Justin Huhn: The Fundamentals For Nuclear Keep Getting Better

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Erik: Joining me now is Uranium Insider newsletter editor, Justin Huhn. Justin has prepared a slide deck to accompany today's interview. Registered users will find the download link in your Research Roundup email. If you don't have a Research Roundup email, just go to our home page macrovoices.com, look for the red button above Justin's picture that says *looking for the downloads*. Justin, I want to start by giving you credit for calling the bottom of this massive uranium correction that we've seen. You were at the WNA conference in London. You literally rushed back at the end of the conference to your hotel room, knowing that the US markets were still open to first panic buy as much uranium shares as you could get, because you knew it was a bottom. And then you made a video late at night from your hotel room in London, saying, guys, this is it, right here, right now, I really think this is a bottom. And you nailed it, was like 40% in a lot of your focus list issues up from there. So congratulations on that call.

Justin: I appreciate that. Thank you. Yeah, it was a very stark contrast experiencing that conference, with the backdrop of the shares continuing to slide and just absolutely horrendous sentiment being expressed on social media. So it was relatively easy, but it was easy because I was at the conference and it was very clear that the market was getting it wrong. I know those are as a dangerous statement to make in the investing world, is that the market is wrong, but you have those moments, every once in a while, where you can clearly see that it is, and I saw that it was, and thought I had to express that. So I appreciate that acknowledgement. Thank you.

Erik: You're very welcome, and it's very much deserved. So there's quite a bit that's happened. We haven't had you on this program since April, I can't believe it's been that long. The Triple Nuclear Initiative had already happened when we had you last on, but the financing of triple nuclear that happened much more recently, September 23 I think, of this year. And then we've, subsequent to that at the COP29 conference, 6 more signatory countries signed on to Triple Nuclear. So, they're up to 31 countries now. We've really seen a major shift in government, public attitude, and also the green community has really come behind nuclear as the right way to accomplish base load energy transition for green energy. So many things have happened that are just so incredibly bullish, and we've seen it in the uranium mining stocks, especially the speculative issues, the exploration issues, but not in the actual commodity. If anything, we're still down a little bit since that WNA conference on the spot price of uranium. Before we even dive into the slide deck, what's the big picture here of, you know, is this what

Jeff Currie told us last week, of just the market has to balance present demand, not future demand? Why is the spot price not reacting, especially when we've got a very popular ETF that a lot of speculators go into, in order to try to get a position in uranium, it seems like spot is not driving the market higher. What do you make of this?

Justin: Well, I think one of the things that's important to acknowledge is that the spot market, really what it is, is a surplus disposal market. This is not the market where utilities secure the bulk of their fuel requirements. And uranium, of course, is not fuel. It's the first step, the fabricated fuel is the last step of the fuel cycle. But uranium is the foundation. It's the core element that goes through various processes before it becomes fuel. Now, the long-term contracting market is where deals are done for 12 months delivery and beyond. So, spot market is 12 months or less, settlement for a purchase, for a transaction, but it also is the market, the spot market, that is the most transparent. And that's really saying something, because it's not all that transparent, but you'll get price quotes, at least daily, sometimes intraday, depending on the service that you may or may not subscribe to get those price quotes. But really, we're talking about negligible volumes in terms of the overall volumes that are actually transacted. So unfortunately, that is what is visible. However, the term price for uranium is up 20% year to date. So, for 2024, the term price has gone from the high 60s all the way into the low 80s. And the spot price started off the year right around 90 bucks. It peaked out at 106, and it's back down into the high 70s here. So, while the spot price has spiked and then settled back, the term price has continued to slowly march higher. And that's really the true indication of where this market is at. Spot price is what the investors see, so that's what gets all the attention and all the talking points. But if we really look at the prices across the fuel cycle, including the long-term contracting price for uranium, everything is in a very, very obvious and continued uptrend.

Erik: And I'll just throw in my perspective. I don't know if you'd agree with this or not, but I think that for the uranium market, because it's something that institutional finance has not covered at all for years and years, I think the market's kind of dumb on this stuff. They're looking at the spot price. What you just explained, which made perfect sense about it's really the action is all in the term market, not in the spot market. I don't think most of the people that are looking at this are understanding that they're looking at the stagnant spot price, saying, yeah, this thing's not really going anyplace, when, in reality it is going someplace. It's going big places. Would you agree with that?

Justin: I would. I mean, it's difficult, right? Because investing in any other commodity, you're going to get much more transparency into the market. There's futures markets, you have way more transparency. So, for an investor to see a month end print of the term price, and that's all they get for a 30-day period, that's just not enough. So, the spot market certainly shows, not only just the surplus disposal and the trades that are being made in the physical market, I'm not saying it doesn't matter, it absolutely matters but the real story of the trend of price is in the term price, and that has continued to march higher. But yes, the spot price also has become intrinsically connected to investor sentiment. So, when risk is on and you see the equity start to move up, and you see the Sprott Physical Uranium Trust start to trade close to, and potentially even at or slightly breaching NAV, then you'll actually see some physical market activity in

expectation of spot coming into the market to do with some buying. So, the spot market has kind of been linked to the investors' equities market and vice versa, and that's how it kind of gets wrapped up into the investment thesis. It's much more exciting and much more transparent than the boring and infrequently updated long-term price or, let alone the fuel cycle prices as well, which are updated sometimes weekly, but the monthly print is for the long-term uranium price. So yeah, the investing market, I would say, really doesn't quite, 'get it.' But for better, for worse, that's the reality. The spot price is what is visible. So that's what we all watch.

Erik: Let's go ahead and dive into the slide deck and talk about some of the longer-term fundamentals, starting with big tech embracing nuclear. Give us the rundown.

Justin: So this has really snowballed since we last spoke, Erik. It's been quite the trend in the making. We identified this trend about a year ago, maybe a little bit more than a year ago, with expectations that simply the rising demand for electricity, that in many ways, is being driven by the growth of data centers and the growth of AI specific data centers, that that rising electricity demand would lead to higher cost electricity and would de-risk the existing nuclear fleet. So that's kind of like step one of the thesis of how AI and data centers are quote 'bullish for nuclear.' And that has absolutely happened. It's going to continue to happen, especially in the United States. It's still the largest market in the world for nuclear, and it is currently and probably will be for the foreseeable future, in somewhat of an arms race with AI with China. So, we think that that is going to be very de-risking to the existing fleet.

We've also heard, of course, unless you're living in a cave, you probably heard the same, in September, it was announced that Constellation Energy, the largest nuclear operator in the United States, has made a deal with Microsoft. This is a 20-year power purchase agreement at prices, purportedly 2x, pushing 3x the existing market for electricity to restart Unit 1 of Three Mile Island. Amazon, of course, is supporting two SMR projects, one on the East Coast, one on the West Coast, and they have made an investment into X-Energy of $200 million. It was just announced a couple days ago, they're investing an additional $334 million for this first project. Google has secured a 500-megawatt deal with Kairos Power, another advanced nuclear developer. So all these multi trillion dollar tech companies are supporting nuclear now, Oracle to build a gigawatt scale nuclear power with three small modular reactors linked together. And just today, literally minutes before we hit record, Erik, Meta announced they have released an RFP, a request for proposal for one to four gigawatts of new nuclear by 2030. So we've seen this enormous wave of tech companies recognizing the very obvious trend of huge electricity demand and also recognizing that base load clean energy is the ideal source to be powering these things. Now, we're going to see other electricity sources kind of pick up the slack in the near term, because new nuclear is going to take some time to get off the ground, especially in the states. So, we're probably going to see, and we're already seeing massive sales of gas turbines. For example, natural gas is probably going to be a beneficiary in the near to midterm, but nuclear looks like it's going to be a big, big winner with this trend for the mid to the long term.

Erik: Now, I have a perspective. It's just completely subjective that I'd love to get your feedback on. I don't think people get the significance of what these deals are going to mean for uranium demand. And specifically, what I mean is, I don't think people understand, they know it's high tech, they know it's next generation. They know it's Generation IV. But in your opinion, Justin, do the people who are looking at this look at the Kairos deal or the X-Energy deal and say those are both TRISO fueled reactors. That's a different fuel cycle. It has a completely different set of requirements. Oh, wait a minute, let's look at Sam Altman investing in Oklo. That's a fast sodium reactor that depends on HALEU fuel. We've got a major bottleneck problem with HALEU. And even if we didn't have that problem, it's a 50 to one. It takes 50 times as much raw, that's the U308 yellow cake, uranium takes 50 units of that to make one unit of HALEU. Do people get those kind of things and understand that these new reactors are going to require a whole lot more both SWUs, in order to do all of that greater enrichment to produce HALEU, and so much more uranium? Or is it just kind of like, yeah, tech pros are buying some nuclear. It's cool. I have the impression most of the market has no idea what the implications of the more advanced fuels are going to be in terms of demand.

Justin: I would agree with you. I don't think the market understands as well. I also think that the market probably likely doesn't really think that this has near term implications for their investment thesis, right? Which is generally kind of true, even though we have seen already, we've seen SMR demand. So, for example, GE Hitachi is building BWRX-300 units in Ontario, Canada, and they have already put out RFPs for that uranium, so we're already seeing some SMR demand in the market. But yes, you're absolutely correct. The high assay low enriched uranium takes much more feedstock to achieve that higher enrichment level. They go through fewer refueling cycles, so that some of these advanced reactors can run for 5, 10, 15, 20 years on a single fueling of this higher enriched uranium. But no, I don't think the market fully understands the implications, and I don't think the market will understand the implications, until they start to see an actual pull on the physical uranium via the demand from these projects. So this is all well and good, and it's, of course, it's a huge sign to see the big tech companies that have basically an endless amount of cash and need the electricity that are going to make this happen. So that's enormous, and that's positive, and that's bullish. But we have yet to really see the demand hit the physical market and a lot of times, investors, a big theme of investing is trying to discount the future and trying to predict the future, and this is smacking us in the face of what is going to happen. But what hasn't happened yet is Meta, Google, Oracle, Microsoft, Amazon, actually coming into the market and either via themselves, securing the fuel sources for these projects, or actually funding the projects, and the project developers coming in to buy that fuel. So, this hasn't happened yet in many ways. And so, this is a future projection. It's very positive, it's very bullish, but I don't think investors are going to truly ‘get it,’ until they start to see the needle move in the physical market, and we will, when that happens is a more difficult question to answer. All of these projects, these advanced neutral nuclear projects, are late decade at best, but we could see fuel demand, uranium demand, coming to the market for some of these SMR projects, advanced nuclear projects, within a two to three year period. We could absolutely see some physical market implications.

Erik: I definitely agree with you that it's late decade when it all happens and gets realized. But I'm also going to add to that prediction that I think things are going to go a whole lot faster than most people assume. The AI data center demand is going to keep growing. The Tech boys have lots of money, as you said, they also have the connections that are necessary, in order to get things pushed through government. So, I think what we're going to see is an industry that's used to everything happening at a snail's pace, oh, we're going to get some new reactor design in the next 30 or 40 years, maybe it'll get approved. I think they're going to push these things through pretty quickly, and by late decade, I think that the numbers you're talking about now, Google secures 500-megawatt deal with Kairos Power, is one of the bullets on the slide here. Well, that's the deal they've already signed up for. I think by late decade, it's going to be 5 or 10 gigawatts with Kairos, and it's going to be more with X-Energy. And these guys that are all running HALEU or TRISO fuels, I don't think anybody has begun to discount what that's going to mean for conversion and enrichment demand. And what I don't see coming to the table is who's going to build out all of the conversion and enrichment that will be necessary, not in the next year or two, I agree with you, it's a few more years out than that. But between now and the end of the decade, when we're going to need to fuel all of those new high-tech reactors that demand much more enrichment SWUs. Do you see a pipeline coming online of a whole bunch of new enrichment capacity being built? I don't see it.

Justin: It's happening. It's just happening slowly. So we have Urenco in the United States building out their facilities a bit. We have Orano in France building out their facilities a bit. Centrus is adding some centrifuges as well. We have the advent of global laser enrichment, hopefully getting a project up and running for re enriching depleted tails by the end of the decade, or maybe the early 2030s, so it is happening. It's just happening slowly. Enrichment and conversion are slow to build. They're also very unique markets that have experienced extremely painful, extremely difficult and extremely euphoric swings in price and demand. To give you one example, ConverDyn, in the their Metropolis facility in the United States, they shut down in 2018, they just reopened that facility last year. And this facility went, we had conversion trading on, I think, all the way down to $4/kg was the lowest price. It's now, we had a deal done almost $100/kg to end the week last week. Now, they have seen government intervention. They have seen the market absolutely crash. They've seen the market soar. They've seen enormous amounts of under feeding coming from Russia. That under feeding, basically, is a source of UF_6, therefore making it, reducing the demand for conversion. There's been all sorts of geopolitically influenced elements to these markets that make them very difficult to operate within, and also very difficult to invest in. And so, there's been pressure and questions coming to ConverDyn over the last three years, especially since Russia invaded Ukraine, and Russia being the largest provider of conversion in the world. ConverDyn, when are you guys going to expand? You're telling us you can expand. You're running at 7,000 tons a year, and you're telling us you can expand to 13,000 to 15,000 relatively easily. Why aren't you doing it? And every single time at every single conference, the ConverDyn rep is like, okay, how about you guys stop buying EUP from China and sign some contracts with us, and maybe we'll think about it. Like, Honeywell doesn't give a damn about this project, it's a rounding error for Honeywell. But what we are hearing from industry chatter is we believe that ConverDyn will eventually expand. It's possible they might even, the Honeywell might even spin off ConverDyn and become a publicly traded

company. So these are all potentials that could happen. We know that Cameco, with Westinghouse, is looking at restarting the Springfield's facility in the UK. And like I mentioned, GLE as global laser enrichment actually will be a source of UF_6, not enriched uranium.

So, all of these things are slowly happening. Orano is slowly expanding. So, we think that the market elements will influence the expansion of these services in time. For the time being, these are bottlenecks, but they're only bottlenecks because the demand has gone through the roof in the past couple of years because of the geopolitical problems, right? So, any utility, especially in the West, let's say in the EU or the US that has been concerned about a potential ban of Russian material, or has been concerned about just dealing with Russia going forward in the future, because of these geopolitical elements of strife, has voluntarily created a bifurcated market and secured conversion enrichment in the West. Erik, if you take a look at slide number 7, the graphic showing the enormous price rise for both conversion and enrichment in the past two years now, in any commodity investment, any commodity market, what influences the price to go up? Well, you either have a supply disruption, or you have a demand overshoot, right? The demand increases, the supply decreases. Supply of both conversion and enrichment have increased in these last two years. ConverDyn has come online. The Chinese are building out both conversion and enrichment, now this is largely, or if not entirely, to fulfill their own domestic needs. They have 30 reactors under construction right now, so they are building out a fuel cycle as well to service their own needs. But these two markets have expanded their capacity during the period of this enormous price rise. So, what does that mean? This means that utilities have plowed into these two markets with much, much greater demand that these two markets had seen over the past 5 to 10 years. And why is that? If you are a utility, you're concerned about getting your fuel, you're going to secure the elements that are closer to the end of the fuel cycle first, and that's conversion and enrichment. Last step, of course, is fuel fabrication. But that's a little bit of a different market. So you get your conversion, you get your enrichment. Some of these utilities have U308 inventories that they can feed into those conversion deals, and some of them do not. So, these big price spikes, while they have caused a bottleneck, because conversion is basically static until more capacity is built out, whatever capacity is there is what we have. So, if you need conversion right now, and you need it like six months from now, you're going to pay through the nose for Cameco or ConverDyn, or Orano to be able to give you a little tiny piece of whatever they might have capacity available, which isn't much. So what we expect to happen is not for these two markets to crash back down, according to this slide, but for the uranium market to catch up to it. Yes, we'll probably see some backing and filling in the enrichment conversion markets as new capacity does come online in the next two or three years, but the uranium is going to have to catch up. Why? Because you can't buy conversion and not have the uranium to feed into that service.

And I'll give you one more element, if you go back to slide number 6, Erik, talking about the Russian ban, and we haven't really discussed this yet, but Russia has actually cut off the exportation of enriched uranium to the United States. One important element of this that's related to that previous chart on slide 7 is that Russian enrichment contracts allow for return feed, so you can buy a contract for enrichment from Russia, they will send you the product of that service, which is enriched uranium product or EUP, and you can send the UF_6 back to

them. Well, to the extent that a contract that you have signed with Russia as a US utility is going to have to be reneged, and you have to source that enrichment from Urenco or Orano. You have to provide the feedstock up front. And we believe that is one of the things that is leading to this squeeze that's happening literally right now, within the last week. And the conversion market is, there certainly are some utilities that are not going to get their next shipments of EUP, and they're going to have to buy uranium and have it converted. So that's going to put a squeeze in an already tight market, and just the geopolitical strife that is happening between the West and in Russia in particular, is causing major ripples throughout the fuel cycle. It is a huge theme for this year, and I don't know how it's going to go going forward. We have a lot of uncertainties around the new Trump admin as well as far as this is concerned.

Erik: Justin, I should apologize for jumping ahead on you. Let's go back to slide 2, because everything that you've said tells me, okay, they are actually doing what they can to increase conversion and enrichment capacity. We ought to be able to support maybe a 2% or 3% CAGR, in terms of expected EUP demand. But guess what? The electricity demand expectations are not 2% or 3% CAGR, it's like double digits. I still see a major crisis here. And the reason that it's so concerning to me is, if I think about a conversion and enrichment problem, it makes me worry that a lot of investors are going to be a little bit out over their skis speculating on, oh, this just has to mean incredibly high uranium prices. Well, ultimately, it does, but you can't have higher demand for uranium until you've got the conversion and enrichment facilities to process it. And it seems to me that's where the bottleneck is going to be, really, for the rest of the decade. Because what you're, I think, saying is, they're already growing as fast as they can. And what slide 2 says to me is, they're not growing anywhere close to fast enough.

Justin: These graphics on slide 2 are showing just the enormous energy consumption, not necessarily the growth of nuclear, we'll get to that on slide number 5. But the energy growth, the energy demand growth, I should say, and the AI trend is real. I mean, that's really what I want to emphasize with these two graphics. This is not speculative at this point, this is absolutely happening. It's going to happen, and the energy availability, electricity availability is going to be the limiting factor. In fact, that was something that Zuckerberg just came out and stated within the last couple of days, I mentioned the RFP that Meta just put out today, electricity availability is going to be the limiting factor. And that's why we've seen the announced restart of Three Mile Island. That's why the Palisades reactor in Michigan is restarting. They're looking at restarting Duane Arnold in Iowa. They're actually looking at even picking up where they left off. The construction of the V.C. Summer plant in South Carolina, which was a major financial calamity. This is, AP1000 is being built kind of a along the same time frames as the Vogel plant in Georgia. They halted that project, and it didn't get picked back up. They're talking about potentially restarting the construction of that project. So, all of these, the electricity demand is leading to much more interest in nuclear, especially in the markets where we're going to see major data center growth.

So I shared these two graphics, Erik, primarily to just emphasize that this trend is real. We think that the AI trend is going to be as big, if not bigger, than the internet, and we know how that shaped the world over the last 25 years. So this is a major theme, and I'm very pleased to see

that that nuclear is growing along with it. As far as conversion and enrichment capacity being built out, those are being built out currently, it's a bottleneck, primarily right now, because of the massive amount of demand that's come into the market in the last two years, not because those markets have been squeezed or the capacity has dropped. So, if you go out 2029, 2030, and beyond, which is really kind of tomorrow in terms of how utilities will secure their future needs, capacity opens up, and it opens up pretty significantly. So, to the extent that utilities are uncovered in the short term, that is usually pretty rare, and not just because of this moment in time with the problems that are happening with Russian supply, but usually utilities are covered for the next 18 to 36 months, to speak very generally. So, if you go out to the end of the decade, you start to see capacity open up. You're trying to secure enrichment conversion uranium to the 2030s, it's absolutely available. So, we think that there's plenty of capacity currently for the uncovered needs. But if we see growth that is proffered by, let's say the COP28, COP29 goals by the Department of Energy's Liftoff report, we're going to need much, much, much more of every single element of the fuel cycle. So, to some extent, I absolutely agree with you.

Erik: It seems to me, what's happened so far is the tech boys get it. They've figured out that nuclear is the only sane way to power this. They've got the money and the influence in order to make it happen. But what I don't think they've figured out yet is that they're going to have this huge dependency on conversion and enrichment. And I don't hear anything about Google and Meta making, can we join the Cameco and SILEX partnership and make GLE bigger? Let's make the Paducah laser enrichment facility triple its size. Meta wants a slice of it. I'm not hearing anything like that yet, and I think that's what needs to happen next.

Justin: Yeah, I think that the evidence will have to appear that it's a major, major problem right now, it's just expensive for utilities, right? So, the tech companies are probably largely wanting, at least initially, to rely on the capitalism to figure these things out. We want this thing, and we're willing to pay for somebody to make it happen. So, the fuel needs for nuclear are not really on their radar yet and really, if we go back historically, we've never, ever seen a nuclear power plant not get the fuel that it needed at any price. So, if you're looking at a multi-billion dollar nuclear build out to power a data center, for example, spending $100 on conversion, $150 on uranium, $75-$80 for SWU plus fuel fabrication. These are rounding errors on the total cost of the project and the importance of that data center and the profitability of AI for the tech company. So, I don't think the costs of the fuel cycle are really even on their radar whatsoever. And I don't think they will be, unless, until they really believe that the fuel won't be available. Now, if we're talking about advanced nuclear, what we already know is that the DOE has basically told TerraPower that they're going to be able to provide that first fuel load from down blending warheads. But that's not going to be a long-term solution. Why? Well, A) geopolitical tensions are on the rise. B) military stockpiles in the US are at historical lows. In fact, we think the US is going to be buyers of uranium and for military and other purposes, strategic uranium stockpiles, nuclear Navy, etc., all of these things are coming together to show an enormous demand picture for uranium. But as far as the tech companies are concerned, they're used to writing a check and having things just appear, right? So that's probably where they're at here. They recognize the problem with electricity availability. They recognize the solution. As far as what is going to get in the way of that solution, we're going to have to see how that plays out in

the coming years. As far as the nuclear fuel cycle, historically speaking, price has led to supply appearing, and just as in most markets, this usually happens. So we've yet to see how that will play out and whether or not this bottleneck will continue based on the expected growth of the sector.

Erik: You said that most of the contracting for enrichment and conversion is done on a forward basis. There's forward contracts. So those are typically assignable, because it seems to me, we've got this vehicle already. The Sprott Physical Uranium Trust to speculate on uranium. You can buy some physical uranium so that if the price of uranium goes up in the future, you had a chance to make money on it. I'd much rather speculate on the price of conversion and enrichment. I want to buy the Sprott contract for assignable contract for conversion enrichment in the late 2020s because I think the price of that is going up. Is that something that could be turned into a fund that people could invest in?

Justin: It's hard to say. And the Uranium Participation Corporation, before Sprott took it over, did hold both U308, and UF_6. UF_6 being the product of the conversion process, but we'll see. I mean, it's possible that ConverDyn ends up as a public vehicle. Cameco is publicly tradable, and they have the Port Hope conversion facility. Of course, I don't really think that anybody really cares much about that element to their business, strangely. And of course, they have 49% ownership of Westinghouse, which owns the Springfield facility that is likely to be up and running at some point in the future. But I think that that's probably pretty unlikely, Erik, unfortunately.

Erik: I mean, that's what I want to speculate on. Let's move on. One of the things that has been a theme we've talked about, and you've written quite about in your newsletter, is that the geopolitical breakdown between the United States and Russia has led Vladimir Putin to basically say, you think you can ban me, I'm going to ban you. So, he's basically banned any export of enriched uranium products, trying to cut the West off from access to Russian conversion and enrichment facilities. You've written quite a bit about that being a major factor before President Trump was re-elected. What is this going to mean? Moving on to page 3, the Trump administration with respect to the Russia ban and in general, with respect to energy policy and nuclear energy policy?

Justin: Sure. Well, I think I'd actually just jump to slide 6 to start that answer, Erik, just to kind of give people some background on what happened. So, the United States, of course, passed the House Bill 1042, that was signed into law in May, that became law in August of this year, and that bans the importation of Russian enriched uranium, effective immediately. But there are waivers being offered out to December 31 of 2027, basically to 2028, a US utility can apply for a waiver with the Department of Energy to receive material if they can prove that they literally cannot find it elsewhere. Now, as was expected, the waivers, the first few shipments did get waivers. So that was a handful of utilities that was centrist as a broker for a handful of utilities, we've already seen a couple of shipments come through since August of Russian material to the United States. However, it has been a concern from the beginning that Russia could actually cut off those exports, and that obviously made a lot of sense to us. Why? A) We're their

adversary. We're essentially in a proxy war with Russia. And we've already seized Russian assets and sanctioned other Russian materials, and now we've sanctioned the actual uranium importation. So, it would make sense on a tit-for-tat basis for Putin do the same. B) These legacy contracts that Tenex, which is the Russian state owned enrichment corporation, has signed with US utilities, 2, 3, 4, 5 years ago, that are being delivered upon now are at way, way lower prices than what they could sell that enrichment for in the present marketplace. So, they could play geopolitics and cut off those exports. That would be perfectly understandable, considering we've already done that to them, and they could highly profit from doing so by reneging on these contracts and sending the material elsewhere. Now, Russia's ban is also offering waivers, but those waivers have to be applied to the Russian entity via Tenex, not from the US utilities applying for these, Tenex has to apply for these. And our understandings of the first shipment that was set to leave the port of St. Petersburg, well, that ship sailed, and it does not have the enriched uranium on the ship headed to the United States. So as of now, this material is not coming here. Now, this is called a temporary ban, because it supposedly will end unless they extend it on December 31 of next year, 2025.

So, going back to Trump and the Trump admin, what we expect on slide number 3. Well, there's certainly plenty of people that believe that Trump is a friend of Putin and that all of this will just go away. And I don't believe that's the case for multiple reasons. One, during Trump's first term, there was a petition called Section 232 that was brought forth by Ur-Energy and Energy Fuels in the United States. And they wanted 25% of the Iranian requirements for US utilities to be mandated to be purchased from US miners. And Trump basically said, yeah, I'm not going to do that, because he's a free market capitalist, essentially. But he said, I will look into this issue. And the case was made in Section 232, that the US is highly reliant on Russia and Eastern, let's say, Central Asian supply, which is absolutely true. 25%, roughly, of the United States enriched uranium needs come from Russia, and that's only because it's committed on the Russian suspension agreement to not reach that level. So, the Nuclear Fuels Working Group put together by Trump basically came out with a report during 2020, and if you remember 2020, there was way, way more on his plate to deal with than this particular matter. But the Working Group basically said, yes, this is a problem. Yes, we should do something about it. They established the beginning, the first phase of the strategic uranium reserve. And so we think that he's unlikely to push for reversal of this ban, because the ban highlights the sovereign energy concern of being reliant on Russia. And along with the ban came a number of other elements of funding to support the fuel cycle domestically. The other element is that the Russian ban in the United States was legislated, that did not come about via executive order for Biden. So, Trump can't just say, yeah, give me a pen, I'm going to make this go away. You would have to introduce, or someone would have to introduce legislation to reverse this ban, and it would have to be voted on by the bipartisan Senate and House, and we think that is highly, highly unlikely to happen, considering that basically this was a unanimous vote to ban this material. The other elements of this new administration, of course, is that we believe that Trump is keenly aware of the energy situation, and we believe that he understands that the growth of AI and tech and data centers is going to put enormous strain on the grid. And it's also interesting for him to have Elon Musk in his ear, seemingly on a daily basis right now. Elon, of course, runs X, and X has Grok, which is an AI platform built into X. Also, of course, running Tesla with our self-driving

software that is AI driven, there's going to be a full understanding of this AI growth situation, the arms race with China, concerns with AI and what will be needed in order to remain competitive and 'win this race.' And all of that, in our estimation, is going to lead to support of growth of energy and support of nuclear in the United States.

Erik: Justin, let's talk a little bit more about Christopher Wright, who is President Elect Trump's choice for Secretary of Energy, seems to me like this is a guy who really gets it. And I don't want to put Jennifer… yeah, I do want to put Jennifer Granholm down, because she's an idiot. Complete, just night and day difference, I think, in terms of having a clue, in terms of who's in charge of Department of Energy. I mean, he's on a closed board, so he clearly gets advanced nuclear. He's also a fracking guy. Seems like President Trump's energy strategy is going to be very much, drill, baby, drill. Let's really get oil production back up. What do you think Christopher Wright's focus is going to be? Is it going to be more in the oil and gas space, or more in the nuclear space, or a little of both, or what?

Justin: Well, I think it's probably pretty obvious that his focus will most likely be in the oil and gas space, considering that he's the CEO of Liberty Energy, which is a fracking company. But he also, like you said, he's on the board of Oklo, which is an advanced nuclear developer, and he's on record of being supportive of nuclear, especially advanced nuclear. So 'the energy humanist' moniker, that was something that was proffered by Doomberg. I think that's a very accurate description of Christopher Wright. I think he is very, very sharp. And like you said, I also agree that he gets it. Either way, this should be very bullish, generally speaking, for nuclear going forward. Even though he is the CEO of a fracking company, being on the board of Oklo, that's not something that's accidental. I think he understands that we need growth across the board for energy in the United States.

Erik: Justin, let's move on to page 4, where you're charting supply and demand for uranium, and the outlook.

Justin: Sure, I wanted to give kind of an update. There's nothing that's really all that different on this picture, other than the demand growth has shot up to the upside since the projected demand growth since last you and I talked. And this slide and on slide number 5, are both from a recent report from RBC. And RBC, importantly, is getting this data from their sources of UxC, which is a the largest nuclear fuel analyst, the World Nuclear Association, which does incredible work across the board on nuclear, the IAEA, which is the International Atomic Energy Agency, and then, of course, RBC's own input. So, they're getting this data, and they're graphing out this data from the people that live, eat and breathe this world. So they're not just pulling it out, right? This is solid data from the most respected entities in the industry. And they're showing, basically, that the mine supply, the long-term deficit, starting kind of in the mid 2030s, looks to be really, really severe. And this moment in time where the market could balance is highly speculative, based on how smoothly and efficiently and quickly the expansion of supply will happen in the later part of this decade. There's still very, very large deficits looming right now, between now and, let's say, 2029, 2030. Because what happens at 2029, 2030, while the market expects that kazatomprom and Kazakhstan, on 100% basis, will be able to expand

production substantially, which maybe they will, but it's going much, much more difficult than anybody expected. The market expects that NextGen's Arrow project will start production, which starts out at 28, 29 million pounds a year for the first few years, Denison's Phoenix Global Atomic's Dasa, various other expansions of brownfield, and maybe a couple of other smaller greenfield projects. And if everything goes right, we have a point in time of this market balancing. But nothing ever goes right in the mining world. I'm sure you know that just as well as anybody else, and we've already seen multiple brownfield restart projects that are not hitting their production goals. So whether that's Ur-Energy, whether that is Boss energy, whether that is Paladins restart of Langer Heinrich, all of these projects are coming up short on their production targets, even from a mine that already was pre-existing. So, when we're talking about these major, major greenfield projects, it's highly speculative whether or not these will get into production at all, let alone on time, on budget. So, we still have a very large, up into the right demand bar, supply is a question mark, and you can see that lighter colored shading at the top of these bars is secondary supply, which has shrunken a lot since if you go back into the early 20 teens, and that was megatons, the megawatts, plus enormous amounts of under feeding. And as we've discussed multiple times in this chat today, Erik, enrichment is relatively constrained. So, when you have constrained capacity enrichment, you don't have under feeding, so that secondary supply has dropped a lot.

Erik: Let's move on to page 5, Justin.

Justin: Sure. So I just wanted to highlight, again, that this actually is a growth industry. This is something that, and maybe that's clear to everybody at this point, but this was something that nobody really understood, going back a few years, that the sector was actually growing. The nuclear technology isn't dead. It's not only being phased out, some old reactors, of course, are incrementally being phased out, but they're largely being replaced with much, much larger new reactors. So, this graphic on slide number 5 highlights exactly that. Again, the source data coming from the WNA and the IAEA, just showing how much nuclear is growing, and specifically where it's growing. So you can see China, of course, is the biggest growth story in all of nuclear, with 30 reactors under construction right now, they are shooting to have 150 gigawatts of nuclear by 2535, they're on pace to hit that. And of course, backing up, this foundational graphic showing the enormous growth of nuclear is the Chinese practices of the last few years in terms of procuring uranium. China does not have a lot of domestic uranium resource in the ground. They're building out a lot of conversion and enrichment for their own sources, but they have to procure uranium elsewhere, so they're assigning deals. They're taking over projects, and they're signing long-term contracts. Two more very large long-term contracts were secured with kazatomprom and two different Chinese nuclear utilities. So, they are doing everything they can to scoop up the pounds from the prolific producers of the world, which is Kazakhstan, also shares the border with China, so it's convenient. In that way, they are much more aggressive on the procurement side than anyone else in the world. And why Western utilities have not reacted to this practice yet is somewhat of a head scratcher, and they will, and we're going to look back five years from now and see just how intelligent the Chinese were by acting early and in a bold manner, in terms of the volumes that they're securing. So, the Chinese are building out like crazy, and they're also procuring like crazy. And if anybody's concerned that the Chinese

inventories are going to be sold into the market, the Chinese will be net buyers at least out to 2030, and probably beyond.

Erik: And all of those Chinese statistics that you just quoted were the conventional nuclear build out that China has planned. On top of that, they're also doing a whole bunch of advanced development, including thorium fueled, and as you say, they're short on uranium deposits in their own country, but they're not short on thorium, and they're building out the thorium supply chain that we ought to be building in the West. So, I couldn't agree with you more on that final question. Justin, before we close, as I assimilate all of the things you're telling me, first of all, as you said, nothing ever goes right in the mining business. All it would take is just for the Dasa project in Niger, which is definitely at risk right now, we don't know what's going to happen politically in Niger, and I certainly hope it gets worked out, I've got a big chunk of global atomic stock. But if that project by itself, nothing else were to go wrong, that totally unbalances your supply and demand chart. And it seems like it's a no brainer, like you just have to go all in on uranium. But hang on, anytime anything seems like a no brainer, I always want to stop and think and say, okay, where could I be getting the investment thesis wrong? What could I be missing? And it seems to me like the biggest candidate for what we could be missing here, about uranium demand really increasing dramatically, is if we get that conversion and enrichment bottleneck where there's demand for enriched uranium product, but there's not enough conversion and enrichment capacity to consume as much uranium as everybody thought was going to get consumed. Is that the right thing to worry about? And if that's not the right one, what else could go wrong to undermine an all-in on uranium kind of investment thesis?

Justin: Well, like I mentioned earlier, if you go out a few years beyond where the current bottleneck exists for both conversion and enrichment, which has been driven by a massive increase in demand, not by capacity decreasing, right? So that's super important to understand, is that these price spikes did not happen because a conversion facility caught fire or an enrichment facility went down or for some other reason. This is happening because demand is pouring into these markets, largely because of the geopolitical situation, but that's happening either way, and that has a follow on demand for uranium. It's not theoretical. It has to happen because of physics. You need something to feed into that conversion process, and the only thing that you can feed into that process is U308, so that demand is yet to really hit, and that is what we're expecting for next year and the years after that, as far as going out into the 2030s, we're just going to have to see how the market adjusts to the demand that comes into those markets. So if, as a nuclear utility, if you have a facility that's set to shut down in 2032 and then you get a life extension, and then you go out to buy your enrichment, you go out to buy your conversion for those periods of time, the coverage that you need, and it's not there, then we can see continued price increases. We have yet to ever see, like I mentioned, ever in the history of this industry, that there was insufficient uranium conversion or enrichment to the point where a facility didn't get its fuel. So, if the scenario that you're discussing hypothetically where there just isn't enough conversion and enrichment to equate to Uranium demand, well that's the same situation that there isn't enough conversion or enrichment to actually fuel the reactors. And if that's the assumption you're making, then all of these graphics, you can just throw out of the window. We believe that the growth of nuclear is going to be important enough for sovereigns

and individual companies that it's going to incentivize the industry to grow, basically, via simple capitalist economics. And the demand for something grows, the price goes up and the supply increases. And the only thing with this industry, has just happened slowly. So, I don't believe that a conversion enrichment bottleneck is going to slow down the uranium growth story, or the uranium market, or the price rise for uranium, at least not in the time period that we consider for this investment thesis. How this plays out in the 2030s is just too far in the future to really predict, but the growth projections are there.

As far as what else could go wrong, we always have the possibility of a nuclear accident that's always there in the background, whether or not that leads to a demand destruction event like Fukushima, with 53 reactors turned off over the course of 12 months, that is really what led to a decade long bear market, not the accident and sentiment that affected things pretty significantly for quite a few years. But I think that if you had a smaller, less significant accident, is that going to cause China to stop building nuclear? Probably not. So how is that going to affect the demand picture? I'm not sure. Would it be a positive thing? No, of course not. But that possibility is always there. Is there another potential demand shock out there that we're not picturing? Certainly possible. A reduction in demand, a reduction in the forecast of demand, if China already, if they decided to slow down their build out, if the US, for whatever reason, decided to not grant life extensions to a bunch of reactors that have applications up for life extensions. These sorts of things can change the actual supply demand dynamic, and should change the forecasting of the investment thesis. Of course, as far as the supply side goes, we have a very hard time seeing an unforeseen large source of supply here, at least at these prices. If we get up to $150, $200 a pound uranium, and it stays there for years, we're going to see an incentive for new sources of supply. So, whether that's from phosphates in Morocco, whether that's from sea water extraction, these things are out there, but they're just not in play right now, and they're not going to be in play for many, many years, like I said, unless and until we have much higher prices sustained for a very, very long time. So for now, hard to tell. On the supply side, if anything comes in out of left field, it's not looking highly likely. On the demand side, we could always have a shock that's unexpected.

Erik: Justin, I can't thank you enough for a terrific interview, but before we close, I want to talk a little bit more about Uranium Insider, the newsletter that you publish. As I mentioned at the beginning of this call, you perfectly nailed the bottom call on this deep correction. I know you've got something in excess of 400% return since inception on your newsletter in just a few years. So terrific performance. Congratulations on that. Tell us more about it. Who's it for? Is it only for professional investors? Is it for the retail market as well? How much does it cost? Where do you sign up? And give us the whole rundown?

Justin: Sure. Erik, yeah, like I said, we've been running this since August of 2019, we have a small team behind us. We are 100% focused on the nuclear energy sector and the uranium mining sector. So this is all that we do. Who this is it for? This is for investors who already have money on the line in the sector, are interested in putting money on the line in terms of investing in the growth of nuclear and in the rise of the uranium price via uranium mining stocks. So, as you can tell from the various directions that this conversation has taken in just a very short

period of time today, it's an extremely complicated sector. What we always try to do, and what I think that we do very well, is distill down the incredible amount of information that's swirling around all the time for this sector, into what exactly you need to know as an investor. And a lot of that focus is on the physical market, trying to understand who is buying, who is selling. Various sources that we have built, connections that we built throughout the industry over the many years that we've been doing this, give us up to date and accurate information, we are able to distill that into what you need to understand as an investor. So, we try to take a very complicated sector and make it simple so that you can make investment decisions. And of course, we have our focus list of security recommendations that has led to that 411% return since inception in August 2019, so you can find out more information at uraniuminsider.com and, of course, I have a decent presence on X as well @uraniuminsider.

Erik: Well, Justin, I can't thank you enough for a great interview. We'll have you back in a few months for another update. Listeners, just to let you know what's in store later this week, I'll be pre-recording our Christmas and New Year's specials. We pre-record those in order to give our production team those holiday weeks off, we're going to take a really deep dive on advanced nuclear technology. The first episode to air on Christmas will be all about the advanced reactor designs that are going to be important for energy transition. So, if you're still scratching your head wondering, what's the difference between a fast sodium reactor and a molten salt reactor and a high temperature gas cooled reactor, and what does all this stuff mean? We're going to cover that in the Christmas episode. Then, in the New Year's episode, we're going to take a deep dive on nuclear fuels and nuclear fuel cycles, including the newer fuels, like TRISO and HALEU and thorium fuels that will supply the reactors of tomorrow. So that's all coming up in our holiday specials over Christmas and New Year's. Patrick Ceresna and I will be back as MacroVoices continues right here at macrovoices.com.