2017 TAF: Optimistic and Pessimistic Forecast Scenarios for Large and Medium Hub Airports

The Terminal Area Forecast (TAF) has baseline forecasts of total enplanements and total airport operations by airport. In addition to the baseline forecast, FAA has produced an optimistic and pessimistic forecast scenario for these parameters for the 30 large hub airports and 30 medium hub airports in the 2017 TAF. The purpose of these scenarios is to quantify forecast uncertainty.

Total enplanements are comprised of domestic air carrier, international air carrier (US flag plus foreign flag), and commuter (domestic plus international) enplanements. Total airport operations include itinerant air carrier, itinerant commuter/air taxi, itinerant general aviation, itinerant military, local civil, and local military operations.

The optimistic and pessimistic forecast scenarios for domestic enplanements and commercial operations were generated by altering baseline inputs to the Modernized TAF (TAF-M) model. For a discussion of the model refer to *Forecast Process for the 2017 TAF* (at taf.faa.gov) regarding airports with more than 100,000 enplanements in FY 2016.

The optimistic forecast for domestic enplanements and commercial operations assumes higher personal income growth and lower oil prices than the baseline forecast. In addition, the lower oil prices make it possible for airline fares to be lower than in the baseline forecast. These assumptions result in a stimulation of air travel demand and an increase in enplanements and operations compared to the baseline forecast.

The pessimistic forecast for domestic enplanements and commercial operations assumes slower personal income growth and higher oil prices than in the baseline forecast. In addition, the higher oil prices result in higher airfares than in the baseline forecast. These assumptions result in suppressing air travel demand and a decrease in enplanements and operations in comparison to the baseline projection.

The baseline international forecast is generated with an exponential smoothing model. The optimistic and pessimistic international enplanements and operations are forecast based on a confidence interval. The confidence interval was selected to create a range of uncertainty that is closest to the historical forecast errors in the international forecast. The optimistic total enplanement forecast was generated by summing the optimistic domestic enplanement forecast plus the optimistic international enplanement forecast. The pessimistic total enplanement forecast was generated by summing the pessimistic domestic enplanement forecast plus the pessimistic international enplanement forecast.

For the airport operation forecast scenarios, ranges were produced for itinerant general aviation and local civil operations. These ranges are based on two separate ARIMA (Auto-Regressive Integrated Moving Average) models. The forecast uncertainty was quantified based on a confidence interval from the ARIMA model. The optimistic and pessimistic forecast range at the selected confidence level closely

resembles the historical forecast errors. The itinerant military and local military operations forecasts were not altered for the optimistic and pessimistic forecasts (i.e., assumed to be the same as the baseline forecast).

The optimistic total airport operation forecasts were generated by summing the optimistic forecasts for itinerant air carrier, itinerant commuter/air taxi, itinerant general aviation, and local civil and the baseline itinerant military and local military operations. The pessimistic total airport operation forecasts were generated by summing the pessimistic forecasts for itinerant air carrier, itinerant commuter/air taxi, itinerant general aviation, and local civil and the baseline itinerant military and local military operations.

The ranges are unique to each airport, because each scenario reflects the unique set of economic growth scenarios, passenger mix (O&D versus connecting, and domestic versus international), fleet mix, and operations mix by user category.