RALPH NADER RADIO HOUR EP 274 TRANSCRIPT

Steve Skrovan: Welcome to the *Ralph Nader Radio Hour*. My name is Steve Skrovan along with my co-host, David Feldman. Hello, David.

David Feldman: Hello.

Steve Skrovan: How are you doing?

David Feldman: Very good. We have a YouTube channel. People can listen to this show via YouTube.

Steve Skrovan: That's right. We've been meaning to mention that. We have close to 12,000 subscribers on YouTube. It's just for the audio, but if you . . .

David Feldman: But we still give makeup tips like if . . .

Steve Skrovan: That's right. And describes certain exercises in the gym that you can do.

David Feldman: Uh-huh.

Steve Skrovan: And we also have the man of the hour, Ralph Nader.

Ralph Nader: Hello, everybody. Good news in this program; wait and see.

Steve Skrovan: That's right. What's been fun about doing the show for over five years now is it provides a relatively long arc where we can chronicle the progress of certain issues, their ups and downs, setbacks and victories. And over two years ago, we talked to Eric Steenstra, Executive Director of Vote Hemp. Vote Hemp has been in existence for almost 20 years and it's a national non-profit organization that has been advocating for the legalization of industrial hemp. Now this is different than the hemp products that get you high. We're talking about industrial hemp and its many practical uses in clothing, building materials, soaps, lotions, and a host of other products. It's just an incredibly versatile plant material that has been illegal to farm here in the United States due to some very arcane drug laws. Well, we're happy to report victory for Mr. Steenstra's organization and farmers everywhere will at long last be able to cultivate hemp for industrial use. Because about seven months ago, back in December of 2018, news that certainly flew under my radar, especially with all the other news related to the legalization of marijuana in various states, President Trump signed legislation to legalize hemp farming. So we're going to talk to Mr. Steenstra about what finally pushed them across the finish line and what remains to be done.

Also on the show, we continue our nuclear theme. We welcome back former member of the Nuclear Regulatory Commission, Peter Bradford, who now teaches energy policy at the University of Vermont. We're going to talk to him about what is going on in the world of nuclear power. I don't know about you, because I follow this rather closely, I've seen a few op-eds in the *New York Times* and various other publications. Recently, they're extolling the virtues of nuclear power in light of the climate crisis. Well, we'll see what Professor Bradford has to say about that. Defeating this beast is obviously going to take a little longer arc.

As always in between, we will hustle over to the National Press Building where Russell Mokhiber keeps shining his relentless spotlight on the real American carnage, corporate crime. But first, let's get the good news about hemp. David?

David Feldman: Eric Steenstra is president and co-founder of Vote Hemp. Under his leadership, Vote Hemp has become the nation's leading hemp lobbying organization and lobbyist, working towards full re-commercialization of industrial hemp. Welcome back to the *Ralph Nader Radio Hour*, Eric Steenstra.

Eric Steenstra: Yeah, thanks for having me back, David.

Ralph Nader: Yeah, great news, Eric, about the legalization of industrial hemp in terms of allowing our farmers to grow it. I've been campaigning on this for over 25 years; you've been campaigning on this, and we finally got Congress to act. Before we have our listeners learn how this happened, because it hasn't really gotten national news, as Steve pointed out, industrial hemp is not marijuana. It's got one-third of 1% THC or less. It's been grown for 5,000 years, starting in ancient China; over 5,000 products have been made with industrial hemp. Thomas Jefferson and George Washington grew it on their farms. It's been reputed that the Declaration of Independence used industrial hemp for the paper on which it was drafted. And it has many uses--food, fuel, car parts, clothing, cosmetics, paper, and on and on and on. And for years, it's been legally imported. In fact, the importers in this country imported it from China, Romania, France and Canada, but it was illegal for U.S. farmers to grow it because it was on the DEA [Drug Enforcement Administration] prohibitive list, linked with marijuana. Now all that's been changed. And tell our listeners, Eric, how did this rationality get through the U.S. Congress with conservative and liberal support?

Eric Steenstra: Yes, that's a great question, Ralph. So it's been a long process but basically hemp is really not a partisan issue, right? There are so many economic benefits here for farmers, for American manufacturers. And when we demonstrated to members of Congress on both sides of the aisle that there was economic development happening and that there were missed opportunities, especially for American farmers, I think that's the message that finally carried the day. And I think it helped a lot that politicians in Kentucky pushed to change the policy there back in 2013.

Ralph Nader: At the state level?

Eric Steenstra: Yeah, at the state level, correct. So, the Agriculture Commissioner James Comer, and some other politicians, pushed to get the law changed. And I think that caught Mitch McConnell's attention, and of course as the majority leader, he was helpful in getting this legislation finally included into the Farm Bill that was signed by the president. And there was a lot that went into this. And I always remind people that you were an early advocate for this, and that really encouraged Ron Paul to take this up, and he was the first sort of modern era politician to introduce federal hemp legislation. So we were really thankful for your leadership on this early on.

Ralph Nader: You're very welcome, Eric. Actually, I shared a stage in New England before some organic farm organization with Congressman Ron Paul and I put him right on the spot. I said, "You're a libertarian, you couldn't possibly support preventing U.S. farmers from growing this crop. Are you going to introduce a bill?" And he didn't hesitate five seconds. He said, "Yes," and the place erupted in cheers. He got about 7-8 members of the House on his side, some conservatives and liberals. It didn't go anywhere. This was over 10 years ago. And then the pressure, as you say,

from North Dakota at the state level, farm associations passed resolutions; legislatures at the state level passed resolutions. And it got through in December 2018 and Trump signed it. So what happens from now?

Eric Steenstra: Yeah, so we've moved from this phase of fighting to get change to working with agencies on implementation. So, one of the things that 2018 Farm Bill did was it removed hemp from the Controlled Substances Act, as you mentioned before, and now it put it in the hands of USDA. So, USDA now treats this as an agricultural commodity and they are in the process of creating federal regulations that were mandated under the Farm Bill to allow for hemp production. Then they will also be working with state and tribal officials to approve plans there. So the way the system works now, the federal government can oversee a program for a state that doesn't want to regulate it, but many of the states have already got plans in place. So, I think a number of states, like Colorado, Kentucky, Oregon and quite a few others will have their own plan and will regulate it at the state level with an approved USDA plan.

Ralph Nader: Now, there are about 80,000 acres in the U.S. already planted with industrial hemp. Colorado is one of the leaders, but so is Montana. And New York State has about 2,500 acres or so. Tennessee has about 3,300 acres or so. Kentucky has 6,700 acres. So it's underway. More jobs are going to be created and companies like Interface Corporation or Patagonia are going to use more domestic industrial hemp for their clothing wear in terms of Patagonia and for the carpet tile, carpets of Interface out of Atlanta, Georgia. And it can be supported by the U.S. Department of Agriculture. Just like any other crop, it can get crop insurance. What do you think is the obstacle to rapid expansion? Because I know the auto companies want to use it for parts and the food industry is hot for it. Hemp milk is terrific, by the way, listeners. Is it the machinery that's complex because it's such a tough fiber? It's the longest fiber plant, I think, in the world. Is it the machinery? What is it that will hold it back from rapid expansion?

Eric Steenstra: Yeah. I think there's a few things that the industry is facing as challenges, and you identified one of them, which is the equipment to process the crop into raw materials that can be then made into products. So number one, there's sort of a technology gap, right? We haven't really worked with the crop in decades, and so there hasn't been a lot of research into new technology on how to process the crop for today's uses. So that's one thing. Also, investment--seeing companies come in and actually put up processing facilities. We're definitely seeing that the Farm Bill opened that door and a lot of new people that were sitting on the sidelines are coming in to invest and to process it. So that's a good sign. But some of the other challenges we're facing, you might be a little surprised about, like banking. A lot of banks have been wary to do business with hemp farmers and businesses. So, some people have had difficulty getting accounts set up or being able to sell online or that type of thing. Even advertising, companies like Facebook have blocked advertising for hemp companies and so the word hasn't completely gotten out. One other problem was transportation. The 2018 Farm Bill says that hemp can be transported across through any state even if the state doesn't have hemp legal at the state level. And yet we've seen some shipments of hemp that have been caught up in legal battles. So anyway, there are some things I think that'll hopefully get worked out here over time, but there are definitely some challenges for the industry to overcome.

Ralph Nader: Well, existing firms that have been using imported hemp have been very enthusiastic. I mean, you have Dr. Bronner's top-selling brand of natural soaps, for example, uses hemp seed oil in its products. Senator Ron Wyden had a good statement from Oregon; a big champion, he said, "Hemp products are now made in America, sold in America, and consumed in America." Now, after the legislation was signed, he said, "Hemp will be able to legally be grown in America to the economic benefit of consumers and famers in Oregon, and nationwide." How big is the market right now? That is before the bill was signed into law, how big was the market in dollars, using imported hemp, and what do you think the projections are?

Eric Steenstra: Yeah. So, the 2018 estimate for sales of hemp products was about $1.1 billion and estimates vary. There's a lot of activity going on, but I think that we're looking at probably like a $2.5 billion or maybe $3 billion market by 2022. So, it's growing pretty quickly and there's not only the fiber and the foods; , but also there's been a big market for the extracts of the flower, including cannabidiol or CBD, and some other compounds in there that have been found to have some really good health benefits.

Ralph Nader: Eric, tell us, why does it have to be licensed? I mean, you can grow tomatoes without having a license.

Eric Steenstra: Yeah, that's a great question. At this point, the federal government's approach to this was they felt it still needs to be controlled. They want to know who's growing it because of its relationship to marijuana, right? They want to make sure that the plants that are being grown are hemp varieties that aren't going to be used to get high or something like that.

Ralph Nader: If you were a legal marijuana grower, say in Colorado, would you want a farmer next to you growing industrial hemp?

Eric Steenstra: Actually, that's a great point. We had opposition from some of those legal marijuana growers to hemp in California, Colorado, Oregon, and some other states as well, because of a concern about pollen. So, marijuana growers are only growing the female plants and their whole crop would be at risk of loss if there was pollen from the hemp crop that would mix with that, which could cause it to go to seed or reduce its potency. And so, that's a great point; marijuana growers really don't want hemp right next to their crop.

Ralph Nader: I raise the issue because that was the argument used by the federal government's DEA prohibited list. They would say, "Well, the reason why we can't license industrial hemp is because it can provide camouflage for marijuana plants." Well, it would dilute the marijuana plants. Nobody would really want that.

Eric Steenstra: Yeah, and cause them to go to seed and who wants a marijuana with seeds in it? So it's a great point. The DEA had a number of arguments against hemp that really didn't have a whole lot of solid footing. So ultimately, we were able to overcome it.

Ralph Nader: Well, as you know, in World War II, the U.S. Navy had a big program using industrial hemp to manufacture rope, the tough rope that is needed on naval ships. We're talking with Eric Steenstra, the long-distance running president of Vote Hemp. If people want to get more information before we continue on, what's your website?

Eric Steenstra: It's www.votehemp.com.

Ralph Nader: Okay. There are about 3,600 licenses already issued by various states. Not all the states are doing this. How many states are in the business of licensing industrial hemp? And what about the other states; what's holding back Connecticut, for example?

Eric Steenstra: Yeah, that's a good question about Connecticut. So we had 24 states that had hemp licenses that allowed for hemp to be grown last year in 2018. I think we're going to see a pretty dramatic increase. And a number of new states have passed legislation this year to bring them into the fold. Texas has a bill sitting on the governor's desk. Iowa and Nebraska governors just signed bills. Most of the states are starting to wake up to this. So, the question in some of these other states that have passed legislation to allow it, but haven't implemented a program. I think once they start receiving maybe more calls from farmers and more pressure on this, I think a lot of the states are going to come on board. And our goal is to see all 50 allowing it.

Ralph Nader: People might want to know how lucrative a crop is this? In other words, compared to an acre of wheat/an acre of corn, what does it bring in right now? Isn't it more lucrative than a lot of other crops for farmers to grow?

Eric Steenstra: Yeah. So it depends on what you're growing it for, but I'll give you a couple of examples. So, if you're growing it for organic hemp seed, which is very nutritious as you noted earlier, it's currently bringing in about $1.15 a pound. And so that's a pretty nice return for farmers that are making more there with hemp than they would with corn or soy or some of the other crops that they're traditionally growing. And then when you move to these extracts market or CBD market, some of the farmers are reporting even higher returns. There's a lot more work; it's far more labor-intensive, but some farmers are making thousands of dollars in acres. So, it's definitely something a lot of farmers are looking at.

Ralph Nader: And what listeners may not know is you don't use much fertilizer or pesticide or herbicides with hemp. It's a very tough plant, isn't that right? Do you want to give us some specifics on that?

Eric Steenstra: Yes, generally, there's no pesticides approved for hemp and there hasn't been any really strong need for that. So that's a great point. And then also when it comes to fertilizers, if you use proper crop rotation practices, you really don't need to do a ton of inputs there either. And as far as the weeds are concerned, typically when hemp is planted like for grain or fiber, it gives a nice canopy and really shades out the weeds. As long as farmers are using good practices, you don't need a lot of chemicals to make it work.

Ralph Nader: And there's no sign that GMO fire breathers are planning genetically engineered industrial hemp; is that right?

Eric Steenstra: We're not aware of anything along those lines. We certainly have been opposed to that all along, so we hope that that'll continue to be the case.

Ralph Nader: So, what's the big expense, the machinery? If you grow just an acre, can you do it by hand?

Eric Steenstra: You could. I mean, you could plant it by hand; with sowing it and harvesting, it would be a lot of work, but that doesn't mean it couldn't be viable. So, an acre of hemp especially for the extract version, could be planted as more a horticultural model where you plant plants, then

tend and harvest them by hand. I think it could be successful. And then the guys that are growing for, say the seed, could use combines that are already being used for other crops by making some adjustments or slight modifications to make it work with hemp.

Ralph Nader: That's interesting. Who's producing the farm machinery for this?

Eric Steenstra: A few different companies out there. John Deere has some equipment and it's interesting, even some of the farmers have looked up older equipment from the '40s and before that has hemp settings on it and that type of thing. So, there's some old equipment that's available, but I think John Deere has produced some equipment that works with it. And then some other companies, newer up and coming companies like Bish Enterprises out of Nebraska, for example, has developed specific harvesting equipment perhaps, so we're seeing some investment in that area, too--people coming and wanting to help growers.

Ralph Nader: Well, the news keeps getting better. We've been talking with Eric Steenstra, the long-distance running president of Vote Hemp. I've been meaning, Eric, to call on Steve and David but they've been so excited that they've been ordering immediately from Patagonia their hemp shirts and chugging down hemp milk and they're not paying attention to the program. Hello, there. Anybody want to ask a question, David and Steve?

Steve Skrovan: I'm actually sitting in a bathtub of hemp seed oil right now, as we speak.

Ralph Nader: Go ahead.

Steve Skrovan: This is great news, Eric, and it must be so gratifying. I'm going to talk more about your own personal journey here. Vote Hemp was founded, I noticed, in 2000, so that's 19 years you've been at this. And I'm sure there have been ups and downs and setbacks and little wins and step forward, step back. How did you keep the faith?

Eric Steenstra: Yeah, that's a great question. We kept believing that this was the right thing to do and that it would be beneficial. And I think maybe if I had realized at the beginning it was going to take almost 20 years, I don't know if I would have started on the journey or not. But once we got invested, we felt like we wanted to finish the job. And so, it's really gratifying. We spent a lot of time meeting with congressional staff and just educating them on all the benefits of this and helping to bring them up to speed. And it felt like that helped lead to this sort of bipartisan support and the ability to get the votes that we needed to get this thing passed finally.

Ralph Nader: This is great news for Indian reservations. About a decade ago, federal agents descended in helicopters at dawn to rip out hemp plants from the Sioux Indian Reservation. And they were ruining a budding business by Native Americans. So, I think we're going to see more hemp growing on Indian reservations, correct?

Eric Steenstra: Yes. I'm so glad you brought that up. Alex White Plume was the farmer who had his hemp stolen by the DEA that you mentioned. And we worked hard to get the federal injunction removed so he could grow again. And he's been planting. In fact, I visited Pine Ridge Reservation last month and had a chance to meet with Alex and see where he's planting his crop and talk to him about that. And we worked very hard to make sure the tribes were included, as equals with states, in this version of the Farm Bill. So, tribes are now able to regulate hemp farming just as any

state would and we're excited that tribes will be able to derive economic benefit from hemp and utilize this important crop.

Ralph Nader: Is it correct that hemp doesn't need a lot of water?

Eric Steenstra: Yeah. I think maybe it's been oversold a little bit as like it grows with no water, and that's not really true. But it definitely doesn't need as much water as some other crops like cotton.

Ralph Nader: Not to mention rice.

Eric Steenstra: Yeah, absolutely.

Ralph Nader: Steve, David, any more comments?

David Feldman: Yeah, could you name-check some more corporations that are lobbying against hemp?

Eric Steenstra: I'm not really aware of any major commercial interests that have been lobbying against it. I'm starting to wonder now about pharma interests when it comes to some of the CBD products and that type of thing, but we didn't see a lot of corporate interests pushing back on this. It would have been probably hard to get done. It was mainly the DEA and confusion in some circles of law enforcement that really held us back.

Ralph Nader: I think, David, you're thinking the old paper companies that opposed it in 1940s because they saw it as a threat to their paper industry. Industrial hemp paper is superior to tree-produced paper. It lasts longer; it doesn't fade. I mean that's why some of the books that are 400 years old, 300 years old, you open them and they're in pretty good shape. A lot of it comes from industrial hemp production.

Eric Steenstra: Um-hum.

Ralph Nader: Well, let's wade into a real controversy. About four years ago, a booklet came out and the title was "Hands Off My CBD." Well, there are all kinds of claims formed against CBD. Do you want to try to clarify it for our listeners, Eric?

Eric Steenstra: Yeah. So, CBD or cannabidiol, which is phytocompound contained in hemp and other types of cannabis. And I think research has started to reveal that it's got some pretty incredible properties. It's been shown to have almost very little negative properties and a lot of benefits including helping to get rid of seizures for people with epilepsy, reducing anxiety. And basically, what you have to understand about cannabis and the human body is that the human body has what's called an endocannabinoid system; it's receptors in the body. And CBD and other cannabinoids in cannabis help to regulate what's called homeostasis or balance in the body. And so, people have been producing extracts from the hemp plant that contain CBD, other cannabinoids and terpenes, and those extracts have been found to be really helpful. A lot of people have been using them and finding them to help reduce pain and other issues that they've had and just to be really good in sort of generally regulating this homeostasis in their body.

Ralph Nader: But there's been some law enforcement action against selling it in some parts of the country and a backlash saying that the claims for it are overdrawn and it's not true and it may have some bad side effects. What's going on there?

Eric Steenstra: Yeah. Unfortunately, there's still some of this confusion, right? And so, there's maybe a perception that these hemp extracts have some connection to marijuana or somehow they're intended for people to get high, and that's not the truth at all. And so we've had some states where they still haven't gotten up to speed on the laws on this or where law enforcement has overreacted. And there have been some issues where people have . . . I heard something about a lady getting arrested at Disney World, a grandmother, with a bottle of CBD. So there's been some confusion and hopefully that's going to get cleared out here. I know FDA just held a hearing last week on this and we're hoping that they'll help to provide some clarity for the market.

Ralph Nader: Again, your website, and David, you have another question. But first, Eric, your website for people to get more information.

Eric Steenstra: Sure. It's votehemp.com.

Ralph Nader: And you also got it broken down by states, right?

Eric Steenstra: We do. So, we have a crop report on there. If you go to votehemp.com/cropreport, you can see that report that lists how many acres are grown in each state and it kind of shows you where the laws are. So, we've got a lot of other information, too, but the crop report is on there and a lot of people like that.

David Feldman: How easy is it to convert industrial hemp production into industrial marijuana production?

Eric Steenstra: Well, when it comes to producing the flower . . .

David Feldman: And I mean surreptitiously.

Eric Steenstra: Oh, yeah. I mean, the thing is, the way the state licensing works, there's different checks and balances. You have to have a test of your crop prior to harvest and other things like that. And what Ralph mentioned earlier, also the fact that you don't want to really grow hemp and marijuana nearby. It doesn't make a lot of sense; I don't think we're going to see that as a major problem.

David Feldman: But how similar are they in appearance?

Eric Steenstra: Very similar. If you're growing it especially for the flowers, they don't look so different. But there's other things in the licensing process that really makes it easy to tell if you're planting the right variety and then they do a test at the end of the season.

Ralph Nader: Well, this has been very optimistic, very forward-looking, Eric. We're out of time, but I think our listeners got the idea that persistence and civic action works. You got to go to Congress again; the Congress responded, Trump signed the bill. We're underway--a whole new crop spreading around the country. It's not located in Louisiana the way the rice industry is. It can be grown all over the place. And so, go to votehemp.org and get some more information. You can try it out on a small scale, a midscale or a larger scale. Any last comment, Eric, before we conclude?

Eric Steenstra: I just want to say a special thanks to you, Ralph, again for being an early and strong advocate for hemp and helping to educate people and bring this crop back. You took this on early when a lot of people weren't really aware or paying attention. So, all your efforts were greatly appreciated.

Ralph Nader: Thank you very much for that. And it's just an illustration that when people work together, especially conservatives and liberals, it's an unstoppable coalition. Thank you very much, Eric.

Eric Steenstra: Thank you.

Steve Skrovan: We have been speaking with Eric Steenstra, Executive Director of Vote Hemp. We will link to his work at ralphnaderradiohour.com. Now it's time to take a short break and check in with our *Corporate Crime Reporter*, Russell Mokhiber. When we come back, we will talk to Peter Bradford about the dangerous renaissance and attitudes towards nuclear power.

Russell Mokhiber: From the National Press Building in Washington, D.C., this is your *Corporate Crime Reporter*, "Morning Minute" for Friday, June 7, 2019. I'm Russell Mokhiber. The Justice Department's plans to investigate Google have been building over time amid a growing public conversation about whether the government should do more to scrutinize the handful of giant tech firms that dominate the U.S. landscape. That's according to a report in *The Wall Street Journal*. The department, last July, hosted a speech by Franklin Foer, author of *World Without Mind*: *The Existential Threat of Big Tech*, a book that raises alarm bells about Google and other tech giants that had built their dominance on the collection and use of big data. "There's so much hanging in the balance when we talk about their size and dominance, Foer told the Justice Department audience. "and therefore, so much is resting in your hands." For the *Corporate Crime Reporter*, I'm Russell Mokhiber.

Steve Skrovan: Thank you, Russell. As I said at the top of the show, I have noticed in the last few months a number of op-eds in mainstream publications like the *New York Times* and others that are trying to make the case that nuclear power is an answer to the climate crisis. We've done a number of shows on this and looked at it from various angles. And I'm looking forward to hearing what our next guest has to say about it. David?

David Feldman: Peter Bradford is a former member of the U.S. Nuclear Regulatory Commission and the former chair of the New York and Maine Utility Regulatory Commissions. He has taught at the Yale School of Forestry and Environmental Studies and is currently an adjunct professor at Vermont Law School where he teaches nuclear power and public policy. He is Vice Chair of the Board of the Union of Concerned Scientists and is the author of *Fragile Structures*: *A Story of Oil Refineries, National Securities and the Coast of Maine*. His latest article is entitled "When the Unthinkable is Deemed Impossible: Reflecting on Fukushima. Welcome to the *Ralph Nader Radio Hour*, Peter Bradford.

Peter Bradford: Thank you. It's good to be back.

Ralph Nader: Peter, the *New York Times* published an op-ed not long ago called, "Nuclear Power Can Save the World: Expanding the technology is the fastest way to slash greenhouse gas emissions and decarbonize the economy". It's by three authors; two of them are authors of a book called *A Bright Future*: *How Some Countries Have Solved Climate Change and the Rest Can*

Follow. That's Joshua Goldstein and Staffan A. Qvist, and it's signed by this prominent psychology professor at Harvard, Steven Pinker, who is considered the world's greatest pie-in-the-sky optimist. But you were reading all of this and you've got experience in regulating utilities; you were on the Nuclear Regulatory Commission in Washington. What's your reaction? How would you rebut this argument, which even a few, not many, environmental groups have adopted?

Peter Bradford: Well, when you hear a title like "Nuclear Power Can Save the World", you have to think of the old story of Groucho Marx when a man burst into a hotel room and finds Groucho in bed with his wife, and Groucho leaps out and says, "Who are you going to believe, me or your eyes?" If you look at nuclear power's actual track record, and especially the effort to build new reactors in the U.S. over the last 20 year, it really paints the opposite picture, and it paints it very clearly. When the Bush Administration sought to launch a nuclear renaissance in 2001 and '02, the Congress passed all the incentives that the industry was then asking for and a number of state legislatures threw in even more. And the result was that there were 31 applications pending or immediately expected at the NRC [Nuclear Regulatory Commission] about 10 years ago, early 2009. Of those 31, 29 are cancelled or indefinitely deferred, some after billions of dollars were spent on them. Two are still under construction. They're far over budget; they're far behind schedule. So, what that means is that far from saving the world, the U.S. has not avoided a single molecule of carbon emissions with a new nuclear power plant in the 21st Century. However, we spent a great many billions of dollars that would have avoided a lot of carbon and created a lot of jobs if it had been spent on energy efficiency and more on renewable energy. Well, they couldn't really build . . .

Ralph Nader: Without government guarantees, right?

Peter Bradford: That's also correct; not just government guarantees, but actual changes in regulatory policy such that the customers had to pay for while they were being built, whereas historically, customers hadn't been charged for utility investment until it's actually serving them. And that's of course true of everything else in the economy, too. You don't pay the mill that's under construction for the price of paper; it starts making money when it starts producing. But not these nuclear plants. They all made a profit even though they turned out to be holes in the ground.

Ralph Nader: Yes. Well, let's say you were arguing against these writers. What would be a few of your arguments? Because we know that a nuclear plant in the U.S. is now sometimes 15 years or more. The Georgia plants are way over schedule and they just got another infusion of $3.5 billion of taxpayer guarantees for bank loans; they're so over-budget. But if you take the money that these people want to invest in nuclear power "to save the world", where else would you invest it in terms of a much better deal?

Peter Bradford: Well, in terms of a much better deal both for electricity customers and to avoid carbon emissions, you'd invest it in combinations of renewables, of energy efficiency. And now energy storage is becoming increasingly a feasible part of that package and in terms of improvements to the utility, transmission and distribution grids. And what we're seeing now in the power markets, to the extent we have them in the U.S., is combinations of renewables are bidding in at 3 and 4 [cents a kilowatt hour]; if storage is included, maybe 5 cents a kilowatt hour. Whereas the cheapest that anyone is proposing to build a new nuclear reactor is up in the 13, 14 cents a kilowatt hour range and they haven't even proven that they can finish one at those prices. So, what happens when a state makes a commitment to a thousand 1500-megawatt chunk of power to form

a new reactor, is that it freezes out a lot of the technology that is working and that's declining in cost in favor of setting aside a big block of its electric sector for a technology that's increasing in cost and that doesn't come online with the kind of urgency that fighting climate change requires. I mean, if the money we'd spent on new nuclear since the year 2000 had gone into efficiency and renewables, it would have avoided all kinds of carbon emissions at much lower costs than the nuclear plants would have. And in fact, since the nuclear plants weren't finished, it would have avoided carbon emissions that the nuclear plants just haven't avoided. Basically, with the commitments to new nuclear are a commitment to a very expensive way of solving the problem. And when you do it that way, you buy less of what you need than you would if you bought the lowest cost alternatives first. It's like trying to solve world hunger by investing heavily in caviar.

Ralph Nader: Well, the argument also in this column is that we got new nuclear plants coming online. They're standardized, they're smaller, they're more efficient. I've been hearing this for 30 years. Is there anything new coming compared to what is already on the ground in terms of nuclear reactor designs?

Peter Bradford: Well, technology they are, to some extent, new. Well, I mean the idea of building small reactors of course isn't new; it's where the industry began. And for many years, their argument was always we have to get bigger; we have to get bigger so we can spread the high costs over more kilowatt hours. Now they've reversed themselves because the big plants just haven't met expectations and they've gone back to arguing for smaller ones, granted the smaller ones have some design improvements to them. But what's missing is any proof that the smaller ones will in fact be less expensive or operate more efficiently than the big ones. All we're dealing with right now are vendor-cost estimates. That is the promise is made by the people who are desperate to build the reactors to convince the Congress and others to subsidize them. And vendor cost estimates have a terrible history in the nuclear industry. They are never met and they're usually under-statements by a factor of two, three, even four times what the plants would actually cost in the end.

Ralph Nader: In other words, if they say a plant costs 4 billion, it could end up costing 16 billion?

Peter Bradford: Yes. That has happened. In fact, if you look at the Shoreham plant on Long Island, in New York, the original cost estimates were on the order of $600 or $700 million. The plant, though it never ran, was finally abandoned after $5.2 billion had been spent, so a factor of about 8 (about 8 what?). And there are some others in that league as well.

Ralph Nader: The authors in this *New York Times* article say, "The reality is that nuclear power is the safest form of energy humanity has ever used." That's their quote. Do you want to respond to that?

Peter Bradford: Well, it clearly is not as safe as they would have you believe. When people write things like that, they invariably ignore the radiation exposures that occur as a result of the nuclear fuel cycle as a whole and the deaths, for example, of uranium miners. And the epidemiological statistics on exposures around nuclear sites are controversial; there are firm believers on various sides of that. I wouldn't argue that nuclear is safer than coal, but of course that's not the only comparison by a long shot. And we just don't have the kind of thorough analysis of the full health effects of the fuel cycle that would let one make that statement with the confidence that they do. In addition, you have to take into account the extraordinary nature of nuclear accidents, not just in

terms of short- and long-term health effects. Certainly, anyone who's been watching the HBO series, “Chernobyl”, realizes something about both the immediate effects of worst-case accidents and the fact that the health effects go on appearing for decades afterwards. But there's also the entire issue of damage to land and damage to the economy. Nuclear accidents are unique in that respect in their ability to take huge swaths of land out of productive use and to do immense economic harm. Just look at the situation around Fukushima plants where many of the thousands and thousands of people who evacuated have yet to be able to return to their homes eight, nine years later, and may not be able to for another decade or two.

Ralph Nader: One of the arguments against nuclear power is the storage of radioactive waste, which could be deadly for a quarter million years or more. And in this article, the author signed on to, say, "Nuclear waste is compact. America's total from 60 years would fit in a Walmart and is safely stored in concrete casks and pools, becoming less radioactive over time." Reaction?

Peter Bradford: Well, it's hard to take that seriously. That sure isn't a Walmart you'd want to go anywhere near. But beyond that though, the issue with nuclear waste has never been its volume, with spent nuclear fuel; it has never been its volume. It's that it's highly radioactive and that it has a significant heat load and that heat load makes underground storage difficult because of its potential interaction with any water that may be in the vicinity. I mean, there are good reasons why we've had such a hard time finding a suitable repository. Some them geological as in the case of the salt domes in Kansas, some of them part geological and part political as like Yucca Mountain.

And the nuclear folks have a tendency to say, "Well, the political objections, those aren't legitimate." But in fact, they’re as much a part of the landscape that is the geology. If people don't want a repository, it's going to be somewhere between difficult and impossible to find one. That's not to say it can't be done, but the processes that we followed in the U.S. just hasn’t worked out. Essentially, we looked to Congress, the Nuclear Regulatory Commission and the Department of Energy to pick a place; ultimately, they picked Yucca Mountain [in Nevada] and then crammed it down the state’s and the residents' throats. And it's not clear when we're going to derive a set of processes that will actually obtain consent to put it in a place where it can be disposed of safely.

Ralph Nader: The authors just recklessly ignored the spent pools with spent fuel rods that are in water pools next to every nuclear plant; there are about 98 in the U.S., waiting for some permanent repository underground or propelled into outer space. Is it true that these pools that have these spent fuel rods are extremely risky situations, not just sabotage but otherwise?

Peter Bradford: 98 last week, 97 this week with Pilgrim [in MA] having just closed and we should talk about the operating reactor situation at some point. But as to the spent fuel pools, there is a potential hazard with the spent fuel pools in the event that the cooling water flow is somehow interrupted. It would be better, but the NRC has refused to do it--to adopt policies that require the spent fuel beyond a certain age, five years is often suggested, to be put in the dry cask storage. You'll still have the issue of every reactor site acting as its own long-term spent fuel storage facility, which certainly wasn't what the local people were promised at the time the reactors were being built, but it would be a safer configuration than relying on the pools indefinitely. And a number of companies are in fact doing that, although they're not doing it at the pace that would be most desirable.

Ralph Nader: Well, let's talk about the existing operating plants. One of the things that pro-nuclear power people have trouble with is symmetry of time. They want to get carbon emissions down fast with nuclear plants that take 15 years at least to build when you can have energy efficiency right now building up from day one, among other things. Wind power gets online much quicker, solar panels get online much quicker. And the insurance companies just won't insure nuclear plants without essentially a government guarantee under the Price-Anderson Act. But even the existing nuclear plants, which supply just under 20% of U.S. electricity, are having trouble, and one of the reasons is they're closing down. Do you want to elaborate on that?

Peter Bradford: Yeah, when the existing plants were built and for that matter, when the proposed new ones were being put forward, the argument generally was, yes, they're expensive to build, but they're really cheap to operate. And you'll be glad that you have them later on in their lives when they'll be much cheaper than fossil fuels and the other alternatives. Well, here we are later on in their lives for sure and what's happening is not that we're celebrating their inexpensiveness; what's happening is they're coming in with their hands out, saying, "Guess we miscalculated. We can't compete with the alternatives in the power markets that have been created in the last 20 or 25 years. And we've got to have rate increases, surcharges really, put on the customers just to keep us in business. And the reason you should do this is that the power markets don't appropriately value our low-carbon reliability characteristics." But that's baloney. I mean, the power markets work very well in terms of doing what they're asked to do and they could be asked, without much difficulty, to reward low-carbon. They do reward reliability and fuel diversity. And then we'd see just which types of facilities were available to provide low-carbon energy. My conjecture is that given where the price of renewables and efficiency has gone over the last 5 to 10 years, especially now that we have storage options as well, is that the operating reactors would fare poorly in a fair competition like that. But instead, they've gone into the state capitals in Pennsylvania, Illinois, New Jersey--and now they're trying in Ohio and Pennsylvania--to do what they do best, which is these massive political cattle drives in which they seek to scare legislatures with horror pictures of job losses, tax losses and loss of reliability, unless the customers pay some very substantial surcharges for the specific purpose of keeping the nuclear plants in business. It would be hard to object if the purpose of the surcharges were to pursue more low-carbon energy. But the nuclear industry doesn't want that because then it would have to compete with the other low-carbon sources. And it knows that it might be able to do that for a year or two but it probably can't do it for 5 or 10 years.

Ralph Nader: There's no limit to the industry's arrogance. They're now pushing, as you say, for bailouts essentially. Upstate New York, "Hey, we're in trouble," Governor Cuomo, "Okay, we'll shore you up on the backs of consumers and taxpayers". You had an article in a Utah Paper recently, May 21, where you talked about Utah's nuclear power plan being doomed to fail. And this plan is being pushed by municipal power systems in Utah. Can you explain why it's doomed to fail?

Peter Bradford: Well, it's actually being pushed on municipal power systems by their umbrella buying and they joined together to form a wholesale entity, which has bought into this small modular reactor visions of sugar plums emanating from the would-be vendors and from the Department of Energy. A number of the municipals have bought into it, and that was true during the nuclear construction in the '70s and '80s too; when the costs began to run away, the industry went to places like the Rural Electrification Administration and said, "Can't you get the co-ops and

the municipalities to take bigger shares in these plants in return for the subsidized loans that you pass out?" And for these little systems, they'd seen the chance to kind of hang out with the big boys and get on board what looked like a train pulling out of a station, but in fact was something more akin to the Titanic. And a number of them did climb on board just in time to bankrupt themselves because they don't have stockholders to lay costs off against and the customers rebelled once they realized what was going to happen in their rates. And the Utah municipals are making the same mistake that the state legislatures are making with regard to the existing plants. If they buy in to this small modular reactor project, they're being asked to do it without running any kind of meaningful competitive procurement. And they're in a part of the country that has a terrific solar resource and has access to good wind resources as well. So, all they've got to do is apply the lessons we've learned in power procurement and power marketing over the last 20 or 30 years and it'll reveal how the asking price of the small modular reactor compares with the contracts that the renewable and efficiency people are actually willing to sign. The SMR [small modular reactor] people will never sign a contract with a firm price commitment anywhere near the vendor cost estimates that they're talking about now.

Ralph Nader: David and Steve, do you have any comments or questions to ask Peter Bradford?

David Feldman: Well, I hate to bring up pop culture, but the series, "Chernobyl", on HBO could possibly put the final nail in the coffin for all this, far more than what *The China Syndrome* did back in the late '70s, early '80s. "Chernobyl", the series on HBO, is going to be the most watched television show in HBO history. It's the highest rated, the best reviewed. Have you seen it yet?

Peter Bradford: I have. I'm astonished that it's done as well as it has with the general viewership, because it's, at times, of course quite a dark story and quite a specialized, and I found it absolutely riveting.

David Feldman: And the visuals.

Peter Bradford: It is a docudrama. Yes, I think it makes things real in a way that print journal just can't. At the same time, it is a docudrama; not everything in it happened exactly the way it's described but a lot did. And of course, also now that there are a lot of people viewing it who weren't even alive at the time of the Chernobyl accident . . .

David Feldman: How much easier is it going to make your life and Ralph's life and Steve's life in fighting these reactors? Because I think we're underestimating the power of this series. It is going to end up being bigger, in terms of numbers, than "Game of Thrones" [TV series].

Ralph Nader: Are you serious?

David Feldman: Yup.

Peter Bradford: I don't know about making lives easier versus harder; you can anticipate that the industry will respond by . . . they're saying the same things now that they said at the time of the original accident, that that reactor type doesn't exist in the West, and that the Soviet safety culture was just awful and that nobody would run a plant that way. So, on the other hand, that kind of offensive didn't do them much good at the time of *The China Syndrome* because that movie was followed so quickly by the Three Mile Island accident. My guess is that it will make a substantial difference because the contest between nuclear renewables and efficiency is tilted in the direction

of renewables and efficiency anyway. I mean, the public has the sense that there are dangers associated with nuclear energy that are not associated with other low-carbon energy sources. And Chernobyl will confirm that pretty strongly, and even conceding all the points about how we're not building RBMK reactors anymore and never did build them in the West. It gives you a sense that there is a lot of this very dangerous, potentially explosive - in a non-nuclear explosive sense - although I guess in Chernobyl they actually did have a brief nuclear explosion to go with the steam and hydrogen explosions.

Ralph Nader: Yes, they did. I think part of the dread and fear comes from you can't go home again. I mean, there are many square kilometers around Chernobyl that are uninhabitable and they're going to be for the foreseeable future. And the other is that you can't see, feel, touch [or] smell radiation and it's not good for you. So, that's part of the fear and it's just [that] the sensory perception of human beings relies on seeing and something that triggers a reaction like you're seeing a fire and you run away from it or you mobilize to put it out. And nuclear power can never escape that. I mean, it's amazing what political power of corporations can do. Nuclear power cannot compete with energy efficiency and job production. It cannot compete with the safety and efficiency of wind power and solar energy--all the way from photovoltaic to passive solar; it cannot compete with natural gas. It cannot compete with laying off the backs of the taxpayer. It's basically constantly subsidized, constantly loan-guaranteed by the federal government, and still its promoters have this arrogance that they're going to save the world and deal with climate disruption if we will only wait 15 to 100 years to build all these nuclear plants, any one of which could contaminate an area the size of Pennsylvania with a Class 9 meltdown. That estimate came from the Atomic Energy Commission back in the 1950s.

Peter Bradford: Right. Yeah, I think it may, at this point, be equal parts arrogance and desperation because what's really shifted in the last decade is the pervasive availability of renewable energy alternatives and the storage also. I mean, a fair part of the public's acceptance of nuclear industry arguments, and still I think of Congress and state legislators' acceptance, is because those are lubricated by campaign finance and have always rested on the argument of "Well, whatever the difficulties, you don't have a choice. It's us or coal." And now, that just isn't the case anymore and people, when they travel anywhere in the U.S., are going to see solar panels; they're going to see wind facilities. They're going to have neighbors who installed their own rooftops or systems and there's a spreading awareness that there really are more benign choices, and that creates a different political landscape. It takes a while but it's certainly happening.

Ralph Nader: Well, thank you very much, Peter Bradford, former NRC commissioner, former head of the New York State Public Utility Commission, former head of the Maine Public Utility Commission. To be continued. Thank you, Peter.

Peter Bradford: Okay. Thanks, Ralph.

Steve Skrovan: We've been speaking with Peter Bradford. We will link to his work at ralphnaderradiohour.com. I want to thank our guests again, Eric Steenstra and Peter Bradford. For those of you listening on the radio, that's our show. For you podcast listeners, stay tuned for some bonus material we call the Wrap Up. A transcript of this show will appear on the *Ralph Nader Radio Hour* website soon after the episode is posted.

David Feldman: We have a YouTube channel. Also for Ralph's weekly column, it's free, go to Nader.org. For more from Russell Mokhiber, go to corporatecrimereporter.com.

Steve Skrovan: And as you probably know by now, regular listeners, Ralph has got two new books out, the fable, *How the Rats Re-Formed the Congress*. To acquire a copy of that, go to ratsreformedcongress.org. And *To the Ramparts*: *how Bush and Obama paved the way for the Trump presidency*, *and why it isn't too late to reverse course*. We will link to that also.

David Feldman: The producers of the *Ralph Nader Radio Hour* are Jimmy Lee Wirt and Matthew Marran. Our executive producer is Alan Minsky.

Steve Skrovan: Our theme music "Stand up, Rise Up" was written and performed by Kemp Harris. Our proofreader is Elisabeth Solomon.

David Feldman: Join us next week on the *Ralph Nader Radio Hour* when we speak with journalist, Katherine Eban, about her book, *Bottle of Lies*, about the generic drug boom.

Steve Skrovan: Thank you, Ralph.

Ralph Nader: Thank you, everybody. Another example, listeners, how do we get industrial hemp legalized to be grown in this country by U.S. farmers? Congress. We put the pressure on; Congress finally responded. Just think of all the good things that can happen in our country if we get Congress under the control of the people.