
User Centric GreenLandings® Delta/Congestion Solution
versus
FAA/ATC Centric Time-based Flow Management (TBFM)

User Centric GreenLandings® Solution

1. User has business control over their aircraft movement and arrival flow (schedule, gates, crew, maintenance, etc.)
2. GreenLandings® aircraft movement is deterministic based on the airline's business needs
3. Easily manages every flight at every airport 24/7-365, starting within months, all day, every day, starting "*day of*" hours prior to landing
4. Immediately reduces random point overloads, which is the root cause of delays, congestion and excess CO2
5. Low risk, fully developed, fully operationally tested/validated software (FAA Task J and Embry-Riddle University, 2010-2012, GE Aviation 2013, Georgia Tech, 2006, etc.), COTS solution available starting within months
6. Transparently crosses FIR and ATC sector boundaries
7. Capable of reducing ATC structure
8. Reduces controller workload with aircraft specific, pilot managed Required Time of Arrival (RTA) flow time for each aircraft, leaving the separation task to the controller
9. One pilot manages one aircraft to destination
10. Utilizes onboard navigation and communication capability bought and paid for, and already in place,
11. GreenLandings® is a fully coordinated, real time, "*day of*" automatic data arrival flow process between users (airlines/operators), ATC and aircraft
12. Highly flexible aircraft movement environment, easy to scale up worldwide
13. Provides all ATC/airlines/operators aircraft specific information on what every IFR aircraft wants to do in the future (airline, GA, etc.)
14. Low cost for users/ATC, with immediate proven, cash benefits
15. Low airspace complexity
16. Shovel ready, \$50 million, 3-year project to cover the entire US
17. GreenLandings® process has been fully operationally tested and validated by FAA, Embry-Riddle, GE Aviation and others
18. RTA capability already installed in the aircraft, allowing pilots to enter a time over a navigational fix, and the airplane automatically adjusts speed to meet that time

FAA/ATC Centric TBFM Program

1. ATC keeps control over the movement of the user's aircraft, with zero business/user input into arrival flow
2. TBFM delay is subjective/random as each center decides each necessary sector delay to meter boundary time
3. Only manages limited flights, at 20 airports during part of the day based on traffic (e.g., ATL 6 AM-10PM) and only reaches out 500 to 1,000 miles
4. Minimal impact on random point overloads, reportedly creates adjacent sector overloads and related delays
5. High risk, yet to be fully developed, computationally complex (if feasible) software, after ANSPs already have spent \$100s Billions and decades with little impact on delays/congestion (MLS, AAS, CPDLC, GPS, FANS, RNP, ADS-B/C, NextGen, Sesar, etc.)
6. Difficult to impossible to cross FIR/sovereign boundaries
7. Perpetuates or even increases ATC structure
8. Increases controller workload, as controller must separate aircraft, receive time communication for each aircraft, manage flow time/speed for many aircraft
9. 10s of controllers manages one aircraft to destination
10. Full implementation requires new processes and equipage (navigation, communication, etc.) at unknown added cost
11. TBFM has limited, if any, real time automatic coordination between users, ATC and aircraft with, again, zero user business preference inputs
12. Highly controlled aircraft movement environment, very difficult to scale up, especially across national boundaries
13. Limited to no information available to other ATC/users on what other IFR aircraft are doing, or, more importantly, want to do
14. Very high cost for ATC, with limited (none proven) benefits
15. High airspace complexity
16. Multi-Billion dollar, decades long project to cover the entire US, maybe