Ux Weekly®

23 | OCT | 2017 VOL 31 | NO 43

A WEEKLY PUBLICATION OF UXC.COM

THE LEADING SOURCE FOR TIMELY MARKET INFORMATION

Not If, But When?

In the current downcycle, the spot uranium price has fallen 67% since March of 2011 and has lingered in a rather narrow 75-cent trading range of $20-$20.75 over the last four months since bottoming out at $18.00 last December. This recent lack of price volatility begs the questions of whether supply and demand in the current uranium market are perhaps closer to equilibrium than many in the industry perceive and just when will the next price upcycle occur?

The last several months have certainly brought a rash of negative news to the demand side of the picture, namely a shift in South Korea's policy toward nuclear power following the election of President Moon Jae-in, a slight slowdown in the pace of new nuclear build in China, uncertainty surrounding how quickly France will reduce nuclear power to 50% of total generation, the premature shutdown of a number of U.S. reactors unable to compete against inexpensive natural gas and subsidized renewable energy, as well as the cancellation of SCE&G's Summer 2 & 3 in the wake of Westinghouse's bankruptcy. These significant demand-side events, and others, prompted UxC to reduce its URM Q3 2017 Base Demand forecast by 4.5% over the period 2017 through 2030. We witnessed a similar move by the World Nuclear Association (WNA), as it dropped uranium requirements by 6.3% over the period from 2017 through 2030 under the Reference Scenario in its recently published *2017 Nuclear Fuel Report*. However, despite the forecasted demand declines, the spot price has proven itself as somewhat resilient amid the bad news.

While the production cut announcement by Kazatomprom in January did serve to help the spot uranium price recover from a low of $18, since then there were no significant additional cutback announcements until two weeks ago when New AREVA reported that it would reduce production at its open-pit SOMAIR mine in Niger by ~400 tU to 1,700 tU (~4.42 million pounds U_3O_8) in 2018 from 2,100 tU (~5.5 million pounds U_3O_8) in 2017. Furthermore, New AREVA is investigating the future course of production at its COMINAK underground mine in Niger, which UxC projects as higher-cost than its SOMAIR mine.

Kazakh ISR mines certainly host a lot of low-cost uranium, accounting for ~64 million pounds (~40%) of global production in 2016, but the fact of the matter is that very little of the world's remaining production is sustainable at a spot price of around $20 per pound U_3O_8. In past covers, we have iterated

Ux Price Indicators

Weekly* Ux U_3O_8 Price® *(10/23/17) **$20.15** (-$0.20)

Ux 3-Yr U_3O_8 Price $23.00 Ux 5-Yr U_3O_8 Price $27.50

Month-end (9/25/17) **Calculated values*

U_3O_8	Spot	**$20.25**	Conversion	NA Spot	**$4.60**
	Spot MAP*	*$20.45*		NA Term	**$14.00**
	3-Yr Forward	$22.75		EU Spot	**$4.60**
	5-Yr Forward	$27.25		EU Term	**$14.00**
	Long-Term	**$31.00**	SWU	Spot	**$42.00**
UF_6 Spot	NA Price	**$56.35**		Long-Term	**$48.00**
	NA Value*	*$57.51*	EUP	NA Spot*	*$ 849*
	EU Value*	*$57.51*		NA Term*	*$1,270*

that production has not responded well to demand cuts, mainly due to higher-priced legacy term contracts allowing suppliers to continue operating profitably. If we look more closely at production costs of operating uranium projects from UxC's *2017 Uranium Production Cost Study* (UPCS), we find that ~59% are producing at a full cost above the current spot price. As legacy term contracts roll off, more of this production will become exposed to spot pricing, leading to additional cuts.

Global inventories also continue to be a major factor keeping a lid on uranium prices, but these will not persist forever. Secondary supplies currently meet ~24% of UxC's Base Case Demand for 2017, but this figure is projected to drop to ~17% in 2025. Next month, UxC is scheduled to release its updated *Global Nuclear Fuel Inventories* report, which will provide an updated review and analysis of the global nuclear fuel inventory situation.

Like all commodities, the uranium market is cyclical and is still in a period of adjustment, with the production side lagging. The previous downcycle (1979-2001) lasted over 20 years, but was characterized by unprecedented inventories stemming from the U.S.-Russia HEU Agreement and USEC Privatization. Additionally, it did not include the nuclear growth story in China, which is still quite positive today. We are now almost seven years into the current downcycle, and while uranium prices could still push lower, the market is aiming to get tighter. It is ultimately not a matter of if uranium prices will rebound, but when?

News Briefs

South Korea will allow construction of two reactors following panel's decision

On Friday, a panel comprised of 471 ordinary citizens revealed its recommendation to allow construction to move forward on Units 5 and 6 at the Shin Kori nuclear power plant. The panel spent three months reviewing information on whether to permanently cancel construction on the two 1,400-megawatt APR-1400 reactors. Work on the reactors, which are about 30% complete, was halted while the panel deliberated. President Moon Jae-in, who previously made a campaign promise to close Shin Kori 5 and 6, has stated that he will support the decision and allow the reactors to be completed. "We respect the will of the public-discussions committee that has deliberated on this for the past three months," said a spokesman for President Moon as quoted by *Bloomberg*. With construction now slated to resume, Shin Kori 5 is expected to come online in 2021 with Unit 6 following in 2022.

Although President Moon will allow the construction of Shin Kori 5 and 6 to proceed, he has stated that a policy to phase-out nuclear power in South Korea will continue, which includes a ban on the construction of additional reactors. Also, the government will proceed with the permanent shutdown of Wolsong 1. "We will completely stop of plans for the construction of new reactors like the government previously stated," said Moon in a statement that was quoted by *Reuters*. "The government will also step up usage of natural gas and renewables in order to maintain its stance of phasing out nuclear-generated power."

Japan's ruling party wins re-election in a landslide

In a positive development for nuclear energy, the ruling coalition in Japan led by the Liberal-Democratic Party won big in a national election yesterday, taking 312 out of 465 seats in the lower half of Parliament. With these results, Prime Minister Shinzo Abe will likely obtain a new term in office. In addition, the existing policies for restarting idled reactors are likely to be maintained. In contrast, opposition parties had called for more restrictions on reactor restarts and an eventual end to the use of nuclear power. The CEO of the Institute of Energy Economics, Japan (IEEJ), Masakazu Toyoda, believes the election results will allow for the restart of five additional reactors over the next 15 months.

Japan's NRA to require new emergency cooling systems for BWRs

Last week, *Kyodo News* reported that Japan's Nuclear Regulation Authority (NRA) will require the installation of new emergency cooling systems for boiling water reactors (BWR) that are now undergoing inspections in preparation for restart.

Industry Calendar

- January 17, 2018
  NEI Fuel Supply Forum
  Nuclear Energy Institute
  http://www.nei.org/Conferences
  The Mayflower Hotel, Washington, D.C., USA
- January 30-31, 2018
  Nuclear New Build Summit, Egypt 2018
  InforValue Consulting
  http://nuclearegypt.com/
  Cairo, Egypt
- February 14, 2018
  6th Asian Nuclear Power Briefing 2018
  Strategic Communications
  http://stratcoms.com/6thAsianBriefing18/
  Tokyo, Japan

Details are available at:
http://www.uxc.com/c/data-industry/uxc_calendar.aspx

The impacted reactors include those at the Higashidori nuclear power plant, the Onagawa complex and the Hamaoka nuclear power plant. So far only two BWRs, Unit 6 and 7 at the Kashiwazaki-Kariwa nuclear power plant, have been cleared by the NRA as meeting the safety standards required for restart, and Tokyo Electric Power Co. has already agreed to furnish those two units with emergency cooling systems.

Kansai EPC may scrap Ohi 1 & 2

Multiple news sources reported last week that Kansai Electric Power Co. (EPC), operator of the Ohi nuclear power plant in Fukui Prefecture, is pondering the option of scrapping plans to restart Units 1 & 2 at the plant because of costly upgrades needed to meet new post-Fukushima safety standards. *Japan Times* reported October 17 that Kansai EPC will render a final decision on the fate of the reactors by the end of 2017.

In 2019, Ohi 1 & 2 will reach their 40th year of operation. Under new post-Fukushima safety standards, nuclear reactors in Japan are not allowed to operate for over 40 years unless significant equipment upgrades are completed to pass Nuclear Regulation Authority (NRA) safety standards. An anonymous source told the press that Kansai EPC would need to invest approximately $891 million to meet safety requirements to operate Ohi 1 & 2 for another 20 years. Kansai EPC said it was "studying from the technical and safety perspectives preparations" to apply to the NRA for safety reviews of Ohi 1 & 2 to resume operations.

Kansai EPC plans on putting Ohi Units 3 & 4 back online during the first quarter of 2018 as they have passed preliminary safety inspections and recently gained local consent for restart. Of the utility's 11 nuclear reactors, two units (Takahama 3 & 4) are in operation, seven are offline (Mihama 3, Takahama 1 & 2, and Ohi 1-4), and two units (Mihama 1 & 2) have begun decommissioning.

Limited construction permit issued for Turkish nuclear power plant

In an Oct. 20 press release, Rosatom announced that that the Turkish Atomic Energy Authority has granted Akkuyu Nuclear Joint Stock Company a limited construction permit for the Akkuyu nuclear power plant in Turkey. The limited permit will allow work to commence for the turbine island and auxiliary structures but excludes safety-related structures. "Obtaining the Limited Construction Permit is a significant step forward for the Akkuyu project implementation. We are actually moving from the preparatory stage to the construction activities at the site," said Akkuyu Nuclear JSC CEO Yuriy Galanchuk. Rosatom expects to obtain a full construction license in the first half of 2018. Four VVER-1200 reactors are planned for the Akkuyu site with the first unit scheduled to start operation in 2023.

Callaway plant undergoes $130 million in repairs

Ameren Missouri took its Callaway Energy Center offline earlier this month to conduct a scheduled refueling and maintenance outage. About one-third of the fuel assemblies will be replaced, and crews will conduct repairs that cannot be accomplished while the plant is operating. Barry Cox, senior director of nuclear operations, said, "There is a 10,000-item task list to accomplish. One of the largest jobs will be the first complete overhaul of the main generator stator assembly. We're taking it down to the wiring. Work we do this fall will ensure its long-term health." Callaway operates on an 18-month refueling schedule.

EDF awards $130 million power transmission contract for Hinkley Point C to ABB

In an October 19 press release, Swiss industrial digitization firm ABB announced that EDF has awarded it a contract valued at $130 million to design, supply, and install power transmission infrastructure for the Hinkley Point C project in the UK. The infrastructure will include substations for two separate units that will feed electricity into the grid. "We have signed over £9 billion of contracts and this major contract marks another significant step forward for the project," said Hinkley Point C Managing Director, Stuart Crooks. "Hinkley Point C is bringing together companies and expertise from the UK, France and the world. Construction is fully underway and we remain firmly focused on what we need to deliver in the year ahead and beyond." Preliminary construction activities are now underway at Hinkley Point C, and the first of two EPRs at the site is expected to commence operation in 2026 with the second unit expected to follow a year later.

Canadian Nuclear Laboratories receives 80 responses to SMR request

On October 17, Canadian Nuclear Laboratories (CNL) announced the release of a summary report regarding its Request for Expressions of Interest (RFEOI) for small modular reactors (SMR). CNL received responses from 80 organizations, and there were 19 respondents who expressed interest in locating a demonstration SMR at a CNL campus. CNL hopes to demonstrate that SMRs are commercially viable and to site an SMR at its Chalk River site by 2026. "Based on the volume and quality of responses CNL received to this RFEOI, it is clear there is enormous interest in establishing an SMR industry in Canada, and in testing the technology through a prototype reactor at a CNL site," said CNL's Vice-President of Business Development and Commercial Ventures, Corey McDaniel. "The information we've received through this exercise has been invaluable, giving us better visibility on the requirements for SMRs to be successful in Canada, and will help shape our program in the years ahead." The full report, entitled *Perspectives on Canada's SMR Opportunity*, is at http://www.cnl.ca/site/media/Parent/CNL_SmModularReactor_Report.pdf.

China set to approve patent for Lightbridge's metallic fuel design

On October 18, Lightbridge Corporation announced that China has issued a Notice of Allowance for patent involving the company's metallic fuel design. Once issued, it will become Lightbridge's fourth patent in China. "Lightbridge fuel aims to enhance the safety and economics of China's existing nuclear power plants and offers significant additional benefits for new reactors," said Lightbridge President and CEO Seth Grae. "Our innovative metallic fuel could produce 30 percent more power from new nuclear power plants, reducing upfront capital costs to build them by 13 percent. Based on an estimated capital cost of $4,500 per kilowatt of generating capacity, China alone could save approximately $85 billion in capital costs to deploy an additional 150 gigawatts of nuclear power."

U.S. DOE to provide up to $20 million in funds in support of advanced reactor designs

On Friday, the U.S. Department of Energy (DOE) announced that it will make up to $20 million in funds available to support the development of new technologies that will allow for advanced reactors that are more economical and safer. The funding will be provided as part of a new Advanced Research Projects Agency-Energy (ARPA-E) program known as Modeling-Enhanced Innovations Trailblazing Nuclear Energy Reinvigoration (MEITNER). "When ARPA-E examined the challenges facing nuclear energy, we found an important opportunity to support the advanced reactor design community with early-stage technologies that could enable the development of safer and less expensive plants," said ARPA-E Acting Director Eric Rohlfing. "MEITNER projects are developing technologies that will accelerate fabrication and testing, making construction cheaper, while integrating high levels of automation and built-in safety measures across the plant to reduce operational costs. Close coordination with the Office of Nuclear Energy in this endeavor, including utilization of the

knowledge and resources developed by that office, will be critical to ensuring a successful, forward-looking program." Additional information on the MEITNER program is available at https://arpa-e.energy.gov/?q=arpa-e-programs/meitner.

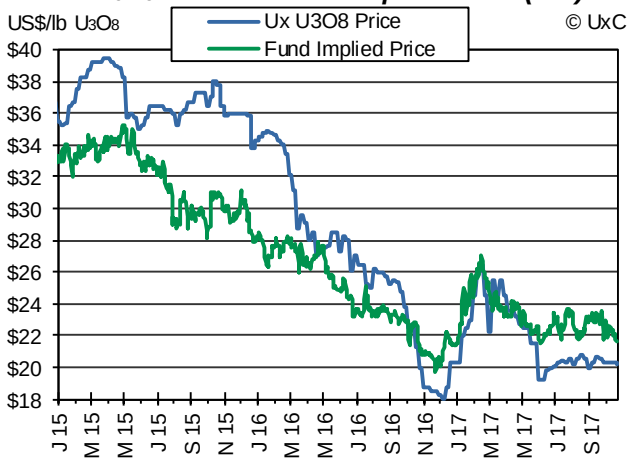
Peninsula to divest interest in Karoo

Peninsula Energy Ltd. announced October 18 that it plans to exit and sell its interests in the Karoo uranium project in South Africa. The company intends to completely divest its 74% interest in Karoo in the 2017 calendar year, but noted that it may opt to retain some level of exposure to the project at a significantly reduced level. Peninsula reported that with the ongoing challenges in the uranium market, it instead decided to focus its future capital expenditures on operating its Lance in-situ recovery (ISR) uranium project in Wyoming. Therefore, the company "does not wish to devote significant further capital to progressing its less advanced secondary project." The Karoo uranium project is comprised of 40 prospecting rights covering 7,800 square kilometers in the Karoo Basin, South Africa. The company commenced exploration activities at the project in 2006. An updated resource estimate shows 21.9 million pounds U_3O_8 grading 0.1242% U_3O_8 in the indicated category and a further 15.3 million pounds U_3O_8 grading 0.1038% U_3O_8 as inferred resources. Peninsula currently owns a 74% interest in the project with South African BEE Groups holding the remaining 26% stake.

BHP reports operational review for Q3 2017

On October 18, BHP reported its operational review for the third quarter (Q3) ended September 30, 2017. At the company's Olympic Dam copper/uranium project in South Australia, BHP produced 880 t UOC (~1.94 million pounds U_3O_8) during Q3 2017, which is down 4% from 916 t UOC (~2.02 million pounds U_3O_8) produced during Q3 2016. BHP reported that the major maintenance campaign on the smelter commenced on August 21, 2017 and will be phased through to Q4 2017. This includes a rebuild of the electric slag furnace, the flash furnace, and the electro static precipitator. This is the largest maintenance program undertaken by BHP at Olympic Dam, and upon completion, the improved operational performance will underpin an expected increase in copper and uranium production. For the first nine months of 2017, Olympic Dam has produced 2,565 t UOC (~5.65 million pounds U_3O_8), which is down from 2,753 t UOC (~6.07 million pounds U_3O_8) produced during the first nine months of 2016. BHP sold 680 t UOC (~1.49 million pounds U_3O_8) during Q3 2017, which is down from 1,085 t UOC (~2.39 million pounds U_3O_8) sold during Q3 2016.

Ux U_3O_8 Price vs. Fund Implied Price (FIP)



Rio Tinto reports Ranger and Rössing production totals for Q3 2017

Rio Tinto reported October 17 production results for the third quarter ended (Q3) September 30, 2017. At the Ranger mine in Northern Territory, Australia, processing stockpiled ore achieved 1,407,000 pounds U_3O_8 during Q3 2017, which is 4% lower than 1,468,000 million pounds U_3O_8 produced during Q3 2016. Rio Tinto holds a 68.4% interest in the Ranger operation, which returned attributable production of 962,388 pounds U_3O_8 during Q3 2017. For the first nine months of 2017, ERA produced 3,713,000 pounds U_3O_8, which is down slightly from 3,853,000 pounds U_3O_8 produced during the first nine months of 2016.

At the Rössing uranium mine in Namibia, Q3 2017 production topped 1,103,000 pounds U_3O_8, which is up 20% from 916,000 pounds U_3O_8 in Q3 2016. The company attributed the increase in Rössing production to higher grades and mill throughput. Rio Tinto owns a 68.6% share in Rössing, which returned an attributable 756,658 pounds U_3O_8 during Q3 2017. For the first nine months of 2017, Rössing produced 3,337,000 pounds U_3O_8, which is up from 2,940,000 pounds U_3O_8 produced during the same period of 2016.

Rio Tinto reported that its expected share of 2017 production remains unchanged at 6.5-7.5 million pounds U_3O_8. Rio Tinto Uranium Ltd. markets 100% of both Ranger and Rössing production.

Harmony to acquire AngloGold Ashanti's gold and uranium assets

AngloGold Ashanti reported October 19 that it entered into a sale and purchase agreement to dispose of various assets in the Vaal River region of South Africa to Harmony Gold Mining Co. Ltd. for cash consideration of US$300 million. The assets consist of the Moab Khotsong mine and related infrastructure; AngloGold's entire interest in Nuclear Fuels Corp of South Africa Ltd. (Nufcor); and AngloGold's entire interest in Margaret Water Co NPC. The company reported that the sale of these assets follows a restructuring of its South African assets to ensure their viability. AngloGold also stated that it was prudent, in line with its overarching capital allocation strategy, to sell Moab Khotsong while it still has existing ore reserves. Following the sale, AngloGold's remaining South African operations will consist of the Mponeng mine and the Mine Waste Solutions surface operations, which constitute less than 15% of the company's annual production.

The Market

Uranium Spot & Forward Market

As noted in the cover story, while the spot price is likely to remain weak for a while, over time market conditions will inevitably change. Over the past couple of weeks, announcements that AREVA will cut back U_3O_8 production (*UxW 31-32*), South Korea will now complete construction of Shin Kori 5 and 6 (see page 2), and other items such as Ohio and South Africa taking steps to support nuclear power reflect that the industry continues to improve its position, albeit in small steps. However, in the meantime, the spot market remains under downward pressure as inventory supplies through various sources are finding their way to the market.

Spot market activity for uranium remained low to moderate last week as many were preparing for this week's industry meetings at the NEI IUFS conference in Seattle, Washington. A U.S. utility that entered the market last Monday seeking a quick turnaround for 100,000 pounds U_3O_8 with delivery in November made its decision. In addition, it appears that a couple of other utilities have also been interested in testing the spot market waters, and a portion of last week's activity may have been related to using year-end budgets. A total of five spot transactions were reported last week involving 600,000 pounds U_3O_8, all with delivery over the next month. This activity brings October's volume to just under two million pounds U_3O_8 equivalent under 16 spot transactions.

While bids and offers firmed up slightly last Tuesday, activity in each of the successive deals done over the past week reflected a slightly declining trend through Friday and remained at that level today (Monday). Based on recent activity as well as current bids and offers, the Ux U_3O_8 Price slips to $20.15 per pound, down $0.20 for the week. The Ux 3-Year and 5-Year U_3O_8 Forward Prices are unchanged this week at $23.00 and $27.50 per pound, respectively (chart on page 7).

UxC Broker Average Price

The UxC Broker Average Price (BAP) began the week on Tuesday up $0.15 to $20.45. Tuesday would prove to be the midpoint's high for the week as it slid into the weekend to finish Friday at $20.14, down $0.15 on the day. Today's UxC BAP is $20.15, up $0.01 from Friday but down $0.15 from last Monday's $20.30. The BA Bid is $20.00, down $0.20 from last Monday's $20.20 and the BA Offer is $20.30, down $0.10 from last Monday's $20.40.

Fund Implied Price (FIP)

Fund Implied Prices (FIP) started the week on Tuesday up $0.11 to $22.06. The FIP dipped towards week's end to finish Friday at $21.59, down $0.13 on the day. Today's FIP is $21.61, up $0.02 on the day but down $0.34 from last Monday's $21.95. The latest FIP information can be found in the chart on page 4.

U_3O_8 Futures Market

The CME Group futures market for uranium remained quiet throughout the week with no new volume booked. However, multiple bids went unmatched on Wednesday for the November and December 2017 contract months. Prices on the strip declined by an average of $0.31 throughout the week. For the latest futures market prices, please refer to the table on page 7. As no new volume was booked, the 2017 annum total remains unchanged at 4,474 contracts (1,118,500 pounds U_3O_8). Open interest also remains unchanged at 4,227 contracts (1,056,750 pounds U_3O_8).

UxC Market Statistics

Monthly (Oct)	Spot		Term	
	Volume	# Deals	Volume	# Deals
U_3O_8e (million lbs)	2.0	16	>0.8	2
Conv. (thousand kgU)	70	1	W	1
SWU (thousand SWU)	70	1	0	0
2017 Y-T-D	**Spot**		**Term**	
	Volume	# Deals	Volume	# Deals
U_3O_8e (million lbs)	35.7	255	67.4	28
Conv. (thousand kgU)	2,021	25	14,871	17
SWU (thousand SWU)	229	6	5,500	5

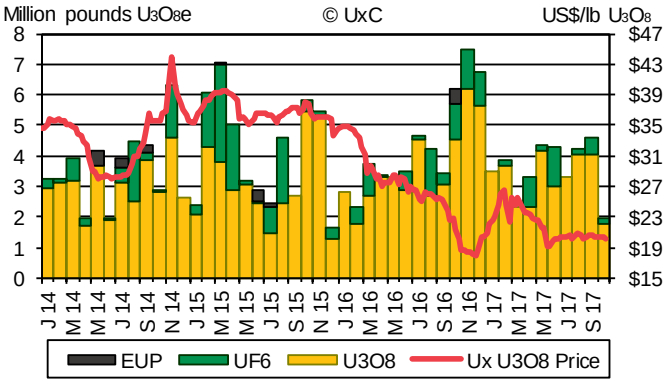
Key: N/A – Not available. W – Withheld due to client confidentiality.

UxC Leading Price Indicators

Three-month forward looking price indicators, with publication delayed one month. Readings as of Sep. 2017.

Uranium (Range: -17 to +17)	**-8** [unchanged]
Conversion (Range: -16 to +16)	**-3** [unchanged]
Enrichment (Range: -18 to +18)	**-9** [unchanged]
Platts Forward Uranium Indicator A forward one-week outlook.	**$20.00-$20.70** As of 10/23/17 (US$/lb)

Ux U_3O_8 Price vs. Spot Volume by Form



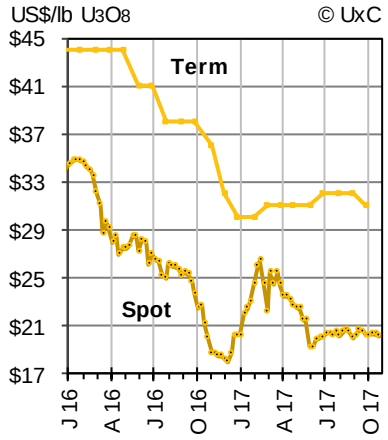
Try Before You Buy

Myra was going to the office party but needed a new party dress.

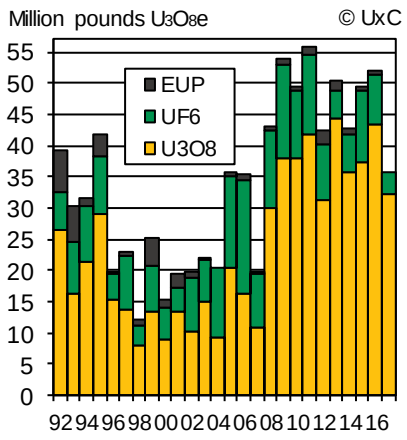
In the clothing store she asked, "May I try on that dress in the window, please?"

"Certainly not, madam," responded the salesgirl, "You'll have to use the fitting room like everyone else."

Ux U_3O_8 Prices



Annual Spot Uranium Volumes



Ux Price Indicators (€ Equiv‡)

Weekly (10/23/17)	1 US$ =	**.85143€**	
Ux U_3O_8 Price		**$20.15**	€17.16
Ux 3-Yr Forward		$23.00	€19.58
Ux 5-Yr Forward		$27.50	€23.41
Mth-end (9/25/17)	1 US$ =	**.84421€**	
U_3O_8	Spot	**$20.25**	€17.10
	Spot MAP†	*$20.45*	€17.26
	3-Yr Forward	$22.75	€19.21
	5-Yr Forward	$27.25	€23.00
	Long-Term	**$31.00**	€26.17
Conversion	NA Spot	**$4.60**	€3.88
	NA Term	**$14.00**	€11.82
	EU Spot	**$4.60**	€3.88
	EU Term	**$14.00**	€11.82
UF_6 Spot	NA Price	**$56.35**	€47.57
	NA Value*	*$57.51*	€48.55
	EU Value*	*$57.51*	€48.55
SWU	Spot	**$42.00**	€35.46
	Long-Term	**$48.00**	€40.52
EUP	NA Spot**	*$ 849*	€ 717
	NA Term**	*$1,270*	€1,072

Uranium Term Market

While the term uranium market remains quiet with no new requests or utility contract awards reported over the past week, a number of utilities are evaluating potential off-market activity, and this week's NEI meetings will likely give many a chance for additional discussions during face-to-face meetings. In addition, a non-U.S. utility that was previously looking for close to four million pounds U_3O_8 with delivery starting in 2023 and going through 2032 has apparently made its decision last month. Still active in market is a non-U.S. utility that is evaluating offers based on its request for U_3O_8 with delivery over the 2019 to 2024 period totaling up to 1.8 million pounds. A non-U.S. utility is evaluating offers based on its request for EUP or its components with delivery in 2019-2023 (for about 2.3 million pounds U_3O_8e) and optional years of 2024-2028 (for a potential 3.6 million pounds U_3O_8 of additional quantity). Another non-U.S. utility is seeking offers for notable quantities with delivery starting in 2024.

Conversion & UF_6

The conversion market remains extremely quiet with only one spot deal involving UF_6 reported thus far for the month. No new demand or contract awards were reported over the past week for either delivery time period and reported supply remains more than ample to meet any demand. In the term market, a non-U.S. utility is awaiting offers based on its request for three million kgU as conversion services with delivery over the 2021-2030 period. Offers are due November 8. Another non-U.S. utility is evaluating offers based on its request for EUP or its components with delivery in 2019-2023 and options through 2028 (with options, volume totals almost 2.3 million kgU as UF_6).

Enrichment & EUP

Activity on the enrichment market remains very limited with no new demand or transactions reported for the past week for either spot or term delivery. In the term market, a non-U.S. utility, which requested validity extensions, continues to evaluate offers for EUP or its components with delivery in 2019-2023 (totaling just over 650,000 SWU) and options for 2024-2028 (adding up to one million SWU).

Ux Price Indicator Definitions

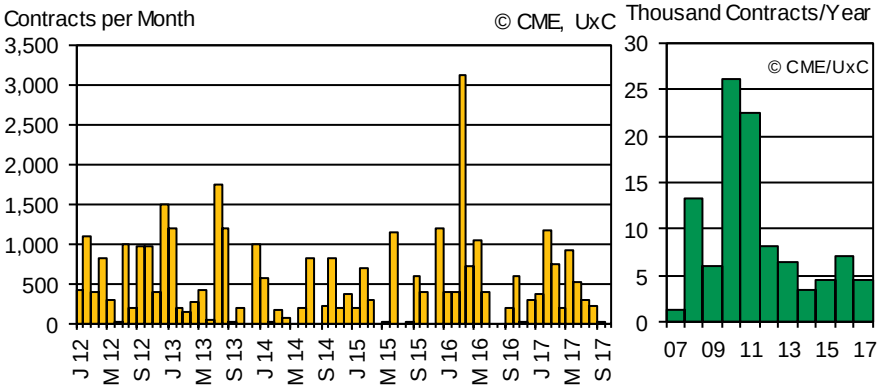
The Ux Spot Prices indicate, subject to the terms listed, the most competitive offers available for the respective product or service of which The Ux Consulting Company, LLC (UxC) is aware, taking into consideration information on bid prices for these products and services and the timing of bids and offers as well. *The **Ux U_3O_8 Price**® (Spot) includes conditions for delivery timeframe (≤ 3 months), quantity (≥ 100,000 pounds), and origin considerations, and is published weekly. †The **Ux U_3O_8 Monthly Average Price** (Spot MAP) represents the average of all weekly Ux U_3O_8 Prices for the month. The **Ux 3-Year** and **5-Year U_3O_8 Forward Prices** reflect UxC's estimate of prices for U_3O_8 delivery 36 and 60 months forward taking into account market activity and other indicators, using the same quantity and origin specifications as the Spot indicator. The **Ux LT U_3O_8 Price** (Long-Term) includes conditions for escalation (from current quarter), delivery timeframe (≥36 months), and quantity flexibility (up to ±10%) considerations. The **Ux Conversion Prices** consider offers for delivery up to twelve months forward (Spot) and base-escalated long-term offers (Term) for multi-annual deliveries with delivery in North America (NA) or Europe (EU). The **Ux NA UF_6 Price** includes conditions for delivery timeframe (6 months), quantity (50-150,000 kgU), and delivery considerations. *The **Ux NA** and **EU UF_6 Values** represent the sum of the component conversion and U_3O_8 (multiplied by 2.61285) spot prices as discussed above and, therefore, do not necessarily represent the most competitive UF_6 spot offers available. The **Ux SWU Price** (Spot) considers spot offers for deliveries up to twelve months forward for other than Russian-origin SWU. The **Ux LT SWU Price** (Long-Term) reflects base-escalated long-term offers for multi-annual deliveries. **The **Ux Spot** and **Term EUP Values** represent calculated prices per kgU of enriched uranium product based on a product assay of 4.50% and a tails assay of 0.30%, using spot and term Ux NA and appropriate spot and term price indicators and are provided for comparison purposes only. All prices, except for the weekly spot Ux U_3O_8 and Forward Prices, are published the last Monday of each month. The Ux Prices represent neither an offer to sell nor a bid to buy the products or services listed. ‡The Euro price equivalents are based on exchange rate estimates at the time of publication and are for comparison purposes only. (Units: U_3O_8 = US$ per pound, Conversion/UF_6: US$ per kgU, SWU: US$ per SWU, EUP: US$ per kgU)*

The Platts Forward Uranium Indicator price range belongs to S&P Global Platts and is published with permission. Definition of this price is available from Platts.

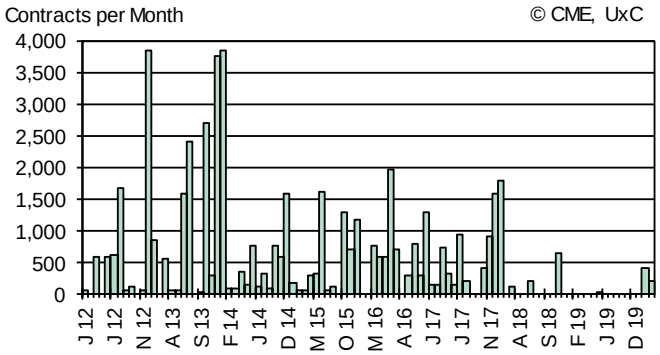
The *Ux Weekly* is published every Monday by UxC. The information contained in the *Ux Weekly* is obtained from sources the company believes to be reliable. Accuracy cannot be guaranteed; therefore, UxC makes no warranties, express or implied, nor assumes any liabilities for the accuracy or completeness of the information contained in the *Ux Weekly*.

The Ux Consulting Company, LLC
1501 Macy Drive
Roswell, GA 30076, USA
Phone: **+1 (770) 642-7745**
Fax: **+1 (770) 643-2954**
Internet: http://www.uxc.com/

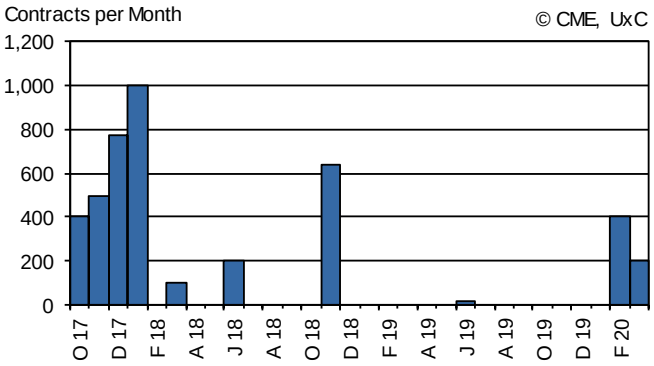
CME/NYMEX UX Futures Activity
Total Contracts by Transaction Month, by Transaction Year



Total Contracts by Settlement Month



Open Interest by Settlement Month

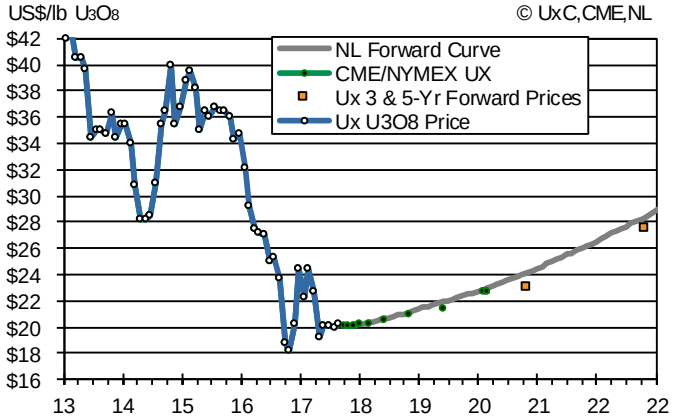


CME Uranium U_3O_8 (UX) Futures

Activity as of October 20, 2017

	Settlement	Price	Volume	Open
U_3O_8	Dec 2015	**$34.25**	1,176	N/A
	Mar 2016	**$29.15**	758	N/A
	Apr 2016	**$27.50**	600	N/A
	May 2016	**$27.25**	600	N/A
	Jun 2016	**$27.00**	1,963	N/A
	Jul 2016	**$25.00**	700	N/A
	Sep 2016	**$23.75**	300	N/A
	Oct 2016	**$18.75**	800	N/A
	Nov 2016	**$18.25**	300	N/A
	Dec 2016	**$20.25**	1,300	N/A
	Jan 2017	**$24.50**	133	N/A
	Feb 2017	**$22.25**	133	N/A
	Mar 2017	**$24.50**	733	N/A
	Apr 2017	**$22.75**	333	N/A
	May 2017	**$19.25**	133	N/A
	Jun 2017	**$20.10**	941	N/A
	Jul 2017	**$20.15**	200	N/A
	Oct 2017	**$20.15**	400	400
	Nov 2017	**$20.15**	900	500
	Dec 2017	**$20.15**	1,594	772
	Jan 2018	**$20.20**	1,800	1,000
	Mar 2018	**$20.25**	100	100
	Jun 2018	**$20.45**	200	200
	Nov 2018	**$20.95**	640	640
	Jun 2019	**$21.45**	15	15
	Feb 2020	**$22.75**	400	400
	Mar 2020	**$22.75**	200	200
	*From May 2007	**Totals:**	**103,513***	**4,227**

Ux U_3O_8 Price vs. CME/NYMEX Forward UX Price Curve



UxC Broker Average Price (BAP) Definition

*The **UxC BAP** (Broker Average Price), subject to the terms listed, is a calculated average mid-point of bid and offer prices as supplied to UxC by participating brokers. The participating brokers are Evolution Markets and Numerco Limited (the "Brokers"). Data posted by the Brokers are kept confidential and will not be published or made available independently. The Broker data are subject to verification by The Ux Consulting Company, LLC (UxC), which compiles and reports the UxC BAP. In order to have a sufficient number of data points and to represent submissions by all of the Brokers, the UxC BAP includes the best bids and offers reported up to a three-month forward period. This period is consistent with the three-month delivery period for offers considered in the determination of the **Ux U_3O_8 Price**. On a daily basis, the Brokers submit their best bids and offers over a forward three-month period through a secure system. From these postings, UxC separately calculates the UxC Broker Average (BA) Bid and the UxC Broker Average (BA) Offer prices. The UxC BAP is a simple mid-point average of the **UxC BA Bid** and **UxC BA Offer** prices. Other Broker data collected include lot volume on a per offer basis. The UxC BAP is published on a daily basis and is made available to subscribers through email updates and UxC's Subscriber Services website.*