

Powered by Marsh FINPRO

Episode 13

Managing tomorrow's risks today: Quantifying emerging risks to drive success for Energy & Power companies

Sarah Baldys:

Welcome to Powered, where we talk with experts on the front lines of the energy transition to understand what's changing, what's at stake, and what boards and executives need to know now. From emerging technologies to evolving liability exposures, our guests bring sharp insight into how companies can lead confidently through the energy transition. I'm Sarah Baldys, US power and renewables leader at Marsh's financial and professional liability practice, and I am thrilled to hand things over to your host, Grace Brighter.

Grace Brighter:

Great. So today we are looking at analytics through the lens of D&O and shedding light on emerging risks in the energy and power sector. So, we'll explore why D&O claims can be a powerful prism for enterprise risk, how analytics can help model and anticipate those exposures, the key trends we're seeing in the sector, and then most importantly, how to translate those insights into practical actions for our clients. So, to guide the conversation today, I'm joined by Mike Carls and Alison Pan. Thank you both so much for being here today. Mike, can you briefly just introduce yourself, speak a little bit about your role within Marsh FINPRO Analytics, talk about what you focus on day to day and why it really matters for clients.

Mike Carls:

Sure, Grace, thank you. Yeah. So, Mike Carls, I am the data and analytics leader for Marsh FINPRO US, which means I'm charged with the continual evolution of our model and insights for our clients. Ultimately, that's

about making more informed decisions, understanding your risk profile, but the focus on not just limits adequacy, but program efficiency. What is the value of every dollar that you spend?

Grace Brighter:

Great, thank you. And now Allie, I'll ask you to do the same, just introduce yourself and maybe share a little bit about your work on emerging risks and how that supports our clients.

Allie Pan:

Yeah. Hi, senior vice president of Emerging Risks here at Marsh out of the Marsh Chicago office. My team helps fill some of the gaps in data and analytics, hence the name around emerging risk issues. So, I think we all know that within the insurance industry there are some really well-established, fantastic commodity level models out there that do amazing work around core risk classes like property or casualty, really traditional lines of insurance. And there are, as new issues come up or as issues start to collide, one peril then drives another, and we would start seeing cascading or interdependencies. Some of those core models don't quite pick up those nuances. So, my team exists to try to account for new new -- think pandemic, think like unexpected war in the Middle East that we weren't planning for to new/new, but then also new interconnectivity. So cyber isn't new anymore, but the cyber drive a property outcome, which then isn't cyber cyber risk anymore. It's property and it's bi and it's how do we make sure that models talk to one another? So that's what my team does.

Grace Brighter:

Great, thank you both. So, to get started, when we think about D&O claims, they often follow some sort of material event, something significant like impact to valuation or investor outcomes like a stock drop or an investor loss. That's why D&O can definitely be an interesting lens for enterprise risk. So, Mike, given your expertise in the area, I think we can get a little bit into the modeling and analytics relating to this topic. When you're modeling D&O risk, what data sources and indicators tend to be most meaningful and how do you make sure real world context is reflected in the analytics, not just the numbers?

Mike Carls:

Yeah, sure. And so even as you think about enterprise risk, I'll just build off what Allie had just said on cyber, cyber can go from cyber to a bi risk and then it can transfer ultimately to a D&O risk. So, everything you do, every decision you make on a daily basis is applicable to D&O. And so how do we ultimately think about modeling that we do and have analyzed and found there to be correlation to a number of factors. To ultimately build a D&O model, you need to have a very broad data set both on a public basis and on a private basis. When I say private, I mean proprietary. So, if you look at particularly our breadth and the broad claims data that we have across hundreds, thousands of historical D&O claims, we utilize all that information when we ultimately build a model.

So proprietary information, particularly if we're speaking about public company D&O, there is public information out there, but we also need to map that to known financial metrics. And so, as we think about ultimately how we model not just frequency but severity, we're looking at a number of factors. We know your industry ultimately matters; every industry is different. As we think about that enterprise risk and how that changes over time, that certainly is a factor that we look at. Also, your overall performance, meaning your share performance over the last 12 months and your valuation, right? If you are a very large market cap company, you are two to five times as likely to have a suit than your smaller market cap peers. As you think about market signals, right, some of the questions that you asked on a more qualitative basis, we actually look at market signals in your share performance relative to your peers because there are factors and trends that ultimately influence that movement and that is what underwriters look at here.

So all that has found to have a correlation to D&O risk. And then there are kind of the real-world factors, right? Major M&A events offerings, historical claims, all of those things ultimately roll into our models so we can better assess your overall frequency, which means your likelihood of a claim. As we think about severity, that Grace to what you had mentioned is ultimately anything can lead to some level of investor loss. We can look at over time, we focus on the last 10 years, but we can look over time at your value at every company's valuation, anything that was ultimately announced and the impact that that had on the share price and the corresponding securities class action settlement associated with that. So ultimately it comes down to a

very broad data set and then identifying unique factors that ultimately are predictive of not only having that claim but what the severity ultimately is.

Grace Brighter:

Great, thanks Mike. So, you talked a lot about what goes into these models, the data, the indicators, the sector specific context. Hoping maybe you can touch a little bit on the backend. Once you have this output, how do you really know that it holds up in the real world? How are you pressure testing these models against reality and anything you can really share about limits adequacy over time?

Mike Carls:

Yeah, no, that's a great question. So, we have a predictive model. We build it, we evaluate it every year. We refresh it every year. And the good news is when one year goes by, we can actually go and back test that relative to what ultimately happened and what our predictions were. And we do ultimately see that to be highly predictive and ultimately correlated. As we think about limits adequacy, it's interesting across many industries, but we do see the way that we ultimately frame our analytics. You can be sitting in the boardroom, and you can say, I have \$200 million worth of insurance. Is that enough? Is that too much? And so ultimately what we do is we look at the full distribution of income or outcomes. As we look at the full distribution of outcomes, it's easier to say, I am insured to the 80th percentile, for example, or 90th percentile. If \$200 million means 90% of all anticipated and modeled settlements are within your program, that feels pretty good. Now, if it's 50%, that may not feel as good. And so ultimately when we leverage our modeling, we're talking with our clients about this relative to their potential outcomes where their peers purchase on this, and that should also track with overall growth.

Grace Brighter:

Great. So, a lot of the discussion so far has been based on modeling and modeling relies on obviously a lot of historical data, but I think Allie, this would be a great place for you to jump in just thinking about emerging risks by definition are uncertain and always evolving. So, the past isn't always the most reliable guide. With that in mind, what are the most important emerging risks you're seeing right now overall and then specifically for energy and power companies? And then just a little further, how can models and analytic frameworks really adapt to incorporate a lot of this uncertainty?

Allie Pan:

A lot more? Okay, going to try to break that one down

Grace Brighter:

Eight months. That was a big one.

Allie Pan:

That was a big one. Before I jump there, I actually want to almost rephrase something that Mike said. I actually think it's super important and I know am going to go kind of derail us just a little bit. I know you want me to address data and the scenarios, but there's an undercurrent of what Mike said, especially around that limits conversation and ease, which is you kind of have to have a question that you're trying to answer. And so, there is objectively in reality like data, there's a political scientist, political theorist who describes the way humans interact with the world as there is history, capital age. These are events that have occurred, but the human understanding of that as lowercase age and all of our writing including by the way, the way that we use numbers and formulate mathematical formulas, et cetera, that's really just a human interpretation.

And so there's always some kind of limited view. And I go off that tangent because there's this sense that you have this concept of there's real data out there, there's numbers. We can do our best to try to capture all of that. There's always going to be weaknesses, still a person trying to do it. But at the end of the day, none of that matters if you don't have a really clear question that you're trying to answer. And that the you here is pretty generic, right? Is you the client, you the analyst, you the modeler? So, the question of limit it all actually kind of boils down to also, but what does your organization want to protect, right? A full distribution doesn't. This really matters. What I think is really interesting is I constantly get to work with Mike and his team and I see the differences in how D&O models drive decisions and another model like cyber.

In cyber, all models will have in statistical terms, like a severity and a loss. Severity is the events loss is frequency weighted. A bunch of zeros in that simulation are also brought in 90th percent down numbers between severity and loss do not look the same. And in D&O land, a lot of times a lot of that conversation, I think you heard it from Mike, if you play it back, he said, are you protecting the 90th event? That is statistically in that model? That is the severity model. A lot of times when I'm in cyber, when I'm in wildfire, when I'm in some of the other models, we're trying to protect the

90th percentile loss, frequency weighted, and that matters because now what you're asking your partners to tell you is we're having question about tolerance and like that. So, there's no objective what is your limit goal?

There is however, this emotional human interpretation of what risk management should look like and it often even varies by the line. So, kind of want to lay out that out there of this idea of the models themselves are hopefully useful. You probably heard the term all models are wrong, some are hopefully useful. But that utility, whether or not it's useful is deeply, deeply tied to, did it answer the question that you were assigned to answer? So that's sort of the matter framing and I want to pick up with some of the underlying things that Mike said, but also Mike, am I putting too many words in your mouth? Am I overstating some of the things that you were kind of going with?

Mike Carls:

No, I think you're spot on, right? So, when we look at severity specifically, if you had a securities class action claim and it's settled, is it to the 90th percentile? That is the way that we approach it. So, I think you correctly articulated that Allie.

Allie Pan:

Pass my stats 101 class. Sweet. That's good, those I fired tomorrow. But back then, grace to your question of like, okay, so how do we tackle emerging risks and things like that? So in power and utility, this is not a comprehensive, there are a lot of different perspectives about the emerging risks for this space, but me personally, just Allie Pan demand and the ability to meet demand, I think we know that we're probably expecting to see 30 to 50% increase in national level demand in the next 10 to 15 years. The generation uptake, which is an infrastructure build out at both the generation distribution line, power line level, can that demand be met at the build rate that we have? Can we even surge at the build rate at the larger industrial level to meet that demand rate? By the way, that demand rate is a projected demand rate.

The demand question as an emerging risk is probably the pinnacle of absolute insanity to model because that demand is also dependent on completely volatile market measures of what is driving that demand. Is it population growth, is it expansion for some communities? Yes, heavily it is around data centers. So now you have a power and energy industry projecting build out and demand against another industry that is

itself emergent, highly volatile with some interesting financial accounting dynamics, right? So, you, I mean I think that's the lesson of there's no great history there to some, what I'm trying to say is some emerging risks are much easier to model than others. That one's really dicey. The more variables, even with stochastic modeling, which is sort of the methodology we use for truly randomized type events, D&O stochastic model, a lot of these actual approaches are all stochastic models. But at the end of the day, when you throw too much randomness and wildly variable kind of outcomes that have this, then this, but seven chains of that, your modeling becomes incredibly different and then difficult.

And what you're trying to do is try to maybe isolate a piece here and then maybe you're doing stress test methodologies where you're like, okay, let's assume this condition happens. What if the AI demand does surge and meet? What does that look like? What if that AI demand shifts? And what is the conversation today about AI changes and how does that look? And so, you kind of go off of a more scenario basis to try to narrow it down, but then you're losing some of that complexity when you band your modeling into discreet scenarios, you're going to lose some of that issues. There are other emerging risks that are a little bit easier, like the people who specializes in these risks would not call them easy by any stretch of the imagination, but in terms of outcomes like demand versus war, wildfire liability, slightly easier-ish, right?

And that's where in the emerging risk of wildfire liability for power & utility, which by the way is tied to demand because as you grow and build out your footprint, hence cascading in wildfire liability, we have really good historical wildfire data in a lot of the areas where we've had significant amounts and rates of burn. In those areas we've got a very good view of where we think wildfires could go, where we think power utility specific attributed ignitions could start. There were some amazing new technology out there doing burn scar modeling, ignition modeling, things like that. Some really, really fancy stuff that's even outside of the insurance space. So, the goal there in that kind of emerging risk where we know data is more robust, the scenarios are a little bit more limited, the human volatility shenanigans decision making is less of a driver. That's where you get the ability to, Mike and I play in insurance.

And so a lot of times what we touch is heavily insurance, data insurance modeling, but when you have

slightly more tightly bound emerging risks, the trick there is to go outside. Is there fine sites? Is there physics data? Is there really interesting data around infrared sensors that normally wouldn't come into play in our world? But what you're trying to do is you're expanding your aperture of data available and trying to interpret it for that risk management use case. It's not what those models were designed to do necessarily. A fire burn model, a physics model isn't meant to drive an insurance outcome, but can an emergent risk team take that specialization from outside from a different industry and turn it on its tail, merge it with some of our expertise and create a better view. So very long-winded way of saying there's several different top of mind for me is demand.

It is geopolitical with the supply chain, with the raw materials that are going to be critical to the demand build to both the demand side build out as well as then the power energy build out needs. So that makes a big difference. So let me backtrack, let me pause. Demand, geopolitical, supply chain slash raw materials, wildfire, which is deeply tied to climate and then associated with that geopolitical is going to be cyber. We know a lot about cyber for power and utility. We have a lot of that data already, but in a geopolitically high tense situation, we go beyond the traditional scope of cyber and now we're starting to look at the cyber to physical demand. So highly sensitive safety systems. Any facility that has hydrocarbon management, that is a very easy trigger into a flood fire and explosion scenario. That's that cyber to physical for which most traditional cyber models aren't equipped to kind of bridge that gap. So those would be my top four. And in an order of doable, doable modeling cyber wildfire, we've got a pretty good grip on lots of orthogonal expertise that we can bring together to have at least the beginning view. The other two a lot trickier.

Mike Carls:

So, Allie, when I hear this right, I try to take it up to the top level and I think about D&O modeling, right? And when we think about our D&O modeling and we can take our baseline D&O model and we can extend that into each one of these specific risk types and we can look at that pull through in terms of the financial impact, overall severity and what that may mean from a valuation perspective. What I think is really important though, as we think about power and utilities today, you look at to your point, historical, regulated, very much utilities, stable earnings, not a whole lot of disruption, not a whole lot of volatility. Now we see this kind of

strategic transformation that's taking place. The stat that I love is over the next five years, the investor-owned utilities are expected to spend almost 70% of their valuation today.

And so as you think about all of this and you think about the potential for risk and looking historical versus current, you really have to start thinking about all these things because now it's more of a valuation narrative. And as you look at this historically low from an industry perspective, frequency. Today, that's not necessarily the case. This shift certainly means that there's the potential for greater lawsuits in terms of execution risk and potential oversight and what you disclose. And with that, that's more shots for the plaintiffs' bar to chalk up a nice settlement from a high severity perspective, which is not something I think most clients in this sector have experienced historically and certainly needs to be a conversation at the board level.

Allie Pan:

I think of the different worlds that you and I sit in, Mike, as this is about as nerdy as I'm going to get, I'm Anthro five modeling. To me it's almost like our models are in dialogue. A lot of times you hear, well, this thing drives this and it gets semi one-directional. But Mike, what I'm hearing you say, and I think what you and I have talked a lot about offline is the insights from what you and your team do can help my team understand in an emergent scenario, materiality. That historical experience around D&O gives me a sense of, okay, that's a threshold that I need to start thinking about when my models generate losses, will my losses cross this valuation threshold that your DNL modeling is indicating is like "ruh roh", do not cross go. This is the line you want to stay below.

And when we start thinking about tolerance or appetite or risk management and what do you retain and transfer that concept of the historical lessons from the D&O model help guide us with then the proactive modeling management of the emerging risk. But that's the first direction. The second direction then is my team should be coming back to you and going, hey, heads up you think is the valuation is probably not your valuation 24 months from now or 72 months from now. There is your world may go upside down because this is as a regulated industry cost, sorry, income revenue, relatively stable's that cost nuclear verdicts, you just described it. Wildfire liability, expense load, vegetation management like skyrocketing year over year. And oh, by the way, that's tied to things like raw materials and

supply chain. So, what's that feedback loop so that as your models can help us understand materiality today to do tactical management today, can then my models on the emergent side give you a heads up of the D&O management three years from now. And then by the way, if that picture is wildly different, that in theory should give you and your team's runway to redesign that D&O program or the thinking around like Grace, your original question limits and the appropriate and efficient way to access that protection. Hopefully this two-way dialogue gives then the placement teams runway to build creative new structures.

Mike Carls:

Yeah, I think you're absolutely right. As you look towards and forecast and try to understand where valuations will ultimately go, you have to start considering the severity impact of that, right? And then you overlay, which what we've already talked about some of the event driven litigation. So, we track 500 plus event driven litigation event. Historically, 40 plus of those are dedicated to cyber, 70 plus are dedicated on an operational product safety basis, which is what we're talking about here. And ultimately what we see is on a severity basis when it's much more tangible, the severity is higher, right? Your median loss actually isn't at the 50th percentile, it's at the 60th percentile. So how are you accommodating for that, number one? And then number two, the potential for valuation growth, which we always see organizations tend to trail on that. So, taking that, taking both sides of our modeling as you're describing here, Allie, and using that to start to plan out a potential 1, 2, 3, 5-year plan in terms of your program and limit needs is incredibly important. I couldn't agree more.

Grace Brighter:

Okay, great. So now let's shift a little bit into decision-making and how all these insights actually influence decisions for our clients. And I think this is something you both can address at some point, but how are you really seeing companies successfully use analytics to drive better risk decisions?

Mike Carls:

So, I'll start. So ultimately it comes down to, and this sounds very high level and generic, but it comes down to understanding your risk and leveraging every single tool model insight that you have available to you. So gone are the days of benchmarking, but those that still exists, right? And then I'm certain there are a board of directors that care about that looking at historical

losses, looking at outlier losses specifically on the event-driven basis that we had just talking about looking at your distribution of outcomes ultimately from a model perspective, taking all that information and putting that into the context of your risk and your exposure and where you operate and the magnitude of loss that could ultimately contribute to a material severity event and how that translates to your financials. That's what I'm speaking from a D&O perspective, and I'm sure Allie has many other thoughts relative to just the broader enterprise, but it's understanding your risk, understanding the potential for volatility and ultimately understanding efficiency.

So we've hit on understanding your risk. Let's hit on efficiency and we'll also talk a little bit about volatility. So, as you understand your frequency and your severity, we can talk about the full distribution of outcomes, and we also can look at the value of your program. And so, clients are always looking at their program and the return on every dollar of premium that they spend. And so, when clients make decisions, they not only look at that percentile on a severity basis that we talked about, but the value of that. And so knowing the value of that and where the market is at, if the market is potentially dislocated from a pricing perspective that may have a client reevaluate their retention, maybe they increase their retention, maybe they decrease their retention, it also is an opportunity to evaluate are those higher limits of very good spend of my dollars?

Recognizing that your D&O budget, for example, is probably 5% or less of your overall insurance spend. And so, if we're talking about a three to 4% increase in your total program spend in the grand scheme things, it's a pretty insignificant number to really get a high degree of efficiency relative to your program back. But as we do this, we look at your total cost of risk. We look at what you retain below on an expected loss basis, what you retain above, and then we also look at your tail value at risk. So, to the extent that you have a loss net of coverage on a one in 100 event or even more what that looks like to you and the impact that that would have on the organization.

Allie Pan:

I'm going to jump in on tail risk because that's actually a lesson. Several papers came out post 2007, the Great Recession where basically in the postmortem of that period, the Fed issued several think pieces, but also basically issued new rules and guidance on how to

utilize modeling. What was interesting is they didn't say, come up with a new model. They didn't say this math is wrong, this is all foundationally problematic. No, the foundations were right, the distributions were all right. What they highlighted was that we weren't looking at tails, we thought we were, people were picking a 90th percentile loss severity even, or a 99th percentile, right? Your classic property like one in a hundred-year flood. And that felt good enough that felt like, well, that's a 1%, how much more do I possibly need? And the postmortem basically indicated is when you look at the full scale of an entire distribution, you can have two outcomes that have the exact same number at the 99th and have very different numbers at the 99.9th.

What that tells you is it's the volatility, the tail at the end, the losses that are far less frequent but are devastatingly material if you are not accounting for those. If every time you look at your 99th and you call it a day and you're not having a conversation around, but what does the tail keep doing? I tell my team, I use it like the wag the dog analogy. You know what I mean? How much wiggle is there? And so there are a couple of statistical measures that we use, but fundamentally the Fed's guidance since '07 has, if you are doing risk planning and risk management, you cannot stop your utilization of these models at a single point in the var, however far you think it is, you have to ask yourself, but do the losses continue? And how rapidly do they scale up?

Right? If at the 99th that little nice log normal curve is flattened out, you're probably in a good position. If at the 99th you just started your exponential Everest climb, guess what're limit your utilization, your retention, and then ultimately because of that, to Mike's point, that efficiency is going to be way off. And now you've undermanaged a risk, you've underpriced that risk, you've undermanaged it, you've jacked up your valuation for the next two years. There's this pretty negative sort of spiral, but it's also a lesson that we've known since '07. And so, it's this just reinforcing these really hard lessons that we've all already had to learn to keeping that top of mind when you're thinking about utilization of data and analytics.

Mike Carls:

Maybe just one additional closing thought as we think about efficiency and what this means for clients today as they approach their decisioning, right? We've talked a lot about changes in valuation. We've talked a lot about where clients are able to evaluate the distribution

of losses and the percentile in which they ultimately purchase through to. There's a broader trend that we see. The larger you are as a valuation, the lower you buy on that distribution. And even within those market cap ends, there are many that fall underneath the median by definition. One stat that I think is most interesting as we've seen this valuation growth over time is almost two thirds of the companies that saw greater than 50% increase in their valuation over the last two years didn't actually increase their limits. And as you look at efficiency across the board, it's what we've been talking about.

There's a very material return right now in evaluating those higher limits. What that means is that there is potential pricing dislocation, and particularly in some industries with power and utilities being one of them because of the historically small amount of ultimate settlements, I think there is a view that average loss potential that we always talk about, and that tail value that Allie had just talked about isn't there. And as we look at this change that's happening from an industry perspective, it certainly will increase the overall frequency of lawsuits. And so starting to think about and lean in all these analytics that we just talked about, and ultimately looking at the efficiency now is without question, the best time since 2018 to evaluate increasing limits at a high return relative to the money you're spending, not just from a D&O perspective, but likely across all lines of coverage given the marketplace.

Grace Brighter:

Great. Well, Mike, Allie, thank you both so much for the discussion today. You both did an amazing job walking us through D&O, emerging risks, the analytics, and most importantly, translating a lot of these insights into better decision-making in today's constantly changing environment. So really appreciate the time.

Mike Carls:

Thanks, Grace.

Allie Pan:

Thank You.

Grace Brighter:

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