

Joby – Virtual Fireside Chat with Joby Aviation’s Bonny Simi Transcript – 3.24.21

Abigail Glenn-Chase:

Good afternoon, everyone. And thank you for joining us for today’s Fireside Chat with ATCA President and CEO, Pete Dumont.

Abigail Glenn-Chase:

I am Abigail Glenn-Chase, ATCA’s Director of Programming and Communications. As always, we’re really excited about today’s program featuring our special guest, Bonny Simi, Head of Air Operations and People at Joby Aviation. So let’s jump in.

Abigail Glenn-Chase:

Joby Aviation is a transportation company, designing and manufacturing all-electric, vertical takeoff and landing aircraft, which they intend to operate as a commercial passenger service, starting in 2024. They have spent more than 10 years perfecting the design of their piloted five-seat aircraft, which will make a clean, quiet, and fast air travel an every day reality for journeys of five to 150 miles.

Abigail Glenn-Chase:

Their prototypes have already flown more than a thousand test flights, and have secured a G1 certification basis with the FAA, paving the way for them to achieve certification of their aircraft in 2023. Following certification, Joby intends to deploy their aircraft themselves as part of an on-demand, aerial ride-sharing service.

Abigail Glenn-Chase:

I’ll let Pete introduce Ms. Bonny Simi. But first, a quick video to take you into the Joby state of mind.

Speaker 1:

Good afternoon. We will be suspending forward flight momentarily.

Speaker 2:

Copy.

Speaker 2:

(silence).

Pete Dumont:

(singing).

Pete Dumont:

Well, that was pretty cool. Hi, everyone. I’m here today with Bonny Simi, from Joby Aviation.

Pete Dumont:

If you’ve listened to a bunch of these, you know I don’t usually go through bios and that type of thing, just like to have a casual conversation, but I do want to read Bonny’s bio.

Pete Dumont:

Bonny is Head of Air Operations and People at Joby Aircraft¹, a leading aviation company that is developing an all-electric aircraft that it intends to operate as a commercial passenger aircraft, as Abigail just said, beginning in '23-'24. Miss Simi leads the development of the operating service, including flight operations, maintenance, training, safety, air carrier certification, and sustainability.

Pete Dumont:

Given her background in airline operations, and human resources, she also oversees the people function. Miss Simi was previously the president of JetBlue Technology Ventures, the Silicon Valley venture capital subsidiary for Jet Blue Airways' investment and incubation of emerging startups at the intersection of technology and travel.

Pete Dumont:

Miss Simi is also an airline pilot, an engineer, an Olympic athlete, a TV commentator, and has 30 years in the aviation industry. She has flown aircraft from Boeing, Airbus and Embraer, at both United Airlines and Jet Blue Airlines. She has served in operational and strategic roles within flight operations system, operations, people, airports, customer support, and prior to leaving the venture arm of Jet Blue, she was the head of talent for the airline.

Pete Dumont:

Miss Simi is also a three-time Olympian, and 10-time national champion, in the sports of luge and bobsled. She also has master's degrees from Stanford Graduate School of Business, and Stanford School of Engineering.

Pete Dumont:

Okay. So you're lazy. I couldn't start this conversation without saying ... Welcome, first of all.

Bonny Simi:

Thank you.

Pete Dumont:

Tell me about luge.

Bonny Simi:

Sure. So when I was a young kid, I put down a list of goals, and one of them was to be a pilot. Obviously, we'll get into that. But another one was to meet Olympian.

Bonny Simi:

I was like so many kids, and I watched TV. Then it was ABC TV, for the Olympics, and I happened to see bobsled, and I thought, "Ah, that looks fascinating." And it turns out at that time, women were not allowed to bobsled. It was banned.

Pete Dumont:

Oh, really?

¹ Reference should be to Joby Aviation.

Bonny Simi:

That has since changed, obviously. I helped change that, but women could do luge. I ended up getting involved in luge, at a beginner's camp at the age of 17, and well, the rest is history. So I ended up making the Olympic team four years later, and I did that three times.

Bonny Simi:

That was in Sarajevo, Yugoslavia in '84, and then Calgary in '88, and Albertville, France in '92, and then, retired and became a parallel pilot. Then I came out of retirement to do bobsled for 2002, for the Salt Lake Games, just missed it. I was the alternate for the Olympic team, but I did the commentary, so ...

Pete Dumont:

Wow. Where are you from?

Bonny Simi:

Well, I'm actually from California, Southern California.

Pete Dumont:

Oh yeah, the luge capital of the world, yeah.

Bonny Simi:

I think I was in the luge capital of the world, yeah.

Pete Dumont:

Yeah.

Bonny Simi:

No, well, I grew in a ski area called Mount Baldy, but I got involved in luge, I was a torchbearer for the 1980 Olympics, in Lake Placid. It was an essay contest in high school, and you can enter those contests, and people actually do win. So I won that, and was a torchbearer in Lake Placid.

Pete Dumont:

That is amazing. All right, let's get into Joby a little bit.

Bonny Simi:

Sure.

Pete Dumont:

I've been a photographer for many years since I graduated high school back in 19-whatever. And Joby, to me, always meant tripods.

Bonny Simi:

Yes.

Pete Dumont:

Yeah. Same company.

Bonny Simi:

Well, same founder. Same founder.

Pete Dumont:

Oh, okay.

Bonny Simi:

The founder is Joe Ben Bevirt, one of the most brilliant, if not most brilliant, people I have ever met. It's actually one of the main reasons I am at Joby now. He's brilliant.

Bonny Simi:

As a project at business school, he came up with those little tripods for cameras, and he and his fellow students, they all said, "No, we want to go off into consulting," or whatever the business school students do. He said, "I think I can make a company out of it." And he did.

Bonny Simi:

So he created Joby Camera Tripods. He later sold that company, and then took the proceeds to build out, to be the seed money to build Joby Aviation.

Pete Dumont:

Wow, okay. So we saw the video. Cool aircraft. We've talked to a lot of new entrants, as we did some of these Fireside Chats, and the thing they all had in common, that I could see, is they were all disruptors.

Bonny Simi:

Yeah.

Pete Dumont:

This doesn't seem like a disruptor model. Am I wrong? And could you tell me what the model does look like?

Bonny Simi:

Sure, sure. And maybe Abigail, you can share, I have a few slides that gives a good context to this.

Bonny Simi:

First of all, we've designed this to really fit into daily life. This isn't meant to be a replacement for helicopters per se, that are for the elite, if you will. They really are, as you can see, even from this image, it's an airplane.

Bonny Simi:

It is piloted, that is very important. It happens to take off and land vertically, but it can also land conventionally. One of the big passions for this company, and its emerging passion, of course, in aviation is emissions.

Bonny Simi:

Clearly, it's all electric, it's not hybrid. It's all electric, so there's zero emissions. Because we can fly on the wing, we have a longer range. So roughly, a 150-mile range, with that VFR reserve. We do also have IFR, we will have our par capabilities, more about that later.

Bonny Simi:

Again, nice speed, right, 200 miles an hour. But more importantly, this has been a project, that we've been heads down for 10 years. So it's not really a new entrant.

Bonny Simi:

Now we'll go to the next slide, and this more specifically answers your question. When you think of a Joby, you can think of, really, a Cirrus, very similar in size. We're a little bit bigger, so we have four passengers. The Cirrus would have three passengers and a pilot, but we are an airplane.

Bonny Simi:

We are being certified in the process of Part 23. It's single pilot. Our normal cruising speed, about 175, again, fairly similar to a Cirrus. We are unpressurized, so a ceiling of 15,000, but really, operating range below 10,000.

Bonny Simi:

We will initially certify per day and night VFR. Again, we will plan to go IFR after that, but first we want to get into the system, operate a VFR, and non-peak.

Bonny Simi:

So we're, right now, not going to be a flight into known icing. Now that's the traditional, and you can see that's pretty much the bulk. Think of us as an airplane, but oh, by the way, we're electric, all electric.

Bonny Simi:

Our charging, and our capabilities, think of it as almost a Tesla. Basically, the charging infrastructure would be similar to what Teslas use. We can land as an airplane, and we can land VTOL, either way, which really allows for amazing flexibility, when you think of air traffic controllers.

Bonny Simi:

So moving onto the next slide, this is the certification process. We actually started, the company started in 2009, doing small scale, and kept working its way up and refining. We had acceptance of our certification basis by the FAA in 2020. So that says, "Here's the rules by which we will certify our aircraft."

Bonny Simi:

We are now working through with a prototyping pre-certification. Our flight testing is located in central California, and we have a team of flight test. We actually have a camp, through a partnership with the Department of Defense, so we operate in military airspace.

Bonny Simi:

Through 2022, will we be working on our precertification, which is working with, on a government basis, because we actually have already been accepted the US Air Force Airworthiness Authority, which allows us to operate on bases.

Bonny Simi:

That gives a lot of good operating experience before we move into the final certification, and our 135 operations. We'll be at a 135 air carrier certification, right after our type certification. We are also producing our aircraft, so we will have a production certificate, as well.

Bonny Simi:

Then, from an air traffic control perspective, you go to the next slide, as I mentioned, we're an airplane. We plan to integrate into the normal air traffic control system, with additional flexibility. When I think of an airport and sequencing in for runways, we can also land on helipads at the airport.

Bonny Simi:

So if you say, "Hey, maybe there's too much congestion on lining up for a particular runway," fine, we'll come in and we'll land on a heliport on the property. We aren't obviously going to be going up into Class A, because our ceiling right now is 15,000 feet. Maybe someday, we'd be up there, but otherwise operating as a regular aircraft.

Bonny Simi:

The disruptive piece, if you will, is that we're all electric. That battery technology has taken, call it 100 years, to get to the point where we're now at a place where we have to take all of our power up with us. And the battery capability in storage is now at a place where we can operate in the aircraft that we're operating in now. The battery technology is already in existence.

Bonny Simi:

That's what's new, and the fact that we can transition seamlessly from vertical to forward flight. Those are our innovations, but otherwise, I think, it's important.

Bonny Simi:

The aviation world, there's a lot of regulation, there's a lot of existing tradition. To be too disruptive, I don't think, is the right path forward.

Pete Dumont:

I will not call you a new entrant, because you just said you don't view yourself that way. But what we do see from new entrants is trying to change the system to fit around, excuse me, the model they're developing, and this doesn't seem to be anything like that.

Pete Dumont:

You said a couple of things that I'd like to touch on. Well, it's a piloted aircraft. Have you flown it?

Bonny Simi:

I wish. I wish.

Pete Dumont:

Yeah.

Bonny Simi:

I'm actually down at our flight test operation right now, but I will tell you, although I'm a pilot, and many decades of flying, I am not a flight test pilot. So no, our test pilots have flown it.

Bonny Simi:

Most of our testing right now, though, is remote. In our next iteration, the aircraft will move into fully piloted, and we'll do a lot of our flight test as piloted. But right now, most of it is remote flying, as we work out all the complexities of the aircraft.

Pete Dumont:

You mean completely remote flying, just like a Reaper?

Bonny Simi:

Right now, sort of line of sight. Yes, we are doing remote-

Pete Dumont:

Yeah, yeah, right, right.

Bonny Simi:

... even military airspace, right? We're doing it. And then, by the end of the year, the next iteration of our aircraft, we'll be taking out the fly by wire capabilities, and it'll be fully piloted. It's really very important to note that we are a fully piloted aircraft.

Pete Dumont:

Okay. When it goes into production, and you become a Part 135, will it still have the remote capability? I guess my question is, will it be a pilot optional ...

Bonny Simi:

No. Well, as we move through the certification process, it'll be certified as a piloted aircraft. Now, we will have full-time fly-by-wire capabilities for it to simplify the task of flying, because remember, this is going to... Ultimately we'll be doing IFR, so it's Single-Pilot IFR, down the road. And eventually, we'll look for opportunities to add some automation, to increase safety and efficiency, because the complexities of autonomy are very, very significant. And while some companies are jumping into autonomy immediately, we've decided that the safety and skills that a commercial pilot brings to the table are critical for this aircraft.

Pete Dumont:

And autonomously, you can't fly today.

Bonny Simi:

No.

Pete Dumont:

With your model, you can fly today.

Bonny Simi:

That is exactly right.

Pete Dumont:

Well...

Bonny Simi:

We want to get from certification, to production, and into commercial operations, as seemly and as efficiently as possible. That makes the business model successful.

Pete Dumont:

Right. You talked about batteries.

Bonny Simi:

Yes.

Pete Dumont:

What you said is, "Think Tesla," and as soon as you said batteries, I did think Tesla. And I thought that, when I think of premier, state-of-the-art, leading-the-charge, no pun intended, in batteries, I think of Tesla. Whose batteries are you using?

Bonny Simi:

Aha. We are using Joby batteries, so we are a fully vertically-integrated aircraft, with a few exceptions, like we've partnered with Garmin for our avionics. We don't need to build our own avionics. But we are building our own batteries, because they are basically fully-integrated into the structure of the aircraft. That said, the Joby team, or the battery team, but actually, the entire team of Joby, it's truly amazing, the people that are here. They come from a variety of different operators, whether it's in aviation, but also in Tesla. I will tell you that we've got some of the absolute best battery technicians, who help build out the batteries at Tesla.

Pete Dumont:

Okay.

Bonny Simi:

Yeah, I'm very confident in our abilities in this space.

Pete Dumont:

Now, the difference of course being, the first thing that comes to mind, is Teslas don't operate at 10,000 feet. It gets cold at 10,000 feet, and battery efficiency decreases as it gets colder, as I learned very quickly in Antarctica. Without getting too technical, because I don't know if you want to get too technical, the battery is heated?

Bonny Simi:

No. Well, we have a very, very, very careful control, battery control and temperature controllers, in our aircraft. I'm not the battery technician, so I'm not going to get deep into the technology of it.

Pete Dumont:

Right.

Bonny Simi:

But keeping in mind our initial operations, as well, when we think about where we're going to be operating initially, outside of icing conditions, we do factor in the temperatures, as well.

Pete Dumont:

You said, when the aircraft is piloted by a pilot in the aircraft, is it difficult to fly?

Bonny Simi:

No, actually. Now, I have not flown the aircraft, but we have simulators. In fact, we'll be building out an entire pilot training program. Of course, being a pilot myself, I know... And we'll get into this about pilot shortage and all of that.

Pete Dumont:

Yeah, right. Yeah.

Bonny Simi:

We can cover that, but part of this is, since it is single-piloted, we're also building out simulator capability.

Pete Dumont:

Full motion?

Bonny Simi:

Well, yes. We'll have a Level C sim, in order to certify our pilots, and that's what's required for a 135, is Level C. But we also have some fixed-phase simulators right now. I've been flying the simulators, and we're actually going to be having some simulators in D.C., in our D.C. office.

Pete Dumont:

Oh, great.

Bonny Simi:

Allow folks to come in and fly. It is amazing, we've used the unified flight control system, similar to the F-35, which allows... And we'll call it an inceptor, one can call it the joystick, if you will, but it makes it very, very, very intuitive. That's on one hand, and then the other hand, we'll have our acceleration control. And I won't say speed control, it's literally accelerate. Do you want to decelerate it or accelerate? And when you fly it... I'm not a helicopter pilot, I'm an airplane pilot, and I brought my team when I was first introduced to Joby actually, as an investor. I was at JetBlue as an investor in the company, and we invested. And I brought my team, none of them were pilots, and myself, to the simulator. And I jumped in it, and I flew it around, and it seemed to me that the only hard part was, I took off, off the top of a building in San Francisco.

Bonny Simi:

And I flew over to the San Francisco Airport, and the gentleman who was walking me through it, he gave me two minutes of instruction, and he says, "Okay, I want you to land on the numbers. 28 right, land on the numbers." "Okay. That's what when I land on the numbers." He said, "No, land on the numbers." So I'm flying in the approach, 28 right, into San Francisco, and I'm slowing, and slowing, and slowing, and just kind of decelerating, decelerating. And I'm watching the air speed go from 150, to 120, to 100, to 80, to 60, to 40. And the nacelles automatically transition into... There's no pilot input is required, and automatically transitions into a hover.

Bonny Simi:

So I just slowed to zero, right over the numbers, and then just pushed the nose down, and I landed. Then, my team had been watching, so they jumped in the simulator, and they were able to do the exact same thing. None of them were pilots. So the flying of the aircraft is actually fairly easy and intuitive. That said, the pilots will be operating in complex, urban environments, as an airplane, aircraft. They will go through the traditional pilot training, private instrument, commercial, and building hours, to be able to operate the aircraft.

Pete Dumont:

Will you be doing your own pilot training?

Bonny Simi:

We will. We will.

Pete Dumont:

Of course, you will.

Bonny Simi:

Of course. We need to control our destiny, and I think the pilot shortage is real. And I think that COVID... We were just on the precipice of it as we got into COVID. And what COVID has done, of course, we have a surplus of pilots at the moment, but as aviation returns, the shortage will be even worse because so many people left the industry, and so many people chose not to enter the industry. So for us, controlling our destiny by developing our own pilot workforce, and as a 135 operator, pilots can move right into VFR operations at 500 hours. We'll be developing our entire workforce and partner also with our DOD partners. So pilots will work with us and then they'll move into the DOD as operations, as contract pilots, to gain more experience on the military bases, and then come out into the commercial operations. So it's a real nice seamless pilot training process.

Pete Dumont:

Will you... Excuse me. Will you seek certifications as a part 141?

Bonny Simi:

Yes, we are going to do one. We're working, and again, this gets into our safety piece too. By being as vertically-integrated as we plan to be, we'll be a 141 on the training, 135, we'll be a 145, as well, for our air stations. And we're going to be building out an enterprise SMS program, as well.

Pete Dumont:

That exciting. You brought up a couple more things, you brought up COVID. Before some of the questions that we're getting, those are some of the things I'll be asking as we go further along, because they're very much in line with this conversation. Let's talk about the people for a minute, since you're in charge of people. You brought up COVID, you also brought up, you have a lot of great people, so let's start with, how big is Joby Aviation?

Bonny Simi:

Yeah. Yeah, Joby Aviation, we've been growing very rapidly. We're at about 700 team members so far, and in 2016, we had about 50, so you can see how rapidly we're growing. And what's interesting is, we posted an analysis the other day, because it's been so remarkable how talented we are on the engineering side, we have 430 engineers out of the 700 total team members.

Pete Dumont:

Wow.

Bonny Simi:

The number of PhDs, it's amazing, the talent here. Yeah 700, and I anticipate... Because we're also building out our own manufacturing plant, we'll have our future factory, which will be in Marina, California, which is near Monterey, between Monterey and Santa Cruz, at an old military base, Fort Ord, for those who know the area. We'll be breaking ground on that fairly soon. That'll have hundreds of team members, as well. Our flight school, flight academy, will be based in that area as well, so we will be doubling and tripling in size again, over the coming years. Go to Jobyaviation.com, anybody who wants to join our team.

Pete Dumont:

Okay. We're running a jobs thing here, too, for free.

Bonny Simi:

Well, I am in charge of people. You have to

Pete Dumont:

Right, exactly. I understand. I understand that. Is your location... You're in that California area, and is that because JoeBen... Did I say his name correctly?

Bonny Simi:

JoeBen.

Pete Dumont:

JoeBen, is that because he grew up in Santa Cruz?

Bonny Simi:

Yeah actually, and the history of the company is... I mentioned that when I was a kid, I dreamed of being an Olympian and dreamed of being a pilot. Well actually, when JoeBen was a kid, when he was eight years old, he dreamed a building a helicopter, because he lived up in the hills above Santa Cruz and it was a long ride to school, and he wanted to build a helicopter that he could fly to school. But he also is very much into, even as a young child, and his family, into sustainability and taking care of our planet. And helicopters are noisy, and they burn a lot of fuel, and are smelly, so he wanted to make it electric, even when he was eight years old. But of course, batteries, technology was not available for that then.

Bonny Simi:

Anyway, that's where his career path came from, and that's actually why he went off and started these other companies and came back, now that battery technology is capable of this type of operation. And he chose to found the company in this area, so it's part of the ethos. You can see my background here with the Redwoods, and it is part of the ethos of the company.

Pete Dumont:

Okay. Back to people, COVID, what a year. Has this slowed your progress in developing the aircraft, in engineering the aircraft, in any of those things? How are you handling COVID and 700 employees?

Bonny Simi:

Yeah. And how do you onboard employees in a environment and all that? Well, it is a challenge to hire and onboard new employees in a COVID environment, because we're doing a lot so much by virtual, and again, our culture is so important. That said, we are a design and manufacturer and flight test company right now, which you can't do virtually, it's impossible.

Pete Dumont:

Right.

Bonny Simi:

Right? But we also care deeply, deeply, deeply about safety and the health of our employees. I mentioned before that JoeBen Bevirt is a brilliant, brilliant man. And even early on in February of last year, it still had not really landed in the U.S., he felt that this could be a real crisis for our company and for our country. Other people thought he was crazy, but he started spending his nights and weekends to create a new company, a subsidiary of Joby, that would do COVID testing. And indeed, by the Spring, we had a FDA-approved PCR test and a lab that could turn the tests around overnight.

Pete Dumont:

Your own lab.

Bonny Simi:

Our own lab, our own lab. The company was actually spun out as a subsidiary and does testing now for like the Los Angeles School District and others, so it's a separate entity, but for us, it allows us to do daily testing onsite with less than a 24-hour turnaround. All of our employees get tested, we require it if you're going to come onsite, at least every 48 hours, but most people test every single day. And of course, strict protocols on COVID.

Pete Dumont:

Right.

Bonny Simi:

But given how contagious it is, people get it, but we have very good protocols. As soon as somebody tests and if it comes back positive, we're able to isolate, do the contact tracing, so we virtually have had zero disruption in our operations. Occasionally, we'll have to shut down one section or one building until we complete the contact tracing, and then we're back up and running again. So very, very little disruption, and it's just become a normal part of our process. I get tested almost every day. And it's such a relief to know that all of your coworkers, that you're coming to an environment that is safe.

Pete Dumont:

Right. Well, I would imagine so. Yeah. It's kind of scary. Let's talk about, you said you have, let me see, you have taken on some Tesla engineers, battery. That gives you battery capabilities. I believe Uber recently, Uber Elevate...

Bonny Simi:

Yes. Yes. Mm-hmm (affirmative).

Pete Dumont:

That was an acquisition?

Bonny Simi:

Yes, we acquired... And again, as I mentioned, we're growing very quickly. And one way to grow quickly is to acquire companies that are like-minded and can have capabilities that we don't have at our core. At our core...

Bonny Simi:

... that we don't have at our core. So at our core, a engineering product aviation company, but we also need to now be a customer facing, because we'll be an app-driven. And just like calling for an Uber, you'll be calling for a Joby. And so to build out that capability and infrastructure, and Uber Elevate had actually begun operating in New York in a beta test with Uber Copter. And so part of that acquisition was with that team as well. So when Uber Elevate did Uber Copter was mainly just a beta learning testing platform.

Bonny Simi:

And so we were able to bring that entire capability, all of their safety systems, all of their talent. And so we did acquire them. In fact, I lead Air Operations. We talked about my role in people, but I also lead Air Operations and a good portion of my team actually came from the Uber Elevate team. And it allows us to jumpstart. I mean I'll use... Literally this morning, I was having a conversation with our leader who's helping me build out the safety management system who built out a system on the Uber Elevate side. And he had written some manuals that literally are coming right over. So you don't even have to rewrite manuals. So yes, it's been a... And Uber is also an investor in Joby.

Pete Dumont:

Okay. So Uber Elevate obviously their business model was urban air mobility. Which is not really what we're talking about yet, are we?

Bonny Simi:

Yeah. So we're building out the capabilities and ultimately, yes, in the end it'll be you will access an app. It's not exclusive to Uber. You will access a Joby app as well. But we will be on Uber app, and perhaps on other ride sharing apps too, and perhaps on airline apps. So we may look at partnering with airlines. You could imagine say, leaving from your home in Manhattan, taking maybe an Uber or another ride share car to a vertiport or heliport near you, ride the Joby. Perhaps we might even have it integrated through TSA. Could be either pre-security or post-security, depending, but might have a dedicated terminal at JFK. So fly a JetBlue flight from JFK to Los Angeles, and then again, take the Joby vehicle into downtown, right down to downtown Los Angeles. And the entire thing purchased through a platform. So that, it's mobility. It isn't just air mobility, we-

Pete Dumont:

Okay. So you built an aircraft that can operate as soon as it's certified in the current system with the capability of becoming something else in the future to be more versatile in an urban air mobility environment. You mentioned Manhattan, and you mentioned an app. So I know basically if I'm in Alexandria where my office is and I want to go to Dulles, I know it's going to cost me about \$120 if I take an UberBLACK with four of my staff. What's it going to cost me? What's the cost? What's the price point? Is this an expensive or exclusive?

Bonny Simi:

No. Our goal is right about at that UberBLACK, and eventually even less. As we build out the network effects, much less. But yeah. That same \$120, and when you split that over with four people, that actually becomes very, very affordable.

Pete Dumont:

Right. Yeah. If I was taking myself, I wouldn't be taking-

Bonny Simi:

Exactly. And that's the point, is we are approaching this as a very affordable and accessible transportation solution that is also sustainable. So this is not intended to be take something from the 34th Street heliport in Manhattan at 300 bucks a ride or 600 bucks a ride to JFK and to be escorted into your little first-class cubicle or any of that stuff. This is meant for people like you and me.

Pete Dumont:

Yeah. Okay. So let's talk about Manhattan for a minute.

Bonny Simi:

Sure.

Pete Dumont:

So helicopters in New York City produce a lot of noise, which limits their ability to fly as much as maybe they could. So give me the comparison between what you're doing and a helicopter, as far as the noise is concerned and the public acceptance.

Bonny Simi:

Oh yeah. So completely different. So we're a hundred times quieter, and it's been measured. And we actually have NASA coming out here in a couple of months to do a full NASA study on our noise, which we'll then be able to publish as well. So very, very quiet, a hundred times quieter. And what does that

really mean, of decibels and all that? But when you are standing a hundred feet away from the aircraft, we could continue our conversation as it takes off, transitions, and goes into forward flight. We wouldn't have to shout at each other at all. When it flies over, in fact there's actually a video of that on the Joby website, you can actually hear our founder talking and in the background, you see the eVTOL and then it turns on and it takes off and he doesn't even change the tone of his voice.

Bonny Simi:

And that wasn't made up. That was real. He's a hundred feet away from the aircraft. And then when it flies overhead, it's silent. It's completely silent. The other thing that's very interesting, so part of that is because part of the noise in a helicopter is the, whether it's a piston or it's a turbine engine, is the noise of the engine. The whine, but also the propellers. There's that wop, wop, wop of the blades. It's that wop, wop. The way ours is designed with our propeller is that there isn't that frequency, you don't hear it. It's completely canceled out. So there isn't a wop wop wop sound at all. And when it flies overhead, you don't hear it at all. So at a thousand feet it's silent.

Pete Dumont:

Wow.

Bonny Simi:

So when you fly over Manhattan people won't hear it at all. It's true. I mean, it is one of those things. It was one of those things that actually got us to invest in the company in the first place. It's neat to watch it on video and you think of this as cool, but when you actually see it, and I tell people, it's actually, when you hear it, that you realize that is the transformative piece. When we talked earlier on about what's transformational, we can talk about the electric batteries and safety of course, which that was not only was our number one priority, but it is our number one value, which is different. It's value as something that's core. But the very next design principle behind safety was noise, is how to reduce noise.

Pete Dumont:

Although there'll be more of them.

Bonny Simi:

They will, but if... Okay, so you have a hundred silent aircraft flying over your head instead of one silent aircraft.

Pete Dumont:

It would sound like one. Right. Okay. All right. Sounds fair. Can it land on a building, like on a rooftop?

Bonny Simi:

Yeah. So currently the aircraft are designed to land on heliports. Now some cities around the world have a lot of current heliports that can be used for commercial use. Most can only be used for emergency use. And the reason is because of city ordinances because of noise, noises. So that's again, I mean we could say that one of the main reasons we designed it is this way is for public acceptance and to avoid noise pollution. But in the end of the day, regulatory. We need to be able to access the top of the buildings, and noise. So it's reducing the noise and also a lot of the fire suppression. So in order to run a commercial heliport, you have to have fire suppression because of fuel and our aircraft don't have fuel. So that makes it easier.

Bonny Simi:

So right now we can land vertically at heliports. We imagine building out, and maybe Abigail you can show those slides. There's those two slides about kind of where we plan to land. So initially, obviously this will help us build out, there's 5,000 airports in the country, many of which are under-utilized. And so we'll certainly be able to operate into all of those, because again, our short takeoff and landing we don't need the runway length. Isn't an issue at all for us. And so we can operate in and out of federal public use airports.

Bonny Simi:

And then on the next slide, we have the existing heliports with the infrastructure. There are, again, it depends on the city and country where the heliports are, how many there are, but we are now thinking about and working with some partners on vertiports. So vertiports would be similar to heliports, but they would have noise criteria. So this would be a certain level of decibels in order to be able to operate and would have electric charging without having the fuel. So it doesn't have to have the same fire suppression foam that causes some environmental hazards, which is also part of the reason why buildings in major cities have outlawed their vertiports

Pete Dumont:

Okay. Right. Like San Francisco, that's my-

Bonny Simi:

Yeah.

Pete Dumont:

So going into state local and tribal governments, how are you handling that?

Bonny Simi:

Yeah. Well, I think first we have certain areas and municipalities that are eager for this and have existing infrastructure, existing heliports, existing under-utilized airports. And we begin there. We do anticipate that once people see and experience the aircraft, we actually imagine that there'll be cities actually clamoring for our service. And that will take time, but there's quite a few places, both in the US and actually internationally, where we'll be able to take several years of our production and go into those places where the infrastructure is already there.

Pete Dumont:

You know, as we're speaking I'm thinking I could see this being very beneficial in areas that have a lot of medical facilities, Life Flights, those types of things, hospitals. This could be very beneficial there. Somebody asked an interesting question. I can't believe I haven't asked this. How long does it take to charge the aircraft?

Bonny Simi:

Ah, yes you know. So although our range is 150 miles if we wanted to deplete the battery all the way down, that'll take a couple hours of charge. But most of our operations are going to be 25 miles or such. And we anticipate getting our charging time down under 10 minutes. The amount of time that it takes people to get off the aircraft and then back onto the aircraft and through their briefing, the charge will be sufficient. So it'll be very rapid charging.

Pete Dumont:

Oh. It's just like fueling and aircraft.

Bonny Simi:

Mm-hmm (affirmative), yeah. Yeah.

Pete Dumont:

Okay.

Bonny Simi:

Quicker actually than fueling an aircraft, even.

Pete Dumont:

Yeah. That's yeah, quicker. What I meant was you know how long it takes people to get off an airplane.

Bonny Simi:

Yeah, exactly.

Pete Dumont:

A big airplane.

Bonny Simi:

A big airplane. Yeah. Exactly.

Pete Dumont:

Sometimes I wonder how they ever get off. That's going to require infrastructure.

Bonny Simi:

Yes.

Pete Dumont:

So talk a little bit about infrastructure if you can.

Bonny Simi:

Yeah. So again, this is why focusing a lot on some of the existing airports and heliports. So we're building out what our infrastructure, our charging... Think of the Tesla. And for those who've been to those shopping malls that have Tesla chargers, there's a box that's the transformer that's there. So building out that infrastructure is part of our process as well. And in fact, it shows some of our partnership on it with our DOD partners. As we're building out the infrastructure to operate on military bases that helps us build out the prototypes of what size do we need? What is the charging infrastructure?

Bonny Simi:

In terms of the actual electrical source, as I mentioned again it's very similar to a Tesla. And if you think about how many Teslas there are that are out in our ecosystem even now, hundreds and thousands of them, and that's not causing a huge drain on our electrical infrastructure. We'll be in the thousands, not hundreds and hundreds of thousands. So there's not really going to be a drain on the electrical infrastructure for us. And when we think about the 300 kilowatt hours, that's very similar for us as well. So we fit in, it's just building out the transformers, building out the charging infrastructure.

Pete Dumont:

Okay. Somebody mentioned to me something the other day that I thought was fascinating that we haven't talked about or thought about, and I probably haven't discussed with anyone yet. What about with an aircraft like a tilt rotor, and I'm not sure that's the right term for this particular aircraft, but the ability for it to fly vertical, takeoff and landing or forward flight and transition, what's the wake turbulence?

Bonny Simi:

Yeah, no, we've done... Our flight physics team has built out unbelievable modeling and there's really no wake turbulence and there's not really much of a disturbance. And so the way the infrastructure and the way the propeller prop wash, if you will, not really wake, I mean prop wash, right?

Pete Dumont:

For a prop wash. Right. That's more appropriate.

Bonny Simi:

Yeah, Yeah, has all been modeled and so there's really not going to be much of a challenge. So of course as we come down in the hover, of course there's a little bit of airflow that comes out and you can see that even on the videos that we have on our website, but it's not as dramatic as one would see on a helicopter at all.

Pete Dumont:

And you're going to fly... You're not going to sell your aircraft to other-

Bonny Simi:

No, no. Our intention is we were fully vertically integrated. So in other words, our vehicles-

Bonny Simi:

... Be vertically integrated. So in other words, our vehicles are not for sale. Again, this allows us to be, as the manufacturer, as a servicer and as the operator, much more seamlessly connected. It makes for a safer operation as well. For controlling our pilot training allows for just fully integrated manuals, train how you fly, fly how you train, and as well as maintaining the aircraft.

Pete Dumont:

Do you see a cargo role for this aircraft?

Bonny Simi:

Well, I've learned in the innovation space and the start up, never say never. That is not our business model. We will, of course, when we're first operating the aircraft on the military bases, we will be using it as boxes and logistics, not carrying people first. Is it possible? Hey, when we're in operation and if we get some great contracts, like I say, from the hospitals or whatever it may be, and it's more lucrative than just the people, of course, there might be some opportunities there. I think where our vision is really about helping people. We have our mission on our website, help a billion people save an hour a day. It's about making us as a society, more productive, more efficient and more sustainable.

Pete Dumont:

Okay. You're going to build your own aircraft. What's that going to look like? How many aircraft?

Bonny Simi:

Yeah, so we're building out our prototype line now in Marina, and we have a small prototype factory that is under construction. Our first year, we'll put out 30 aircraft and then it'll build up, 250. It could expand after that, build additional lines of production in other locations. But right now I think of 250 aircraft a year. Similar to say what the Cirrus... Again, I use Cirrus as a real good example. I happen to be a Cirrus pilot as well.

Pete Dumont:

Of course you are. Of course you are.

Bonny Simi:

So I'm a fan of the Cirrus. I'm a fan of the safety model that they have. So think of it in that scale for now.

Pete Dumont:

Okay. Someone asked a good question about you produce your own batteries, so you've got a handle around exactly what you want, what you need. But with the ramp up in production of batteries, the resources and materials to source for batteries, that's a genuine concern moving forward. How do you plan to address that?

Bonny Simi:

Yeah, so we're battery sourcing worldwide and ensuring we're sourcing from appropriate sources. And we also are thinking, we're actually partnering with the Department of Energy, the National Renewable Energy Lab, to do a lifecycle analysis. So we think of not only where are our batteries being sourced from, but how are they being recycled and where did they go to? So we have to think of that entire sourcing and it's still a, with the geo geopolitical environment and evolving nature of batteries, it's an area of opportunity for the entire industry, but it is something top of mind. And again, by building out our lifecycle analysis, that's part of the process.

Pete Dumont:

Okay. So you have VFR operations, IFR operations. The avionics onboard, do you envision or will you have the capability for precision landing systems on there?

Bonny Simi:

Oh yeah. Yeah, yeah. So we're partnered and it's public out there. We'll have the Garmin3000 operations so we'll be running precision approaches. Eventually, especially as we build out VERTA ports, we will be building out our own approaches as well as currently, initially, we'll fit right into the existing system. And then as we build out RMP approaches is kind of the next step.

Pete Dumont:

And do you have remote monitoring capabilities of your aircraft? Health, for example?

Bonny Simi:

Sorry, say again.

Pete Dumont:

Health, for example, like is the aircraft operating optimally? Can you predictive maintenance, those types of things?

Bonny Simi:

Yes. Yes. So it's just super exciting for me when I come out of my... Again, I come from JetBlue Airways and the venture capital arm and one of the challenges for airlines, there's a lot of data that is stored on the aircraft and some of it is streamed, but not as much as people would think. And when you have to pull... We talked in the airlines of using the Sneaker net, where every 28 days, a mechanic would go out of his sneakers and plug in an old PCI card and download the data and move that over to FOQA and all of that. And there's the challenge in today's operation for getting... You can't do predictive maintenance unless you have real-time data streaming at volume and at scale. So, absolutely. I mean, we're completely built that way.

Bonny Simi:

And again, if that video that you saw, which is also on our website, people can go back and you can see all of our screens, every little terabytes of data are streamed from the aircraft live. So absolutely, we'll be able to have predictive maintenance, continual health monitoring. When the pilot, if we're seeing something, you will fit in alerts. And it's not unlike like when I'm operating, say a JetBlue aircraft and there is some streaming that happens from the... I fly the Embraer, streaming down to our maintenance control. And often I'll get an ACARS message and they'll say, "Hey, take a look at this or this." And they may have seen something even before I do. But that's not the norm in commercial operations today. We see that as part of the operations for Joby is that we'll be monitoring. We have an operations control that'll monitor the aircraft and we'll be able to assist the pilot in decision-making should there be some sort of maintenance issue that comes up and where to divert to or whatever.

Pete Dumont:

So when I hear that, I hear I think of future capabilities. So I start thinking in an internet of things, smart city, smart airports, smart roads, start communicating with each other. The aircraft could actually communicate with the airport at some point. But as we progress from where you're at, which is very advanced, what are your security protocols, your cybersecurity protections I would say?

Bonny Simi:

Right. So that is very much part of our program and our platform as well. And it's actually part of the certification process now for aircraft, because this is a growing concern worldwide within aviation. So yeah, that is a foundational element of our process.

Pete Dumont:

I should have known that. Let me see here. I want to make sure we get all our questions because unfortunately, we're running out of time.

Bonny Simi:

I know. I see so many great questions here.

Pete Dumont:

I know. Did you see one that you loved?

Bonny Simi:

So one of the things they were talking about, where would we be sourcing our electric power and yeah.

Pete Dumont:

I just saw it as well.

Bonny Simi:

Yeah, yeah. So initially of course, local grids, and again, I'm going to reinforce the fact that the power, the amount of kilowatt hours we need is very similar to like Teslas. So it isn't a huge draw, but in the end of the day, we are a company not unlike Tesla, that thinks very much around sustainable energy sources. So I can imagine us thinking about some of our own electric sourcing, but solar and others. But that is the one thing that I will tell you is not currently on our roadmap, because we are taking on a lot as it is.

Pete Dumont:

Yes, you are. Yeah. I would agree with that. Well, we're just out of time here. So I'm going to say thank you very much, Bonny. This has been a pleasure and fascinating. I could have kept talking for a lot longer, as you can tell. What a fascinating company, interesting. You're very well versed on it. And you've only been in your position two months now, I believe.

Bonny Simi:

Yes, that's true. I'm drinking from a fire hose. Although, again, I will say that JetBlue invested in Joby almost four years ago, and I've been a member of the board. So at a high level I've been involved, but just not down into all of the level that now.

Pete Dumont:

It's a lot easier to drink from a fire hose when you enjoy what you're doing.

Bonny Simi:

I do. As I say, "If you love what you do, you never work a day in your life." And I can tell you, I'm not working right now. This isn't called work. I'm thoroughly enjoying it.

Pete Dumont:

I'm in the same, well, I'll say aircraft, not boat, as you are. I took this job for two years as a turnaround, and I've been here 15.

Bonny Simi:

There you go.

Pete Dumont:

I enjoy it so I do it. Well, thank you very much, Bonny. I'm going to hand it back over to Abigail. I see there are some questions that we might not have answered. Maybe Greg can address those with Abigail and we can get those answers back to the people. Okay?

Bonny Simi:

All right.

Pete Dumont:

Thank you very much.

Bonny Simi:

Thank you.

Pete Dumont:

Bye-bye

Abigail Glenn-Chase:

Thanks. Thank you. Absolutely. Like Pete said, if any of your questions have been outstanding, I've put my email in the chat field. This is so exciting. This is such exciting stuff. When Joby comes to DC, I'm going to be your first customer or me and all the other poor schmucks who commute on the Beltway every day. Thank you so much, Bonny, for joining us today.

Pete Dumont:

Second customer.

Abigail Glenn-Chase:

Exactly. Please feel free to send me those outstanding questions. Like I said, I'll route them to the Joby team. And before you go, if you liked this conversation, we are going to have many more like it at our upcoming virtual ATCA tech symposium the full week of May 17th. Registration just opened this week. And this year government and military can attend all sessions complimentary. So check it out. Glenn Cudaback just put the link in the chat field, but you can always go to ATCA.org for more information. With that, thank you so much for attending today and happy St. Patrick's day.

IMPORTANT LEGAL INFORMATION

Forward Looking Statements

This document contains certain forward-looking statements within the meaning of the federal securities laws with respect to the proposed transaction between Reinvent Technology Partners (“RTP”) and Joby Aero, Inc. (“Joby Aviation”). These forward-looking statements generally are identified by the words “believe,” “project,” “expect,” “anticipate,” “estimate,” “intend,” “strategy,” “future,” “opportunity,” “plan,” “may,” “should,” “will,” “would,” “will be,” “will continue,” “will likely result,” and similar expressions. Forward-looking statements are predictions, projections and other statements about future events that are based on current expectations and assumptions and, as a result, are subject to risks and uncertainties. Many factors could cause actual future events to differ materially from the forward-looking statements in this document, including but not limited to: (i) the risk that the transaction may not be completed in a timely manner or at all, which may adversely affect the price of RTP’s securities, (ii) the risk that the transaction may not be completed by RTP’s business combination deadline and the potential failure to obtain an extension of the business combination deadline if sought by RTP, (iii) the failure to satisfy the conditions to the consummation of the transaction, including the adoption of the Agreement and Plan of Merger, dated as of February 23, 2021 (the “Merger Agreement”), by and among RTP, Joby Aviation and RTP Merger Sub Inc., a Delaware corporation and a direct wholly owned subsidiary of RTP, by the shareholders of RTP, the satisfaction of the minimum trust account amount following redemptions by RTP’s public shareholders and the receipt of certain governmental and regulatory approvals, (iv) the lack of a third party valuation in determining whether or not to pursue the transaction, (v) the inability to complete the PIPE investment in connection with the transaction, (vi) the occurrence of any event, change or other circumstance that could give rise to the termination of the Merger Agreement, (vii) the effect of the announcement or pendency of the transaction on Joby Aviation’s business relationships, operating results and business generally, (viii) risks that the proposed transaction disrupts current plans and operations of Joby Aviation and potential difficulties in Joby Aviation employee retention as a result of the transaction, (ix) the outcome of any legal proceedings that may be instituted against Joby Aviation or against RTP related to the Merger Agreement or the transaction, (x) the ability to maintain the listing of RTP’s securities on a national securities exchange, (xi) the price of RTP’s securities may be volatile due to a variety of factors, including changes in the competitive and highly regulated industries in which RTP plans to operate or Joby Aviation operates, variations in operating performance across competitors, changes in laws and regulations affecting RTP’s or Joby Aviation’s business and changes in the combined capital structure, (xii) the ability to implement business plans, forecasts, and other expectations after the completion of the transaction, and identify and realize additional opportunities, and (xiii) the risk of downturns and a changing regulatory landscape in the highly competitive aviation industry. The foregoing list of factors is not exhaustive. You should carefully consider the foregoing factors and the other risks and uncertainties described in the “Risk Factors” section of RTP’s registration on Form S-1 (File No. 333-248497), the registration statement on Form S-4 discussed above and other documents filed by RTP from time to time with the SEC. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Forward-looking statements speak only as of the date they are made. Readers are cautioned not to put undue reliance on forward-looking statements, and RTP and Joby Aviation assume no obligation and do not intend to update or revise these forward-looking statements, whether as a result of new information, future events, or otherwise. Neither RTP nor Joby Aviation gives any assurance that either RTP or Joby Aviation or the combined company will achieve its expectations.

Important Information for Investors and Stockholders

This document relates to a proposed transaction between RTP and Joby Aviation. This document does not constitute an offer to sell or exchange, or the solicitation of an offer to buy or exchange, any securities, nor shall there be any sale of securities in any jurisdiction in which such offer, sale or exchange would be

unlawful prior to registration or qualification under the securities laws of any such jurisdiction. RTP intends to file a registration statement on Form S-4 with the SEC, which will include a document that serves as a prospectus and proxy statement of RTP, referred to as a proxy statement/prospectus. A proxy statement/prospectus will be sent to all RTP shareholders. RTP also will file other documents regarding the proposed transaction with the SEC. Before making any voting decision, investors and security holders of RTP are urged to read the registration statement, the proxy statement/prospectus and all other relevant documents filed or that will be filed with the SEC in connection with the proposed transaction as they become available because they will contain important information about the proposed transaction.

Investors and security holders will be able to obtain free copies of the registration statement, the proxy statement/prospectus and all other relevant documents filed or that will be filed with the SEC by RTP through the website maintained by the SEC at www.sec.gov.

The documents filed by RTP with the SEC also may be obtained free of charge at RTP's website at <https://www.reinventtechnologypartners.com> or upon written request to 215 Park Avenue, Floor 11 New York, NY.

Participants in the Solicitation

RTP and Joby Aviation and their respective directors and executive officers may be deemed to be participants in the solicitation of proxies from RTP's shareholders in connection with the proposed transaction. A list of the names of the directors and executive officers of RTP and information regarding their interests in the business combination will be contained in the proxy statement/prospectus when available. You may obtain free copies of these documents as described in the preceding paragraph.