



Episode 12: Public Transit in 2023 with Paul Comfort

Journey to the future

It is one day after little Christie's birthday party. Everyone had fun and enjoyed the ice-cream that Christie and her dad got for the party. However, the little girl still did not open all her gifts from yesterday's party. Of course, it was a busy playful time for her and her friends yesterday. So, this morning Christie is very excited about opening the rest of her gifts.

Among many games and toys, there was a different kind of present this time, a book that her father, Thomas, got for her. Reading became one of Christie's hobbies, since the times of home schooling during the Covid restrictions. Some while ago, when Thomas found this really interesting children's book about public transport, Christie immediately came to his mind and he bought it for her. „What a great book, thanks Dad“ said Christie in laughter hugging Thomas. As she goes through the pages of the book, she gets really engaged and starts reading already. „I will leave you to it then, Christie“ says Thomas, as he sees her digging through the book.

Later that night, Christie goes to her father to ask him about the ideas she got after reading. “Dad, isn't it dangerous to have autonomous cars on the road without drivers? They might cause accidents!” Having read about AV vehicles already Thomas answered “ You know Christie, these cars and their systems are developed by us humans, so we have programmed it to sense and see when something is in the way to stop” then Christie answers “well, I still think someone should be there to monitor and control them”

“Yes, you are right, Christie, and they are indeed! They are monitored and controlled from control centers by the team who developed them” Christie pauses a little and says “oh, I understand better now” then she tells her dad to show her one of those autonomous vehicles, when they are outside on the street. However, she still stays busy in her head, imagining what the future of transport will look like after this conversation.

Agnes Kunkel: Hello, I'm Agnes Kunkel. Your host in 2023, your window to the world beyond covid-19. We have now 31.365.000 confirmed cases worldwide and over 965.000 people have been confirmed to have died. Today we have the 22nd of

September 2020. Our guest today is Paul Comfort speaking on Public transportation in 2023.

Paul Comfort is an expert on leadership, transportation infrastructure and transit trends. As former CEO of the Maryland Transit Administration (MTA), he most recently led a revolutionary change from a 50-year-old old school transit system to the world-class BaltimoreLink, an efficient, high-frequency, connected rail and bus transit system in Baltimore, Maryland.

Mr. Comfort has spent a career in public transport and local government, having served as County Administrator for two suburban counties in Maryland, and was elected as a County Commissioner. He has also worked in business development and operations management for many public and private transit operations.

He is currently Vice President of Business Development for Trapeze Group, serving as a brand ambassador to the transit industry, ensuring C-level success with their technology products and services and speaking and writing on transit trends and solutions. He also hosts the well-known podcast "Transit Unplugged", interviewing top Public Transportation Leaders about their work, operations and transit trends. He is author of the highly recommended bestseller Future of Public Transport and a children's book on Public Transport from steam locomotives to hyperloop and beyond. Welcome Paul Comfort!

Paul Comfort: Thank you. It is great to be here.

Agnes Kunkel: So thank you for coming to our show.

We are living in crazy times. How was your work affected by social and movement restrictions during covid-19?

Paul Comfort: So it was dramatically impacted, Agnes. And thank you again for having me on the show. So it's funny how life works. I had this book, The Future of Public Transportation, which I had worked on for quite a while, and it was coming out and it was published on March 1st. And of course, a week or two after that, the covid-19 pandemic hit here in the U.S. I live on the East Coast near Washington, D.C. I had a whole world book signing tour scheduled. I had shirts made up literally with all the places I was going around the world, going to Dubai and Singapore and Canada all over

America and do book signings and speeches. All of that was cancelled. I had to go virtual. But I always look for the silver lining. I've actually been able to have, even more impact right here from my home office outside Annapolis, Maryland, where I've been able to drop in virtually into staff meetings from Vancouver, Washington to Australia and many places in between talking about the future of public transportation. Not just a book, but the topic. And now Covid has hit. I've been able to start another version of the podcast called Comfort Squirter focused primarily on the how the Covid pandemic has impacted public transit. So it's really impacted us, impacted me and our industry dramatically. But I think there is a silver lining and that's what we'll talk about today.

Agnes Kunkel: That's great. In the beginning, we have this little story where the daughter was given your book about the public transport for children from the steam locomotive to the very modern vehicles. How did you come to the idea for a children's book?

Paul Comfort: Isn't that interesting? So that was my Covid project. Actually, that's what I did during the five months of the Covid, I worked on the children's book. And it really is a corollary to the book I just mentioned, the future of public transportation. And that rolls back to the podcast. So, when I started work for Trapeze, I finished up 30 years in the public transit industry as CEO of the MTA in Baltimore. And then I went to work for this amazing technology company. And they've given me a lot of flexibility to really be a thought leader and to investigate and to research public transit best practices. And one of the things we've done is started this podcast, Transit Unplugged, where our interview, CEOs of Transit Systems and I have done it up until covered in person. So almost every interview I've done has been I go to their office in Sydney, Australia. I sit down with Howard Collins, the CEO of Sydney Rail, we talk, and he gives me a tour of Israel Operations Center. We ride on the train, I meet his staff, and then we sit down, and we tape the interview. And it's been fantastic, a fabulous experience. I've been able to travel the whole world for this podcast. And after about a year and a half of it, I'd interviewed, 50 or 60 of these executives. I've really got my finger on the pulse of what's happening in this transit industry.

And there's so many cool things happening, from mobility, a service to autonomous vehicles to Hyperloop. I really want to capture all that information in a book and share it with people. And so I knew that I didn't have the best wisdom on all of it. So I invited 40

of the world's leading experts to write for this book, *The Future Public Transportation*. And then I thought, since my wife and I are strong believers in family and we've been married 33 years now, we have six children and we have five grandchildren... wouldn't it be fun to have a book where I could share with my grandkids and other children the story of public transportation and why I'm so passionate about it, how does it help so many people? So that was really the genesis of the book and the timing was perfect. I would not have had the time to really focus on it, had I been on heavy traveling schedule. But because I was home for the last five months, I thought, I want to do this. And so I started kind of writing down, sketching down ideas of what I would do that I put together kind of a basic storyboard of what I would go back into the past, talk about how it all got started one hundred and fifty years ago with the Tom Thumb Railroad and then work our way through history showing the different types of vehicles in a cartoon style picture book, not a coloring book.

Although I did take one picture up front, the kids can color of a bus because I know the kids like to color, but the rest of the book is all colored for them. And Agnes, I crowd-sourced the artwork literally. I knew a few artists, but I thought, I want to get somebody really good at this. And so I just I have like seventeen thousand people I'm linked into on LinkedIn. So I put it out there, hey, I'm going to write a kid's book. Anybody interested in into an illustration and is not going to charge me an arm and a leg for it. I had a couple of people interested and ended up with this brilliant illustrator, Sudeep Copy out of India. And we've had a Sunday morning date for the last three or four months where every Sunday morning we do a Zoom call, just like you and I are doing now. I sent him the storyboard with all the pictures I'd like him to draw, and he illustrated it on a computer.

And a lot of it was done right while we were on the phone together, while we were talking, he would say, OK, you got to move that kid back behind the yellow line at the train station. No kids are allowed over the yellow line, those kinds of things. And we ended up with a brilliant storyboard where the artwork is sharp and crisp. And you know what else? There's nothing else similar to it on the market, like before the Covid-19 crisis, I went to bookstores and I looked at all the children's books and I saw just what I noticed as a granddad, which is all these books with monster trucks and zoo animals and but nothing about public transportation and the vehicles. I mean, once in a while there's a book that has a bus in it, but not the kind of historical perspective, which is fun, giving stories, anecdotes. And hopefully it'll capture their imagination, especially in this

post Covid era, when there's been so much negativity toward public transportation. So we could talk about that more if you'd like, but that was part of that's kind of how it all got started.

Agnes Kunkel: I remember when you sent it, I was reading the book and it reminded me of my grandfather. My grandfather started his career as a blacksmith. And then he moved to steam locomotive. And then he has done the first exams to use an electrical locomotive.

Paul Comfort: Oh, wow.

Agnes Kunkel: Yeah. And my mother, she is nearly 100 now. She told me about it, that he and his friends were learning at home for these exams and that it was very heavy work. And when I was going through your book, I remember these stories and said: "Oh yes, yes, my grandfather too".

Paul Comfort: I had the same experience as I was putting it together. I remembered my father, William Comfort. He grew up in Brooklyn, New York, and he used to tell me stories about how he would ride the train, the subway train in New York out to Coney Island with just one token. So I put that in the book. How that back in the in the nineteen thirties and forties, for one token, you could ride the train as far as it would go, it was just a few cents and it was really his escape out of the city into the beaches of and the fun parts of Coney Island. And so public transportation, just like you mentioned, Agnes has been so important to so many. I want to make sure we can share that with the next generation.

Agnes Kunkel: Is it planned, that maybe some transport agencies give it to school kids?

Paul Comfort: I hope so. I've had I've had a few transit agencies, had their CEOs talk to me about the book. And I'm actually working right now with the International Transportation Association. They sent me a nice quote and now they're going to start promoting it. And I think that schools I just was on the phone earlier today with a reporter for a newspaper and she said she wanted to send it to her daughter, who was a school teacher, and they're doing home school instruction with children. And she'd like

to have the digital version so she can put it on the kids' laptops and so that they can talk about it as part of their school curriculum. And I'm really hoping and believing that that's going to take off because it really is valuable information for young people.

Agnes Kunkel: Yes, I guess the all pupils that they have to use it and maybe it's not to hand it over to say in the first day when they go to school, here is something to understand where your school buses are coming from and where they may be going to.

Paul Comfort: That's right. Yes. School buses are in the book too, because that's really the form of mass transportation which kids are familiar with.

Agnes Kunkel: Yeah. So you are a public transport ambassador and evangelist. Why how did you come to this type of career?

Paul Comfort: Well, thank you. My father was a pastor, and my uncle was actually an evangelist in the church. And so that's kind of where I got the name from as I thought about what I wanted to do at this stage of my career. And I really wanted to share back with people what I've learned over the last 30 years. I started in 1987. I got my bachelor's degree from University of Maryland. My first job was my county where I live. Queen Anne's County, Maryland was to become the county's first transportation coordinator. We had a small van system that served the elderly and people with disabilities, took him to senior centers and doctors. And then the county commissioners asked me to start a public transportation system for the public. So I did. It was called County Ride and we grew it. And after a few years, it won the National Award as the best small community transit system in America. And that really got me going in my career, worked out for seven years. And then I began working for all these big international companies that now people have heard about. Now their companies like first transit and train staff. But I work for all these companies that run transit service under contract for cities and help them start up systems all over America from Microsoft, the corporation. I helped them set up their first campus shuttle system with forty minivans so that people could pick up the phone.

When they got to the front door of their building, they would there be a minivan waiting for them and they could be transported anywhere on the two-mile campus in Redmond, Washington. That was back in the 1990s, all the way to the Virgin Islands, where we ran

by train, the public transit system there. And I got to do a lot of traveling and speaking and learning about public transit. And I really developed a passion for it. And I saw not only for me, a big part of public transportation is helping people that don't have any other way to get around. And a big part of my career was working what we call Paratransit, which is van service, door to door service for people with disabilities. As a matter of fact, I spent five years running America's largest single contract for that in the Washington, D.C. area. I work for a company called M.V. Transportation. It was director of operations for the system which transported ten thousand people every day, people with disabilities with about a thousand drivers and vehicles all over. And my job was to manage that day to day. We had twelve garages, where vans were a big call center. And really my heart is to help people. I'm a people person to learn that probably from my father.

He wanted to help people and their spiritual life. I want to help people out as well, but also in their physical getting around where they need to go. And people would be stuck at home or stuck in nursing homes or lawn care facilities with no mobility, if we did not have the services. And so, I became really passionate about it. Then our governor of Maryland, newly elected governor, asked me to run the state's public transportation system. And I went from a little small system with fifteen vans to America's eleventh largest system with five thousand employees and contractors and a billion-dollar budget. And now I wanted to take that and share that with other people. So that's why I'm so passionate about it. I really feel like it's not only a way to help the elderly and disabled folks who can't get around, but folks who need to get to employment and people who need to visit mom and dad and for children to get around. I mean, especially in the urban areas of the world, public transportation is so important. And that's not even to talk about the environmental impact, because every bus takes 40 cars off the road, all that smoke and smog out of their tailpipe. And now everybody's moving toward electric buses or other zero emission buses, hydrogen or CNG. It's even cleaner, and even more way for us to help improve our world.

Agnes Kunkel: Oh wonderful, impressive and unbelievable. So you are not just a trained public transport person, but you have gone more or less one step by step from the small systems to very big systems, special power, and transport. Now I understand much better.

We now have this pandemic. I guess this was unbelievable for public transport. People stood at home. Other people had to go to work as being essential. And I guess public transport is essential. Can you tell us a little bit what happened in mid-March or maybe a little bit earlier, when everything was going shelter in place?

Paul Comfort: Yeah, it's been an amazing time for the public transportation industry worldwide. You can imagine. So here in the U.S. and in Canada and in parts of Europe, ridership was finally on an increase in two thousand nineteen. After a five to seven year lull where routes went down, people figured out how to improve ridership and that was to reboot their bus networks to add infrequency, adding high frequency routes, mean routes that come every 10 to 15 minutes. So you don't need to schedule runs like a train for the buses, and then reducing friction, which would be adding bus-only lanes, transit signal priority and then moving the fare collection kind of off the vehicle, not doing so much work at the fare box.

I studied it and in 2018 seven of our big systems here in the U.S. saw an increase in ridership and they all did one or more of those steps. And I went to England and talked to their folks. They were doing the same thing in Canada. So it was great. 2020 we entered on a high. We were really excited about the future public transportation and then all of a sudden the shutdowns came where the government agency said "hey, you can't ride unless you're an essential worker". And so we had a fifty to ninety five percent ridership reduction.

And then we had the commensurate reduction of routes. People started moving to one door boarding only because they didn't want drivers to have to interact with passengers and potentially spread germs. As a result of that, people couldn't pay their fares because the fare box was the front door. So most systems waived fares and said you can ride for free. And then they had to really ramp up their cleaning protocols. And so the money was coming down, but the costs were going up because people didn't want to lay off drivers during this time unless they had to, because you want to keep your employees employed. And so they found other jobs for them.

And the contracting companies, like I mentioned, first transit, M.V. Keolis all those guys. They wanted to keep their drivers on board, too. So they found other jobs for them to do Meals on Wheels, delivery for the transit agencies and lots of other things. And then transit agencies started doing divider between the seats as we got through the through

the pandemic, help kiosks like my friend Phil Verster is doing up in Toronto, Canada. Seating at buses was at a reduced capacity where they're cutting down the number of people that can sit in a bus. So there's some social distancing and then they provide a real time. Right now, they're providing real time information for passengers. I just did a whole podcast episode with David Gursel, the chief digital officer of Boston's transit system, where they're now putting this right on the phone. So you can see, "hey, the bus coming is full". And over the last three days, it's been full at this bus stop. So maybe I need to try a micro transit vehicle. Then they've added an ultraviolet light and micro transit and mass on board. And I think there's going to be long term implications of this. I think that we're going to move away from the fare box like London has done, but they don't really accept cash anymore. A lot of transit systems are considering that moving toward store boarding. I think our commuter services are really going to recover slowly the buses and the trains that bring people in from outside the city into the city. And of course, the cleaning protocols really have to be continued to be ramped up.

Agnes Kunkel: That needed a lot of flexibility. However, the public transport organizations don't have a reputation for being extremely flexible.

Paul Comfort: You are exactly right Agnes, and they get it on the head.

Agnes Kunkel: Yeah, this needed flexible responses. How did they manage it?

Paul Comfort: And it's a very good point. I've written an article that I'll give a link to you after this that we can share with folks that when I've talked to the folks that we're flexible. I've studied it and talked to professors and a lot of leaders. And I've come up with "the ten top ways to future proof your transit service". And a lot of it involves that flexibility, because what happened was when the routes had to be adjusted downward, most transit agencies have employment contracts, and they have collective bargaining agreements with unions. There are lots of work rules in them. And unless you have them uploaded into your software system when you change routes, you have to go through a big process to have Labor relations departments comb through them and looking for how when you take the routes and you put them into blocks of work for drivers and you really need to have the right software so you can reroute service, adjust rosters quickly and seamlessly. And then the other thing is a lot of transit systems have technology that's stuck in the 1980s and 90s, still. They're not even tracking their

assets. Agnes, just before this pandemic, I was in a big city in Canada and I was touring their operations and I saw up on the wall a piece of paper in their dispatch office, and it was a map of their yard where all the buses were parked.

And it had the parking spots on it and then it had handwritten the bus No. 22 is parked here, but No. 67 is there, one on ones here. And every few hours they have somebody walk a lot to see where the buses are parked. That is old technology. I mean that's what I was doing when I started in the 1980s. There's software now and hardware available for buses and you need to have it on your vehicle, track your bus, wherever it said. I mean, bringing buses back to the yard to clean it in between runs now, because of the pandemic, especially the smaller vans, people with disabilities; you've got to know where your vehicles are. You've got to be able to communicate with them, not just with radio signals, but with cellular signals and all this new technology. And so that's really the way that people are trying to hardener future proofed their transit system. They've learned a lesson during the pandemic, and we know that something else like this could happen. Right. So, we need to be ready to be more flexible for the future.

Agnes Kunkel: But some seem to have said, “OK, that freed us up to do things we haven't thought of, but we were able to do it”.

Paul Comfort: That's right. One example would be: I talked to a CEO of a transit system and she said: “Paul, I've been wanting to do away with paper route schedules for a long time”. And it takes, six to nine months to go through a public process, announcements, hearings, people that rely on. But she just wanted to go to online and not have to change all the schedules every time they adjust it around. She was able to do it under the emergency situation of Covid. Another CEO in California told me she was able to make dramatic route adjustments that she'd wanted to make what she felt would serve people better. And through the Covid crisis the Chinese character for crisis turned upside down as an opportunity. And she took the crisis and turned it to an opportunity and was able to adjust the routes in a way where the riders would be able to use it more flexibly. And so, yeah, there are opportunities here as well. And people are using this opportunity to really re-evaluate what they're doing. What I found in Baltimore when I got there, I found out that there really had been significant changes to the system in 50 years. For 50 years, you've been on the same routes. You were talking about how your grandfather went from the train to the electric vehicle. Baltimore had the

same thing. And back 50, 60 years ago, they had these electric trolleys that would go downtown. And that's where all the action was. Everybody wanted to go downtown like the downtown. But now and in the twenty teens and 2020, that's not where all the action is anymore. Now, there are jobs, hundreds of thousands of jobs around the city. But the bus route had never been reconfigured in a dramatic way all at once to make that happen. And this is an opportunity and hopefully we'll have a chance to talk about it for transit systems to really evaluate what are we doing? Do we need to move toward a mobility on demand model where maybe we cut back some of the routes that weren't productive, but we want to leave those people stranded? So maybe we do a contract with Uber or Lyft or the micro transit providers in the area, or maybe we start our own service like my friend Robbie Makinen did in Kansas City, where he started something called Ride Casey Freedom. And first it was vans just for people with disabilities. And then he said, I'm going to open it up to everybody. You just call in or you go on your app and you book a trip. People without a disability pay a little bit more to subsidize a trip for people with disabilities. And everyone gets door-To-Door service. And these types of new models right now, while we're in this pandemic still. And in Europe they're having another resurgence of it, as you know. Now is the time to take a look and say, what can we do with technology to really improve what we're offering? We don't want to sell what people are buying anymore. We want to provide them a service which really meets their needs. And so whether it's e-faring, moving to bracelets and necklaces and cards and phones, you can pay your fare with that, so you don't pay cash to micro, to real time passing information to federal governments finally stepping up and funding public transit like the essential service that it is. So many governments like Canada only provide capital dollars up until this year. And finally this year, they said: we understand now, we see that our economy cannot function without affecting mobility for the essential workers. And we're going to go ahead and start matching whatever the local province does, we can match up to a cap with federal dollars. I'm real excited to see the national governments like in the US, we did the same thing. We stepped up in a big way and gave Covid funding relief to them, which is now running out. And they need more. But it's happening all over the world. That's not just a local or city responsibility anymore. But the federal governments realize; for our cities to function, we have to have effective mass transit.

Agnes Kunkel: What about the uses of the people using public transport? I'll be coming back. You talked about commuters, maybe not so much coming back. What's the

situation now? And do you think you can catch up with this trend that more people were using public transport in 2019?

Paul Comfort: Excellent question. Thank you. It's a complicated answer and it's based on where you're at. So, for example, I was on a live webinar about a month ago, and one of the members on the webinar was the CEO of the transit system in Lagos, Nigeria, which has 11 million people that are in the region. She said, Paul, we shut our service down completely during the peak of the pandemic and we opened back up. We're back to 95 % ridership within a month. And she said the reason is because the folks who ride our transit system, a lot of them don't have any other option. They're day laborers. They need to get to work. And our transit system is rapidly recovering ridership. You go to another type of service, what I call commuter services. Let's go to Long Island Railroad. Or my service that I used to run called Mark, the commuter train service, which took people into Washington, D.C. or in Toronto, coming back much slower. It's more analogous to what happened after 9/11 here in America when people were afraid to fly airplanes for a while. I went back and look at the National Transportation Statistics ridership database, and it took 18 months for riders to come back and feel comfortable to ride airplanes after they saw one crash into the World Trade Center. And so I think that's going to be similar on these commuter services, because in addition to people being a little more concerned to ride on a train for an hour into the city, even with a divider, even with a mask, the other thing is, the working situation has changed. Now people realize, "hey, I don't have to go into work every day. I can actually do this from home. I've actually been pretty productive". And so a lot of professionals who maybe aren't going to go into those tall buildings downtown anymore, but maybe only twice a week. They were the main folks that were riding these commuter services.

What I've heard from some CEOs talking to one in Sydney, Australia the other day, is that they're looking at the peaks in the morning and the afternoon people were riding into and out of the city. They've flattened a little bit. So instead, now they're going to say, "what do people want?" They still need the service. Let's start nights and weekends so people can go into the entertainment things that are in the city, the ball games, the nightlife and still have a safe ride home and then maybe get a lift or something, or Uber ride home or taxi ride home at the train station so they don't have to drive if they've had something to drink. So now we're going to see, I think, new types of routes and services

pop up to replace at this micro transit mobility on demand. But in the in the center part of cities, I think public transportation will still be vital and will still be utilized. And I just looked at numbers yesterday from YITP looking at ridership trends at major cities across the world, from Vienna to all of it. And it is creeping up. Not as fast as we would like, but it is creeping up five, 10 percent a month, moving up, moving up, moving up. We were down to about 50 percent in most cities. They got down to about 50 percent ridership. Now a lot of cities are around 70 percent. And they're back up. The question is the last 20 percent I just talked to a CEO last week, he says, is after we get to 80 percent, what's going to happen to that last 20? And I think that's yet to be answered.

Agnes Kunkel: So you think it will take maybe a year or half a year, one and a half year till it's forgotten, especially as here in Europe we are expecting a tough month ahead, we have quite increasing numbers again, what will, of course, harm public transport. I guess in London, it's now some sort of U-turn that people are, again, asked to stay at home and not to go back to the downtown.

Paul Comfort: Yes. Minister is announcing so. It's a shame, in my opinion, that we've had a lot of political leaders really cast blame on public transportation at the beginning saying: "you shouldn't ride public transit, it's a petri dish for Covid". Well, it hasn't been proven to be true. The studies that have come out haven't shown people are catching any more on a bus than they are in a grocery store or even less so than parties at their own home. And so now I think the damage has been done. People are a little bit afraid and so public transit agencies are having to do what they call the theater of the clean, and so they're having cleaners come out and wipe down the poles on the bus while people are running the kind of show them, hey, we are doing a good job here or there making a big deal out of the fact, like New York City Metro now is using those lights, which flash in which will clean the vehicle at night. There's lots of ways where we're trying to kind of send the message, hey, it's OK. And that's really what my children's book is about. It's about telling children: it's safe and it's clean and it's exciting to ride public transit. Obviously, we need to take safety precautions. And follow what the science tells us. But public transit is still an effective, safe and clean way, especially environmentally, to be able to meet your mobility needs. And it's cheaper than buying a car by far.

Agnes Kunkel: By all means! Since you just talked about the environment side of public transport, what about new ways or new engines, electricity, fuel cells, will we see this in the near future or just in 10 to 20 years?

Paul Comfort: Yeah, one of the things that I find very exciting about public transportation is how the new technology really over the last five or 10 years of public transportation has had more new technology come in than almost any other field outside of medicine. From zero emission buses, which we'll talk about more in a minute to Hyperloop, which is fantastical science fiction things that are coming true for Elon Musk and Sir Richard Branson are in a race to get the first tube, where an electric train can go on tracks and you pull all the air out of it. It's like you're in outer space, not in the car, but in the tube. There's no friction that that then can fly up to, in theory, subsonic speeds. Right now, they're testing in Las Vegas. They've invited me to come to it the next time I can travel where they're getting up close to 280 to 290 miles per hour, whatever that is, and kilometers. They're getting there.

Agnes Kunkel: It's fast!

Paul Comfort: There's all this new technology. And guess what? It's right here at our door, even the vertical takeoff and landing vehicles, which is the last picture in my children's book. Last November I was able to moderate a panel for the state of Nevada. It was called Go Nevada, which is a one-day panel on all the future. And I moderated a panel on the future of transportation. It included people with unmanned drones with Uber air, which is these basically like a helicopter, but not quite, like an Osprey helicopter. I've ever seen those in the military. And it's a vertical takeoff and landing vehicle. The lift you up and then it goes back, the propellers do and shoots you forward like an airplane and they're already doing it. I mean, they have these in places and they're testing them this year around the world. It's so exciting. The technology is here. Just this week, a major bus manufacturer, Proterra, announced brand new batteries that can run your bus virtually all day with one charge.

And so part of the problem that people had about running electric buses in the past, their batteries basically have a lot of batteries in the bus and they would have to recall feed or at the end of the line, you'd have to get an extra charge. Not so much anymore. The new vehicles, you can run just as long basically as you can, the old diesel engines,

which are a lot dirtier, even clean diesel is not nearly as clean as the as the electric battery powered buses. And my friend Lawrence Skiver has been working on hydrogen vehicles in Coachella Valley, as I mentioned earlier, and then CNG compressed natural gas places like Dallas and in Canada, where there's a lot of supply of that, that's zero emissions. And this is where the future is and it's right here right now. And transit systems across the world are adopting the move toward electric vehicles for policy reasons as well as for environmental reasons.

Agnes Kunkel: Is there funding for this switch from diesel to electricity from fuel and gas?

Paul Comfort: Right. Yeah, a lot of government agencies are actually providing extra money for people who go clean. But even so, the price of these electric vehicles are coming down just like any new technology does once it gets adopted closer and closer. And the lifetime cycle of operating electric bus has been shown to actually be less than that of a diesel bus because and there's a couple of podcasts. If you want to hear more details on the transit unplugged show, just look for the ones with electric vehicles on the cover. I've done some innovation shows recently where it shows that the lifetime cycle cost of the bus because maintenance is so much less, you don't have that big internal combustion engine to maintain. It's just a few parts and electric bus. And the cost to operate it for how many miles it can travel on a charge is less than gas. And then the actual purchase prices of the vehicles are coming down. Big buses are like six hundred thousand dollars now a regular diesel bus, and so an electric bus might be another one hundred or two hundred thousand up front, but then you quickly recoup that cost by the operating cost. And now even those initial purchase prices are coming down.

Agnes Kunkel: In your podcast you mentioned that there will be a lot of funding and spending program in US for public transport in these Corona recovery package. Can this be used for making public transport more sustainable?

Paul Comfort: Yes, it can. That's a great question. The United States Congress passed what was called the Keres Act, a couple of months ago, and it provided 25 billion dollars and U.S. transit funding. That's the largest single pot of money ever given by the federal government to transit. It represented two hundred eighty percent of the funds that we had received for the year 2020. And they're talking about additional funds be made

available in one more stimulus package. And yes, they're allowing those funds to be used for operating costs and also capital costs related to recovering from Covid.

Agnes Kunkel: When we think about 2023, name of our podcast, what would be as an industry expert, your resume on what will we see in 2023, like 2019? And where would you expect from your expertise that we see changes?

Paul Comfort: Yes. So that's a great question. And it's really addressed in my book, *The Future of Public Transportation*, and even in the children's book, both of which are on Amazon now. And that is basically we're going to have a different world when we come out of Covid, generally and specifically in public transit. As I mentioned earlier, I think that we are going to be moving to contactless fairing, moving away from traditional fare boxes like Transport for London has already done and emphasizing ephedrine wearables, contactless cards, which speed boarding. I think there's going to be a lot more information in the hands of riders. People are going to be able to book their trips online without having to call in to pack call centers. A call center had about 60 reservationists sitting right next to each other, and that's not so doable right now because of Covid. And so adding in more technology, whether it's mobile trip booking, whether it's new software to run the back office of your system, that's what's happening. And the other big trend is the micro transit trend, which are either autonomous vehicles, which we haven't talked a lot about today, but using these vehicles without drivers, mobility is a service, moving things more personalized. A friend of mine, Mark Joseph, who was head of a company called Transdev, used to say, we want personalized, autonomous, connected and electric. And so did his successor also said that beyond the reach, who headed up Transdev, that was their big pace "personalized, autonomous, connected", meaning it's all connected together and electric. And I really believe in that in that mantra that I think that's where we're headed.

And I think in 2023 we're going to see a lot more of that. We'll see a lower touch environment, higher personalization and really more connectivity between all the modes of mobility in a city. The public transit system, the traditional buses and trams and light rail and subways will be more connected through your phone to the lifts of the company to of the world, to whatever Uber turns into. To taxicabs, to ferries, to e-bikes, to e-scooters. All the different types of mobility will all be available and connected. Way to kind of plan your trip on your phone. You'll be to pay for it and potentially even subscribe

to it like they do right now in Helsinki with a whim app where you can subscribe and maybe for five hundred dollars a month you can get unlimited transit and a set number of trips on a zip rental car or on a lift vehicle. As a family in America everybody has two cars, it's just the way it is. But if we move to this model, we can really get away with just one car to be practical. If you live in an urban area, you could use this app for the average cost of the car. They say it's about nine or fifty US dollars a month. That's with maintenance, fuel and payments and insurance and even more than that for some people, depending on the car you get. But now with maybe a 500 dollar month subscription, you could get anywhere you need to in the region. And so why would you pay that double payment for a car when you don't really need it? And it would give you much more flexibility. You don't have to drive. You can sit right. And look at your phone or read the newspaper or even.

Agnes Kunkel: hear your podcast.

Yeah, we have similar initiatives here in Europe. Maybe it's called a 365 Euro ticket, meaning that you can use everything of public transport for one year in a metropolitan area. So one euro per day!

Paul Comfort: Amazing. Yeah, that is a really good deal.

Agnes Kunkel: Yeah, in any case, so and as you say, it's doesn't make sense to run a car when you have such a possibility from public transport.

Paul Comfort: As long as there is what's called last mile solutions.

The last mile solution is, how do I get to and from the train station or the bus stop if it's not right in front of my house? I can't walk ten blocks every day to get there. So transit systems need to make sure that they integrate with the other providers that are available, either start the road, like I said, or do connections with taxicabs or other micro transit providers to make sure you can get from your front door to the main mass transit system. That's a key. And I think that's what people are working on right now during Covid is how do I make that connection?

Agnes Kunkel: And what do you think about reputation? Will we see in 2023 elevated reputation of public transport, better understanding for how important it is for our cities and our society to have a good public transport?

Paul Comfort: I do. I really believe that a public transit took a black eye during Covid because of inaccurate predictions by politicians who had knee jerk reactions to what was happening. I'm a former politician myself. I was a former elected official. So I could say that I'm one of the family. And I could say that politicians oftentimes want to point the finger of blame to someone. And it's time now to say, whoa, whoa, whoa, wait a minute, hey, they were doing their best, we'll give them a break, they were doing what they thought was best at the moment. But now, in retrospect and with the studies, we need them out front helping to rebuild our reputation. And then if we provide a better service, a more personalized, autonomous, connected electric service, I think that we will regain the reputation and actually improve it by providing a better service to the individual.

Agnes Kunkel: We started with your dramatic experience of seeing your World tour for the wonderful book Future of Public Transport cancelled. Are there things you changed during the Covid restrictions that you will keep till 2023?

Paul Comfort: Yeah, that's good, what have we learned, to improve our lives? Well, I've been trying to eat better during my travels I used to eat out all the time. And so sometimes you're eating too many desserts and have too many cappuccinos or whatever. And you can more at home with a good home cooked meal, I think is maybe a little healthier out. And I hope to keep that up going forward, and time with the family. It's important to take time with the family. And I've really started my own kind of morning routine, which I didn't always have. So I get up and do have some personal reflection time, some devotion time. Read a book that I like before I go to bed instead of watch TV. I hope to keep all these trends up.

Agnes Kunkel: And will you write more children's books?

Paul Comfort: I hope so. I know I write more books. I've got an idea to write a book. My father passed away. We were talking about our fathers and grandfathers. My father passed away in the last decade, and I've thought a lot about the meaning of having

been a father myself. A lot of my friends are fathers and I'm going to write a book I think called *Without Our Fathers*. And it's going to be the impact of fathers on our lives as men and women and also when they were here and what impact they continue to have even when they're gone, as we try to live up to their legacies. Or to be honest with you, a lot of men have what I call daddy issues where they're still trying to earn their father's approval even when their fathers passed away.

And how can we as men and women kind of free ourselves from the bondage to the past, but also fulfill our highest destiny and as parents for our children and to make sure that our children understand their role going forward. I'm excited about that possibility, kind of branching out of transportation a little bit. I've written three books now and maybe my next one will be a little bit more just the general leadership role. I just took a position with George Washington University as an advisor to their leadership program, and I hope to do more leadership speaking. And we're thinking on that topic as well.

Agnes Kunkel: Oh, that sounds really great, Paul.

It was so great to talk to you to feel the energy and the drive you bring with you. And as you said, let's put together some of your resources for our listeners. And thank you very, very much for sharing this time, for sharing your thoughts and go ahead and evangelize for the public transport. Paul, thank you very much.

Paul Comfort: Thank you for having me. And I just want to mention to folks this children's book has really become a labor of love for me. And I've decided to basically give it away at cost. I priced it as low as I can on Amazon. They won't let me go any lower than two dollars and ninety-five cents because that's, I guess, their cost to pay for the e-book. The e-book is available now. You can download it on your Kindle, it'll be dropped on or your laptop on October 1st and the paperback is going to be priced. This is US dollars. I don't know what it will be in your translation, but the lowest they would let me go is nine fifty. So I'm selling for nine ninety five U.S. dollars again, so I'll make forty five cents a book if that, but I wanted to get it in the hands of children and so I tried to lower the price as much as I possibly could because I really believe it'll be good for our children to learn about public transportation. Thank you. And I will continue to evangelize. And you're helping me do that through your podcast. Thank you so much.

Agnes Kunkel: Thank you. Thank you. Bye bye.