Airport Feature – by Steve Creedy

Reducing the impact of disruptive weather on airports

Weather delays are the bane of every airport manager's existence and by-products of nature that seem unavoidable.

While nothing can be done about the weather itself, an innovative move by Airservices Australia, the Bureau of Meteorology and major airlines to combine weather forecasting expertise is helping to offset the impact on aircraft arrivals of disruptive weather.

Meteorological Collaborative Decision Making, or MET-CDM, has been hailed as an example of what can be achieved when those responsible for safely transporting millions of airline passengers around the country join forces.

MET-CDM is now active in Brisbane, Melbourne and Perth and planning is underway in Sydney.

The process involves meteorologists at Airservices' Canberra-based Network Coordination Centre collaborating with regional forecasters and those at Qantas and Virgin Australia to form a common understanding of how the weather will impact airport operations and how this information can be used to reduce delays when bad weather hits.

Air traffic flow management and the Ground Delay Program are adjusted accordingly. This helps airlines save fuel by adjusting their take-off time at the departure airport rather than putting them into holding patterns as they arrive at the destination airport.

The MET-CDM process aims to improve the predictability of next day's operations, so that the predicted arrival rates used in the Ground Delay Program are closely aligned to the actual rates used on the day of operations.

The result is an ability to better tailor arrival rates to conditions than under the previous system which used a less detailed terminal area forecast.

By more accurately pinpointing when a storm will hit, air traffic managers can step down the arrival rates leading to the event, and the step them back up once the event passes. This reduces the impact of these adverse weather events and assists in recovering from the disruption.

Central to this is an in-house tool built by Airservices, the MET CDM Rates Calculator, which applies agreed MET CDM "business rules" to propose hourly arrival rates for the next day.

Airservices' traffic managers located at the destination airports review these along with other local factors to set the required arrival rate.

"It's really an interpretation of the business rules with the various weather criteria, and runway configurations that would be used under those weather conditions, to help predict the rates that would apply,'' Air Traffic Management Technology Program Manager Laura Bocking said.

The key to the process is drilling down through local weather forecasts.

Where past forecasts had simply said there would be thunderstorms between 2pm and 8pm, the more detailed forecast might say there was a 5 per cent chance the storm would arrive by 2pm, a 15 per cent probability they would be there by 2pm and a 50 per cent chance of a 4pm arrival.

This could mean that instead of reducing the runway arrival rate for the entire six hours, a decision can be made to manage a gradual reduction through the period.

Recovery sees a similar gradual stepping up of arrival rates rather than the airport sitting at a low base rate over an extended period.

Planning for a trial in Sydney is now underway with the intention of it joining the other three gateway airports. The process will be tweaked to take into account a Bureau of Meteorology unit stationed in the Airservices terminal control unit in Sydney to provide a local terminal area forecast.

Bocking says the response by airlines to MET-CDM has been "very positive'' with good support and plenty of feedback. Post implementation reviews of the trials also indicated the system was working as expected.

"Besides the measurable benefits achieved through improving predictability, the increased collaboration between Airservices, Bureau of Meteorology and the airlines has provided a basis for ongoing working relationships and knowledge sharing,'' she said.