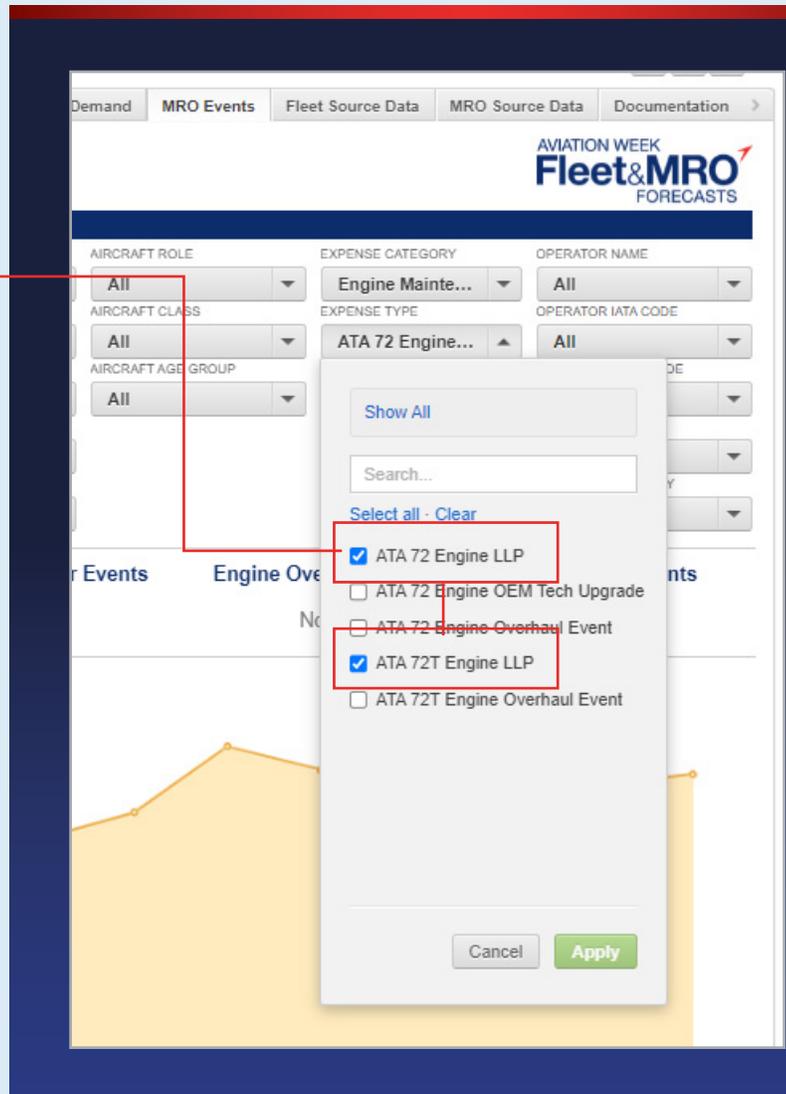


Changes to Engine LLP Modeling

- New this year: the algorithms to identify and account for expensive engine Life Limited Parts (LLPs) changed to more accurately capture the costs and maintenance exposure seen in our fleets.
- Significant costs are associated with mandatory maintenance updates to engine components as they age. Engines operating on commercial aircraft types will see the full spectrum of potential LLP events, their costs, and MRO demand impacts across the 10-years of the forecast.

Please see the methodology section for further information.



Changes to Engine Durability Issues or “Tech Upgrade” Modeling

Both Pratt & Whitney and CFM engine manufacturers are working their way through entry into service on-wing durability issues. Continuing and adding to the GTF and LEAP engine durability MRO coverage from last year, our modeling now makes assumptions about what’s been fixed vs. what’s remaining to see a fix through 2026. This is provided to give a more granular view, more specific results, and anticipated event counts and cost predictions on these two engine families.

Changes to Engine Durability Issues or “Tech Upgrade” Modeling (cont.)

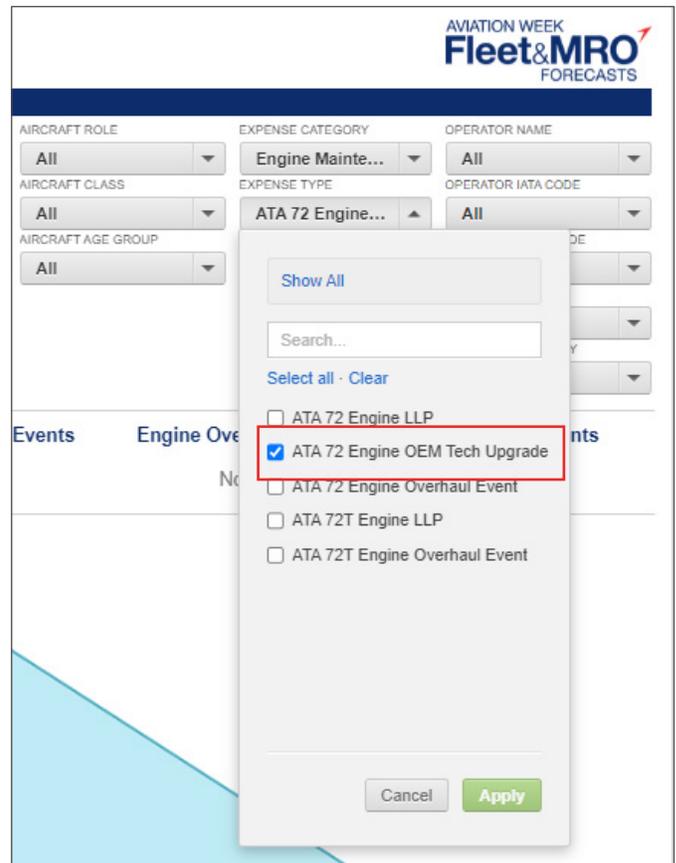
For the P&W GTF engine issues, airframes which have spent over 120 days on the ground during 2023/1H 2024 will be assumed to have had their engines inspected and repaired for the durability issues (powder metal contamination and combustion chamber).

Further, engines whose cycle count reached 80% of TBO during the time of grounding will be assumed to have received an engine performance restoration or overhaul (OH) as well. In this latter case, the engines’ OH timing will be re-set to account for this OH assumption and projected for the next shop visit via our utilization projection modeling.

For the CFM LEAP engine issue, event modeling has been divided between the LEAP-1A and LEAP-1B (for the fuel nozzle issue and reverse bleed system retrofit) being modeled. LEAP-1C engines are modeled separately and will be assumed to have all retrofits accomplished by the end of 2025. In the case of the LEAP-1A, modeling assumptions anticipate that engines built in 2024 will have the necessary fixes included upon delivery. In the case of 2023-built and earlier, the assumption is that those engine’s retrofits will be finalized by the end of 2024 (pre-forecast period).

In the case of the LEAP-1B engines, event modeling anticipates a 2025-2026 period to accomplish. Engines built in 2024 and earlier will require an update, but fielding and installations will not be fully completed until the end of 2026 since CFM has yet to field a retrofit kit. LEAP-1B modeling prioritized engines in this cohort by age and thrust ratings so that higher event randomization weighting was given to those that were the oldest and those that had the higher thrust ratings. This yields a fairly even 50/50 split of the anticipated 2025 engine fleet where half are assumed to be accomplished in 2025 forecast year and the remaining half anticipated for completion in year 2026.

Full details are available via filters in the online dashboard tool. Please see the methodology section for further modeling information.



Need Further Assistance?

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