FBP Update Released to DOE Version
Impacts Of DOE Uranium Barter Program On U.S. Domestic Industry

Fluor-B&W Portsmouth LLC

April 23, 2014

FBP advocates full appropriation funding for Portsmouth D&D; but continued DOE UF6 uranium barter sales if appropriations are not forthcoming

- **In FBP's analysis based on objective measures to date conclude that the U.S. uranium mining, conversion and enrichment industries have not experienced an adverse <u>material</u> impact from DOE's Uranium Barter Program……**
  - Uranium Market Prices (Long Term & Spot)
  - Domestic Uranium Production
  - Domestic Employment
- **DOE has implemented a Transparent and Predictable Plan**
- **FBP has followed through and provided DOE with a model (Traxys) designed to sell the material in the a market neutral non-disruptive manner—moving material from the spot to long-term market and domestic to international.**

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DOE Barter Sales (FBP-Traxys Model)

- DOE quantities are minor compared to other sources
- Sales methodology to minimize impact on uranium market
- Preference to sell to end users rather than speculative players to prevent material from competing against itself.
- 50% of sales to U.S. utilities / 50% to non-U.S. utilities
- 50% of sales under mid and LT contracts, spot quantities very minimal
- U3O8 and Conversion have sometimes been contracted separately

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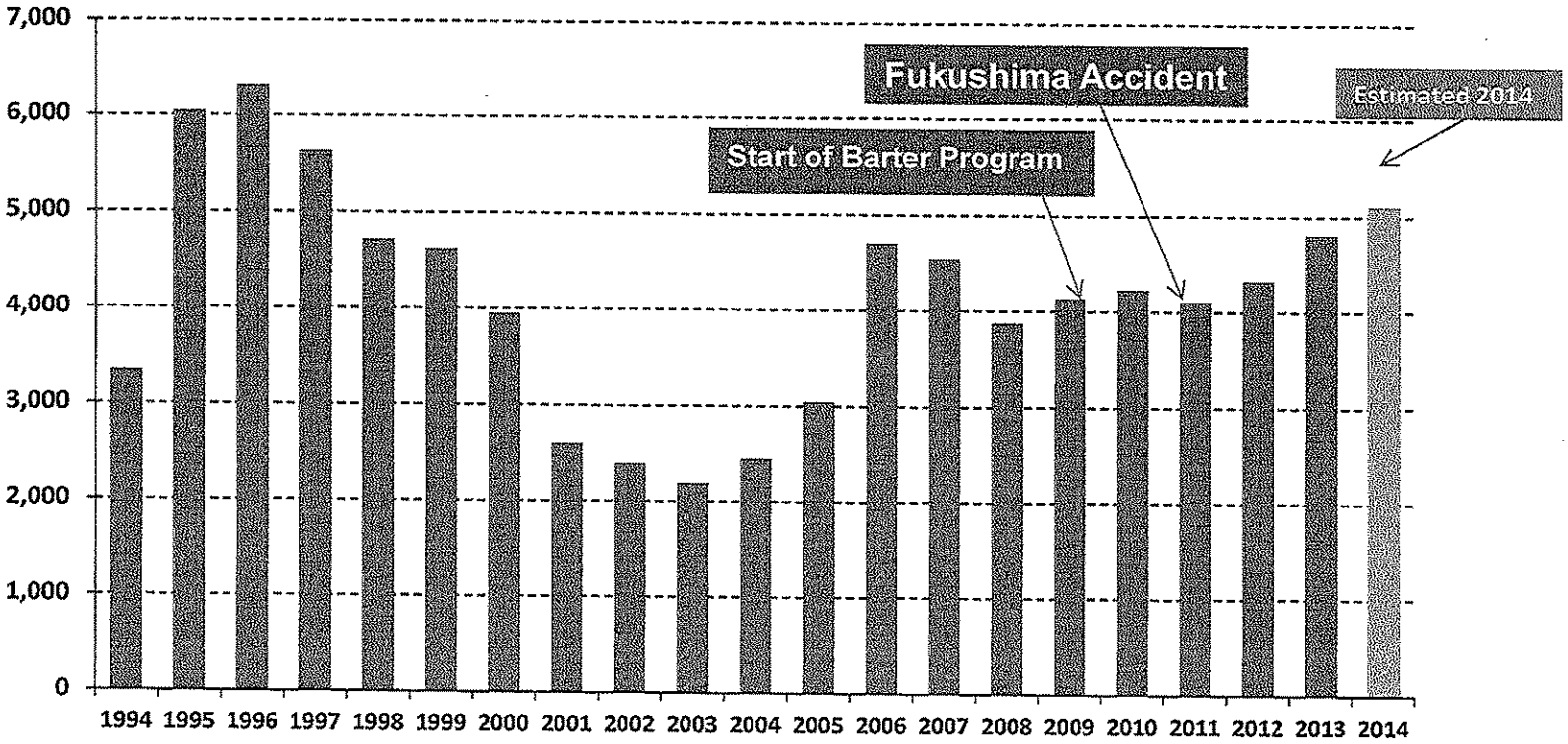
The DOE U barter program has not had an adverse material impact on domestic industries as shown by...

1. As reported by EIA, the **price** paid for U.S. origin uranium over the past 20 years has been at its highest in the last 5 years, since the barter program started.
2. US uranium **production** has been increasing since the beginning of the barter program, and is at its highest level now since 1997 (EIA Data).
3. US uranium **employment** has grown (2009-2012) since start of barters.
4. US uranium producers **Market Cap** has increased significantly over time, with many approaching pre-Fukushima highs over the last 3 months
5. US producer Capital Expenditure decisions are made based on **long-term U3O8 prices**, not spot prices. U3O8 Term price is $45-$47/lb.—up from the decades before level of $10-$15/lb.
6. Term & spot **UF6 conversion prices** are up 40% & 25% since barters began.

U.S. Uranium Production



Since the start of uranium barters, domestic production has increased to highest level since 1997 and is likely to continue to increase in 2014

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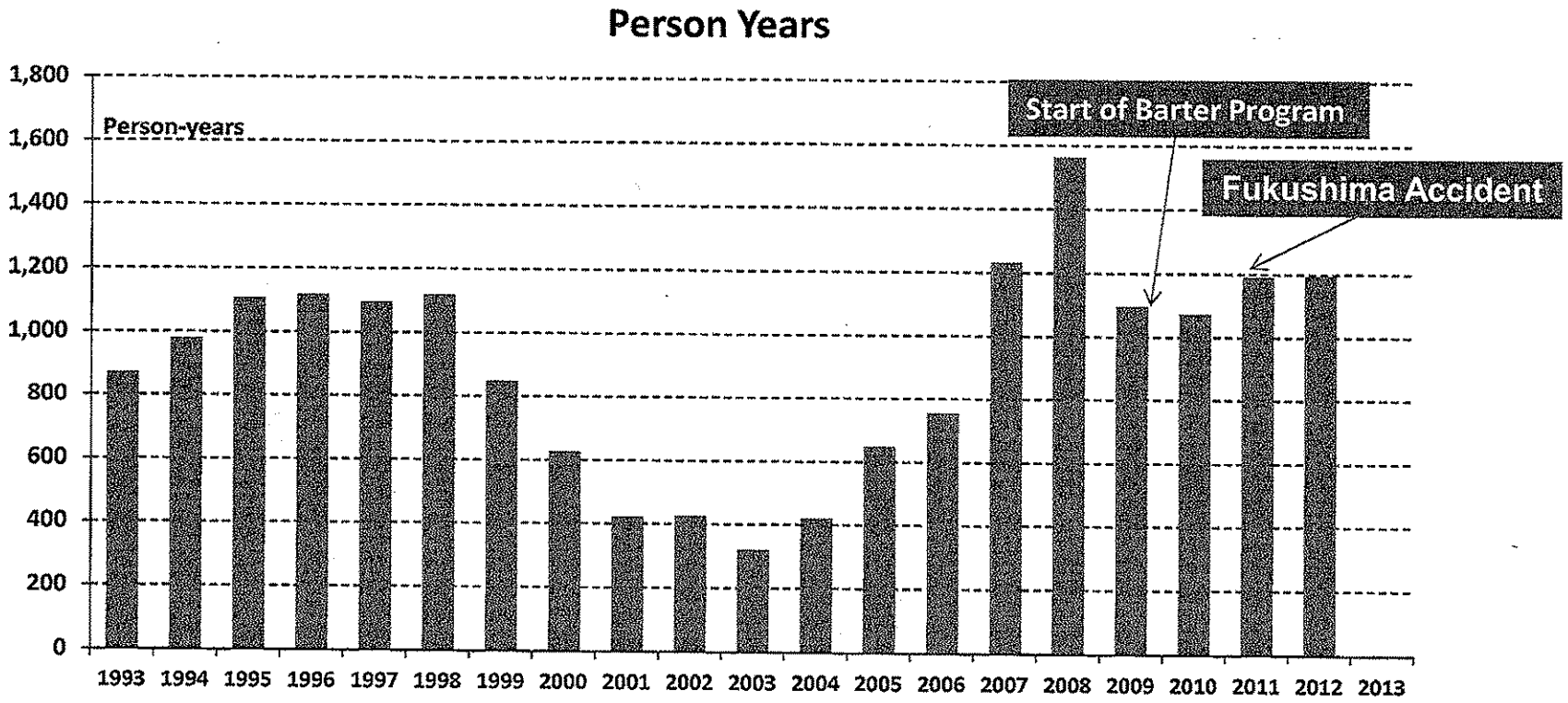
U.S. Uranium Production Industry Employment



Since the start of uranium barters employment has increased. Recent layoffs in 2013 are partially offset by the startup of 2 new domestic ISL producers in 2013 and 2104

Source: Energy Information Agency Domestic Uranium Production Reports for 2012 and 2004

U_3O_8 Prices (Industry Published Indices)

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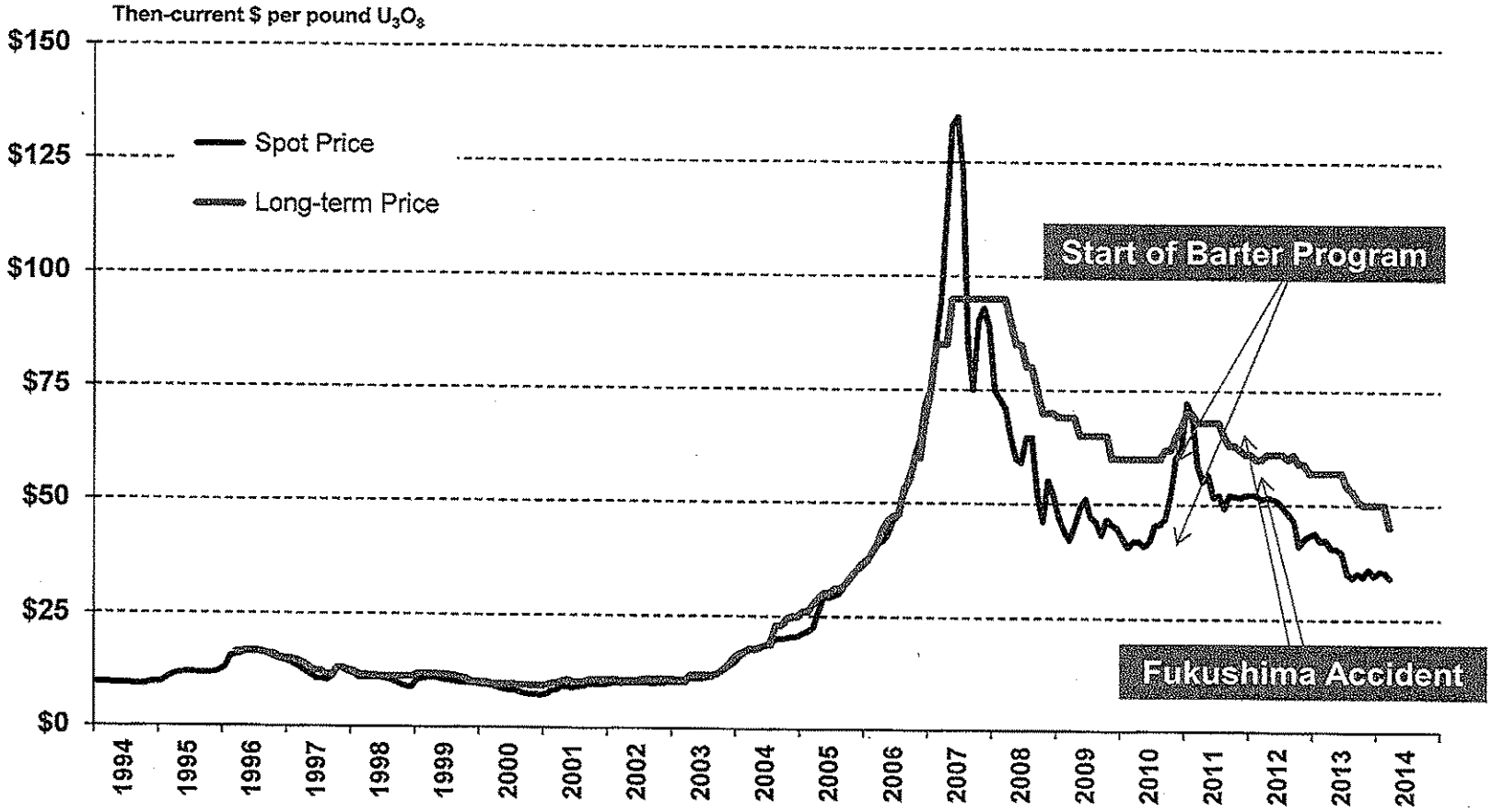
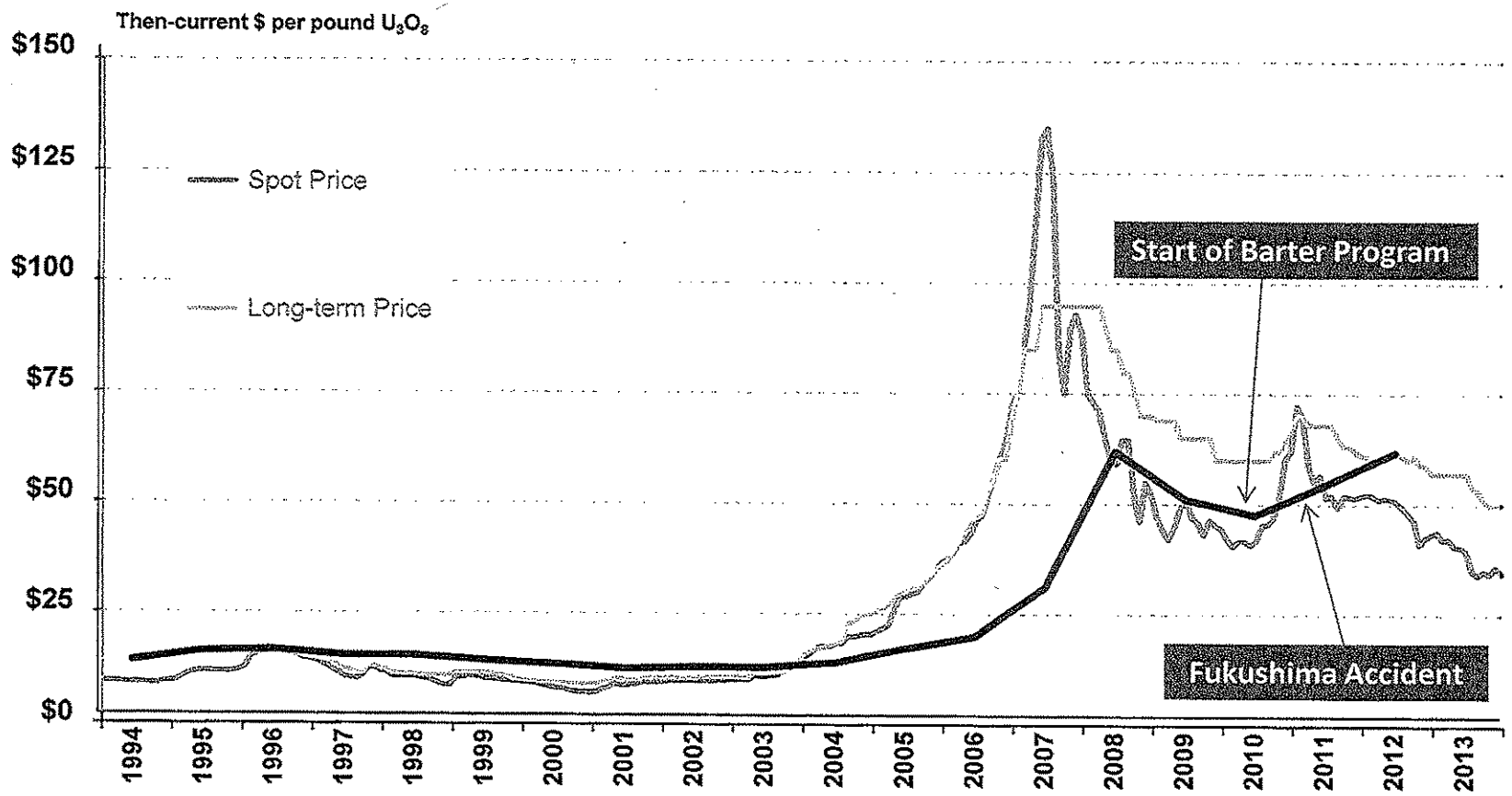


Prices rose quickly, over-stimulated by an excess of exuberance, not fundamentals. A correction was inevitable. 90% of the price drop occurred prior to start of barter program.

Price of U.S. Origin Uranium (U_3O_8) Sold to Owners/Operators of U.S. Nuclear Plants . . .



Highest U.S. Origin prices have been in the last 5 years—Over 5X the decade of 1994-2004. Average price for the latest reported year (2012) is $59.44/lb. U3O8

Source: U.S. Energy Information Administration, 2012 Uranium Marketing Annual Report, weighted-average price for U.S. origin uranium sold to Owners & Operators of US nuclear power plants

Market Insights

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- **The 2007 bubble prices over stimulated supply and the imbalance was accentuated by a large, near-term loss of demand due to Fukushima.**
- In response primary production needs to be reduced, yet it has continued to expand.
- Most expansion is by the world's largest suppliers, some of whom have expanded in other countries (Kazakhstan and Canada) while cutting back in the United States.
- Current market prices are well off their 2007 peak but still significantly higher than the pre-spike decade, by 3X—5X.

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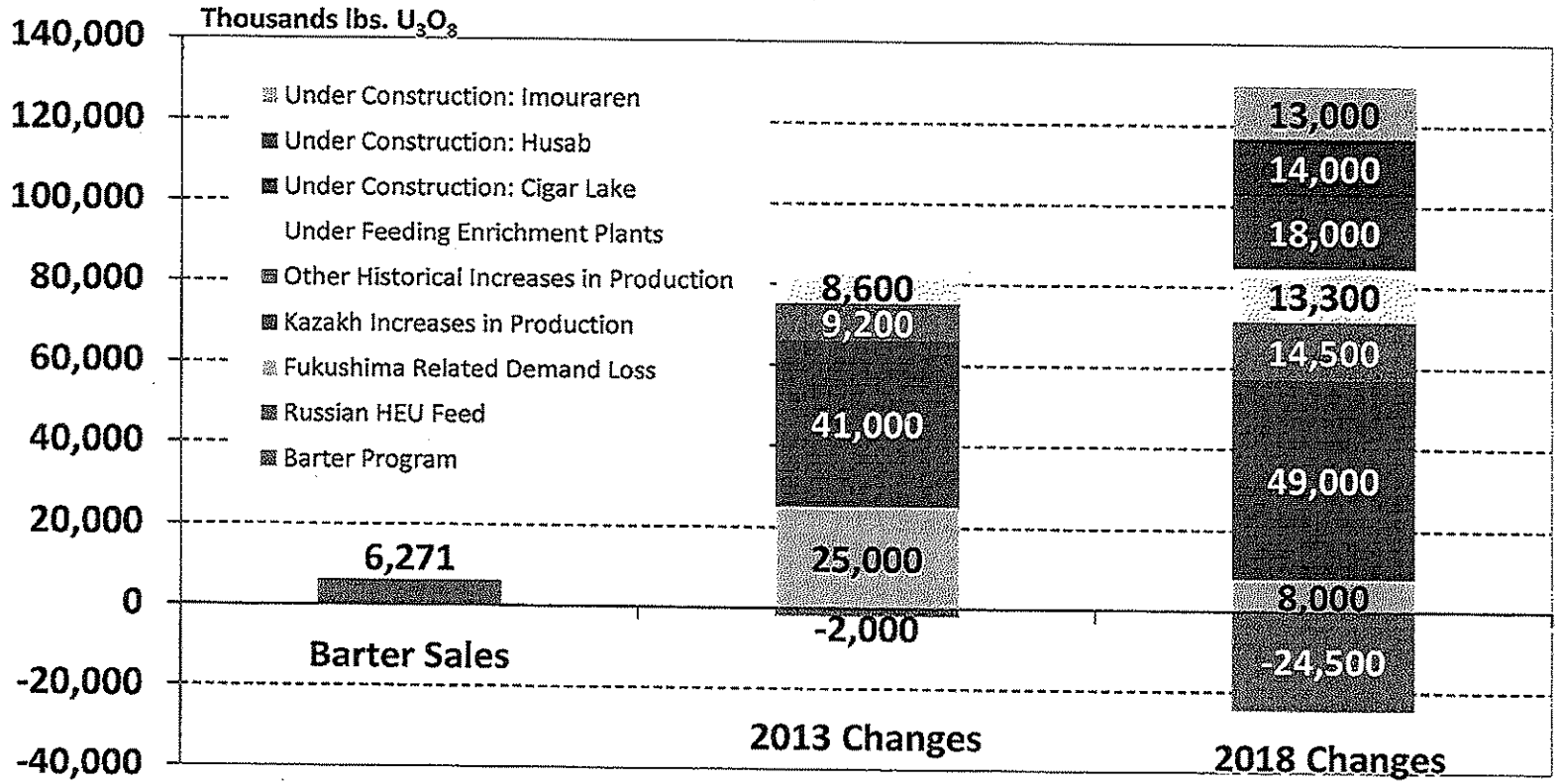
Principal Contributions to Price Decline

- Reduction in near-term demand of 25 million lbs./year due to **Fukushima**
- Annual primary production increased 50 million lbs. (50%) from 2007 to 2012 – **Kazakhstan** accounted for more than 41 million of this increase
- Properties currently under **development** are projected to increase production by another 40 million lbs. (25% increase) through 2018
- Increase in excess enrichment supply (partially due to Fukushima) encourages additional "production" of about 13.3 million lbs. equivalent per year from **under-feeding**/re-enriching tails
- Low cost financing (Stimulus derived) available to **banks** resulted in significant quantities of excess near-term uranium being offered at low, fixed prices to be held for future delivery at imputed interest rates ~3%
- Above factors are partially offset by end of feed from **Russian HEU** Deal

U_3O_8 Supply/Demand Changes Since Peak Price Year—2007



DOE Barter quantities are very small compared to other changes

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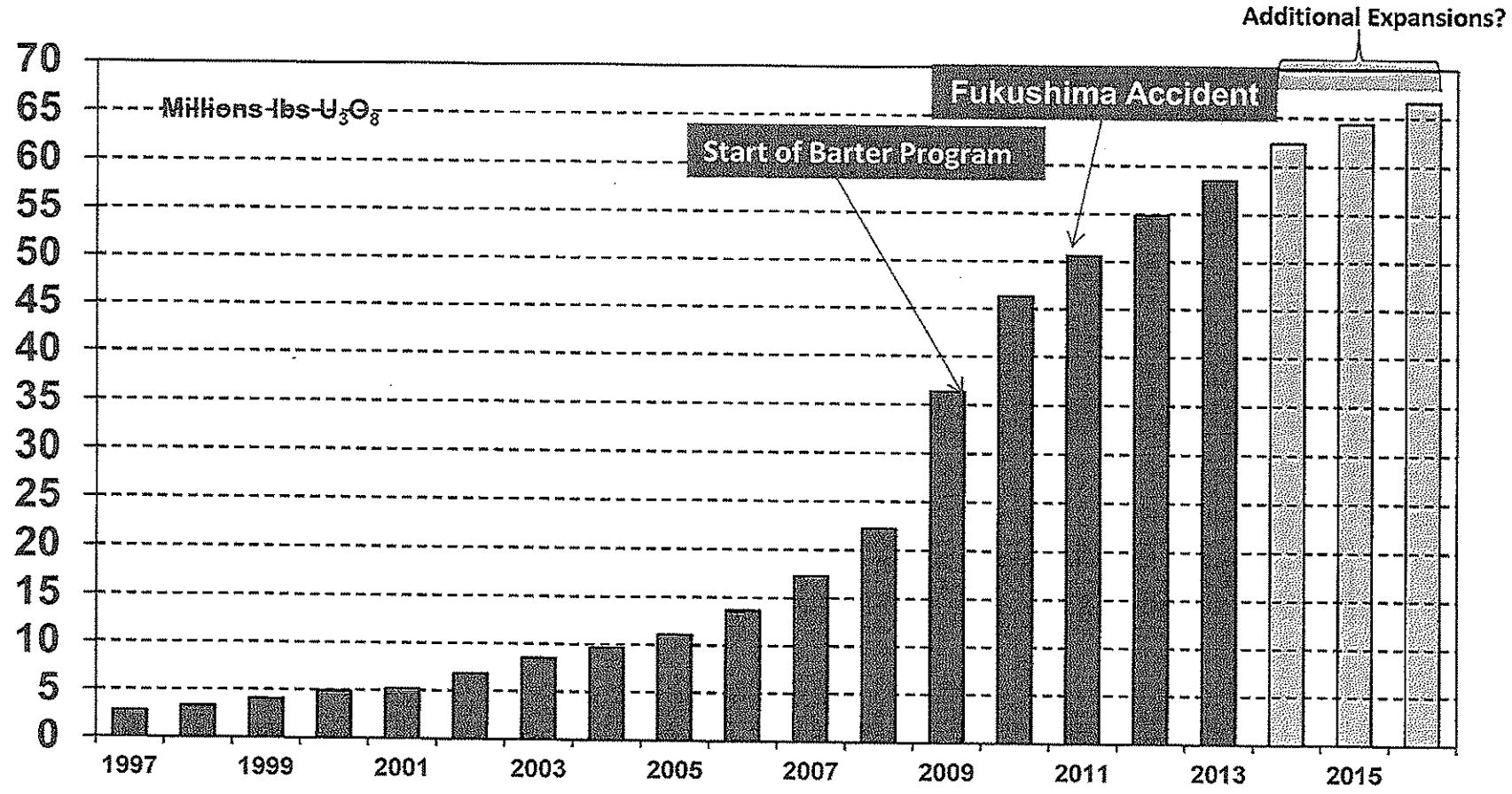
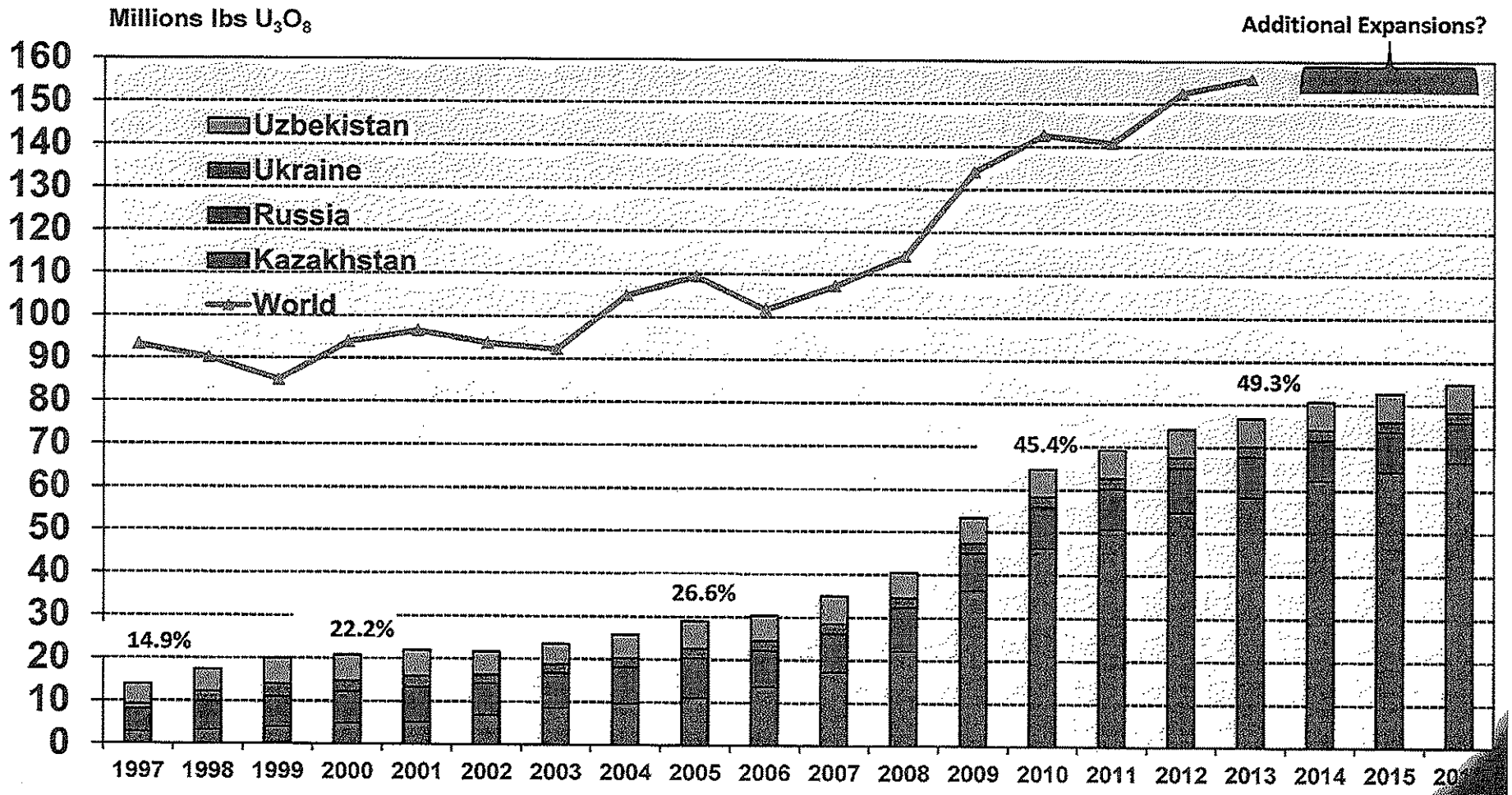
Kazakh U_3O_8 Production



Expansions based on April 15, 2013 Central Asia Economy article discussing Kazatomprom plans.

FSU Equivalent U_3O_8 Production Market Share is 65% in 2013—if HEU and Underfeeding were included . . .



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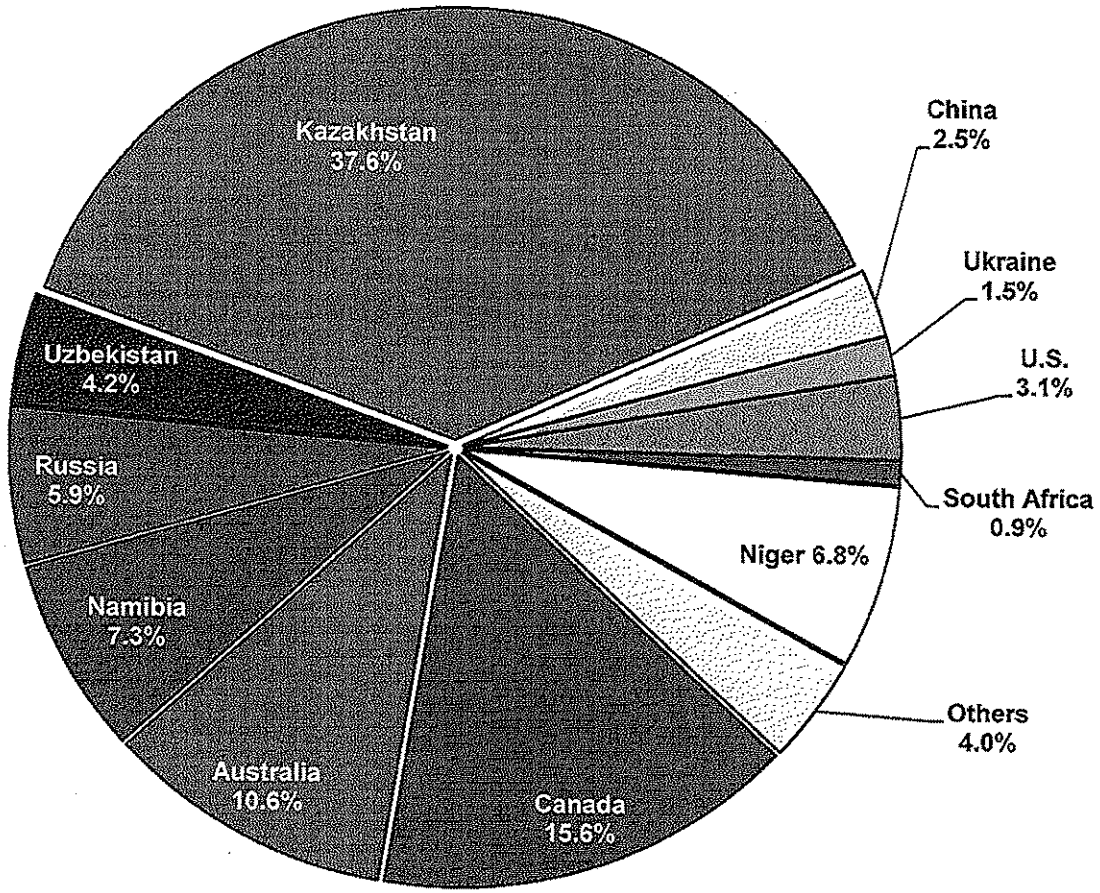
2013 Worldwide U_3O_8 Production

Total = 155.8 million lbs (59,500 MTU Year-End Estimates)



Kazakh market share continues to grow

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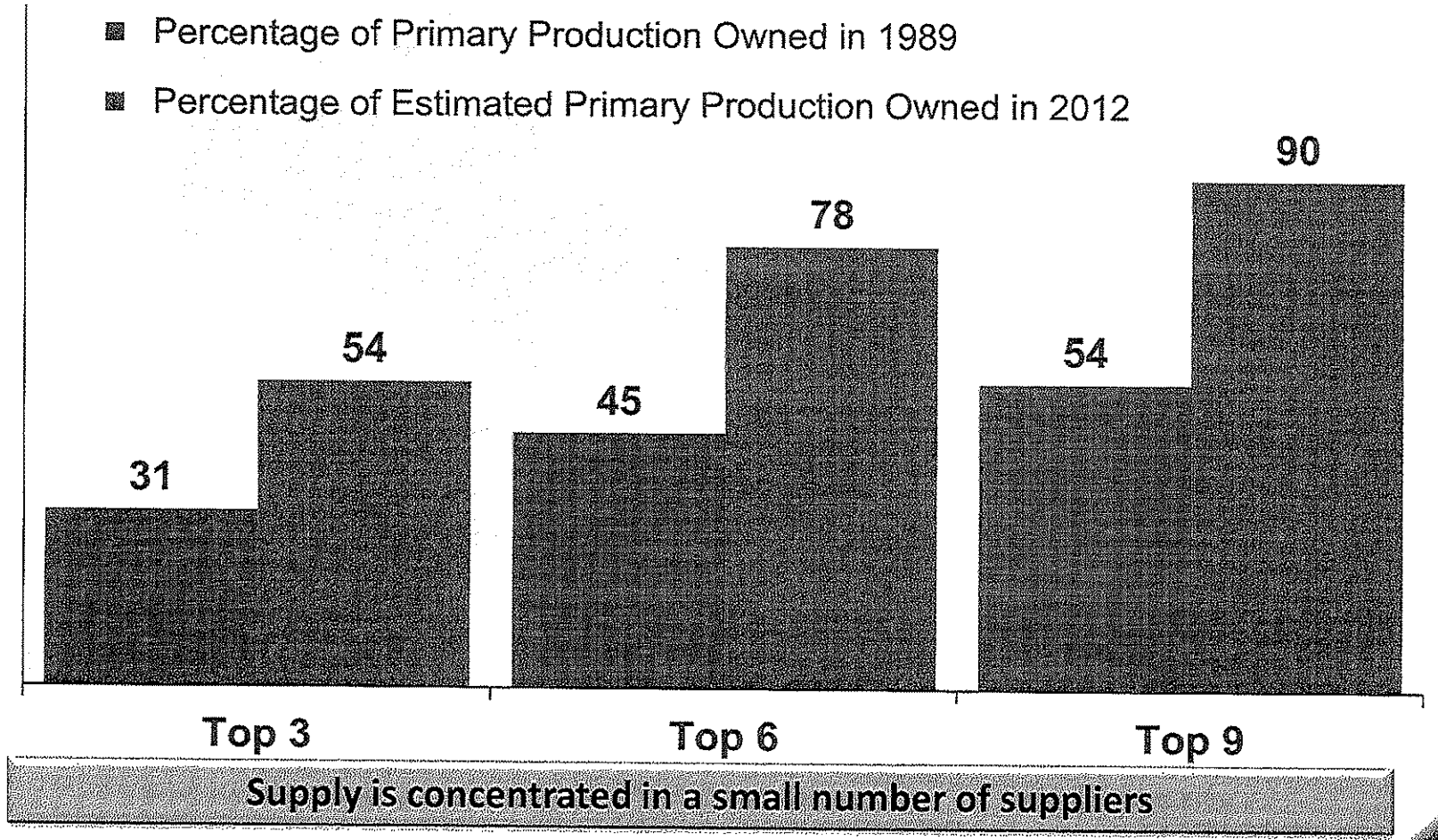
U_3O_8 Industry Supply Concentration Ratios
(after ARMZ/Uranium One Merger, including Russian Underfeeding)



Supply is concentrated in a small number of suppliers

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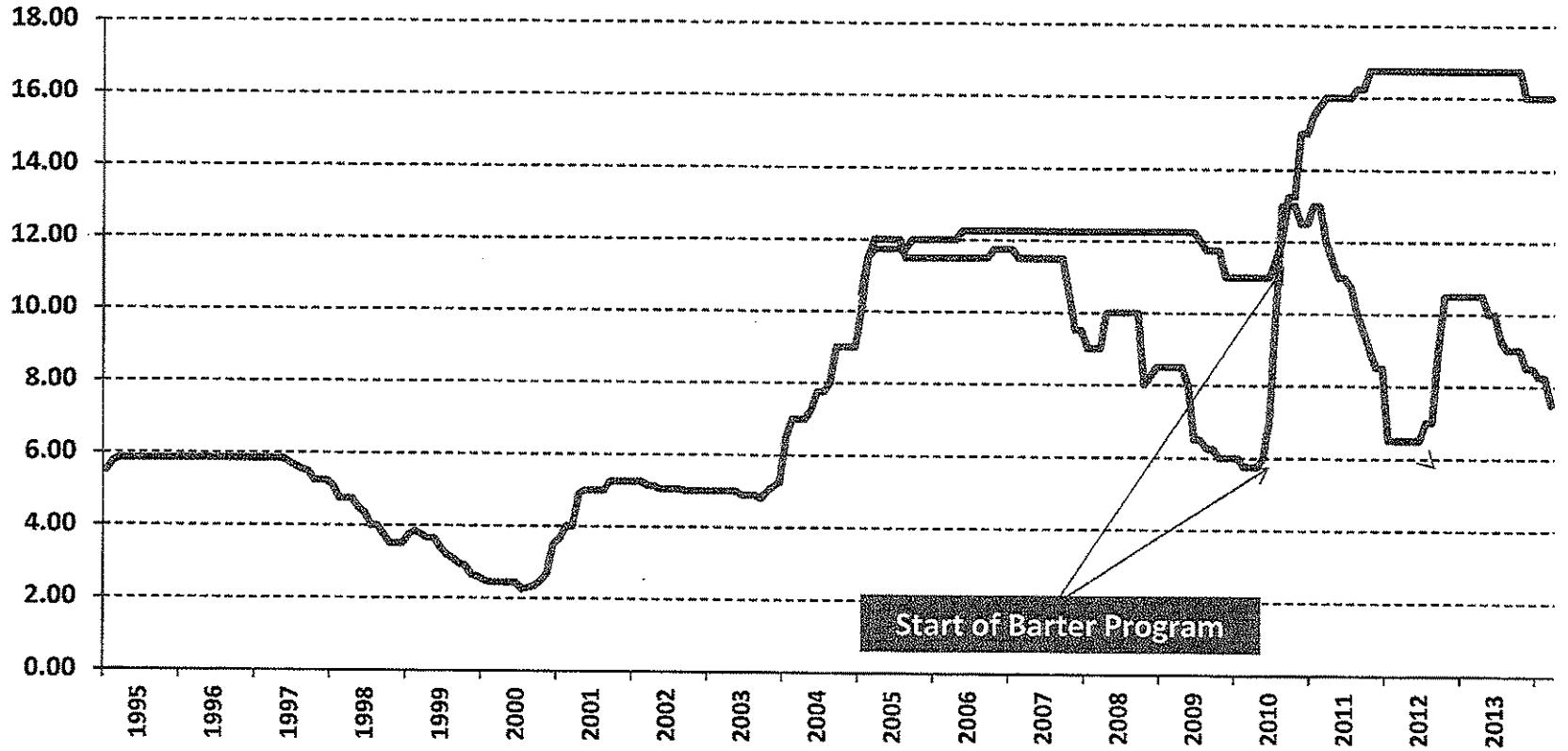
North American Conversion Prices



- Spot price changes show no correlation to barter sales.
- Term & spot prices up 40% and 25% since barters began.
- Term prices not very volatile, generally up since barter started

Conversion Market Observations

- Some excess supply through 2018 even with expected shutdown of Springfields on August 31, 2014 **(2 Years Early)**
- Excess
  - Mainly due to underfeeding
  - Barter quantities are small about 4% of demand, about 25% of HEU feed which ended in 2013
- Some expansion could be necessary beginning late this decade if China does not reach its goal of self sufficiency

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Impact on Domestic Converter

- Appears that their policy is to sell on term market
- Term & spot prices are up 40% & 25% since barters began; therefore there can be no price impact
- Resumed production in mid-2013 after year long shutdown for NRC licensing related upgrades
- Operating at near capacity; therefore no current production or employment impact

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Impact on Domestic Converter (Continued)

- Stated that barter causes loss of sales, raising average production costs (due to high fixed costs)
  - Estimated to maintain ~20% market share outside Russia & China (total demand about 50,000 MTU)
  - DOE uranium sales represent 2,800 MTU/year, with a 20% market share, ~560 MTU loss in sales
  - Stated 2,000 MTU loss would increase production costs by 20%, then 560 MTU loss in market share would increase costs by ~ 4% to 5%

Impact on Enrichers

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- Pre-2019 Barter transactions (Natural UF6) have had no adverse material impact on the enrichment market or prices due to small quantities.
- Post-2019 Re-Enriching tails will add enrichment demand to the market.