

## Transcript: Do airports dream of electric planes?

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Nate Hegyi: This is Outside/In. I'm Nate Hegyi, here with our producer Justine Paradis.

Justine Paradis: Hey. Uh. So, I grew up on the island of Nantucket, which is off the coast of Massachusetts.

Nate Hegyi: Yup. Very famous island. I know the juice.

### **MUSIC IN: Pillow Tree Version 2, Uncle Bibby**

Justine Paradis: Yeah, Nantucket Nectars.

Nate Hegyi: That's my main knowledge of Nantucket is the juice. Very delicious.

Justine Paradis: And for most of my life, my family and I lived less than a mile from the island's only airport. Which, by the way, the code letters for that airport are A-C-K. ACK. Which leads to all kinds of egregious puns, throughout the island, which are a relentless source of suffering for me.

Nate Hegyi: [laughs]

Justine Paradis: Like, "can't wait to be bACK" on island. Like, "let's do some ACKtivities." None of them is good.

Nate Hegyi: Are there t-shirts that say that?

Justine Paradis: There are definitely t-shirts. This is my call to cease and desist, though. We just need to stop.

### MUSIC FADE

Justine Paradis: But anyway, anybody who lives near an airport knows that sometimes, the sound can be so invasive.

[plane ambi]

### SOUND DESIGN

Justine Paradis: But also – if the wind blew from a certain direction – the smell of jet-fuel.

Nate Hegyi: Mm. What does that smell like, by the way?

Justine Paradis: Gasoline with an oomph to it, which is what jet fuel is anyway.

Nate Hegyi: Got it.

Justine Paradis: Everyone would get a headache.

### SFX OUT

Justine Paradis: Nantucket airport's *is* busy – it's actually [the second busiest airport in the state](#), after Logan in Boston.

Nate Hegyi: Wow.

Justine Paradis: It literally ran out of jet fuel a couple times this summer. Nate Hegyi: Really? Cuz it was so busy?

Justine Paradis: But despite how busy the airport is... in a way, they have a big issue.

*Justine Paradis: So, we are literally overlooking the tarmac. [laughs]*

*Noah Karberg: We are! It's hard to get away from it.*

Justine Paradis: So, that's the airport manager. His name's Noah Karberg. And Noah says the way people are flying has changed a ton.

## MUSIC IN

Locals used to take 15-minute flights on tiny planes to the mainland, all the time, back and forth. But now...

*Noah Karberg: There's a shortage of pilots. So what makes sense in the aviation industry is to fly fewer routes on bigger aircraft. You can do it with the same number of pilots. Um, that's a very, very difficult trend when you're a local small operator and you have nine seat aircraft.*

Nate Hegyi: So it's just not penciling out for these guys right now.

Justine Paradis: Yeah, uh. I'm imagining a spreadsheet? Is that what you're saying? I've never heard that term.

Nate Hegyi: Penciling out? Oh yeah! When you're penciling out, it's just like: you look at your spreadsheet, you look at your budget, and you're like dang. I don't have enough pilots, I don't have enough people flying, it's all just kinda: eee.

**MUSIC SWELL**

Justine Paradis: So here on Nantucket, the airport itself is doing fine, because of all of the bigger planes and longer flights are still coming. And locals who want to get to the mainland can use the ferry. But there are a lot of people in isolated or rural communities, like in Alaska, Hawaii, or the midwest, that *really do* rely on short flights.

Nate Hegyi: Right. My wife flies to Alaska a lot for work.

Justine Paradis: Mmm.

Nate Hegyi: And she literally flies on little what they call up there puddle-jumpers, from one island to the next.

Justine Paradis: We call 'em pond hoppers.

Nate Hegyi: Puddlejumpers and pond hoppers! So yeah, there's so many people that rely on these small planes and these small companies. This is wild.

### MUSIC FADE

Justine Paradis: But everything I just said – underserved communities, underutilized airports, the noise, the smell, the emissions – you could see all this together as a problem... or!

### MUSIC IN: Scott Gratton, The First

Justine Paradis: ...you could see it as an opportunity.

Nate Hegyi: [laughing] That sounds like corporate-speak!

Justine Paradis: I'm talking about decarbonizing aviation, of course.

Nate Hegyi: MmMM!

Justine Paradis: Because some say that all of these are dynamics that could change with the introduction of the electric airplane.

Nate Hegyi: Oooh.

*[cheering]*

*Greg Davis: We can do it. Just watch us. We're doing it right now.*

*Dan Wolf: That flight... I think was every bit as exciting as the first flight in aviation.*

*Greg Davis: And so if we can decarbonize, so can everybody else.*

*[cheering] Look at her, she's in the air!*

**MUSIC FADE + PLANE SFX**

Justine Paradis: So, Nate, if you had to guess, or name a couple of the challenges to decarbonizing aviation, to making airplanes carbon-free, what do you think they are?

Nate Hegyi: Uh, I think number one would be range anxiety. If we have range anxiety for electric cars...

Justine Paradis: Yes.

Nate Hegyi: ...flying 500 miles on a plane? I would be very anxious in that plane.

Justine Paradis: The social acceptance factor.

Nate Hegyi: Yes, exactly.

Justine Paradis: Yeah, so the first and the major problem facing airplanes is physics. If your plane is too heavy – it won't get any kind of range, and sometimes maybe not even get off the ground. And when it comes to going electric – those batteries are HEAVY.

Nate Hegyi: Hm!

Justine Paradis: The second problem is the timeline of fleet replacement. Because planes are designed to be in use MUCH LONGER than cars. So, cars, generally, 10, 20 years – planes, 30 or 40.

Nate Hegyi: Oh yeah. Yeah, some of those planes, you look on the side, and there's a little spot to put your cigarette ash still.

Justine Paradis: That is such an amazing detail actually!

Nate Hegyi: It's true.

Justine Paradis: Part of that timeline is because they cost so much money to make. But it's also about safety: for manufacturers, the federal process for testing new aircraft designs is really intense. For good reason.

Nate Hegyi: Yeah.

Justine Paradis: So new airplane models take a really long time to come to market. So, unless a fuel is drop-in — meaning, you can use the same plane design, but just swap out the fuel – it is by definition going to be a while before it's widespread.

Nate Hegyi: Right. Okay, this all is making sense to me.

Justine Paradis: Despite those challenges, a lot of people say: actually, we already know *how* to solve this problem.

### MUSIC IN: Talk to the Town, Adelyn Paik

*Lynnette Dray: I do agree, yes. We do know what to do. There are some kind of technological specifics that need to be worked out. But I'm reasonably confident that these are things that can be worked out as opposed to insurmountable barriers.*

Justine Paradis: So, that is Lynnette Dray. She studies the aviation industry in her role as research fellow for University College London.

Nate Hegyi: She sounds delightful, by the way.

Justine Paradis: Inspiring, right?

### MUSIC SWELL

Justine Paradis: So, let's take a look at some of these alternatives. First is hydrogen. Right now, most planes run on jet fuel.

*Lynnette Dray: It's produced from oil.*

Justine Paradis: And when we burn fossil fuels inside a jet engine, one byproduct of that chemical reaction is, obviously, carbon dioxide.

Nate Hegyi: Wah-wah.

Justine Paradis: On the other hand, [an engine that runs off hydrogen](#) – the hydrogen is reacting with oxygen and produces not carbon dioxide... but dihydrogen oxide.

Nate Hegyi: Uh huh... chemistry... dihydrogen dioxide...  
uhhh... [water](#)?!!!

Justine Paradis: Water! [laughs] You did it.

Nate Hegyi: H<sub>2</sub>O!

### MUSIC SWELL AND FADE

Justine Paradis: But – and here come the cons –

*Lynnette Dray: The big problem here is that you can't use hydrogen in existing aircraft.*

Justine Paradis: Meaning, we'd need *entirely new plane designs to make it work.*

Nate Hegyi: Okay.

Justine Paradis: And another thing is that: the source matters. Hydrogen *can* be sourced through green tech, but right now most of it is synthesized from [natural gas](#).

Nate Hegyi: Oh okay.

Justine Paradis: And what that means is that emissions from the fuel itself might just be water vapor, but it actually takes a lot of energy just to get the fuel in the first place.

### MUSIC IN: Snowbrain, Shiruky

Nate Hegyi: Right. I feel like there should be [sad sound] - like horns, just going meehhh.



Justine Paradis: Yeah. And I'm not even done yet.

Nate Hegyi: [laughs]

Justine Paradis: Finally, hydrogen is very volatile. Just like kerosene, it [likes to blow up](#) if you're not [don't handle it just right](#).

*Lynnette Dray: It has to be kept cold, it has to be kept under pressure. And at the moment it's pretty tricky to put hydrogen through pipelines. Hydrogen quite likes to escape.*

Justine Paradis: That escape is called [leakage](#) and it's a big problem. Like it could potentially BECOME a greenhouse gas, if combined with other stuff in the atmosphere. And last thing: it's very very expensive. So this is only a solution if all these problems are solved. So it always feels like hydrogen planes is one of those technologies that it's ten years away.

Nate Hegyi: Yeah, I feel like there's a lot more [beernggh] than [da-da-da-DA!] on hydrogen.

Justine Paradis: if we were to sum up the solutions by sound effect. That sounds accurate.

Nate Hegyi: It's got too many [neorrrngh], yeah.

### MUSIC SWELL AND OUT

Justine Paradis: The second potential solution here is aviation biofuels.

Nate Hegyi: Ooh.

Justine Paradis: Have you ever seen a VW bus or something similar – which drives around and fuels up on the leftover oil from restaurant grease traps?

Nate Hegyi: Oh, yeah, it smells like french fries. Yeah.

Justine Paradis: Yeah. Biofuels are kind of like that, but super advanced. I'm pretty sure they don't smell like french fries, but fact check on that.

Nate Hegyi: Okay.

Justine Paradis: This is actually the most developed solution right now. Biofuels are chemically identical to jet fuel, so they're already being used, for instance, at LAX in Los Angeles. Con: the sources of biofuels are not equal in terms of impact – you can get it from algae, from food or forest residues, or palm oil.

Nate Hegyi: Mmm.

Justine Paradis: So, some of those sources are not great for the climate or ecosystems in other ways.

Nate Hegyi: Yeah. Yeah, palm oil is not so great.

Justine Paradis: And there is not enough supply of biomass to scale up for the entire global aviation system. And finally, cost.

*Lynnette Dray: The problem is that the price at the moment of these fuels is extremely high.*

**MUSIC IN: bomull, nemes**

*So... biofuels are two or more times the price of conventional jet fuels.*

Nate Hegyi: Wow. So that really wouldn't *pencil out*, Justine.

### MUSIC SWELL

Justine Paradis: So, onto our final decarbonizing aviation pathway of the day!

Nate Hegyi: Okay.

Justine Paradis: Electric airplanes.

Nate Hegyi: Yes!

Justine Paradis: Planes that run on batteries. Major pros here: no emissions from the flight, if the power for the batteries comes from a renewable source.

Nate Hegyi: Mhm.

Justine Paradis: Cons: when you store energy in a battery, that means you're relying on mining stuff like lithium and cobalt. And the weight of the battery? That makes it very difficult to engineer a long-distance flight.

*Lynnette Dray: It is feasible, but it's feasible with some pretty hefty constraints... I think it's very unlikely before 2050 or so, unless there's a big advance in battery chemistries, that you'd be able to have a flight that can fly between the east and west coast of the US or that can fly intercontinentally.*

### MUSIC SWELL AND OUT

Justine Paradis: There are other alternatives too, but nothing that's going to be ready and widespread in the immediate future at least for these longer flights. But there's a category that *is* showing some progress – and that category is what we call shorthaul flight.

Nate Hegyi: Oh, puddlejumper!

Justine Paradis: Yeah! And *an electric plane* capable at least of puddle jumping – they are not just on the horizon. They are almost here.

Nate Hegyi: Cue music. MUX DROP.

**MUSIC: Scott Gratton, Electro Lab**

**A / Nate Hegyi: That's coming up right after the break. But first, let me just say that YOU are the engine that makes Outside/In go... I know that's cheesy, but you are the engine that makes Outside/In go. And if you donate \$60 - or just \$5 bucks a month - we will send you a sweet Outside/In baseball cap.**

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**B / Nate Hegyi: That's coming up after the break. First, though – if you think that designing a hydrogen-fueled**

plane is costly, you should see what it costs to make a podcast.

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We'll be right back.

## **BREAK**

Justine Paradis: Welcome back to *Outside/In*. I'm Justine Paradis.

Nate Hegyi: I'm Nate Hegyi.

Justine Paradis: And before we get into talking about electric planes here Nate, I just want to have a bit of a reality check. I think it can feel as a passenger, when you're, you know, buying a plane ticket, that you're really getting scammed.

Nate Hegyi: Absolutely, when you're dropping \$700 to fly like a state away.

Justine Paradis: The legroom keeps shrinking. Airlines are offering you [mileage programs... even airline credit cards...](#)

Nate Hegyi: Baggage fees! Exactly, all these add-ons.

Justine Paradis: But, despite all that, and we did touch on this earlier, aviation researcher Lynnette Dray says: it is also a really tough industry.

*Lynnette Dray: [laughing] Yeah, I mean, you might think airlines are raking it in. Airlines go bankrupt with surprising frequency.*

Justine Paradis: Planes are not cheap, and neither is paying people to repair or fly them. Actually, [there's a global shortage of BOTH pilots AND mechanics right now](#). And of course a huge cost is fuel, which is tied to the [sometimes highly variable price of oil](#).

Nate Hegyi: So, I guess, when we're being, you know, squished like sardines into the plane, and getting nicked-and-dimed everywhere, it's not like there's these Jeff Bezos types are sitting there making tons of money.

Justine Paradis: I mean, actually, I think they exist.

Nate Hegyi: Yeah, okay, they are –

Justine Paradis: [laughing] I think that they do exist.

Nate Hegyi: Okay, okay! But still.

Justine Paradis: Just, it's more complex than we think.

Nate Hegyi: Yes, more complex than we think. A little bit of a struggle bus for the airlines.

**MUSIC IN: Bill Vortex, Les Portes Du Futur**

Justine Paradis: And it's a particular struggle for *small* airlines...

*Lynnette Dray: It does cost really a lot to operate small aircraft. And a lot of small aircraft out there are already really quite old.*

Justine Paradis: But, again, this might be a situation in which decarbonizing looks less like a problem...

Nate Hegyi: ...and more like an opportunity.

Justine Paradis: ...and more like an opportunity.

## MUSIC SWELL AND OUT

*SCENE: Cape Air hangar*

*Justine Paradis: It smells kind of good down here. Like grease, in a nice way, like a bike shop.*

*Jim Goddard: So just watch out, floor—the humidity is very slippery. And there's a lot of hazards like cords and hoses and sharp edges and things you can hit your head on....*

Justine Paradis: That's Jim Goddard. He's the senior VP of fleet planning and technical operations for Cape Air. Cape Air's a regional airline, one which actually services my home island of Nantucket. And he gave me a tour of their hangar. Full disclosure, Cape Air is an underwriter of NHPR, the radio station where *Outside/In* is produced. So, this hangar is at their headquarters in Hyannis, Massachusetts, which is on Cape Cod. This is this huge garage and workshop, and it had maybe a dozen or so planes on the floor that day. And, honestly Nate, this was so cool.

*Justine Paradis: So, what is the specific task you're doing right now?*

*Scott Genthner: Right now we're installing the turbo charger, variable pressure controller, and throttle body.*

*Jim Goddard: I'd like to say one thing.*

*Justine Paradis: Oh, sure!*

*Jim Goddard: They're very humble.*

*Justine Paradis: Okay! [laughs]*

*Jim Goddard: Okay? ...not everybody in the world can do this. Believe me. Trust me. This is why I call them artists.*

*Joe Urbanski: Cool. [laughing]*

*Scott Genthner: Thank you very much, Jim. [laughing]  
That's, I don't know how to follow that up.*

*Joe Urbanski: We'll take it though.*

Justine Paradis: So, Cape Air is a relatively small airline. Their business model is to create hubs for these shorthaul flights.

And shorthaul flights, by the way, are typically defined as under 500 miles, so sometimes that's little more than puddle jumping. And shorthaul flights [are just about half of flights sold worldwide](#).

Nate Hegyi: Really?! That's a lot. Way more than I thought.

Justine Paradis: Yeah! So Cape Air's got routes on Cape Cod, another in San Juan, Puerto Rico, and another actually out by you, in Billings, Montana.

Nate Hegyi: Really! Oh, that's why they're called Cape Air. Boom! I just, like, that just came together, I have looked at them, and been like I can fly to Miles City from Billings if I



wanted to, which I don't, there's no need. But interesting! Sorry. Tangent.

### MUSIC IN: Tan Glove, Blue Dot Sessions

Justine Paradis: Cape Air, is in a way, the perfect candidate for electric planes. And that's because they use relatively small planes, their longest route is only 220 miles. But also, their fleet is at this point getting really old. Three-quarters of their planes are from when they [first started their business 35 years ago](#).

Nate Hegyi: Their planes are like as old as I am! That's wild!

Justine Paradis: True!

Nate Hegyi: I'm just barely older.

Justine: They are designed to last like this, but at this point they're pretty expensive to maintain, and Cape Air is replacing them with new planes. And remember that challenge of battery weight?

Nate Hegyi: Yeah, yeah.

Justine Paradis: It is no joke. I had a conversation with Dan Wolf, who is the founder of Cape Air. He's also a pilot, mechanic, and the current board chair. And he told me that the weight of a battery in a comparable 9-passenger electric plane, right now, is 8,000 pounds.

Nate Hegyi: WOW.

*Dan Wolf: That 8,000 pounds, if I were to equate that to the energy required right now for Cape Air to do what it does, you're looking at about maybe 600 pounds of fuel. So you're looking at 600 pounds of fuel versus an 8,000 pound battery.*

Nate Hegyi: That's really heavy.

Justine Paradis: Yeah. That's the physics they're up against.

Nate Hegyi: Woof.

Justine Paradis: So that gives you an idea of the design challenge and the reason it took so long to get to this moment.

**MUSIC OUT**

**SCENE: [test flight at Eviation: lift off]**

Nate Hegyi: Ooh, is that an electric plane?!

Justine Paradis: Yeah! It's taking off.

**SCENE: [cheering]**

**MUSIC SWELL**

*Dan Wolf: I've been a pilot for 45 years. I've been a mechanic, an aviation licensed mechanic, for 43. So So, that's a significant percentage of time since the Wright brothers. I mean, I've been a pilot for almost half of the time that human beings have had the ability to fly. And that flight on September 27 of last year I think was every bit as exciting as the first flight in aviation.*

*Greg Davis: The first flight of Alice in September 27th of 2022 was the most exciting day of my aviation career so far.*

Justine Paradis: So, this is Greg Davis. He is the CEO of an Israeli-founded start-up called Eviation. So, that's electric aviation...

Nate Hegyi: Kinda clever, yup.

Justine Paradis: ...get it? And we just heard a test flight of their design – the Alice, which is in their words, quote, “the world’s first all-electric passenger plane.”

Cape Air has signed a letter of intent to buy 75 of these planes when they’re ready for market, which is enough to replace ALL of those aging planes in their fleet.

### SCENE OF LANDING

MUSIC IN: Feeeeelings, Guustavv

Nate Hegyi: Alright, I want to see what it looks like. So I’m going to Google. So it’s Eviation. The Alice.

Justine Paradis: Yeah.

Nate Hegyi: Images. Click.

### MUSIC

Nate Hegyi: [plane noise] That looks like something Elon Musk designed! It’s got Tesla vibes.

Justine Paradis: [laughs] I don’t know if they would appreciate the comparison or not.

Nate Hegyi: I’m sure they wouldn’t. Sorry, Eviation. It’s just got a, it’s got a future vibe to it.

Justine Paradis: So, the silhouette is really distinctive.

Nate Hegyi: It’s sleek.

Justine Paradis: It is white and it's got this dark tint of the windows, and combined with the distinctive shape, it actually reminds me a little bit of an orca whale.

Nate Hegyi: Oh!

Justine Paradis: Can you see it?

Nate Hegyi: I can kinda see that.

Justine Paradis: So, that wide shape is to accommodate the large volume of the battery, which is sitting in the middle of the plane. But the differences don't stop at surface level. There's no gas, so it smells different. No heady kerosene smell that gives you a headache. It sounds different. It's not silent, but this is not a combustion engine.

Nate Hegyi: You're not hearing like [sound fx]. Like deafening sounds, it's more like [sound fx].

Justine Paradis: And it flies differently.

*Greg Davis: With fuel burning aircraft, there's an advantage to climbing for reduced fuel burn. With an electric aircraft, there's no advantage. It's just as efficient when you take off as it is to when you're cruising.*

Justine Paradis: One reason for that is after jet-fuel-powered aircraft takes off, it's burning fuel, so that by the time it lands, the plane weighs less.

Nate Hegyi: Mhm.

Justine Paradis: But of course, if it runs on a battery, a plane takes off and lands at the same weight.

*Greg Davis: So you're actually going to start operating the aircraft at lower altitudes than you would for traditional fuel burning aircraft.*

## MUSIC OUT

Nate Hegyi: Okay, but still, these are electric planes with electric batteries, and so my concern is still: what's the range?

Justine Paradis: Greg said the range is 250 nautical miles, which means a mile that factors in the curvature of the earth, which is useful to pilots and sailors. It translates to about 287.5 miles.

Nate Hegyi: OK.

Justine Paradis: So, that of course would not work for an airline that's flying a cross-country route. But remember, we're talking about short haul flights.

Nate Hegyi: Puddle jumpers, yeah.

Justine Paradis: Cape Air's longest flight is 220 miles. So, for them, this is a range that can totally work for what they do: flying from Nantucket to Boston, Puerto Rico to the Virgin Islands, that kind of thing.

Nate Hegyi: Cool.

Justine Paradis: The Alice is going to cost more than a traditional jet of the same size to start with... there's one model that costs around \$3 million, just for reference. But Dan Wolf of Cape Air says the benefit of electric planes - just like electric cars - is they're cheaper and easier to service.

*Dan Wolf: The simplicity of an electric motor – I'm going to wear my technician work hat for a minute ... is so much better than the other forms of propulsion that are currently used in aviation.*

Justine Paradis: Greg, the CEO at Eviation, actually told me that the motor for Alice works essentially the same as a ceiling fan. Like there's more to it than that, but compared to gas engines there are way fewer moving parts. Here's Dan again.

*Dan Wolf: When my wife and I got married almost 40 years ago, we got a coffee grinder which has a little electric motor in it, and we're still using the same coffee grinder. We've gone through a lot of reciprocating lawnmower engines and car engines between then and now. But that little electric motor, it will last forever.*

Justine Paradis: Obviously, that raises questions about jobs – especially for mechanics. Because, right now, with their current fleet of all fossil-fuel-powered piston engines, Cape Air has to maintain them every 60 hours of flying.

*Dan Wolf: the engine has to be changed out every 2000 hours of operating. And I think with an electric motor, I wouldn't be surprised if we were able to go up ten times that and maybe look at a replacement time interval of maybe 20,000 hours.*

Justine Paradis: With that kind of savings... what they think we might see is more frequent but shorter routes lighting up again. And this is the business opportunity that both Greg and Dan are imagining.

*Dan Wolf: It almost becomes a subway in the sky, if you will, because you can have the airplanes coming and going on a much more frequent schedule with no environmental impact. It's sort of a home run.*

Justine Paradis: This means that those little airports that don't see a lot of flights right now could get more action.

Nate Hegyi: Cool!

### MUSIC FADE

Justine Paradis: But one of the challenges to this dream is going to be charging.

Nate Hegyi: Oh, yeah, of course.

Justine Paradis: And Nantucket is kind of an illustrative example of the issue, because it's an island. So, Nantucket gets electricity from two cables that literally run along the ocean floor back to the mainland.

Nate Hegyi: Oh boy!

Justine Paradis: So, this could increase the likelihood that the island might need a third cable, which is this very expensive thing that everyone constantly argues about at town meeting.

Nate Hegyi: That's a classic small town argument, like, 'aw, we need that third cable!'

Justine Paradis: One way to address this issue is that instead of having their planes plug into the grid to recharge, Cape Air might deploy charging trucks at certain airports. But whatever happens, you can see that this is going to be more complicated than just buying a bunch of electric planes.

Nate Hegyi: Wow. So what is the timeline here to get these planes actually in the sky?

Justine Paradis: Well there are a few different companies working on this kind of thing — companies that are making other deals with other airlines. But as for Cape Air: Eviation is aiming to have the Alice on the tarmac by 2027. Eviation has developed three iterations of the Alice: a 9 passenger commuter plane, which we've been talking about so far. A cargo plane, like for package delivery. And the "executive," aka, a private plane.

Nate Hegyi: Yeah, that's your Elon Musk, Jeff Bezos, zipping around.

Justine Paradis: Taylor Swift, too, people that are, you know, arguably less controversial. But this takes the heat off some celebs doing these little short flights, you know, across San Francisco Bay.

Nate Hegyi: Exactly, yeah. Now they can go skiing in Jackson Hole whenever they want to.

Justine Paradis: Yeah. Yeah, I don't know how I feel about them getting that moral absolution, but in any case!

Nate Hegyi: Anyways!

**MUSIC: Add It Up (Blah Blah) - Bonkers Beat Club**

**Nate Hegyi: Okay, so, like, one thing I haven't heard yet – is, let's say all of Cape Air's flights – well actually, all short haul flights, all around the world. They all go electric. And all those electric flights are powered off of renewable energy. Is that, bottom line, going to make a big dent in global emissions?**



Justine Paradis: Well, yeah, so: cutting a long flight is one of the biggest things we can do as individuals to cut emissions.

Nate Hegyi: Right.

Justine Paradis: Globally, as an industry, aviation is 2% of global emissions. But as far as these puddle jumpers - let's go back to Lynnette Dray, our aviation researcher, to answer that one.

*Lynnette Dray: In terms of actual climate impacts, it's tiny.*

Justine Paradis: All shorthaul flights would end up being more – but if we're just talking just about puddlejumper, or ultrashorthaul flights, this about a tenth of a percent of just aviation emissions. Which in terms of total global emissions, would translate to something like 0.00002%.

*Lynnette Dray: But that doesn't mean that we shouldn't do it, because... it just raises the visibility of green aviation technologies.*

Justine Paradis: One thing to consider is it's very important that people feel safe taking electric planes, so having shorthaul flights lead the way is really important to trailblazing for the rest of the industry.

Nate Hegyi: Right.

*Lynnette Dray: So I think from that perspective, it's actually very important that green aircraft start being in use, even if the overall CO2 impact is, is minuscule.*

**MUSIC IN: Tan Glove, Blue Dot Sessions**

Justine Paradis: Aviation is notoriously one of the hardest sectors to decarbonize. But for Greg from Eviation, that's just another reason to do it.

*Greg Davis: Because here we are and we've flown the electric airplane. We're going to be delivering them to customers in a few years...*

*We can do it. Just watch us.*

*And so if we can decarbonize, if we can take fuel out of what we're doing, so can everybody else. Right? That's the message it sends is we can all do it.*

**MUSIC OUT**

Nate Hegyi: Okay. Uh. Justine?

Justine Paradis: Mmhm?

Nate Hegyi: Do you think that you would fly in the Alice?

Justine Paradis: Ah, haha... it scares me for sure.

Nate Hegyi: Why?

Justine Paradis: Oh, I mean, I want to want to. But I think because I'm not used to it, because it's new? But I think part of it to be honest is these stories about electric cars catching on fire.

Nate Hegyi: Yeah.

Justine Paradis: And I [know that those fires in EVs are rare, and gas-powered cars](#) actually catch on fire a lot more.

Nate Hegyi: Right! Yeah.

Justine Paradis: But lithium fires are scary. I just wonder what would happen if that happened in a plane.

Nate Hegyi: Yeah, cuz you'd be in the sky.

Justine Paradis: I think it's more the fear part of me than the rational part of me. Yeah.

Nate Hegyi: That's fair. I think it's an honest answer. People have irrational fears of flying, period. Right?

Justine Paradis: Yeah.

Nate Hegyi: Even though plane crashes are incredibly rare. It's probably Hollywood's fault. We're probably, that's probably who we can blame, honestly, is Hollywood.

Justine Paradis: [laughs]

Nate Hegyi: And I think if it happened once with an electric plane. I mean you talk about a PR nightmare.

Justine Paradis: Yeah.

Nate Hegyi: Like, I just think of the uh, what was that one plane in the '90's. Uh... the Concorde!

Justine Paradis: I actually don't know this.

Nate Hegyi: It was a supersonic jet. And it had a series of accidents. And gone. Done.

Justine Paradis: So, one thing I'll say that was repeatedly emphasized by everybody was that, actually, our aviation system is so, so, so safe, and they're really proud of it, and it's something they never want to sacrifice.

Nate Hegyi: mhm.

Justine : And, there are multiple layers of safety checks for aircraft – every time it flies, but also when it's being designed, when it's manufactured, and then there's this FAA certification process. The Alice is going through that process right now.

Nate Hegyi: Yeah.

Justine Paradis: But that's not to say that it wouldn't happen. Like, you don't know.

Nate Hegyi: So you might not be on the first flight. But maybe 2030, 2031 after we've seen a few of them.

Justine Paradis: Yeah.

Nate Hegyi: You might do that.

Justine Paradis: Do you think you would?

Nate Hegyi: Same boat as you. Same plane as you. Uh, I would not get on the first flight.

Justine Paradis: This might just might be also part of our personalities too. There's the early adopter type, and there's the people who wait and see – like me, I guess. I do know that there's other people on our team that are psyched about it. Like, when I pitched this, one person said "if you get a chance to ride in an electric plane, can I come?!"

Nate Hegyi: [laughs]

Justine Paradis: But I do think this echoes what Lynnette said earlier – which is, like, seeing these planes in action, successfully, hopefully, is actually really important.

**MUSIC TRANSITION: Nul Tiel Records, Fireflies**

Justine Paradis: So, as for the folks who work at Cape Air, with this massive change for their company right on the horizon – the Alice is still a few years away, but they're already communicating with Eviation about the need to plan trainings for pilots and technicians.

And during my visit on the hangar floor, I ended up climbing into the cockpit of one of their planes with their director of flight training. His name's Bill Guinee.

*Justine Paradis: I get to be in the copilot's seat.*

*Bill Guinee: You're in the copilot's seat.*

And frankly, Bill sounded kinda psyched.

*Justine Paradis: What do you think about the prospect of flying an electric plane? Alice?*

*Bill Guinee: I just hope it comes before I retire.*

**MUSIC IN**

*Bill Guinee: Yeah, I definitely want to check it out and fly it. I'm very interested in it. I think it's, it's about time that that we, we move along. So I hope that it comes around before I call it a career.*

Nate Hegyi: If you want to see the Alice test flight, sign up for our newsletter. We'll be sharing some photos there. Plus, we'll be including a snippet from the cutting room floor — about the possibility of uncrewed flights. *Planes flying without a pilot.*

Don't miss it. You can sign up for the newsletter at the link in our show notes. We'll also post videos of Alice's test flight on our Instagram. Our handle there is @OutsideInRadio.

This episode was reported, produced, and mixed by Justine Paradis and edited by Taylor Quimby. Our team also includes Felix Poon and Jeongyoon Han. Rebecca Lavoie is our Executive Producer.

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