The Solari Report

MARCH 27, 2014

Reinventing America's Homes and Buildings

with Mat Stein

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March 6, 2014

C. AUSTIN FITTS: Ladies and gentlemen, welcome to The Solari Report. I'm Catherine Austin Fitts. I'm delighted you could join me this evening. I am joined by a very talented individual, Mat Stein, who is the head of Stein Design and Construction.

He has had a remarkable history, leading him to become the perfect person for me to talk to about how we reengineer our homes and our houses for the world we're going into. As many of you know, I had a government position in housing, and I was appalled at the disconnect between what we needed to do to live in harmony with the Earth and with each other, and what we were doing with the housing stock. It got much worse during the pump and dump of the city engineering and the housing bubble. I used to drive around America and just be terrified, because people were spending way more money than they could afford to build housing stock, which was inappropriate for the world we're going into.

We are where we are. The question is, how do we get from here, individually and collectively as communities, to having homes and housing and buildings that really are in harmony with the environment and give us the kind of health and safety we want and deserve? So, Mat, welcome to The Solari Report, and I just want to thank you for all the good things you've been doing to invent all the knowledge we now need.

MAT STEIN: You're welcome, Catherine. It's been a long trip for me, and thanks for the great introduction.

C. AUSTIN FITTS: Well, you came out of MIT and headed to Silicon Valley, where smart guys from MIT tend to go, and yet ended up becoming an

expert in resilient living, a homebuilder of green building, head of Stein Design and Construction and also an author. We're going to talk about your books later on in the interview. Maybe you could tell us how you evolved from one to the next.

MAT STEIN: It's a little difficult, but I've always liked working with my hands. I grew up in Vermont skiing, hiking, fishing, climbing and doing all the great backcountry stuff, which my parents loved to do, though I eclipsed them in a lot of areas before I was even a teenager. When I went to work in Silicon Valley (those days it wasn't on the computer, it was on the drawing board), I just really missed being outside and working with my hands. At one point not too long after MIT, I quit for a couple years and was a carpenter in Santa Cruz and I really enjoyed that. Then I ended up in Hawaii and interest rates were 20 percent and there was no building going on.

I ended up finding a job as an engineer instead of a carpenter, and then I went back and forth between engineering and carpentry. My main bread and butter right now is engineering, but I'm going to be doing some more building this summer, it looks like. A fire-resistant green building in Yosemite, where there's a lot of fear about firestorms, especially with climate change. The firestorms in the West are getting extremely severe, and when they start rolling along, there's no stopping them sometimes, and a properly designed building will survive. For instance, in the big firestorm in Laguna Beach, 2 out of 400 buildings survived the firestorm blowing over them. There are things we could learn from what kind of buildings survive and what don't.

C. AUSTIN FITTS: I live in a tornado area and I travel a lot by car around the country, and what you find in every area, people are concerned about having a house that can resist a tornado. In other areas, it's a hurricane. In others it's a drought and fire, but more and more, most people are asking, "How can I get a more resilient home?"

MAT STEIN: That's a really big question on people's minds, and I, for instance, live in both an earthquake and fire area. My current home is not that resistant. My goal is to build another one. I was headed towards

that goal until the financial crash hit and stopped all the building going on and cut down a lot of my cash flow and clients. Hopefully, in the near future I'll be able to build a building that will withstand it. Right now, basically, I have to do what most people do, which is try to build a defensible space around my home and do the best. But if it's a severe firestorm, it's going to be the luck of the draw which buildings make it and which don't.

We had one in South Shore, and on a block there'd be ten buildings burned down and two wooden. It was just a matter of defensible space and the luck of the draw which ones survived and which ones didn't.

I gave a talk called "Fire-Resistant Green Building" with a nice PowerPoint, and there's an article on that available on my Web site, WhenTechFails.com. Based on my talk, a couple of the builders started rebuilding houses down in the burn zone according to the principles I teach in my fire-resistant green building.

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There are things you can do to improve the resistance of existing homes, and if you're building from ground up, there's a tremendous amount you can do. Let's face it. Most people in America can't afford to just start new. In my book, *When Technology Fails*, I have a shelter and buildings chapter and I talk about a lot of these principles so you can improve the energy-efficiency and the resilience of your existing home.

Certainly, if you're starting from ground up, then you've got a clean slate and you can do a tremendous amount, but even if you aren't starting from ground up there are things you can do to improve the resistance of an existing home. That's a case most of us are in: we've got to make the best of what we've got and make it more resilient and more energy-efficient and better able to lead into the future.

C. AUSTIN FITTS: We kind of need to turtle into it from where we are. Now, tell me. I have never been clear as to what green building meant. What is a green building? What are the standards by which you define something as green? What is it and why is it important?

MAT STEIN: Well, there's a lot of green washing out there, so it's a loose collection of things. There's the program called LEED, that helps to define different ways in which a building can be more green, green meaning that it is easier on the planet for at least one, and usually more reasons. One is materials efficiency in the construction. For instance, using forest-certified wood. The wood you're building your home with has been certified to be grown and harvested in sustainable ways (most of the wood on the planet is not harvested sustainably).

Over half the world's forests have been cut down, and over half of that's probably been in the last 30 years. So we're rapidly depleting the planet's resources at an accelerating, exponential rate, and it can't go on. We're already seeing climate-change problems right now. A large chunk of greenhouse gases is due to deforestation, and ten percent of greenhouse gases is due to concrete manufacturing. So between building our homes and our freeways and our buildings, we're contributing a tremendous amount to the demise of the planet.

C. AUSTIN FITTS: I just have to step in as somebody who lives around a lot of trees, and I know you live around a lot of trees. It makes a difference when you're in a place where there's a tremendous amount of trees and other natural landscaping. When you live in a place that doesn't have that, I think it's much easier for a group of people to go nuts.

MAT STEIN: It is easy to go nuts, and it tosses a factor in climate change that a lot of people don't realize. It's called desertification. See, 5,000 years ago the area of the world called the Fertile Crescent was between the Tigris and Euphrates River and it was like the Garden of Eden on the planet, a beautiful Mediterranean subtropical climate. Civilization flourished, and what did they do when they flourished? Well, they built cities and they cut down trees and they irrigated. Well, each tree, each large, mature deciduous or coniferous tree (I haven't done the calculation, but it was

quoted in *The Last Hours of Ancient Sunlight* by Tom Hartman, and I trust that it's pretty correct or at least close), supposedly, between its needles or its leaves has the evaporative surface area equal to a 20-acre lake.

So every giant tree acts as a water pump that recycles water into the atmosphere. The rain falls down. The trees' capillary action in the roots sucks water up into its leaves and needles. The sun beats down on those leaves and needles and there's transpiration, evaporation and the water gets pumped and recycled back into the atmosphere. When you cut down these massive tracts of trees, like we're doing in Brazil, in the Amazon, in the rainforest, downwind you get desertification. You're no longer recycling that water into the atmosphere, so the Fertile Crescent is now Iraq and Iran. The Garden of Eden 5,000 years ago is mostly desert wasteland. We're seeing forest fires and droughts in the Amazon basin, the biggest rainforest in the world, because we're getting rid of these recycling water pumps by cutting down the rainforest. So we alter the world's weather patterns not just by pumping carbon in the atmosphere but also by destroying the water cycle. So, green buildings is a loose collection. But in one sense, if I had my druthers I'd put America back to work, rebuilding America for a resilient energy-efficient future that can withstand depleting coal supplies, depleting oil supplies, and that can withstand climate change and inclement weather.

C. AUSTIN FITTS: It's what I call peak everything.

MAT STEIN: We are in peak everything.

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MAT STEIN: We have peak everything. Shell Oil and these other companies are pumping oil and they're fracking like crazy and they've decided that, "We're losing money." It's so expensive that they're cutting back on how much they're investing. So these bogus news reports saying, "Don't worry. America's the Saudi Arabia of oil and we've got all this frack-able oil and it's all wonderful and good," is a bunch of bull.

C. AUSTIN FITTS: They see it as an interim solution, and if you look at the stress being placed on developing renewables, it's clear to me that no one's depending on that. That's a plug. Peak everything was upon us. I came out of the Bush administration in 1991. We all understood peak everything was here, and yet what I watched was the leadership that financed pulling capital out of the country by encouraging everybody to build the most expensive non-resilient homes that made no sense environmentally or in terms of cost-efficiency going forward.

MAT STEIN: Totally correct.

C. AUSTIN FITTS: It was like insanity. We all just went insane together.

MAT STEIN: Well, it was like, 'if you build the biggest home you can with the least amount of investment square footage, then as prices go up exponentially,' which they assumed would keep going on forever, in spite of having watched the Japanese bubble. You would think, "Wait a minute. It happened there."

C. AUSTIN FITTS: We knew it wouldn't work, because we were outsourcing all the jobs to Asia. So as a political matter, the leadership was very clear that the income was being transferred abroad and that no one could afford these homes. That was all completely explicit and very clear.

MAT STEIN: It's very clear, and yet I just don't understand. Are they wanting collapse? Is there a second agenda where they just want everything to fall apart and the middle class to die? Who benefits from it?

C. AUSTIN FITTS: Well, as a financial matter, what you were able to do was use that to create a bubble that would allow you to shift huge amounts of capital out of the country. I won't bore you with the details, but in other words, it was a critical component of what I call the financial *coup d'etat*, where you collapse currencies around the world and collapse those economies. You shift money out of the developed world when those currencies are high and you buy up the equity very cheap. The more money you can get out of the developed world, the faster, the better, and you have to do it in a way where the population doesn't notice that all

the retirement savings is being shifted. If you want to engineer a huge money move without the population knowing it, it was a brilliant way as a financial strategy to do that.

MAT STEIN: But it screws the 99 percent in favor of the 1 percent, I assume.

C. AUSTIN FITTS: Absolutely, because what they do is instead of using their time to reposition themselves, they use their time to over-lever themselves to do something that takes them backwards, not forwards.

MAT STEIN: So if I had my druthers and I said, "Let's make a world that can survive into the future and not just fall to pieces in a few years," then I would say what we need to be doing is shifting the tax structure, shifting the priorities. Let's stop spending as much as the rest of the world combined on the military and instead spend a large chunk of that on rebuilding America for resilience so that we can actually survive without falling totally to pieces in the next 10 to 20 years.

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It would be rebuilding all of our buildings so that every building has solar rooftops, so that we have a resilient grid, where there's wind farms throughout and there's energy transmission and energy-storage methods to take up the slack when the wind's not blowing and the sun's not shining. You put America back to work rebuilding our existing buildings by putting an extra layer on the outside to improve their efficiency, their energy-efficiency and to make the buildings themselves a net-zero building so that essentially they power themselves and they require almost no inputs in terms of oil and electricity. Those are buildings that can continue as things start falling apart in terms of using fossil fuels to power the world, which is very shortsighted and we know it's going to go away.

I just read a quote yesterday. It's a pretty cool quote. It was Thomas Edison basically saying in 1930, "I'm going to bet on the sun. That's an

incredible energy source, and I pray to God that mankind invests in that energy source before we run out of oil and coal." Well, obviously in 1930 he had that vision and we did very little about it.

Admiral Rickover, the founder of the American nuclear Navy, said Jimmy Carter, who was an engineer, was the best and brightest that ever worked underneath him and he was a commander of a submarine training to become a commander of the first nuclear subs before surrendering his commission and going back home to run the family farm after his father died. Anyway, he was a smart guy and he saw what was going on, but then it was like the world put blinders on and said forget that. "Drill, baby, drill" was the Reagan years slogan, and it worked great for the short term. If you look at Margaret Thatcher and the boom the "drill, baby, drill" did in London and in the U.K., it was like short-term gain. Everything was booming. They pumped all that oil and they sold it for $10.00 a barrel. Can you believe it? Wow, they got $10.00 a barrel. Well, now they're importing oil for $130.00.

C. AUSTIN FITTS: We did a couple of great Solari Reports with Jim Norman, who's written a book called *The Oil Card*. The management of the oil prices is very much tied to strategic goals, and that was a period when they were trying to bust the Soviet Union, and they could do it by dramatically bringing down the oil price. When you look at the economics of it, it's important not to just look at the specific industry but the geopolitical competition that's going on. I think they could make a very effective argument that it was the economic thing to do. Here's the reality, though. It's very, very important at this point to build new energy technologies that can be adapted.

MAT STEIN: Very important.

C. AUSTIN FITTS: I haven't read it, but I just saw a new article in the *Economist* saying they've solved the battery problem. Well, I'm not sure if I agree with that, but I know a great deal has been done in the last ten years to make solar much more economic, and the curve is really coming down. If they do solve the battery problem, then you could start to see solar really get integrated much more, I think. Is that a fair statement?

MAT STEIN: I personally know somebody who helped develop today's generation of batteries 20 years ago. He's got next-generation batteries on the board (I'm sure there's other people, too) and they last ten times as long and they'll use ten percent of the amount of the rare earth metals that we're using right now. The next-generation batteries, I do believe that there's a bunch of people working on that, and I know one in particular, and I'm sure there's bunches of others. I do believe that we can solve that, and certainly by putting the government investment dollars behind that to make it happen is really important, and ignoring it is just asking to get whooped in the next few years. When the little bit of coal and oil that's costing us so much to get out and is such poor quality compared to what we used to get, as that gets twice as bad as it is now, we're going to be in major trouble.

C. AUSTIN FITTS: Well, I have a terrible prejudice because I worked in government, and I don't want to wait for government. I want to know what we can do, because I do believe where you can't stop a market with politics, a market will figure it out and get it done. I'm very focused on what the people listening to this can do, which will make their home safer, and more resilient. Let's build the future. Let's not wait for government. One of the questions I wanted to ask you, because you know a great deal about health and natural healing methods. I was looking in both the books and the Web site and what I read is this issue of indoor pollution and how dramatic the impact on your health can be from toxicity inside the house. Could you talk about that?

MAT STEIN: Well, I'm extremely sensitive to this, because when I was building green homes in Hawaii about ten years ago, we had the misfortune of renting a home that had Stachybotrys, which is a deadly black mold that was hidden within the walls. You could walk around the home, but you didn't smell mold. You didn't see mold, but it killed the prior owner and made my wife extremely ill. Anybody who stayed in our downstairs half-basement, which was a combination of my wife's office and our guest-room, all got sick. It nearly killed my wife, nearly killed my mother-in-law, and so now I've become extremely sensitive, and I'm sensitive both to EMF and to molds and various environmental toxins.

So, in my home one of the things I do is I run some Austin Air HEGA filters, H-E-G-A, which has this military carbon cloth encased in a HEPA. They run large volume of air, and so I have several in the home, and the HEPA outside gets rid of 99.97 percent of all of the particles greater than 0.3 microns. That includes molds, mold spores, and it gets about 95 percent down to 0.1 microns. So it includes bacteria, viruses, molds, mold spores, all of that. Then it's got a large amount of carbon block in there that sucks up toxic chemicals and things. So if you're in a brand-new home, especially if you have carpets and they're not certified really green and low-VOC, you're going to have toxic stuff coming off of the paints, coming off of the plastics and the appliances, coming off of the particles, off of the plastics and the carpets. It's really important if you have a new home to fill your home with these HEGA-type filters so that you're sucking out the VOCs, the volatile organic compounds, that are very toxic to your system and to your nerves, as well as the particles.

I live in wildfire country, so this year I'm not looking forward to fire season with the extreme drought in California. Chances are there's going to be days where I'm going to have to have my house totally sealed up in the middle of the summer and be running these filters 24/7. Going outside I may even have to have carbon, painters mask-type filters to wear if it's really severe outside to take with carbon canisters to suck out the VOCs so that the smokes can be filtered out of the air.

Certainly in some parts of the country you don't have to worry about that, but where it's really wet and moist you do have to worry about the mold neurotoxins. Let me tell you, if it smells musty in a home or in a basement, that's mold. If it smells moldy, it's really bad mold. The house in Hawaii that nearly killed my wife and my mother-in-law, made my son and his partner quite sick, who was staying in our house working on my construction site.

Those didn't smell moldy. They actually gave off a smell like cat pee, and I'd figured underneath the house in Hawaii it was just cats under the house. Part of it was up on piers and the moisture kind of rekindled the cat smell. Well, it turned out this deadly black mold that's known for killing horses (that lay in straw that has this mold on it and stuff like

that), smells kind of like cat urine. Who would've guessed? I also have a crawlspace under my home, and I realized that there is a chimney effect when I have a two-story home, and as air rises through the home, it starts sucking air in through all of the plumbing and electrical holes that go out underneath the house.

So even though the house appeared to be mold-free and dry, and I couldn't see any mold growing in the basement but it smelled quite musty, no matter how I ozoned and filtered in the house, the chimney effect was drawing musty/moldy air from the crawlspace up into the house. So I had to go underneath and do a bathtub seal with very thick layers of plastic, used for sealing foundations, and lap-sealing tape, six-inch-wide tape. I had to caulk all of the edges and put them in with concrete screws to the foundation to seal off the ground, because the moisture under my house was breeding mold in the earth in the crawlspace, and the chimney effect was sucking it in the house.

The other thing I did was foam underneath the house to provide a barrier and it drastically reduced but didn't quite totally eliminate the air penetration from under the house. So, the things I've done made it quite livable for me and my wife, who've become hypersensitive to molds after suffering in this home in Hawaii that nearly killed us and killed the prior owner. Most people aren't aware that if you've got nasal drip or lots of nasal issues or lots of allergies, there's a good chance it's from environmental toxins in your home, such as mold microtoxins, that is contributing to that. If you can eliminate those from your home, then your general level of well-being and feeling of health and energy and vitality and ability to think and focus will all improve dramatically.

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C. AUSTIN FITTS: I know I'm supposed to do foam under the floors. I have a crawlspace under my house, but I'm always afraid of what in the world's going to be in the foam and it could make it worse.

MAT STEIN: Well, I got a water-based urethane, low-VOC water-based urethane, and here's a little tip. The guy putting it in was actually a personal friend of mine. I didn't realize that until he showed up. It's like, "I know you," and he looks at me, " I know you, too." He said, "Mat, there's two kinds of foam. There's a closed-cell and an open-cell," and the closed-cell was quite a bit more expensive. He said, "Really, you're not going to get any air penetrating through this open-cell." And I trusted him on that and I thought, "Okay, I'll save myself a couple thousand and do that."

Well, I found the air did filter at a very slow rate through the open-cell. Even though it looks like there's no way you're going to get any air through there and it's pretty dense stuff, that was wrong. I wished I'd gone closed-cell, because I found that open-cell improved our situation 90 percent but not 100 percent. So then I had to go back and do the bathtub seal on the plastic on the earth, because there was still enough air penetration. Even though it was extremely slow and it was at least ten times better than it had been before, it was still enough to cause my wife especially, and myself to a lesser degree, some issues. So, go for a low-VOC clean closed-cell foam, and one of the big benefits is that you never have mice, spiders, things like that. They're always crawling in along the pipes along the electrical wires. When you foam it, all those spaces are gone. So it's like you get rid of the mice, never a mouse again in the house, ever.

C. AUSTIN FITTS: A much tighter house. Well, let's talk about some of the other systems. Before we start, I had a wonderful associate who was a permaculturalist, and she created a business. Her husband did energy audits, and she created a business to basically help people develop their property with permaculture to have edible landscapes. I talked to her after the first year. I thought it was a wonderful business. I said, "How's it going?" She said not well and I said, "Why is that?" She said there is a tremendous resistance to investing in your property.

People say they don't trust the local government. They don't trust the government. They want to be able to get up and move, and they don't want to invest a lot in their property, because they're worried about

property taxes being raised on them. I've had problems with cell towers and smart meters, and they want to be able to just get up and leave, so they're afraid to invest in their properties. I don't know if you've run into that, but I think it is really a concern, because what we're talking about is making quite a significant investment of time and money in sort of evolving your property.

MAT STEIN: I can understand that, because having borrowed on my property to set my building business up in Hawaii, and then with the crash and my wife's health problems, I had to shut it down. So, because of borrowing and then I was able to recoup all that investment with the health problems. Hundreds of thousands of dollars out the window and dealing with health problems like that. We had insurance in Kaiser and went to the doctor and said, "Do you think mold could be doing this?" My wife had spontaneous bruising and hemorrhaging under the skin. He looked at her and said, "No. Trust me. Mold can't do that." Then we looked on the Internet and searched Stachybotrys poisoning and saw pictures. It was like, "That's it."

All of that was out of pocket. She would've died. We finally found a mold specialist on Oahu and he did blood tests for the mold antibodies and called us back and said, "Get out of the house now. She'll be dead within two weeks if you stay in that house." The next stage is brain and lung hemorrhaging, followed by death. She was inches away from that. So it was all out of pocket and nearly bankrupted us. So, I'm in the situation of a lot of people, where I'm underwater on the house and you don't feel you can justify investing in a house. Right now, maybe I could get a little teeny bit out of the house if I sold it, but if the next bubble bursts, then all of a sudden I'll be way underwater again. You walk away and put $50,000.00 or $100,000.00 of cash into your house.

That's a difficult choice to make. We all invest in insurance and emergency preparedness, and resilience is all about insurance. It's not just dollars and cents on the balance sheet. It's insurance for coping with and dealing with and surviving a tumultuous future that we're all facing on this planet. For instance, I'm not putting solar panels on my home, but I've got a travel trailer with a huge panel on it, and I would like to

build a home and definitely put the panels in and solar hot water and make it a totally energy-efficient zero-energy home, and if I had not borrowed against my house so heavily for the construction in Hawaii and then for my wife's health problems, I would. My wife died as a result of the mold. One of the known side-effects is cancer, and she just died of cancer three days before Christmas.

It was just a constant money-suck and all of those health problems. If I turned the clock back and had that equity in my home, there's no question I would've invested more in edible landscapes in the solar PV and the solar hot water. Solar hot water is one of your fastest returns on your investments that you can do, very quick return on that. You've got to weigh those things, but think about that insurance aspect. We all buy car insurance, and none of us says, "Gee, I want to get in a head-on collision today because I'm insured. Isn't that wonderful?" It's like, no, we have insurance just in case, and we've got a really big 'just in case' around the corner. Everyone intuitively knows that there's some major stuff coming down the pipeline, and no one knows what's going to happen.

C. AUSTIN FITTS: Well, I don't think we even have to worry about major stuff. If you look at the household budget, the market and the pricing, both revenues and expenses, is basically sending a message and has been for 20 years, "Deflate your expenses. Deflate your expenses. Anything you can do to invest in deflating your expenses is the way to go." I wanted to talk about greywater, because one of my favorite entrepreneurs in the world has started a greywater business, and it's focused me on what can be done with greywater. Whenever I drive back from California, I come from San Francisco down through L.A., over to Palm Springs and then through New Mexico and Arizona, and nobody has greywater systems.

MAT STEIN: It's criminal.

C. AUSTIN FITTS: I'm looking at it and thinking everybody needs a greywater system. Why hasn't this happened?

MAT STEIN: One of the reasons is the codes are so down on greywater now. Some local municipalities are not so down on it, but in general codes are really down on it. It's ridiculous, because that's based on this model that says we have all the resources in the world and don't worry about a thing, because there's plenty more where that came from. Obviously here, out in California and Arizona, we know that that's not the case.

The Colorado River is a muddy little toxic trickle by the time it hits the Bay of California down by Baja. What used to be an incredibly rich fishery that the Native Americans lived off of and fished for thousands of years is now dead because the big river's turned into a toxic trickle. And it's because we're sucking all that water away for Las Vegas and Phoenix and Tucson and all those places and Southern California. Greywater should be mandated by code everywhere, but it's not. That's a problem with government.

"Greywater should be mandated by code everywhere, but it's not."

C. AUSTIN FITTS: Plus increasingly in these places it's going to be having a greywater system is the way you're going to have a landscape, because without the greywater it's just not going to be feasible.

MAT STEIN: You're correct there. Without the greywater, it's going to be like, "Whoa, I can't afford to water my plants and to have any landscape, and I can't afford to have an edible landscape," because you've got to recycle that greywater into it. There's some really good handbooks out there on installing and modifying and making greywater systems, so the information is out there. People have done the homework, so you don't need to reinvent the wheel. One of the things that my book, *When Technology Fails,* is good about is every chapter ends in a resource guide.

So, I end with recommended books, as well as places to buy materials. I have a shelter and buildings chapter, and that ends with a resource guide, including greywater and things on toxic mold, on indoor air pollution. All of those kinds of things are covered to a small degree within the chapter, and then in the reference guides, I have references that say, "Hey, if you're interested in making a cleaner indoor environment or in

greywater, then here's your best books on those." I've got three years of my life invested in this book, so you guys can go out for $35.00 and take advantage of the three years of my life and most of the equity in my home that I put in my book when I was writing it.

C. AUSTIN FITTS: That's *When Technology Fails*. I hate to say this, Mat, but when it comes to me, there's a guy in my neighborhood I trust totally to do all the systems in the house, and what I want to do is I just want to call him and say, "Billy." But the greywater system, I don't want to have to read all the books.

MAT STEIN: That's totally understandable. You don't need to be an expert in everything, so long as you can pull on other people who're experts in it. That's totally understandable that most people don't need to be the expert.

C. AUSTIN FITTS: Well, that's what I'm hoping that we can make it a good business for many of the people who do construction in these communities to start to help us get our homes this way. Now, we did a Solari Report recently on water systems, so I don't want to hang on it, but clearly, to me, I think there's no more important system in your home than your water system, and I have a whole-house filter and do a lot to make sure my water is excellent.

MAT STEIN: Well, part of the important thing is getting your water tested. Most municipalities have a pretty extensive test done annually on their water, so you can take a look and determine. If you've got heavy-metals issues, then you need to do more than if you just got volatile organic compounds or cancer-causing agents. Typically carbon is what is required to take the chlorine out and the volatile organic compounds and the THMs, the trihalomethanes, which are when you combine chlorination with surface water and there's stuff like dead leaves and branches and things. Then the chlorine combines with that organic matter and makes these THMs, trihalomethanes, that are cancer-causing.

So, in the very least you should be filtering your water so that you're

getting rid of these THMs if it's surface water that's treated so that you're not getting cancer compounds sucking in through your skin when you shower and bathe in it, as well as when you drink it. But then knowing if you've got heavy metals like arsenics or leads (arsenic is a big problem out here in the West with volcanic soils) then you need to do things like for what you're actually drinking, then you want to use reverse osmosis to make sure you get rid of those heavy metal salts out of there.

If you're in a big agricultural area, then you need to worry about pesticides and fertilizers in the water. You might need some very special things there, and then you might need to call your Culligan man in and say, "For my local water, I really want to make sure it's right."

C. AUSTIN FITTS: My well tested perfectly. The water was perfect, but because I'm in an agricultural area, I just said I don't want to have to worry about this. I can't test it every day. So, I went ahead with the filter.

MAT STEIN: Places like Marysville, California the cancer rates are just off the chart. Everybody has cancer by the time they're in their 40s and 50s. You look around and it's so beautiful and so green and those fertilizers and pesticides come at a price. The people who live around them are sick. By the time they're older, they're wreaking havoc with their body. So, water, like you said, is incredibly important in your home. When you think about from a grab-and-go kit, a point of how do you deal with instabilities in the future, think about what happens if your local water system goes down, if the power's out and there's no pumps running. How do you deal with water? Three days without water and if you have to be physically active, people start dying. It doesn't take very long.

C. AUSTIN FITTS: I'm ready to start to build my dream home, and I either want to retrofit or I want to build a new home. Where do I begin? If you could just walk us through some of the books and sources to educate the beginners listening to this and saying, "Okay, I'm inspired. What do I do? What's my next step?

MAT STEIN: The next step is to pick up *When Tech Fails*, because you have such a wealth of resources in the back. There's no one book that's perfect, but certainly some of the books. Dan Chiras', *The Natural House: A Complete Guide to Energy-Efficient Environmental Homes*, that's a good book to start with. Green building products, there's a whole bunch of different things, but you want to start with an overview and then start saying, "Well, I really like straw bale or I really want to go with structural-insulated concrete," or perhaps a rammed-earth home. There's a bunch of different things.

Then there's remodeling like *Green Remodeling: Changing the World One Room at a Time* by David Johnston and Kim Masters. All of these books I'm talking about are referenced in the reference guide in the chapter on shelter and buildings in *When Technology Fails* or *The New Ecological Home: A Complete Guide to Green Building Options* by Dan Chiras. All of those start giving you a decent overview of what to do. I would assume that most of your subscribers are hiring a contractor to do this, and so they need to really look around and decide, "Does this contractor really know his stuff, or is he green-washing?"

In other words, some people will pitch an environmental home, because they've got energy-efficient showerheads in it and faucets and maybe a little bit more insulation and that's it. Other people are really involved and really understand the whole concept from the ground up. You would put fly ash in the concrete so that we have a lower carbon footprint. Do we build in such a way, where maybe you've got a foundation that uses minimal concrete and has troughs and rammed gravel on there so that you're decreasing the carbon footprint there, and what type of wall system? Are you just doing studs like everybody else, or are you doing a straw bale, or are you doing super-insulation? What are you really doing to be green, or are you just green-washing me and telling me you're green and doing 2 percent instead of 80 percent?

So, those are questions that you need to educate yourself about and starting with some kind of survey overall books with a chapter on building. My book, *When Tech Fails*, is a good way to educate yourself and start expanding your horizons.

MAT STEIN: But you want competent and green. You want competent and resilient. You want a house that's going to survive that, whatever your local thing is. Is it a hurricane? Is it a tornado? Is it a flood? Is it a fire, or is it an earthquake, or is it all of the above? Maybe my shelf's going to cost me 20 percent more, but my overall costs of the building for that 20 percent more on the shelves is only 5 percent overall. So maybe I increase my construction costs by 5 percent but I've got a home that's 95 percent more certain to survive the next disaster that comes my way than the other homes on the block. So that extra 20 percent more on the shelf, 5 percent more on the overall cost, then all of a sudden, wow, that's pretty cheap insurance, because something happened.

"You want competent and green. You want competent and resilient. You want a house that's going to survive whatever your local thing is."

If you look at Homestead, Florida, Jimmy Carter had this Habitat for Humanity project, where he built structurally insulated concrete homes with lots of sweat equity in Homestead, Florida. Well, you go around the block and every single home's gone except there's these couple of structurally insulated concrete panel homes that were untouched, and the other ones are flattened. They're matchsticks. And you say, "Well, I guess that 5 percent was really well spent on those 2 homes that survived, when 1,000 homes round them were destroyed. Those 2 homes, they spent a little bit more and they were fine."

So, that's where it's like the bottom line isn't just the bottom line. What's coming down the pipeline, and how can I spend my money wisely? Yes, I'm worried about the contractor being competent. That's for sure. That's more important than being green. You can do your homework. You can get a great contractor and you can do your homework and just tell him, "This is what I want." In a sense, that's maybe the better way to go. If you can find someone who's both, then that's great, but if not, then educate yourself and make sure you work with your contractor and your architect right from the get-go so that you're not trying to retrofit it in at the end but you're designing it from the ground up to be resilient and to be like those two homes in

Homestead, Florida, that survived when hundreds around them were turned into matchsticks.

C. AUSTIN FITTS: Then it's clear. Habitat for Humanity was not pouring money into McMansions. One of the things I wanted to mention before we close, we do a lot with *Going Organic* magazine in Palm Springs, and they featured Ed Begley several times. Begley is the actor who I think has done a very interesting thing of trying to walk the talk and build a green house and live green, and now he has a TV show, where he and his wife and family just grapple with how to be green and all the different choices. It's an interesting thing to note, because what it says is, okay, people are now enough interested in this to watch a TV show on how we do it, because it is that complex. It really is.

MAT STEIN: Ed's a great guy and he does walk the talk and he really lives, eats and you-know-whats this stuff. So you can trust his opinion. He's devoted so much time and energy, and that's what you have to do is look to the people who've got a lot more time and energy than you to invest in these things and draw on their knowledge so you're not starting from scratch.

C. AUSTIN FITTS: Well, Mat, thank you very much for doing this today. Now, before we close, just give us again your Web site and how we find all your good work.

MAT STEIN: The Web site is WhenTechFails.com and if you click on Articles, there's a lot of really great totally free information, as well as links both to my books, as well as many, many other recommended books. It's a very information-intensive site. Then I have a Web site called MatStein.com that's not as information-intensive. It's more my author's Web site. Both of those sites have links to purchase things, but the information-intensive one, where you can really learn a lot for free and click on articles and get some great information and great recommended books, is WhenTechFails.com.

C. AUSTIN FITTS: You mentioned a filter. If you could just say that again. Is there a link for the filter you described?

MAT STEIN: I don't think I have a link, but it's Austin Air. I should have it on there. Just think of your name, Austin Air. It makes a really great filter, and they have the HEGA filter. They have a home-health one that's HEPA, and then the HEGA is a HEPA on the outside with the carbon military cloth on the inside wrapped around. That's really good for sucking up the toxic VOCs and for smells and odors and mold, toxins, all of that stuff. So, highly recommended those, and it's hard to go wrong. I'm not saying there's not others out there that are good. If you can't get one of those, a Honeywell filter or Homes filter, those are all much better than nothing, but the Austin Air ones are tried and true and really, really good. The guy was an engineer and his wife had extreme health issues, very, very environmentally sensitive, and he just wasn't happy with anything out there, so he decided that it wasn't out there, so he'd better invent it himself for his own family's health sake. So, it's a good product.

C. AUSTIN FITTS: Well, Mat, again, thank you very much. Have a wonderful day.

MAT STEIN: You're welcome, and it's a pleasure being on your show. Have a great day.