Matt Slepin:

Hi, this is Matt Slepin, and welcome to Leading Voices in Real Estate. Recorded on July 19th, right here and live and in-person in Sonoma County. This is a conversation with Greg Smithies, a partner in the PropTech venture capital firm, Fifth Wall. Greg is the partner responsible for Fifth Wall's new climate tech fund. This is the first of our episodes in the hot months of August, both of which are dedicated to the issue of climate change and the built environment.

The statistic that we delve into in these conversations is that the built environment, the real estate industry essentially, is responsible for about 40% of total global emissions, about three quarters of which comes from existing buildings, and about one quarter of which comes from construction and deconstruction. That's us, folks. And with temperatures over 110 in Portland and fires raging everywhere, especially with the risk here in my county of Sonoma, and with our industry's footprint and responsibility, this is not a topic to ignore. So we dive into it and today's conversation with Greg.

The next episode will be a conversation with Elena Alschuler from LaSalle Investment Management, and Marta Schantz from ULI and its Greenprint Center, talking about the same issues, both from the perspective of a global investment manager and ULI really representing the overall industry. This is also part of our ongoing conversation with real estate VCs. This is our second conversation with a partner at Fifth Wall. Our first was with their co-founder Brad Greiwe back in 2019. We've also had as guests, John Helm from the multifamily-focused RET Ventures last year, and with Clara Brenner from the Urban Innovation Fund in 2018.

More to come, I promise, from innovators in the industry on the podcast. I try to focus the breadth of our guests as well as the deep dives within each episode to two very different groups of listeners. First Leading Voices is for leaders to learn from leaders. Again, both the breadth of the series and the deep dives within each episode are meant for that purpose. And in this month's conversations, I hope to instill a call to action for leaders in the business to jump on this train, if they've not already, and to give you the knowledge that there are pathways and an increasing number of solutions and approaches that now really make no brainer sense.

My second audience is young people seeking their pathways and career in real estate. And I know that many young people want their careers to have meaning as well as commerce around the issues of our times. Greg provides a compelling argument that literally any career in real estate in the coming decades will most certainly be involved in changing our industry's patterns around carbon. It's inevitable. So creative, smart, ambitious, young people, please take these conversations in Leading Voices as an invitation to come into our industry and to make a difference in this existential issue of our times.

As always, I want to thank my company, Terra Search Partners, for supporting and sponsoring Leading Voices. These conversations are simpatico with the work that we do as a search firm in the real estate business. And we've just moved the Leading Voices website under the Terra Search Partners website so that you can more easily find us. The new website address for Leading Voices is terrasearchpartners.com/voices. Try it out. And you can also now download full transcripts as well as a short audio teaser from each episode from the website. I hope that you're enjoying the podcast and that you will become a subscriber if you've not already.

Please share this and other episodes with your friends, especially those leaders who want to learn from other leaders, and those young people who are asking you questions so often about their careers. If you have comments, questions, guests suggestions, or want to talk search, you can email me at matt@terrasearchpartners.com. I hope that you enjoy today's conversation with Greg as much as I did. This is one of those conversations that really blew me away.

Greg Smithies, welcome to Leading Voices in Real Estate. I'm thrilled to have you on the show, and this is the first of two episodes that we're going to be doing in the hot month of August, both on sustainability and environment, climate change in the real estate industry. I've heard the statistic that the built environment, i.e. real estate, accounts for up to 40% of global carbon emissions. And in some urban environments could be over 70% of emissions. And so I want to talk to you about all this today. We both live in Sonoma County where climate changes in our face all the time, particularly around fires. You're a partner at Fifth Wall's climate tech fund, and so we have a lot to talk about.

Greg Smithies:

Yeah, absolutely. Thank you so much for taking the time. Always a fantastic opportunity. And I am always keen to tell more people about climate change. It is a little bit shocking that we're at the point where it's still an educate the world sort of thing. But the fact that my phone might be on fire by the time we get home or my well has been dry, it has basically never had water in it, the whole yard. These are not normal things, though they become normal very rapidly where we're actually very good at normalizing these things. Quick high-level background, I lead Fifth Wall's climate tech investing practice.

Fifth Wall is the world's largest venture capital firm that's focused on what we call the built environment. So think of that as real estate, construction, a little bit of infrastructure and energy. And Fifth Wall has a bit of a unique model when it comes to venture capital firms. So traditionally, venture capital firms go and raise money from a bunch of sovereign wealth funds, endowments, pensions, those sorts of people, Fifth Wall does have money from them. We've got about two and a half billion dollars under management, but only about half of our money comes from those traditional investors.

The other half of that money comes from a large consortium of some of the world's largest owners, operators, and developers of real estate and the built environments. We've got about 70 of them. And so Fifth Wall was founded about five years ago to bring together the industry as one large consortium to accelerate its ability to embrace these technologies. It has been incredibly successful around prop tech and real estate tech. So I think of that as software that goes into buildings. And now what's happened over roughly the last year is Fifth Wall has seen that the next big thing that real estate needs to do is decarbonize.

De-carbonization is where this industry needs to go, and we have to think 10 years ahead. Maybe five years ahead. And so we've got to be setting these things up now so that the things we invest in today are ready for five years time when the industry is ready to stop buying them.

Matt Slepin:

And how much when you think of that problem, we're going to talk all about this, but how much is decarbonization and how much is adaptation, are they two very separate things?

Greg Smithies:

They are very separate things. And just for the audience to know the difference, one is a building spews out CO2. You've got heat in the cooler so the concrete inside is spewing our CO2 when you manufacture it. So one investment thesis is, let's invest in better technologies that don't spew out as much CO2. So that would be avoidance and mitigation. The other thing is climate change is happening. And so we do need a whole bunch of technologies to help us just live in this new world. Check my numbers on this, but I think that buildings are worth less if they're on fire or under water, just a little bit.

And largest asset class in the world you can't move buildings, and so we should also be investing in technologies that allow us to deal with the impacts of climate change. Out of this fund, you should

think of it as probably about two thirds of the fund going into technologies that allow us to make the building spew out less CO2, and about a third of the investments going into things to just help us deal with the new world we're in under climate change.

Matt Slepin:

And if you think about each of those, and you think of payback and you think of an owner caring, I can see tragedy of the comments, "I don't really care about what I'm spewing, but I care about protecting as a fortress, my building." Is that not true? And how do we deal with maybe the tragedy of the comments concept around that?

Greg Smithies:

Yeah. I think what's happened very much over the last definitely 24 months, but even accelerating over the last 12 months is this has turned from a tragedy of the comments, meaning an ethical imperative where the only people who are caring about what their buildings were spewing into the environment where the people who fundamentally cared about the environment, to something where it's actually turned into, it's just good business practice. And the reason why that is, is there are roughly three things going on. The primary thing is actually a cost of capital issue, which is over that same timeframe, roughly 18 months, about $200 trillion of the world's asset allocators.

So think of those pensions, sovereign wealth funds, the people use the tail that wagged the dog in the capital markets internationally have all made climate pledges, basically saying we only want to invest in clean projects. And that has a ripple effect through all of the capital markets. And what this means is right now, it's about 50 basis points cheaper to finance a clean building that it is to finance a dirty one. The second thing that's going on is we do have regulations, both carrot regulations and stick regulations. On the stick regulations, one, in the US, most people will know about something in Manhattan called Local Law 97.

Local Law 97, we did an analysis on this, it's going to fine landlords basically if they're building spew out too much stuff, is going to cost landlords in Manhattan about $10 billion per year in fines if they don't clean up their buildings. But that's on the stick side. And by the way, many other cities have something similar. LA has got something similar, Boston announced one about two months ago, Denver's got one. About 400 mayors across the US have said that they're going to put things like this in place. They've got them all over Europe.

On the carrot side, we look at things like the infrastructure build coming out right now. The original version of the infrastructure bill had $400 billion in it just for energy efficiency, retrofits into existing buildings. Now, fine, that's not the infrastructure, but a bill that's going to get passed, but even the one that is most likely to get passed, sort of the bi-partisan one, still has $150 billion in it for energy retrofits into buildings. Why is that? That's because you can take a coal miner and train them how to replace windows in a building, and they can probably do it in their current town right now.

Whereas if you take that coal miner and train them to say, "Build hydroelectric dams," it's going to be very difficult and you've probably got to move them across the country. And so for every million dollars that the government invests in, say, coal power, creates on average full jobs. For every million dollars they put into, say, renewable power solar wind, it creates five jobs. This creates more jobs. For every million dollars they put into energy efficiency upgrades for buildings, it creates 15 jobs. So it turns out this is actually a bipartisan issue.

And then the final piece of the puzzle... So we've got cost of capital, we've got regulations, and then we've got your tenants inside the buildings. Think of this as the world's largest corporations, the

Googles, Microsofts, Facebooks, Coca-Colas Siemens, all of them have gone and signed climate pledges and they're saying, "We're going to be carbon neutral by," I'll make it up, by 2030. Yep. If they go and do their carbon accounting internally, because buildings are 40% of all carbon emissions on the planets, it means that for all of these tenants, their buildings are typically number one, two or three on their carbon problem.

So for someone like Excentia, their buildings are by far number one. For someone like Siemens, because they are building products that have atoms, maybe they're number three, but they're typically one, two or three. And so actually the tenants are coming to the landlords and saying, "We are willing to pay higher rents for clean buildings." And there's a bunch of science on this as well and analysis that clean buildings have low vacancy rates, and these are all things... So we're talking higher revenue, lower expenses, lower cost of capital, just avoid fines and get tax incentives.

This hits every line of a building owner or developer's P&L, and that flows straight through to asset values, and that flows straight through if you're a REIT to your stock price. Essentially, what it means is, over the last, roughly two years, this has heavily shifted from an ethical imperative to something where it is just very clearly good for business.

Matt Slepin:

Let's come back to each of these topics as we talk about this. Talk about your fund for a minute so we get a sense of size and scale what you've raised so far and we'll talk about how you've been deploying it in a little bit.

Greg Smithies:

You should think of us as investing in not super early stage, seed stage companies. In the parlance of the industry, we do a series A, Bs and Cs. What that typically means is these companies have product that is in market and we're investing to allow them to scale up go to market, manufacture more of whatever your product is, get a faster, cheaper, better. And then the things that we're investing in, you should probably think maybe about the life cycle of a building. A building goes from raw materials at one point when it's just starting out, so think concrete, steel, glass, timber. So better versions of those, the raw materials going in, through to your construction stage, which is, how do we actually build buildings?

So here you should think about technologies like even software. So, how do I design better buildings so that they're passively heated and cooled from the beginning? Or maybe ways of building buildings, so prefabrication, 3D printing, stuff like that, where you have much less waste. It turns out 40% of all of the materials in landfills is building rubble. That's great. It would be fantastic if we could avoid that. Then get to your operating stage of a building. Now, we got $270 trillion of buildings out there. And in technical terms-

Matt Slepin:

Is that worldwide or US?

Greg Smithies:

Worldwide. By far the largest asset class in the world. Operating stage, $270 trillion of buildings out there. And to put that in perspective, the first two stages, construction and raw materials, that's obviously into the new construction market. We build somewhere between five and $8 trillion worth of new buildings every year, depending on where in the economic cycle we are, that'd be globally, but there

are $270 trillion of existing buildings out there. And in technical times, when it comes to efficiency, I think the vast majority of them are, the technical term is probably crap.

So we've got a very big mountain to climb just on retrofitting existing buildings to make them more efficient. And then the final piece of the puzzle, which I alluded to, is actually end of life, which is, what do we do with these buildings when we're done with them? A lot of people forget about this, but as I said, 40% of all materials and landfills are building rubble. It would be great if we could reuse that rubble, but also it would be great if maybe we just didn't tear these buildings down. What if you can extend their lives, find different uses? And I'll make this up. So we're looking across every single one of those stages across asset classes.

It turns out that this, ultimately, if you just play with those numbers, five to $8 trillion of new buildings that are built every year, $270 trillion of existing buildings. What's so exciting about this opportunity is, that means if we as an industry need to decarbonize and we set the least aggressive goal out that, let's call it 2070, so we've got 50 years to decarbonize, that means that this industry is going to spend somewhere between two and $5 trillion every year for the next 50 years in decarbonizing itself. And to put that in perspective, because I think trillions is kind of like monopoly money, I don't know how big a trillion is, it's stupid size.

Where everybody has made all of their venture capital returns in roughly the last 20 years is two places, one is in the internet and the other is an enterprise software. The entire internet is only a $1.2 trillion market, and all of enterprise software is about an $800 billion market. What we're seeing is that, just climate tech just into real estate is somewhere between two and five trillion every year for the next 50 years.

Matt Slepin:

And 50 years is a long time, I don't think we're going to be here in 50 years. So, address the question-

Greg Smithies:

Yeah. I think maybe this is a little bit more of a macro, like how quickly do we need to start getting stuff done? So if you think of, out of that 40% of global greenhouse emissions that are around the building, about three quarters of that is the energy that the building is using to heat and cool itself and about a quarter of it is the building itself, meaning the concrete and the steel and the glass. But, what you have to think of is the concrete and the steel and the glass are all going into the buildings right now. Meaning if you're building a new building on day one, 100% of its carbon footprint is actually the materials.

So what that tells us is, we've got a relatively simple, I'm not saying easy, but conceptually simple way to decarbonize that whole five to $8 trillion of new construction every year, is simply by reinventing how we make concrete, steel, and glass. If you just do that, concrete on its own, if it were a country in terms of greenhouse gas emissions, would be the sixth largest emitter in the world. Steel, I think would be four or five offhand. Essentially, what we're saying is that, if you could literally just make your concrete using instead of coal to heat the limestone, use say, clean hydrogen, do the same for your steel, do the same for your glass, that just one maneuver takes care of basically a quarter of the problem. And you could do that relatively rapidly.

Matt Slepin:

Bill Gates is attacking that pretty heavily, isn't he?

Greg Smithies:

Absolutely.

Matt Slepin:

In your consortium, do you share ideas on how to get to these places? Are they rushing faster to get there because there's a bunch of dough to be made there?

Greg Smithies:

Breakthrough Energy Ventures and that's Bill Gates's primary fund that he does this through, Breakthrough Energy Ventures, we've co-invested with them in the past. Actually, one of the first deals we announced out of the fund is called Turntide Motors. They have high efficiency HVAC motors. So we're actively investing with Bill Gates's fund. What I would say is, in general, we actually need people across the capital stack because there are different people who are good at different things here. If I were to say, "What is Breakthrough Energy Ventures good at?" They are very good at taking science that is in the lab and getting it out of the lab, which is step one, but it's a highly critical step.

Step two is taking something to full industrial scale. That's where we typically get involved because our main value add is, how do we get something scaled to some of the largest buyers in the world? But long story short, if we took every fund that's investing in this space and increased their total dollars going off to this space by like an order of magnitude, we still wouldn't have anywhere near as much the dollar concentration versus size of problem that all the rest of the venture capital industry has. Because there, you're talking about $2 trillion worth of market size with, call it conservatively about $500 billion worth of venture capital funding chasing it.

Whereas here, we've got a couple trillion dollars, call it $5 trillion worth of market we're going after, and we've probably only got about $20 billion chasing it.

Matt Slepin:

Yeah. I want to optimism in the conversation. And I read this book, maybe you read this book, which is called The Ministry for the Future. And basically what it talks about is having a ministry that represents future generations instead of just representing us because we don't care that much, but the future generations, they're not going to be there, so their voice is heard. So it was theme number one. And this is a ministry started by the UN that's going nowhere, nothing's happening. But then all of a sudden, there's some climate crisis, like what happened in Portland two weeks ago, and then you have climate activists. So this is a long-winded thing to get to climate activists.

And one of the words I read in one of your blogs or something was assets can get stranded.

Greg Smithies:

Yup. I think one of my favorite sayings is, we do not inherit the earth from our parents, we protect it for our children. We're basically borrowing it from our children, we've got it on loan. And I think that's exactly the right way that we should be thinking about it, but you do bring up a very good point here around climate activists and, when are the pitchforks coming? We saw Exxon and Chevron have activist investors go after them. The list of people going off to the oil and gas industry is exploding. Everything we're seeing there with the pitchforks coming for that industry is going to happen in this industry as well.

The pitchforks are coming, it's just a question of when not if. And there's there's a great saying, which is, how did you go bankrupt? And I think the answer is two ways, slowly at first, and then all of a sudden, and that's how the pitchforks come. When public opinion changes, it happens slowly at first and you might fly under the radar for a decade, but then all of a sudden things flip.

Matt Slepin:

Yeah. I have trouble seeing pitchforks going after office buildings because there's a lot of them, unless you pick one and say, "Hey, this is the office building that we're going to get angry at." But let's keep unpacking this a little bit more, and then I want to talk more about your fund and where you're investing. Unpack more about if you're attacking the problem and if we're 40% of the problem, is the rest of it cows burping and people driving bad cars? Where's the low hanging fruit to get to that, and what's our part of the low-hanging fruit in this around doing that stuff?

Greg Smithies:

On total 100% pie chart, buildings operating is about 30% and constructing new buildings is about 10%. That's how we get to the real estate industry, is makes up 40%. Transportation, so this is actually what everybody thinks is the big, bad wolf, but it turns out that transportation, planes, trains cars, ships, all of that all combined around about 20%, so about half as big as the buildings' slice of the pie. And then agriculture and industry roughly make up the rest, the other 40% is split between ag and industry.

Matt Slepin:

Interesting. So transportation is only 20%, and airplanes, which I feel bad about, I feel worse than an airplane that I do in my car.

Greg Smithies:

The thing is, just on a global scale, if you could change one thing in your life and maybe you have choices, switch to an electric car, skip one trans-Atlantic flight, or talk your office manager into say, installing Turnside motors, a high efficiency HVAC systems into your office building. The number one thing by far that's going to actually have the biggest impact on your life and everybody else's is, talk to your office manager into improving the HVAC in your building, because certainly these things are on 24/7, they're massive. And often, there just isn't even enough clean energy for them to be able to buy so they're forced to buy really crappy other duddy energy.

Matt Slepin:

Okay. So quoting you from another conversation, you said, "If you took all the best technology and the planet and installed them across your buildings today, you'd solve only 44% of the total problem carbon for our industry." And I'm guessing we're talking more about the assets they have and what to do with those assets versus building. But talk about that 44%. Can we go in and just jump in and do that? And what's the marginal cost to do that? And then what's the other 56%.

Greg Smithies:

Actually, I think the number is 47 and 53. Ultimately, here's the issue, is, if I take my existing building and go and retrofit in every single piece of the best technology that's available on the market and I switch all of the electricity to green, that gets you to that 47ish percent, that's how much it would save. But even inside that 47% of the "existing technology," a whole bunch of that doesn't actually make CapEx sense right now, meaning the CapEx payback periods are probably too long. A lot of these technologies are say, call it a seven or a 10 year CapEx payback, which for most of the industry, the REITs of the world and things like that, seven to 10 years is too long, they're looking for three to five years.

So number one goal is for us to go and invest, meaning us as Fifth Wall the fund, but also the industry at large to go and invest in a bunch of these technologies to bring them down the cost curve so

at least the existing technologies start to make CapEx sense us. And this is what we've seen happening in other industries like solar and wind where we've seen their costs come down by about 90% over the last decade. Right now, solar is the cheapest electricity in the history of man. That's only true because countries like Germany went and bought a whole bunch of hits and brought it down the cost curve.

We as an industry need to start going and buying a bunch of these technologies that don't necessarily make CapEx sense right now that might be at that 10 year CapEx payback period, so that in two to three years' time, we can get them down the CapEx payback period ramp by allowing these companies to scale up production.

Matt Slepin:

Can we have a consortium in the industry to say, "Hey, we're all going to do this at once," and then it scales then you have a problem, can't get it all at once? But if over the next three, five years, does the industry pick a winner? Because some of these are going to be losers against that as well.

Greg Smithies:

This is honestly one of the main things that we at Fifth Wall are trying to do, is try to bring together as much of this industry, which is a very fragmented industry, as much of this industry under one big consortium umbrella and try and get them to start moving the needle on buying a bunch of these technologies. I don't think we as an industry need to decide that a particular company A versus B is going to be the winner, but let's all go and buy whatever the next category of technology is that we want to bring down the cost curve.

Matt Slepin:

Unless the next category of technology is a Betamax.

Greg Smithies:

Think of our dollars as allowing companies to get to a stage where the industry can stop buying something, but then us as more of the consortium flipping over into, and then get the industry to start buying it at large.

Matt Slepin:

Got it. It's interesting. In the conversation so far, I've been treating you as if you're the global rabbi of sustainability in real estate, and you're not all of that, you're not the global guy, you have a fund and you're trying to make money to do specific things, you care about the holistic issue, and your colleagues together with all the different businesses attacking this will hopefully get us there?

Greg Smithies:

Yeah, absolutely. This is a many-headed Hydra. We've got to attack it at every single level. And so to the extent, what Fifth Wall has, which is something of an unfair advantage but also puts us in a very good place is because we've already brought so much of the industry together under one roof and most importantly, we've brought the industry together where they have actually written checks into our funds and therefore we have their board buy-in typically, we have C-level exec buy-in. We are in a position to potentially try and move this industry a lot better than say, and without naming names, other industry consortiums where maybe they are treated more as like a marketing exercise rights, where you don't necessarily have board level, C-level exec sign-off.

So the reason why we are still really pounding the table for these issues is, even though we are primarily in the business of running funds, we do think we can actually to move the whole industry along in a positive way.

Matt Slepin:

You certainly can. One of your investors is Blackstone. And if Blackstone says, "Hey, we'll only invest in these areas, or we're going to move our investments towards that place," that will change a lot of behaviors.

Greg Smithies:

Absolutely.

Matt Slepin:

So let's keep going and let's talk specifically about some of the investments that you guys have made. So some of those products that you're attacking.

Greg Smithies:

Yeah. Turntide Motors was the first company that we invested in out of the fund. They have high efficiency motors that are dropping replacement to the big commercial HVAC, the blowers and chillers, the big boxes that sit on the roof of your commercial buildings. That wouldn't be that interesting if you just had drop in replacements and this was something like a VFD drive. Their motors are somewhere between 30 to 60% more efficient in the real world, and they've got millions of hours of performance to prove this. And to put that in perspective, the market for these sorts of motors is around about $100 billion per year, and motors like this consume about half of the world's electricity. About $1.2 trillion worth of electricity goes through motors like this.

And that means this one company with one product which is 30 to 60% more efficient than the real world, this one company with one product could literally save a quarter of the world's electricity. Now, then you come to this question of CapEx payback, because who actually wants to pay a massive green premium for this? So in rough numbers, depending on your duty cycle and your cost of local electricity, so I'll put a bunch of caveats around this, but real customers in the real world see payback periods from 18 months to roundabout three and a half years. So rough numbers, you see people with a $5,000 motor and that's how much it costs fully installed, saving somewhere from 2,000 to $3,000 in electricity, every year per motor.

And when you get to some of these, for example, big box stores, they might have 20 or 30 of these motors on the roof. So you're getting into real money, especially in retail, where retail lives on incredibly thin margins. If you can save 200, $300,000 per year in electricity, just by switching out a couple of motors that have CapEx payback periods of 18 months, especially if you're running them on a refrigeration cycles, that is actually meaningful to the bottom line profitability of an entire company like a Whole Foods.

Matt Slepin:

And how can that company scale to do that work? Is it ready to produce and share that technology? How does that get shared or used by others?

Greg Smithies:

We invested at the beginning of the along with Breakthrough Energy Ventures, as we mentioned. The Amazon Climate Pledge Fund, that's Jeff Bezos's fund, The Rockefeller Foundation, and most fun with Robert Downey Jr., so I get to say I'm a co-investor with Ironman.

Matt Slepin:

Sounds perfect.

Greg Smithies:

But essentially, we invested at the beginning of the year about $18 million into that company in order for them to scale up manufacturing because they literally couldn't make them as fast as people wanted to buy them, they couldn't keep them on the shelves. About two weeks ago, they announced a follow-on investment of about $225 million from CPPIB, that's the large Canadian pension fund. That entire deal was fermented out of the fact that we had previously, along with Breakthrough and everybody else, done that previous funding, so then it was like a massive industry stamp of approval.

The growth took off, they were able to outsource manufacturing and get much more capacity for making these things, and then you attract more capital. So really what we're trying to do is turn on that flywheel for these companies and therefore get them scaled up in manufacturing, then bring these technologies even further down the cost curve.

Matt Slepin:

18-month payback is the time it takes to a write check. That's absolutely.

Greg Smithies:

Yeah, absolutely.

Matt Slepin:

That's amazing. Okay, other examples?

Greg Smithies:

Other example, second deal out of the fund that we've announced, it's a company called sealed, S-E-A-L-E-D.com. And the reason why I find this very interesting is because it hits two interesting thesis. One which is, it hits single-family homes, and single-family homes are around about half of the CO2 problem of buildings in America. Listeners may have bought solar panels before for their houses. Typically, you can pay for them in one of three ways, either you can pay for them upfront, or you can get some debts and just basically payback a loan over a number of years, or three, you can pay for them out of your energy bill cost savings with some arrangement with the utility normally.

Those are typically the three ways you can do it. What Sealed does is they do that third way paying out of your energy cost savings, but for everything else in your house that drives efficiency, so installing that heat pump, ripping out your 20-year-old gas furnace and putting a heat pump in, but also the boring stuff that actually moves the needle, putting insulation into your walls and into your ceilings, weather stripping the windows and proving the doors, all of that stuff. And typically, if you were to do this to your own house, you'd probably have to deal with three, maybe four different contractors.

It would be an absolute nightmare. And it would probably cost you somewhere between 20 and $30,000. And the CapEx payback on it across all of those things would probably be about a decade. So

clearly, this is way too complicated and doesn't have enough of a CapEx payback period for your average household consumer to want to do this. What has Sealed done? They've got a machine learning system that can predict whether or not all of that work is going to actually pay off in your house. They can predict it. Then you go no cash down and they get all of the work done, they pay for that work upfront, behind the scenes.

They finance it all, and then they get paid back out of your energy cost savings on your utility bill. So it literally is zero risk for the customer. And the reason why this is important is because it is as important for us as an industry to be developing the new technologies as it is for us to be developing the easy buttons to actually make people able to consume those technologies. So I put this very much into the category of the easy button. How do we make things a no-brainer so that people actually start using them?

Matt Slepin:

It's interesting, a couple of weeks ago we had a podcast, we talked about single-family rental. And one things we were talking about was the difference between the big owners of single-family rental being able to renovate a home versus a home buyer goes in and renovates a home. I'm going to guess there's a 50% efficiency on cost and emotion around doing that. And the same thing happens with seals because if I go to five contractors that go figure this out, my learning curve is huge. And the rip off curve is really huge.

But if a professional group comes in, knows how to do it, and then also they're sharing in the savings, they're not going to jack the cost up and then it works.

Greg Smithies:

Yeah, absolutely. We haven't actually officially publicly announced any of our other deals. So I'm going to take out random out of a hat of the company to talk about, ICON they're based down in Austin. I think it's just iconbuild.com. They 3D print houses. A lot of people might've seen some very sexy sci-fi videos of people 3D printing houses, just imagine a very big toothpaste tube, squeezing out concretes. The reason why this is interesting and why this is absolutely critical is if you see how much productivity has been gained in every industry over the last 100 years.

Every other industry, if you plot these on a chart, every other industry and productivity has gone up 10 or 100X. Home building has gone up like 5%, the big bumps you get in home building productivity is like the invention of the nail gun.

Matt Slepin:

I was going to say the nail gun. And it's on the wire too.

Greg Smithies:

Yeah. The invention of a nail gun, and I think we actually got another bump when all of those things went wireless, battery powered. But that's about it. And so we're actually building houses in very much the same way that we built them over the last 50 years. Everybody knows that homes are far too expensive, we don't make enough of them. I think the US is behind in something like three million homes. If you 3D print the wall system for a house, you can increase how fast you can bring that house to market by about an order of fall.

Basically bring down your time to build a house by about 75%. You can therefore obviously bring down the cost of that house, but then more importantly from a climate point of view, so that is I would

say, and maybe financial and social reasons for doing it, but on a climate point of view is that because you are building these walls with concrete that have insulation built inside them and they're being printed, so they are almost perfectly sealed, the envelope on that house is incredibly well insulated.

And so you end up with these 3D-printed houses consuming roughly about 66% energy every single year, than their non-3D printed counterparts. So you end up with something that's just fundamentally better product, faster and cheaper. And typically, you can have like better, faster, cheaper pick two type thing. This is one of those technologies where it actually turns out you can have all three.

Matt Slepin:

Well, let's talk about some of the problems around this that you may or may not be addressing. So it may or may not be in your remit, but let's talk about it anyhow. And we both live in Sonoma County, we've talked about fires a little bit. Are you or anyone investing in stuff that either protects us or stops that from happening?

Greg Smithies:

Yes, this is slightly outside of our remits, but what I have been seeing for this industry is a whole bunch of stuff on climate models to predict fire risk that are then going into your insurance and you'll underwriting ability to go and finance your buildings. It turns out the vast majority of the insurance welds relies on things like FEMA maps. And those are updated roughly once a decade and the backward looking, they're all out of date, they don't give you good ideas on what's going to flood and what's going to burn.

So there is a massive category here of just, how do we understand this stuff? How do we build pricing of climate change risk into these assets that sit around for 40 or 50 years? For an industry that has such long lived assets, we typically are very bad at actually thinking of a long-term risk. The other thing, I was actually going to move on to a different idea around this, there's a quid pro quo or corollary to there being more fires, there are more fires because typically most of these parts of the world are getting drier.

That's what we're seeing on the West Coast here, Cape Town almost ran out of water, I think it was about two years ago, Australia, that's what's happening. So I do think we have a massive opportunity for technology around water, water reuse. So how can we do gray water recycling and black water recycling inside our buildings and at the municipal level, but then also things like atmospheric water generation, which sounds very sci-fi, but literally have you suck water out of the air.

And I think these are two very big technologies that over the next couple of decades, your water coming out of the tap is going to end up being so expensive that you want to recycle it on site. And you would probably want to also generate your own water for the buildings.

Matt Slepin:

That would be fascinating. I could see LA, I'm trying to suck water from the air and at Phoenix, I don't understand how you do that.

Greg Smithies:

Yeah. It depends on the technologies. Some of them can go all the way down to 3% ambient humidity, which is astounding. It typically just ends up in how efficient are you and how much energy do you take to go in. So at 85% ambient humidity, maybe it costs two cents per liter for the water, but on a 3% ambient humidity, maybe it's more like 10 cents per liter, but that's the way you should think about it.

Matt Slepin:

Fascinating. Talk about sea level rise.

Greg Smithies:

And what did we say? No building is an island this there's too much sea level rise in which case, many buildings will be islands. So there are two ways to think about this. One is, where am I currently building my buildings? And I think there's an entire category of software and predictive models that our building owners and real estate people should be using to decide where they actually want to invest. And this might be something as simple as, "I'm not going to be in this particular block in Manhattan, I'm going to be on a different block in Manhattan." That's table stakes.

However, there's a bigger opportunity, which has maybe, "Hey, I think that in 20 years' time, up in Michigan is going to end up being an incredible agricultural center, and it's going to be balmy weather and everybody's going to want to live there. So maybe I'm going to go and start buying tracts of land that are cents on the dollar right now." I think there are multiple ways that this industry could be playing this trend, but those are the opportunities that are coming out of this. You do still have to mitigate your risk on your existing portfolios.

So what I would say is going out, and I'm working with companies like Fathom to really get a comprehensive view of your current portfolio of assets and what is the risk there of flood, hurricanes, fire, all of these new catastrophes we should absolutely be doing right now.

Matt Slepin:

Must be done right now. It's interesting because that's the risk of buildings becoming stranded, which is in five years, people may say, "Well, this really isn't something that's saleable." Today it's still saleable, I think.

Greg Smithies:

Well, you see how many houses they're still building in Miami. If you've got any friends down there, the market is as hot there as it is in the Bay Area, which I fundamentally don't understand. So let's maybe just touch what the concept of a stranded asset is, because I think people viscerally understand a stranded asset, "Oh, if this building ends up being underwater, yes, it's stranded." But there's also, okay, well, if I can no longer get to this building because the roads are underwater, it is also technically stranded.

But there's a form of stranding that's actually more important to the century that happens decades before that, which is everybody's climate models tell us that this thing is going to be underwater or cut off from the mainland or whatever it happens to be, and then all of a sudden, I can't insurance it, or I can't refinance it. And so whole swaths of your portfolio that currently might be valued at A, are going to potentially be valued at A-minus some very large percentage when your financiers and your insurers decide that they're not going to go and underwrite it anymore.

And those are the sorts of things even if that building's only going to be underwater in 15 years, you chop the final 35 years off of the net present value in your economic model for a building, and it turns out your asset value today goes down quite significantly.

Matt Slepin:

I've wondered for a while what's taken the insurance company so long to come back to this and take a harder stance and then to do different variable pricing on these kinds of risks.

Greg Smithies:

I will say without naming any names, we are currently in talks with five of the world's largest insurers to become investors in our fund because they fundamentally want to understand this better. And I will tell you, this is a top priority for all of them, because when you look at, as we said, $270 trillion worth of buildings out there, which means if you pick any random insurance company, their real estate underwritings are probably their number one, exposure out there. And then out of all of the risk for those real estate items, wildfire and flood are the number one and number two biggest catastrophic issues for them.

So whilst they might have taken a while to get here, I think that entire industry is going to flip very fast. Every single one of their conversations starts with exactly this topic, "How do we update our insurance models to be forward-looking and to take climate risk into account?"

Matt Slepin:

Well, you put insurance and capital markets on top of things, and then you put government as the third, then you don't need the pitchforks because these are stronger pitchforks than the mob might be. Let's totally change the subject. Leading Voices, we've explored many, many topics of Leading Voices, it's first time we've done a deep dive on sustainability, and I have two audiences on the podcast. One are the leaders making decisions around these things, and the other are young people trying to get into the industry and plotting their real estate careers.

And one of the reasons I'm doing this week's podcast and the one in two weeks is for young people who think this is the issue around real estate and there's careers to be had big time around

[crosstalk 00:42:20]

Greg Smithies:

Don't get too hung up on the fact that you need a very linear direct path through in your career because I've done big banks, I was at Citigroup, I've done large funds and small funds, I've done Elon Musk world. We didn't touch on this, but I was head of finance and operations at the Boring Company, digging tunnels and making flamethrower, and at Neuralink putting microchips in people's heads. You'd be surprised how many people think Elon Musk's already put a microchip in their head. I've been at BMW, I've been now at Fifth Wall and the real estate industry.

So really, the only common through line in my career has been the marriage of some kind of business and finance and some kind of engineering.

... to optimize ad click throughs. I think we as a species should feel very bad about that. What I am very hopeful about is at least we have a generation coming through now who fundamentally want to do more important things with that time. And that is why I'm very excited by the new generation of people coming through who wants to go and say work on climate tech, for example, which is fantastic for all of us. My background, I came across the states for college, and you can't get rid of me now, but I really came over here from South Africa.

And I came over because as many people do, America is really the land of opportunity, I was supposed to go to Cambridge and study actuarial science. And at the last moment was talked into going and studying business and engineering at Penn, because at the end of the day, when you want to have a

multi-variate background, where you want to marry stuff like business and engineering, there's only one place in the world that's already good at that, and that's America. So came across for college. And then since then have had a very meandering background.

Don't get too hung up on the fact that you need a very linear direct path through, in your career because I've done big banks, I was at Citigroup, I've done large funds and small funds. I've done Elon Musk world. We didn't touch on this, but I was head of finance and operations at the Boring Company, digging tunnels and making flamethrower, and at Neuralink putting microchips in people's heads. You'd be surprised how many people think Elon Musk's already put a microchip in their head. I've been at BMW, I've been now at Fifth Wall and the real estate industry.

So really the only common through line in my career has been the marriage of some kind of business and finance and some kind of engineering, which I think when people are thinking about their careers, they don't necessarily think about it in terms of that almost abstractness. They think like, I want to be, maybe not even real estate, they might say like, "I want to be in multifamily real estate because I don't know, my family does that and I've always done that." I think it's better just when planning your career to take the pressure off, and realize that you should just think about what is your genesis acquire. Like what is the thing that you're good at?

And maybe some higher level esoteric terms, and then figure out a path that maybe doesn't look direct to the outside world, but is actually direct internally to you.

Matt Slepin:

I often suggest to people, and I give little lectures to young people applying any careers, assume it doesn't come together to your 40.

Greg Smithies:

I think my main advice, which is similar to what you're saying is, follow whatever path feels right for you even if it happens to be meandering.

Matt Slepin:

Fair deal. Fair deal. Talk about some of those meanderings because you mentioned a few and it sounds interesting. Elon Musk with flamethrowers and boring tunnels, talk about that.

Greg Smithies:

Elon Musk got very frustrated with traffic. This was probably about five years ago, I think he was stuck on the 405 in LA, and tweeted out what everybody thought was a joke at the time, which is, "I'm going to dig a tunnel under the 405 for cars to go in. It's going to be much faster. We're going to call it the Boring Company." Everybody thought it was joke. Then he actually started it and they started digging tunnels. And the goal was to go and dig tunnels, roundabout 100X cheaper than anybody else could do, which by the way, that was basically the whole plan for SpaceX.

SpaceX's plan, yes, ultimately is to get humanity to Mars, but really the way that you get them to Mars is by fundamentally decreasing the cost of launching things into space. And their goal was always to bring that down about 100X. Before the Boring Company started, it costs around about a billion dollars per mile to build a tunnel for a subway tunnel. And by the way, a billion dollars per mile would actually be cheap when you actually look at the real projects in the real world, like in Manhattan, we're talking probably close to like three billion per mile.

The Boring Company, that first tunnel that they did in Hawthorne, they also just finished that tunnel in Las Vegas, at the Las Vegas Convention Center, they're going pretty comfortably under $10 million per mile right now, which is crazy.

Matt Slepin:

Whoa. So how does that differential in cost? What is the technology that, I don't even know if it's the technology, what does that?

Greg Smithies:

Typically, they build accustomed boring machine for each project. There's no reuse of any of the tools. That sounds a lot like SpaceX before they started, people would build rockets and only use them once. We think that's crazy now. Also, each of those tunnels would on average be 30 to 40 feet in diameter because you needed to fit a train through them. If you change the goalposts and instead say, "I only want to fit a car through it," then you can do that in a 12 foot, 13 foot tunnel. And volume is a cube, so going from a 30 or 40-foot tunnel down to a 12-foot tunnel is a ton less just land you need to move.

Matt Slepin:

So when you said mile, you were not discussing mile of the same amount of space, you were discussing big or narrow?

Greg Smithies:

Yes. But if we think of that mile as how many humans can I put through it per hour, for example, and you have, and I'll make it up, 1,000 people per hour for a train. If you could still hit the same 1,000 people per hour, but do it with cause, then why do you care about how wide the diameter of the tunnel is? So it's really just this ruthless focus on Elon Musk world on, what is the ultimate goal we're trying to do? And then just chip away at that problem.

Matt Slepin:

Literally. So you did that, then you went to BMW Ventures, then you came to Fifth Wall? So just talk about that.

Greg Smithies:

I was at the Boring Company, I was also running finance and operations for Neuralink at the same time, which is Elon's other company that's putting a brain machine interfaces into people's brains, then came up on my five years and decided I wanted to go back into venture. At the time I was really looking at what are the next big opportunities.

[crosstalk 00:48:49].

...went to BMW, founded that sustainability and climate investing practice mainly focused on how do you decarbonize manufacturing, supply chain and obviously, transportation and mobility. Was there for a number of years, got to the point where I thought that decarbonizing transportation while it's not easy is conceptually simple, which is basically electrify the vehicles. So I felt that maybe the venture capital life cycle of it and mobility was maybe starting to get played out. Went to look for what is the next largest industry that needs to be decarbonized, and that gets us to the beginning of this conversation.

$270 trillion worth of buildings is out there and 40% of all greenhouse gas emissions. So my shopping list for the largest industry started and stopped at real estate.

Matt Slepin:

So your LinkedIn profile self-describes you as an investor in climate tech, sustainability, AI, robotics, and software applied to unsexy industries. And so we're going to end our conversation in a few minutes, but I think you've called us boring through the conversation, behind the times, but also unsexy, which I take on [inaudible 00:50:02].

Greg Smithies:

Yep. I'll put it very solid tongue in cheek, maybe be a little bit facetious. I think most of the world thinks that the sexy stuff is the next TikTok of the world. And this goes back to my comment that the best and brightest minds for the last 20 years have gone into stuff that frankly, I think many of us should think is pointless, at click-through optimization. I'm trying to make unsexy sexy, which is we're bringing sexy back and making people realize that these industries like real estate, construction, manufacturing, supply chain, industrial, tech, these are the things that actually run the world.

And whether you're on the left side of the aisle or the right side of the aisle, these were some of the industries that really made America great. Like the Heyday of America, and Marc Andreessen has another article about this called Let's Start To Build Again, these are the industries that really built America, and then we forgot about them. We became a country of consultants and software engineers and forgot that we're actually very good at these other things and really wealthy, isn't it?

So it's a bit of a battle cry for me, is let's take all of these industries that maybe have been ignored for the last 20 or 30 years and make them sexy again, because these are really the industries that actually build the world, move the world and where you have a much stronger ability to actually impact the world than by optimizing ad click-throughs on the internet.

Matt Slepin:

I love that. It's interesting that the, our industry has been somewhat ignored, but we've ignored the future at the same time. I think you just described some of thesis for Leading Voices, because I believe that real estate does have an impact on the globe, and how we do it for better or worse is going to impact a whole lot of stuff, from income, equality, equity, affordability, the way people live, to certainly the climate.

Greg Smithies:

Yep, absolutely. And it's one of those things where I think real estate can as an industry get complacent, where we think, "Okay, well we own some buildings and they seem to be performing fine." And you can phoned it in as an industry. You can very easily not try very hard, but those are the people who are going to get left behind. Because all it takes is, who is the Elon Musk of the real estate industry? Who's the one who's just going to leave everybody in their dust by, I don't know, and I'm making it up, reinventing their commercial real estate portfolio?

It's the people who are thinking outside the box about things like that, about how these assets can be used and you can eke out every little bit of value on them as opposed to the people who are complacent to it.

Matt Slepin:

I think that's true. Last question on Leading Voices, and you've gone into it a little bit, but advice for a young person getting into the real estate business.

Greg Smithies:

I would say, my experience so far is that this is an industry that is very eager to learn. And so my advice for someone coming into this is, it might feel like there's institutional inertia in this industry and it wants to move slowly, but when you actually start talking to people, everybody wants to move fast, everybody wants to achieve greater and bigger and better things. And so don't feel like you can't push the envelope inside this industry. I think you absolutely can, and you should try.

Matt Slepin:

It's interesting, I don't feel inertia when I talk to owners at all. I feel that they don't have a pathway or understanding of where they can go and how they can get there, and then it's achievable on this subject. And some of this conversation convince me A, they got to get there. And then B, you're going to start showing a menu of ways to get there that makes this really achievable.

Greg Smithies:

Yeah, exactly. That ultimately is the goal, let's go and find technologies, get them down the cost curve so that those CapEx payback periods are just no-brainers, and then deliver people, "Here is the how-to guide." We are trying to build that for this industry so that this becomes a no-brainer, and it's super easy to do.

Matt Slepin:

Cool. Well, thank you for being here. Thank you for sharing. Thanks for telling us so much, and welcome to our unsexy industry.

Greg Smithies:

It's great to be here. Thank you.

Matt Slepin:

Thank you.

Thank you for listening into Leading Voices, and I hope that you enjoyed today's episode. I have a request. If you enjoyed the episode and found it to be valuable, please share it with a friend or two. If they're podcast weary, take their smartphone in your hand and subscribe for them and teach them to listen. You'll change their life. Seriously, thanks for listening and keep in touch. You know you can reach me at Matt@terrasearchpartners.com. See you next time.