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Uranium Enrichment: Contributing to the Growth of Nuclear Energy

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Before I begin, I want to caution you that some of the statements I may make today are forward-looking statements about USEC that involve risks and uncertainty. Certain factors could cause our actual results to differ materially from those expressed in these forward-looking statements. More information about these factors is contained in our filings with the Securities and Exchange Commission, including our annual report on Form 10-K/A, which are available on USEC's website. We do not undertake to update our forward-looking statements except as required by law.

With that out of the way, let's move on to the topic at hand: uranium enrichment's contribution to the growth of nuclear energy.

By any measure, the outlook for construction of a new generation of nuclear power plants has changed dramatically in the past few years. Constituencies that maintained strong doubts about nuclear power—including government officials, media, and leading environmentalists—are now favoring a substantial global commitment to new nuclear plants.

This proposed expansion is taking shape in emerging markets like China and India. Also, in several traditional markets, nuclear power is re-emerging as a strong and credible option.

In the United States, nuclear is earning new recognition thanks to rock bottom production costs, record capacity factors, 20-year license extensions and power uprates. But that's only a piece of the story.

Global climate change, air pollution, soaring fossil energy costs and security of energy supply are all drivers that make nuclear power more desirable and necessary.

And then there is the strong commitment of the U.S. government to foster the expansion of nuclear power. Financial incentives, regulatory changes and cost-sharing programs in the new energy bill help remove obstacles to expanding U.S. nuclear capacity.

All of these help set the stage for a global expansion of nuclear power.

The future impact on the uranium enrichment industry—and in particular USEC—is unmistakably positive. Today, I'll cover projected demand for enriched uranium fuel and provide snapshots of the key markets around the world. We'll look at which markets are emerging as areas for long-term growth. And finally, I'll examine what steps the enrichment industry is taking to ensure the long-term strength of nuclear power.

According to recent World Nuclear Association projections, there will be steady growth in enrichment demand from 2010 to 2020, immediately followed by a sharper upturn as many more plants come online. The enrichment industry is making the necessary commitments to meet future demand through projects to add capacity.

This requires long-term commitments from the marketplace—that means producers and customers. A stable marketplace is necessary to support the development of new, highly efficient enrichment technologies and the capital cost of building new plants. The enrichment industry's long-term stability will be key to the coming expansion, and I'm confident we can achieve that.

Let's now turn to several key markets where new reactors will drive future enriched uranium demand.

Markets for Nuclear Expansion

Around the world, there are solid reasons for optimism. It's most evident in what I'll call Emerging Asia, comprised primarily of China and India. Data for this section comes from the World Nuclear Association's recently issued *Global Nuclear Fuel Market* report. Except where noted, all data reflects the report's "Reference" scenario.[1]

Emerging Asia

Both China and India have fast-growing economies, rising demand for electricity and insufficient energy resources. That makes them particularly attractive for nuclear expansion.

Today, China's nuclear capacity is only about 6 gigawatts, or 2 percent, of the country's generating capacity. The Chinese government is making bold plans to add to its nine currently operating nuclear units. By 2020, the government expects to add about 30 new units—boosting its nuclear generating capacity to 40 gigawatts. This is optimistic but achievable. I should note that WNA has taken a more conservative view even in its "Upper Scenario," which projects 36 gigawatts of capacity by 2020. As shown here, the Upper Scenario forecasts China's annual enrichment requirements increasing from 1 million SWU today to over 5 million SWU by 2020.

There is also renewed interest in India, with the U.S. government pursuing a framework for commercial nuclear cooperation. Nuclear power currently accounts for just over 3 percent of India's electricity generation. Fifteen reactors are operational, and eight plants are under construction. India could add 20 new plants by 2020, increasing its nuclear capacity from 2.5 gigawatts today to 20 gigawatts. This is substantially above WNA's Upper Scenario projection of 15 gigawatts.

India's long-term enrichment demand is expected to increase dramatically from about half a million SWU per year today to 1.6 million in 2020. The majority of this increase is expected to occur after 2010.

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[1] See "The Global Nuclear Fuel Market, Supply and Demand 2005-2030," published in September 2005 by the World Nuclear Association, for detailed assumptions underlying this forecast. Please note that enrichment demand forecasts are particularly sensitive to tails assay assumptions, which for the WNA report are detailed in Table V.4 of the appendices. WNA Members can either contact the WNA for their complimentary copy or download it from the Members Area. Single copies of the report are available to non-members for 200 pounds sterling: please contact WNA at www.world-nuclear.org.

The government's long-term plan is to develop thorium reactor technology, which doesn't require enriched uranium. This could change, however, if India gains access to Western fuel supplies, and could lead to increased enrichment requirements.

Although I've focused on China and India, other nations could also emerge by 2020. Vietnam and Indonesia are two countries with long-term plans to add reactors.

Established Asia

Japan, South Korea and Taiwan make up the established Asian market. Eighty-one reactors supply about one-third of the total electricity. All three countries are building new reactors. By 2020, an additional 20 reactors are expected to be online, and overall generating capacity should increase from 68 to 93 gigawatts.

Annual enrichment requirements are expected to rise from about 8 million SWU today to about 12 million in 2020.

United States

Turning to the Western Hemisphere, several mature nuclear markets are re-emerging for a second phase of expansion. The reasons are varied—including a positive shift in government policy, improved plant performance and economics, and an understanding that nuclear power is the only way to reduce greenhouse gas emissions and secure energy independence.

In the United States, the nuclear renaissance has been only a few years away for over a decade. But today we can clearly see that this is neither a mirage nor a dream. The powerful messages of nuclear's competitive economics, as well as its environmental and energy security benefits, are too compelling for even the skeptics to ignore.

The American nuclear industry has been actively laying the groundwork for building new plants. It appears to be a race between utilities and utility consortia as to who will be the first to announce a commitment to build new nuclear plants. While we can expect a significant number of commitments, they will come over time. WNA projects five new reactors by 2020. Nuclear generating capacity is expected to rise 8 percent between now and 2020—from 98 to 106 gigawatts.

In the United States, there is healthy competition in the enrichment market. Stability in the market has allowed projects for new capacity to move forward. If stability continues, I'm confident the market will reliably meet all future domestic fuel requirements.

According to WNA, annual U.S. enrichment requirements are expected to increase from 13 million SWU today to 16 million in 2020. I'm optimistic that these numbers can improve, as the first wave of new nuclear plants will lead to more orders.

Western and Central Europe

In Western and Central Europe, nuclear generating capacity is virtually flat over the next 15 years—dropping only slightly from 136 to 130 gigawatts. A recent Energy Information Administration study points out that, of the few "mature market economies" with firm plans to add new reactors, two are in Western Europe—Finland and France.

In Finland, TVO has laid the foundation stone for a new reactor using the European Pressurized Water Reactor (EPR) design—it's scheduled for full operation between 2010 and 2012. A sixth Finnish reactor is under consideration as well.

EdF will construct France's first EPR in Normandy—startup is expected between 2012 and 2014.

The UK market is mixed. The eight remaining Magnox plants are expected to shut down by 2010, and eight advanced gas-cooled reactors may follow by 2020. On the positive side, the government knows it needs new nuclear plants to meet its climate change obligations. A vigorous national debate will precede any construction. The WNA reference case projects two new plants by 2020.

And in Germany, the tight elections this week again raise questions about Germany's nuclear shutdown policies and how the country will meet emissions reduction targets.

Enrichment requirements in Western and Central Europe are expected to increase from 15 million SWU today to 17 million SWU by 2020. For years, competition in this region has been effectively controlled. The European Commission has historically reserved 80 percent of demand for European producers. But the tide may begin to turn as customers look to diversify supply following announcement of the Areva-Urenco centrifuge joint venture.

The State of Enrichment

Having looked at these regions, we can conclude the state of the enrichment market is strong. In key markets around the world today, supply and demand are in reasonable balance—given existing trade restrictions on unfairly priced enriched uranium. Based on these projections, worldwide demand would increase from 46 million SWU today to 64 million by 2020.

Indicators suggest that there will be solid, steady growth after 2010, and even greater growth beyond 2020. For now, growth in demand will be incremental. This requires enrichers to adjust production to meet current demand while pursuing projects for new capacity to meet longer term growth in requirements.

The enrichment industry is preparing to support that growth with the introduction of replacement centrifuge capacity. Overall SWU capacity will remain relatively flat as approximately 13 million SWU of gaseous diffusion capacity is phased out between 2010 and 2015 and replaced with centrifuges.

Some of you may bemoan the higher uranium and SWU prices. The answer to why these prices are higher can best be answered by Adam Smith. In *The Wealth of Nations,* he says the "invisible hand of the marketplace" is at work. Prices in the nuclear fuel cycle are rising to levels that will permit necessary expansion to competitively meet growing demand. Higher uranium prices provide resources to promote exploration and development of new mines. And higher SWU prices are supporting the transition to new technologies and expanded capacity.

Higher uranium prices have been one of the big drivers for enrichment demand. With uranium soaring to over $30 a pound, fuel managers are specifying lower tails assays in their enrichment orders. This increases the amount of SWU billed and reduces the uranium transferred from utility to enricher. But it does not change the amount of enriched uranium produced.

The real impact is within enrichment operations. An enricher using gaseous diffusion technology, like we do at Paducah, can make adjustments to operating tails to optimize costs. Higher uranium prices make it attractive for an enricher to reduce uranium consumption and employ extra SWUs to produce enriched uranium. We refer to it as underfeeding, and USEC has been underfeeding steadily for two years, which allows us to "create" additional uranium to meet customer requests for uranium supplies.

Even with these uranium price increases, nuclear power's production costs continue to beat those of coal, natural gas and oil. Nuclear's fuel costs are only about 25 percent of overall production costs, so it's not as sensitive as fossil fuels to price volatility.

Another factor contributing to enrichment demand is that nuclear power plants are running better and longer. In the United States, improved capacity factors and power uprates have added the equivalent of more than 20 new 1,000-megawatt plants. And don't forget the impressive volume of 20-year license extensions—33 approved and another 44 under review or planned.

Securing and Sustaining Success

The enrichment industry is taking action to ensure its long-term ability to meet customer requirements. Our ability to achieve that goal will ensure a reliable supply of fuel and will help drive the global expansion of nuclear power.

First, we must successfully license and deploy new enrichment technology.

Both the United States and France are moving to replace aging gaseous diffusion technology. The timely licensing of USEC's American Centrifuge and ultimate construction of a new enrichment plant is essential to improving the cost structure of U.S.-based production. LES' National Enrichment Facility provides another source of centrifuge capacity in the United States.

USEC is using a three-step plan to deploy the American Centrifuge—currently, we're testing individual full-size centrifuges. The second phase is operation of a Lead Cascade—a series of centrifuges—which will provide cost, schedule and performance data that we'll need for the final step: construction of a full-scale commercial plant.

We are working through some issues that came up during the testing phase related to quality of material, performance of certain components and recent changes in regulatory requirements. We expect to resolve each of these issues.

The Lead Cascade is now scheduled for operation during the first half of 2006. We still expect to begin construction of the American Centrifuge Plant in 2007 and reach full-scale annual production of 3.5 million SWU during 2010.

Second, the industry must ensure security of supply by maintaining a strong domestic enrichment capability.

Around the world, leading commercial nuclear power programs have uniformly committed to a strong enrichment capability. This underscores the obvious here in the United States: America needs a strong nuclear fuel supply. USEC is doing its part to support energy security by maintaining a reliable supply while we transition to American Centrifuge technology. Support for new centrifuge capacity is coming from our utility customers.

Third, we must maintain fair trade.

Fair, healthy competition in the enrichment market is in everyone's best interest—suppliers and customers alike. The U.S. government's investigation of European enriched uranium imports helped return stability to the enrichment market. And the Russian Suspension Agreement has been an absolute necessity for ensuring the health of the domestic uranium and enrichment industries. Without the Suspension Agreement, the volume of uranium imports from Russia would rise dramatically, prices would fall, and investments in new production capacity by all Western suppliers could be compromised. It could also destabilize the commercial viability of the HEU-to-LEU downblending program, commonly known as Megatons to Megawatts. This program fulfills a key U.S. government national security objective by securing and eliminating Russian warhead material.

Fourth, we have to find ways to meet non-proliferation objectives without disrupting primary supplies.

USEC's Megatons to Megawatts program is a remarkable achievement in converting Russian warhead uranium into reactor fuel. As we celebrate the elimination of the 10,000th warhead this week, it is important to remember the role this program plays in supplying 50 percent of America's nuclear fuel requirements and 10 percent of our electricity.

But there is a limit to what can be absorbed in the market. DOE's proposed program to market U.S. HEU throws that balance into question. Selling this material on the open market would suppress prices and undermine domestic supply. It also could undercut continued implementation of Megatons to Megawatts and successful deployment of new enrichment capacity.

USEC proposes that the U.S. HEU supply be used to establish a strategic nuclear fuel stockpile or to produce fuel for the initial core of one or more future U.S. nuclear power plants, such as we've suggested in our Isaiah reactor proposal. This would help stimulate new reactor construction while not impacting the existing market.

To those of you asking whether Megatons to Megawatts will be extended beyond 2013, I can only say I share your interest. Megatons to Megawatts enjoys strong support in the U.S. and Russian governments. It is a critical national security program that has also been very important to the nuclear fuel cycle—not just the enrichment industry, but uranium and conversion as well. A decision on extension—whether it's yes or no—must be reached in the next several years. This will give suppliers time to make the necessary supply adjustments to assure balance in the marketplace.

Securing Commitments

As the enrichment industry takes these necessary steps, it's also important to remember the interdependent relationship we have with our customers. The long-term strength of the enrichment industry will require us each to make commitments. We are committing to maintain a high level of performance and to provide a reliable, competitive fuel supply.

The modularity and flexibility of centrifuge technology will help the enrichment industry to quickly respond to customer requirements. USEC expects the American Centrifuge to allow for capacity additions as demand increases and to accommodate a wide range of assays, as required by advanced reactor technologies.

For utilities, the commitment to the future must come in the form of long-term fuel contracts, which help fund large-scale construction projects. Our customers that are considering building new reactors are addressing the same basic issue. A stable market with predictable prices is essential for attracting the needed capital to achieve an acceptable return on investment. That's the same whether you're selling fuel or electricity.

Conclusion

I'm more encouraged about this industry's future right now than at any time since I joined it two decades ago. We see substantial prospects for growth in Asia, and the potential reinvigoration of several markets. The enrichment industry is committed to supporting this growth through continued strong operations and the successful deployment of new capacity.

In 1776, Adam Smith wrote about the invisible hand of the marketplace. Today, the market's invisible hand is moving deftly to support the nuclear industry's long-term sustainability and plans for expansion. Let's not miss this golden opportunity . . . to build the industry we want . . . and to deliver the energy that the world will need.

Thank you.