Uranium Conversion – All you wanted to know

June 2025

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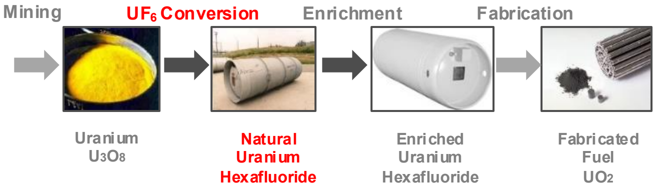
What is Uranium Conversion

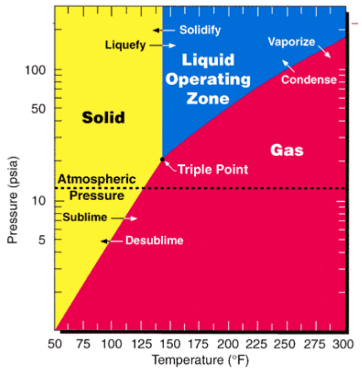
Nuclear Fuel Cycle



The second step in the nuclear fuel supply chain.

“Converts” mined uranium ore to uranium hexafluoride UF_6.

Why UF_6



- Enrichment needs uranium as a gas.
- UF_6 is a gas at low temperature and pressure, so that’s convenient!
- Fluorine only has one isotope. Which means all the atoms are the same weight. Handy!
- But its one electron short of a full set.

Raffinate Treatment → Waste

CLASSICAL PROCESS (WET)

Drum Sampling → Nitric Acid Digestion → Organic Solvent Extraction → Aqueous Extraction → Evaporation → Denitration → Reduction → Hydro-Fluorination → Fluorination → Cold Trapping → Cylinder Filling

Organic Stream

Honeywell FLUORIDE VOLATILITY PROCESS (DRY)

Drum Sampling → Ore Preparation → Reduction → Hydro-Fluorination → Fluorination → Cold Trapping → Distillation → Cylinder Filling

The different bits

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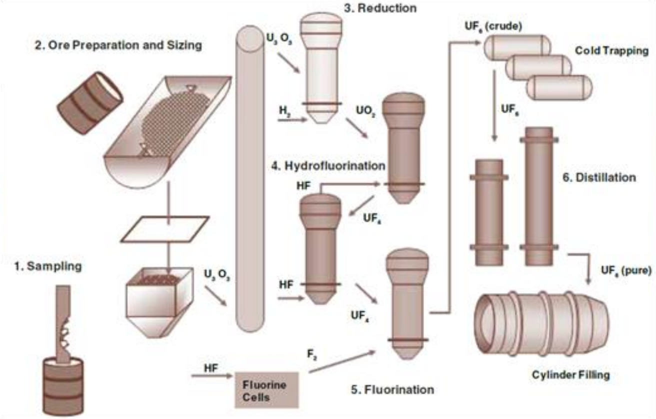
Conversion Process

- Uranium is shipped in 55 gallon drums in ISO containers from 7 countries and 15 suppliers.
- Currently 5 ISOs per day 1Mlb/week.

- Uranium Ore comes in many chemical forms with varying levels of purity

Conversion Process

U_3O_8 UO_2 UO_4



99.99%
Pure UF_6

Purpose of conversion is to create a pure, homogenous uranium product for enrichment

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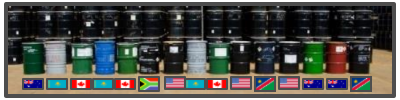
Why is it called a service

STEP 1: Purchase Uranium Ore from Mining Companies



- Yellowcake mined globally; open pit & ISR
- Shipped in 55 gallon drums
- 750 – 1250 drums per 18 month reload (~850 lb/drum)
- Current market price ~$90/lb (~$70M/reload)

Uranium ore shipped to converter

STEP 2: Purchase UF_6 Conversion

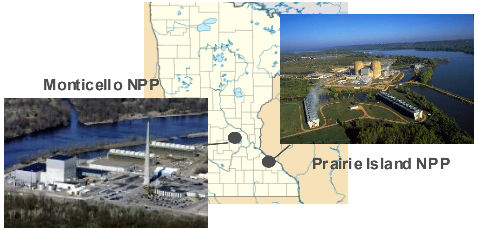
- Purifies and Converts to UF6
- Product shipped in 48Y cylinders
- 33 – 40 cylinders per reload (~8200 kgU/cyl.)
- Current market price $35/kgU (~$11M/reload)

UF_6 Shipped to Enrichers

STEP 3: Purchase Enrichment

- Enrichment concentrates fissile U-235
- Natural UF6 ~0.7% U-235; "EUP" up to 4.95% U-235
- Priced in 'Separative Work Units' or 'SWU'
- Current market price ~$160/SWU (~$60M/reload)

EUP shipped to fabricators



Fabricated Fuel Loaded into reactor

- Fabricators 'de-convert' EUP into enriched UO2 powder
- Powder is pelletized and fabricated into fuel assemblies
- Fuel fabrication costs $10 - $15 per reload

STEP 4: Purchase Fuel Fabrication

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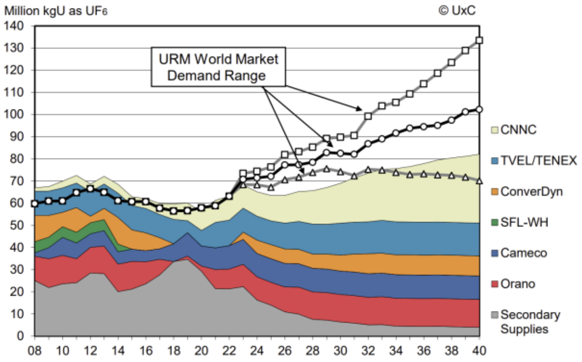
Is That all you do

- We commoditize uranium ore
- We store uranium, 55Mlbs on site
- We provide the worlds largest uranium trading platform
- We transport UF6 to global enrichers

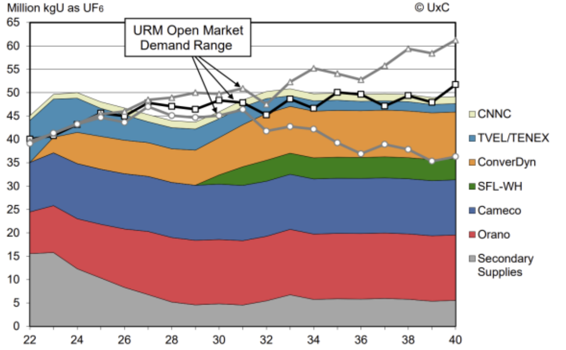
What does the trade press say

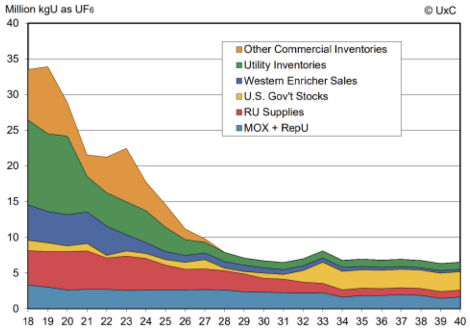
Low Case Global Supply and Demand



Open Market Supply and Demand

Figure 38. Open Market Base Case Conversion Supply vs. Demand, 2022-2040





- Not all secondary supply is equal
- The plug has gone
- This is a fundamental shift in the market

Conversion Market Update

1 Available Conversion Supply at Concerningly Low Levels

ConverDyn market intelligence indicates that suppliers from Canada, France, Russia, as well as ConverDyn have **no conversion to sell until 2029** or later; with very limited supplies until 2031 or later

2 Market Price at All Time High

Spot price 1000% above 2017 lows

3 Supply Capacity Expansion will Take Time

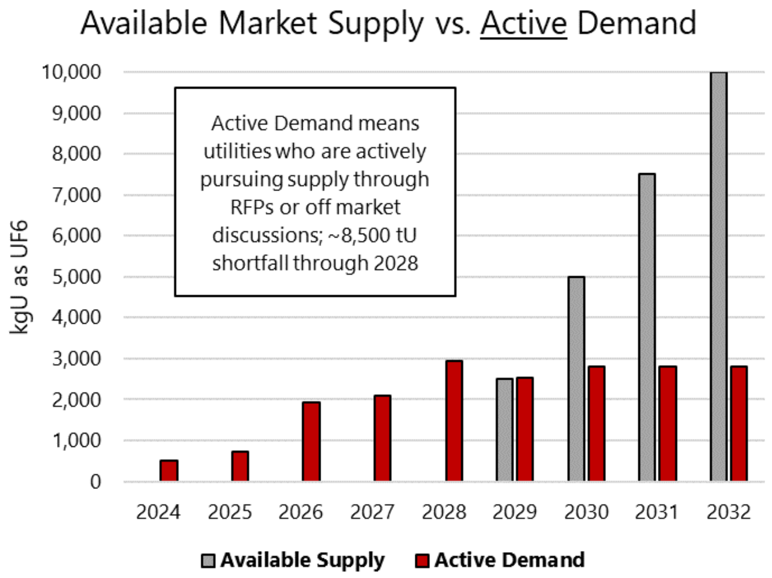
Announcement of new capacity at SFL; but this will take until 2028 or later. Existing suppliers may consider expanding but also can not afford to shut down

4 Uncoverable Demand Across 10+ Utilities

No supply available through 2028 ConverDyn estimates ~8,000 tU of active demand with no conversion sources available

5 Emerging Demand from New Builds

ConverDyn has seen outreach from multiple SMR vendors and planned operators looking to contract for fuel now



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Where will new supply come from

- DOE on a mission to enhance domestic nuclear fuel capability
- $3.4b to invest in HALEU and LEU.

- Primary expansion – limited capability.
- GLE – Enrich Tails to Natural Levels.
- Springfields – RU and Natural.
- China – Continued policy of self-sufficiency.
- Return to underfeeding – I hope not.

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How are we regulated

- Radiation is the least of our concerns
- Conversion plants are chemical plants with a secondary radiation hazard

U.S. DEPARTMENT of STATE

H.R.1042 - Prohibiting Russian Uranium Imports Act – Became law 5/13/24

- Prohibits the importation into the United States of unirradiated low-enriched uranium that is produced in the Russian Federation.
- Waivers may be granted until 2028

H.R.8046 – Russian Sanctions Enforcement Act

- This bill will impose sanctions on Rosatom, the Russian state-owned nuclear energy corporation.

Metropolis Shutdown Decision & Strategy

1 Oversupplied Market

Excess **secondary inventories** caused chronically depressed market which hit low point in 2017 at ~30% of producer costs

2 ConverDyn Action

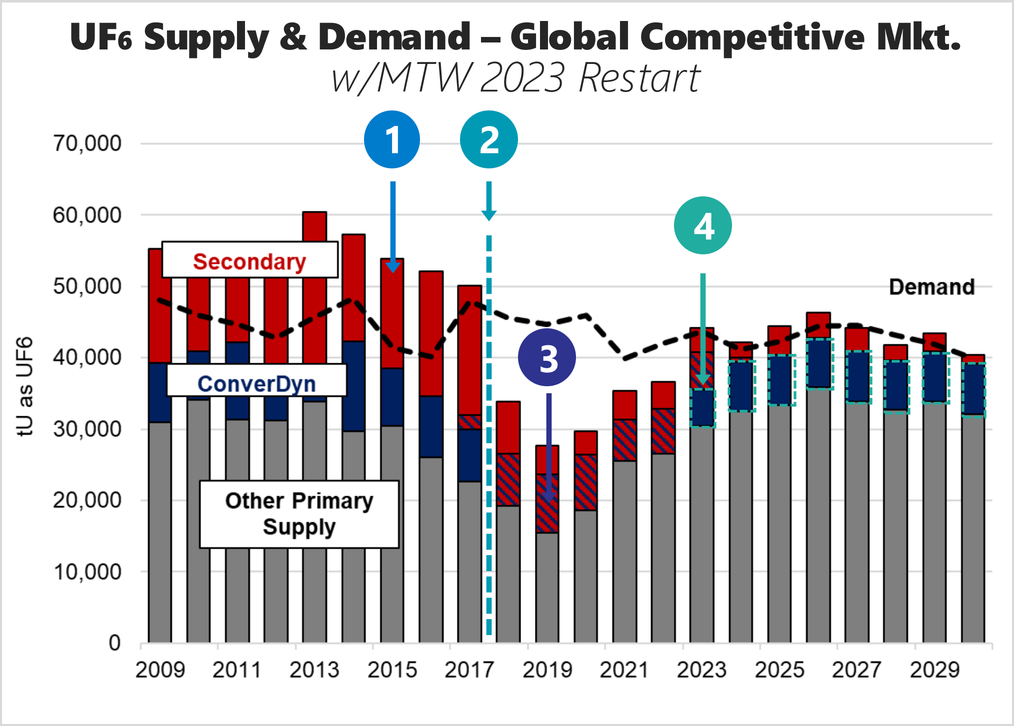
All **secondary inventories** purchased and MTW shutdown in 2017; strategy made simple business sense relative to cost of MTW production

3 Excess Supply Sold

Purchases of **secondary inventories** sold into existing contracts while MTW shutdown

4 Metropolis Restart

Restart of MTW needed by market to balance S&D long-term; needed by ConverDyn to fulfill contracts 2023+



Strategy had intended effects – necessity of MTW affirmed; but many lessons learned