

Powered by Marsh FINPRO

Episode 8

Nuclear industry trends and risk strategies

Sarah Baldys

Welcome to the Marsh *Powered by FINPRO* podcast. Through a series of interviews with experts from across the energy and power industry, this podcast will examine key challenges and opportunities brought by the energy transition and how to approach and manage the evolving management liability risks this transformation brings. I am Sarah Baldys, US Power and Renewables leader at Marsh's Financial and Professional Liability Practice, and I am pleased to introduce the host of the *Powered by FINPRO* podcast, Grace Brighter.

Grace Brighter:

This episode, we are very happy to have Everett Hansen, Vice President and US Nuclear Energy leader at Marsh McLennan. Everett joined Marsh in 2023 as an energy and power advisory specialist and as of recently was appointed for leading and managing the largest and most diversified team of specialty colleagues supporting all US nuclear energy industry clients in the US and around the globe. Everett is latest in an unbroken chair of nuclear energy industry specialists to hold the role, a record of continuous commitment to industry, which began with the very first nuclear liability insurance policy placed in the US, including the creation of NEIL, the first direct utilization on foreign markets for domestic nuclear risk, and the placement of every new nuclear construction project in the last three decades. Everett brings a decade of operational, brokerage, advisory and engineering experience in the nuclear energy risk and insurance management to his new role.

Prior to joining Marsh, he served as a naval nuclear submarine warfare officer in the US Navy. We are still lucky to have him here with us today. Hey Everett, thanks for being here today. Everett, before we deep dive into all things nuclear, we just first wanted to congratulate you on your new role. We're super excited for you and I know I sort of outlined your role when introducing you, but could you explain what this new position really means for you? What are you responsible for as US nuclear energy leader here at Marsh? And also, can you let us know if there's anything you're really hoping to prioritize in this new role as we are now entering the second half of 2025?

Everett Hansen:

Yeah, thanks, Grace. Really appreciate the opportunity and I'm excited as well. I'm excited for the industry because there's a lot to be excited about in nuclear power today in the United States and more broadly from a global perspective, and I'm excited for our clients because they've been doing great work centered around nuclear power now for decades, and there's a lot of recent development, which I'm sure we're going to talk about here throughout the rest of the podcast where we see a lot of opportunity for future growth and really a nuclear industry that potentially looks a lot different than it has in the past and is producing a lot of power for the benefit of all. Marsh has historically maintained a nuclear industry practice, a nuclear brokerage practice to align our services and our subject matter expertise around a class of risk, that being nuclear power generation, which has always required a little bit of a special treatment broadly within the insurance industry. Nuclear assets are unique for a number of reasons, and they require specialty underwriting and risk engineering subject matter expertise in order to properly assess and ultimately transfer associated risk in the insurance marketplace. We've been supporting that effort here at Marsh for decades. I am just the latest in a long line of those that have provided that service to our clients and to the industry, and I'm really excited to be continuing in the role.

Grace Brighter:

Great. Thanks for that overview, Everett of just Marsh's nuclear practice as a whole and getting a little bit into nuclear insurance. It definitely is a unique space

compared to some other traditional types of insurance, but just curious who really needs nuclear insurance?

Everett Hansen:

So, when we use the word nuclear insurance or we're talking about nuclear risk, we're really talking about what the industry refers to as the nuclear energy hazard, and that is a hazard risk both from a property and a liability perspective that's centered around nuclear material. When you're talking about a nuclear power plant, you can think of nuclear material as the fuel that goes into the plant to ultimately make power. This class of risk, nuclear risk is something that's historically been treated by a very select group of insurers. Broadly, they are mutuals or group captives or what we call reinsurance pools that have the expertise to effectively underwrite these risks and, in some ways, manifest themselves as self-insurance. You have an industry with risks that are not particularly favored elsewhere in the commercial insurance market and that industry is pooling those risks and ultimately ensuring itself against nuclear causes of loss.

I think when people think about nuclear energy or maybe negative public perceptions associated with nuclear power production, they tend to think about headline events that have occurred throughout history. There are not many of them, but there are a few that are well known and recently publicized in the media such as Chernobyl and Fukushima, and those types of events are really nuclear power on its worst day. That's not representative of what nuclear energy is and all of the great benefits that the public reap from the production of power via nuclear sources of energy. And that's where this specialty market has the focus, the market's changing. I can talk a little bit more about that as we go on, but that's sort of how the industry has coalesced around a specific type of risk.

Grace Brighter:

Great. Thanks for that overview of the industry. Everett. Super insightful. We have a wide range of listeners for this podcast, therefore we kind of want to start with the basics as it relates to nuclear for maybe those who aren't familiar with the industry its growth or some of the key developments that have occurred recently in the sector and there's definitely a ton to cover here. So, could we maybe start with just helping us understand the lay of the land relating to nuclear energy in the US. Maybe just walking through some of the basic

principles, how is nuclear energy generated and what's its role in our country's energy mix?

Everett Hansen:

Yep, absolutely Grace, just to simplify things and provide an overview of how all this works and what the industry has looked like from a historical perspective and what we think it might look like going forward. Nuclear power generation is very simply when you use a nuclear reactor to produce steam that ultimately spins a turbine and makes electricity. Fusion reactions, or the splitting of atoms provide the energy that drives that process and that process is very energy dense. So nuclear reactions, I think pound for pound are about a hundred thousand times more energy dense than an equivalent coal burn and they're capable of producing electricity around the clock, so we call that baseload power production, and you can run a nuclear reactor in the middle of the night, you can run a nuclear reactor in the middle of the day and it doesn't matter if the sun is shining or the wind is blowing and the fuel sources last a very long time on the order of 18 to 24 months, depending on what type of technology you're talking about before, you have to replace fuel and keep the reactor running.

In the United States and globally, nuclear generating stations have historically been large point sources of electrical generation, so on the order of gigawatt scale generation and very much fixed in place. Right. I highlight that because that's somewhere we might see the industry changing. Those reactors or the legacy fleet are operating today, there are 94 operating reactors in the US. It's about a hundred gigawatts of total capacity, and those reactors produce about 20% of the electricity that is consumed in the US. There are new developments and there are other areas of nuclear industry that are changing and that we're paying attention to and we're excited to support. The second when compared to the legacy fleet are we'll call restarts, right? So, these are legacy sources of nuclear generation. They're power plants that have been shut down with the intention of decommissioning. Some of those plants are being evaluated commercially to be restarted, to be brought online and make electricity as they were before they were originally shut down for decommissioning.

So that's really exciting and that's a first for the US nuclear industry. Haven't seen a restart yet. There's one company who pledges or plans I should say, to do

that before the end of 2025. So, this is a near term, a near term potential for the industry. There are others that are on the horizon, maybe two to three years out, but a lot of potential for additional generation there with assets that already exist. And then the third sort of sector is new nuclear construction. New nuclear construction looks like a lot of different things depending on what particular opportunity one is investigating. So new nuclear construction could be the construction of legacy assets or gigawatt scale assets. We saw that most recently with Vogel units three and four in Georgia or nuclear construction could be new technology, whether that's an advanced reactor type that maybe uses a key engineering technology that isn't present in the US generating mix today, or US nuclear generating mix, molten salt is a good example. Whether that new technology is maybe a scale down of an existing gigawatt scale technology or a modular technology or a mobile nuclear generation source, there's a lot of possibility and we're excited to see those developments and excited to be supporting.

Grace Brighter:

Great. It sounds like a lot of growth in the industry since inception and a lot of recent trends that you mentioned I'm sure, which are always changing, but very helpful to get the latest there. I would say many people, including myself, may be a bit more familiar with some of the other alternative energy resources such as solar wind. Would you be able to speak to the efficiency costs and environmental impact of nuclear and maybe go into detail about how they differ from these other energy resources? In other words, maybe some pros and cons?

Everett Hansen:

Yeah, absolutely. And I think Grace, you touch on a question that a lot of people have and that question is, 'is nuclear energy a clean technology?' Or, 'is nuclear energy a zero-carbon emission technology?' I think some of those answers are a little bit clearer than others. So, it's certainly true that the operation of a nuclear power plant is a carbon free source of electrical generation. There's no CO₂ that's produced in the operation of a nuclear power plant. So very much fits in with clean energy initiatives or maybe how technologies are classified as being clean sources of generation. There are some counter arguments to that point, and I think a lot of them or a lot of what raises questions are centered around the fuel risk or the risk associated with nuclear material that is required to produce power with

a nuclear reactor. Those types of materials are eventually fully utilized and no longer capable of being put to work to produce power and spent nuclear fuel does require special treatment.

It requires special handling in order to ensure that the public remains safe because these materials are not something that you can hold in your hand. I don't think that necessarily makes nuclear technology, and this is my personal opinion, I don't think that makes nuclear energy or nuclear technology a non-clean technology. There are a lot of intended byproducts from other types of generating sources which we consider clean. I'll use solar panels as an example. Eventually one day those panels will no longer be put to use for producing power. They'll become a waste product and there certainly can be environmental concerns with the disposal of those pieces of equipment. Same thing with wind turbine generators, right? As an example, there's a lot of oil that's inside of those systems in order to support their function and that could be considered an environmental hazard or maybe a waste product ultimately once those assets are no longer producing power. And so, when you take a step back and consider that point of view, I think that nuclear energy is very much a clean technology, clean source of generation and should definitely be included in the clean technics in people's minds. And there are a lot of regulatory frameworks that are present in the United States to incentivize the generation of clean energy via nuclear, which I think agree.

Sarah Baldys:

Hey Everett, thinking about the role of nuclear in the energy mix for United States, there is so much that we are expecting in terms of energy, electricity demand and demand for energy, and a new report by the National Electric Manufacturers Association in April of this year, estimated demand to increase 2% annually and 50% by 2050. So, thinking about nuclear, which is often cited as a key piece of potentially the solution to address this demand for electricity, and I think people often even think of the role of data centers and AI and technology. What do you see? What do you think the role of nuclear could be in potentially needing the demand for electricity?

Everett Hansen:

Yeah, absolutely. Sarah, you mentioned applications of nuclear energy and big tech, right to power data centers or AI. And I think the reason that nuclear enters those

types of conversations is because those operations, data center operation, or even just the servers that support artificial intelligence use, and I don't profess to be an expert on artificial intelligence by any means, but I do know that those processes are incredibly energy intensive. So, they require massive amounts of energy to support, and they're coming online at rates that are much greater than have ever been seen, right? It's a technology that's becoming a greater part of all of our lives, and in order to effectively power those assets, you need a lot of energy. And I kind of touched on earlier, nuclear generation is incredibly energy dense. So, in a relatively small footprint, I'm talking a geographic footprint, you can produce a lot of energy sometimes directly situated next to the assets that ultimately need to consume that energy in order to support them. Legacy sources of generation are not particularly adept at doing that because they're massive pieces of infrastructure that are sitting in place where they were originally built new or advanced nuclear technologies term small modular reactors sometimes comes into play here are or maybe more flexible or more adept to provide power on demand where needed for whether data centers or servers that support artificial intelligence and the like, because they're scalable and they're handling more compact than what nuclear sources of generation have historically been in the United States and globally

Grace Brighter:

On this podcast and previous episodes, even this one now, a lot of these conversations really always seem to come back to the same thing, this demand for energy, and it's definitely not going away anytime soon. So, with that in mind, what does the investment landscape really look like as it relates to nuclear?

Everett Hansen:

Yeah, absolutely Grace. I think the one thing that investors have right now in the nuclear space is options. There are so many new entrants to the space who are bringing new thought leadership, new designs, new technology, and it's not just reactors, right? There are certainly plenty of those plenty, plenty of newer companies who have new reactor designs that they'd like to see out there producing power for industry. But it's also a whole host of supporting suppliers and vendors throughout the US and more broadly globally who enable those designs to come to fruition. So if you're an investor, you have a lot of choice and you don't even necessarily have to invest in the nuclear

industry, but you can make your investment in nuclear adjacent industries, let's say the technology industries for which we are thinking that maybe nuclear will play a pivotal or supporting role and indirectly or maybe in concert with investments in ancillary industries support the nuclear industry because there's confluences that are emerging, which historically just haven't been present.

Grace Brighter:

So, Everett, can you speak a little bit about the regulatory oversight of the nuclear industry? Is this regulatory oversight a challenge for the build out of new nuclear and do you see this potentially impacting investment in this space?

Everett Hansen:

Yeah, sure, Grace. So, for those that maybe aren't familiar and do a quick base on the US Nuclear Regulatory Commission does regulate both the construction and the operation of nuclear generating assets in the United States. Their regulatory remit is actually much than just power generation for the purposes of this conversation. And we think about nuclear energy as a source of power. The NRC are the regulator, and when we talk about challenges of regulation, it's really from my perspective, just adaptation and maybe the speed at which the regulator is able to move to support the regulation of technologies which haven't been put forth before. The NRC is incredibly effective at regulating the, excuse me, the legacy generating assets that are pushing power to the grid today. Those types of assets are very homogenous. Like we mentioned, they're all large, mostly gigawatt scales, point sources of production. They're all pressurized or boiling water reactors.

So, the technologies are pretty similar. They're obviously nuances depending on which specific technology you're talking about, but in general, they're all pretty similar from a physics perspective and a lot of what we see coming to market doesn't look like legacy generating sources. They don't look the same because they're smaller. Maybe there's key differences in design, and the regulator has to consider all of these things because ultimately the American public rely on the NRC to ensure that the industry is safe, and the NRC is working on that, right? And they actually have a mandate from Congress in the form of what's known as the Advance Act. It's a piece of legislation that was passed last year, 2024, which sort of puts forth a

challenge to the regulator to come up with ways to fast track some of the rather lengthy or road processes that are involved in granting a construction permit for a new nuclear build or granting a new operating license. Not to the extent that those processes make nuclear generation or the approval of new nuclear operation in the US any less safe than it is today, but to maybe challenge some of the assertions that have existed from an historical perspective in order to help new entrants get to market.

Sarah Baldys:

Everett, listening to you kind of describe the regulatory process and thinking about some of the potential complexity there and potentially in the construction involved in some of these nuclear projects as well. It also, thinking about the growth that you've described in this sector and the amount of investment, it just makes me think about, I guess my mind jumps to emphasizing some of the things we think about in when we think about directors and officers and executive liability and thinking about protecting the company and the executives from D&O risk and litigation and how important it is to ensure that all of your public statements around things like construction timelines, costs, where you are in a regulatory approval process, how important accuracy and frequency of clear communications with your investors is just so vital to managing that executive liability risk. And I think we all appreciate when you're a growing company and you're on the path of trying to get investment dollars, you always want to paint your company in the best light. At the same time, it's always important to be really mindful of you're navigating sort of a complex timeline with these construction projects in this nuclear space, and so taking extra care to have really robust disclosure practices in place seems to be something that really should be front of mind for your clients.

Everett Hansen:

Absolutely, Sarah, and I think this is where from the Marsh perspective, we add a lot of value. We work cross collaboratively with our colleagues and other specialty industry practices in this particular case, nuclear being one and FINPRO being another to ensure that our clients have full visibility of the risk continuum. And I think that's something that's a really powerful offering for us to be able to make and really helps to de-risk an organization over its lifecycle. We see so many in this space that are startups, right? Some of them in their first year of operations, and we're working with

many others that were in that same place maybe 10 or 15 years ago and are getting ready to break ground on a new nuclear reactor. The amount of change that's manifested to those organizations over such a relatively short period of time, and certainly the evolution of the risk landscape, I think is really significant. And when we're able to collaborate across specialties, we find that we help our clients maybe see risk at certain points of intersection that might otherwise go unnoticed or perhaps untreated.

Grace Brighter:

Well, thanks, Everett. From the conversation today, it sounds like there's just an immense amount of opportunity in this space, so just curious to hear what you were excited, what's really to come in the nuclear world?

Everett Hansen:

Yeah, Grace, I'm excited to see what happens next. There are so many different ways that this could go, right. There are so many different ways that the nuclear industry could evolve and it definitely will look different, I think five or 10 years from now than it has for the past several decades. And none of the ways in which change could manifest itself in the nuclear industry have to happen in a vacuum. There's no reason that we can't build new reactors that look like those that are operating today. We can't restart reactors that are currently sitting idle, and we can't see new technology finding its way to market. What all of those different sectors of the nuclear industry have in common is that they produce good power, good clean power, and there's such a demand for that power. I don't know how we could continue to meet that demand in the United States if nuclear is not a part of that mix.

And I think that from our perspective, when we take a look at this from a risk management perspective and an insurance perspective, we find that the clients that we work with experience the greatest success when they start early. There's nothing better than having a luxury of time when you're assessing risk to an organization. And that could be property and casualty risk, that could be specialty nuclear risk, it could be financial products, whatever. It's having the luxury of time to assess what risks are out there, what risks should be treated and what shouldn't, and how much risk a business is ultimately willing to retaining the pursuit of their commercial goals is really what separates those that are maybe leading or finding ways to realize efficiencies

as they grow versus those that may have a little bit of a more difficult time.

Grace Brighter:

Great. Well, thank you very much, Everett, for such a wonderful conversation. We really enjoyed the discussion today and we look forward to seeing all you accomplish in your new role here at Marsh.

Everett Hansen:

Great. Thanks, Grace. Thanks Sarah. I really appreciate the opportunity.

Grace Brighter:

That's all for this edition of *Powered by Marsh FINPRO*. We hope you enjoyed our discussion and thank you for listening. You can rate, review and subscribe to *Powered by Marsh FINPRO* on Spotify, apple Podcasts, or any other app you're using. You can also follow Marsh on LinkedIn or X. In addition to your podcast feed, you can find more episodes of *Powered by Marsh FINPRO* at www.marsh.com/poweredbypod and more insights from Marsh on our website, Marsh.com. Until next time, thanks for listening.

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