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# The Boeing Co. (BA)

Investor Day

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## MANAGEMENT DISCUSSION SECTION

### Matt Welch

*Vice President-Investor Relations, The Boeing Co.*

Right. Good morning again. Welcome to day 2 of Boeing's 2022 Investor Conference. For those of you that are in person, I hope you enjoyed the tour and the management reception yesterday. This morning, if you go ahead to the next slide, please – this morning, we do have a full agenda. We'll do management presentations. We'll take a quick break and then we'll come back for a Q&A session with the management team. Couple of housekeeping items. Just a reminder, no photos or videos while on Boeing site.

And the next slide, please, just a reminder projections, estimates and goals we include in our discussions involve risks, including those described in our SEC filings and in the forward-looking statement. Disclaimer, in addition, we refer you to our presentation and disclosures for reconciliation of certain non-GAAP measures. And with that, I'll turn it over to Dave Calhoun.

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### David L. Calhoun

*President, Chief Executive Officer & Director, The Boeing Co.*

Thank you, Matt. Welcome everyone to Renton to our delivery center. This is the source of all truths. If you want to know anything about Boeing, our customers are here. If you walk around these offices, you'll see you'll see a tag out front for pretty much everybody in the world. They all come here, they sit here, and they wait for their deliveries. They inspect the airplanes, pretty much everything they think. And boy, has that been an interesting dialogue over the last couple of years.

But this really is, in my view, one of the greatest sources of truth in our company. I want to make a couple of introductions right up front. Might have done it last night, but it just looked a little too disheveled at the reception. I have two board members with me who have been critically important to what I'll refer to as a turnaround, come back, assign whatever label you might want to assign to it through one of the most tumultuous moments in industrial history, in my view, with one of the great companies in industrial history, and that's the Boeing Company. But Larry Kellner, who is our Chairman, if you don't mind standing up for a second, he weathered that storm and he's done a remarkable job of reconfiguring the board.

I want to mention to you just a few, because I don't want to miss it. We've had seven new members of our board. All value-added, folks. Steve Mollenkopf. Mollenkopf was the first and this is all sort of that post-MAX moment an engineer's engineer smart interfaces with all of our technical programs Admiral John Richardson oversaw the naval fleet. All things nuclear in the submarine area, all things safety. They have to be great. They have been great. The record is superior. Lynne Doughtie, who joined us from KPMG and who sits on our board and the audit committee and has been a real value-add. Akhil Johri, former UTC CFO, long aerospace history. Lot of experience, runs our audit committee and does it incredibly well. David who I view as the single best propulsion guy on the planet, the best. He joined us and he leads our safety committee. He has history with safety in every way you can imagine on one of the most if not the most critical component on an airplane. He has been involved and he's retired. So we get him mostly full time. General Stayce Harris, she's a pilot both in the National Guard and then a long career at United. She knows the Boeing equipment, knows the airplanes, knows the cockpit, an incredible talent an incredible talent in every way and keeps everyone informed. And then most recently, David Gitlin, of course, runs a very successful company, at Carrier, but has real deep roots in his time with Raytheon and UTC. He knows this industry, knows it well. He's a member of the safety committee. And again, we did what we

think the governance world asked us to do, which is to populate this board with people who really know this industry and have depth and are willing to get their hands dirty. And so far, I can testify that that's been the case. So anyway, thank you, gentlemen. Glad you're with us.

Why now? Why would you do this? Supply chains are in turmoil. The Fed's going to launch another increase in maybe an hour or two. World seems to want to get tougher. Why would you do it? Well, in my discussions with all of you since the day I started this first quarter of 2020, I heard two themes. Some articulated it in different ways, but it was pretty much the same. You got to relieve the risk. These are huge. They're enormous. Many referred to them as existential. And I would too.

Retire the risks. Get to a moment where you can get back to normal, back to where you were, stable deliveries. That's what we want, particularly here at BCA. We know and we understand what the cash flows are that are attached to that moment. That's what we want you to do. That's what we're going to attempt to tell you, the timeline, how we plan to get there and why now, I feel like we've mitigated these existential moments that we've had to face.

I make a couple of – I've been told by my team, don't get emotional, be clinical, so I'll do my best. January of 2020, after a December decision which led to a leadership change and the stoppage of our production line on the MAX, we sat with 450 airplanes on the tarmac that were finished with 385 on our customers' tarmacs that could not be used in revenue service. These are huge numbers, annual rates of production, a large part that we would have to sort of rally ourselves to get back into the air. And you think that's a big risk, except there was one bigger one and that was, would the MAX ever get certified? Would it get certified, because in January we had an FAA that was out there on the record publicly of saying, stop with your predictions, Boeing, stop with your predictions, the every three months. Predict, can't do. Predict, can't do. So, that was a serious moment and everybody knows it. And I call that existential number one.

Existential number two. January the 22nd of 2020, first case of COVID report in the United States. Where was it? 20 miles from where you're sitting. In a nursing home called Kirkland. And that COVID moment and the migration into our two most important factories, two biggest factories, Renton and Everett. I mean, it's uncanny, how quickly it came. We lost our first employee March 22nd. And that was like getting your stomach punched. It was a moment for all of us. We shut down all our factories on March 23 to give ourselves time to recover and build protocols that would ultimately keep our employees safe.

We overlaid an entire management system on top of what was already a difficult moment to do what? We've got one system protecting the airplane. We had another system protecting our people. And at that moment, the people one took precedent. So, we worked that, we didn't retire that effort. Week by week by week by week protocols changing, directives from everywhere. A supply chain that touches pretty much every state in the country. And you're trying to work your way through that. Anyway, it was an incredible moment. Proud of the team because we stepped it up and what we did for our people, because everybody here knows we don't do this virtually. We don't do this virtually. So, you have to have hands on. You have to create an environment where our people are safer coming to work than they are out in their communities. And we maintain that record through that whole period of time and we're proud of it.

So now the real issues with respect to COVID as it just jumped on top of everybody here in March and April, 80% of the traffic in the world sat down, 80%, that's when everyone took a big deep breath, big deep breath. That's when survival questions started come in with respect to the Boeing Company. And we had to deal with that. And that is when the credit markets shut, credit markets shut and all the media coverage into suggestion that it would sort of require a bailout like the automotive industry and other things started to come around.

And I'll be the first to tell you, it scared our people, it scared our people. they weren't interesting moment at that time. Good news is the CARES Act moves forward and moves forward quickly. Our customers are allowed to keep the employees that would ultimately allow them to bounce back and the Fed window opened for companies that have credit where investors believe in them and we went out at the end of April and we went for a significant capital raise to the bond market that we had \$25 billion? Why \$25 billion, because in those 30 days, 45 days, we looked at every piece of data we could find with respect to what happened post-9/11, what happened in the last SARS crisis and said to ourselves, when might this market return?

It's global. That was now a dimension we had never really been able to evaluate and we suggested that in 2024 or 2025, we could get back to those 2019 levels and then ultimately grow from there and that would take that long for demand to return. And were we wrong. Demand came back much faster. Vaccines got produced much faster than we imagined in that 30 day set of analytics. And then what we didn't realize was, forget demand. The issue we would all be wrestling with collectively in light of the adjustments that had to be made at that dire moment, was going to be supply and that supply chain sort of to rebuild and building the vibrancy back in that supply chain to support now, what is a hot market that would become the challenge and that is the challenge.

So our timeframes are not that far off. But the dynamics with respect to what we thought might happen and with what is really happen are quite different. Now there's a word on here called strict compliance. I think it's underappreciated in many ways, but why does it matter to us. Strict compliance is every airplane that leaves your tarmac, it gets delivered to a customer, will be 100% conforming to the engineering spec that you delivered in certification. And I mean, precisely. In the old days. It was a very inefficient process with us and our regulator, where we looked through those things, determine no safety involved. You couldn't see it, it was no issue and we'd be able to move these things through the system no more, zero.

So 450 airplanes, a year's worth of production. Here's the punch line. It takes as many or more hours for us to prepare an airplane and return to service as it does to assemble it in first place. So we have a factory. So in January of 2021, after a November 13 cert date, where the administrator came out, flew our airplane, ex-737 pilot, confident in the airplane, confident in the certification. That was day one for us. That was day one. We relieved that risk and it was a big win for all of us.

On the other hand, we have to restart a factory that had been closed for a year. So our start was from zero. Wasn't from the rates in 2018, wasn't from the rates in 2019, it was from zero. And a workforce - I give the team here at BCA a lot of credit - we kept. We had to reallocate them to do all kinds of other things, to help us in some areas, et cetera. But most importantly, we had to keep them on the payroll. And we did. But we had to bring them all back and less than half of them went back to the same job that they started in, less than half. When you get through all the bumping and you get through all of the voluntary retirements.

So starting a factory from scratch in 2021 and starting an even tougher factory at Moses Lake to do the RTS work with all the same hours applied but less standard work. Not a lot of work instructions for everything that need be done, a lot of take apart, a lot of put back together. But we did it and we did it steadily. And in the end of the day, in light of what's happened with the MAX and its reintroduction and putting those airplanes back in the air, I could not be more proud, could not be more proud of the team that pulled it all together.

You know final risk here that I unfortunately we think we covered here in the third quarter these fixed price development. I don't want anybody to think that these cropped up in the third quarter of this year. That's not what happened. You all know it. These programs have been with us for quite a long time. We have made significant

progress on the airplanes themselves, the technical developments that are embedded in the development process. We've made great progress.

The tanker, which was the biggest of the contracts and the biggest of the issues on my first day. So before I even met with the president on subjects like MAX, I had to go meet with the Pentagon on the subjects like tanker. We need this airplane. It is the most important airplane for us to project to project. And ultimately, we promised them we do everything in our power to make it work. And as everybody, I hope has read, that airplane, the tanker, now satisfies all its use cases in all theaters in the world. So it's a proof for all of those things.

We still have work to deliver the remaining airplanes. That is what the charge represents. And then ultimately we believe that franchise is going to be a significant payoff for shareholders of record during that period and unfortunately know that we will not recover the enormous investment we made over these last bunch of years.

So we try to be as candid as we can about that, but we think we're close to that moment. And of course, we have the President's airplanes. I'm not going to do a lot of talk other than to tell you we're going to deliver to greater planes. And we think we've covered the risk and the other two development programs we love. And I do it all again tomorrow. I'd do it all again tomorrow. So I'll let Ted talk about that.

So it's not like we don't have few risks ahead, but these risks feel to me a lot more manageable than risks that we had to rearview mirror. And it is our time to give you some guidance, so that we can live up to it, right, to really measure. Everybody here knows we haven't been in the guidance business for quite some time. So here we are. Oh, sorry. I missed the best part of that last one. Just a couple of comments with respect to leadership philosophy and maybe I'm talking to the media, maybe I don't know who I'm talking to.

What happened on culture during that period of time? What happened on culture? Number one, day one, transparency. We were in a significant public trust moment, significant public trust moment. We all knew it. The board knew it. They knew it clearly. Job one, when it comes to public trust, anybody's trust is perfect transparency. Tell them everything you know, every minute of every day. Tell them all. Start with your own people at every level. Know where the issues are.

Know where they are, deal with them. Deal with them. Don't be afraid to tell the regulator, day one. Don't be afraid to tell the regulator. Don't be afraid to tell the customer and don't be afraid of the media coverage that tries to inform the flying public. It is what it is. Just deal with it. Transparency from day one. I think of all the things that we talk about with respect to culture and leadership that one might be the most powerful with respect to the reemergence of our company.

Two, patience, a word I'll bet you've never heard from a CEO, it's not our pedigree. It's not what we do. We're usually impatient. On pretty much every front and I know I'm talking to a whole bunch of type As. The issue with patience is when you're dealing with a flying public that's worried about trusting you and you're hearing from a regulator who's feeling like they're getting pushed into a corner at every turn with respect to delivery dates, certification moments, all those things without thinking about the discovery that the regulator has to go through themselves to make that certification.

That's a problem. And there is only one answer. Be patient. Give them everything you got. Give them everything you got. Some is great and some isn't. Get the feedback. Let them go through their own discovery no matter how inefficient you think it is. And that's the process we went about. Frustrating everybody. Certification took a year. Startup of these two factories, we're still in the throes of starting them up. That's my view, still more training to be

had. Still more to do. Don't force them. Don't let them travel work. Don't let them do the things that get you in difficult, long-term predicaments. Do this the right way and stay patient. And then most importantly, I'll make a comment with respect to culture, and then I'll talk about it later in a different context. Safety.

Safety dominates Boeing, anybody, anybody, whose thinks, we don't remember those accidents and I'm not talking about me, I'm talking about every employee in the Boeing Company. We don't remember those? We don't remember the discussion that went around it? You're crazy. We all remember it. And pretty much everything we've done since that day, everything that we've done. Larry, and I started a memorial service. We went through every single name. Every soul that was lost in these two accidents. Tears everywhere by everybody. We'll never forget it, nor should we ever forget it.

And all the work we do around safety, which has been the dominant theme in our company during this whole period of time, all the work we do around safety is built around that premise. It's a testament to the industry because the industry does this. I can promise you Boeing does it and it's a big deal. All right. These are the charts you all are familiar with, so I'm not going to spend more than a minute. We serve giant markets. This is ten years' worth of numbers. It's \$10 trillion. These are huge. We don't have to go hunting for adjacencies. We don't have to sort of broaden our mix. We can go with the tried and true. We can go with the portfolio we've got. We can run the play and run it well. And we've got a giant market to serve.

Strategy. Normally in a strategic discussion and certainly the strategic discussions a lot of you would like to have with me or the predecessors is pull out the airplane chart. Which airplane are you going to build? How are you going to build it, right. Exactly what's the market share going to be when you get there? When with respect to every external plane which occurs in our industry, above 15, 20 years in between, what matters is the capability to bring that airplane. Is it differentiable enough to put you in the leadership position? I don't want to fill a gap in a product line.

I want to build a product that's going to differentiate in a way that absolutely substitutes the airplanes that came before it. That number has to be at least 20%, 25%, maybe 30% better than airplanes it replaces. And there are technologies and concepts that go with that and underlying ways of building it that can get you to that answer and they all take time and they all have to be proven. These are the areas we talk about. I'm going to just comment on safety first.

We see other part of safety, people underestimate. Culture would be great. Everybody could just feel like this, we got to be safe. This is the most complex, difficult program that we have at our company and most players in the industry have in theirs. This is assessing data from every use case, every flight, everywhere in the world understanding what anomalies occur in every one of those flights, putting them together, analyzing the data every way you can, and get it to the engineers as fast as you can to make determinations and assessments about what it means to safety and then take action to do something about it.

It is a program of all programs. We have our best leadership team working on it. They've invested in a whole variety of new sources of data and most importantly, the integration of our safety management system with the safety management systems that exist in the airlines. That integration gets us more current, more data, and ultimately better on avoiding safety incidents that may occur sometime in the distant future.

Digitally enabled. We're not that far from autonomy. We're not. It's not unreasonable for us to think about autonomy on the next commercial airplane. I'm not sure the first one goes with autonomy, but it sure should be capable of it. It sure should be capable of it. This isn't a pie in the sky. This isn't the automotive industry 10 years ago. We have our planes out there doing dramatically dramatic things in our military fleets.

You saw our little Wisk airplane out here. We intend to invest in that Wisk product because there's a discrete small market not going to move the needle a whole bunch for everybody. It will educate the FAA on how to certify autonomy in the commercial airplane. So together on a manageable project, we can work our way through that taxonomy of issues and ultimately the methods and process they want to use to certify autonomy. In the meantime, we'll keep running autonomy technology through everything we have in the defense portfolio because it requires it and we'll keep developing it.

I think we can be the leader in the world if we're not already, and we're going to stay focused on it. Unmatched producibility, I'll let Greg Hyslop in his discussion, just comment on it. Producibility is going to matter a lot for all of us. It's going to matter a lot for all of us. The card we'll play and the one I think is going to benefit us the most is our long experience curve in the composites arena. We've been at it a long time. It offers real benefits, offers real benefits. You build more functionality into it. And the application of composites is mostly about the learning curve and processing and applying it.

It's not the design of the matrix itself. My friend David over here knows more about this than anybody because he use it in a fan blade on the GE90 that has turned out to be the world's best fan blade by a long shot. And we all remember taking deep breaths when we started that process. Sustainable aerospace, I'll let Chris talk about it. That next airplane. And this might be the long pole in the tent on when a next airplane comes along. This might be it, because if it doesn't have a sustainability wrapper all around it, if it can't meet the emissions tests, if it can't deliver significant performance advantages, then there won't be an airplane. It just won't. We may not even be allowed to introduce airplane that doesn't do something like that.

So we have to prepare for it and we have to be good at it. You'll hear from Chris. We don't think hydrogen's the answer. It doesn't mean we're not going to work on hydrogen. We've got a long history of working on it. But I don't think hydrogen is going to get us from here to there in the 2050 timeframe. Anyway, sustainability, we've got a lot of investments Chris will talk to you about. Then finally, global talent and culture, just to comment on this one. In the early stages and in the early stages of this year, comments about the exodus, exodus of our experienced talent here, there and everywhere, blah, blah, blah. I view this one complete opposite. We had voluntary layoffs. Of course, many people took advantage of that experienced talent. When they do take advantage of it, if we ever need them for anything.

I mean, they're at the end of a phone or in our offices within a minute, they do what they do. What really happened in this process is we were forced to hire 10,000 engineers. Everybody's been talking about the demographic curve in the aerospace industry and in our industry. Our company, they were talking about the demographics of the engineering workforce and oh boy, it's going to bleed away. Now, we had 10,000 new ones and I get to visit them. I get to see what they're working with.

We visited our autonomy center at MIT here recently, and I saw the most brilliant set of resources that I've ever seen, sitting around talking about autonomy and the application of autonomy in our world. And these are all software engineers, AI experts, blah, blah, blah, blah, blah and they joined because of the mission. And they're here and they're now. And our job is to get them all lined up with all of the important strategic efforts that we have underway, all the development projects, all those things make them real contributors as fast as we can.

And when we do it well, we won't hear about demographic problems anymore. We just won't. So I view this as a moment in time where we get ahead of that. Greg will talk to you a little bit about it, and some of the methods by which we retain all the information experience that we do have, how we retain it and how we use – how we

disseminate that to our new people. So this is strategy for us, capabilities. And then there'll be a moment in time where we'll pull a rabbit out of the hat and introduce some new airplanes sometime in the middle of next decade.

There'll be a moment in time when we do that and if we bring any of the capabilities that I am suggesting will be available to us at that moment, will be differentiated. And leadership will be well within our grasp. All right, this is probably why most of you're here. Let me just describe the track. We were at – everybody knows 2020, when your factories aren't delivering airplanes and you're fighting through COVID and doing all the things that we're doing, it was one of the all-time cash burn years. We did everything that you're supposed to do. We've restructured a lot. We're not going to have a long discussion on restructuring, but a lot of those restructuring actions are leverageable in this equation in a pretty significant way.

2021, another rough one. We finally crossed the start generating cash in the 2022 timeframe. And we think this \$10 billion number which I call normalized, this isn't a pie in the sky. Everything that underlies normalized for you, you've seen before. In terms of quantities, in terms of what we do, the hours we put into airplanes, blah, blah, blah. So our objective is to get back to that. More importantly, all of the characteristics of what that looks like, stable deliveries, predictable deliveries, satisfied customers because they get the airplane when they want it, where they want it.

That path to normalization, I'll let Brian talk about it, it's largely built around things we control, like pretty much everything. And I do suggest that we control the supply chain and how it advances to support our needs. So I submit I'm responsible for that. And our team is responsible for that. And we believe we can do that. So it's not somebody else's problem. We get back to where we need to be on the 737/787 deliveries, I'll Brian cover the stats et cetera. But this we could do and the defense fixed price programs for all of you know, we aren't taking them. We're not. We haven't in quite a while. And we're not. So, we'll maintain discipline with respect to contract type, but we will be aggressive going after some programs that we're well invested in already that none of us can talk about.

We'll stay disciplined on investments. Again, everybody thinks there's a giant ticket out there somewhere in this timeframe or even five years beyond this timeframe to do some new fancy airplane. It's not going to happen. Not going to happen. Technologies won't be ready to make that happen. So, make sure that's understood. End of the day, always highest levels of quality and safety, I hope, I hope in light of the actions we've taken, we have given you proof points about how serious we are on safety and quality, our willingness to pause lines, our willingness to self-disclose the most minute non-conformances you've ever seen that required the most aggressive rework to ultimately remedy so that we can restart the delivery of our 787s.

All of those issues, all of them, self-disclose, self-examination, post-MAX, our willingness to go down that path, our willingness to deal with it and not complain about policies or how strict is strict. I think that's a testament to our determination to see through safety and quality in every way I can think of.

What happens after 2026? In our industry, that's tomorrow. In our industry, that's tomorrow. We had a few of these things behind us. We have a very robust aerospace systems, I cannot wait to get the full integration of the SMS systems our customers use everywhere around the world, fully integrated with our own system. Now human intervention data on data. AI being applied at every level to figure out where every anomaly exists, an informed experienced team that can look at the data, pull out the things that they believe are going to matter and go to work on them.

So there's a lot to be said for that. Derisk the product portfolio, we'll have a -7, we'll have a -10, we'll have a 777 family, it's a loaded product development line. It is. We'll have them all at our disposal. I love the way they

compete because I compete them now. Stan's out there with this team every day looking at deals. We win our share that airplane performs, it performs. Make no mistake. We talked about capabilities. I want nothing more than return money to you.

This company is big enough. It serves a big enough market. It's profitable enough to be able to do that and do that predictably and where we are on a march to go do it. And then finally, just one last word, and Brian will probably emphasize it a couple of times. I do not need, we do not need equity to do it. So everybody, write that down, please. Anyway, I'm excited about all this. It's been tough. It's been a heavy haul for everybody. You may or may not like this outlook, it is the outlook. It's what we believe we can do. It's what we believe we owe the shareholders.

All right. I'm going to turn it over to Brian. Fire away man.

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## Brian West

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

Thanks, Dave. Good morning, everyone. Thanks for being here. I'll share our financial projections in a moment. But first, I'd like to baseline everyone on 2022. Free cash flow, our primary financial metric it's been that for all of this year and as long as Dave's been here, super important for us. In the first half of this year, we used \$3.7 billion of cash flow in line with what we expected. In the third quarter last week that we just announced the results, we generated \$2.9 billion of free cash flow.

Embedded was a tax benefit. If you strip that out underlying performance was \$1.4 billion. Now we go from the third quarter to the fourth quarter. We expect to do approximately \$2.5 billion in the fourth quarter, about \$1 billion better between the third quarter in line and the fourth quarter. That's all driven by volume and that's BCA and that's 787 deliveries. There will be more in the fourth quarter and third quarter that will drive that sequential improvement and then we'll land for the full year at around \$1.5 billion to \$2.0 billion of cash flow.

Now, importantly, the second half is better than the first half. It's positive and it starts as a baseline for momentum going into next year. Now I'll lay out what we intend to do next year. Operating cash flow for next year will be between \$4.5 billion and \$6.5 billion, we'll then reinvest \$1.5 billion back into the business through CapEx to get us to free cash flow in the \$3 billion to \$5 billion range. Over the last year, feedback from all of you has been consistent and clear.

You want realistic and achievable financial metrics, and that is what we intend to do with that range. We believe that the low end is three. We're aiming at five. We also heard feedback that you want more visibility around the cash components. The upper right describes the operating cash flow by business. BDS is going to be a use of cash between a \$0.5 billion and \$1 billion driven by the third quarter year-to-date charges that were taken on the fixed price development programs.

BGS will be \$2.5 billion to \$3 billion of free cash flow, very steady, very consistent. And BCA will be between \$2.5 billion to \$3.5 billion. BCA will be underwritten by two very important assumptions and deliveries. The 37 deliveries will be somewhere between 400 and 450. Now, again, as we try to bound to the bottom and give you a high confident set of projections, 400 means that basically next year, all year, we're in the low-30s of deliveries. We don't expect that to happen. But that bound to the low end or aiming at is to be in the 425 to 450 range. And what that implies is that for the first six months of next year, we'll be in the low-30s and the back half will be the low-40s. And that will give us time to continue to stabilize the supply chain in the factory and even talk about getting ready for a rate ramp.

And the 87 Similarly, between 70 and 80, aiming at 75 to 80 as we head into next year with the low end of 70. Next year will all be about that BCA delivery volume. BGS continue to perform and righting the ship in BDS. Now I'll lay out for you what we intend to do in the 2025 to 2026 timeframe.

Again primary financial metric, very simple, free cash flow and \$10 billion reflects our intention to get this place back to normal, post the turnaround back to normal, back to the pre-2019 representation. Underlying that assumption of \$10 billion, a couple of important points. Revenue for the company will be approximately \$100 billion and operating margins approximately 10%. And the key components start with BCA, around 800 deliveries, low double-digit margins and a return to the cash juggernaut you're all familiar with. On BGS, mid-single digit growth and mid-teens margins.

And finally BDS low single-digit growth in high single-digit margins. Importantly, I'll make a reminder that if you take the services benefit in our defense business and you apply to that BDS, that high single-digits gets better by about 100 basis points to get close to 10-ish and more in line with its competitive set. My point on the assumptions on the revenue margins, these aren't big unrealistic assumptions. These are things we're confident we can go execute on. And then we also, at the same time, want to continue to invest in the business, \$3.5 billion of R&D and \$2 billion of CapEx, very much in line with what the business has historically done.

We talk about 2025, 2026 timeframe. We can't be that precise in a calendar year, but it will be sometime in that timeframe of 2025, 2026, and that even might be we exit 2025 on that run rate, too hard to call, but it's going to be somewhere around 2025-2026. Double click a little bit on the \$10 billion, \$12 billion operating cash flow, \$2 billion of the reinvestment in the business and CapEx get you to \$10 billion and again, if you look at the upper right, the segment operating cash flow is on the chart there. BCA at around \$9 billion, BGS at \$3 billion, BDS at \$2 billion and other is a drag of \$2 billion. That's because we're going back to profitability and we're to start to pay cash taxes again and we're perfectly comfortable with that.

The key assumptions underlying the BCA production rates, you can see there the 737 in this forecast gets to 50 a month which we've done before. The 787 gets back to 10 a month and the 777/777X gets to 4 a month. If you bridge it, underlying the bridge between where we see 2023 and 2025, 2026, there's about \$6 billion of improvement between these two points of time. And the underlying benefit really is productivity and it starts with BCA. BCA over this period of time will get \$6 billion better. It's going to be driven by production ramp. It's going to be bigger and faster. A lot of productivity that Stan will talk about in a moment but remember, we are going to have to invest some of that cash back into the 777X production as that program begins to ramp.

On the BDS side, we see \$2.7 billion improvement. Keep in mind, we're going to go from a usage of cash to a generation of cash and look a lot more normal for what you're used seeing, basically driven by the program transitions between development to mature as well as a big dose of productivity that Ted will talk about. BGS, volume driven. And then we've got some things that go the other way, largely investments, modest investments in R&D and CapEx, as well as higher tax payments, a little bit of benefit from interest expense, all that gets you to the \$10 billion. As Dave mentioned, we see this as all within our control and now we'll take you through what we intend to do about the balance sheet.

On capital structure, the playbook for us is very straightforward, deliver airplanes, generate cash, pay down debt. And I reiterate what Dave said. There's no need, no plans to raise any kind of capital from either the debt or the equity markets. We don't need to. As we close this year, we expect to have around \$17 billion of cash on hand, that's between \$7 billion and \$9 billion higher than historical baselines.

We then expect over the period to generate substantial free cash flow, that's more in excess of what our debt maturities are – our debt maturities over the next three years, around \$14 billion. So in our view, we have sufficient liquidity with both the cash on hand, as well as access to over \$12 billion of our untouched revolver, all while continuing to reinvest in the business.

We will continue to generate this cash flow. We'll address the debt maturities and then any excess cash we have, we will point towards accelerating debt paydown, because investment grade remains a priority for the company. And over this period of time, as we get through this 2025-2026 timeframe, our debt levels and our historical debt leverage ratios will look much more normal to you.

So we repair the balance sheet by one very simple thing, generate operating cash flow. We pull back a little bit longer term. What gets us excited is our backlog. Our backlog is big, it's diverse, it's over \$380 billion across our three segments, commercial over \$300 billion; defense \$55 billion; services, almost \$20 billion; big important. And to us, this really demonstrates our competitiveness but also demonstrates the confidence that our customers are putting in our products. And now it's up to us to deliver on their behalf.

And finally, the wrap. Our priorities are crystal clear. We have to stabilize the business with, of course, this turnaround. We have to drive productivity. We have to return value and return value primarily restore that balance sheet and ultimately return cash to all of you.

So with that, I'm happy to turn it over to Stan Deal, President of Boeing Commercial Airplanes. Over to you, Stan?

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## Stanley A. Deal

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

Thank you, Brian, and good morning. It's great to be here and really represent the people that bring these products to life, the employees of the Boeing Commercial Aircraft Division. I simply believe they're the best in the industry at what they do.

Let me orientate you briefly we are at the Seattle Delivery Center. There's two big things we do here. First, this is the revenue end of the engine for the 737 MAX. You saw our Renton facility yesterday. That's where we build. And then we take the airplanes and prepare them for flight on the airport over there. We bring them here and we deliver here. Also, the aircraft from the modification centers converge here for delivery. So two factories when you think about the 737 inventory production.

The second important function of this facility is our test and evaluation of commercial and military derivatives. And Greg's team gets to run that across the enterprise. But this is a very important center for that. Today, we have on display some terrific airplanes, the P-8, the derivative of the 737 that serves Navy of the US – the US Navy, as well as foreign allies. The ecoDemonstrator, this is our 10th year of running that program. We've had nine airplanes. That is all about advancing our environmental responsibility.

Small things that can make a difference to the footprint of our products in the world and make the world relative to sustainability better. This year, we have over 30 projects on that airplane. Two years ago, you may remember, we also used ecoDemonstrator to test technologies. We would make the cabin safer in this COVID environment, specifically around our confident travel initiative.

And then in the back, the 787, this is a 787-9 on display, which has become the heart of the widebody market globally and our newest member, which is in certification, the 777X program. Everybody remembers the queen of the skies, the 747. I would submit to you this is the next queen of the skies, the 777, which stands in a category of

its own, will replace the four-engined aircraft, the 747 and the A380. And then, of course, the workhorse, the 737, this is a 737-8 for the Southwest Airlines.

So anyway, coming out of this pandemic, it's really clear that travel is resilient. People have a need to connect. They have a need to want to explore the world and when you factor that with the market is still in the recovery, I believe, in the pent-up demand that people still have for travel. I believe we have some built in resilience as we continue to grow, even if economic recessionary pressures continue. And as was shown over the next 10 years, we have a large market, \$3.5 trillion that's about 20,000 aircraft. We've already captured a very large backlog of that. But we have more to go and I'll just tell you, our products are very well-positioned to capture our fair share. So we already have stability in terms of commitment to work off as we turn our focus to execution.

Our focus on executing stable rate ramp ups as well as working through and working with our supply chain to bring them through a disrupted world called COVID. When I think of the supply chain and Brian rolled the numbers out, the supply chain really is our limiter on how fast we can take rate up. And we've factored in the performance in this commitment we've provided on the financial guidance.

We're seeing shortages in the near-term. We talk about the limiting factor, the major limiting factor, the rate being through the engine manufacturers. But we've seen near-term impacts as well. You've heard about them from galleys to wires to electric components and an occasional quality escape out of our supply chain which our quality management system catches and that has been a factor for our stability in 2022.

Last month, September or month before September, you saw net output of 37, on the Boeing 737. This month we were impacted again by quality and we'll give you the early orders and deliveries numbers. We saw 23 Boeing 737s. At the last moment, our quality management system caught a defect in the fuselage, two defects and delayed deliveries. We'll recover on that quickly. We can surge and we will recover for our deliveries at the end of the year, but that adverse quality which we have to manage out of the system was an impact.

So we'll continue as we work forward to align and focus on stability of the rate on the 737 and we've rolled in the lessons we've learned of bringing the MAX from zero to its current 31 into the 787, but stability and quality will be the key metric. We manage the commercial division as we move forward through 2022 and throughout the periods of guidance we've given you.

Our final focus remains on the development programs and we're fortunate that we have terrific leadership, Mike Fleming and a team that led the MAX to recertify, all under a single management team. We're taking that experience and using it to manage all of our development programs. And Mike also has and has quite a reputation of superior customer support. He had the ability to launch the MD-11 into service the 777, the 787 and working on the development, his passion for the customer and making sure the product works right every time it's high. So we're very fortunate, with that focus and that continuity we'll assure all the lessons working with our regulator, the FAA, in a tight relationship transition through each program.

If I can turn to the next slide. This is my fun slide. This is our product lineup and I'm very proud of this. All of us are proud of the product line. When it comes to the performance of this line up in the market, every one of our airplanes we offer has been sold this year across the family. And I'll give you a preview of orders for October. So, as we close the month of October, we netted 122 new orders across our family. That brings our total for the year of 550. In that, 122, I want to highlight, Alaska ordered another 52 that included dash-10s and IAG ordered, concluded their order on the MAX, which includes the -10 and -8200 the category killer, if you will, dubbed by Mike O'Leary. And we had orders for freighter, the 777F, we had orders for 787, unidentified.

Our customers love our product line. Talk just a little bit about the product line. We have the MAX family. We have two models in service. We have the dash-8, actually three, the 8, the 8200 and -9. They're doing well. There's 806 flying. We're well over a million revenue flights over 2.5 million flight hours since the accident. The dispatch reliability is at 99.5, higher than the current NG fleet. In fact, the highest dispatch reliability embedded in the majority of those MAX, is Stephanie's aircraft health monitoring.

I think that contributes significantly to ensure we had the highest reliability. The 787 fleet we've said it before it's most utilized widebody in the market, particularly through the pandemic and it's really a testament to the environmental capability of that airplane, the fuel burn and the features that we added for the passenger, lower pressure altitude, big windows, smooth ride through our flight control system and that airplane continues to open up new markets in it will, as the international widebody market recovers.

And we were quite proud in the month of September to announce that China Airlines added this to their fleet. In addition, it was great to see Lufthansa take delivery and rollout to their public the first 787-9. So we're expanding our base and then we have the 777-9 and 777-8, which really stand alone. There is no competition. We added a freighter version of that this year. We launched it and it will be the flagship for major international carriers as we move forward.

As I said, it's the new queen of the skies. As for freighters, we continued our long tradition of providing freighters that simply do the right mission relative to tonnage, relative to economic advantage. We are very pleased to add the 777-8 F this year with the launch order of Qatar. And since then we've grown our order book with orders from Lufthansa, ANA, Silk Way and it was great to be in Luxembourg to sign Cargolux, which will renew their entire 747 fleet over the long haul with the 777-8 F.

And of course, the 767 continues to move on with orders, orders from FedEx, orders from UPS. We're quite proud that airplane does the work and satisfies that middle 80-ton market segment. So we're now focused on development. You can see the aircraft we have in development 737-7, 737-10, 777-9, 777-8F and the 777-8. We'll continue to close major milestones on these programs. And we continue to collaborate very closely with our regulator.

On the MAX, we've talked. We continue to work the certification and we anticipate that will close either later this year or early into 2023. On the MAX 10, we'll continue to work with the FAA and we anticipate the closure of certification by late 2023 or early 2024. The 777-9 remains on track and unchanged relative to its certification. We announced that that first delivery will be in 2025. And of course, we continue to evaluate and test the airplane while we work with the regulator. As we conclude the decade, we will field the 777-8 into the market.

At the end, I'm confident we'll have a safe product line up that continues to position us for decades while we continue to work the emerging technologies will enable the next generation. But for now, our development pipeline is full. It's absolutely full. Our engineering teams are excited. They're motivated. They're working on challenging problems to usher in these airplanes.

As Dave mentioned, we have a keen focus on new technologies that will enable the next aircraft and benefit us back into our existing product line. Like in the past, once we field these products, we'll continue to improve them. That's what's next in the agenda. We already have improvement plans laid out. For instance, the 787 we will introduce an enhanced gross weight version of the 787 in the near future, adding more capability to an already superior product in the middle of the widebody market. We'll also usher in a new flight management system on the 737, one produced by Boeing, one that's integral to our strategy. Dave talked about and sets the stage for having the heart of the airplane prepared as we usher in autonomy.

And in addition, you've seen we announce that by 2030, we'll reinvest in every one of our active production airplanes to make it 100% SAF capable. So in summary, we have a well-performing portfolio. We've got the right developments in the pipeline. So let's turn to the next chart.

We have a clear path to returning BCA to double-digit margins and a robust free cash flow. I want to orientate Brian gave you the numbers, but I want to give you a framing to think about how to view us, think of us as having two major factories, the production output, represented in the blue through our build and final assembly and delivery. And then the white representing the cumulative inventory of airplanes, both on the 737 and the 787.

For that inventory, Dave already mentioned the 737 that inventory carries about on average as many hours with it to prepare the airplane as it did to build and on the 787, it's actually greater than the assembly hours. All that works necessarily the 787, it's about the rigorous tip-to-tail strict compliance. And you will see we have a rhythm where we put lean even in those factories for preparing and modifying airplanes earlier in the year that was a challenge to throughput. We've resolved it and those benefits are being applied to the 787.

So we'll liquidate that inventory largely through 2024, a few that spill into 2025 and that will eliminate the disruption relative to the financials that Brian expressed. And you'll see the return of our real factory performance, the underlying performance. But that doesn't happen without work. We have to reinvest. And I'll talk about that with the supply chain. It's about working with the supply chain. Multiple things we're doing to help the supply chain recovery. We learned the challenges of re-staffing. It takes tenacity. This is a highly competitive market. We're sharing those approaches. We're sharing the techniques of how we alter comp and benefits in our recruiting with our supply chain.

But that remains a lingering issue and will be out and helping. We deployed over 320 people commercially out of our supply chain team into the supply chain. You may know we have a robust fabrication division in our commercial operation that fab divisions not only capacitate to produce the parts for the airplanes we have here, but we carry excess capacity to bail out and rescue distressed suppliers. And we've had a number of situations where we pour that capacity back into the supply chain in order to recover and assure the continuity of parts supply.

In addition, we've had to use some of the inventory engines, Boeing aircraft that already had engines in inventory to ensure continuity of production, avionics and we'll do that as a last resort. We have also been preparing our own factories. That journey started while we were in COVID. You saw, we made the difficult decision to consolidate the 787 in South Carolina and when it came to office space. We eliminated our excess office space. We had a commercial headquarters building. It was remote. It wasn't around the site. We eliminated that building. We liquidated, I've redeployed here right where the revenue occurs. And I've had my leadership deployed out in the factory. We're getting our teams closer to the factory, closer to the people where the great ideas get unlocked and inspired to build these airplanes.

And we've embarked on the lean mission. We never stopped. But clearly during COVID, we were focused on recovery, we were focused on getting the products recertified to a reinvigorated lean. Scott Stocker and Elizabeth Lund, who you saw yesterday, work that in tandem. We've started with a natural two big drivers for the company, the 737 and the 787. And to date, after our kickoff, we've had 24 Kaizen events just on the 737 alone, 14 more to go this year. And about 121 improvements that already are in work, which will lower the flow time, improve quality and lower unit hours, all about productivity that we can take to the bottom line.

You've also seen on the 737 – well, we'll invest in lean, we'll also invest in new technologies, the panel assembly, the automation you saw and actually was invested on several years ago is now paying dividends, our

horizontal build automation on the 737 which now will roll into the 777 wing line. So it's going to be a combination of lean and reinvestment in production technologies. And all of those capabilities will apply as we think about work to enable the next product. The outcome of all those enablers, the work in the supply chain, the work in our four factories will allow us to recover the rate that Brian outlined, to get us well into 800 aircraft of output. As we think about the 2026 timeframe and return us to double-digit margins with free cash flow.

With that, I'd like to turn it over to Ted Colbert, the President of our Boeing Defense and Security. Ted?

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## Theodore Colbert

*Executive Vice President, President & Chief Executive Officer-Boeing Defense, Space & Security, The Boeing Co.*

All right. Good morning, everyone. Thank you, Stan, and welcome, everyone. Good to see you and good to be here with you. Let's get into it on the first chart and talk about the focus areas for Boeing Defense. As we all know, we are in a moment where global threats facing our country and our allies around the world make it very important for Boeing Defense, Space and Security to show up strong with our customers.

This moment is not lost on us, and we believe that we have the portfolio both today and in the future to satisfy the needs of our customers here in the United States and internationally. We also know that we have a variety of big fixed price development programs that we've got to deliver on to support those important missions, both today and the future. We're committed to delivering on those programs, and our teams are working hard every single day to get to the next big milestone in delivery of those programs.

Factory stability as part of those programs and as part of our legacy programs is also important to us. Supply chain disruption has impacted us significantly, and that has driven challenge of stability in the factory, in the development teams. We have work to do with our supply chain and we have work to do to mitigate internal labor disruption. We will go after both those challenges with the mighty force. We are in with our suppliers every single day. We have teams deployed similar to Stan talked about, to make sure that requirements absorption is done well and we are doubling down inside of the company and with the suppliers on recommitting ourselves to lean principles and making sure that every program runs with those principles every single day.

And we're working towards making sure that we have the right people in the right place at the right time. We've done a ton of hiring and we're going to continue hiring in the places that matter and spend and invest in our people from a training and development perspective. All these things contribute to us bringing more stability to our factories and to the production system in the company.

Lastly, I'll say, and to tie this all together, all these things are about making sure that those enduring legacy are proven programs that I'll share with you in a second, get back to their normal margin performance. And as we deliver on these big fixed price development programs and get them to rate, they contribute in the way that they should to the financial performance that Brian laid out earlier on today, both working the enduring programs and delivering on the fixed price development programs, contribute to the financial success of our piece of the business in the company, and we're excited about both.

Let's go to the next chart. So this is my favorite chart because this talks about our products. Our products and our portfolio are well-suited to position us for high digit margins and strong cash flow going forward. Again, right in line with what Brian shared with you earlier today. From a strike systems perspective, we had two strong enduring platforms in the F-15 and the F-18. These serve critical missions today around the world and will for a long time to come. Those complemented with the T-7 and MQ-28 make our portfolio even stronger from a strike perspective in the long run.

In the advance fighter work that we have going on that I can't talk about with you today. I am really excited about and you'll see that come to fruition and come to life over the years, hopefully. Space and missile defense, what an amazing place to be. We are proud of our partnership with NASA as we continue to work with them on human space exploration. SOS launch is right around the corner, and we're excited about that. And we'll fly the first crewed mission of Starliner earlier next year. Space is also a draw for great talent, which is why it's important to us.

Vertical lift. We just delivered the first 4 MH-139 aircraft to our customers last quarter. We will continue to deliver to our commitments, and we're waiting for the decision later this year on the future of a long-range assault aircraft. Our partners and I are waiting for that decision and we're excited about delivering that aircraft to the customer as well. And then lastly on mobility and C4ISR, it goes without saying that the E-7 platform has significant demand both here in the United States and in my conversations with our customers around the world, it's a proven platform and has a long tail of demand as well. That along with the advanced autonomous capabilities of the MQ-25 make this part of our portfolio just as strong. So as you see, we have a strong portfolio here. Demand driven from our customers, a team focused on delivering to the mission. And we're committed to delivering both the things that we have today and in the future to support the portfolio of the company.

With that, let me finish on an important topic for all of us, and that's big fixed price development programs. The chart that you see in front of you represents four big fixed price development programs, upcoming key milestones that we have right in front of us and the period with which we've de-risked these programs in the last quarter.

These programs represent 15% of our development program revenue. We have not taken on any more fixed price, big fixed price development programs since 2018 and we don't have the appetite to do so going forward. We remain committed to them. And as I said before, we're going to live up to our commitments and double down on lean and program management and improving our focus for the supply chain and performance there.

But I am still excited about these programs. The T-7 sets the basis for model-based engineering, digital engineering and with Stephanie's business, the idea to pull the digital thread into the services business through the life of this product and support future variants. It has a long life ahead of it and the demand will just get stronger and stronger. The MQ-25, as I mentioned before, an unmanned autonomous carrier based tanker. You got to be excited about that, and we've got to deliver on this commitment to the customer.

And the KC-46, 60 of which are already in bases around the world covering the entire set of use cases as Dave described, will just get better and better going forward and we're excited about that platform. And then lastly, VC-25B, we are proud and excited to deliver two perfect airplanes to our President, two perfect airplanes, and that is what we're focused on. And we will do exactly that.

And so with all of that, with these big fixed price development programs in front of us, we remain committed to delivering them. We have worked as hard as we can to de-risk the financial profile of these programs, and we're going to get them done.

And with that, I'm going to pass the mic over to Stephanie Pope, CEO of Boeing Global Services.

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## Stephanie F. Pope

*Executive Vice President, President and Chief Executive Officer of Boeing Global Services, The Boeing Co.*

Good morning. It's great to be here today to talk about our services business. Let me jump in on the next slide and highlight a few of our key focus areas. First and foremost is on-time predictable delivery. Key to everything we do in meeting our customer commitments. We're also focused on expanding global capability. We operate in

over 70 countries with more than 40% of our workforce outside of the US, allowing us to locally support our customers 24/7 with the clock speed they demand.

Digital enabled modern sustainment across everything we do, delivering predictive analytics to drive availability and operational efficiency, and finally, disciplined, profitable growth. This is all about optimizing working capital and being very deliberate and intentional about where and how we expand our capability and capacity where we can leverage and increase our IP and drive value. Let me give you a few specific examples in our portfolio.

Next slide, please. The breadth and depth of this portfolio is unmatched. We support commercial customers, government customers and the BAGA Market, business, aviation and general aviation market. And we do that with four businesses, our parts and distribution services. We operate the largest, most comprehensive, platform agnostic, aerospace distribution network in the world. Inclusive of that is our 2018 acquisition of KLX where we have successfully integrated that business and captured both our top line and bottom line synergies.

We've also transitioned from a very historical manual demand planning model to a predictive demand planning model, delivering analytics that we can leverage to make investments in inventory, driving availability and preventing shortages. That availability is key to driving our performance. We've also leveraged our IP and transitioned our manage programs in areas like rotatable exchange programs, component service programs and used services material.

Our engineering modification and maintenance business is one significantly enabled by our OEM expertise and our IP delivering products like Boeing converted freighters, commercial mods, spanning avionics, interiors and connectivity, as well as service life extensions and performance-based logistics across all of our military platforms. We've invested significantly in driving capacity to meet our customer needs. In fact, in just the last couple of years, we've almost doubled our Boeing converted freighter capacity, operating 15 737 active converted lines as well as five 767s.

We also look for opportunities where we can invest in needs for our customer as well as expand our IP. This is illustrated in our comprehensive cabin offering that we've been developing in partnership with our JV at Adient Aerospace as well as our acquisition of EnCore.

Our market-leading digital solutions and analytics business, inclusive of Jeppesen and ForeFlight, provides over 80 digital offerings to our customers, market-leading in Nav, crew and Electronic Flight Bag, and we continue to innovate and invest to drive additional operational efficiency and sustainability for our customers, bring in new offerings to market.

And lastly, efficient and high value training and professional services is critical to driving safe operation for our customer. We have a comprehensive portfolio where we support pilot and maintenance training, as well as simulators and simulator support and digitally enabled learning solutions. The performance and value of this portfolio gives us confidence in meeting the financial objectives laid out by Brian earlier.

Let me talk about those financial objectives on the next slide. We continue to execute and deliver strong performance quarter-over-quarter. Many of you last night asked me about our portfolio mix. So let me start by addressing that with the graph out on the left.

Pre-COVID, we were about 60% commercial and 40% government. At the peak of COVID, that balanced out to a more 50-50 mix and we're now seeing growth as commercial traffic recovers with a 60% commercial market and a 40% government. Let me also point out embedded in that commercial market, 40% of our offerings are off-

platform. Other enablers that are going to drive our business performance is the growing installed fleet you heard Stan and Ted talk about. That creates an annuity of sustainment for decades to come.

Our integrated digital solutions across all of our platforms and portfolio, as well as a robust and aggressive focus on our cost to lean and that our cost to serve embedded in lean and simplification in everything we do. And lastly, let me talk about disciplined investments. We are being very thoughtful at our capital deployment, where we invest, where we can leverage and grow our IP to deliver value and creating different business models within the industry to partner and collaborate where we can't. Emerging from the pandemic, with a robust portfolio, with a right sized cost to serve and a disciplined investment gives us confidence in meeting the financial objectives Brian laid out earlier, continuing to deliver profitable growth and strong cash conversion.

With that, let me introduce Dr. Greg Hyslop, Boeing's Chief Engineer.

## Gregory L. Hyslop

*Chief Engineer & Executive Vice President-Engineering, Test & Technology, The Boeing Co.*

Good morning. It's good to see many of you again. The engineering culture at Boeing has always been strong. It's what produced these beautiful airplanes behind you. But the MAX accidents taught us, showed us what we had to do to strengthen that culture. We'll never forget October 29. We'll never forget March 10. And that's what we've been about for the last three years. So when you talk about changing the engineering culture, strengthening the engineering culture in a global company with 58,000 engineers, that's a big job. But the scale of the task didn't make us blink. We committed ourselves to it, and we've made significant progress.

Our values state right up front that we start with engineering excellence, and that's what I'm going to talk about on the next chart, how we do that. We established these four priorities three years ago to set the course for the changes in engineering and really the changes across the company. The tagline for our safety management system or SMS is SMS is how we work, and it has become the heartbeat of our company. Every week, we have schedule – we have safety reviews in each of the business units chaired by me, Stephanie, Ted and Stan.

In those reviews, we look at trends in the data. We celebrate success. We learn from mistakes. We review the input that comes in from our employee speak up portal. The reviews are characterized by transparency. The FAA attends every week at the BCA safety review. And these reviews have enabled us to identify risks more quickly and get them elevated today to Dave and our board of directors. Dave mentioned we established our aerospace safety committee of our board.

We created a Chief Aerospace Safety Officer position. We stood up a product and services safety organization, outside of the business units, housed within engineering and we've also hired over 60 experienced pilots and deployed them around the world to consult with and work with our customers on any issues that might be coming up.

We realigned our engineering team, so we took 58,000 engineers. So now every engineer in The Boeing Company works for another engineer, all the way up to me. My title changed. I was the CTO. Now, I'm Chief Engineer. I was asked about that when that change went in, how I felt about that. I said, at Boeing, it's actually a higher calling because the technology always serves the engineering at our company. And now our CTO and the business unit chief engineers are all direct reports to me. Howard McKenzie, our Chief Engineer for Boeing Commercial Airplanes, is here today.

When we talk about our design practices, Dave mentioned the demographic shift that's underway. And so how do we make sure that incoming engineers get off to a good start? With our design practices, this provides the foundation that they can build their careers on the knowledge of all those who have gone before. Again, when you

look at our company and you look at the diversity, look at Ted's chart on the portfolio of products, and you look at that and literally that we need expertise in every engineering discipline, that is a big job.

But again, we didn't let use that as an excuse. We got after it. We've written over 2,000 design practices so far. We're using our top 1,500 engineers that comprise our technical fellowship to curate and apply that knowledge across the company. And more importantly, to approve any exception to a design product that is requested by an engineer in the course of their work.

When we talk about engineering across the value stream, we want our engineers to be curious, curious about what it takes to build the product in the factory and to operate it and maintain it in the field. This is where our work around model-based engineering and the digital factory comes in which I'll talk about later. But it also means we need our design engineers on the factory floor, which we've done and it's making a big difference. It also means we need to strengthen industrial engineering in our company, which we've been about and we're making good progress there.

And finally, we want our engineers to be empowered to make decisions. While our work is very exacting, as Dave mentioned earlier, judgment's still required. The design practices provide the foundation from which engineers can be creative, but it also gives you the guardrails so you can make judgment calls. While our focus has been on strengthening engineering and the issues within our own programs and production systems, we are thinking about the capabilities we need for the future and we group those capabilities in these four areas: producibility, digital transformation, autonomy and sustainability.

Our work in producibility is built on the foundation of our work in carbon fiber composites, which now goes back almost 50 years. It started in our defense programs and has now been scaled up to what you see out here with the 787 and that beautiful wing on that 777X. The 787 alone represents over 80 million pounds of composite parts that we've got in service today.

And I always bristle a little bit once people talk about Boeing and, well, are you really innovating? When you see that wing on that 777X, that's innovation. When you see the size of those composite parts and the precision with which that wing comes together and the performance it gives and you watch that wing tip fold and after it comes down, you don't see a seam. That's where technology and innovation is happening. That's the foundation we're going to build upon for our producibility effort.

And that pattern of starting in our defense programs and scaling it up to commercial continues, as Ted mentioned on the T-7, with the advanced assembly technique of Full-Size Determinant Assembly. That has great promise in terms of ergonomics and quality, a fuselage joined on a tactical fire that used to take days is now measured in minutes. The issues we're working through on T-7 are normal for any new airplane going through development and our issues with these Full-Size Determinant Assembly and some of the other advanced producibility is how it gets deployed throughout the supply chain and the process discipline required for them to do that. And that's where you have our engineers working with the suppliers so they can do that and have that process stability.

But also on T-7 is where we talk about digital factory and model-based engineering. What do we mean by that? We want to design a production system with the same system engineering rigor that we design the airplane. We want to be able to connect models of the production system and a model of the airplane through an authoritative engineering database because a good program manager, what do they do, they manage change. We want to see what the effective change in one does to the other and we want to have models that predict the performance of both of them.

The learning curve goes back to the 1930s and we want to flatten that learning curve and create that new paradigm by being able to build the first several airplanes in a simulation. The T-7 program has done that and they see the benefit of it. They see the benefit of having the data coming out of that database straight to the mechanics on the floor with what they need to do their task. So that is achievable. Now, our job is we're going to scale it up for our commercial airplane program.

Our work in autonomy is really motivated by safety. If you can think about a certified software agent working alongside a human operator and the software can respond more quickly to the unknown and the unforeseen, you're going to make a safe product safer. Our work on Wisk, as Dave said, is to push autonomy through that certification process. There will be a lot of learning that comes from that. And that will set the standard then for the programs that will follow.

Wisk is also where, as you saw, it's an all-electric airplane, vertical take-off and landing and it's a key part of our strategy on sustainability, which Chris will talk about after me. So, sounds great. Do you have the people that can do it? The answer is yes. We've hired 9,000 engineers this year. We have very aggressive goals, and in this labor market, frankly, we were wondering would we be able to do it? We actually achieved that goal sooner than we thought. That includes 1,100 interns we had.

And I'll say this because I spend a lot of time on college campuses and I talk to students. Our brand is still strong. It is still strong. And it also extends to and I say our university partnerships have extended to how we build those capabilities. We are invested with the University of Washington on their iterative disciplinary engineering building that's going to house their AI Institute.

We invested in the Innovation Campus at Virginia Tech in Arlington. And we just now – we're the only aerospace company that opened an office on the campus of MIT with our Boeing Aerospace & Autonomy Center in Kendall Square. But we've also been able to attract experienced talent into the company. Jinnah Hosein is here. Jinnah is our Vice President for Software Engineering and he did his graduate work at SpaceX and Google before he came to Boeing. But Jinnah has been a great add to our team.

So when talent comes in, how do we nurture them? How do we grow them? Our intern program, as I mentioned, we had 1,100 interns this summer. And we were proud to be announced as the number one internship program by WayUp and Yello this year. In our interns, I talked to a lot of them, they have access to me. They have access to Howard, all of our senior engineering leaders. They all had a great experience because they were doing real work on real programs and it changed them.

And then finally, for engineers at the high end of their career, I mentioned our technical fellowship. We did something a few years ago, because our technical fellowship went up to the executive level, but we expanded it. And we said you could have a technical career at Boeing and go to the Senior Director and to the Vice President level. Dr. Jill Seebergh is here. She is the Chair of our fellowship, Ph.D. in Chemical Engineering from the University of Washington.

So, all of these changes, I hope you can tell, are having a deep and lasting impact on our company. It's a huge job that we've been about, but the scale of it, we have – is not something we shy away from and we don't blink at. And our commitment to those changes, as Dave said, will never be done with these things, we're only going to get better. But our commitment is unwavering to all of these things.

Okay. Next, I'm going to introduce Chris Raymond, who's going to talk about our strategy in sustainability. Chris?

## Christopher D. Raymond

*Chief Sustainability Officer & Senior Vice President, Global Enterprise Sustainability, The Boeing Co.*

Hey, everyone. Thanks for being here. Thank you for your time, especially those of you in the room, but also those of you online. I wanted to start this morning by just saying a couple of words about aerospace. I've been a little worried as a 36-year veteran of aerospace that we take it for granted almost now around the world. And I think the pandemic showed us how important it is to all of us.

Pre-pandemic, it connected 4.5 billion people around the world and the cultures that they live in. It brought many of you here today. In the pandemic and during the pandemic, we saw the importance of cargo delivery. We saw the importance of vaccine development and transportation around the world. We were also reminded of the importance of humanitarian relief in peacekeeping operations.

So, I think this thing that we love called aerospace, we can't take it for granted and we need to remember that it's important to people, it's important to countries and it's important to global economies. And we were reminded of that. It also is growing, so it has to be more sustainable going forward.

And I wanted to say a few words about sustainability at Boeing and Greg hit on this a little bit in his role. I'm an example of the change at Boeing. Sustainability, having a role like mine, we didn't have that two years ago. Having it report to Dave and our board, we didn't have that two years ago. It's explicitly part of the values of our company. It's explicitly part of the strategy of our company. It's critical to earning stakeholders' trust.

And I would also say, like Greg did, that we've also got a team of people. We have a dedicated leader around customer engagement in sustainable aviation fuels. We have a dedicated leader in Amsterdam with people around the world focused on sustainability policy and developments and partnering that's going on in the world. We have a dedicated Chief Engineer who focuses on future mobility and sustainability. We had none of that two years ago. We're part of that change.

We also produced our second ESG report. I know that's a topic that some of you cover. I've been fortunate and blessed to be at some of your conferences on that. So that's our way of conveying our ESG information to our stakeholders. And you know that, as you all know, is a difficult challenge. Everybody has different expectations. I can tell you our experience and judgment emphasize six focus areas in our ESG report, but the first two start with safety. I would argue safety is the foundation of sustainable aerospace.

So I just want to open with that, and then I want to put aviation in a little bit of context for you. So if we looked at aviation in context, it's about 2.6% of the world's carbon emissions. Maybe to put that in a little more context, the cooling industry, air conditioning and the like, is 4 to 5 times higher than that. The cement manufacturing industry would be about 3 times what aviation is. But we know we're growing and we know we're big and a global industry, but our global industry is actually agreed on a long-term challenge.

I would almost argue that there's not very many global sectors that you could say have the forums or the ability to even agree on a long-term goal like Net Zero 2050. And yet, through forums like IATA, with our airlines, and ICAO with our governments, we have an agreed to goal. We have an agreed to goal on how we're going to do carbon offsetting if it's required and we can't fully solve the problems by 2050.

Most industries don't have that. And then, I'm a Boeing person. I go back to 1929 when Bill Boeing said we are pioneers of a new science and a new industry. And I think when you think about what this industry has done and solved 30 years after he said that, the introduction of the Jet Age, making the world smaller with 707. About 10 years later, walking on the moon.

So we are in the era of sustainable aerospace, but this industry goes after big hard problems. This is a big hard problem. We've got to fix it. In Boeing's view on how we fix it starts with this slide. When we ask what are the focus areas, how does this industry get to net zero by 2050? What are the potential levers and ways to do it? This is what we say at Boeing.

First and foremost, it's what it's always been about, investing in fuel-efficient airplanes, new airplanes replacing older, less fuel efficient airplane. 30 to 40 years ago, it would be 50% less fuel efficient than the ones you'll get on today. And the ones that Stan and Ted talked about and are in development in the industry, when these new airplanes replace these old airplanes, we've gotten 15% to 25% more fuel efficiency. That's the challenge.

People ask how many more times can we do that in this industry? We're going to see tremendous benefits on carbon emissions when the fleet renewal occurs by what's in development today. And if you notice, most people when they make their announcements now, we don't just talk about the % fuel efficiency gains we get anymore, we talk about the tons of carbon emissions saved.

Operational efficiencies, always been important, little things that add up to big gains in carbon emissions. These are things that airlines worked relentlessly on every day to find an extra pound weight, a little less water, a little less fuel efficiency and Stephanie talked about the host of tools that our BGS services unit has to try to help people solve those problems.

But now, now, the question and all the conversation is about how will renewable energy intersect aviation and advanced technologies in flying machines? Sustainable aviation fuels, electricity, hydrogen and how those will be used in our industry and on those future platforms. It's no secret that Boeing has been a big proponent of sustainable aviation fuel. We've been involved in it since 2006. And like Greg said, things take a little time in our industry. But if you go back to 2006, our industry was asking the question, will these work? Is this even possible from an engineering or physics perspective?

One of those programs out there on ecoDemonstrator helped us say that it was. And in 2008, the first airplane flew on an ecoDemonstrator program with Virgin Atlantic on sustainable aviation fuel. So now we can fast forward and there's skepticism on how fast this can scale up. It's a hard problem. But I would also argue that we are no longer asking, is this possible, we're asking how much output can you create and by when? So that's the challenge now, moving the S-curve to the left and scaling up sustainable aviation fuel.

But we like to say it's going to take sustainable aviation fuel and whatever else can be generated, and we have to be working on the and as well. But it's going to take a lot of sustainable aviation fuel for the industry to realize its goals of net zero by 2050. And I'd tell you, I am hopeful, when you see the technology combinations, the process refinements going on, when you see what's happening in the banking industry with transitioning to a more financeable energy future, when you see what the oil and gas companies are doing to pivot to these renewable energies, when you see what's happening in the automotive industry to electrify, these big trends, I believe, give us optimism that this industry is going to solve this problem and find a way to have a lot of sustainable aviation fuel.

And there's a lot of innovation occurring in that space. We collaborate with MIT on that. And when you think about what's happening with feedstocks, renewable electricity, industrial carbon capture, the introduction of green hydrogen, these pathways are going to expand. They're going to get greener and cleaner, and it will take time. But it's a huge solution to the decarbonization of aviation. But we are working on the and.

In fact, Greg introduced a few of his people. I'd like to introduce, Brian Yutko is in the room with us today. He's our chief engineer for sustainability and future mobility. And sometimes, we like to say he's Brian and because this is the and. And if Boeing is – if there's ever any doubt that Boeing is already in electric aviation, I would just like to point back to that airplane and the 787 that's sitting behind us.

We forget there was a megawatt and a half of electrical power on that airplane. It taught us all kinds of things about electronic architectures, electric architectures, taught us a lot about voltage. Remember, it taught us a lot about batteries. It taught us a lot about thermal management on airplanes. We had a lot of learning. There's been a lot of discussion about Wisk. Wisk is one part about the urban air mobility market and will it happen and how it will happen. But it's the more important part about how electronics will get – a fully electric airplane will get certified and developed.

If you lift it up the guts of that airplane, it was designed completely differently. As Brian likes to say, it's 12 moving parts when it flies. In the lower right, you see battery packs. Those supply chains didn't exist. They don't exist. The people that are flying prototypes either buy what's available and kind of hope that it helps them satisfy their objective or you go develop those supply chains and you figure out what's really optimized to the airplane you need and the one you have to certify, because as we all know about these future technologies, nothing scales in this industry unless it's technically possible and safely certifiable, and then it has to have a value proposition and then it has to help do what you intended it to do, and in this case, that's reducing the carbon emissions of aviation by 2050. So we are in the electric business.

Now, let's talk about hydrogen. I got asked last week, is hydrogen possible in aerospace? We already use it in aerospace. We use it in rockets. We've flown it on airplanes. In the upper left, you see the first airplane to ever fly on a hydrogen fuel cell, fully electric powered airplane. Boeing did it in 2008. On the bottom, in your lower left, you see an airplane that flew on liquid hydrogen. If you wonder about its weird shape, it's because it had to be optimized for the fuel tank. L/D can be a little challenge on that airplane, right?

So we are learning. In the middle, the two pictures you see in the middle, a composite, liner-less cryogenic storage tank, made from the 787 carbon fiber system that Greg talked about, in the learning curve and the trajectory of learning's we've had on carbon fiber. That holds about the amount of hydrogen you would need to power a regional jet or a future flight concept like is in the lower right of this picture. So we're learning from hydrogen. We've used hydrogen. And when people say, well, what are the obstacles to hydrogen in your industry? I'd like to use two words, safety and infrastructure.

Safety, loading it, transporting it, refueling it, controlling temperature, controlling pressure; infrastructure and don't take our word for it, go talk to the people that are in the hydrogen production industry and there's great zeal for it. We should all want more green hydrogen in the world. It would mean there's an abundance of renewable electricity in the world. But when you talk to the people that are trying to produce it, production, pipelines, that's their part of the infrastructure. Our part of the infrastructure, airports and airplanes. And so we spend a lot of our time talking to airports about what changes they'll have to get ready for, if there were multiple ways to refuel airplanes in the future.

We spend a lot of our time thinking about airplanes like the future flight concepts and how our planes would have to be configured. But our view is, if we're serious about reducing the carbon emissions by 2050, we need a lot of fleet renewal with these more fuel efficient airplanes. We need to scale sustainable aviation fuel in this industry. And more green hydrogen could be used as a very effective ingredient in sustainable aviation fuel production to make it even cleaner and greener.

To help talk about these strategies for how the industry gets to net zero by 2050, we invented a digital tool called Cascade. It's a web-based tool. Just to orient you to the tool a little bit, in the upper left, you see some data. This happens to be a year in the life of aviation. 2019, we didn't want to pick a low year, so we went back to 2019. But you see there were 32 million-plus flights and about 952 million tons of carbon were created by the air transportation network that we call scheduled air delivery.

Across the top, we could sort that data by the type of aircraft, airlines, distances, origins, destinations. It's all aligned to the commercial market outlook that Stan talked about. Down the right, you see the things I talked about, fleet renewal, operational efficiency, the introduction of these renewable future aircraft, and yes, market based measures. And that's what – we wanted to do is to give people a way, a web-based way in real-time to have these discussions about what do you think is going to make the industry most net zero by 2050?

What are the policies that we should really be focused on if we're serious about that? And in my last chart, you can see when you run the model and start to move the levers and I hope we get a chance to interact with many of you on that, you can start to see some early results. Fleet renewal will always remain important. It's a huge component. If we could just snap our fingers and replace all the last generation airplanes with the ones we have in development and coming into the market now, you see 17% bite out of carbon emissions because of the improved fuel efficiency.

Fleet renewal is a critical component. Operational efficiency remains a critical component. Sustainable aviation fuel is a critical component. And the other thing we learned is that when we're thinking about electricity and hydrogen, we have to think about how they're produced. Are they green? Are the grids green yet? Is the hydrogen green yet? We got to solve that stuff. But this tool helps us interact with policymakers, with customers, with industry partners, and talk about what are the ways to get to net zero by 2050. And with the government, what are the enabling policies that can make the biggest difference to either de-risking or creating the flow of capital that's needed to scale this stuff up?

So I look forward to working with you. Our motto is Sustainable Aerospace Together. It's a nod to the fact that it is going to take partnerships. And I feel like these global companies like Boeing and the relationships we have around the world can bring together the people that can go solve this hard problem in the era of sustainable aerospace. So thank you. Look forward to your questions. I'm going to turn it back over to Dave.

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## David L. Calhoun

*President, Chief Executive Officer & Director, The Boeing Co.*

Thank you, Chris. I'll be – just take a couple of minutes to make comments about the comments and leave you with a thought. And then we have a break, 15 minutes. So if I don't announce it then, know that it's coming.

Number one, Brian. Brian's new. Brian has reached into every corner of the company with fresh eyes, fresh perspectives, what's reality, what's pie in the sky? He's had to sort of sort through all of that, and he's gaining on it every day, every minute. And we believe the plan that we have out here and the guidance that we've provided is doable. If we didn't, we wouldn't put it up. And we think it's clear eyed with respect to what we're going to face. And as he said and as I'll say, we feel like we're in control of all the variables that matter with respect to the delivery of that guidance.

Stan, Stan's passion for his product line is – it's unlimited, but it's based on just cold reality. We go out and we fight every day to win orders. We have customers tell us precisely what they need based on their route structures, exactly what wins, what's more efficient. Now, today, what is less emissions? All of those things go into that discussion and we learn something in every one of them and we have never felt disadvantaged in a single discussion ever. So any

questions about our product portfolio, I hope, I hope we answer them. More importantly, I hope the market continues to answer them the way it has. We feel great about it.

Ted. So Ted is new to his role. He's done a remarkable job in handling services in a really good way to Stephanie, which is why we've been able to get the leverage we've gotten. He had to deal with a real tough problem right up front with respect to fixed price development contracts. The hard part of that discussion is that the hard part is messy, it's unexpected, all those things that you hate and I hate and anyway, we apologize for that. Underneath it, the product lines, the products, what we do for the military to serve their needs at a very important moment in time, very important moment time. Everything has to get measured against the new threats that they have in front of them and those threats are coming in fast.

And all of a sudden, the Defense Department feels like they're in a race, not just what's the best product and that we ultimately can develop, but when can we get it because the other guy's moving at light speed with big resources and big commitments. So this is a different defense world and we are proud of our product line. And I wish I could talk about all the things we can't talk about. Just know we're invested and know we're working hard on it. And we believe there are some very important parts of Boeing's product portfolio that will emerge.

Stephanie, the comment I want to make about her, because we love her and we love everything she does there, there's a long standing question about the \$50 billion number that we've been after in services. So we're not after that number, we're not, because what that leads to is undisciplined capital allocation. Stephanie is an expert on capital allocation. She knows where the value is and isn't, knows where it's trapped, how to get it, where the IP comes to play, where it doesn't. She's got instincts that most of our leaders don't have. So, I think it's the perfect placement for the perfect role. I want all of you to know \$50 billion is not in any page or any chart or in any discussion. We simply want to make disciplined allocation decisions in a growing market, one that's very attractive and in our view, can deliver real value for all of us.

Greg, just a comment, it's always hard to describe engineering to the financial world or any world, quite frankly. He grabbed the biggest rock we had and he started pushing it. 50,000-plus people, technically supporting programs all over the company, all around the world and he is going to put some glue to it. Reinforce discipline, starting with safety, create practices that get us over the demographic problem once and for all. Recruit a new bunch of engineers, mostly software engineers, AI, data analytics all those things that now sort of dominate the development of our airplanes.

Greg has got a heavy lift. He has done an amazing job with four simple principles that he developed, he developed early and he is stuck with them, every day, all day. So I want everyone to know that the guts of our company is committed to change and committed to change in a significant way.

And then with Chris, here you can help me. Chris invented Cascade in his team. Every airplane, every day, every route, every customer, what's emitted based on every engine, on every one of those wings and a few on the tail. That set of analytics, all the modeling that can be done does what? It prevents us from doing what the energy industry did, where policymakers got so far ahead of capabilities, the music stopped. And we know where some of that music stopped. And it's hard and it's difficult. But with a tool like Cascade, if we can get it in all the right hands, our customers, ultimately the legislators and the policymakers who want to create policy to incent us to be sustainable, at least it will be informed and they'll know where capability really is and what technologies are really capable of and it's open source.

So all the whizbang ideas that come out pretty much every day about what's possible, they can get evaluated and they can be built into this model and we can find out exactly what it means and it shouldn't be lost on anyone in

that chart that hydrogen actually made it worse, not better, between now and 2050. We'll stay focused on hydrogen, and maybe the second half of this century we'll be great at it. And maybe it'll make a dent in sustainability. But for now, know the limitations before policy gets too far ahead.

All right. Just a bit of a coming out party for us, so I apologize for some of our emotional activation. We believe in our company. We want to represent our 150,000 people. That's what we want to do. They did the heavy lift I spent the first 20 minutes talking about. That's a little bit of a demonstration about what people can do, how they can execute in the most difficult of moments. Most of my CEO peers when they look back and peer back over their careers and say when did I learned the most, it was that moment when everything hit the fan. It was that moment when you're left to your own devices, you have to be resourceful. You have to think about things in different ways. It's survival questions. That's what drives decisiveness in a big way.

That's what this team's been through. That's what they've been through. So supply chain issues are tough. But this team's capable of dealing with supply chain issues. It's capable of knocking down pegs. It's capable of making improvements that will sustain us over a long period. And while that goal of \$10 billion and stable, is it all that sexy? It feels good to us. That's exactly where we want to be. In the meantime, we'll fuel all of those capabilities, innovations that will come to bear on that next airplane someday and it'll be amazing.

Do I think we've given up leadership in this industry? Not for one minute. Do our people think it? Not for one minute. And we're not going to take any yearly fluctuation or experience like we've had in the last couple of years, as an indication that we've given up on that. That will not happen. Anyway, I appreciate everybody's time today. I don't want you to confuse this coming out in our confidence with arrogance. That's another one of the significant cultural changes that I think is embedded in this company for a very long period of time.

Anyway, thanks for your time. We've got 15 minutes and then we'll get up and do some Q&A. Appreciate it. [Break] (01:52:49-02:09:56)

## QUESTION AND ANSWER SECTION

### Matt Welch

*Vice President-Investor Relations, The Boeing Co.*

A

All right. Welcome back for the Q&A portion of this morning's agenda. If you have a question, please raise your hand and I'll call on you. I do ask out of the courtesy to others you keep it to one single-part question. There are mics and so as I call on you, somebody will bring a mic over so that everyone in the room can hear your question. I'll start with Doug?

Q

Okay. This is really – I think it's for Stan and Dave, but when you think about – in the guidance you've given, next year, basing off of kind of low-30s deliveries. When you look at that, there's the engine issue. You've got some other components that can be an issue here in keeping it a little slower than you would want. But you've talked about possible upsides, certainly to 38, and we've seen capacity for 38 on the wing line yesterday. I think it's up. But how do you project this? In other words, you're getting information, forward information from CFM, from others. When will you know when you think you can take that rate up?

### Stanley A. Deal

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

You want me, Dave?

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Well, again, this is the age old question. And as you know, at least a couple of us in the room have some history on that particular line. It'll be when we see the rate increase. So – and we measure it in weeks. So how many engines get delivered in weeks and they gave us a high confidence number. And Larry is a tough guy and he gets underneath things and he is smart about how factories perform and that's set numbers we got. And endeavored to increase that rate with some suggestions about what he can do and we believe him. When we get to that moment where that weekly rate hits the number we think is required to get our 38 rate increase, we'll announce it that day. It's all about demonstrated rate and performance, all about demonstrated rate and performance. It's not more complicated than that.

Q

So in this – when you get that, that number, the amount of lead time you get on that is what, are we talking about 10 weeks forward, this is what we think we can deliver. Two weeks, six months...

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Here, what will happen is and Stan I'm going to ask you to comment on one part – part of this. Success begets success. When you're stalled and the rates haven't been coming along to the extent that you thought they might and this is a variety of players and team errors we are going to discount that – sort of that suggestion of where it is. And then as you begin to progress, again, and that weekly rate improves and everything you suggest about next month starts to happen on as predicted, then our confidence starts to go like this, it just does. And then we'll always ask the question, can the casting world, the forging world, support you? And I know they're laser focused on that. If the answer to that question is yes, then we'll go as quickly as we can, and then you might just comment on how quickly it can move rate.

**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Yeah.

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

And by the way, rest of the supply chain is moving at much better rates, so that is not just warm, we expect them to supply us at the high end of the rate, rate scale.

**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Yeah. And I'd just add Doug and everything Dave said and that's weekly output levels, they tend to quarterly increase than the net output. So that's the incoming to our factory. But we are also with them on the value stream. So not just the output which is through the test cell, what's happening in the parts supply, that's the earlier indicator of are they getting ahead of the problem, so that we have confidence that throughput is coming through. So we look at both, net output, when they're on, we're ahead and they have been very explicit in loading demand hotter than they've committed to us, which we're very appreciative of. That's how we're looking at.

And then in our factory, obviously, in the tour yesterday, you probably heard we've already hired in employment

for the next rate break. We do have planned within the 2023 view another rate break, and we typically like to bring our resources in about six months in advance a break. So that, one, they can go through a training period off airplane and then a training period in on the airplane itself and then finally practice. We always post paper well in advance, typically a month to two months in advance of a rate break. We posted at the rate job time. They still get the full time, but we pay some to the higher output level and then we use that buffer. So that's how we're looking at it.

And again, in setting this guidance, it's a range. The low end assumes a lot doesn't happen. Obviously, the commitments we have are actually more towards the norm or to the high side of this. And that's how we're going to manage it going forward. So, when I see that stability, we'll start posting paper, we will probably fire a third line early, just to give us some capability, take those rate, 38 people, get them practice on a dedicated line of airplane that may run at a much different rate than the other two lines. Those are the times and the things we do to build confidence.

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**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Peter?

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**Peter J. Arment**

*Analyst, Robert W. Baird & Co., Inc.*

Q

Thanks. Peter Arment from Baird. For Dave and Stan, just on the kind of the walk back to 10 a month on the 787, if you could just kind of maybe unpack that, maybe what are some of the assumptions behind that? And also, you're going to be producing that all down in Charleston...

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**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Yeah.

---

**Peter J. Arment**

*Analyst, Robert W. Baird & Co., Inc.*

Q

...just confidence levels around that. And you're also starting with a little bit of stored inventory. How should we think about kind of how that factors into all this and whether Brian wants to make a comment around the cash flows there? Thanks.

---

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Yeah. Just a quick one on just the construct and then Stan will give you a lot more of the details. That rate, if it's a question of whether we can do it, that's a demonstrated rate. We'll get a lot of efficiency out of doing it out of one place. The limiter is the pace at which we can deliver these finished goods, airplanes, because it occupies one of the lines in the construct of the factory as we do the joint verification work. So, it's – there is a step function when we get – when we wind our way through the joint verification.

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**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Yeah. And in terms of rate, so first of all, we got a lot of experience learning what happened on the MAX [0-31. The 87, some of our suppliers that are at zero, they're having to rate back up. So first, we got an early preview of risks that really happen now in the post-COVID world. Our supply chain team has been back into the supply base even before we got to August 15 saying, okay, classic staffing. That was one of the early risks we saw.

The good news, the major structures partner, the majority of the major structure partners, and as you know, we have a lot in Japan had retained staffing. So that was good. Some retained it within the work cells, some of it moved labor into other work and they're now moving it back. So there's a little higher skill relative to them coming in than maybe we saw in some of our MAX suppliers that are gone to zero and now are bringing new skill in.

And we also factored in the fact that what we learn in modifying airplanes is you need to bake a little extra time. Even though you have an industrial plan, you've demonstrated once, there is some variability in that mod sequence. So we've factored that in, in the forward-looking guidance for the inventory. That's why you see that inventory burn go through 2025, bulk by 2024, but a little in 2025, and then cautious rate ramp ups from where we're running today out into that 2025, 2026. And the good news is, Ihssane Mounir who you met last night, like two years ago narrow body orders were re-emerging, wide body orders are re-emerging and the first and foremost focus on that center of the wide body fleet which is 787. So we see a pretty good outlook on the demand, it's just managed in our factory output through the supply chain. Brian?

---

**Brian West**

*Chief Financial Officer & Senior VP, The Boeing Co.*

A

I would say on the inventory component near term, as Stan mentioned, we're going to do more in the 4<sup>th</sup> quarter than the 3<sup>rd</sup> quarter on 787. As we turn the corner into 2023, we'll have under 100 in all likelihood of the "115" and then it's more or less half in 2023 and half in 2024 tied to, what Stan said in terms of working them through the joint verification process. So that feels highly confident to go execute that. And the cash flow is between how we go from this year, 2022, to next year, big part of that is going to be those 87s for sure. And then, of course, we get it in the out years, going to 10 a month is incredibly powerful to that \$10 billion delivery.

---

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Ron

Q

Thanks, Matt. In the context of the turnaround, when you think about the guide for 2025, 2026 and thanks for that, right? I mean, it kind of helps everybody think about where things are going. What makes you feel confident about it, right, just across the businesses, I guess it's a question to everybody, but what makes you all feel confident about those numbers and maybe upside/downside, that kind of thing?

---

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

The upside/down side is always a trap, so I'm going to try to avoid that one. No, no, I get it. So I'll start with the presentation I attempted to make, which is the risks that we have faced and overcome in the last couple of years prevented us from confidently projecting anything. Have we always believed this would be the outcome? Of course. But the risks were coming at us from sort of everywhere, some unexpected, some just new learning, et cetera, et cetera.

As I put that into context, with the supply chain risk that's ahead of us or on us, I will say, I just want – one is minuscule relative to the others. And so I believe it's all manageable. We got a lot of people, have a lot of experience in supply chains. I do. We know how lean works. We're exercising our disciplines with respect to travel work that makes it bumpier in the early months, but it leans it out and makes it predictable when you get to 50. It's all with forethought. It's all measurable. I've been with enough suppliers. Every next squeaky wheel, we all go see them. And to Stan's point. I head right from here to Asia to meet with all the heavies that support our work.

Yeah, I'm confident they're getting ahead of things. Still a little unpredictable. If we keep our disciplines, pause lines when we need to pause lines, not compound an issue, I think we're just going to steadily march our way up this rate increase. And I trust our suppliers. I – we talk a lot about engines. We have a very clear eyed discussion its not mean spirited or anything with our engine supplier. They tell us with real conviction what they believe they absolutely can do and what they're shooting for and we have to make judgments about where we're going to be in that process. This is at the low end of that judgment, and I hope we can get to the high end of it based on just our demonstrated performance out of them.

So I just am confident and it's founded on the basis of the risks I see going forward, which I think are now beginning to be look like common risks, most CEOs and leadership teams face in their – in all of their endeavors. I've been through every one of the aerospace earnings calls and discussions, et cetera, et cetera. Their discussion on the supply chain risk is identical to everything I'm experiencing. Identical. And so collectively, I think there's confidence that we'll overcome it.

Labor shortages are definitely getting, what should I say, we are finding people. We definitely have found everybody we need and even our supply chain is beginning to sort of bring the people in that they need. So I'm confident that that's beginning to resolve itself. I can't measure this quarter-to-quarter as easily as I can year-to-year. But, boy, 2025 is a long way out with a lot of effort and I just think this supply chain will smooth its way out.

Yep. And there's nothing by the way – I'm sorry, because this question will probably come up, there's only one 2022, to next year, big part of that is going to be those 87s for sure. And then, of course, we get it in the out years, going to 10 a month is incredibly powerful to that \$10 billion delivery.

---

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Ron?

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**Ron Epstein**

*Bank of America Securities*

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Yep. And there's nothing by the way – I'm sorry, because this question will probably come up, there's only one other risk that's out there that we took out of this, and that's China. So we don't have to have the return of China as a customer to do what we're talking about here. We do not.

---

**Ron Epstein**

*Bank of America Securities*

Q

Thank you.

---

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Yeah.

---

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Sheila, you have a question?

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**Sheila Kahyaoglu**

*Analyst, Jefferies LLC*

Q

Just on that note, when we think about the 787 at 10 a month and the 737 at 50 a month, how does China factor into that? And on the 787 specifically, what sort of international traffic growth are you assuming and what's the A350 at?

---

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Yeah. I'll let you take the second one. How does China factor in? So comment number one, we want China as a customer. No mistake about it. I do not want to, Stan does not want to remarket the airplanes that we may have to ultimately if we don't get deliveries accepted on the timeframe that we're going to wind down our second factory. So that's sort of that – the decision matrix around do you remarket the next 50 is all based on making sure that

the factory we set up to bring these airplanes back to the marketplace. We're going to run that as efficiently as we can, and we're not going to pause it and postpone sort of that effort on the basis of China deliveries that have not yet happened. So we'll approach that sometime, maybe 12 months to 15 months is my guess.

Not having China matters a lot to us. We want them. I will work as hard as we can. Stan supports their customers. We have a finishing center in Zhoushan that's ready to go. So we want it. I hope, I believe that based on need, it will happen. We are not turning our backs on them in any way, shape or form and won't. But we've de-risked this guidance that deal with it if the geopolitical thing just doesn't resolve itself.

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**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

In terms of recovery, look, we still believe the recovery in 2023 and 2024, internationally, the one but is China. But if you watch this year largely domestics recovered, Europe, Middle East, Latin America, US then the international market started up in the North Atlantic, very robust through the summer and continues to be robust actually when you're looking at something that would have been some seasonality downturn.

So, and then in terms of outcomes, I'm not going to comment on 350, I'm more focused on my products the 787 does change the world. It's changed. It opens up new routes, liberalizations. People want to fly to where they want to fly to and the 787 does it. So I think we'll get it more than our fair share. We always have on the Widebody fleet. And then I think you'll see a resurgence of buying for what I call the second version of the Queen of the Skies, the Boeing 777X, which stands alone because there will be a need to get that flagship airplane. We've got a great order base, I love who helped us launch it. We had to move through cert and I think that buying will start in late 2024 and 2025 and again, it will become the flagship anchor. So...

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**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Myles?

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**Myles Walton**

*Analyst, Wolfe Research LLC*

Q

Thanks. Stan, maybe just a little bit more detail in the quality slips that occurred and were those in-house. Are they fully resolved? Was that also contemplated in the low 30 delivery rate for the next foreseeable future as a clarification and then, Dave, the outlook for a new plane. It does seem like your tone is shifted forward a little bit as to when that would occur. I think you've previously talked about the manufacturing system potentially creating the opportunity for new plane sooner. Is that correct on my part or no?

---

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Yeah, it's correct on your part, if that's what you thought.

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**Myles Walton**

*Analyst, Wolfe Research LLC*

Q

Thanks.

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**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

So I talked about the priority we put on the digital modeling capability and the experience curve we are on with several of our defense programs and then the build out in capacity with respect to all the computational support

that is required in it, et cetera, et cetera. So I have commented on that many times and I've said many times we won't contemplate a new airplane, we won't even put it on the drawing board until we know we're capable of doing that.

But in addition to that, because it's multiple things, we just start with the premise. These airplanes get invented about every 15 years or so. They're not typically invented to fill a niche or some product gap you think you have relative to portfolios, et cetera. They have to be built, so that they can last 50 years, get serviced for 50 years and offer an improvement that in sense the airlines don't want to get them sooner or rather than later in displays airplanes that they currently do.

That numbers definitely got to be north of 20. It's got to be 20% better than the other airplanes that they can buy in the existing portfolio. There is nothing proven in the propulsion side of the house, nothing that's going to deliver that in this decade. There's concepts, but there is nothing that's going to do it. My guess is when they do it, it'll be somewhere around the 10% at the high end, probably something south of that.

And without a real invention on the wing, it'll never spell mother. So we've got those two factors and then we have this sustainability question, attached to both of those that we have to make an appreciable difference on sustainability. So if it feels like new news, then it is, but the discipline to build in these underlying technologies, so that next one is truly differentiated. That is what we're focused on and we're invested in. We're invested in. I know the propulsion guys have concepts that they're invested in, but this thing is, I don't think we're going to even get to the drawing board this decade. Yeah.

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### Stanley A. Deal

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Yeah. And then look, in terms of the couple quality issues that came over, one, first of all, we got increased rigor on our quality management system, Carole Murray, leads it for us. One passionate leader dedicated to quality with a great teams, adding inspections and depth in our supply chain, but created at our fuselage supplier got captured, controlled here, found here. We'll work it back handful of days to do it. It's two items and we'll get through it. Yes, in terms of that monthly variability of output, we've baked some of that in the low side case going forward that that's kind of part of this defining the floor.

We're obviously counting on that instability coming out, part of breaking to the next rate break is that we have a consistent output from Renton to here while we supplement with the inventory airplanes, when we see that and then we see the supply chain stabilization, we'll break that next rate.

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### Matt Welch

*Vice President-Investor Relations, The Boeing Co.*

A

Seth?

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### Seth M. Seifman

*Analyst, JPMorgan Securities LLC*

Q

Thanks. Good morning. Brian, when we look at the guidance for BCA and I think it was a low double-digit margin in the out years. How do you get there with 787 and 777X booking at zero?

---

### Brian J. West

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

Yeah. So if you want to talk unit margins or program margins, I'll let you pick?

**Seth M. Seifman**

*Analyst, JPMorgan Securities LLC*

Q

Which was the guidance referring to?

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

So on the program margins. So the 787 is going to get higher over time for a variety of things, including the productivity that that's Stan had mentioned. We'll also have some better model mix. So that one from where we're at for where we're going, feel very confident that we can get to those margins. And margins that believe or not will get pretty close to -- will be more than what they were prior, even with the different rate ramp.

On the 737, that one will be a little bit more pressured, largely because we do have the compensation that we owe customers for the late deliveries as well as we have some customer mix that's going to be unfavorable. So that will get quite back to the 2018 timeframe margin level but we feel good that with some productivity benefits, it's going to help us get to that underwritten double-digit for Stan's business. So those are two big ones.

Now on the 777X, it's going to be dilutive because we'll be in low production mode and we've got to get that one moving. But on the two big ones that will be at rate, we feel pretty good about where they're headed.

**Seth M. Seifman**

*Analyst, JPMorgan Securities LLC*

Q

If I could sneak in a quick one, is there a tax refund next year?

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

No.

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

... Glad we don't project that anymore.

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Noah?

**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

Q

Thanks. Thanks for all the detail here. Stan, you just laid out having labor for the next rate break on the MAX and that usually do that six months in advance. So what is the engine supplier saying about their ability to do that? I would think they would know that six months in advance. And then separately, just on demand, it's a macro world where normally the airlines would be pulling back. What are they saying to you or are you hearing any caution? And specifically on the widebodies, the company is talking about a replacement cycle for a long time. I think the data shows the age of the fleet actually driving that basically now and so does that back this high 787 rate?

**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Yeah. All the discussions with the airlines are pretty lined up. They're still in a recovery mode, so they haven't established pre-pandemic levels. And this combination of pent-up demand, I think every customer we talked to believes they'll still be able to grow through any kind of recessionary pressure and everything we see from a buying behavior is supporting that. We haven't seen a pull back, a stop of RFP or something of that nature.

And remember, the airlines are also trying to establish and meet their sustainability goals, that is driving fleet renewal, even, when they may be faced with some slowing of growth. So to me, that bodes well. As I said, you've started to see some 787s coming through on the order books even while we were getting strict conformance we saw like Lufthansa getting prepared for the future. And I just think that will continue and we're all aware of the major campaigns that are out there in the public and there's many that are not in the public.

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**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

I'll just add something to that having been through this a couple of times too. This supply chain problem we're all talking about, that's not lost on the airlines and they're actually trying to get deliveries out in 2027, 2028, 2029, 2030. So they don't actually extend whatever recession they may face next year into the time they may need deliveries of airplanes. So this supply chain thing that surrounds our industry, not just the manufacture of airplanes, but the things underneath it, I think it incentivized them in a pretty big way to start to get in line. I've seen this before and that's exactly what's going on now.

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**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Again in your labor question.

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**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

Q

You know, probably, going to ask three part.

---

**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Yeah.

---

**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

Q

A lot going on here. But the first part of that just you basically laid out the timeline to break to 38 in the middle of the year. I would think CFM would need to be declaring right now whether or not they'd be able to do that or is that not true.

---

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Yes, they have. I mean, this is...

---

**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

They have. They are part of our discussion, they have declared a high confidence plan does, predicated on that plan. We know we can we can make that rate, but we're going to watch that, right.

**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

Q

CFM want to declare to you they could they could be ready for 38, middle of next year, low end of year.

**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Ready for their output they need, so we can do that. But we're going to continue to watch it. And they are bringing labor in, but it's really their suppliers as well. And the suppliers are part of the reality of bringing that in, though, is ramping up, learning, perfecting process, getting yields back to where they could be and I think that piece we're through the staff, now it's the learning curve as we look there.

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Nobody's trying to dodge anybody here. We're trying to give everybody the right information. There is what they say they can do and there is what has been demonstrated. And we wrestle with those curves every day, all day. And as I said, those lines have to meet, I think they are determined to get those lines to meet. And every week that goes by where it looks like those are meeting, we'll have more and more confidence to hit the rate break exactly when we hit it. This is just judgment on both sides. We're not mad at each other. They know the risks they have in trying to meet the targets that they want to meet. They're aggressive. They'd like to meet them. We're trying to bake the realities into that.

**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

Q

Makes sense. Thank you.

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Kristine?

**Kristine Tan Liwag**

*Analyst, Morgan Stanley & Co. LLC*

Q

So looking at the environment, I mean, you are clear, we're seeing aircraft orders, despite the macroeconomic uncertainties. We're not really seeing cancellations like we saw in the 2020 period. I mean, aerospace is still a duopoly. Your biggest competitors sold out through or your only competitors sold out to 2028. Is there a time to reset pricing expectations for airlines where you could get pricing higher? And can you describe for the incremental orders you're getting today, are you getting that pricing increase and are you getting inflation pass-through for future deliveries that maybe you want to be able to before. And to that, where is pricing today versus where they were pre-grounding of the MAX.

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

I'm going to try to answer this as broadly as I can. This isn't a topic we like to get pigeon-holed in. So let's talk about macro. We go up against each other for every next deal, every next deal. There are a lot of big ones out there and we'll go up against them. The environment is good for realizing price at the moment. Why? Because we're talking about deliveries that are out there. We have to protect our risks. Our competitor presumably is trying to protect their risks. And so it's a decent environment for all of that. That's all we can say about it. And then it's that last stroke of the pen in every competition that ultimately determines where we're going to be. Don't add

anything...

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**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

I wouldn't. I do follow work instruction.

---

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Rob.

---

**Robert Spingarn**

*Analyst, Melius Research LLC*

Q

Thanks, Rob Spingarn, Melius. Brian, what's the upside to the \$9 billion in BCA cash flow with China?

---

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

I'm probably I'm not going to try to quantify an upside case. I think right now, as we think about the 737, for instance, we're sold out through 2026, 2027. We've a huge backlog. We got to go deliver that and Stan's got a plan of how we're going to increase the rate ramp to achieve that. And let's just go deliver that.

Look, if China were to ever come back in a meaningful way, it's a great problem to have. But I'd rather talk about it when we have more evidence that that's the case. In the meantime, we've got a big backlog for customers that want those airplanes and it feels like the conversations that we're having lately is they just want to keep on filling the skyline and these are customers who aren't in China obviously. So I think it's an option on the upside, but we're hesitant to quantify it.

---

**Robert Spingarn**

*Analyst, Melius Research LLC*

Q

And just a clarification on your 2023 cash flow with regard to excess PDPs on 737 and 787. When do they finally normalize? And how much of a headwind is baked into 2023 for that?

---

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

Yeah. So there is a headwind baked in for that phenomena. We do have a little bit of the offset for natural PDPs that we'll enjoy through the course of the next year. But we think that between 2023, 2024, partially till 2025, that'll start to unwind in the billions of dollars and we can't wait for that to happen to get that out through the course of the turnaround period so that the bumpiness of these unique cash flows are behind us. But we expect it to unwind, but it's going to take those two years to do it.

---

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Rob?

---

**Robert Stallard**

*Analyst, Vertical Research Partners LLC*

Q

Thanks so much. Ted you haven't done any work here come on!

**Theodore Colbert**

*Executive Vice President, President & Chief Executive Officer-Boeing Defense, Space & Security, The Boeing Co.*

A

Thank you.

**Robert Stallard**

*Analyst, Vertical Research Partners LLC*

Q

Fixed price development programs, if everything goes to plan, what is the cash outflow profile on those programs? What would you say today is the biggest risk in that forecast?

**Theodore Colbert**

*Executive Vice President, President & Chief Executive Officer-Boeing Defense, Space & Security, The Boeing Co.*

A

Rob, first, the as you saw in the chart, we have put a ton of energy, myself, Brian, others, Greg into derisking the profile of those programs over the periods that we described. That is the plan that we're going to focus on. I'm focused on getting those planes delivered one by one by one, and anything above and beyond that will be will be good. Brian?

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

Yeah. The cash flows because the two big programs that we took charge on this last quarter were the tanker of the VC-25B. Those are in situations based on where they are in their lifecycle, where those cash flows impacts will be more near-term. So it'll be this year and next year, some of the ones that are more out there would be more like the T-7 which has got production for a very long time and they're not very big numbers that doesn't and it's all contemplated in our forward look. So near-term, we are going to see those cash flow impacts and it's all contemplated and where we expect to land both this year and next year and then when you get out beyond the 12 to 18 month timeframe on that topic, it's largely behind us.

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

David.

**David Strauss**

*Analyst, Barclays Capital, Inc.*

Q

Thanks. David Strauss from Barclays. So wanted to ask on the 50 a month, just so I understand, the 50 a month on MAX in 2025, 2026, that assumes nothing for China. And if you had China in there, you think the MAX would be close to 50/50 market share with the A320 family?

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

I guess the answer is yes. Market share involves a lot more than just the China, China deliveries and China orders. So but the answer's probably yes. So that would be our intent whether we get to 50-50, I want to just highlight for all of you, is not an objective of ours. I want to get to stable, as stable as at 40 without China, and then that's what we want to do. If China comes along and we get to 43 or 45, depending on the rates and how quickly we can feather them in, then we can start our march toward 50. But I – that's not going to be a stated objective for us. Our stated objective is going to remain stability, knowing that we can deliver airplanes on time, on schedule to our customers that will be our stated objective, stability and whether we are tied one or two in that market is not going to be the be all end all. It gets you in trouble.

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Ken?

**Ken Herbert**

*Analyst, RBC Capital Markets LLC*

Q

Yeah. Hi. Ken Herbert with RBC. Yeah, maybe Dave or Stan, as you think about the supply chain again, two questions, really. The first is maybe the engine OEMs and they can ramp up and you can deal with that visibility.

But what have you done differently to manage the risk further down the supply chain and how confident are you that other issues won't just crop up? Because obviously, the last two years...

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Sure.

**Ken Herbert**

*Analyst, RBC Capital Markets LLC*

Q

...there's been a lot of uncertainty and issues that we didn't see today certainly come up. And then the second part of this specifically to the 787, you're again – you're going like you did on the MAX from sort of a shut production line to a fairly ambitious ramp over the next two to three years. How are you approaching supply chain differently there, perhaps in looking to de-risk that?

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Go ahead.

**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

I'll take it. So we have about 11,000 suppliers, 1,500 are direct. And then the balance remains the tier 2, 3 and 4. And this is just a daily skin, we've got 5,000 supply chain people that manage that ecosystem. We get to supplement it, as I said earlier with a fab division that has talent and excess capability, we can redeploy into that supply chain and we work with our tier ones. The great thing about this industry, there is a lot of collaboration. Once you go below our tier 1s, you see intersection of common supply points. We try to zone manage.

What does that mean? We try to say, okay, Boeing's going to cover this tier 2 supplier A, you cover this and we look at our combined interests together. That's how we've been breaking through, in seeing risk early. This time around, obviously, we've learned quite a bit, that was different from past recoveries. We've talked about labor. I think people are starting to get ahead of that and they will get ahead of it. They just had to adjust policy practice to be more aggressive in the front end. And then we have our scan list of top suppliers. And at any moment, we're looking at about 100 suppliers, give and take.

They come in and out of risk scenarios that could pose a threat to what we committed to you. And then we go at work with the tools I talked about to recover from financial distress to I can't get a fastener to, I can't get raw material to, can you lend me some management? Because I've got a critical issue and you have some expertise I can use. That's how we're going to do it. And having run the supply chain before it's a little different now than it was. And I think some of the other learnings here and these are industry learnings I think every industry, we're

going to have a little more buffer stock when we get through this. I think that's going to be an important insurance policy. We proved the fragility of supply chains with net probably isn't the way we want to run steady state moving forward.

So that will be as we earn back the rate, you should expect and will wash that through from a productivity, having a little more buffer to insulate this and ensure we hit those delivery commitments to the customer.

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### **Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

Cai?

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### **Cai von Rumohr**

*Analyst, Cowen Inc.*

Yes. Thanks so much. Cai von Rumohr from Cowen. So the way you described your plan makes a lot of sense and we can see huge amounts of leverage once you kind of get up to rate. But if we kind of go back in time, you were talking about delivering in the low 400s on the 737. Then it went down to 400. Then it went down to 375 and I think you just said you did 23 in October and my math suggests you got to do 35 average in the last two months to get to 375.

So the question is, what kind of confidence do you have in hitting these numbers? I believe ultimately you will, but that we're really at a stabilization at whatever we predict, so that we can kind of take that to the bank.

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### **David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

Yeah, Cai. This is all of the supply chain questions wrap up into one. We are going to have month to month stability based on a quality issue here or there or non-delivery out of our supply chain. Our discipline around lean and pausing, our movement of product across the line when those moments happen, add to the stability problem today, they add to the problem. So the monthly fluctuations in many cases you'll see as, oh my god, they got it again or there. But in my case, if it's because we paused a line and didn't travel something to the next line, I view that as a badge of courage and I should reward people for that.

So this whole process where we work with our suppliers through all of these issues that come up and stay focused on the long term and make sure that when each of those issues comes up, we evaluate and fix the problem at hand. Stan says we've got some issues today that we'll get in a week but the bigger that question and is or if it happened now, will it happen again and what can we do in the underlying performance of that company.

It's just our GE discussion. It's just like – GE is more in the spotlight because it's the rate determinant. But these other things are going on all the time. I am confident we are moving ahead on it. I just would be very careful about computing and extrapolating our monthly numbers in today's environment. I don't think that's a healthy thing for anybody, and I try not to do it other than to find out whether we made the right decision to pause the line when something came in the door that wasn't what we represented or didn't come in the door or that we did something ourselves. These are – these just all factors. So that's the moment we're in. And that's why we continue to refer to stability as the key to unlocking all of this value.

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### **Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

Cai, one, because you mentioned it. And I just want to give context to just the posture difference. It was 500 at the beginning of this year, and we thought China had a shot at opening up in February and we also had contemplated

A

a rate increase. Well China didn't happen and supply chain and the engines were slow to the constraint on us being able to ramp. So we all learned that painfully. And now as we've got that posture, it's okay.

As we think about going forward, what can we count on, right? Proof points and yeah, maybe things get a little better, but we try to be a little bit grounded in terms of the numbers that we gave you, including this question around China, which we've gotten many, many times. And I think just to make sure of super clear we've derisked China for the foreseeable future. And then as we monetize its backlog, we still don't need China to get to 50 a month, we've got a big enough backlog. And by the way, we hope they come in and we hope we have an opportunity to serve them in the marketplace. But we think we've tried to take a little bit of a different risk posture and some of those big things that we can't control.

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**Cai von Rumohr**

*Analyst, Cowen Inc.*

Thank you.

Q

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**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

Matt?

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**Matthew Akers**

*Analyst, Wells Fargo Securities LLC*

Hi. Matt Akers from Wells Fargo. Could you touch a little bit on the 777X cash burn profile? What is it now? And is it still I think you said break even a year or two after first delivery. And then on the rate on 777X, is it fair to assume there's upside to that four further out, just given the backlog you have now? And hopefully in the next couple of years that there are even more orders in there.

Q

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**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

Why don't you take rate, and I will take...

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**Stanley A. Deal**

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

Yeah, I'll take that first – so we told you four and that's a blend, right? It's a blend of bridging through the existing what we call the metal wing, the classic 777, and then gradually ramping the 777-9. Four is what we see right now. But as I said, we're going to get another look as we get into 2024 and 2025 relative to one the cert of closing and then two the buying cycle. I think that's where we'll see the buying cycle and we'll get to say is there more demand than the supply but force what we're calling right now.

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**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

And in terms of the cash, so we still now that we're paused, we have about \$1.5 billion of abnormal that we have forecasted. And that number hasn't changed track and a little bit better as we go forward and that'll happen through 2023. And like Stan said, we can't wait to the point we're back fire in the line. Stay tuned.

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**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

Charles.

A

## Charles Armitage

*Analyst, Citigroup Global Markets Ltd.*

Q

Hi. Charles Armitage at Citi. One of you earlier said 2026 is tomorrow and from a structural castings point of view it really is. So if you're going to hit rate 50 at the beginning of 2026. The structural castings need to be in place really in the next year to 18 months, which means the investment going in there needs to be now. And when you consider they haven't done anything, it seems since they ran out of engines in 2017, what are they doing?

Triumph and the casting companies, are they putting the money in? Are you confident that they can get there?

## David L. Calhoun

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Yeah. It's exactly the right question behind all of this. Beyond all the rate questions, all of the things that is the most essential question. Everybody's focused on it. This is the discussions that I'll have with our engine supplier at my level. This will be the discussion. We believe they're all signed up to make the necessary investments to get us all to where we need to get. It'll be tracked by all of us, all of us, and it's not just our industries, few other industries that are sort of in the same quagmire around that particular issue. So yeah, I think the investment will be there. I think they have plans to put it there. I think pricing will get tougher for all of us, but we're all willing to deal with that, and we just move forward. But that is the right, that's exactly the right ball to watch.

## Matt Welch

*Vice President-Investor Relations, The Boeing Co.*

A

Seth?

## Seth M. Seifman

*Analyst, JPMorgan Securities LLC*

Q

Thanks for the follow up. So just wanted to understand a little better the situation with 737 production. So right now, you guys are pulling into the factory at 31 a month, but there aren't 31 coming out. So there's a bunch of whip piling up. And if you think about the idea of possibly going up in rate to 38 in the middle of next year and you also talked about the possibility of only delivering in the 30s overall in the first half of the years which means what's coming out of the factory is probably in the 20s, which means that even more whip is piling up. Don't you need to over deliver versus 31 out of the factory for a while before you can think about going up to 38 or my misunderstanding, how all this works?

## Brian J. West

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

Can I just one point. We've talked about timelines around a rate ramp. We have not said and snapped the line on middle of next month and the middle next year, rather. So be careful that we're not talking ourselves into all of a sudden taking our numbers up. We want to make sure we have the proof points in order for us to make that decision with enough lead time for the engine suppliers, et cetera. So just want to make sure that no one walks away with that's a done deal, working towards it. But we've got more proof points that we have to clear ourselves of.

## Stanley A. Deal

*Executive Vice President, President & Chief Executive Officer-Boeing Commercial Airplanes, The Boeing Co.*

A

Now I can add a little color to it. So yeah, there's a little accrual of inventory less, a few parts, right, that aren't there. And, we'll have to factor that as we move forward. So that'll mean for those suppliers that have the inventory, we'll try to match and adjust rates as we make the call which Brian was right. We've got an objective,

but we haven't firmed that. I mentioned to you we will be firing a third line. I think that's a prudent exercise that could give us some potential to maybe surge a little before we get to a rate break. But again, it's too early to call that could to bleed some of that inventory. But ultimately, we'll just interrupt the supply chain to get it net and that you'll see as we get to the forward looking rate breaks, that's where you'll see a lot of true up and we start to get net into demand plus a little buffer stock. Like I said, that's one of the practices we want to have going forward.

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

I will view it as a good sign if whip increases even significantly as we approach a rate break, simply because that when we get to the rate break and then we have to sustain that break, this will act like bugger. So I'm okay with that number. And we're not going to keep it low.

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

A

Kristine?

**Kristine Tan Liwag**

*Analyst, Morgan Stanley & Co. LLC*

Q

Hi. Kristine Liwag, Morgan Stanley. I should have introduced myself first.

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

A

Yeah. No, we know Kristine.

**Kristine Tan Liwag**

*Analyst, Morgan Stanley & Co. LLC*

Q

Maybe a follow up on customer advances. So embedded in your free cash flow guide in 2023 and the \$10 billion for 2025 and 2026, how much of a headwind or tailwind in customer advances are you assuming?

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

No real change, particularly in the out years 2025, 2026 we don't expect the this to act any differently.

**Kristine Tan Liwag**

*Analyst, Morgan Stanley & Co. LLC*

Q

And is that from deposits of new orders and also like just a natural reduction rate?

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

A

Exactly. The only thing the near-term that we have – that we're working on is, it's just the excess burn off. It's going to be working against that. And that's more of a near-term impact that we're trying to work our way through. But by the 2025, 2026 timeframe, all that'll be sorted out.

**Kristine Tan Liwag**

*Analyst, Morgan Stanley & Co. LLC*

Q

And as a follow up, Brian, it's basically neutral at that period. Is that what you're saying?

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

Yes, excess PDP is behind us and now we're just doing our net normal thing in terms of how we collect from our customers as we think about that that order profile.

A

**Kristine Tan Liwag**

*Analyst, Morgan Stanley & Co. LLC*

Thank you.

A

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

Yeah.

A

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

We have time for one more question Noah?

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**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

You've spent more time on the defense fixed price programs because they keep incrementally taking cash flow out of the plan. You guys have established that the charges create negative cash flow this year and next year. It sounds like it then stops, it's a nice, positive, normal number in 2025. I don't know if it is too long for this forum, but it'd be great to go through like each program hits which milestone to make you feel confident that the cash burn ends right there because you gave the path on a lot of them and a lot of them have a lot longer period of time before they're in the part of the life cycle where we sort of know they're out of the woods or they're in the production lines?

Q

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

So most of those charges, though are on the tanker in the VC-25B and the way that those clients work with the customer, you get advances. So essentially I have to go earn what I've already collected and that's going to be over a more narrow period of time in the next 12 to 18 months. The T7 impact, which is a much smaller number, is much further out there tied to those timelines. You're not gonna be able to find that because it can be so long so I think most of it should be on those two bigger ones and think about how we just have to unwind that over the near term.

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**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

Got it.

Q

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

Makes sense?

A

**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

Q

And since I have it, just one more for you, Brian, when you left 2024 blank in all of this, you'll have a lot of that defense go away. The base business will be better, but you'll still be unwinding about the same amount of BCA inventory as 2023. So does 2024 look more like 2025 or 2023?

**Brian J. West**

*Chief Financial Officer & Executive Vice President-Finance, The Boeing Co.*

You know, we didn't give a number for a reason, but the trajectory is going to be forward and we will build momentum between where we land 2023 on our path to that \$10 billion momentum between where we land 2023 on our path to that \$10 billion to 2025-2026 timeframe. So it'll be momentum is the way I'd answer that one.

A

**Noah Poponak**

*Analyst, Goldman Sachs & Co. LLC*

Thank you.

Q

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

One thing, I would add, Brian will shoot you for doing it, but middle of 2024 is a lot of the step function stuff happens, a lot of the step function stuff as you guys run your models and do your things, lot of things end and/or get de minimis in the middle of a 2024.

A

**Matt Welch**

*Vice President-Investor Relations, The Boeing Co.*

All right. Thank you. That concludes our Q&A session in the 2022 Boeing Investor Conference. We really appreciate joining us here and we'll talk to you soon.

**David L. Calhoun**

*President, Chief Executive Officer & Director, The Boeing Co.*

Thank you, everyone. Appreciate it.

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