Terminal Sequencing and Spacing (TSAS)

LAX/Community Noise Roundtable

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Time Based Flow Management System (TBFM)

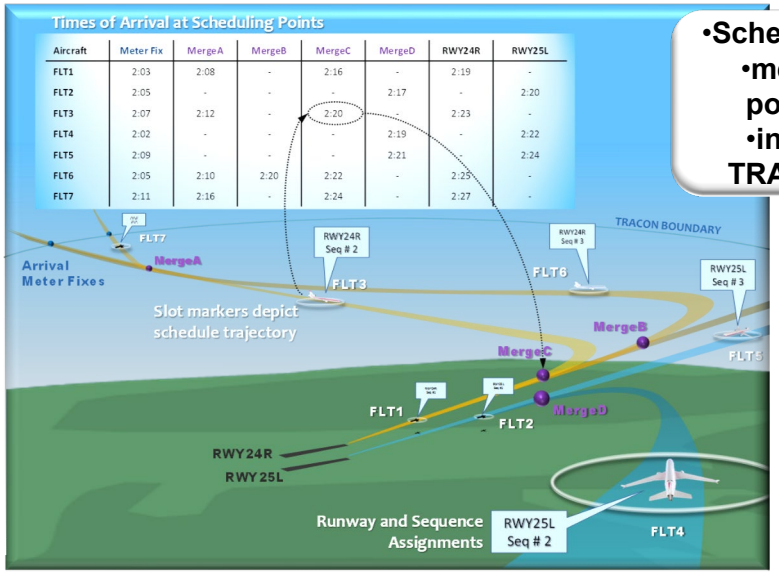
- **TBFM is a NAS automation, decision support system, that enables the use of time-based metering (TBM) to optimize the flow of aircraft as they approach and depart congested airspace and airports.**
  - TBFM technology is evolved from Traffic Management Advisor (TMA) which, was initially developed in the early 1990s via a partnership between NASA and the FAA
- **Time Based Metering (TBM) has been proven to more efficiently manage congested airspace over Miles-in-Trail by:**
  - Smoothing out irregularities in traffic flows,
  - eliminating the bunching of aircraft, and
  - delivering a more efficient, consistent flow of traffic down to the runway.

TSAS Overview

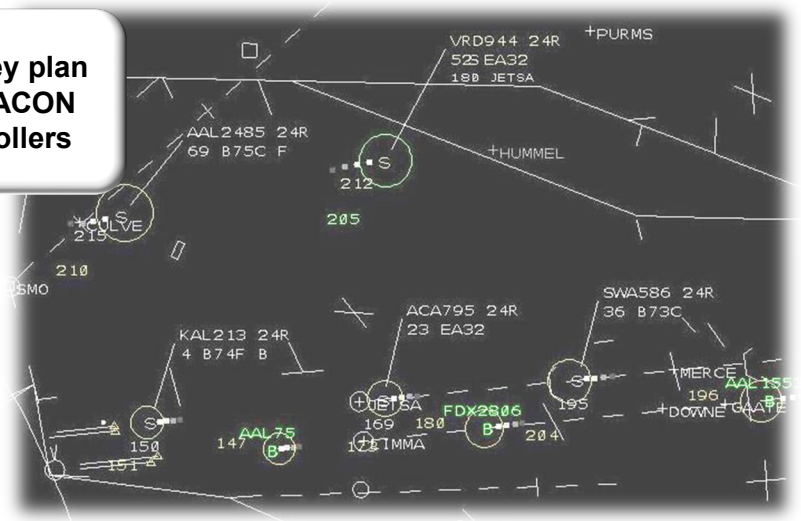
- **Terminal Sequencing and Spacing (TSAS) tool extends the metering capability into the terminal area by providing tools to terminal Air Traffic Control (ATC) and Traffic Management Unit (TMU) for time-based merging, sequencing and spacing**
  - Enables better runway delivery/ accuracy/ consistency necessary for Performance Based Navigation (PBN) and end-to end metering
  - Provides speed advisories/slot markers and metering information to terminal ATCs
- **Functionality allocated across multiple platforms**
  - TBFM: Metering and Speed Advisories
  - Standard Terminal Automation Replacement System (STARS): ATC Computer Human Interface (CHI) (Slot Markers)
  - En Route Automation Modernization (ERAM) Program: Adaptation

TSAS Functionality

- **An enhancement to TBFM extending metering into the terminal**
  - Creates a time-based schedule for all arrival aircraft to terminal merge points and the runway
  - A new set of tools that provides the TRACON controllers slot markers and speed advisories to meet scheduled time of arrivals (STAs)
  - Provides sequence and runway assignments to facilitate smoother flow to runways allowing increased use of PBN
- **Component of iTBO operations**



•Convey plan to TRACON controllers



TSAS Benefits

- Increases the use of Performance Based Navigation (PBN) to improve flight efficiency
- Reduces flight time and fuel burn resulting from more optimal trajectories from meter fix to assigned runway threshold
- Reduces delay resulting from more accurate runway delivery accuracy
- Extends use of time-based metering from the en route domain to the terminal domain and runway, leveraging the FAA's investment in TBFM

**Note: The concentration of flights due to increased PBN use may be perceived as increased noise and/or visual pollution by those directly under the concentrated flow.*

TSAS Performance Benefits