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Nuclear Buzz

Why New Build Won't Happen Here

By Andrea Jennetta, Publisher

We've all heard the tired cliché that "nuclear is too expensive." We all know the culprit is the huge reactor-construction cost. In terms of operating costs, we all also know that nuclear energy is cheap (though not "too cheap to meter"), over its 60-year operating lifetime.

Nuclear plants that run in deregulated electricity markets are among the lowest-cost power providers because state utility commissions do not limit their profit margins.

Sure, it's risky to sell electricity on the open market. But because they provide baseload power in markets that have barely enough electrical capacity to squeak by each day, independent system operators snap up all output at daily premium prices. Ergo, merchant nuclear generators usually make a boatload of money, with revenues from market sales to the spot market or through longer-term power purchase contracts.

So why can't their owners get commercial financial institutions to loan the needed bucks to build new nuclear units to replace the evil fossil plants in markets that barely have enough baseload supply to begin with? Why do they have such low investment grade credit ratings? Is it a simple balance sheet issue? Problems with supply and demand forecasts?

Intuitively, as least for me, such loans seem like no-brainers. Until you consider

Price and Production

How a Fuel Broker Makes a Living

By Emily Fink, Guest Contributor

I have to admit. "I'm a Nuclear Fuel Broker" gets some interesting looks from people who ask me what I do for a living. As a part of the Nuclear Fuel Brokerage team at Evolution Markets, it's our job to receive bids to buy and offers to sell nuclear fuels. We seamlessly and anonymously enter these prices into the market on behalf of our clients, assisting their procurement or sale of material at the best price available.

The best price comes from Evolution Markets' ability to leverage a network of counterparties to find the most competitive price at which to purchase or sell uranium. Our clients include the major participants in global nuclear fuel markets: utilities, producers, fabricators, converters, enrichers and financial players.

It is important to note that we play the role of introductory broker. That means Evolution Markets brings together buyers and sellers without taking a physical or financial position in the market. Our clients generally use our services to get deals done more quickly, efficiently, creatively and cost-effectively—and do so without moving the market drastically.

How do we get our prices? As brokers, it's our job to have our fingers on the pulse of the uranium market. We speak to our clients all day (and sometimes all night). We know where the market is at all times. Our prices are a view of the best bid and offer shown to us in the market, and we see a comprehensive view of supply and demand. With this market knowledge, we can provide our clients with first hand market insight prior to purchase or sale decisions. We can also advise them of price volatility risks inherent to nuclear fuel markets—and how to manage or "hedge" these risks.

Proper hedging requires using a variety of techniques, and at Evolution Markets we provide strategic advice on assessing nuclear fuel market risk

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Special Insert on Nuclear Supply Chain!

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the decades-plus timeframe to recoup the investment. Then it looks risky. Then, when you factor in the associated credit-subsidy cost, which is based on the probability that a loan recipient will default on payments, it looks *really* risky.

Regulated Utilities Need Guarantees?

Now, in the U.S. at least, conventional wisdom holds that the Department of Energy's Loan Guarantee Program, which Congress set up five years ago, "fixes" the above problem.

Not quite. In February, Southern Co. received a conditional $8.33 billion loan guarantee for two new AP1000s at Vogtle. I get that the award was symbolic. That Southern was willing to bet its balance sheet on the LG application is laudable. From what I understand, Southern's credit subsidy cost was close to zero. While DOE won't say, we may be able to suss out the actual amount when Southern posts 2010 financial results.

But Georgia Power, the Southern utility subsidiary that holds the largest equity stake in the two new units, is regulated. As is Oglethorpe Power Corp., another owner. Two other owners, the Municipal Electric Authority of Georgia and the City of Dalton, Georgia, operate under a different set of corporate tax rules then their for-profit partners. Their state regulators can set rates that assure the new build investment is recovered in the rate base. So can someone explain to me why these companies need a loan guarantee?

Merchant Generators Need Them Now

Which brings me to Constellation and NRG Energy, two merchant generators that operate in deregulated electricity markets (Mid-Atlantic and Texas, respectively) that have too many fossil-fueled plants and not enough base load capacity. I wonder whether either company will ever get one—and at a credit subsidy cost that it can afford. Putting politics aside—and when it comes to nuclear new build and loan guarantee program, there is plenty of that (*see related article in special section, p. 4*)—there are fundamental financial realities that make me wonder whether either company has a chance.

Edward Kee, vice president at NERA Economic Consulting, had to this to say in answer to my musings:

"In the U.S., several issues have made investments in merchant power plants in these markets look less profitable: (a) low natural gas prices that lead to lower electricity market prices; (b) the possibility that shale gas will ensure low natural gas prices for a long time; (c) lower demand due to soft economy means lower demand for power and lower electricity market prices; and (d) the increasingly dim prospects for any real carbon control regime. All these factors are hitting the merchant nuclear plants really hard, as the high capital intensity means a much longer period is needed to recover the investment." *Sigh.*

In the U.K., the situation is even worse. There, the government has rightly decided to retool the entire electricity sector landscape and, in essence, start over—but without financial backing for merchant power generators. That North Sea oil won't last forever, my friends. As for Europe…what a mess. There, nuclear reactors operators are blackmailed out of their profits in exchange for longer operating lives. Thanks, but no thanks.

It's Called Leadership

At the end of the day, it boils down to leadership. Those of us in the developed world can't tackle any major infrastructure challenge without getting bogged down. Of course democracy and public debate is important. As is cost.

But if we are serious about clean air then we have to take some risks. This means you, Office of Management and Budget. Sure it's possible Constellation or NRG could default on a $10 billion loan at 3% interest from the U.S. government. But is it probable? Why not issue a conditional loan guarantee and find out?

The only thing the dithering about nuclear loan guarantees has accomplished are layoffs and the loss of high-paying, advanced technology jobs that would have otherwise been created by new nuclear manufacturing and supply chain companies. I don't think the Obama administration can afford too much more of that before jeopardizing any hope of a second term.

Or maybe we should just re-regulate and get the government involved again. After all, that's how we built all the nuclear power plants in the first place. The approach is most definitely working out in countries with developing economies like China, India and South Korea. In Asia, governments are investing as much money as it takes to build reactors as fast as possible. They get it. We don't.

AFRICAN PROJECTS

Central Namib Report: Strict Mgt. for U-Mines

By Roger Murray, Special Correspondent

The final draft report of the "Strategic Environmental Assessment for the Central Namib Uranium Rush" (SEA) published in August provides a comprehensive analysis of the socio-economic and environmental impacts of expanding yellowcake production in Namibia's primary uranium province. Public consultation on the report is due to close on Sept. 9, and after evaluating it the Namibian government will probably put the recommended strategic environmental management plan.

Compiled by the Southern African Institute for Environmental Assessment, with the support of the Geological Survey of Namibia and Germany's Federal Institute for Geosciences and Natural Resources, the report endorses further expansion of uranium mining as beneficial to Namibia's economy and employment prospects, provided the required measures are taken to protect the fragile ecology of the Namib desert and mitigate adverse socio-economic impacts, for instance on tourism.

But it recognizes that effective implementation is subject to "political will and sufficient [public] finances" and would also place a considerable strain on the institutional capacity of Namibian government departments and parastatal companies.

"To ensure that the uranium rush has a positive influence on future development," the Namibian government, mining companies, local authorities and civil society "must work together to eliminate, reduce or offset the negative impacts and enhance the benefits and synergies," the report concludes.

Uranium to Replace Diamond Mining

Three production scenarios are outlined through 2020. Low-case Scenario 1 is based on the two operating mines, Rössing and Langer Heinrich, including planned expansions, plus Trekkopje (under construction by AREVA) and Valencia (for which a development decision has not been taken). This would provide annual production of 11,000 tonnes U3O8.

Medium-case Scenario 2, which the report said is now looking "very likely," adds mines at Bannerman Resources' Etango and Extract Resources Rössing South projects, almost doubling annual output to 21,500 tonnes.

Under high-case Scenario 3, mines at Marenica Energy's Marenica project and Deep Yellow's Omahola project would take annual output to 26,900 tonnes, although the report cautioned that "other projects could emerge as better candidates over the next few years."

The report forecast that under all scenarios uranium will replace diamond mining as the largest contributor to Namibia's GDP, with the value of yellowcake exports expected to increase from N$5.4 billion ($740 million) in 2008 to at least N$12 billion ($1.6 billion, scenario 1) and up to N$26 billion ($3.6 billion, scenario 3) by 2020, assuming a contract price of US$70 per pound U3O8 and 90% capacity mining operations.

It also predicts that the uranium mining sector and directly related new industries will employ between 1,700 (scenario 1) or 7,000 workers (scenario 3) by 2020. In addition, a significant number of new jobs would be created in other sectors to supply goods and services.

Water A Key Constraint

The report concludes that the central Namib has "insufficient groundwater to supply uranium mines," and identifies the availability of desalinated water as "the critical path." A planned second desalination plant by NamWater "needs to be fast-tracked in order to be up and running as soon as possible."

The report acknowledges that further yellowcake mines "will inevitably have a number of negative impacts on the environment, both at the scale of individual mines and at a regional level due to the cumulative effect of several mines operating within a relatively small area with similar construction and operating timeframes."

The SEA's most important recommendation is to create an office to administer the environmental management plan. "This will be crucial in ensuring that the Uranium Rush, as a whole, is moving towards sustainability and not away from the goals of sustainable development," the report said.

Loan Guarantee Delay Imperils U.S. Supply-Chain Revival

By Nancy E. Roth, Managing Editor

Some of the most stalwart proponents of the nuclear renaissance in the U.S. may well be wondering right now whether they have made an expensive mistake. Within the past six weeks NRG Energy (South Texas Project) and Constellation Energy (Calvert Cliffs 3) announced that they were reining in project spending due to uncertainties about the timing of the Energy Department's loan guarantees, for which they are prime candidates.

AREVA appears to be marching to the same dirge, having announced on Aug. 21 that it would postpone the opening of its $363 million nuclear-component manufacturing facility in Newport News due to the uncertain economy and absence of loan guarantees to its prospective utility customers.

Jarrett Adams, a spokesman for AREVA, told *FCW* that the U.S. government had not capitalized on the opportunities afforded by companies like AREVA, which had "invested heavily" in what it believed would be a robust nuclear market.

"We still believe in the U.S. market," he said, but the current market has not generated enough demand for the plant's products to support AREVA's former pace of investment. To date AREVA has put $25 million into the facility, which is a joint venture with Northrop Grumman Shipbuilding. When it does go on line in 2013, it will be able to fabricate components all kinds of reactors in the U.S., not just EPRs.

Adams also pointed out that AREVA has encouraged the development of a supply-chain base among U.S. manufacturers, holding recruitment events in Ohio and Baltimore. More than twice the anticipated number of companies sent representatives to the events, he said, demonstrating the high level of interest in the manufacturing sector. AREVA is planning another event in Idaho Falls before end-2010, he added, in support of its Eagle Rock enrichment plant.

Leadership in Short Supply?

Industry sources that declined to speak for attribution have told *FCW* that the delay springs not from the Energy Department but the Executive Office of the President, under whose aegis the Office of Management and Budget operates. DOE has submitted an estimate of the credit subsidy cost for the loan guarantee for the Calvert Cliffs project, but OMB, which is responsible for signing off on it, has not done so. A key mission of OMB is to protect taxpayers from taking on excessive burdens, and it is always "the voice of pessimism" in any discussion of the budget.

What is needed to resolve the conflict between DOE, which wants to press forward, and OMB, which wants to hold back? Leadership, said one individual. The President has been elected to take bold action. But the President, or perhaps his advisers, appear to be bogged down in the analysis.
"Yes, you need to understand all the risks," said the source. "But at a certain point it becomes dithering. You lose opportunities by default. Everything has an expiration date."

Loan Guarantees Could Draw in Investment

Another thing that the Administration does not appear to recognize is that the first nuclear loan guarantee, which went to Southern for a two-reactor project at its Vogtle site near Atlanta, was encouraging to the industry but did not demonstrate that the program could work for the typical, small (compared to state-owned utilities in Europe and Asia) utilities in the U.S. Southern was in a position to take a larger portion of the financial risk than any other utility, and therefore got a far lower credit fee in the loan guarantee that others could not hope to attain.

For that reason, loan guarantees to companies like Constellation and NRG are what will prove the value of the program for the U.S. nuclear industry, signaling that the Administration is serious about starting a nuclear renaissance in the U.S.

"There is a lot riding on this decision," a nuclear executive told *FCW*. "There is risk involved in the [normative nuclear] project. It's a question of whether public policy will support taking risks to get a whole bunch of goals that everyone thinks is important. Like jobs creation, manufacturing base expansion, export of American supply-chain products and attracting investment."

For example, foreign investors that have already taken a stake in American projects are watching the loan guarantee program closely. EDF is in a joint venture with Constellation and owns nearly half of its nuclear assets. Toshiba has also committed to invest in NRG's South Texas Project. Loan guarantees to these two projects, would encourage foreign investors to extend their interest in other viable projects. This may also open the way for other foreign investors to enter the U.S. market and help it grow.

In supplying a growing domestic industry U.S. manufacturers would see export opportunities for their products multiply as well.

Election Politics Holding Up Program?

The Department of Energy cannot be blind to all these potential benefits of nuclear loan guarantees. Nor can the President and his advisers.

Yet the holdup of new loan guarantees has extended far beyond what anyone in the industry expected, and certainly longer than Energy Secretary Steven Chu seemed to promise in a speech after the award of the first loan guarantee on Feb. 16. Chu told reporters that the award to Southern was the Administration's first for a nuclear project, but "it won't be the last."

Indeed, sources have told *FCW* that the White House wanted to award two loan guarantees simultaneously, but only had adequate loan authority for one. DOE requested $54 billion in additional authority from Congress for additional nuclear loan guarantees in FY2011.

But the Senate Appropriations Committee was not exactly receptive, writing in its budget report that it remained "concerned" about the Energy Department's failure to use all the funding authority it already had received, including for nuclear projects. In July it allocated only $10 billion in nuclear loan guarantee authority.

For some weeks it appeared that the Kerry-Lieberman climate bill might contain additional funding authority, but that hope faded when the legislation sank under the pressure of coming midterm elections.

That may ultimately be why neither DOE nor the White House has shown any sign that the next loan guarantee is coming. In recent weeks the White House has been directing most of its energy and attention to campaigning to prevent what is widely predicted to be a rout for the Democrats in Congress.

Despite President Obama's call for bipartisan support for nuclear on Feb. 16, there is no question that the grant to Southern rankled many of the old-line antinuclear environmental groups that form some of his core support. It may be that the White House has decided to give a higher profile to energy enterprises this constituency favors. On Aug. 16, for example, the President gave a speech in Wisconsin praising an advanced battery manufacturer that would create 80 new jobs after adding manufacturing capability.

Pronuclear voters also have traditionally tended to favor Republican candidates, so perhaps the White House reckons it has little to gain by courting them. If this is the case, nuclear projects and supply chain manufacturers may have to wait still longer to see the next nuclear loan guarantee hit the street.

Modernizing Manufacturing

Group Focuses on Updating Nuclear Fabrication Methods

By Dan Yurman, Contributing Reporter

The American Nuclear Society's April 2010 issue of *Nuclear News* listed more than 900 nuclear manufacturers making everything from nuts and bolts to valves and sensors, to complete steam supply systems. Some two dozen of them have formed the Nuclear Fabrication Consortium.

Nate Ames, the group's technical director, told *FCW* in an interview that the members, which include AREVA, Babcock & Wilcox, Nucor and Westinghouse, banded together to support the growth of a vibrant domestic nuclear industry.

"Our goal is for the American nuclear supply chain to compete successfully on the global stage by enabling more cost-effective and reliable nuclear power in a carbon-constrained environment," he said.

Better Welding Techniques Available

The group has identified more than 200 key issues that hinder domestic industry innovation and progress toward becoming more cost-competitive in the global market. Early on, the group determined that ASME code for manufacturing components could be more accessible and better organized.

The group has borne down on welding practices in particular. Ames said the nuclear industry has yet to accept innovative welding techniques now used in other industries. For example, the shipbuilding industry welding methods for "big round things like containment structures" could will save manufacturers 10,000 work hours, and drive down their costs.

In nuclear manufacturing many large components need costly thick-section welding. But the nuclear industry could test and validate technologies that other industries use, reducing production costs and lower residual welding stress, thereby improving quality. The techniques include laser welding, Laser-Gas Metal Arc Hybrid Welding, Tandem Gas Metal Arc Welding and inertia-based welding processes.

Avoiding "Core on the Floor"

NFC has taken its concerns to Washington, and last year, in concert with the Edison Welding Institute, it secured $2 million in federal funding to improve fabrication processes and equipment development, perform material evaluation and testing and develop standards, plus teaching them in the industry.

A longer-term initiative is to find a way to use silicon carbide as cladding for nuclear fuel bundles. "You can't get core on the floor," with this material, Ames said, because unlike zirconium alloys, it will not melt. But it is difficult to two pieces of it together.

The Idaho National Laboratory is testing the material in hopes of producing results within the next year. The goal is to develop a cladding material that will not fail under high neutron flux, increases fuel burn up, and enhances safety under accident conditions. Regulatory approval is still a long way off, though.

Separately, a consortium of the Massachusetts Institute of Technology, the Electric Power Research Institute, Oak Ridge National Laboratory and several specialty ceramics manufacturers hope to produce test assemblies over the next few years.

This spring the Nuclear Regulatory Commission will be working on a rulemaking for performance-based cladding acceptance criteria. Tara Inverso, the NRC project manager, told *FCW* the rule will move from prescriptive to performance-based criteria for fuel cladding materials. "Extensive acceptance testing would still be required for new materials," she said.

Among other things, the rulemaking will govern the evaluation of ceramic cladding and require suppliers to demonstrate the safety of the material under a variety of normal and off-normal conditions.

U.K. Supply-Chain Growth Accelerates

By Roger Murray, Special Correspondent

When the Labor government decided to allow the private sector to build new nuclear power plants in the U.K. in 2008, skeptics said the nuclear supply chain would not be up to the task (*FCW* #260, Jan. 9, 2008).

Two years on, a new U.K. coalition government of pronuclear Conservatives and conflicted Liberal Democrats has taken power. Domestic manufacturing constraints remain, but manufacturers have grown enthusiastic about opportunities in the nuclear sector, for which total investment is projected at +£30 billion ($46 billion). If the EPR1600 and the AP1000 meet the core safety clearances next June, and site-specific planning consents are granted without undue delay, construction should be underway by mid-2012 (*FCW* #392, Sept. 2).

Although the U.K. has seen no new nuclear plants in over 30 years, a strong mix of nuclear industry capacity has remained intact. The U.K. Nuclear Industry Association reports that the civil nuclear industry employs around 40,000 skilled people and is responsible for generating more than 80,000 direct and indirect jobs.

Members of the NIA include operators/vendors of nuclear stations, equipment suppliers, engineering and construction companies, decommissioning businesses, nuclear liabilities and waste management, and companies involved in all parts of the fuel cycle.

During the past two years, U.K. nuclear-industry conferences have recorded a significant growth in supply-chain company attendance, including small-valve manufacturers and specialized component makers, along with large integrated nuclear engineering companies and suppliers of nuclear services.

Hits at Westinghouse Website

Testament to this expanding supply chain, over 450 potential suppliers to AP1000 reactors have registered an interest with Westinghouse via its Nuclear Power Delivery UK (NPD) web portal, the company's Adrian Bull told *FCW*. NPD, a consortium of Westinghouse, The Shaw Group, Laing O'Rourke and Toshiba launched this June in a ceremony attended by 170 companies, in Manchester, the biggest city in northwest England, where much new build construction activity will take place. The consortium will promote supply-chain partners the Westinghouse's AP1000 reactor in the U.K.

As NPD Managing Director Dr. Rita Bowser commented at the ceremony, "The supply chain strategy for Nuclear Power Delivery UK is to 'buy where we build' and we see the event as an important first step in establishing a robust supply chain that will work with us to deliver the AP1000 nuclear power plant to the UK and possibly beyond. … We estimate that the total opportunity for the UK economy could be worth in excess of £30 billion [$45 billion] if we were to build a fleet of 10 plants."

Balfour Beatty and Rolls Royce signed supply-chain partnerships with AREVA at the end of 2008. Rolls Royce is working on supply chain development and manufacturing and engineering services. Together with BAE Systems and Doosan Babcock, it has also partnered with Westinghouse.

Balfour Beatty is also helping AREVA develop its supply chain, as identifying the skills and resources needed to deliver an EPR fleet. It has also formed a joint venture with Vinci Construction to help deliver project management, construction and civil engineering infrastructure for the UK EPR program.

Northwest England Center of Nuclear Biz

A major supply chain boost was the end-August announcement of a partnership between Cammell Laird, the long-established, Merseyside (Liverpool)-based shipbuilding firm, and nuclear engineering firm Nuvia, based in Risley, Cheshire County.

Northwest England is set to become a significant center of nuclear supply-chain opportunities, as it contains five of the ten approved new-build sites: Braystones, Kirksanton and Sellafield (Cumbria), Heysham (Lancashire) and Wylfa (Anglesey/North Wales). But the new partnership hopes to gain contracts for work other U.K. new-build sites also.

The two firms said on Aug. 26 that they teaming to bid on contracts to fabricate "heavy modules and components for new nuclear plants." They believe these could potentially create hundreds of jobs at Cammell Laird when new build nuclear construction gets underway in about two years.

Global Briefs

In a shocking turnaround, the **Australian Labor Party** (ALP) has gained sufficient support from independent candidates elected in the Aug. 21 election to remain in government. A Sept. 7 deal between ALP leader Julia Gillard, who will now get a second crack at being prime minister, and two independents from New South Wales means she can count on the support of 76 MPs, a bare majority of the 150-member House of Representatives.

Gillard apparently planned Labor's survival strategy carefully. She opened with a first-ever formal deal between the ALP and the Green Party, under which the Greens' sole lower house MP Adam Bandt threw her his support if she set up a climate-change committee to work on a carbon tax. When parliament is sitting, Gillard will meet every week with Bandt and Greens leader Bob Brown to review the government's legislative agenda.

This will almost certainly include **a revived mining super profits tax**, although this may stir tension with the Greens, who want to go back to the original tougher version announced by ousted ALP leader Kevin Rudd. Gillard hopes the diluted version she announced before the elections will avoid a showdown with Australia's major iron ore and coal producers, including BHP Billiton and Rio Tinto.

Germany's chancellor Angela Merkel announced Sept. 5 a **green light for extensions to the operating life of the country's fleet of 17 nuclear reactors**, which provide 21% of the country's electricity supply. E.ON, RWE, and Vatenfall welcome the development but will also need to pay a **new renewables tax**, which analysts expect will deter fresh investment in modernizing reactor fleets.

The previous Social Democrat Party/Green Party coalition government brought in a mandatory phase-out by 2020, but reactors built before 1980 will now be allowed to operate for another eight years beyond that (extended from 32 to 40 years total life cycle), and those built subsequently for a further 14 years (from 32 to 46 years).

But Merkel's Christian Democratic Union/Free Democratic Party coalition will not let go of an election manifesto pledge that they would extend the lives of the reactors only as a bridge to an energy future in which wind and other renewables supply 50% by 2030, rising to 80% by 2050.

Nuclear operators must pay €300 million ($390 million) in 2011 and 2012 to support renewable development. That goes down to €200 million ($260 million) from 2013-16, with a tax on every megawatt-hour of nuclear output to go into a fund to support renewable development.

USEC Inc. (NYSE:USU) closed on Sept. 2 the first tranche of a three-phase investment by **Toshiba** (TOKYO: 6502) and **Babcock & Wilcox** (NYSE: BWC). The $75 million will be used to continue work on USEC's American Centrifuge Project. In May, Toshiba and B&W signed an agreement to invest $200 million in USEC in three phases. Closing on phase two of the investment of $50 million will occur when USEC secures a conditional commitment on a loan guarantee from the Department of Energy. The balance of the investment, $75 million, in phase three is conditioned on closing on a $2 billion loan for the ACP under DOE's loan guarantee program

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Last Friday, the U.S. Nuclear Regulatory Commission completed its inspection of the **Metropolis** plant's operator training and safety and operating procedures and gave **Honeywell** "the go-head to resume full operations," the company said on its website. The plant resumed full production of UF6 on Sept. 4 without any of the 220 union employees who have been locked out since June 28 after contract negotiations broke down. Non-union workers were trained to take over the plant's operations.

Kivalliq Energy Corp. (TSX-V: KIV) announced on Sept. 7 that shareholders have approved the sale of an additional C$1.2 million (4.8 million shares) to **Lumina Capital Ltd. Partnership**. If Lumina Capital chooses to exercise its right to participate in the full amount, it will own approximately 18.3% of the shares of Kivalliq on an undiluted basis, and approximately 24.2% assuming exercise of all warrants held by Lumina Capital.

AngloGold Ashanti (NYSE: AU) is planning to boost gold and uranium production from its South African mines, according to the Sept. 7 *Wealth Daily*. To achieve this, AngloGold's Mponeng mine will undergo a $162 million expansion to raise production. The company also expects to increase uranium production 54% to 2 million pounds per year. Overall, AngloGold expects to produce 80 million pounds of uranium from the company's mine-tailing piles.

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and creating and implementing risk management strategies. A physical hedge, for example, allows a client to purchase or sell a specific amount of material anywhere in the fuel cycle at a set price and at a set date in the future. As a result, end users can budget more effectively, and lock in supply at a fixed price, while sellers can preserve revenue against falling market prices.

A financial (or futures) hedge allows market participants to hedge price risk without changing their physical exposure. It's a way to lock in price without a physical commitment, and to participate in the market without taking physical delivery of nuclear fuels. These hedges utilize futures contracts, which are financial instruments whose value depends on the value of an index. In the case of uranium, the index is the month-end spot U3O8 settle price reported by The UxC Consulting Co.

Hedges based on these contracts simulate financially the purchase or sale of fixed priced physical uranium. Financial futures are traded in contracts, and each contract represents 250 pounds of U3O8, and the typical trade for futures is 400 contracts or 100,000 pounds equivalent. Not only are clients actively participating in the financial swaps market, and financially hedging with increased interest, but there are over 11,500 contracts of open interest in the CME cleared market today. That's about 3 million pounds!

Of course, the traditional procurement channels have long dominated the nuclear fuel markets, but companies are more often using the over-the-counter (OTC) trading market as another element in their strategies to protect themselves against adverse price movements. We're finding there is more day-to-day activity because there's more volatility in the market. This is a natural progression in a growing market, such as nuclear fuel.

As a result, there is more exploration for price discovery, as we saw in the later part of August. Late in the month the market fell from $46 to $43 in a few days, and then headed back up to $46 with active participation along the way. In part, this was fueled by market participants showing increased interest in using the market to hedge price and delivery risk. It was also seen as an attempt by buyers and sellers to probe the market for the next big price movement.

This is just another example of how the uranium market is growing and changing each week. It's Evolution Markets' view that with the help of our clients, new market demand and new participants, this marketplace can continue to thrive and develop.

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