NextGen Performance Snapshots Reference Guide

The Performance Snapshots Reference Guide provides information about the following:

Access: Key Performance Indicators (KPI)
- LPV & LP Access at GA Airports without ILS
- Percent of Qualified GA Airports with LPV or LP Access

Capacity: Key Performance Indicators (KPI)
- Average Daily Capacity
- Average Hourly Capacity During Instrument Meteorological Conditions (IMC)

Efficiency: Key Performance Indicators (KPI)
- Airborne Distance (City Pairs)
- Average Airborne Time (City Pairs)
- Average Gate Arrival Delay
- Average Number of Level-offs Per Flight
- Distance in Level Flight from Top of Descent to Runway Threshold
- Effective Gate-to-Gate Time (Core 30 Airports)
- Effective Gate-to-Gate Time (City Pairs)
- Taxi-in Time
- Taxi-Out Time

Environment: Key Performance Indicators (KPI)
- CO_2 Emissions
- NAS-Wide Energy Efficiency
- Noise Exposure

Fuel Burn: Key Performance Indicators (KPI)
- Average Fuel Burn
- Average Gate Weight
- Average Great Circle Distance
- Fleet Mix
- Fuel Burn Reporting Carriers
- Fuel Burn City Pairs

Predictability: Key Performance Indicators (KPI)
- Airborne Time Predictability
- Effective Gate-to-Gate Time Predictability

Airport and Facility Information
- Core 30 Airport Information Table
- Additional Airport Information
- Marquee Locations
- FAA Facility Information

Metroplex Information
- Metroplex Definition
- Metroplex Traffic
- Average Daily Scheduled Flights
- Projected Annual Benefits

NextGen Priorities — Joint Implementation Plan Milestones Information

Acronym Information
Additional Acronym Sources

Access: Key Performance Indicators (KPI)

As described by ICAO: *A global Air Traffic Management (ATM) system should provide an operating environment that ensures all airspace users have right of access to the ATM resources needed to meet their specific operational requirements and that the shared use of airspace by different users can be achieved safely.*

LPV & LP Access at GA Airports without ILS

Reported as Count of Airports for NAS

Desired Trend: Increase

Source: FAA Office of Airport Planning and Programming.

Localizer Performance with Vertical guidance (LPV) & Localizer Performance (LP) data gathered from the FAA Global Navigation Satellite Systems Group.

Airport information gathered from the 2015-2019 National Plan of Integrated Airport Systems (NPIAS) Report and Airport Master Record Form 5010 data.

The count of national, regional, local and basic GA airports (as defined in the 2015-2019 National Plan of Integrated Airport Systems Report) without an Instrument Landing System (ILS) that have an LPV or LP procedure in the indicated year.

Computations

Sum of the count of airports within the defined scope having an LPV or LP procedure for a given fiscal year (FY).

Scope

LPV and LP procedures were counted for airports that meet the following conditions:

Not be a primary airport as defined in the 2015-2019 NPIAS Report,
Be listed as either a national, regional, local or basic GA airport in the 2015-2019 NPIAS, and
Not have any ILS procedures.

Statistical Issues

This data is calculated based on the number of procedures published by the end of the FY; the value may vary within the year due to different procedure publication dates.

Airports are counted per the earliest LP/LPV initial publishing date in their current list of procedures and may not account for procedure updates or changes. Previously published procedures that are no longer available will not be reflected in the data. This may cause historical values to change slightly when updated procedure lists are used to update the metric.

The list and categorization of non-primary airports is subject to change.

Completeness

Procedure data used to calculate the metric was last updated on October 15, 2015 and includes procedures published through the final charting date of FY 2015 (August 20, 2015).

The NPIAS Report was submitted to Congress in September 2014.

Additional Notes

Outcome: LPV approaches provide reliable, precise access to airports during low visibility/ceiling weather conditions, particularly for GA aircraft operators.

LPV is similar to LNAV/VNAV except it is much more precise (40 m lateral limit), enables descent as low as 200 feet above the runway, and can only be flown with a Wide Area Augmentation System receiver. LPV approaches are operationally equivalent to the legacy ILS but are more economical because no navigation infrastructure (glideslope and localizer) has to be installed at the runway.

Back to top

Percent of Qualified GA Airports with LPV or LP Access

Reported as Cumulative Percent for NAS only

Desired Trend: Increase

Source: FAA Office of Airport Planning and Programming.

LPV and LP data gathered from the FAA Global Navigation Satellite Systems Group.

Airport information gathered from the 2015-2019 National Plan of Integrated Airport Systems (NPIAS) Report and Airport Master Record Form 5010 data.

The cumulative percent of qualified national, regional, local and basic GA airports (as defined in the 2015-2019 NPIAS Report) with an LPV or LP procedure.

Computations

The cumulative percent of qualified airports that have an LPV or LP procedure in a specific year.

Scope

This metric only includes LPV and LP qualified national, regional, local and basic GA airports (as defined in the 2015-2019 NPIAS Report).

The yearly numbers of LPV and LP Procedures counted include those available at airports both with and without ILS procedures.

Statistical Issues

This data is calculated based on the number of procedures published by the end of the FY; the value within a year may vary due to the different charting dates.

Airports are counted per the earliest LP/LPV initial publishing date in their current list of procedures and may not account for procedure updates or changes. Previously published procedures that are no longer available will not be reflected in the data. This may cause historical values to change slightly when updated procedure lists are used to update the metric.

The list and categorization of airports is subject to change.

Completeness

Procedure data used to calculate the metric was last updated on October 15, 2015 and includes procedures published through the final charting date of FY 2015 (August 20, 2015).

The NPIAS Report was submitted to Congress in September 2014.

Additional Notes

To be qualified for an LP or LPV procedure an airport must have a paved runway of 3,200 feet or greater (terrain or obstacles around the airport may also affect the ability to develop a procedure for an airport).

LPV is similar to LNAV/VNAV except it is much more precise (40 m lateral limit), enables descent as low as 200 feet above the runway, and can only be flown with a WAAS receiver. LPV approaches are operationally equivalent to the legacy ILS but are more economical because no navigation infrastructure (glideslope and localizer) has to be installed at the runway.

Back to top

Capacity: Key Performance Indicators (KPI)

As described by ICAO: *The global Air Traffic Management (ATM) system should exploit the inherent capacity to meet airspace user demands at peak times and locations while minimizing restrictions on traffic flow. ICAO also notes: The ATM system must be resilient to service disruption and the resulting temporary loss of capacity.*

Average Daily Capacity

Reported as Number of Operations at Core Airports during reportable hours

Desired Trend: Increase

Source: MITRE/Aviation System Performance Metrics (ASPM) data.

During reportable hours, the average daily sum of the Airport Departure Rate (ADR) and Airport Arrival Rate (AAR) reported by FY. The reportable hours vary by airport.

Computations

The yearly sum of the hourly AAR and the hourly ADR during reportable hours divided by the number of days in the year.

Scope

Called rates include all arrival and departure traffic that an airport can support.

Statistical Issues

Due to the leap year, the number of days for FY 2012 is 366, all other years it is 365.

Due to the units of this metric (capacity), the results were rounded to the nearest whole number.

Completeness

The type of data from which this metric is calculated is intended to capture the full set of ASPM records.

Reliability

The data for FY 2014 is not yet final as amendments may be made to the ASPM source data until six weeks after the end of FY 2015.

In addition to calculating the FY2014 data values, the entire dataset (FY 2009 - 2013) was re-calculated prior to the April 2015 NPS release to ensure that any data amendments would be reflected in the final metric.

Additional Notes

Reportable hours vary by airport and are based on local time. Additional reportable hours information is included in the Airports section below.

Back to top

Average Hourly Capacity During Instrument Meteorological Conditions (IMC)

Reported as Number of Operations at Core Airports during reportable hours and IMC weather conditions (as defined by ASPM).

Desired Trend: Increase

Source: MITRE/Aviation System Performance Metrics (ASPM) data.

The average hourly capacity reported during IMC weather conditions (as defined by ASPM). Capacity is defined as the sum of Airport Departure Rate (ADR) and Airport Arrival Rate (AAR). It is calculated based on the reportable hours at the destination airport. The reportable hours vary by airport.

Computations

The yearly sum of the hourly AAR and the hourly ADR during IMC during reportable hours divided by the number of days in the year.

Scope

Called rates include all arrival and departure traffic that an airport can support.

Statistical Issues

Due to the leap year, the number of days for FY 2012 is 366, all other years it is 365.

Due to the units of this metric (capacity of operations), the results were rounded to the nearest whole number. The identification of IMC is based on the most recent celling and visibility criteria for each airport.

Completeness

The type of data from which this metric is calculated is intended to capture the full set of ASPM

records.

Reliability

The data for FY 2014 is not yet final as amendments may be made to the ASPM source data until six weeks after the end of FY 2015.

In addition to calculating the FY2014 data values, the entire dataset (FY 2009 - 2013) was re-calculated prior to the April 2014 NPS release to ensure that any data amendments would be reflected in the final metric.

Additional Notes

Reportable hours vary by airport and are based on local time. Additional reportable hours information is included in the Airports section below.

Back to top

Efficiency: Key Performance Indicators (KPI)

As described by ICAO, *efficiency addresses the operational and economic cost-effectiveness of gate-to-gate flight operations from a single-flight perspective. In all phases of flight, airspace users want to depart and arrive at the times they select and fly the trajectory they determine to be optimum.*

Airborne Distance (City Pairs)

Reported as Nautical Miles for Selected City Pairs during reportable hours (based on the local time for the destination airport)

Desired Trend: Decrease

Source: MITRE Threaded Track and Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data.

During reportable hours at the destination airport, the average airborne distance of flights between the selected city pair. The reportable hours vary by airport and the results are reported by fiscal year. Additional reportable hour information can be found in the airport information section of the Reference Guide.

Formula

F D n F

D is the airborne distance flown for each flight in the Scope, *F* is the set of all flights in the Scope and n_F is the number of *F*

Computations

The metric is calculated as the sum of airborne distances of the flights within the Scope, divided by the total number of flights within the Scope.

The metric is derived from a fusion of flight position reports throughout the flight envelope into a single synthetic trajectory. These sources currently include National Offload Program (NOP), ARTS, STARS, and ARTCC sensors, Traffic Flow Management System (TFMS) reports, and Airport Surface Detection Equipment, Model X (ASDE-X) surveillance data.

For each flight, the first radar track point greater than 500 ft. above the origin airport is chosen to approximate wheels-up time. Similarly, the last radar track point greater than 500 ft. above the arrival airport is chosen to approximate touchdown time. The along-track distance of the flight trajectory between these two track points, derived from flight position reports, is calculated as the airborne distance. Note that the calculated airborne distance will consistently underestimate the actual airborne distance for a given flight by approximately 1-2 NM, depending on climb and descent gradients, because the chosen first and last track points are always at least 500 ft. above the ground.

Scope

The metric considers ASQP reporting carriers operating domestic service between the selected pair of airports in the direction indicated. Only flights arriving at the destination airport within the reportable hours are included in this measurement. Flights may depart the origin airport outside the reportable hours.

Statistical Issues

The airborne distance computation includes a filter for flights with a first radar track point greater than 4000 ft. above the origin airport or a last radar track point greater than 4000 ft. above the destination airport, to minimize inaccurate airborne distance calculations due to poor radar coverage near the ground. The airborne distance computation also includes a filter for flights with a first radar track point greater than 10NM from the origin airport or a last radar track point greater than 10NM from the destination airport, to eliminate any additional radar coverage issues and deviations to alternative airports. These filters exclude 1.5% of flights in the Scope.

Completeness

The first full year of data for the Newark Liberty International — Chicago Midway International (EWR — MDW) city pair was FY2012.

Reliability

The data for FY 2013 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2014.

Additional Notes

The metric is first calculated for all IFR operations between the city pairs and then linked to ASQP flights, obtained through the ASPM website. In the original data set the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal "ASQP" in order for the flight to be considered an ASQP flight and used in the calculations.

Back to top

Average Airborne Time (City Pairs)

Reported as Minutes for Selected city pairs during reportable hours (based on the local time for the destination airport)

Desired Trend: Decrease

Source: Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data, for reportable hours only.

During reportable hours at the destination airport, the average Airborne Time for flights between the selected city pair. The reportable hours vary by airport and the results are reported by fiscal year. Additional reportable hour information can be found in the airport information section of the Reference Guide.

Computations

The metric is calculated as the average Airborne Time. Airborne time is the difference between the Actual On Time at the destination airport and the Actual Off Time at the origin airport.

Scope

This metric only measures ASQP reporting carriers operating domestic service between the selected pair of airports in the direction indicated. Only flights arriving at the destination airport within the reportable hours are included in this measurement. Flights may depart the origin airport outside the reportable hours.

Statistical Issues

Calculating the average of all flights helps provide a better picture of the typical airborne time by reducing the effect of atypical data points.

This calculation did not normalize the data for any changes in operator fleet mix.

Completeness

ASQP flights are those with actual data reported to the Department of Transportation.

The first full year of data for the Newark Liberty International — Chicago Midway International (EWR — MDW) city pair was FY 2012.

Reliability

The Technical Directive outlining the ASQP reporting carriers is available on the Bureau of Transportation Statistics website.

Reportable hours vary by airport and are based on local time. Additional reportable hours information is included in the Airports section below.

The data for FY 2014 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2015.

Additional Notes

The metric is derived directly from individual ASQP flight data obtained through the ASPM website. In the original data set the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal “ASQP” in order for the flight to be considered an ASQP flight and used in the calculations.

Back to top

Average Gate Arrival Delay

Reported as Minutes per Flight for Core Airports during reportable hours

Desired Trend: Decrease

Source: MITRE/Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data.

During reportable hours, the yearly average of the difference between the Actual Gate-In Time and the Scheduled Gate-In Time for flights to the selected airport from any of the ASPM airports. The delay for each FY is calculated based on the 0.5th — 99.5th percentile of the distributions for the year. Flights may depart outside reportable hours, but must arrive during them. The reportable hours vary by airport.

Formula

$$F \quad AD \quad n_F \text{ for each } G$$

where

$$AD = (t_{in\,act} - t_{in\,sch})$$

and where *G* are the groups defined within scope, Arrival Delay (*AD*) is equal to the actual time into the gate at the arrival airport ($t_{in\,act}$) minus the scheduled time in at the arrival airport ($t_{in\,sch}$); *F* are all flights over the year within each group and n_F is the number of *F*.

Computations

Average Gate-In Delay against schedule over all flights in the FY for each group defined within the scope.

Scope

Flights are restricted to domestic ASQP flights departing from an ASPM airport and traveling to the selected airport. To be included a flight needs to arrive within the reportable hours, but may depart the origin outside reportable hours.

Statistical Issues

The list of ASQP reporting carriers is subject to change yearly. Additionally, changes in carrier operations at an airport may impact data results over time.

This calculation did not normalize the data for any changes in operator fleet mix.

This calculation may include time an aircraft spends in a non-movement area (defined in the Aeronautical Information Manual as *Taxiways and apron (ramp) areas not under the control of air traffic)*. Reporting carriers (operators) may use slightly different starting and/or ending points when gathering performance data.

After the metric was calculated, the data was truncated to remove outliers. The information provided is based on the 0.5 — 99.5 percentile of the distributions by airport and year.

Completeness

ASQP flights are those with actual data reported to the Department of Transportation.

Reliability

The metrics are derived directly from individual ASQP flight data obtained through the ASPM

website. In the original data set, the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal "ASQP" in order for the flight to be considered an ASQP flight and used in the calculations.

The data for FY 2014 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2015.

Additional Notes

Positive delays are considered any time beyond the scheduled arrival time (including delays less than 15 minutes). Due to the inclusion of flights arriving before schedule (negative delays), negative values are possible for this metric.

The Technical Directive outlining the ASQP reporting carriers is available on the Bureau of Transportation Statistics website.

Reportable hours vary by airport and are based on local time. Additional reportable hour information is included in the Airport section below.

Back to top

Average Number of Level-offs per Flight

Reported as Counts per Flight for Core Airports

Desired Trend: Decrease

Source: MITRE Threaded Track

The count of level-offs as flights descend from cruise altitudes to the arrival airport, averaged for the fiscal year.

Formula

= F LO n F

LO is the count of level-offs for each arrival in the Scope, *F* is the set of all flights in Scope and n_F is the number of *F*

Computations

The metric is calculated as the sum of the count of level-offs for each flight within the Scope, divided by the total number of flights within the Scope.

The metric is derived from a fusion of flight position reports throughout the flight envelope into a single synthetic trajectory. These sources currently include National Offload Program (NOP) ARTS, STARS, and ARTCC sensors, Traffic Flow Management System (TFMS) reports, and Airport Surface Detection Equipment, Model X (ASDE-X) surveillance data. Starting with FY15 data, ASDE-X surveillance data is no longer included in the Threaded Track used for level-off computations – there is no expected impact on metrics.

Level-offs are tracked from the Top-of-Descent (TOD) point or 200 nautical miles from the airport, whichever is closer. A trajectory segment is considered as a level-off if the change in altitude of position reports is less than 200 feet and the segment is at least 50 seconds in duration.

Scope

Flights are restricted to jet arrivals at the designated airport from any origin airport. Only IFR operations are considered.

Statistical Issues

For approximately 1% of IFR flights in the Scope, merging of radar track data from multiple sources was not feasible due to data anomalies, and these flights are excluded. The level-off computation also includes a filter for flights with a last radar track point greater than 2.5NM from the destination airport, which excludes 0.5% of flights. The impact of this filter is seen the greatest at HNL, where most arrivals are excluded. Thus, level-off metrics are not reported for HNL.

Additional Notes

This metric is calculated using all hours.

Back to top

Distance in Level Flight from Top of Descent to Runway Threshold

Reported as Nautical Miles per Flight for Core Airports

Desired Trend: Decrease

Source: MITRE Threaded Track

The distance flown during level-off segments as flights descend from cruise altitudes to the arrival airport, averaged for the fiscal year.

Formula

= F D n F

D is the distance flown during level-off segments for each arrival in the Scope, *F* is the set of all flights in the Scope and n_F is the number of *F*

Computations

The metric is calculated as the sum of the total distance flown during level-off segments for all flights within the Scope, divided by the total number of flights within the Scope.

The metric is derived from a fusion of flight position reports throughout the flight envelope into a single synthetic trajectory. These sources currently include National Offload Program (NOP) ARTS, STARS, and ARTCC sensors, Traffic Flow Management System (TFMS) reports, and Airport Surface Detection Equipment, Model X (ASDE-X) surveillance data. Starting with FY15 data, ASDE-X surveillance data is no longer included in the Threaded Track used for level-off computations – there is no expected impact on metrics.

Level-offs are tracked from the Top-of-Descent (TOD) point or 200 nautical miles from the airport, whichever is closer. A trajectory segment is considered as a level-off if the change in altitude of position reports is less than 200 feet and the segment is at least 50 seconds in duration.

Scope

Flights are restricted to jet arrivals at the designated airport from any origin airport. Only IFR operations are considered.

Statistical Issues

For approximately 1% of IFR flights in the Scope, merging of radar track data from multiple sources was not feasible due to data anomalies, and these flights are excluded. The level-off computation also includes a filter for flights with a last radar track point greater than 2.5NM from the destination airport, which excludes 0.5% of flights. The impact of this filter is seen the greatest at HNL, where most arrivals are excluded. Thus, level-off metrics are not reported for HNL.

Additional Notes

This metric is calculated using all hours.

Back to top

Effective Gate-to-Gate Time (City Pairs)

Reported as Average Minutes per Flight for Selected city pairs during reportable hours (based on the local time of the arrival airport)

Desired Trend: Decrease

Source: MITRE/Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data.

During reportable hours at the destination airport, the difference between the Actual Gate-In Time at the destination airport and the Scheduled Gate-Out Time at the origin airport. Flights may depart outside reportable hours, but must arrive during them. The reportable hours vary by airport and the results are reported by FY.

Computations

Average Gate-to-Gate Time over all flights in the FY for the selected City Pair within the scope.

Scope

This metric only measures ASQP reporting carriers operating domestic service between the selected pair of airports in the direction indicated. Only flights arriving at the destination airport within the reportable hours are included in this measurement. Flights may depart the origin airport outside reportable hours.

Statistical Issues

The list of ASQP reporting carriers is subject to change yearly. Additionally, changes in carrier operations at, or between the origin and destination may impact data results over time.

This calculation did not normalize the data for any changes in operator fleet mix.

This calculation may include time an aircraft spends in a non-movement area (defined in the Aeronautical Information Manual as *taxiways and apron (ramp) areas not under the control of air*

traffic). Reporting carriers may use slightly different starting and/or ending points when gathering performance data.

Completeness

ASQP flights are those with actual data reported to the Department of Transportation.

The first full year of data for the Newark Liberty International — Chicago Midway International (EWR — MDW) city pair was FY 2012.

Reliability

The metric is derived from individual ASQP flight data obtained through the ASPM website. In the original data set the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal "ASQP" in order for the flight to be considered an ASQP flight and used in the calculations.

The data for FY 2014 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2015.

Additional Notes

The Technical Directive outlining the ASQP reporting carriers is available on the Bureau of Transportation Statistics website.

Reportable hours vary by airport and are based on local time. Additional reportable hour information is included in the Airport section below.

Back to top

Effective Gate-to-Gate Time (Core 30 Airports)

Reported as Minutes per Flight for Core Airports during reportable hours

Desired Trend: Decrease

Source: MITRE/Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data.

During reportable hours, the difference between the Actual Gate-In Time at the destination (selected) airport and the Scheduled Gate-Out Time at the origin airport. Flights may depart outside reportable hours, but must arrive during them. The reportable hours vary by airport and the results are reported by FY.

Computations

Gate-to-Gate time over all flights in the FY for each group defined within the scope.

Scope

Flights are restricted to domestic ASQP flights departing from any ASPM airport and traveling to the selected airport by an ASQP reporting carrier. Additionally, to be included, a flight needs to arrive within the reportable hours (but may depart the origin airport outside the reportable hours).

Statistical Issues

The list of ASQP reporting carriers is subject to change yearly. Additionally, changes in carrier operations at an airport may impact data results over time.

This calculation did not normalize the data for any changes in operator fleet mix.

This calculation may include time an aircraft spends in a non-movement area (defined in the Aeronautical Information Manual as *Taxiways and apron (ramp) areas not under the control of air traffic)*. Reporting carriers (operators) may use slightly different starting and/or ending points when gathering performance data.

Completeness

ASQP flights are those with actual data reported to the Department of Transportation.

Reliability

The metric is derived directly from individual ASQP flight data obtained through the ASPM website. In the original data set, the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal “ASQP” in order for the flight to be considered an ASQP flight and used in the calculations.

The data for FY 2014 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2015.

Additional Notes

The Technical Directive outlining the ASQP reporting carriers is available on the Bureau of Transportation Statistics website.

Reportable hours vary by airport and are based on local time. Additional reportable hour information is included in the Airport section below.

Back to top

Taxi-In Time

Reported as Minutes per Flight for Core Airports during reportable hours

Desired Trend: Decrease

Source: MITRE/Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data.

During reportable hours, the yearly average of the difference between Wheels-On Time and Gate-In Time for flights arriving at the selected airport from any of the Aviation System Performance Metrics (ASPM) airports. Flights may depart outside reportable hours, but must arrive during them. The reportable hours vary by airport.

Formula

F TI n F

where

TI = t in act - t on act

The Taxi-In Time metric is calculated as the average over all flights in the FY defined within the

scope. The Taxi-In Time for a flight (TI) is defined as the time the aircraft pulls into the gate ($t_{in\ act}$) minus the time the aircraft wheels touch the ground ($t_{on\ act}$). This value is added to all the other flights within scope (F) and divided by the number of F (n_F).

Computations

The average of the difference between the actual Gate-In Time and actual Wheels-On Time over all arrivals for each group defined within the scope.

Scope

Flights are restricted to domestic ASQP flights departing from an ASPM airport and traveling to the selected airport by an ASQP reporting carrier. To be included, a flight needs to arrive within the reportable hours, but may depart the origin outside reportable hours.

Statistical Issues

The list of ASQP reporting carriers are subject to change yearly. Additionally, changes in carrier operations at an airport may impact data results over time.

This calculation did not normalize the data for any changes in operator fleet mix.

This calculation may include time an aircraft spends in a non-movement area (defined in the Aeronautical Information Manual as *taxiways and apron (ramp) areas not under the control of air traffic)*. Reporting carriers (operators) may use slightly different starting and/or ending points when gathering performance data.

Completeness

ASQP flights are those with actual data reported to the Department of Transportation.

Reliability

The metrics are derived directly from individual ASQP flight data obtained through the ASPM website. In the original data set, the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal "ASQP" in order for the flight to be considered an ASQP flight and used in the calculations.

The data for FY 2014 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2015.

Additional Notes

The Technical Directive outlining the ASQP reporting carriers is available on the Bureau of Transportation Statistics website.

Reportable hours vary by airport and are based on local time. Additional reportable hour information is included in the Airport section below.

Back to top

Taxi-Out Time

Reported as Minutes per Flight for Core Airports during reportable hours

Desired Trend: Decrease

Source: MITRE/Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data.

During reportable hours, the yearly average of the difference between Gate-Out Time and Wheels-Off Time for flights from the selected airport to any of the ASPM airports. Flights must depart during reportable hours, but may arrive outside them. The reportable hours vary by airport.

Formula

$$F \quad TO \quad n \quad F$$

where

$$TO = t\ off\ act - t\ out\ act$$

The Taxi-Out Time metric is calculated as the average over all flights in the FY defined within the scope. The Taxi-Out Time for a flight (*TO*) is defined as the time the aircraft takes off ($t\ off\ act$) minus the time the aircraft pushes back from the gate ($t\ out\ act$). This value is added to all the other flights within scope (*F*) and divided by the number of *F* (n_F).

Computations

The average of the difference between the Actual Gate-Out Time and Actual Wheels-Off Time over all departures for each group defined within the scope.

Scope

Flights are restricted to domestic ASQP flights departing from the selected airport and traveling to an ASPM airport. To be included, a flight needs to depart within the reportable hours, but may arrive at the destination outside the reportable hours.

Statistical Issues

The list of ASQP reporting carriers is subject to change yearly. Additionally, changes in carrier operations at an airport may impact data results over time.

This calculation did not normalize the data for any changes in operator fleet mix.

This calculation may include time an aircraft spends in a non-movement area (defined in the Aeronautical Information Manual as *Taxiways and apron (ramp) areas not under the control of air traffic)*. Reporting carriers (operators) may use slightly different starting and/or ending points when gathering performance data.

Completeness

ASQP flights are those with data reported to the Department of Transportation.

Reliability

The metrics are derived directly from individual ASQP flight data obtained through the ASPM website. In the original data set, the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal "ASQP" in order for the flight to be considered an ASQP flight and used in the calculations.

The data for FY 2014 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2015.

Additional Notes

The Technical Directive outlining the ASQP reporting carriers is available on the Bureau of Transportation Statistics website.

Reportable hours vary by airport and are based on local time. Additional reportable hour information is included in the Airport section below.

Back to top

Environment: Key Performance Indicators (KPI)

As described by ICAO: *The Air Traffic Management (ATM) system should contribute to the protection of the environment by considering noise, gaseous emissions and other environmental issues in the implementation and operation of the global ATM system.*

CO_2 Emissions

Reported as Kilograms for NAS only

Desired Trend: Decrease

Source: FAA Office of Environment and Energy

Estimated quantity of carbon dioxide emissions (CO_2) emitted by commercial aircraft within the NAS.

Formula

Fuel Burn (kg) × 3.155 (CO_2 kg per kg of fuel burn) = CO_2 in kilograms

Computations

As part of measuring and tracking NAS fuel efficiency from commercial aircraft operations, the FAA quantifies annual aircraft fuel burn using FAA's Aviation Environmental Design Tool (AEDT). AEDT is a FAA-developed computer model that estimates aircraft fuel burn and emissions for variable year emissions inventories and for operational, policy, and technology-related scenarios.

Statistical Issues

Potential seasonal variability and variability from year-to-year can be expected when analyzing air traffic data and commercial operations.

The extent to which enhancements are incorporated to improve AEDT model accuracy, for example via more robust aerodynamic performance modeling algorithms and databases of aircraft/engine fuel burn information, will impact the overall results. This could create statistical variability from year-to-year if not taken into account. In cases where such enhancements have the potential to create a significant shift in baseline, annual inventories may need to be re-processed and/or adjusted to ensure consistency and accuracy of results.

The extent to which aircraft fleet improvements cannot be sufficiently modeled because of a lack of manufacturer proprietary data may also influence results. In this case, attempts will be made to characterize such aircraft with the best publicly available information, recognizing that newer aircraft types in the fleet will likely exist in significantly lesser numbers, thus minimizing the influence upon results.

The results for calendar years 2005, 2010 and 2011 have been re-calculated using the latest version of the AEDT. The NPS was updated in April 2015 to reflect these values.

Completeness

Data used to measure aircraft performance are assessed for quality control purposes. Input data for the AEDT model are validated before proceeding with model runs. Radar data from the Traffic Flow Management System (TFMS) are assessed to remove any anomalies, check for completeness, and pre-processed for input to the AEDT model. TFMS data are verified against the Official Airline Guide (OAG) information in order to avoid any duplication of flights in the annual inventory.

In some cases, TFMS data lack appropriate fields to conduct quality control and in these cases the data are removed. Data from the AEDT model are verified by comparing output from previous years and analyzing trends to ensure that they are consistent with expectations. In other cases monthly inventories may be analyzed to validate the results. Model output is subsequently post-processed to perform the calculations. Formulae and calculations are checked in order to ensure accuracy.

Reliability

The measuring procedure used is highly reliable. That is to say that the processing of data through the AEDT model including the performance of algorithms is not subject to random factors that could influence the results. However, this is potentially influenced by factors outside the control of FAA.

We do not expect increases in fuel burn or decreases in distance traveled or both to degrade the fleet fuel efficiency significantly.

Additional Notes

This metric is shown by calendar year (CY).

Back to top

NAS-Wide Energy Efficiency

Reported as Kilograms per Tonne-Kilometer for NAS only

Desired Trend: Decrease

Source: FAA Office of Environment and Energy

Estimated fuel burn in kilograms per revenue tonne kilometer

Formula

Fuel Burn (Revenue Payload x Distance Flown)

Computations

Measuring and tracking fuel efficiency from commercial aircraft operations allows FAA to monitor improvements in aircraft/engine technology and operational procedures, as well as enhancements in the airspace transportation system. The FAA measures performance using the Aviation Environmental Design Tool (AEDT). AEDT is a FAA-developed computer model that estimates aircraft fuel burn and emissions for variable year emissions inventories and for operational,

policy, and technology-related scenarios.

Scope

This metric focuses on all U.S. commercial operations.

Statistical Issues

Potential seasonal variability and variability from year-to-year can be expected when analyzing air traffic data and commercial operations.

The extent to which enhancements are incorporated to improve model accuracy, for example via more robust aerodynamic performance modeling algorithms and database of aircraft/engine fuel burn information, will impact the overall results. This could create some statistical variability from year-to-year if not taken into account. In cases where such enhancements have the potential to create a significant shift in baseline, annual inventories may need to be re-processed and/or adjusted to ensure consistency and accuracy of results.

The extent to which aircraft fleet improvements cannot be sufficiently modeled due to a lack of manufacturer proprietary data may also influence the performance results. In this case, attempts will be made to characterize such aircraft with the best publicly available information, recognizing that newer aircraft types in the fleet will likely exist in significantly lesser numbers, thus minimizing the influence upon the results.

Completeness

Data used to measure performance are assessed for quality control purposes. Input data for the AEDT model are validated before proceeding with model runs. Radar data from the Traffic Flow Management System (TFMS) are assessed to remove any anomalies, check for completeness, and pre-processed for input to the AEDT model. TFMS data are verified against the Official Airline Guide (OAG) information in order to avoid any duplication of flights in the annual inventory.

In some cases, TFMS data lack appropriate fields to conduct quality control and in these cases the data are removed. Data from the AEDT model are verified by comparing output from previous years and analyzing trends to ensure that they are consistent with expectations. In other cases monthly inventories may be analyzed to validate the results. Model output is subsequently post-processed through spreadsheets to perform the calculations for the performance target. Formulae and calculations are checked in order to ensure accuracy.

Reliability

The measuring procedure used is highly reliable. That is to say that the processing of data through the AEDT model including the performance of algorithms is not subject to random factors that could influence the results. However this is potentially influenced by factors outside the control of FAA.

We do not expect increases in fuel burn or decreases in distance traveled or both to degrade the fleet fuel efficiency significantly.

Additional Notes

This KPI is shown by calendar year (CY).

Back to top

Noise Exposure

Reported as Number of People

Desired Trend: Decrease

Source: FAA Office of Environment and Energy

Number of persons exposed to significant aircraft noise (regardless of whether their houses or apartments have been sound-insulated). Significant aircraft noise levels are currently defined as values greater than or equal to Day-Night Average Sound Level (DNL) 65 decibels (dB).

Formula

∑ i = 1 n POP65i - ∑ j = 1 9 POPRELj

Where $POP65_i$ is the number of people residing in the DNL 65 dB contour at the ith "Noise Inventory" airport as of the current year projected from the 2010 Census, and *n* is the number of "Noise Inventory" airports. A Noise Inventory airport is defined as any airport that reported having at least 365 jet departures for the year being used in the analysis. $POPREL_j$ is the number of people relocated from the DNL 65 dB contour in the jth FAA region.

Computations

Beginning in FY 2012, the estimates of the number of people exposed to significant noise are calculated using the Aviation Environmental Design Tool (AEDT). Prior to the use of AEDT, estimates were calculated using the Model for Assessing Global Exposure to the Noise of Transport Aircraft (MAGENTA). The computational core of AEDT is FAA's Integrated Noise Model (INM) with methodological improvements. INM is the most widely used computer program for the calculation of aircraft noise around airports. In FY 2015, INM will be replaced by AEDT as the regulatory tool to calculate airport noise around airports. Major assumptions on local traffic utilization come from obtaining INM datasets that were developed for an airport and ETMS.

The AEDT model calculates individual DNL contours for the top 101 U.S. airports using detailed flight tracks, runway use and track utilization. The contours are superimposed on year 2010 Census population densities projected to the current year being computed to calculate the number of people within the DNL 65 dB contour at each airport. For smaller airports, AEDT uses less detailed information consisting of flight tracks that extend straight-in and straight-out from the runway ends. The contours areas are then used to calculate people exposed using 2010 Census population densities projected to the current year being computed. The projection is used to account for population growth between 2010 and the computed year. The individual airport exposure data are then summed to the national level. Finally, the number of people relocated through the Airport Improvement Program is subtracted from the total number of people exposed.

Scope

The metric tracks the residential population exposed to significant aircraft noise around U.S. airports. Significant aircraft noise is defined as aircraft noise above a Day-Night Average Sound Level (DNL) 65 decibels. In 1981, FAA issued 14 CFR Part 150, Airport Noise Compatibility Planning, and as part of that regulation, formally adopted DNL. DNL, symbolized as Ldn, is the 24-hour average sound level, in dB, obtained from the accumulation of all events with the addition of 10 decibels to sound levels in the night from 10 PM to 7 AM. The weighting of the nighttime events accounts for the increased interfering effects of noise during the night when ambient levels are lower and people are trying to sleep.

In the promulgation of 14 CFR Part 150, FAA also published a table of land uses that are

compatible or incompatible with various levels of airport noise exposure in DNL. This table established that levels below DNL 65 dB are considered compatible for all indicated land uses and related structures without restriction.

Statistical Issues

This metric is derived from model estimates that are subject to errors in model specification. Trends of U.S. noise exposure may change due to annual improvements to the noise exposure model. A major change to the model may result in a large change in the estimate of the number of people exposed to significant noise levels around U.S. airports.

Note: In April 2015, the NPS was updated to reflect a revision to the calendar year 2012 metric value.

Completeness

No actual count is made of the number of people exposed to significant aircraft noise. Aircraft type and event level are current. However, some of the databases used to establish route and runway utilization were developed from 1990 to 1997. Changes in airport layout including expansions may not be reflected. The FAA continues to update these databases as they become available. The benefits of federally funded mitigation, such as buyout, are accounted for.

Reliability

The Integrated Noise Model (the core of the MAGENTA and AEDT tool) has been validated with actual acoustic measurements at airports. The population exposure methodology has been thoroughly reviewed by an International Civil Aviation Organization (ICAO) task group and was most recently validated for a sample of airport-specific cases.

Additional Notes

The FAA migrated from the Model for Assessing Global Exposure to the Noise of Transport Aircraft (MAGENTA) to the AEDT with the FY 2012 report. This metric is shown by calendar year, and is rounded to three significant figures.

Back to top

Fuel Burn: Key Performance Indicators (KPI)

Fuel burn can be a function not only of aircraft size and flight stage length, which varies with the actual mix of flights across city pairs, but also of the weather, congestion and other operating conditions, which may vary from year to year and from one city pair to another. This metric is not a direct measure of operational fuel efficiency and should not be used as a proxy for system fuel efficiency.

The metrics are calculated based on data provided by select airlines for the 104 NAC recommended city pairs. The data does not include all operations for the select city pairs. See the Fuel Burn Reporting Carriers and Fuel Burn City Pairs sections of the NPS Reference Guide for additional information.

Average Fuel Burn

Reported as Pounds

Desired Trend: Decrease

Source: Carrier reported flights for key city pairs.

Fuel Burn is defined as the actual fuel used between gate departure and gate arrival. This metric is reported as an aggregated per flight average for all key city pairs over the course of a Fiscal Year (October-September). Average fuel used per flight is influenced by the mix of flying across city pairs, aircraft size, traffic carried, aircraft performance characteristics and weather. Accordingly, as reported, this metric is not a direct measure of operational fuel efficiency and should not be used as a proxy for system fuel efficiency.

Computations

Total fuel burned between Gate-Out and Gate-In averaged across all flights within scope.

Scope

Source data is limited to reporting carrier flights between the 104 reported city pairs (see the Fuel Burn City Pairs and Fuel Burn Reporting Carriers sections below for additional details). Due to data issues, some reported flights may not be included in the calculations. See the Statistical Issues Section below for additional details.

Statistical Issues

Individual flight data used to compute this metric may have quality issues which prohibit it from being included in the metric sample. An example of these issues is missing/nonsensical fuel values for individual flights. Statistical issues were attempted to be rectified when encountered, if the data record issue could not be addressed, the record was not included in the metric calculation.

Additionally, due to the limited scope of city pairs and reporting carriers, some city pairs do not have substantial percentages of traffic included in the data set.

Completeness

Only complete reporting periods (quarterly and annually) are displayed for this metric. Incomplete Quarter and Fiscal Year values are not included.

Reliability

Airline provided data is reviewed prior to calculating the metric results. Records with abnormalities are either addressed or removed from the dataset when calculating the metric.

Additional Notes

This metric is reported in the following timeframes:

Quarterly
- Q1: October-December
- Q2: January-March
- Q3: April-June
- Q4: July-September

Annually (October-September)

The flights used to calculate this metric are not limited to reportable hours.

Back to top

Average Gate Weight

Reported as Pounds

Desired Trend: N/A. This is a descriptive metric, neither a positive or negative trend indicates improvement.

Source: Carrier reported flights for key city pairs.

Actual aircraft gate pushback weight, averaged across the flights reported in the Fuel Burn metric.

Computations

Average actual aircraft gate pushback weight for each flight included in the Average Fuel Burn Metric calculation.

Scope

This metric is limited to the flights included in the Average Fuel Burn metric calculation.

Statistical Issues

Individual flight data used to compute this metric may have quality issues which prohibit it from being included in the metric sample. An example of these issues is missing/nonsensical fuel values for individual flights. Statistical issues were attempted to be rectified when encountered, if the data record issue could not be addressed, the record was not included in the metric calculation.

Additionally, due to the limited scope of city pairs and reporting carriers, some city pairs do not have substantial percentages of traffic included in the data set.

Completeness

Only complete reporting periods (quarterly and annually) are displayed for this metric. Incomplete Quarter and Fiscal Year values are not included.

Reliability

Airline provided data is reviewed prior to calculating the metric results. Records with abnormalities are either addressed or removed from the dataset when calculating the metric.

Additional Notes

This metric is reported in the following timeframes:

Quarterly
- Q1: October-December
- Q2: January-March
- Q3: April-June
- Q4: July-September

Annually (October-September)

Aircraft weight is influenced by many factors including, but not limited to, aircraft type, load factor and fuel carried.

The flights used to calculate this metric are not limited to reportable hours.

Back to top

Average Great Circle Distance

Reported as Nautical Miles

Desired Trend: N/A. This is a descriptive metric, neither a positive or negative trend indicates improvement.

Source: Carrier reported flights for key city pairs.

The shortest distance between any two points on the surface of a sphere measured along a path on the surface of the sphere. While the great circle distance between an airport pair remains consistent over time, changes in the frequency of specific airport pairs in the data set may affect this measure.

Computations

Average of the great circle distance for each flight used in the Average Fuel Burn metric.

Scope

This metric is limited to the flights included in the Average Fuel Burn metric calculation.

Statistical Issues

Individual flight data used to compute this metric may have quality issues which prohibit it from being included in the metric sample. An example of these issues is missing/nonsensical fuel values for individual flights. Statistical issues were attempted to be rectified when encountered, if the data record issue could not be addressed, the record was not included in the metric calculation.

Additionally, due to the limited scope of city pairs and reporting carriers, some city pairs do not have substantial percentages of traffic included in the data set.

Completeness

Only complete reporting periods (quarterly and annually) are displayed for this metric. Incomplete Quarter and Fiscal Year values are not included.

Reliability

Airline provided data is reviewed prior to calculating the metric results. Records with abnormalities are either addressed or removed from the dataset when calculating the metric.

Additional Notes

This metric is reported in the following timeframes:

Quarterly
Q1: October-December
Q2: January-March
Q3: April-June

Q4: July-September
Annually (October-September)

The flights used to calculate this metric are not limited to reportable hours.

Back to top

Departure Mix by Fleet Type

Reported as Percent

Desired Trend: N/A. This is a descriptive metric, neither a positive or negative trend indicates improvement.

Source: Carrier reported flights for key city pairs and Traffic Flow Management System (TFMS) data.

Breakdown of the types of aircraft included in the Average Fuel Burn metric data sample based on the categorizations in FAA Order JO 7340.2E.

Computations

The count of individual flights used in the Average Fuel Burn metric with aircraft in each weight class, divided by the total count of flights for the given period.

Scope

This metric is limited to the flights included in the Average Fuel Burn metric calculation.

Statistical Issues

Individual flight data used to compute this metric may have quality issues which prohibit it from being included in the metric sample. An example of these issues is missing/nonsensical fuel values for individual flights. The issue of different reporting styles was particularly prevalent for the Fleet Mix metric. Because of this, air carrier individual flight data was matched with TFMS data to ensure accurate reporting of aircraft type; if the data record issue could not be addressed, the record was not included in the metric calculation. Statistical issues were attempted to be rectified when encountered, if the data record issue could not be addressed, the record was not included in the metric calculation.

Additionally, due to the limited scope of city pairs and reporting carriers, some city pairs do not have substantial percentages of traffic included in the data set.

Completeness

Only complete reporting periods (quarterly and annually) are displayed for this metric. Incomplete Quarter and Fiscal Year values are not included.

Reliability

Airline provided data is reviewed prior to calculating the metric results. Records with abnormalities are either addressed or removed from the dataset when calculating the metric.

Additional Notes

This metric is reported in the following timeframes:

Quarterly
Q1: October-December
Q2: January-March
Q3: April-June
Q4: July-September
Annually (October-September)

The flights used to calculate this metric are not limited to reportable hours.

Back to top

Fuel Burn Reporting Carriers

The following list identifies fuel burn reporting carriers. Most carriers report their data through the industry association Airlines for America.

Alaska Airlines
American Airlines
Delta Air Lines
Express Jet Airlines
FedEx Express
JetBlue Airways
Southwest Airlines
United Airlines
UPS Airlines
US Airways

Back to top

Fuel Burn City Pairs

The following list identifies the city (airport) pairs that the carriers documented in the Reporting Carriers section above report fuel burn data for. NPS Fuel Burn data is aggregated across the following city pairs, pairs not included in this list are not reflected in the fuel burn data.

ATL-DFW
ATL-EWR
ATL-FLL
ATL-HPN
ATL-LGA
ATL-MIA
ATL-PDX
BOS-BWI
BOS-DCA
BOS-EWR
BOS-IAD
BOS-JFK
BUR-OAK
BWI-BDL
BWI-CLT
BWI-ISP

BWI-MDW
BWI-MHT
BWI-ORD
BWI-PVD
BWI-RDU
CLT-DCA
CLT-EWR
CLT-IAD
CLT-JFK
CLT-LGA
CLT-ORD
DAL-HOU
DCA-EWR
DCA-ORD
DEN-LAX
DEN-MDW
DEN-MKE
DEN-ORD
DEN-SAN
DEN-SEA
DFW-IAH
DFW-LAX
DFW-ORD
EWR-FLL
EWR-GSO
EWR-JAX
EWR-LAX
EWR-MCO
EWR-MDW
EWR-MEM
EWR-MIA
EWR-MKE
EWR-ORD
EWR-PBI
EWR-SDF
FLL-JFK
FLL-LGA
HNL-SEA
IAD-JFK
IAD-LGA
JFK-MCO
JFK-MIA
JFK-ORD
JFK-PBI
JFK-RDU
JFK-SFO
LAS-LAX
LAS-OAK
LAS-SAN
LAS-SEA
LAX-OAK
LAX-PDX
LAX-PHX
LAX-SEA
LAX-SFO

LAX-SJC
LAX-SMF
LAX-TUS
LGA-MCO
LGA-MDW
LGA-MIA
LGA-MKE
LGA-ORD
LGA-PBI
MCO-HPN
MDW-DAL
MDW-PHL
MDW-RDU
MEM-ORD
MSP-ORD
ORD-ABE
ORD-CAE
ORD-COS
ORD-PHL
ORD-RDU
PHX-SAN
SAN-OAK
SAN-SFO
SAN-SJC
SAN-SMF
SEA-OAK
SEA-OGG
SEA-SFO
SFO-BUR
SFO-ONT
SFO-PDX
SFO-PSP
SFO-SNA

Back to top

Predictability: Key Performance Indicators (KPI)

As described by ICAO: *Predictability refers to the ability of airspace users and ATM service providers to provide consistent and dependable levels of performance.*

Airborne Time Predictability

Reported as Minutes for selected city pairs during reportable hours (based on the local time for the destination airport)

Desired Trend: Decrease

Source: MITRE/Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data, for reportable hours only.

During reportable hours at the destination airport, the difference between the 85th and 15th percentiles of Airborne Time for flights between the selected city pair. The reportable hours vary by airport and the results are reported by FY. Additional reportable hour information can be found in the airport information section of the Reference Guide.

Computations

The metric is calculated as the difference between the 85th and 15th percentiles of Airborne Time. Airborne Time is the difference between the Actual On Time at the destination airport and the Actual Off Time at the origin airport.

Scope

This metric only measures ASQP reporting carriers operating domestic service between the selected pair of airports in the direction indicated. Only flights arriving at the destination airport within the reportable hours are included in this measurement. Flights may depart the origin airport outside the reportable hours.

Statistical Issues

Calculating the difference between the 85th and 15thpercentile helps provide a better picture of the actual predictability by removing atypical data points.

A lower value for this metric is desired because it shows less variation in the airborne time for flights between the specified city pair within the indicated year.

Completeness

ASQP flights are those with actual data reported to the Department of Transportation.

The first full year of data for the Newark Liberty International — Chicago Midway International (EWR — MDW) city pair was FY 2012.

Reliability

The Technical Directive outlining the ASQP reporting carriers is available on the Bureau of Transportation Statistics website.

Reportable hours vary by airport and are based on local time. Additional reportable hour information is included in the Airport section below.

The data for FY 2014 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2015.

Additional Notes

The metric is derived directly from individual ASQP flight data obtained through the ASMP website. In the original data set the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal “ASQP” in order for the flight to be considered an ASQP flight and used in the calculations.

Back to top

Effective Gate-to-Gate Time Predictability

Reported as Minutes for selected city pairs during reportable hours.

Desired Trend: Decrease

Source: MITRE/Airline Service Quality Performance System (ASQP) data derived from Aviation System Performance Metrics (ASPM) data.

During reportable hours, the difference between the 85th and 15th percentiles of the Effective Gate-to-Gate Time metric. The reportable hours vary by airport and the results are reported by FY. Additional percentile and reportable hour information can be found in the Reference Guide.

Computations

The value for the 15th percentile of the Effective Gate-to-Gate Time subtracted from the value of the 85th percentile of the Effective Gate-to-Gate Time.

Scope

This metric only measures ASQP reporting carriers operating domestic service between the selected pair of airports in the direction indicated. Only flights arriving at the destination airport within the reportable hours are included in this measurement. Flights may depart the origin airport outside the reportable hours.

Statistical Issues

Calculating the difference between the 85th and 15th percentile helps provide a better picture of the actual predictability by removing atypical data points.

A lower value for this metric is desired because it shows less variation in the Effective Gate-to-Gate time for flights for the specified city pair within the indicated year.

Completeness

ASQP flights are those with actual data reported to the Department of Transportation.

The first full year of data for the Newark Liberty International — Chicago Midway International (EWR — MDW) city pair was FY 2012.

Reliability

The metric is derived directly from individual ASQP flight data obtained through the ASPM website. In the original data set the Official Airline Guide Aircraft Identification (OAG_ACID) column must equal "ASQP" in order for the flight to be considered an ASQP flight and used in the calculations.

The data for FY 2014 is not yet final as amendments may still be made to the ASPM source data until six weeks after the end of FY 2015.

Additional Notes

The Technical Directive outlining the ASQP reporting carriers is available on the Bureau of Transportation Statistics website.

Reportable hours vary by airport and are based on local time. Additional reportable hour information is included in the Airport section below.

Back to top

Airport and Facility Information

Airports included on the NextGen Performance Snapshots (NPS) website are often identified by several characteristics, including airport code, name and city. The locations detailed in the Airport Performance pages also include additional background information such as, operations and freight volume at the specified airport; this information is gathered from the 2013 Airports Council International, North American Airport Traffic Summary preliminary data. Many of the locations listed below are included in the NPS portfolio pages. In these portfolio pages, a capability is considered implemented when it achieves a specific, predefined programmatic milestone. The subsections below provide information on the airports and FAA facilities referenced throughout the NPS.

Core 30 Airport Information Table

Several metrics on the NPS are measured during reportable hours. These hours, which are measured in local time, vary by airport and are selected to capture at least 90 percent of the total operations (arrivals and departures) at an airport. The entire percentage of total operations covered under these reportable hours may not be reflected in the NPS metrics due to the characteristics of the data sources used. Please see the individual metric definitions for additional data source information. In addition to general airport information, the table below includes the reportable hours for the airports measured on the NPS. Memphis International Airport (MEM) is unique in this list as it is the only airport in which the reportable hours span a full 24-hour day due to its large number of freight operations during night hours.

Core 30 Airport Information

City	Airport Name	Airport Code	Metroplex	Reportable Hours
Atlanta	Hartsfield-Jackson Atlanta International Airport	ATL	Atlanta	07:00 - 22:59
Baltimore	Baltimore/ Washington International Thurgood Marshall Airport	BWI	D.C.	06:00 - 22:59
Boston	Boston - General Edward Lawrence Logan Airport	BOS		06:00 - 21:59
Charlotte	Charlotte Douglas International Airport	CLT	Charlotte	07:00 - 22:59
Chicago	Chicago Midway International Airport	MDW		07:00 - 20:59
Chicago	Chicago O'Hare International Airport	ORD		06:00 - 21:59
Dallas-Fort Worth	Dallas/ Fort Worth International Airport	DFW	North Texas	07:00 - 21:59
Denver	Denver International Airport	DEN	Denver	07:00 - 21:59
Detroit	Detroit Metropolitan Wayne County Airport	DTW	Cleveland-Detroit	06:00 - 22:59
Fort Lauderdale	Fort Lauderdale-Hollywood International Airport	FLL	South Central Florida	07:00 - 22:59

Honolulu	Honolulu International Airport	HNL		06:00 - 22:59
Houston	Houston - George Bush Intercontinental Airport	IAH	Houston	07:00 - 21:59
Las Vegas	Las Vegas - McCarran International Airport	LAS	Las Vegas	07:00 - 21:59
Los Angeles	Los Angeles International Airport	LAX	Southern California	06:00 - 22:59
Memphis	Memphis International Airport	MEM		00:00 - 23:59
Miami	Miami International Airport	MIA	South Central Florida	07:00 - 22:59
Minneapolis	Minneapolis-St. Paul International/ Wold-Chamberlain Airport	MSP		07:00 - 22:59
New York	New York - John F. Kennedy International Airport	JFK		06:00 - 22:59
New York	New York - LaGuardia Airport	LGA		07:00 - 21:59
Newark	Newark Liberty International Airport	EWR		07:00 - 22:59
Orlando	Orlando International Airport	MCO	South Central Florida	07:00 - 21:59
Philadelphia	Philadelphia International Airport	PHL		07:00 - 21:59
Phoenix	Phoenix Sky Harbor International Airport	PHX	Phoenix	07:00 - 21:59
Salt Lake City	Salt Lake City International Airport	SLC		07:00 - 21:59
San Diego	San Diego International Airport	SAN	Southern California	06:00 - 22:59
San Francisco	San Francisco International Airport	SFO	Northern California	07:00 -22:59
Seattle	Seattle-Tacoma International Airport	SEA		07:00 - 21:59
Tampa	Tampa International Airport	TPA	South Central Florida	07:00 - 22:59
Washington	Ronald Reagan Washington National Airport	DCA	D.C.	06:00 - 21:59

Washington	Washington Dulles International Airport	IAD	D.C.	07:00 - 22:59

Back to top

Additional Airport Information

As shown on the NPS Portfolio Pages, NextGen's impacts touch many locations and stakeholders throughout the National Airspace System (NAS) including locations outside of the Core 30 Airports. The following table provides information on the non-Core 30 Airports referenced throughout the NPS.

Additional Airport Information

Airport Code	Airport Name
ABQ	Albuquerque International Sunport
ACK	Nantucket Memorial
ACY	Atlantic City International
ADS	Addison Airport
AFA	Fairbanks International
AFF	United States Air Force Academy Airfield
AFW	Fort Worth Alliance Airport
ALB	Albany International
AMA	Rick Husband Amarillo International
ANC	Ted Stevens Anchorage International
ANE	Anoka County-Blaine Airport (Janes Field)
APA	Centennial Airport
ARR	Aurora Municipal Airport
AUS	Austin-Bergstrom International
BCT	Boca Raton
BDL	Bradley International
BED	Laurence G. Hanscom Field
BFI	Boeing Field/King County International
BHM	Birmingham-Shuttlesworth International
BIH	Eastern Sierra Regional
BIL	Billings Logan International

BJC	Rocky Mountain Metropolitan
BKF	Buckley Air Force Base
BKL	Cleveland Burke Lakefront Airport
BLI	Bellingham International
BNA	Nashville International
BOI	Boise Air Terminal/Gowen Field
BUF	Buffalo Niagara International
BUR	Bob Hope Airport
BVY	Beverly Municipal Airport
BZN	Bozeman Yellowstone International
CAE	Columbia Metropolitan Airport
CAG	Craig-Moffat County
CGF	Cuyahoga County Airport
CHS	Charleston Air Force Base/International
CLE	Cleveland-Hopkins International Airport
CMH	Port Columbus International
COS	City of Colorado Springs Municipal
CRP	Yeager
CRQ	McClellan-Palomar Airport
CRW	Corpus Christi International
CVG	Cincinnati/Northern Kentucky International
DAL	Dallas Love Field
DAY	James M. Cox Dayton International
DET	Coleman A. Young Municipal Airport
DPA	DuPage Airport
DRO	Durango-La Plata County
DTO	Denton Municipal Airport
DWH	David Wayne Hooks Memorial Airport
EAT	Pangborn Memorial
ELP	El Paso International

EUG	Mahlon Sweet Field
FAI	Fairbanks International
FMC	Flying Cloud Airport
FNL	Fort Collins-Loveland
FRG	Republic Airport
FTG	Front Range
FTW	Fort Worth Meacham International Airport
FTY	Fulton County Airport-Brown Field
FXE	Fort Lauderdale Executive Airport
GEG	Spokane International
GJT	Grand Junctional Regional
GKY	Arlington Municipal Airport
GPI	Glacier Park International
GSO	Piedmont Triad International Airport
GSP	Greenville Spartanburg International
GTF	Great Falls International
GUC	Gunnison-Crested Butte Regional
GUM	Guam International
GXY	Greeley-Weld County
GYY	Gary/Chicago International
HAF	Half Moon Bay Airport
HDN	Yampa Valley Regional
HEF	Manassas Regional Airport-Harry P. Davis Field
HHR	Hawthorne Municipal Airport
HND	Henderson Executive Airport
HOU	William P. Hobby Airport
HPN	Westchester County Airport
HRL	Valley International
HWD	Hayward Executive Airport
HYA	Barnstable Municipal-Boardman/Polando Field

ICT	Wichita Mid-Continent
IDA	Idaho Falls Regional
ILG	New Castle Airport
IND	Indianapolis International
ISM	Kissimmee Gateway Airport
ISP	Long Island MacArthur Airport
IWA	Phoenix-Mesa Gateway Airport
JAC	Jackson Hole Airport
JAX	Jacksonville International
JNU	Juneau International Airport
JQF	Concord Regional Airport
KOA	Kona International at Keahole
LBB	Lubbock Preston Smith International
LCK	Rickenbacker International
LGB	Long Beach Airport
LIH	Lihue
LWS	Lewiston-Nez Perce County
MCI	Kansas City International
MFR	Rogue Valley International Medford
MHT	Manchester-Boston Regional Airport
MKE	General Mitchell International
MMU	Morristown Municipal Airport
MRY	Monterey Regional
MSO	Missoula International
MSY	Louis Armstrong New Orleans International Airport
MTJ	Montrose Regional Airport
MTN	Martin State Airport
MYF	Montgomery Field
MVY	Martha's Vineyard
MWH	Grant County International

NKX	Miramar MCAS
OAK	Metropolitan Oakland International
OGG	Kahului
OKC	Will Rogers World Airport
OLV	Olive Branch Airport
OMA	Eppley Airfield
ONT	Ontario International Airport
OPF	Opa-locka Executive Airport
ORF	Norfolk International
ORL	Orlando Executive Airport
OTH	Southwest Oregon Regional
OWD	Norwood Memorial Airport
OXR	Oxnard Airport
PAE	Snohomish County Airport (Paine Field)
PAO	Palo Alto Airport of Santa Clara County
PBI	Palm Beach International Airport
PDK	DeKalb-Peachtree Airport
PDX	Portland International (OR)
PIE	St. Petersburg-Clearwater International Airport
PIT	Pittsburgh International
PNE	Northeast Philadelphia Airport
PRC	Ernest A. Love Field
PSC	Tri-Cities
PSP	Palm Springs International Airport
PTK	Oakland County International Airport
PUW	Pullman/Moscow Regional
PVD	Theodore Francis Green State
PWK	Chicago Executive Airport
PWM	Portland International Jetport (ME)
RDM	Roberts Field

RDU	Raleigh-Durham International
RFD	Chicago/Rockford International
RIC	Richmond International
RIL	Garfield County Regional
RNO	Reno/Tahoe International
RYY	Cobb County Airport-McCollum Field
SAT	San Antonio International
SAV	Savannah/Hilton Head International
SBS	Steam Boat Springs/Bob Adams Field
SCC	Deadhorse
SDF	Louisville International-Standiford Field
SDL	Scottsdale
SEF	Sebring Regional
SFB	Orlando Sanford International Airport
SGR	Sugar Land Regional Airport
SJC	Norman Y. Mineta San Jose International Airport
SMF	Sacramento International Airport
SMO	Santa Monica Municipal Airport
SNA	John Wayne Airport-Orange County
SRQ	Sarasota/Bradenton International Airport
STL	Lambert-St. Louis International
STP	St. Paul Downtown Holman Field
STS	Charles M. Schulz - Sonoma County Airport
SUN	Friedman Memorial
SWF	Stewart International Airport
SYR	Syracuse Hancock International
TEB	Teterboro
TEX	Telluride Regional
TIW	Tacoma Narrows Airport
TKI	McKinney National Airport

TMB	Kendall-Tamiami Executive Airport
TTN	Trenton Mercer
TUS	Tucson International
TYS	McGhee Tyson Airport
UGN	Waukegan Regional Airport
VGT	North Las Vegas Airport
VNY	Van Nuys Airport
YIP	Willow Run Airport
YKM	Yakima Air Terminal/ McAllister Field

Back to top

Marquee Locations

Hartsfield-Jackson Atlanta International Airport (ATL)

The data included on the Atlanta Marquee Page was gathered from various FAA sources including the 2014 NextGen Operational Performance Assessment. This document contains additional information on the methodology and assumptions used to calculate this data.

For information on the Capacity and Efficiency scorecard metrics on this page, please see the appropriate metric information linked at the top of this page.

Charlotte Douglas International Airport (CLT)

The data included in the Optimized Profile Descent descriptions were gathered from various FAA sources. These sources include the Performance Based Navigation section of the 2014 NextGen Operational Performance Assessment and the 2015 NextGen Business Case report (publication date to be determined). These documents contain additional information on the methodology and assumptions used to calculate this data.

For information on the Capacity and Efficiency scorecard metrics on this page, please see the appropriate metric information linked at the top of this page.

Denver International Airport (DEN)

The data included in the Optimized Profile Descent descriptions were gathered from various FAA sources. These sources include the Performance Based Navigation section of the 2014 NextGen Operational Performance Assessment and the 2015 NextGen Business Case report (publication date to be determined). These documents contain additional information on the methodology and assumptions used to calculate this data.

For information on the Capacity and Efficiency scorecard metrics on this page, please see the appropriate metric information linked at the top of this page.

George Bush Intercontinental Airport (IAH)

The main source of information for the Metroplex write up on the Houston Marquee page is the

Houston Metroplex Post-Implementation Analysis conducted by The MITRE Corporation on behalf of the FAA. This report is available on the FAA website in PDF format.

For information on the Capacity and Efficiency scorecard metrics on this page, please see the appropriate metric information linked at the top of this page.

Back to top

FAA Facility Information

The NPS portfolio pages reference several types of FAA facilities where NextGen capabilities have been implemented. As defined in FAA Order 7110.65, an Air Route Traffic Control Center (ARTCC) is *a facility established to provide air traffic control service to aircraft operating on Instrument Flight Rules (IFR) flight plans within controlled airspace and principally during the en route phase of flight*. There are several different facilities that separate traffic in terminal areas. In some locations an air traffic control tower (ATCT) provides this service, while in other areas a designated Terminal Radar Approach Control (TRACON) facility is responsible. Some towers and TRACONs are co-located.

ATCTs, TRACONs and ARTCCs referenced on NPS

Code	Facility
A80	Atlanta TRACON
A90	Boston TRACON
C90	Chicago TRACON
CLE	Cleveland Tower
CLT	Charlotte Tower
CVG	Cincinnati Tower
D01	Denver TRACON
D10	Dallas-Ft. Worth TRACON
D21	Detroit TRACON
I90	Houston TRACON
L30	Las Vegas TRACON
M03	Memphis TRACON
M98	Minneapolis TRACON
MIA	Miami Tower
N90	New York TRACON
NCT	Northern California TRACON
P50	Phoenix TRACON
P80	Portland TRACON

PCT	Potomac TRACON
PHL	Philadelphia Tower
S46	Seattle TRACON
S56	Salt Lake City TRACON
SCT	Southern California TRACON
T75	St. Louis TRACON
ZAB	Albuquerque Center
ZAU	Chicago Center
ZBW	Boston Center
ZDC	Washington Center
ZDV	Denver Center
ZFW	Fort Worth Center
ZHU	Houston Center
ZID	Indianapolis Center
ZJX	Jacksonville Center
ZKC	Kansas City Center
ZLA	Los Angeles Center
ZLC	Salt Lake City Center
ZMA	Miami Center
ZME	Memphis Center
ZMP	Minneapolis Center
ZNY	New York Center
ZOA	Oakland Center
ZOB	Cleveland Center
ZSE	Seattle Center
ZTL	Atlanta Center

Back to top

Metroplex Information

The NPS website provides an overview of several National Airspace System (NAS) metroplexes, showing their importance to the area in which they are located and to the NAS as a whole.

Metroplex Definition

Each metroplex is a unique system of airports, aircraft, weather patterns and geography. The following is a list of the primary airports in each of the metroplexes on the NPS. Metroplexes were initially defined around the 35 airports in FAA's earlier Operational Evolution Partnership, plus airports in FAA's Future Airport Capacity Task 2 (FACT2) initiative, all 77 airports within FAA's ASPM data system, and airports within 30 miles with more than 10 instrument flight rule (IFR) operations per day. Metroplexes were further refined as designs evolved as informed by subject matter expertise on a case by case basis Due to data availability, all the airports included for a metroplex may not be included in the data describing it. Similarly, additional airports may be impacted by Metroplex designs. For the full name of an airport, please see the individual metroplex page.

Metroplexes

Metroplex	Airports
Atlanta	ATL; FTY; PDK; RYY.
Charlotte	CAE; CLT; GSO; GSP; JQF; RDU.
Cleveland-Detroit	BKL; CGF; CLE; DET; DTW; PTK; YIP.
D.C.	BWI; DCA; HEF; IAD; MTN.
Denver	APA; BJC; DEN.
Houston	DWH; HOU; IAH; SGR.
Las Vegas	HND; LAS; VGT.
North Texas	ADS; AFW; DAL; DFW; DTO; FTW; GKY; TKI.
Northern California	HWD; OAK; PAO; SFO; SJC; SMF.
Phoenix	IWA; PHX.
South Central Florida	FLL; FXE; ISM; MCO; MIA; OPF; ORL; PBI; PIE; SFB; SRQ; TMB; TPA.
Southern California	BUR; HHR; LAX; LGB; ONT; OXR; PSP; SAN; SMO; SNA; VNY.

Back to top

Metroplex Traffic

The Metroplex Traffic section provides an overview of the aircraft types operating within the selected metroplex. This traffic mix is segmented as Commercial Air Carrier, General Aviation (GA) and Military operations. Commercial Air Carrier operations are further defined as the sum of Air Carrier and Air Taxi operations. The information is calculated from FAA Operational Network (OPSNET) data and is reported for FY 2009 - 2014.

The data set used to calculate this metric includes all the airports in each metroplex, although some airports may not support a given traffic segment. The data include both itinerant and local operations for the airports being measured. Per the OPSNET user guide:

Local: Operations that remain in the local traffic pattern, execute simulated instrument approaches or low passes at the airport, and operations to or from the same airport within a designated practice area within a 20-miles radius of the tower.

Itinerant: Operations that land at an airport arriving from outside the airport area, or depart from an airport and leave the airport area.

Back to top

Average Daily Scheduled Flights

The number of average daily scheduled flights is calculated for FY 2009 through FY 2014 and is based on the sum of the departures scheduled to and from all the metroplex airports that offer scheduled service and for which data are available. To obtain the average daily value, the yearly sum is divided by the number of days in the year (366 for FY 2012 and 365 for the rest of the years). The source for this data is the U.S. Department of Transportation, Bureau of Transportation Statistics (BTS) Air Carrier Statistics Database.

Since some airports do not have scheduled service, this information may not include data for all the airports within the metroplex. The following table identifies the airports included in this information for each metroplex. The airports listed may not have scheduled service for each year provided in the data set. To see the full names for these airports, please consult the appropriate metroplex page.

Metroplexes

Metroplex	Airports
Atlanta	ATL.
Charlotte	CAE; CLT; GSO; GSP; RDU.
Cleveland-Detroit	BKL; CGF; CLE. DET; DTW; PTK; YIP.
D.C.	BWI; DCA; IAD.
Denver	DEN.
Houston	HOU; IAH.
Las Vegas	LAS; VGT.
North Texas	AFW; DAL; DFW.
Northern California	OAK; SFO; SJC; SMF.
Phoenix	PHX.
South Central Florida	FLL; FXE; ISM; MCO; MIA; OPF; ORL; PIE; SFB; SRQ; TMB; TPA.
Southern California	BUR; LAX; LGB; ONT; OXR; PSP; SAN; SNA.

Back to top

Projected Annual Benefits

Several of the Metroplex pages contain projected annual benefits or post-implementation estimates of NextGen airspace and procedure improvements. The benefits are based on various phases towards post-implementation. The source of this data is the FAA Airspace Services Directorate.

The projected benefits shown on the NPS are annual values expected to accrue upon completion of the near-term NextGen procedural improvements implemented by the Metroplex program. They are based on the FAA's assessment of proposed airspace improvements compared to operations before any improvements were made. The value of the projected fuel savings is based on a $2.85 per gallon rate. Continued study may warrant that the operational vision used to calculate these projected benefits be modified, thus changing the value of the projected benefits.

Back to top

NextGen Priorities — Joint Implementation Plan Milestones

The NextGen Priorities Joint Implementation Plan (PDF) is the result of an FAA-aviation community collaborative effort in response to a request from the House of Representatives Committee on Transportation and Infrastructure, Subcommittee on Aviation. Through the NextGen Advisory Committee (NAC), a federal advisory committee, the FAA and the aviation industry has agreed to high-level commitments that will provide significant near-term benefits to National Airspace System users in four focus areas: Multiple Runway Operations, Performance Based Navigation, Surface Operations and Data Communications. Commitments will be completed over three years and include operational implementations of capabilities at specific locations; pre-implementation activities, such as safety analyses or engineering studies; and commitments by industry to complete activities required for successful implementation.

The milestones in the plan are a subset of the overall series of programs and activities the FAA is executing for NextGen, which are broader in scope and timeline, creating a more extensive transformation of National Airspace System (NAS) operations.

Back to top

Acronym Information

The NPS utilizes many acronyms to refer to NextGen and legacy technologies, programs, locations and data sources. Although most acronyms are accompanied by a brief description of their meaning, the following table provides links to sources that may be used to find additional detail and meaning behind these acronyms. Please note that acronyms occasionally have different meanings depending on their context, so a definition in these sources, while accurate, may not reflect the intended definition.

Additional Acronym Sources

Source	Description
Air Traffic Management Glossary of Terms	Air traffic management glossary of acronyms with definitions produced by the FAA Air Traffic Control System Command Center.
Aeronautical Information Manual (PDF)	As noted within the document, this publication provides information on basic flight information and air traffic control procedures. Appendix 3 provides a list defining many acronyms and definitions.
Glossary of Airport Acronyms Used in FAA Documents	Airport acronyms that appear in FAA airport standards and related publications.
NextGen Priorities Joint Implementation Plan (PDF)	Appendix B of the NextGen Priorities Joint Implementation Plan provides acronym and location abbreviation information related to the NextGen Priorities.

Back to top

Download Data as PDF