PMA Market

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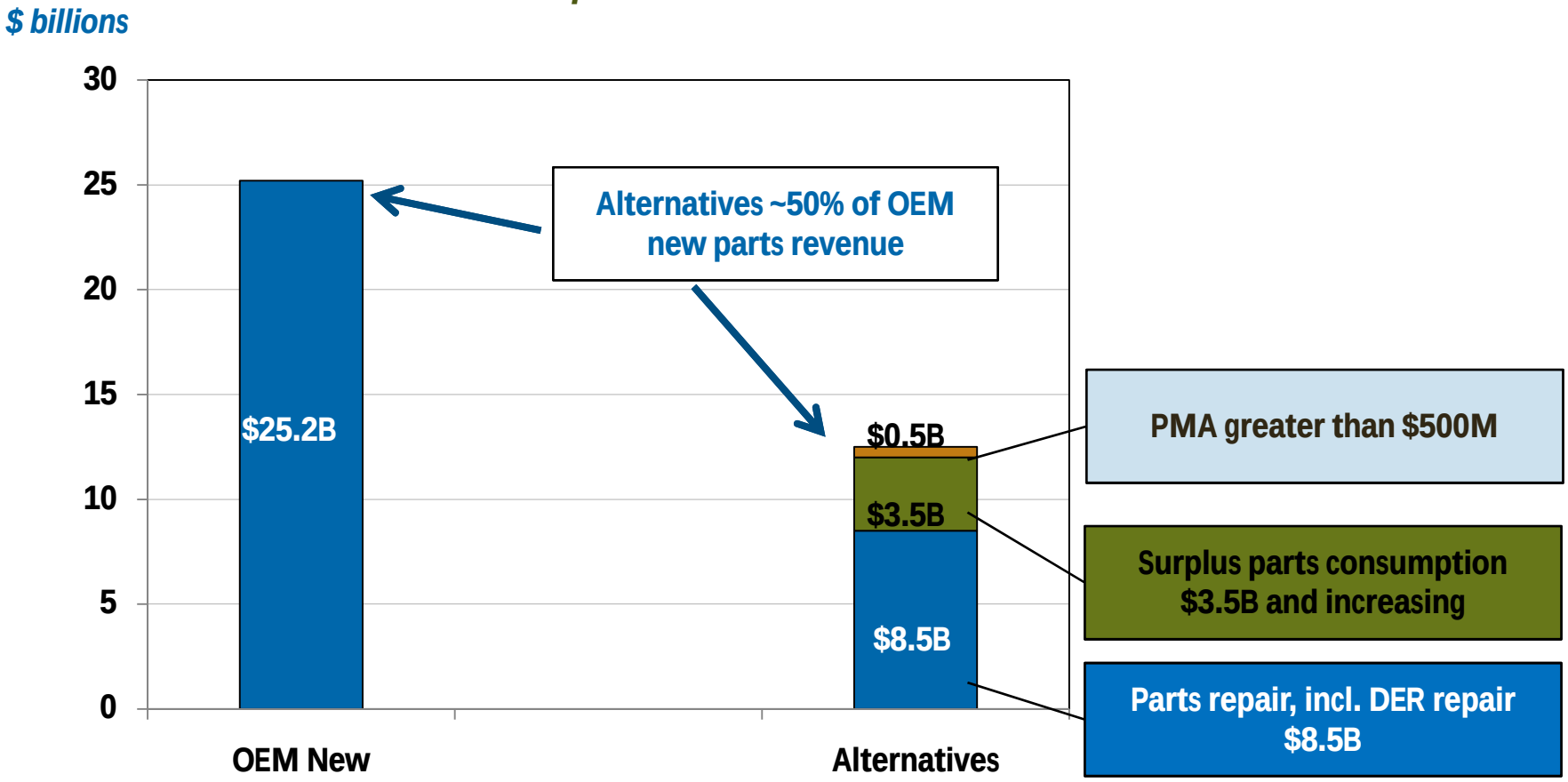
Airline use of alternatives accounts for $12.5B of material spend

*2013 Air Transport Material Demand and Alternatives**



*Total parts demand of $29.3B USD is made up of OEM New + Surplus parts + PMA: Repair activity is outside this parts demand.
Source: ICF SH&E

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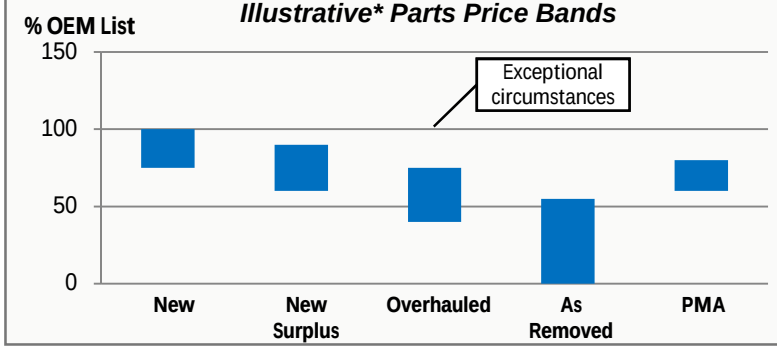
Price and availability are the main reasons for using PMA parts

Part Price

- **PMA parts are typically 20 to 40% off OEM list price**
- **Many OEMs may protect their aftermarket revenue streams by campaigning against PMA and by insisting that licensed MROs discard PMA parts found during overhaul**

Illustrative* Parts Price Bands



Part Availability

- **In an AOG situation, any permitted serviceable part will be used irrespective of price, including PMA**
- **Use of PMA is usually driven by long lead time for OEM parts**

"TAT on repair order and warranty management are most important for my component repair business. Parts availability might drive the use of alternative parts in the future. "

- Major Chinese Airline

"Use of PMA is driven by availability in most cases. Sometimes by price. "

- PMA supplier

"PMA was used as an leverage to deal with the OEM mentality – to increase service levels and reduce lead times. Availability is a key driver. For e.g.. most of the seat manufacturers are still not performing. That is why there is so much activity in the market for seats. Cost savings is another reason. But the amount of paperwork and stress is not worth the cost savings.

- Former PMA supplier executive

Source: ICF SH&E Analysis / Market Interviews

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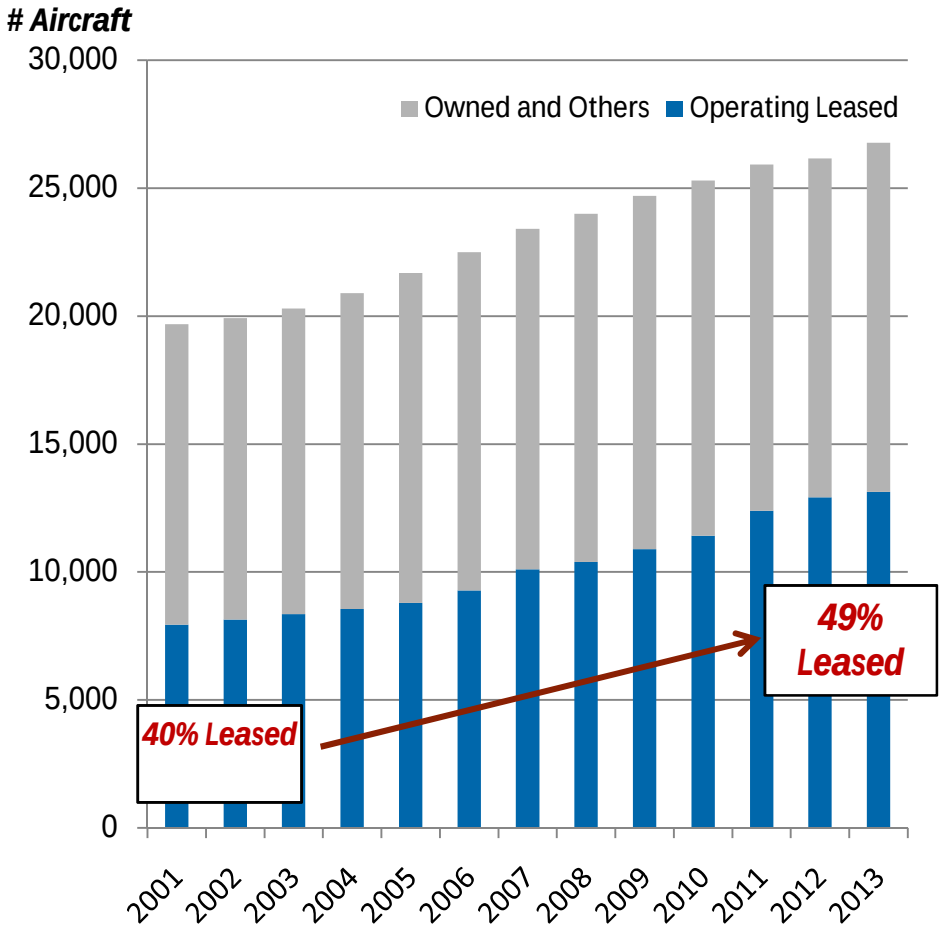
Lessors now own almost 50% of the fleet, putting downward pressure on PMA …

Air Transport Historical Fleet Ownership



Source: ACAS Dec 2013

2013 Operating Leased Fleet

Lessor	2013 Fleet
GECAS	953
ILFC	854
CIT Aerospace	256
Aviation Capital Group	223
AWAS	215
SMBC Aviation Capital	205
BOC Aviation	198
AerCap	155
Wells Fargo Bank	126
Macquarie AirFinance	114
Others	9,833
Total	**13,132**

Half the market under operating lease and other half under OEM control so we have no access as 3rd party.

– Major PMA Supplier

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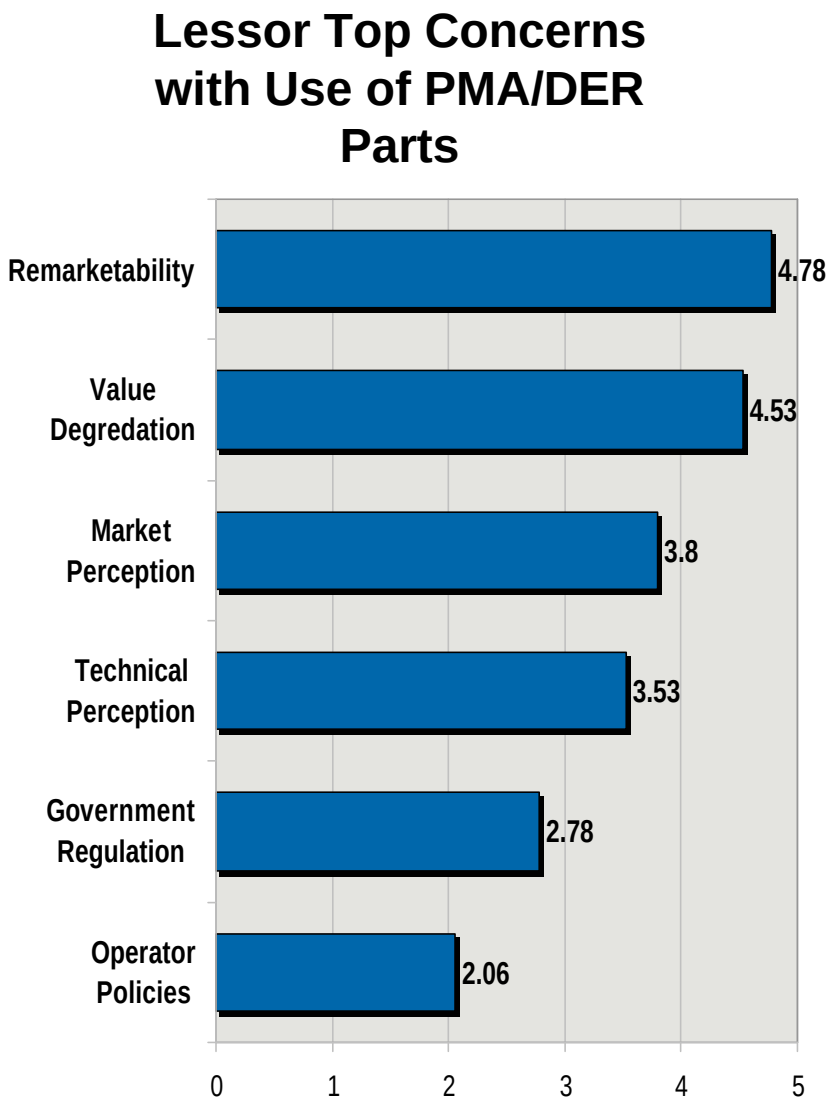
And recent survey work confirms that lessors are still mostly averse to PMA usage …

- Asset Remarketability concerns are the leading factor in PMA parts aversion
- Regulatory concerns, operator restrictions and residual value degradation were also cited as being important
- Nearly every lessor's default policy is to not allow permit alternate parts; however many make exceptions
- Certain types of airlines tend to request permission to install alternate parts



Note: Weighted average response of all lessor respondents. Rank 1 (not important) -5 (very important).
Source: ICF SH&E Survey March 2010

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Lessors are concerned with the ease of aircraft transition between carriers with the use of PMA parts

- **Lessors will allow PMA when airlines and regulatory bodies globally accept PMA parts**
- **One of the main reasons that airplanes are good assets for investment is their global mobility**
- **Having parts on a plane that are not globally accepted by airlines and regulators would severely limit the potential operator base and pose an unacceptable risk to the lessor**
- **Another big part of the equation is the calculation of the residual value of the aircraft at the end of the lease period - lessors may assume a risk if lower-priced PMA parts are used**

"Lessors will allow PMA when airlines and regulatory bodies globally accept PMA parts. If putting PMA parts onto a plane at the time of a maintenance event in any way limits the desirability of an airplane to the next operator, or would limit the countries that the airplane could be registered in, it simply cannot be allowed."

- Major Aircraft Leasing Company
MRO Americas 2013

Source: ICF SH&E analysis

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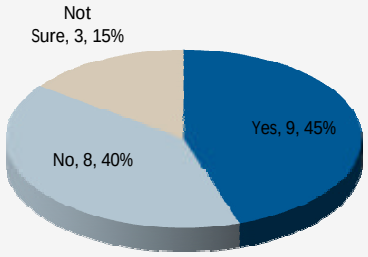
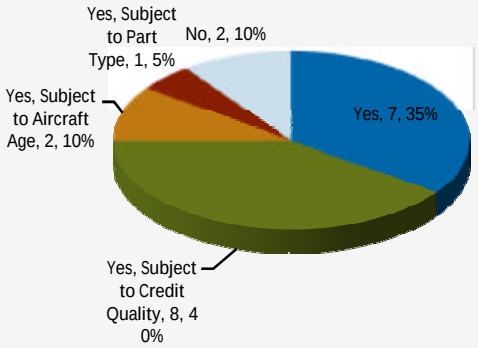
However, some lessors were open to PMA usage in certain circumstances

- **Approximately 45% of lessors indicated they would consider using alternate parts as a differentiator compared to other lessors**
- **Nearly 90% of the lessors indicated they would consider allowing some alternate parts if the lessee would remove them before aircraft redelivery**
- **Approximately 60% of lessors said they would entertain sharing the savings from PMA/DER parts**

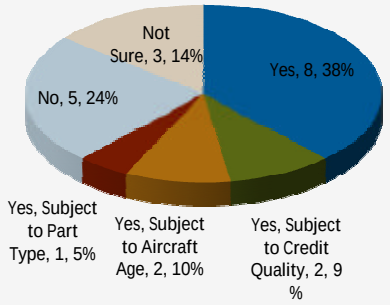
Willingness to explore use of alternate parts as a marketing tactic



Willingness to explore use of alternate parts if removed at lease expiration



Willingness to explore use of alternate parts if savings from PMA/DER shared with Lessee



Source: ICF SH&E Survey March 2010

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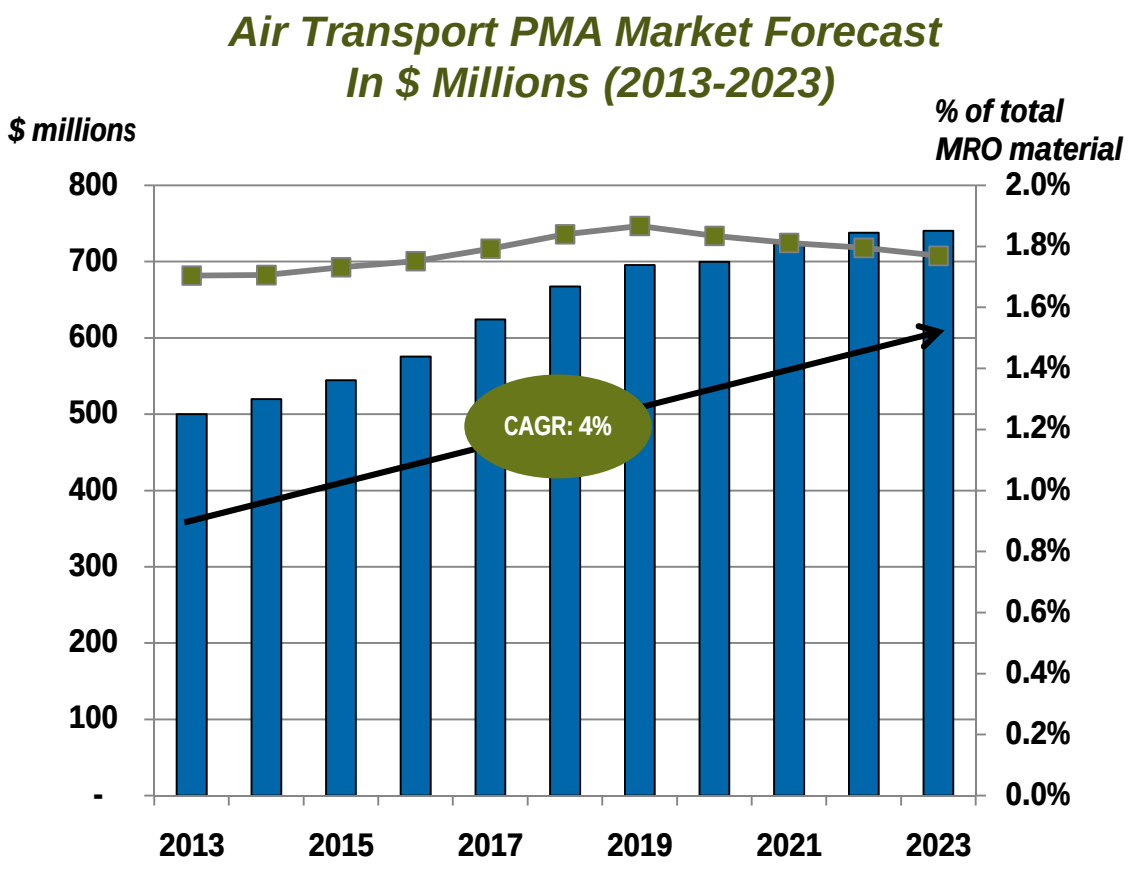
Current PMA market is forecast to increase to $740M by 2023



- The current PMA market is estimated to grow from $500M in 2013 to $740M by 2023 at 4% growth per annum
- The current PMA penetration rate (of total MRO material) will increase from 1.7% to 1.8%

Forecast in 2013 USD, exclusive of inflation
Source: ICF SH&E

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Thank you!

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