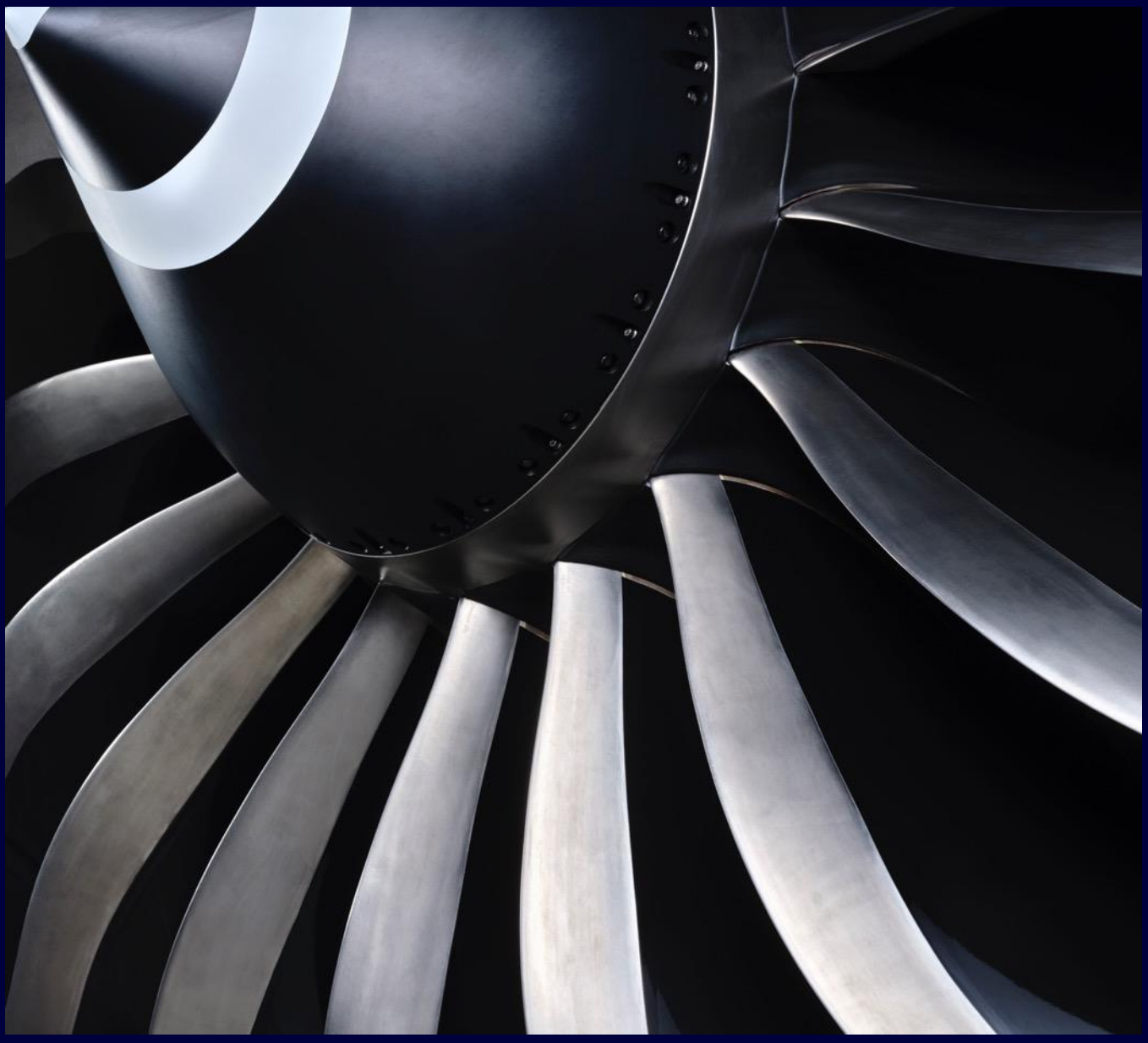
GE Aerospace

Edited Transcript

GE Aerospace Investor Update & 2Q'25 Earnings Call



CORPORATE PARTICIPANTS

Blaire Shoor GE Aerospace - Head of Investor Relations

H. Lawrence Culp GE Aerospace - Chairman of the Board, Chief Executive Officer

Rahul Ghai GE Aerospace - Chief Financial Officer, Senior Vice President

CONFERENCE CALL PARTICIPANTS

Scott Deuschle Deutsche Bank AG - Research Analyst

Myles Walton Wolfe Research LLC - Analyst

Sheila Kahyaoglu Jefferies LLC - Analyst

Douglas Harned Sanford C Bernstein & Co LLC - Analyst

Scott Mikus Melius Research LLC - Equity Analyst

Seth Seifman JPMorgan Chase & Co - Analyst

Gavin Parsons UBS AG - Analyst

Ronald J. Epstein Bofa Merrill Lynch Asset Holdings Inc - Analyst

David Strauss Barclays Services Corp - Analyst

Gautam Khanna Cowen and Company LLC - Analyst

Jason Gursky Citi Infrastructure Investments LLC - Analyst

Ken Herbert RBC Capital Markets Inc - Analyst

Noah Poponak Goldman Sachs Group Inc - Analyst

PRESENTATION

Operator

Good day, ladies and gentlemen, and welcome to the GE Aerospace investor update and second-quarter 2025 earnings webcast. (Operator Instructions) As a reminder, this conference is being recorded.

I would now like to turn the program over to your host for today's conference, Blaire Shoor from the GE Aerospace Investor Relations team. Please proceed.

Blaire Shoor - GE Aerospace - Head of Investor Relations

Thanks, Liz. Welcome to GE Aerospace's 2025 Investor Update and 2Q '25 Earnings Call. I'm joined by Chairman and CEO, Larry Culp; and CFO, Rahul Ghai. Today, we will be sharing an update on our second-quarter 2025 results, financial guidance for 2025, and outlook for 2028, followed by a Q&A session.

As usual, many of the statements we're making are forward looking and based on our view of the world and our businesses as we see them today. As described in our SEC filings and website, those elements may change as the world changes. Additionally, Larry and Rahul will speak to total company and corporate financials as well as our guidance and outlook on a non-GAAP basis.

With that, I'll hand it over to Larry.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thanks, Blaire, and we appreciate everyone joining us today.

The GE Aerospace team is guided by our purpose to invent the future of flight, lift people up, and bring them home safely. At any given moment, nearly 1 million people are flying with GE Aerospace technology under wing. That is a significant responsibility that our 53,000 employees carry with great pride. We use FLIGHT DECK, our proprietary lean operating model, to continuously improve safety, quality, delivery, and cost, always in that order, as we strive to provide unrivaled customer service and deliver our roughly $175 billion backlog.

Before we dive in further, I want to acknowledge the tragedy of Air India Flight 171. We extend our heartfelt sympathies to the families and loved ones of those who lost their lives. Since June 12, our focus has been and remains on supporting our customers and providing technical support to the regulators.

While we were looking forward to a broader update with you in Paris, Rahul and I are here today to share our second-quarter results and our increased outlook. We'll create additional opportunities later this year to share more of the operational details we expected to cover with you in Paris.

Turning to the next slide, safety is and always will be foundational to everything we do. Through decades of experience, learning, and continuous improvement, we've built our reactive, proactive, and our predictive safety processes. GE Aerospace was the first manufacturer to have its Safety Management System, or SMS, accepted by the FAA. We established our SMS a decade before the agency proposed requiring it. The system encourages our employees to report safety concerns voluntarily and ensures that they are thoroughly evaluated.

SMS, together with our quality management system, are the foundation of our safety culture, while our approach to continuous improvement helps us drive safety up the value chain. FLIGHT DECK further standardizes our own processes to support safety investigations, leading to identifying corrective actions faster.

We're also enhancing engine inspections to begin at the part level, extend through manufacturing, and continue into the aftermarket. And now, we're deploying AI-enabled tools to further improve inspection accuracy and consistency, helping to predict potential safety threats. Everyone at GE Aerospace owns safety, and we never compete on safety.

Turning to slide 5. GE Aerospace is an exceptional franchise. As a global aerospace leader in propulsion, services and systems, we're well positioned to benefit from favorable long-term market trends across both commercial and defense.

Our Commercial Engines & Services business, or CES, is servicing and growing the industry's most extensive commercial install base. We're proud to be underwing on three out of every four commercial flights, demonstrating our unmatched scale and scope across the world's most successful and innovative aircraft platforms.

Our Defense & Propulsion Technologies business, or DPT, powers two-thirds of all US military combat and helicopter fleets. DPT offers both the leading defense programs of today while developing mission-critical technology for the future.

Let's take a closer look at GE Aerospace today. As the industry's largest and growing engine fleet, our business model is highly resilient, largely due to our balanced exposure across narrowbody, widebody, regional, and defense platforms.

CES has more than 49,000 engines in service and growing. In 2024, we delivered a particularly strong year with $27 billion of revenue, growing 13%, with robust services, demand and performance supporting higher profit. About half of our revenue comes from narrowbody platforms, while widebody represents 35%.

In DPT, we have more than 29,000 engines in service. 2024 was a solid year with nearly $10 billion in revenue, up 6%, and profit up double digits. Our Defense & Systems business accounts for roughly two-thirds of DPT revenue, including over 70% of revenue from US customers and around

30% internationally. Propulsion & Additive Technologies represents the remaining third with exposure to commercial programs and localized European defense capabilities.

Notably, 70% of our total revenue comes from recurring, predictable, and highly profitable services, including three quarters of CES revenue and more than half of DPT revenue. This represents a significant growth opportunity as our commercial install base continues to grow at a low-single to mid-single-digit compounded annual growth rate through the end of the decade. Services also enable us to live the customer experience and strengthen our relationships, seeing and hearing their needs firsthand while shaping our product roadmaps to ensure alignment with their future priorities.

Turning to slide 7. Given macroeconomic dynamics, we're watching demand near term. This quarter, departures grew nearly 4% in line with our expectations. For 2025, we're still planning for low-single-digit departures growth, taking a more conservative view on the second half.

Broadly speaking, we support promoting free and fair trade, including the duty-free environment that has long fueled the US aerospace sector, leading to more than 1.8 million US jobs and a $75 billion annual trade surplus. We commend the administration for the US-UK trade deal, eliminating tariffs on the aerospace sector, and view this deal as a strong framework for future trade agreements.

Longer term, GE Aerospace is operating from a position of strength. Our robust orders over the last several quarters have increased our commercial services backlog to now over $140 billion, supporting growth for years to come.

Across the commercial sector specifically, we see strong fundamentals. Air traffic growth is expected to outpace global GDP, especially in Asia-Pac and the Middle East. And new aircraft builds and airline expansions remain healthy, supporting the growth of our installed base.

On the defense side, we see solid momentum globally toward modernization and localization. Domestically, we're pleased that the reconciliation package includes funding for key defense propulsion initiatives with more than $1 billion for six-generation aircraft programs.

Internationally, we're expecting faster growth than in the US, largely in response to rising global tensions and the evolving geopolitical landscape. Overall, we expect the market to grow at a mid-single-digit compounded annual growth rate through 2028, reaffirming our strong trajectory.

Moving to slide 8. Our vision is clear: to be the company that defines flight for today, tomorrow, and in the future. For today, we're ramping up services and equipment to support our customers' fleets while fulfilling strong demand for new engines. For tomorrow, we're expanding capacity and capabilities to deliver on while growing our backlog. This includes expanding our supply chain and service networks and investing in technologies to further enhance engine performance. And for the future, we're building the technological foundation that will define the future of flight across both commercial and defense.

FLIGHT DECK is a systematic approach to running our company, translating strategy into outcomes while advancing our culture. Let me share here a few examples of FLIGHT DECK in action to support our multi-year services and equipment ramp.

Earlier this year, we launched the new Technology & Operations team to hardwire and accelerate the FLIGHT DECK enhancements we made last year, often in partnership with our suppliers. The team is providing greater stability and transparency to our demand signals and stronger collaboration to help identify and then break constraints. This helps our suppliers deliver today while investing to support the ramp in the future.

We're also removing waste within our own operations with a focus on improving output and turnaround times. Take our largest MRO site in Celma, Brazil, which is responsible for 25% of our global volume. Here, the CFM56 fan module has been the key constraint to reaching our turnaround time target. A cross-functional team used value stream mapping and implemented flow lines to reduce lead time by over 30%. Now, CFM56 turnaround time at Celma is below 80 days.

Additionally, our recently deployed AI-enabled blade inspection tool is improving inspection accuracy and consistency, while we're reducing inspection time by roughly 50%. Improvements like this are driving turnaround times closer to 90 days for GEnx and CFM56 in our larger shops. That said, we have more work to do on our other platforms.

And finally, we're expanding capacity with the LEAP installed base expected to roughly triple and GEnx to roughly double by 2030. We're growing our elite third-party MRO network which includes six premier partners. In this quarter, we saw significantly higher third-party LEAP shop visits.

Additionally, last year, we announced we'll invest more than $1 billion in our MRO and component repair facilities over the next five years. We've added XEOS in Poland, in partnership with Lufthansa Technik, to our MRO network, which inducted its first LEAP engine earlier this year. And we're investing more than $1 billion across our US factories and supply chain infrastructure to support growth. Overall, we expect to grow internal and external capacity by approximately 40% by the end of the decade.

The impact of FLIGHT DECK and our Technology & Operations team combined is delivering better operational outcomes with substantial momentum. In the second quarter, material input at our priority supplier sites was up 10% sequentially. Stability also continued to improve, with suppliers delivering more than 95% of committed volume, up nearly twofold versus early last year. This contributed significantly to second-quarter output.

CES services revenue was up nearly 30% year over year, supported by internal shop visit revenue up more than 20% and spare parts revenue up over 25%. Total engine deliveries were up 45%, with commercial up 37%, including LEAP up 38%, and defense up 84%. And through the first half, we've delivered 12% growth in commercial units, including LEAP up 10% and 37% growth in defense deliveries.

Overall, material input improvement has resulted in higher inventory as we accelerate output and grow LEAP deliveries 15% to 20% here in 2025. But I do want to pause here and just thank our teams and our suppliers who are working hand in hand to deliver for our customers both near term and longer term.

We move to slide 11. We've won some sizable deals so far in 2025. I'd like to highlight a few. Qatar Airways announced a significant expansion of their fleet with a deal for over 400 GEnx and GE9X engines, marking the largest widebody win in GE Aerospace history. IAG announced an agreement for 32 Boeing 787 aircraft powered by GEnx for British Airways. This further builds upon our growing backlog for GEnx, and our life of program win rate now stands at 75%.

And in defense, the US Air Force awarded a $5 billion contract for our F110 engines to meet the evolving needs of allied operators. Today, we have more than 1,600 commercial and defense engines in backlog, and we're effectively sold out through the rest of this decade.

Turning to slide 12. GE Aerospace is a business with tremendous competitive advantages built on decades of experience and significant investment. With the world's largest installed base of engines, we've accumulated over 2.3 billion flight hours, providing us with unmatched insights on performance, opportunities for improvement, and future breakthroughs. Add to that our R&D investment of approximately $3 billion in 2025, or 6-8% of revenue per year, we're well positioned to enhance our foundational and current generation platforms while inventing the future of flight.

Here's a specific example, composite fan blades, a technology that only GE Aerospace and our partners have in service today. Compared to traditional metal blades, these lighter and stronger fan blades were first introduced on the GE90. Now, with over 140 million flight hours on more than 2,500 engines in service, these blades are helping us deliver industry-leading departure reliability.

Our experience with the GE90, along with GEnx and LEAP, has informed the GE9X development with fourth-generation composite fan blades. These blades contribute to the platform's overall performance with enhanced durability and fuel burn.

And finally, we're designing composite fan blades for the CFM RISE program, combining 30 years of experience with continued investment to help deliver the next step change in durability and efficiency. More on that in a moment, but let me first share with you how our current generations of engines is ramping with customer needs in mind.

Looking at slide 13. Durability and reliability are the top priorities to ensure consistent performance for our customers. Leveraging our experience over multiple product generations, we're maturing technologies to deliver meaningful durability gains.

Take the GEnx for example. We launched the platform back in 2011 and released our durability package back in 2021. This resulted in a more than 2.5 times increase in time on wing, supporting increased utilization. Today, the fleet leader in hot and harsh environments is approaching 4,000

cycles and still running. This means customers are keeping engines on wing about five years between shop visits and even longer in neutral environments. This has been a differentiator for us in the marketplace, underpinning our 90% plus win rate since 2023.

Through our hot and harsh experience here, we've refined durability testing to replicate dust challenges, innovate effective fixes, and validate them. And we're the only engine manufacturer able to leverage this extensive widebody experience for narrowbody engines, which has accelerated the LEAP learning curve, getting to mature time on wing faster.

The LEAP-1A durability kit released late last year that includes the upgraded HPT blade and is now incorporated into all LEAP-1A deliveries and shop visits. This will improve time on wing by more than twofold, matching our industry-leading CFM56 performance.

Next up, we're working with Boeing to certify the LEAP-1B durability kit in the first half of 2026. But we haven't stopped there. As we tested the upgraded HPT blade, our teams, leveraging FLIGHT DECK, found further design improvements which are already certified and set to enter production in the second half of 2025, further enhancing HPT blade producibility. These durability enhancements have supported a win rate of over 70% on the A320 family since 2023.

Turning to slide 14. We're also using our experience to enhance new engine platforms before they enter service. Starting with the GE9X, the most tested engine in GE Aerospace history, with more than 30,000 cycles, the equivalent of six years of commercial flying. Drawing on our GEnx and LEAP experience, this is the first time we've completed dust testing prior to launch, which has informed product enhancements, such as the second iteration of the HPT blades. Importantly, we're ensuring that the GE9X is as close to maturity as it can be at launch.

We're also progressing the CFM RISE program, our most ambitious and transformative technological effort underway. To date, we've completed over 350 program tests with an early focus on durability. This includes advancing new HPT blade cooling technology and testing full-size fan blades, along with more than 3,000 endurance cycles.

And earlier this year at the Airbus Summit, we outlined our vision for the future of propulsion with Open Fan technology. Airbus and CFM teams continue to work together on engine and airframe integration as we look forward to engine ground level and flight test this decade. Big picture, we're continuously applying learnings and improving durability to advance new programs, ensuring we deliver the best performing engines for our customers.

Spending another moment on CFM RISE, which will be a game changer for customers, prioritizing safety, durability, and efficiency. Looking at the Open Fan architecture, first, on safety. Leveraging our experience with composite fan blades, the Open Fan will spin slower at one-sixth the speed of a traditional jet engine. This helps provide a safe flying experience even without a nacelle, and we also expect will result in a quieter engine than today's LEAP.

Turning to durability. RISE's Open Fan architecture gains efficiency through the fan system rather than the core. This reduces the need to push the core to higher temperatures as much as a ducted engine, a key driver of today's engine removals.

And finally, efficiency. Our customers need at least a 20% reduction in fuel burn to support investments in next-generation technology. In our view, the Open Fan is the most promising path to accomplish this step change in efficiency.

When it comes to delivering greater durability and fuel burn, we won't compromise on either, as we recognize both are critical for our customers. With RISE, we believe we can accomplish the genius of the end, meeting customer needs for durability and delivering fuel efficiency.

Turning to slide 16. We're pursuing similar generational advancements in military propulsion. In the US, we completed testing on the XA100 adaptive cycle engine, demonstrating significant gains in thrust and range. Building on that success, we're now progressing to the XA102, aligned with the US Air Force's Next Generation Adaptive Propulsion, or NGAP, program.

Importantly, earlier this month, Congress funded $750 million for the F/A-XX through the reconciliation bill in the coming years. And the US Navy recognized its need for a sixth-generation fighter as the only platform capable of delivering the combination of range, stealth, advanced sensors,

and standoff capabilities necessary to operate across mission sets in highly contested environments. We stand ready to deliver and encourage the Pentagon to move forward with this important program that Congress has already funded.

Through Avio Aero, we represent Italy as an equal propulsion partner with the UK and Japan in the global Combat Air Program, a next-gen indigenous European fighter. We're actively investing to support a targeted 2035 entry into service. And at the same time, with Kratos, we're advancing propulsion technologies for affordable unmanned aerial systems by the end of the decade. And to accelerate development of advanced hypersonic propulsion systems, we recently announced significant investments in our test infrastructure at select manufacturing sites, enabling us to conduct higher mission-relevant testing.

Inventing the future of flight has always motivated the GE Aerospace team. We're building upon our leadership positions across both defense and commercial.

Shifting to the outlook on slide 17. Rahul will cover the second-quarter results momentarily, but so far in '25, we're off to an excellent start, enabling us to raise both our near- and longer-term outlook. For 2028, we're raising our outlook for profit and free cash flow by $1.5 billion versus our prior view, driven by strong operating and commercial services performance. We expect to sustain strong adjusted revenue growth at a double-digit compounded annual growth rate, which will be supported by robust demand for services and equipment.

We expect to drive meaningful operating leverage over that period, with adjusted EPS reaching at roughly $8.40. Operating profit is expected to reach $11.5 billion, with margins expanding to more than 21%. And we expect to generate substantial free cash flow of roughly $8.5 billion, with conversion around 100%. All in, this represents operating profit growth of more than $3 billion compared
to our updated '25 guide, driven by commercial services. We're well positioned for continued value creation for years to come.

Let me pass it here over to Rahul.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Larry, thank you, and good morning, everyone.

Starting with the results, we had a strong second quarter, with improvement across all key metrics. Orders were up 27%. Revenue was over $10 billion, up 23%, with CES growing 30% and DPT up 7%. Profit was $2.3 billion, up over $400 million, or 23%, driven by services volume and price, which supported margins reaching 23%. EPS of $1.66 was up 38% from profit growth, a favorable tax rate, lower interest expense, and a reduced share count. Free cash flow was $2.1 billion, nearly doubling over last year.

Looking closer at our businesses. CES delivered an excellent quarter, with demand remaining robust. Orders for services were up 28%, and equipment was up 26%. Continued demand, combined with material input improvement, drove meaningful revenue growth.

Service revenue was up 29%, with spare parts revenue up more than 25%, from higher volume and price. This included strong CFM56 shop visit growth and higher LEAP third-party shop visits. Internal shop visit revenue grew more than 20% from higher output, increased workscopes, and price. This included LEAP internal shop visit volume growth of over 20%. Equipment revenue grew 35%, with spare engine ratio down sequentially and year over year, as expected.

Profit was $2.2 billion, up 33%, primarily from services volume. CES margins expanded 50 basis points to 27.9%.

Moving to DPT. Higher output supported a solid quarter. Orders were up 24% year over year, with defense book-to-bill of 1.2x. Revenue grew 7%, with Defense & Systems up 6% and Propulsion & Additive Technologies up 9%. Profit was roughly $360 million, up 5% on a tough compare. Volume, productivity, and price more than offset self-funded next-gen investments and inflation. Margins declined 20 basis points to 14.1%. At the mid-year mark, we've delivered high-teens revenue growth, $1 billion of operating profit growth, and nearly $800 million of higher free cash flow.

Given the strength of our first-half results and our expectations for remainder of the year, we are raising our 2025 guidance across the board. We now expect total revenue growth of mid-teens, up from low double digits. With the absence of reciprocal tariffs in China thus far, we are currently seeing reduced risk for spare engines and spare part deliveries. And material availability is improving, supporting higher spare parts growth. Therefore, we are increasing revenue growth expectations for commercial services to high teens and commercial equipment to high teens to 20%. This supports total CES revenue growth of high teens. Our DPT expectations are unchanged from mid to high-single-digit revenue growth.

For total operating profit, we now expect to be in a range of $8.2 billion to $8.5 billion, up $350 million at the midpoint versus our April guide from improved services outlook. And we now expect adjusted EPS of $5.60 to $5.80, growing over 20% at the midpoint year over year, reflecting higher operating profit and a reduced tax rate.

Additionally, as we shared in April, high-teens tariffs are resulting in additional costs for us and our supply chain. We are continuing to make progress on our operational plans to reduce the impact. Assuming that reciprocal tariffs are implemented after the current pause, we still expect the net impact of tariffs to be roughly $500 million in 2025, which we are offsetting through cost controls and pricing actions.

We now expect free cash flow to be in a range of $6.5 billion to $6.9 billion, up from $6.3 billion to $6.8 billion, driven by our improved profit outlook. With this raise, we expect to grow operating profit by over $1 billion for second year in a row, with free cash flow conversion remaining solidly above 100%.

Now, as we look at the longer-term outlook on slide 20, win rates continue to be strong. Backlog is at record levels. We are making operational progress to improve durability and delivery, and defense spending remains resilient. With this backdrop, we are expecting that the improvement in '25 guidance will carry through to our '28 outlook.

Starting with revenue, we now expect double-digit growth on an annualized basis between '24 and '28. The main drivers will be growth in commercial install base, largely from LEAP and GEnx, and increase in workscopes as our fleets mature, supporting 25% growth in widebody revenue per shop visit, favorable mix in defense, with rising international defense shipments, mid-single-digit growth or low single-digit net price increases for spare parts catalog list price.

Higher revenue will support double-digit profit growth, with profit reaching approximately $11.5 billion in '28. This growth, plus benefits from share buyback and a lower tax rate, will drive mid-teens EPS growth. And we expect to convert 100% of net income to free cash flow, reaching roughly $8.5 billion of cash by '28. Our updated outlook from profit and free cash flow both represent a raise of $1.5 billion versus our prior outlook.

On slide 21, looking closer at our profit growth drivers between '25 and '28. Starting on the left, at our new '25 profit midpoint of $8.35 billion, the most significant driver of profit growth will be nearly $8 billion of commercial services revenue growth between '25 and '28. This will be partially offset by a mid-teens increase in equipment revenue, including higher LEAP and GE9X shipments, and the normalization of spare engine ratio. We expect incremental GE9X losses of a few hundred million dollars in '28 versus '25, given higher volume.

DPT revenue growth of mid-single digits at improving margins will also contribute to profit growth. Given ongoing supply chain constraints, we expect material inflation to stay elevated, but pricing actions should more than offset that impact. And we're leveraging FLIGHT DECK to drive 2 points of gross productivity annually, as we reduce waste by lowering the non-productive and overtime in our
shops and increase output per employee. At the same time, we're stepping up R&D investments to improve LEAP durability, support the GE9X ramp, and advanced technologies supporting the future of flight.

Overall, these actions will add more than $3 billion of profit between '25 and '28. And despite the introduction of a new widebody platform and significant new product ramps, double-digit annualized growth in services will support margin expansion.

So let's unpack commercial services revenue in slide 22. As you can see, both narrowbody and widebody are well positioned to deliver sustainable growth. Today, CFM engines power approximately 75% of industry's narrowbody flights. This share continues to increase, as our LEAP fleet is expected to grow roughly 3x by 2030.

Narrowbody revenue is exceeding our prior expectations, driven by LEAP growth and the extended longevity of CFM56 fleet. As a result, we now expect narrowbody revenue to grow at a low-double-digit CAGR and '28 revenue to be approximately 15% higher than our expectations last March.

Our widebody business remains a significant differentiator. We currently power more than half of industry's departures. We expect to maintain this position with GEnx doubling its install base by the end of the decade and continued utilization of GE90 fleet and the introduction of GE9X. We anticipate widebody services revenue will grow at high-single-digit CAGR through 2030, including GEnx at a low-double-digit CAGR. Taken together, the strength of our foundational fleets, combined with our install base growth, supports the annualized double-digit services revenue growth.

Moving to slide 23. On commercial services revenue growth and how that will translate into significant profit improvement, narrowbody profit is expected to rise over 70%, primarily from LEAP, with CFM56 continuing to contribute meaningfully. And by the end of the decade, we expect LEAP and CFM56 profit to reach parity, reflecting the maturity and the scale of the LEAP program.

Widebody profit is expected to grow more than 40%, supported by installed base growth and higher workscope shop visits for both GE90 and GEnx. We also expect contributions from productivity, pricing, and favorable mix as external shop visits increase. And even with LEAP shop visit volume growing at a 25% CAGR through 2030, we expect CES Services margins to stay at current levels as we
are offsetting the impact of LEAP with better performance on other platforms. Altogether, we expect services profit to grow over 50% between '24 and '28, with contributions from both foundational and current generation programs.

Going deeper into the outlook for our foundational fleets on slide 24. Currently, approximately 40% of CFM56 fleet has yet to undergo a first shop visit, and a majority of the operators anticipate keeping these engines in service well into 2030s. This sustained demand is resulting in fewer retirements. We expect retirements of around 1.5% in 2025, rising to 2% to 3% percent in '26, before normalizing at 3% to 4%.

Increased shop visit activity, which we expect to peak in '27, with approximately 600 additional shop visits through '28 compared to our outlook last March, and we expect a gradual decline in volume post '27 to roughly 2,000 shop visits by the end of the decade. With this shop visit outlook, we expect CFM56 revenue peaks in '28, underpinned by increased workscopes and pricing.

We are seeing similar dynamics with GE90. Continued strong demand for freighter aircraft, coupled with a more gradual widebody production ramp, is extending the services demand across this fleet. We now expect internal shop visits for GE90 to grow to '28, representing approximately 100 incremental visits compared to our outlook last March. And as a reminder, widebody shop visits can be more than 2x the revenue of a narrowbody shop visit. So this is a significant contributor to higher revenue.

In addition, the scope for widebody shop visits typically increases by about 50% during the second shop visits. With approximately 70% of GE90 fleet yet to undergo a second shop visit, this dynamic is contributing to higher growth. Better performance from both CFM56 and GE90 is a key driver of our improved outlook compared to last March.

Another significant contributor to our profit outlook is the growing LEAP aftermarket on slide 25. Overall, the LEAP installed base will approximately triple by the end of the decade, with internal shop visits growing roughly at the same pace. Beyond revenue, we are focused on improving the profitability of services as the program matures.

Touching on a couple of ways we are improving performance. First, we expect external shop visits to grow from 10% of the total in '24 to 15% in '25 to 30% by the end of the decade. This increased volume drives spare part sales and offers a mixed benefit. Second, we expect to continue benefiting from catalog price increases. More importantly, we've significantly improved pricing in new service contracts as we move past launch. While these increases take time to materialize in the financials, higher shop visit pricing, combined with improved time on wing, will support improved services profitability.

We continue to expect approximately 70% of LEAP shop visits to be performed by CFM, split equally between our JV partner, Safran, and us. To further reduce shop visit cost, we are investing in repair technology, which typically costs roughly 50% less than new parts. This offers customer significant economic benefit while also reducing turnaround time as we do not have to wait for new material.

Year to date, we have developed over 200 new repairs for LEAP and 1,000 repairs across the Commercial Engines business. Our goal is to more than double the number of LEAP-specific repairs by '28. For context, we've developed nearly 3,000 repairs over the lifetime of the GE90 program, and we are targeting a similar number for LEAP at maturity. These actions give us confidence that we can navigate the impact from CFM56 retirement and that LEAP will not only equal CFM56 profit by the end of the decade, but the profitability levels will continue to improve beyond that.

Now, let's turn to how we plan to continue converting this profit growth into cash. We added approximately $3 billion of inventory within '23 and '24, and our results are inventory terms declined by about 0.5 point. The majority of this increase is due to trapped inventory, material we purchased but can't yet use because we don't have all the parts needed to complete a shop visit or deliver an engine.

As material availability and stability improve, we expect inventory terms to begin recovering. We see a clear opportunity to improve at least one full turn from '24 to '28. We'll get there by reducing work in progress and raw material inventory, driven by better flow and continued implementation of a pool-based system with our suppliers.

If you look to the right-hand side of the page, you will see the growing install base and increasing flight departures are fueling strong growth in billings. Take LEAP for example. Billings are expected to grow 2.5x between '24 and '28. For GEnx, we expect 1.5x increase over the same period. Given shop visit growth, the cash flow from contract assets will not contribute at the same levels as the last couple of years, but billings growth on these contracts continues to support cash flow growth. This gives us a clear roadmap to sustain cash conversion at or above 100% through '28.

To summarize, GE Aerospace is a business with solid operational and financial fundamentals. Revenue growth will be driven by positive secular trends, our growing install base, and our best-in-class products, technology, and people. Profit growth will be driven by volume, productivity, and price, offsetting the typical headwinds associated with new product introductions. Given this strong profit and cash performance, we have ample opportunity to compound shareholder returns.

I'll now pass it back to Larry to cover capital allocation and share some closing remarks. Larry?

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Rahul, thank you. Pulling this all together on slide 27. As Rahul just walked you through, our operating performance and robust commercial services outlook underpins our increased guidance of sustainable revenue, earnings, and cash flow growth.

2024 was a strong year with approximately $1 billion more in operating profit than we had originally expected at the start of the year. In 2025, we're again performing ahead of our expectations and raising guidance across all key metrics. Compared to our 2024 Investor Day outlook, this represents an increase of more than $1 billion in operating profit. Importantly, we expect this momentum extends into 2028 with operating profit growing more than $3 billion and free cash flow growing over $1.5 billion versus '25. We're also leveraging our strong balance sheet and free cash flow generation to support mid-teens EPS growth.

With respect to capital allocation, our principles remain the same. First, we will invest in the business to support growth in current and future programs.

Next, we have a bias toward returning cash to shareholders and expect we'll return more than 100% of free cash flow to shareholders through 2026. Last year, we shared plans to return roughly $19 billion of cash to shareholders between '24 and '26 between dividends and buybacks. Now, subject to Board approval, we're increasing that to $24 billion, including about $19 billion of buybacks and roughly $5 billion of dividends at roughly 30% of net income. This is 20% higher than what we discussed a year ago. Beyond 2026, we expect to return at least 70% of free cash flow annually through a combination of dividends and buybacks.

Finally, we're open to opportunistic bolt-on M&A with a high threshold for strategic, operational, and financial fit. We believe this balanced and disciplined approach best supports our goal of compounding long-term shareholder returns.

And to close, on slide 29, our strong operational and financial foundation supports our increased outlook and our sustained competitive advantages will propel us to new heights. We have a diversified fleet of preferred platforms across the narrowbody, widebody, and defense sectors.

What we do and how we do it matter. Front and center are safety, quality, delivery, and cost, always in that order. Our services and technology offer industry-leading operational reliability, including greater efficiency, extended time on wing, and faster turnaround times.

We serve the industry's largest fleet of 78,000 engines with unrivaled customer service and flight support. This keeps us close to our customers through decade-long life cycles, building meaningful relationships, and making us the partner of choice. Our talented engineering teams continue to develop breakthrough innovation to support our existing fleet and advanced next-generation technology. And finally, FLIGHT DECK supports us in delivering results and lasting value for our customers and shareholders.

So we're still far from reaching our full potential, yet we couldn't be more optimistic about our path ahead. We appreciate you joining us for this extended call on both the quarter and our revised outlook.

So with that, I'll throw it back to Blaire for questions.

Blaire Shoor - GE Aerospace - Head of Investor Relations

Before we open the line, I'd ask everyone in the queue to consider your fellow analysts and ask one question so that we can get to as many people as possible. Liz, can you please open the line?

QUESTIONS AND ANSWERS

Operator

(Operator Instructions) Scott Deuschle, Deutsche Bank.

Scott Deuschle - Deutsche Bank AG - Research Analyst

Hey. Good morning.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Good morning, Scott.

Scott Deuschle - Deutsche Bank AG - Research Analyst

Rahul, the high end of the 2025 guide implies second-half EBIT nearly $500 million lower than the first half. But over the last few years, the second-half EBIT has actually been trending around $400 million higher than the first half. So your guide essentially has nearly $1 billion spread versus the seasonality you've demonstrated over the last few years. I understand there's this GE9X headwind this year, but it is a very stark difference versus typical earnings cadence. So I'm just wondering if you can reconcile that second-half EBIT decline for us. Thank you.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Yeah. Scott, let me try, and Larry, please jump in here.

So Scott, first, we're having a good year, raised the revenue growth expectations from low double digit to mid-teens. So about $900 million of increase in revenue at the midpoint with about $350 million of profit increase at the midpoint versus April. So we had a better second quarter than we expected.

But if you look at a $350 million profit increase, it is split between what our overperformance in the second quarter and raising our expectations for the second half of the year. So the first half, second half thing, we expected a strong start to the year this year, and we've been striving to have a more linear year than we did in '24, just given the OE ramp in second half of the year, including 9X shipments that we expected a couple of million dollars of headwind versus the prior year, and also expected a lower spare engine ratio in the second half. And then the corporate expenses also typically step up in the second half of the year. And you can see that in the corporate expenses in the first half versus what we are projecting for the full year. And then there's an R&D step-up between the first half and second half as well.

And these expectations around all these factors have not changed from where we were back in April. But also, we are maintaining some conservatism around departures that Larry mentioned in his prepared remarks, which impacts our expectations for spare part sales in the second half. And even with that, we're kind of expecting a mid-teens services revenue growth in second half.

But if you look at all of that, we should still see strong year-over-year profit growth in the second half at the midpoint of the guide. And overall, we feel better about the year than we did back in April. And if you step back, it should be another year of more than $1 billion of profit growth and $1.25 billion at the high end.

Scott Deuschle - Deutsche Bank AG - Research Analyst

Thank you.

Operator

Myles Walton, Wolfe Research.

Myles Walton - Wolfe Research LLC - Analyst

Thanks. Good morning. Good presentation. I wanted to touch on two assumptions, if I could. One is the pricing assumption through 2028, 2024 to 2028, and the low-single-digit assumption there. What would that imply for the go-forward period, '26 through '28? It would seem like it would imply no pricing.

And then on the retirement step-up to 3% to 4%, can you just give us some baseline as to -- for the last decade, CFM56 has been running about 1.5%. Is there a prior period where you'd put this as similar, where you'd have that quick of a step-up in retirement rates?

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Myles, maybe I'll speak to price and Rahul can take retirements.

Yeah, I think if you just step back for a moment, I think you know well our pricing philosophy. We make significant investments in next-generation platforms, obviously provide a lot of value to our customers while taking on considerable risk. So we really try to price more broadly with appropriate returns around those commitments in mind.

I think the way we've looked at price here is really to have price more than offset inflation in '25 between what we're doing in CES services, call it up at a mid-single-digit level on a net basis. That includes spare parts, where in some instances we might do a little bit better than that. It's really

dependent on which program we're talking about. But I think as we look forward, we're probably looking at something on a mid-single-digit basis at a gross level, low-single-digit on a net basis, at least with respect to spare parts.

But also keep in mind that as we move past launch, I think Rahul touched on this in his prepared remarks, we anticipate to see better pricing dynamics. And fundamentally, it's all about moving beyond launch. LEAP is well into the life cycle now. But it does take time to see that fall through, typically, call it, eight years thereabouts, post an agreement to really see that in the P&L. So a lot of volume here, workscope expansion in a number of areas, a little bit of price, that's how you get to that double digit top-line number that we're looking at between now and '28.

Yeah. Rahul, did you want to talk to retirements?

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Yeah, I can talk retirements. So Myles, you're right. I mean, the last couple of years have been really low. I mean, even this year through the first six months of the year, retirements for CFM56 have been running below where we were in '24. And if I remember correctly, '24 was below '23.

So the retirements have been trending extremely low. But as you would expect that, as the fleet ages, this should pick up, and that's been our expectation. And now we've been proven wrong on that one before. But ultimately, what it comes down to is what do you expect in new aircraft deliveries and where you expect departure growth to be.

So what's built into our assumptions is that both Airbus and Boeing kind of reach their stated goals over the next couple of years, three to four years. And as those -- and if you add up what Airbus aims to deliver and you add up what Boeing aims to deliver, that leads to about a 6% to 7% increase in installed base growth, over where 19,000 to 20,000 narrowbody aircraft that are flying today. And then you say, okay, the departures, we expect the departures to be up, call it 3% or so, low single digits, and you can say 3% to 4%.

So that gets us to our ratio of 3% to 4% somewhere in that zone. Now, we don't have a precise insight into that number, but I think we decided, Myles, so that everybody understands our fundamental assumptions going into what we are projecting for CFM56 shop visits, because that's the fundamental driver of where the shop visits are going to be and the number that we will see. So that's our assumptions.

Myles Walton - Wolfe Research LLC - Analyst

Okay. Thank you.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thank you, Myles.

Operator

Sheila Kahyaoglu, Jefferies.

Sheila Kahyaoglu - Jefferies LLC - Analyst

Good morning, guys. Thank you.

Maybe if we could talk about LEAP aftermarket profitability. It's been a major contributor to CES performance year to date. Can you talk about -- you talked about profits equal in the 2030 timeframe which, based on the revenue buckets you give, would mean margins pretty close to CFM56 levels. So if you could talk a bit about the margin profile across CSAs and external for LEAP and how that progresses today to 2028 to 2030.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

So Sheila, we have -- overall, we are very pleased with how LEAP is progressing. If you -- we are kind of hitting our key milestones here for LEAP, both on financial performance and operational performance. And the share has been higher than what we expected. So on financially, we've always targeted the program to break even this year, and that's on track. We expected OE to break even next year. That's on track. And then obviously the install base, as we said that in our prepared remarks, we expect the install base to be up 3x.

So if you look at fundamental, what are the drivers of LEAP service profitability? I would say there are a few. One, as the LEAP shop visits grow, we will leverage our fixed investments in the MRO shops at a greater rate. So the fixed cost will get utilized at a higher rate; therefore, that should help improve the profitability. The second is around price. We spoke about kind of the mid-single-digit growth, low-single-digit pricing on CLP, plus the pricing discipline that we've been driving for pricing new shop visits. So that's the second piece in the LEAP puzzle.

The third, I would say, is the growing aftermarket channel. Again, I said that earlier. So we expect about 30% of the shop visits to be external by the time we get to 2030. So that's right, the spare parts revenue stream, which is now beginning to grow as we -- in 2025, but will continue to expand. And the last piece is going to be repairs. I mean, I think we spoke about it in our prepared remarks as well. And you saw that when we were together in Celma, some initial work that we're starting to do around that. So that's the final piece.

And I think you put all that together, we are seeing good progress on LEAP service profitability in '25. And I think that will continue to improve as we get into the outer years. Profit equals CFM56 margins. I see a profit equals CFM56 dollars by 2030. And overall, I would say the LEAP service margins should start approaching our overall service margins by the time we get into that timeframe.

Sheila Kahyaoglu - Jefferies LLC - Analyst

Great. Thank you.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thank you.

Operator

Doug Harned, Bernstein.

Douglas Harned - Sanford C Bernstein & Co LLC - Analyst

Good morning. Thank you.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Good morning, Doug.

Douglas Harned - Sanford C Bernstein & Co LLC - Analyst

I'd like to just continue on that topic. Because when you look out -- first, I wanted to make sure to clarify when you said LEAP service profitability should be comparable to overall service profitability or specifically to CFM56. And then -- I guess the question I have is, you're at the very early

stages in terms of performance restoration shop visits, so a lot of the heavy work. How do you get comfortable in projecting what you know so far out five years out to really have the confidence you're going to be able to get to those margins that are like CFM56?

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Yeah. Well, so Doug, just to clarify my comment here, when Sheila asked about the service margins, and our comment was that LEAP service margins should equal overall service margins, not CFM56. So just to kind of clarify that, so they should be close to the overall service margin levels. So that's one.

Second, if you look at kind of looking at the trajectory, and I can start and Larry can jump in here, I mean, part of that is improvement in LEAP durability. If you see the improvement here that we've seen over the last couple of years, everything that we've been speaking to and driving to, we've been hitting those milestones. And obviously, LEAP-1A durability is now at CFM56 levels for everything that we are shipping now and everything that we are overhauling in our MRO shops. So that's one.

And if you look at our trajectory on GE90 or GEnx, 60% to 70% of those fleets are under a long-term service agreement, and the profitability on those programs is above our overall service profitability. So we have enough experience with these long-term service agreements that we can do this, we can do it right, we're conservative in how we model it. And with improvement in durability, that's the remaining piece of the puzzle, which we feel much better about today than we did a couple of years ago.

Larry, anything you want to add?

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

No, I think you hit it right. We try to model conservatively up front, continue to push product performance, witness the durability kit with LEAP, and make sure that we are executing not only from a safety and quality perspective, but from a delivery cost perspective. So whether it be the fixed cost leverage you talked about, the variable cost improvements we ought to get from repairs, let alone the turnaround effect we see from repairs, there are a whole host of things that help the bottom line. Put it all together, you get our outlook here at least through '28.

Douglas Harned - Sanford C Bernstein & Co LLC - Analyst

Very good. Thank you.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thank you, Doug.

Operator

Scott Mikus, Melius Research.

Scott Mikus - Melius Research LLC - Equity Analyst

Morning, Larry and Rahul. Nice quarter and good presentation.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thanks, Scott. Good morning.

Scott Mikus - Melius Research LLC - Equity Analyst

I wanted to ask a question about the new HPT blades and the LEAP-1A and LEAP-B. That should result in better margins on both just through spare part sales, but also by extending the time on wing for the CSA contracts. So I'm just wondering how long are you expecting it to take to retrofit the roughly 9,000-plus LEAPs that are already delivered? And then, as those retrofits happen, should we be expecting you to be booking favorable contract margin reviews as those retrofits ramp up?

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Scott, maybe just a couple of key markers here. Again, we received certification for the durability kit for the LEAP-1A late last year. I mean, Rahul mentioned in his prepared remarks, we're now fully in production both with new make and in the aftermarket. We're not going to go out necessarily and try to upgrade everybody overnight. That will be a multi-year process as the field of engines come in for their next shop visit. So think years, not months in that regard.

But clearly, as we talk about the LEAP installed base growing by what a factor of three between now and 2030, all of those A's will be covered. We updated the outlook here for the durability kit for the LEAP-1B, thinking about early next year. We'll go through a similar process in feathering that in both with respect to new make and in the aftermarket, and again, with respect to the fleet that's out there, upgrade those as they come in.

So you put that together, I think we are, again, encouraged with the outlook here in part because of the improved durability performance. We know that's top of mind for customers. But in turn, we also are going to have a more producible blade that is going to help us. It's already helping us on the LEAP-1A deliver better output. So part of the services revenue number, even in the quarter here, up 29%, is a function of improved supply chain performance to include but not limit it to the new HPT blade.

Scott Mikus - Melius Research LLC - Equity Analyst

All right. Thank you.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thank you.

Operator

Seth Seifman, JPMorgan.

Seth Seifman - JPMorgan Chase & Co - Analyst

Hey. Thanks very much, and good morning.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Good morning, Seth.

Seth Seifman - JPMorgan Chase & Co - Analyst

I wanted to ask about the trajectory of margin going into next year, given kind of the step-down that's implied for the second half. When we think about -- we look out at 2028 and we see something that's above where we are this year and last year, but there's a starting point potentially in the second half of this year that's considerably lower. So how do we think about how we bridge there kind of from the second half of this year kind of through '26 and then getting to that destination in '28?

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Yeah, Seth. So as we think about '26, first, there's tons of momentum coming out of '25. We spoke earlier about we've improved our revenue expectations. We improved our profit expectations. And part of that is just driven by our supply chain improvements. Part of that is driven by the macro environment being slightly better than what we thought back in April. So it's a combination of factors that's allowing us to improve our '25 outlook, and those things should continue into '26 as well.

So now, as you think about '26 specifically, we take the different pieces of our business. On commercial equipment, sufficient backlog extends multiple years, as Larry said in his prepared remarks. We kind of sold out through the end of the decade. So we're not expecting a big disruption. We expect to kind of stay the course here with improving our engine output and improving shipments.

On the commercial services side, there is some uncertainty in the environment, but it feels a lot better than it did three months ago. And more importantly, as you think about our business, our basic growth algorithm of the business has not changed on the services side, even in an uncertain economic environment. You talk about LEAP installed base growth. You talk about LEAP share of cycles being up almost 6 points versus where we were in 2023. The number of engines coming off wing, that is going to be up in '25. That's going to be up in '26. And that is irrespective of number of cycles that are going to fly now. That's just the number of cycles that have previously flown. So that is good as well. And then we're increasing the widebody workscopes, combine that with a mid-single-digit price increase. So all that gives us reasonable confidence about our service business as we think about 2026 and achieving the growth targets that we've outlined.

And on DPT, it should be steady, with nearly $20 billion backlog today. So that should be good as well. So while the economy may play a role here, I think overall we feel good.

And then in regards to your question around second half to '26, I just would not index too much on a quarter or a half because there are factors that can impact performance. Like if you look at the second half, I think we spoke earlier about corporate expenses being more skewed towards the second half, R&D stepping up here between first half and second half, same thing you take for the 9X shipments, they're all sitting in the second half versus being spread throughout the year. So I would -- as you think about run rating into '26, I think the full year is a better baseline just to normalize those things and then you project forward.

Seth Seifman - JPMorgan Chase & Co - Analyst

Great. Thanks very much.

Operator

Gavin Parsons, UBS.

Gavin Parsons - UBS AG - Analyst

Thanks, guys. Good morning.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Morning.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Good morning.

Gavin Parsons - UBS AG - Analyst

Obviously strong CES order growth in the quarter, but you still do have that conservatism in the second half of the year that you talked about. Is that informed by behavior changes from airlines or your conversations with customers, or just erring on the side of caution? And then similar question, as MAX and LEAP deliveries ramp up, are you hearing any fleet planning changes in terms of retirements from your customers? Thanks.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Gavin, I would -- to the first question, I don't think we've got a tremendously different perspective on the second half here today than we did 90 days ago. We've got a second quarter where departures were in line with the first up 4% and we watch that on a daily basis. We've said for the full year, we think we'll end up being up low single digits, which would suggest a flat, a slightly up back half. But I don't think our commentary in that regard is too far out of line with what you're hearing from the airline. Some have suggested maybe that's a touch conservative. We've been called worse. We'll take that.

I think with respect to skylines, I don't think we've seen any change in customer behavior, whether it be what we're doing with Boeing on the MAX, on the widebody platforms with Airbus, on the neo, those backlogs are real. Those annual step-ups in production are where we're focused at every turn. But we haven't really seen that evolve or change.

So in many respects, it's all -- you put that together, it's what undergirds the outlook, the improvement of the outlook for 2028. The foundational platforms are going to be used for longer, be it in the narrowbody or the widebody space. And we know we have a lot of not only demand to service, but momentum in doing so, as we think about how FLIGHT DECK is helping us improve deliveries.

I mean, anytime you print a new make engine increase of 45% year over year, you've got momentum. Again, shout out to the supply base. They're working hard, working well, working with us. But in terms of customer behavioral changes, we really haven't seen much new or different in that regard over the last 90 days.

Gavin Parsons - UBS AG - Analyst

Appreciate it.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thank you.

Operator

Ron Epstein, Bank of America.

Ronald J. Epstein - Bofa Merrill Lynch Asset Holdings Inc - Analyst

Yeah. Good morning, guys. It seems like since the Paris Air Show, the discussion around RISE has changed. It really does seem like you all feel much more confident in the technology and in the program. And in fact, your competitors trying to say, no, no, no, that won't work. And it really does seem like there's flags getting put in the ground. So I guess broadly, what makes you all feel so good about RISE today? And if it doesn't end up being an unducted fan, is there a ducted option?

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Ron, we're really looking forward to putting the full team on stage in Paris. I think everybody understands why we adjusted that original plan and are here in an abbreviated form. I'm glad you think we planted the flag. It was a flag we planted several years ago at the Air Show. But we were going to be as full-throated in Paris as hopefully we are today with respect to our confidence and our optimism about the RISE development program, technology development program, just as a reminder for everybody, and in particularly Open Fan architecture.

Why, to your first question, do we feel so good about it? I think it's really a combination of all the progress that we're making in the labs. Again, I'll underscore technology development. But we now have over 350 program tests at the module subsystem level that is not only focused on that propulsive efficiency gain we talked so much about, but also durability. And to be able to, again, leverage everything we've done, not only in predecessor widebody platforms, but narrowbody here as well, I think just sets us up to have confidence to go with this architecture.

More to come. This is a multi-year effort, ground test, flight test, all of that. But then I think when you combine that with what we're hearing from so many in the industry who understand the pivot to relying more on propulsive than thermal efficiency, we had Mohamed Ali, who runs Technology & Operations, up on stage in Toulouse just a couple of months ago, talking about the joint work we're doing with Airbus in that instance, and their own thoughts around what that next-generation narrowbody is going to require in the latter part of the next decade.

So we're all in, Ron, on Open Fan. Not to be strident about it, but really to just make sure that we're making the investments today and all the underlying technology components that are going to deliver on that next-generation narrowbody propulsion platform that the industry will need.

Ronald J. Epstein - Bofa Merrill Lynch Asset Holdings Inc - Analyst

Got it. Thank you.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thank you.

Operator

David Strauss, Barclays.

David Strauss - Barclays Services Corp - Analyst

Thanks. Good morning.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Morning, David.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Good morning, David.

David Strauss - Barclays Services Corp - Analyst

I wanted to ask a couple of questions on the OE side of things. I guess first of all, starting with 9X, the production rate assumptions that are underlying your loss forecast on 9X, if you can give us some detail there, what you're assuming for LEAP deliveries out in 2028, and then how much you think better LEAP profitability on the OE side and GEnx profitability can offset some of that incremental 9X headwind. Thanks.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Okay. I'm taking notes here, David, as I'm trying to answer the question.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

There are a few there. I think you started on the 9X and the 777X. Maybe as context, we're excited to be underway. We have started shipping engines to Boeing and are working with them, as you would imagine, on EIS. I think we're encouraged by what we hear from customers, witness the 60% win rate versus competition. We've got over 1,000 engines now in backlog. So the market really wants to see this platform, this engine come forward.

We know that at EIS, it will be the most tested engine really in the company's history. We've got over 30,000 cycles behind us now, 8,000 endurance cycles. So that's a significant test regimen. And again, leveraging what we've learned, particularly in hot and harsh environments, we've got over 1,600 dust ingestion tests that are behind us. So we continue to learn and iterate there. I think we're on our second generation of both the HPT blades and the CMC nozzles. So a lot happening in this regard.

Rahul, maybe you can hit some of the modeling assumptions, but we're excited to be underwing, and I think this is going to be a winning platform in the marketplace.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Yeah, absolutely. So on the losses, I think Larry touched on some of the trends that are underpinning this, David. We shipped our first engines to Boeing last year, and we're increasing our shipments to Boeing this year in 2025, all in the second half of the year. And these are initial shipments with kind of the highest losses. So we do expect a couple of hundred million dollars of profit headwind in '25. And that is no change to prior expectations.

Now, we're working to get the cost down. We expect to take about 30% of the cost out by the time we hit the 50th unit, another 30% out by the time we get to the 250th engine. So we'll start moving past kind of peak losses, which we expect a year after entry into service for the platform, which we're still expecting that to be in 2026.

And then as we think about the '28 guidance that we've provided, the losses per engine start to come down. But still, as since the volume is still growing, we do expect the losses to be a few hundred million dollars higher in '28 versus where we are in '25. So you're seeing kind of -- and then we move past that, and we expect the program to get profitable as we get into the 2030s. So that's our expectation of the LEAP trajectory.

I think Larry, the question on LEAP volume, if you want to take that.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Yeah. I think David was asking about '28, if I heard him correctly. Just maybe to back up for a moment, I think we're, again, encouraged by the momentum we've got not only here in the quarter, but in the half. I mean, quarter was up, new make 38% for the first half, year over year, up 10%. And I think that as we generate more momentum with FLIGHT DECK, if Safran gets past the labor disruption they had in the second quarter, and we're still confident around our deliveries for this year, we've said previously, we'd be up 15% to 20%. No change in that outlook here in '25. That puts us on a path to deliver 2,500 LEAPs in 2028.

Plenty of work to do, not only with Safran, but all of our suppliers. But that's what we're here for. And again, I think we can look at the second quarter and the first half and point to a number of signs of improving performance.

David Strauss - Barclays Services Corp - Analyst

Great. Thanks for hitting them all.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Glad we caught them all.

Operator

Gautam Khanna, TD Cowen.

Gautam Khanna - Cowen and Company LLC - Analyst

Thanks. Good morning, and nice presentation, guys.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Morning, Gautam.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thank you. Good morning.

Gautam Khanna - Cowen and Company LLC - Analyst

I was wondering if you could elaborate on the state of the supply chain. You guys have given us good updates in the past, how that's progressing, where the pinch points still are. And also, if you could just comment on your expectations of gross inflation over the supply chain inflation over the forecast period. Thanks.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Sure. Well, again, I think with the proof points that we've shared this morning, not only in terms of output, but also input, I think we're really encouraged by what we're able to do with FLIGHT DECK and as a function of this new organizational construct that we put in place earlier this year, let alone what we're seeing from an input perspective from suppliers.

I can remember vividly a year ago when we weren't necessarily getting what we needed in terms of volume, but the variability around delivery to expectations, to commitments, rather, was all over the place. And it's just hard enough to ramp, but when you don't have that visibility, that certainty, it's even harder. And that's why we call out not only the 10% sequential improvement, first quarter to second quarter, just in sheer volume that we're getting from our critical suppliers. And again, when we say our priority or critical suppliers, we're really talking about 12 companies across 18 sites. But for them to be delivering to their commitments in the 95% range just makes life a whole lot easier.

But frankly, what I'm most excited about, you don't see in these numbers. We see it day in, day out, but just the way our supply chain, our engineering, and our quality teams have come together to be quicker, to be deeper in our technical problem solving, and to have, frankly, a higher level of expectation with respect to countermeasures, both short and long term, all the while taking that to the supply base, who I think by and large would hopefully tell you outside of our earshot that they're working with a different GE Aerospace, that we're more constructive, we're more collaborative. We want to be their best customers, because we know there's no way we serve the airlines and the airframers who depend on us without having the best possible supply base in the world.

So again, a lot of proof points here. What I see qualitatively supports that all the more. But we need to do more in the second half than we did in the first half. We need to do more next year than we did this year. We'll be talking about this for a while. I don't want anyone to think, okay, well, check the supply chain box. That's done, anything but -- again, lots of proof points that suggest we're all moving in the right direction.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

And then to hit your other point on inflation, Gautam, I think it goes hand in hand with what Larry said about the continued ramp that we need to see from our suppliers. So the material delivery environment is expected to remain tight. We're not expecting that this magically gets better, and you see the ramp that we need to deliver on both on the OE side and on the aftermarket side. I mean, you think about where Boeing and Airbus, the benchmark that they are putting on in the market. And so expectations will be up 50%, 60% from where we are in terms of total aircraft output in the next three years or so.

And then you combine that with the aftermarket growth that we need to deliver on and the defense market. So we expect the supply chain environment to remain tight, and that drives a higher inflationary environment than we've seen in the past. So we are really not expecting any letoff in the inflation that we have been seeing here over the last couple of years. So we're expecting a consistent environment from where we are. And then, as we said, as we were walking through the profit drivers for '28, we are expecting that overall, given what we've outlined in pricing this morning, that the pricing will cover inflation. So that's the building blocks for the '28 profit.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

And I think as we improve those deliveries, Rahul, not only in terms of volumes, but just improved linearity. I think about the labor productivity we saw in the second quarter, I think about a number of our key facilities like Lynn that have gotten off to a very good start here in July, just with those inputs coming in at a higher level, coming in more predictably in a more linear fashion, we're just able to mitigate some of that material price inflation so much more effectively than we saw in '24 or '23.

Gautam Khanna - Cowen and Company LLC - Analyst

Thank you, guys.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Thank you.

Operator

Jason Gursky, Citi.

Jason Gursky - Citi Infrastructure Investments LLC - Analyst

Hey, good morning, everybody.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Good morning.

Jason Gursky - Citi Infrastructure Investments LLC - Analyst

Hey, Larry. I'm going to just go back to some of the comments that you made about the international defense outlook, and I think you used the word localization maybe in your words. So just kind of curious how you think the company is going to participate in the growth of European defense budgets that we're likely to see over the next decade. Do you need to find additional partners to take advantage of this growth? Do you need to make some investments, either organically or inorganically, in the region to assure that you are local enough in the views of the Europeans to take on some of this new work? Thanks.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Well, I think that with respect to Europe in particular, but even more broadly, the optimism we have around defense growth is going to be fundamentally within Defense & Systems. And it will really be around these existing programs that we've got really across the board, both in rotorcraft and in combat jets trainers as well. So those increased budgets, I think, play into our existing footprint very well. It's a little bit of what you see with the F110 agreement as well.

And frankly, those international contracts tend to be priced a bit better. They're structured more like commercial agreements than not. So we get not only the revenue, but the margin hit. Part of what we don't get to show you, I think today doing this virtually as opposed to having the team on stage in Paris, is putting the spotlight on Avio Aero, which is our native European defense position in Italy. Very strong position with the MOD there, with exposure to the Eurofighter, Eurodrone, GCAP, all of the core programs there. And they'll be a focal point for us here as we go forward.

Are we open to other partnerships, other arrangements? Of course. But frankly, we like where we are positioned today, both from a US base as well as from Avio. And know that, again, given the backlogs, I think both Rahul and I have pointed to, we're going to have a good growth trajectory on top of -- or before we get any additional major orders from any of those customers, be it again in Europe or more broadly.

Jason Gursky - Citi Infrastructure Investments LLC - Analyst

Great. Thank you.

Operator

Ken Herbert, RBC Capital Markets.

Ken Herbert - RBC Capital Markets Inc - Analyst

Yeah. Hi. Good morning, Larry and Rahul. I wanted to ask about the 15% higher revenues associated with narrowbody services through 2028. Just curious if you could parse that out a bit, and specifically from a couple of angles. One sort of sounds like much of that is CFM56. And I'm wondering if you've seen within that any fundamental change in airline spending, like greater percentage of engines, seeing a second or third shop visit, or how much of this is really just supply chain unlock and better turnaround times and your ability to obviously get better flow through?

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Yeah. It's a great question, Ken. So let me if I just step back for a second before I get into the narrowbody. What we did this morning is we improved our services outlook from where we were back in March of last year by, call it, $4 billion. And that's a combination of two things. One, we improved our expectations of growth in the future. We went from high single digit growth expectation to a double-digit growth expectation. And that's coming off a higher starting point in 2024. So you put both of them together, the services revenue are up approximately $4 billion from where we were back in March of last year.

And that is a fairly broad-based improvement in outlook, Ken. It's coming both from narrowbody and from widebody. So if you're getting into the narrowbody where you were a second ago, I think that there are kind of two things that are driving the narrowbody improvement. One, as we said earlier, we've seen 600 incremental shop visits for CFM56 between now and 2028 vs where we were back last year. So that is fewer retirements and also just the airlines keeping their fleets longer. I mean, as you see, even some of the lessors talk about it. They talk about the fact that their renewal leases add kind of close to 90%, 95% from where they were just 30% to 40% a few years ago. So these fleets are just continuing to fly longer. And that's what we're seeing.

Also seeing an increase in LEAP install base. So the LEAP install base is growing and that is driving an improvement in outlook. So the narrowbody is a combination of both CFM56 and LEAP. And the same things happening on the widebody side as well. I mean, widebody you saw, we spoke about the GE90 shop visits being 100 shop visits higher, GEnx kind of the growth in install base there. So it's the exact same replica on the widebody side. So I think it's a fairly broad-based improvement in outlook that's giving us that incremental $4 billion of revenue versus where we were in March. And overall about $8 billion of revenue growth on services between now and 2028, which is driving the profit.

Blaire Shoor - GE Aerospace - Head of Investor Relations

Liz, we have time for one last question.

Operator

Noah Poponak, Goldman Sachs.

Noah Poponak - Goldman Sachs Group Inc - Analyst

Hey. Good morning, everyone.

Rahul Ghai - GE Aerospace - Chief Financial Officer, Senior Vice President

Good morning, Noah.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Good morning, Noah.

Noah Poponak - Goldman Sachs Group Inc - Analyst

Can you hear me okay? I just landed in the airport. It's a bit noisy.

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Loud and clear. Hopefully you were on a GE engine.

Noah Poponak - Goldman Sachs Group Inc - Analyst

I was powered by the LEAP-1B. So that's a win. I wanted to ask, we've been in this world where air travel growth has been decelerating. Aftermarket growth has not. Part of that is the aging of the fleet. A lot of that is pent-up demand that's being created by part component labor availability and then the pricing that that creates, all of which you've alluded to at different degrees.

And so I wonder if you can quantify the duration of the pent-up demand. Will it take you one, two, three years to get through that? And when you built the '25 to '28 framework, are you assuming all of that pent-up demand and the price that comes with it, versus did you just assume the normal core algorithm of the fleet becomes the shop visits in a normal world?

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Well, it's a hard question to answer quantitatively. I think you touched on many of the factors that work in the business's favor and our favor. You didn't touch on our pre-share cycles, which helps lever up the underlying installed base growth. And not only are some of these foundational platforms like the CFM56 or the GE90 staying in service longer, they're approaching those higher-calorie shop visits as well, which is another positive mix effect.

But I think with respect to the outlook here, Noah, it's really, I think, looking at what we can, what we need to do to satisfy that $175 billion backlog, which is maybe the one quantitative way that catches most of what we've just touched on. And in turn, we're clearly going to be working that down over the next three years is whatever is pent up there, flushed in three years, five years, I think that's hard to tell, so many moving pieces. But again, even in this environment, to look at that backlog, to see what we're seeing on the part of customers with respect to existing fleets, let alone their skylines, their fleet plans, we come forward today with a revised update largely on the back of confidence born of that backlog in their plans.

Noah Poponak - Goldman Sachs Group Inc - Analyst

Okay. And Larry, maybe if I could sneak one in on the OE side, just since I'm last here. It's sort of an ask, but just as something specifically and singularly broken wide open in the supply chain improvement process, you sound a lot better. We see the Boeing numbers are finally clicking into the rates they've talked about, maybe even a little faster than they last said. Was there one bottleneck that's now solved? Or is this just sort of the triangulation of the many different efforts that have been ongoing?

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

No, I wish it would have been one bottleneck. We had stopped talking about this a long time ago. But it's a moving target because the volumes keep increasing, thankfully. And it's never been about one commodity, one supplier. Again, we wish it were so simple.

I think in terms of what we can control between FLIGHT DECK and our new Technology & Operations organization, we're better at deploying lean principles. And we've got an outstanding team working more closely together, deep in the organization, deep with suppliers to put those tools to

their highest and best use. And again, that's why we cite the input progress. You see that in turn in the output numbers that we've cited throughout the call here.

But more to do. So we'll be talking about supply chain again, I think, for the next several years. But I'm really encouraged and frankly proud of what our team has done. Again, a shout out to the supply base who's been there virtually every step of the way. But we all know we have this wonderful opportunity to satisfy that existing backlog while inventing the future of flight.

So we'll wrap here and we'll get back to work.

Blaire Shoor - GE Aerospace - Head of Investor Relations

Larry, any final comments?

H. Lawrence Culp - GE Aerospace - Chairman of the Board, Chief Executive Officer

Blaire, thanks. And thanks to you and the team for preparing this so well, particularly twofold now, what was going to be in Paris and here this morning.

No, I would just say that, again, we think GE Aerospace is an exceptional franchise with real tremendous competitive advantages. The updated outlook that we provided here reinforces our optimism about our path ahead. And we think we're well positioned to deliver significant value creation for shareholders. We went long today, but we really do appreciate the time you invested in the presentation and obviously your interest in our company.

Operator

Thank you, ladies and gentlemen. This concludes today's conference. Thank you for participating. You may now disconnect.
