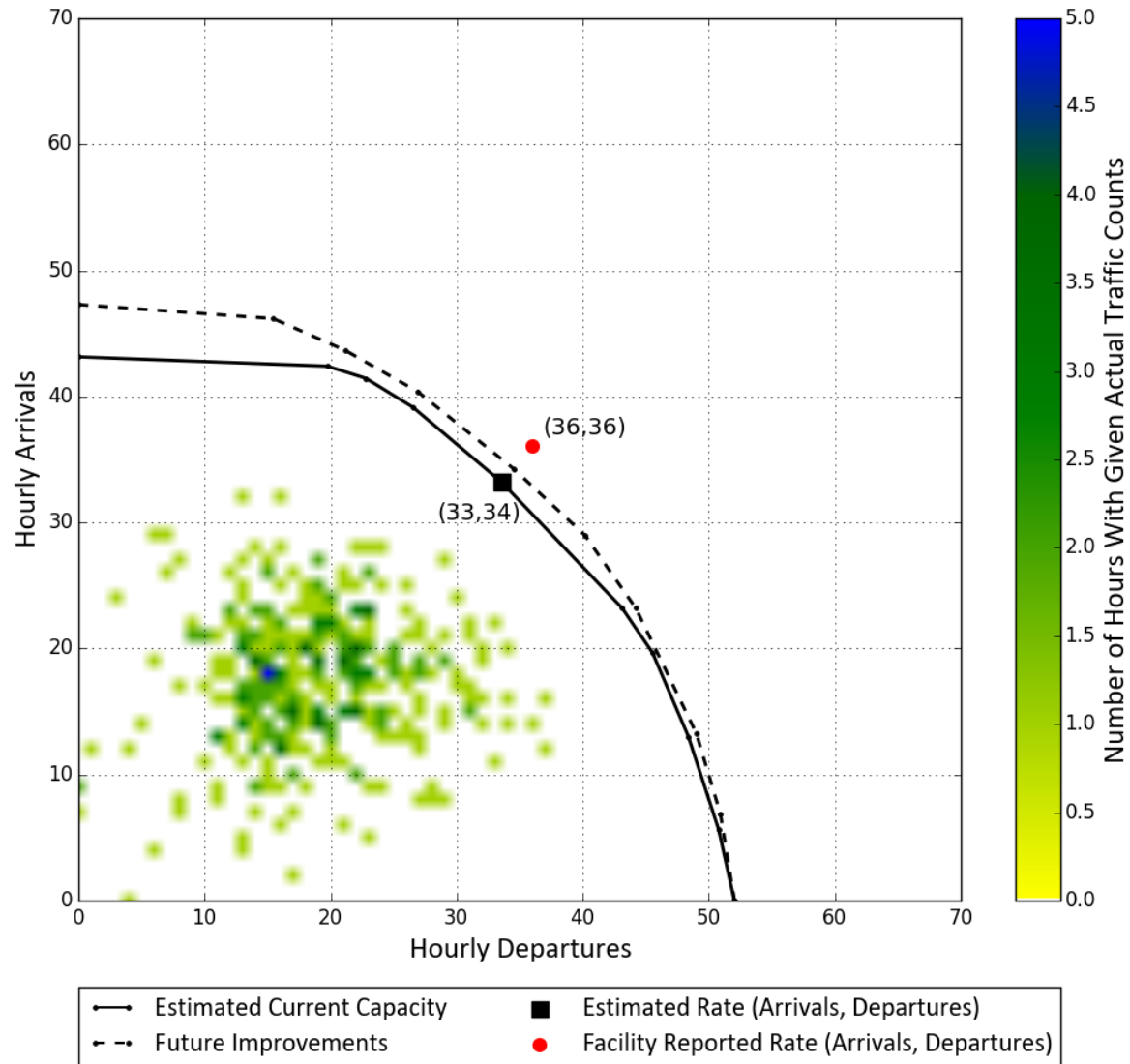


Actual traffic counts shown are for all Visual hours, all configurations.

Type Operations	Arrival Runways	Departure Runways	Hourly Rate	
			ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	33L, 33R	28, 33R	72	67
FUTURE IMPROVEMENTS	33L, 33R	28, 33R	N/A	69

- **Future improvements:** Improved Runway Delivery Accuracy
- The capacity rate range in West flow Marginal conditions is 67-72 operations per hour.
- Use of Runway 15L-33R is limited to aircraft of Runway Design Code B-III or smaller.
- To ensure adequate separation at the runway intersection, an arrival must be at least 2 nautical miles from the threshold of Runway 33L to release a departure on Runway 28.

MARGINAL WEATHER CONDITIONS

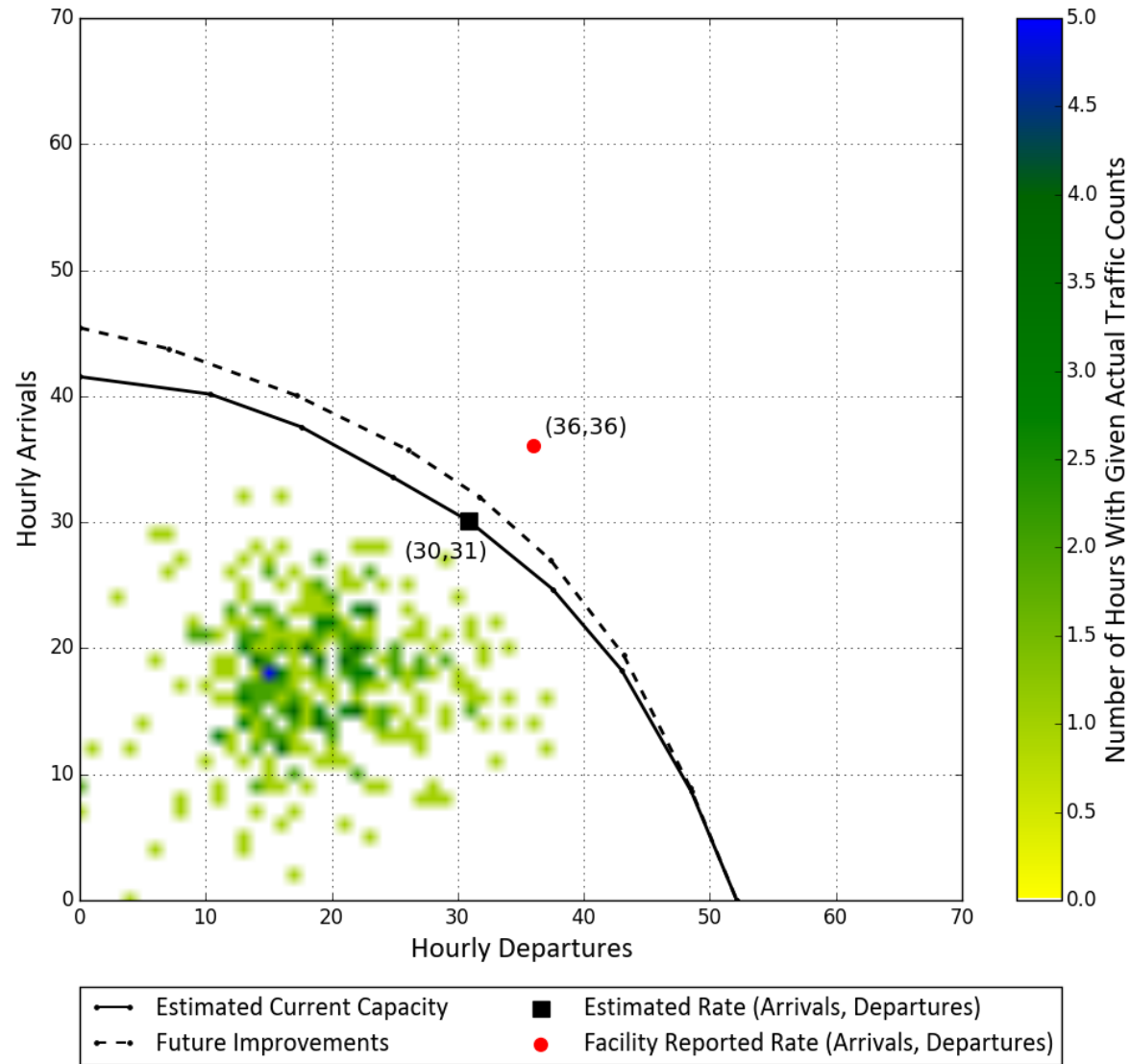


Actual traffic counts shown are for all Marginal hours, all configurations.

Type Operations	Arrival Runways	Departure Runways	Hourly Rate	
			ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	10, 15L	15R, 15L	72	61
FUTURE IMPROVEMENTS	10, 15L	15R, 15L	N/A	64

- **Future improvements:** Improved Runway Delivery Accuracy
- The capacity rate range in East flow Marginal conditions is 61-72 operations per hour.
- Use of Runway 15L-33R is limited to aircraft of Runway Design Code B-III or smaller.
- To ensure adequate separation at the runway intersection, an arrival must be at least 2 nautical miles from the threshold of Runway 10 to release a departure on Runway 15R.
- Instead of using an arrival-departure window, the converging operation between arrivals on Runway 10 and departures on Runway 15L is managed as if the runways physically intersected.

MARGINAL WEATHER CONDITIONS

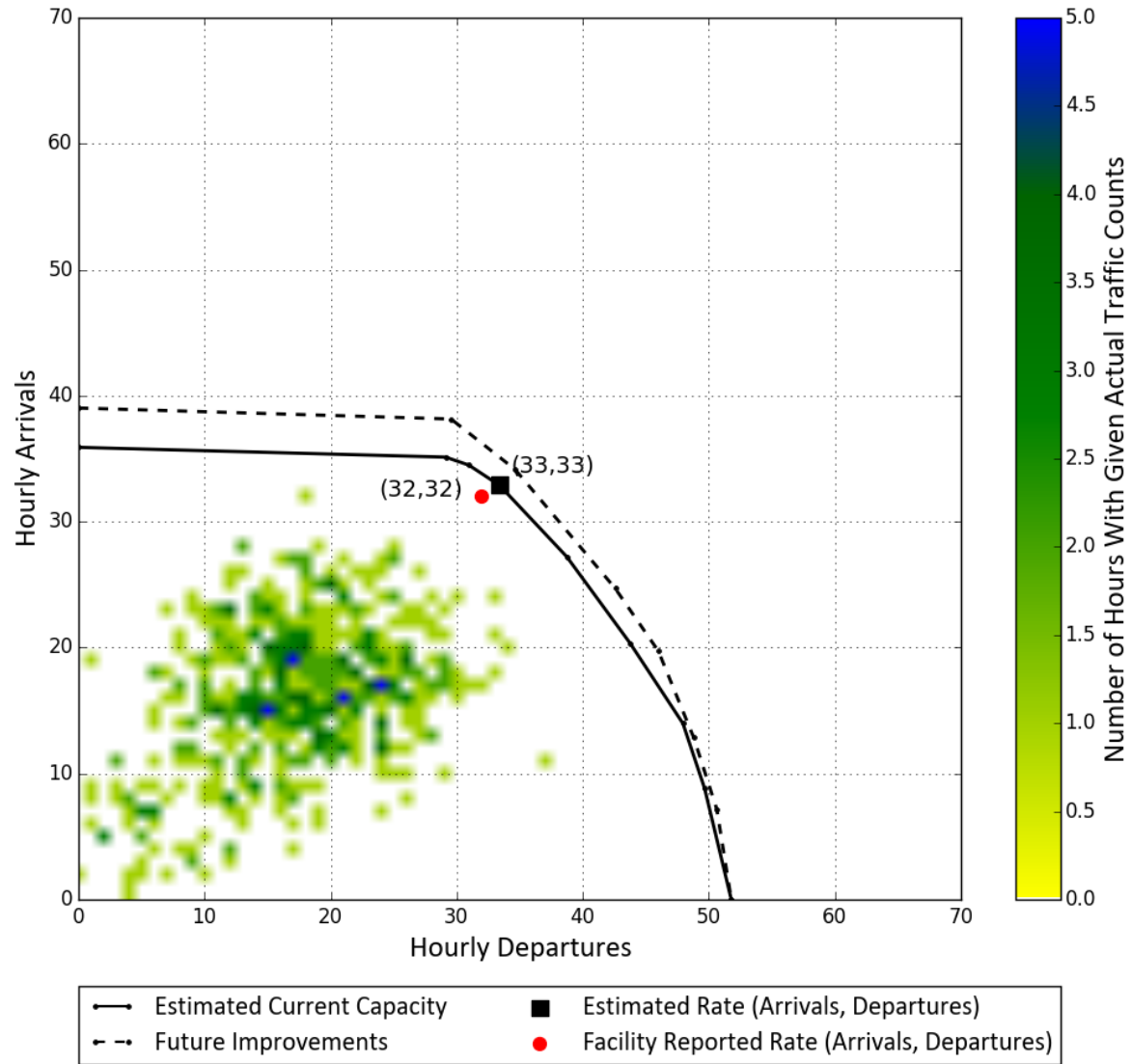


Actual traffic counts shown are for all Marginal hours, all configurations.

Type Operations	Arrival Runways	Departure Runways	Hourly Rate	
			ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	33L, 33R	28, 33R	64	66
FUTURE IMPROVEMENTS	33L, 33R	28, 33R	N/A	69

- **Future improvements:** Improved Runway Delivery Accuracy
- The capacity rate range in West flow Instrument conditions is 64-66 operations per hour.
- Use of Runway 15L-33R is limited to aircraft of Runway Design Code B-III or smaller.
- To ensure adequate separation at the runway intersection, an arrival must be at least 2 nautical miles from the threshold of Runway 33L to release a departure on Runway 28.

INSTRUMENT WEATHER CONDITIONS

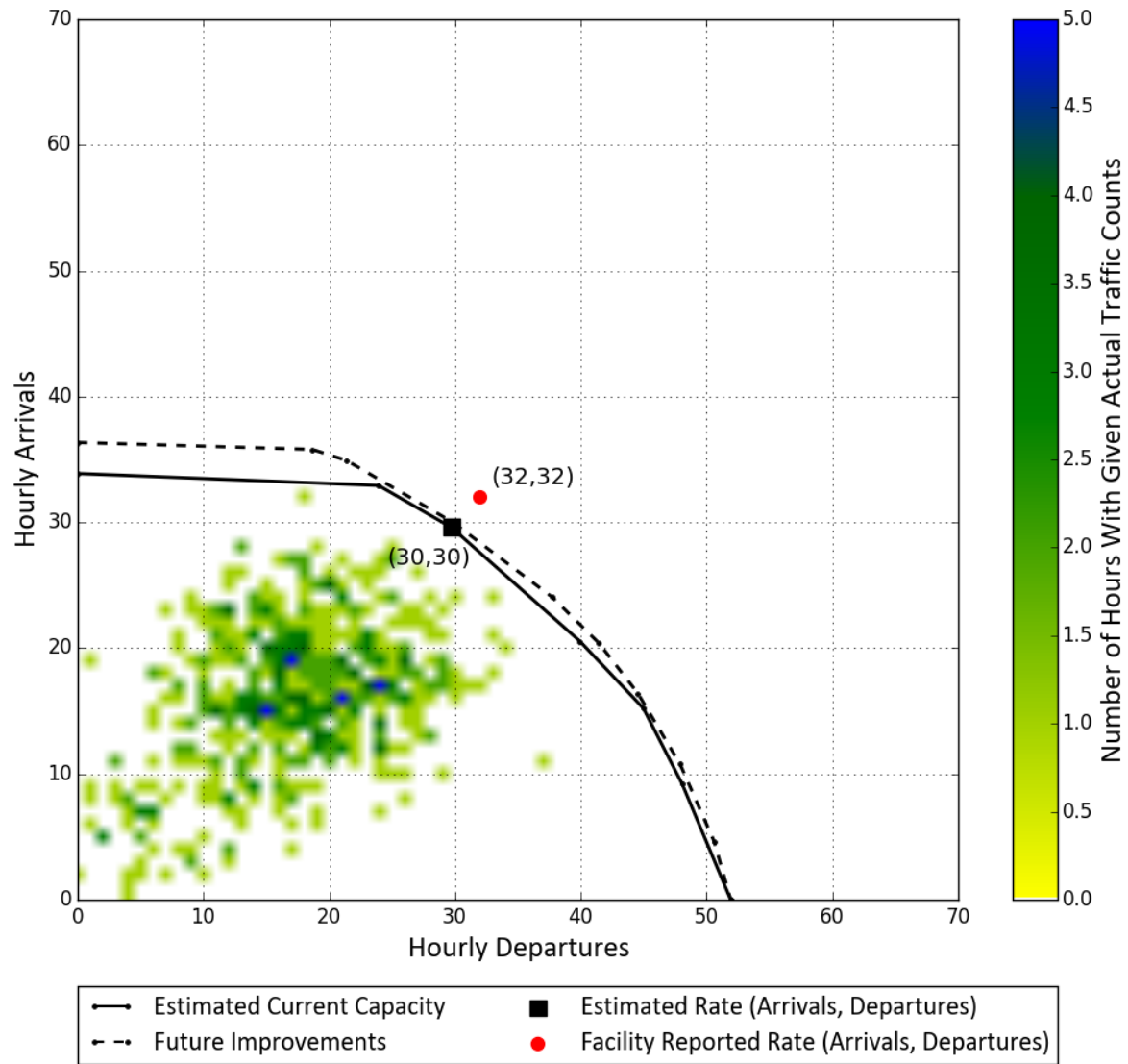


Actual traffic counts shown are for all Instrument hours, all configurations.

Type Operations	Arrival Runways	Departure Runways	Hourly Rate	
			ATC Facility Reported	Model-Estimated
CURRENT OPERATIONS	10, 15L	15R, 15L	64	60
FUTURE IMPROVEMENTS	10, 15L	15R, 15L	N/A	60

- **Future improvements:** Improved Runway Delivery Accuracy
- The capacity rate range in West flow Instrument conditions is 60-64 operations per hour.
- Use of Runway 15L-33R is limited to aircraft of Runway Design Code B-III or smaller.
- To ensure adequate separation at the runway intersection, an arrival must be at least 2 nautical miles from the threshold of Runway 10 to release a departure on Runway 15R.
- Instead of using an arrival-departure window, the converging operation between arrivals on Runway 10 and departures on Runway 15L is managed as if the runways physically intersected.

INSTRUMENT WEATHER CONDITIONS

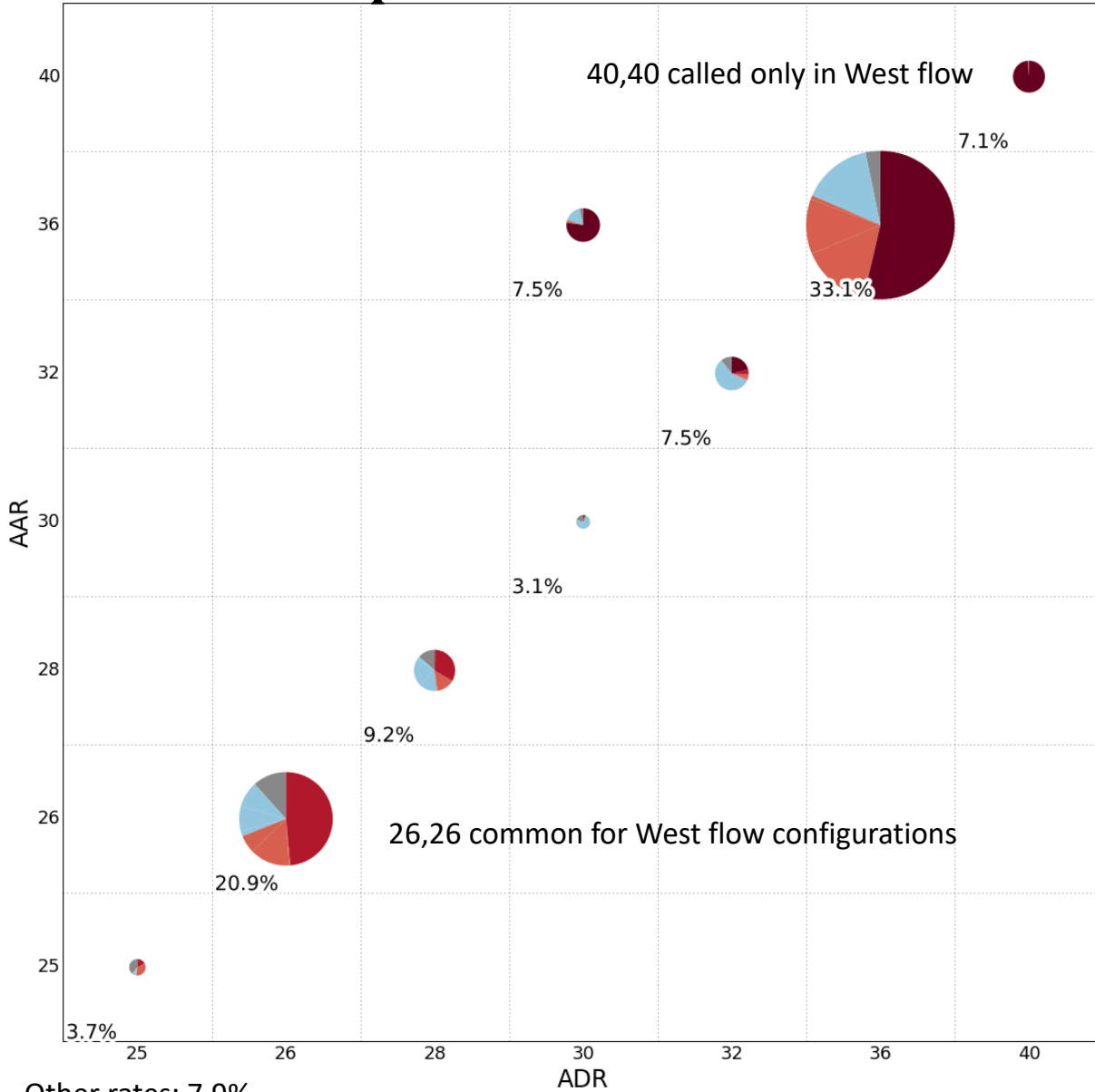


Actual traffic counts shown are for all Instrument hours, all configurations.

HISTORICAL CALLED RATE AND CONFIGURATION USAGE BY FLOW

WEST FLOW – HISTORICAL USAGE

Airport Called Rates*



Other rates: 7.9%

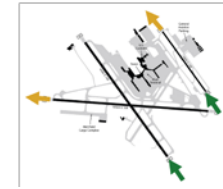
Color indicates configuration

* Rates for all hours regardless of configuration, minimum 2% of time

WEST FLOW FACILITY REPORTED RATES		
36,36 (VMC)	36,36 (MMC)	32,32 (IMC)

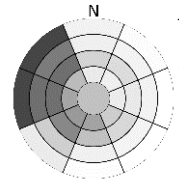
Configuration Usage

33L,33R | 28,33R (35%)



RATES

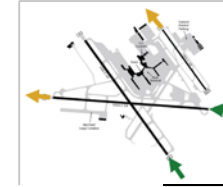
36,36 (52%)
40,40 (21%)
36,30 (17%)



WIND & WEATHER

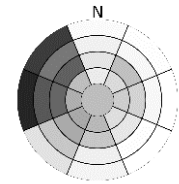
VMC: 96%
MMC: 2%
IMC: 1%

†28,33R | 28,33R (15%)



RATES

26,26 (71%)
28,28 (21%)



WIND & WEATHER

VMC: 87%
MMC: 6%
IMC: 7%

Others > 2%

- 33L | 28,33R (6%)
- 33L,33R | 28 (5%)
- 33L,33R | 33L,33R (5%)
- 28 | 28,33R (3%)

East Flow Configurations

Other Configurations

Key

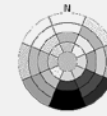
Arrivals | Departures (% of time in configuration)



RATES

90,90 (90%) Rates called at least 5% of time when configuration used

WIND & WEATHER



Wind speeds increase away from center (3 knot increments)

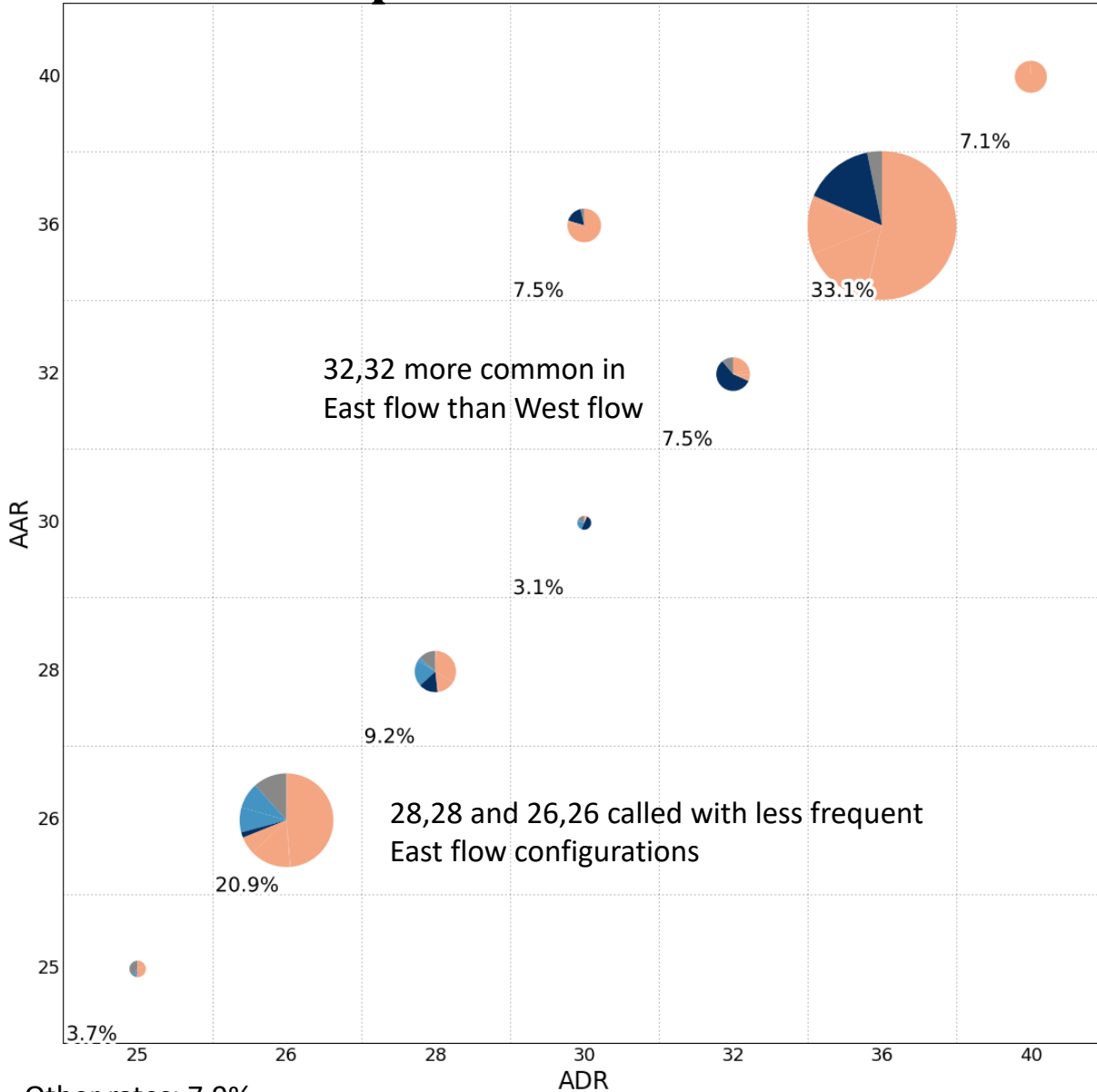
More common winds are darker

% of time spent in VMC/MMC/IMC when configuration used

† Not a Modeled Configuration

EAST FLOW – HISTORICAL USAGE

Airport Called Rates*



Other rates: 7.9%

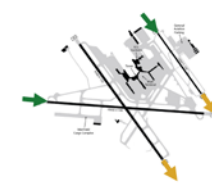
Color indicates configuration

* Rates for all hours regardless of configuration, minimum 2% of time

EAST FLOW FACILITY REPORTED RATES		
36,36 (VMC)	36,36 (MMC)	32,32 (IMC)

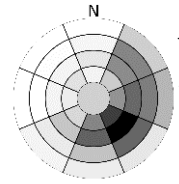
Configuration Usage

10,15L|15L,15R (16%)



RATES

36,36 (33%)
32,32 (29%)
30,30 (10%)
28,28 (9%)
36,30 (8%)



WIND & WEATHER
 VMC: 74%
 MMC: 9%
 IMC: 17%

Often used in bad weather where east winds are common

Others > 2%

- 10|15L,15R (3%)
- 15L,15R|15L,15R (3%)
- 10,15L|10,15L (2%)

West Flow Configurations

Other Configurations

Key

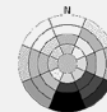
Arrivals | Departures (% of time in configuration)



RATES

90,90 (90%) Rates called at least 5% of time when configuration used

WIND & WEATHER



Wind speeds increase away from center (3 knot increments)

More common winds are darker

% of time spent in VMC/MMC/IMC when configuration used