



MZConsulting New Year's Message 2016

Nuclear power made considerable progress in 2015. Japan has restarted its first two units with more to follow in 2016. While emphasis has been on the potential early shutdown of units in the USA, Watts Bar 2, the first new unit in 20 years, is ready to go into service. China continues to shine completing eight units in 2015 and moving to invest in nuclear units abroad. The Paris conference on climate change brought countries together with a commitment to lowering carbon emissions.

The spot price of uranium showed some life mid-year when the first Japanese unit came back into service; but then fell back to below where it started the year and is now sitting at just under \$35/lb. As more Japanese units come back into service and China keeps on building, the time will come for new supply putting upwards pressure on prices. The timing remains uncertain, as the market addresses the impact of the potential reduction of generation from units that may be closed in the US and Europe.

Company	Price CDN\$	1 yr (%)	1yr (%)	1yr (%)	1yr (%)	1yr (%)
	Dec 31/15	2015	2014	2013	2012	2011
Cameco CCO-T	17.07	-10.4	-13.6	+12.5	+6.4	-54.3
Denison DML-T	0.70	-38.1	-12.4	-2.3	-3.1	-62.8
Forsys FYS-T	0.08	-52.9	-59.5	-47.5	+9.6	-75.9
Mega MGA-T	0.07	-44.0	+38.9	-25	-40	-81.7
Toro TOE-AX	0.066	-17.5	+9.4	-40.8	+10	-28.6
Paladin PDN-T	0.25	-25.4	-24.7	-59.5	-22.5	-71.7
Energy Fuels EFRT	4.10	-32.7				
Ur Part U-T	5.13	-0.40	-8.8	+4.6	-3.9	-29.0
UEX UEX-T	0.15	-47.4	-27.8	-33	-10.6	-70.7
Ur Energy URE-T	0.89	-10.1	-31.3	+73.5	-4.6	-70.8
Uranerz URZ-T	delisted		-0.8	-6.6	-26	-53.6
Fission FCU-T	0.82	-4.7	-19.6			

While slow, Japan makes restart progress

While restarting nuclear units in Japan has been a long process, the first two units to restart, Sendai 1&2, are back in operation ending a long period of no nuclear power following the Fukushima accident in 2011. Two more units, Takahama 3&4 are ready to go and are likely to restart early in 2016. This is an important milestone for the industry in Japan. A few more units are expected to start up in 2016 although it will take time for the fleet to be restored as Japan moves to a target of 20% nuclear by 2030, less than the 30% nuclear share prior to 2011.

It's all about China

China brought 8 units into operation in 2015 and started construction on six more units demonstrating that they are on track to bring a number of units into operation every year as they work towards their 2020 target of 58GW and 150GW by 2030.

They also continued to work towards becoming a global force in nuclear as they committed their Hualong 1 reactors at home as the basis of their export program. China has confirmed investments in the nuclear programs in Argentina, Romania and, of most importance, in the UK to support other vendor projects, in exchange

for commitments that future projects in these countries can be Hualong 1 designs.

The search for a first investment in uranium in Canada ended when in December, Fission Uranium announced that it had signed a binding letter of intent with China's CGN Mining Company Ltd whereby they will invest \$82 million in a private placement into Fission Uranium for a 20% stake in the company

Challenges in the USA

Single unit plants in deregulated markets continue to struggle as Entergy announced plans to shut down the Fitzpatrick nuclear power plant on Lake Ontario near Syracuse, New York, and the Pilgrim Nuclear Power station near Boston, Massachusetts, before the end of this decade. Efforts are continuing to find solutions to save older plants based on their economics and their contribution to reducing greenhouse gas emissions (as they are mostly replaced by gas).

On the other hand, the first new unit in the US in more than two decades, Watts Bar 2, received its operating license and is on track to enter service in 2016.

Canada, world's second largest U producer thinks and goes big

In October it was announced that Arthur MacDonald of Queen's University in Canada was jointly awarded the Nobel Prize in Physics with Takaaki Kajita of Japan for discovering that neutrinos have mass. The team captured neutrinos using a sensitive new detector 6800 feet below ground at the Sudbury Neutrino Observatory which made use of heavy water – used in the country's CANDU nuclear reactors.

Nuclear power supplies some 60% of Ontario's (Canada's most populous province) electricity. With its fleet aging, Ontario has now made a strong commitment to continued use of nuclear power long into the future.

In December, an agreement between Ontario and Bruce Power was signed that will see six (two are already refurbished) of its eight CANDU reactors (which in total produce 6300 MW of electricity - the world's largest nuclear station), refurbished with an investment of \$13 Billion and will keep the Bruce site operational an additional 30-35 years - until the 2060's.

This was followed by an announcement that the refurbishment of the four units at the Darlington station at a cost of \$12.8 Billion will proceed with the first unit starting refurbishment in 2016. This announcement also committed to extending the life of the Pickering nuclear station until 2024.

In April, Cameco signed a 5-year deal to provide India with 7.1 million pounds of uranium worth some \$350 million. Small compared to its overall sales, this is the first deal since Canada and India signed a nuclear cooperation agreement in 2013.

The Cigar Lake mine continues to reach its incredible potential, exceeding 10 million lbs production in 2015 and targeting 16 million lbs in 2016 (6150 tU).

Kazakhstan leads the world once again

Kazakhstan, the world's largest uranium producer, increased its production in 2015 to 23,800 tU from 22,800 tU in 2014 as they continue to meet their production targets.

When will the market see the merit of nuclear energy?

What is clear is that countries with large domestic nuclear power programs- China, India, Russia and South Korea – and little indigenous uranium see it as a strategic commodity. In addition to their large domestic programs, all four of these leading countries are, or are planning to export their reactor and fuel cycle technology.

Paris Climate Change conference starts a discussion on nuclear

At the climate change conference in December, nuclear power was endorsed as a reliable low-carbon source of electricity by scientists, climatologists, and titans of industry (Gates, Bezos and Zuckerberg) who used the Paris conference to launch the Breakthrough Energy Coalition. There is recognition that nuclear is an essential component as countries develop their plans to meet the agreed targets.

About MZConsulting

MZConsulting advises governments, utilities and others interested in new build nuclear and investment in uranium companies.