



White Paper

# Today's Fleet-Planning Complexity: The Added Dimension of New Technology Aircraft

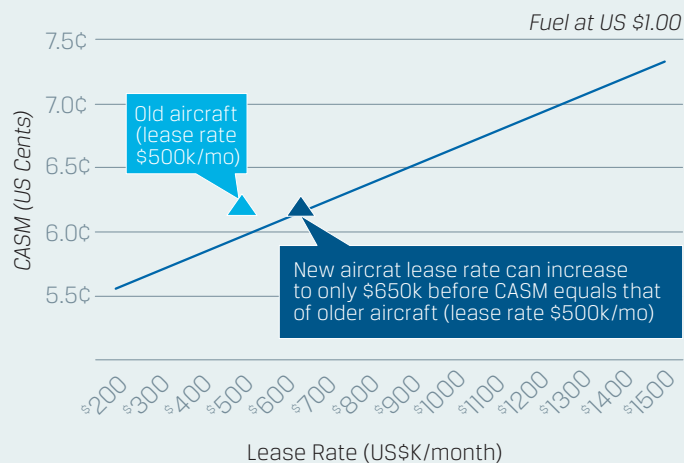
By Samuel Engel



Like never before, airlines must ensure their fleet planning processes are strategically managed. With the introduction of new technology aircraft, the airline industry is poised on the brink of unprecedented change, but low fuel prices have complicated the economics. This complication is actually business as usual for fleet-planning specialists. Fleet planning has always strived to optimize the number and type of aircraft needed by an airline to meet its strategic goals. New technology aircraft bring an additional dimension: When is the right time to add them to the fleet for maximum benefit from both the old and new aircraft?

## COST ADVANTAGE OF NEW AIRCRAFT DECLINES WITH LOWER OIL PRICES

CASM Comparison at Varying Lease Rates



Cost per available seat mile (CASM) can be lower for old aircraft as the price of fuel varies.

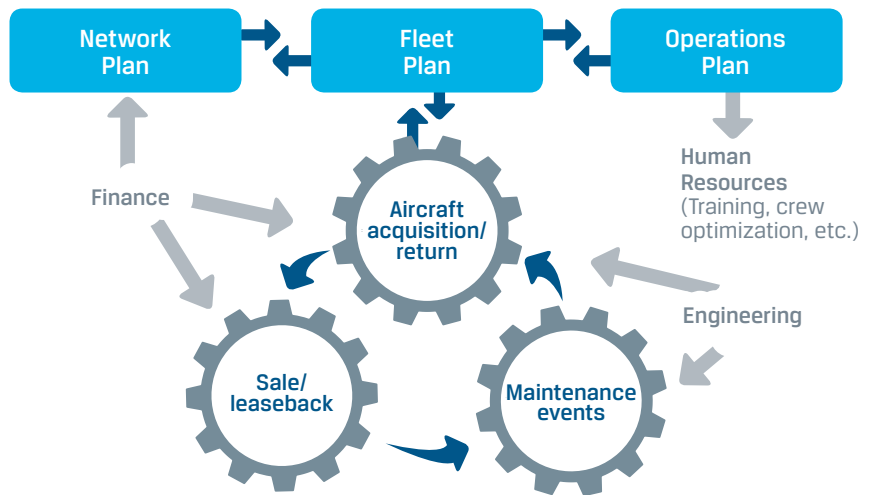
Source: ICF model

**DID YOU KNOW?**

Old aircraft can actually be the right choice for a carrier if their lower ownership costs balance out factors such as higher maintenance costs and higher fuel burn plus high cash costs of D checks and expensive cabin refits.

On the surface, the promise of improved returns and a better customer experience make the switch to new technology aircraft seem inevitable, even urgent. But peeling back the layers, financial considerations get increasingly complex. Newer aircraft offer lower operating costs unless fuel prices plummet and dramatically reshape the costs of operating older aircraft. Newer aircraft may require an outlay of capital that could be used to upgrade older aircraft instead at lower overall cost. And older aircraft may be coming up to high-cash, heavy maintenance events that could be avoided if capital is used instead to invest in or lease new aircraft. The fleet-planning process seems circular—and in many ways it is, as illustrated below:

**MOVING PARTS OF THE FLEET PLANNING PROCESS CYCLE**



Fundamentally, fleet planning is driven by corporate and network growth strategies to ensure the best use of available resources. But financial, operational, and engineering considerations must be factored in for optimal fleet development. An important part of achieving a better economic performance is avoiding unexpected surprises. In particular, close management of the aircraft assets that an airline leases can protect against contractual obligations being overlooked or misunderstood. While effectively working in a cycle, the following key steps in the fleet-planning process must be taken initially and reconsidered as necessary:

**The Key Steps and Questions in the Fleet-Planning Process**

**1 Determine markets**  
Where do we see our best opportunities for growth when balancing the needs of our customers with those of our network?

**2 Acquire aircraft**  
Should we lease or buy?

**3 Assess timing**  
When is the right time of year to bring new aircraft in (e.g., pre-peak) to maximize revenue?

**4 Plan for maintenance**  
Can we time aircraft checks and lease returns to minimize cost and maximize use of airframe, engine, and parts' lives?

**5 Proactively manage end of lease/end of useful life**  
What is the aircraft's residual value? Are we maximizing use of the asset before it exits the fleet?

### About ICF

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Effective fleet planning will establish a two-to-three-year firm blueprint while aiming for increasing flexibility beyond that point. Market conditions can change dramatically—as we have seen with fuel pricing—so having the initial plan is important, but so is running the sensitivities to understand how changes in costs or demand could impact the plan. For example, an initial plan may provide for the addition of new aircraft in Year 3, but flexible planning will ensure that incoming aircraft can be used either for growth or for replacement by having options for existing aircraft.

The many drivers impacting optimal fleet composition over time can present an insurmountable challenge for airlines without the right organizational structure to support fleet planning across disciplines (e.g., engineering, finance, operations). Establishing a planning function can bridge gaps and provide oversight to the process as the full-time endeavor that it is. With decades of experience in fleet planning backed by a Fleet Optimization model, ICF International can apply best practices to helping develop the function in house or to supporting planning as an independent third party.

### About the Author



**Samuel Engel** leads ICF's Aviation group, serving airlines, airports, aircraft finance, and aerospace & MRO. He is a recognized expert on airline economics and strategy and has developed a reputation for guiding organizations through complex issues that have roots in multiple different departments. His analyses for airlines, investors, and governments have supported multi-million dollar investments and litigation results, as well as decisions to pursue new business lines, routes, and aircraft purchases.

Samuel expertly leads full-scale restructuring and transformation engagements. He led the team advising the Government of Bahrain to turn around over five years of losses at the country's national airline, Gulf Air. As part of this work, he built consensus among senior government officials to support a financing package, renegotiate aircraft purchase agreements, and address organizational efficiency. Samuel put in place interim executives and executive advisors that enabled the airline to halve losses within months and subsequently to reach break-even.

In another transformation assignment, Samuel designed and supported the operational integration plan for an airline that operates 400 aircraft across bases on five different continents. The objective of this plan was not only to reduce costs, but to build data-driven business structures that support safety, customer service, and scalable operations. For this client as for others, he has remained with the airline to ensure successful implementation of the plan.

Samuel holds an M.B.A. from Yale University and a B.A. from the University of Pennsylvania.

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