

Testimony for the Record

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Chairman Royce and Ranking Member Engel, thank you for the opportunity to testify today on this important issue. I am Daniel Lipman, executive director for policy development and supplier programs at the Nuclear Energy Institute¹ (NEI). Our 350 members represent all aspects of peaceful nuclear technology, from nuclear power plant operators and reactor vendors, to major architect/engineering firms, to fuel suppliers and component manufacturers, to educational and research organizations. On behalf of our members, we appreciate the opportunity to provide testimony on the future of international civilian nuclear cooperation to the House Foreign Affairs Committee.

Industry View on International Civilian Nuclear Cooperation

U.S. nuclear cooperation with and commercial engagement in other countries' new and expanding nuclear power programs advance global nuclear safety, security and nonproliferation. U.S. commercial involvement ensures the highest possible levels of nuclear power plant safety and reliability, maintains U.S. leadership in nuclear energy technology and strengthens U.S. influence over global nuclear nonproliferation policy and practices. Noted national security experts agree that "one of our nation's most powerful tools for guaranteeing that countries acquiring this [nuclear] technology continue to use it exclusively for peaceful purposes is to ensure that the U.S. commercial nuclear industry continues to play a leading role in the international civil nuclear marketplace."²

In order to create American jobs and support critical U.S. foreign policy interests, the United States must be fully engaged in the global expansion of nuclear energy already underway. The U.S. nuclear energy industry:

- Supports efforts to limit the spread of uranium enrichment and used fuel reprocessing (E&R) technologies consistent with current U.S. policy. The United States has a broad portfolio of bilateral and multilateral policy instruments that can be used to advance this policy, including: Nuclear Suppliers Group guidelines, assurances of fuel supply,

¹ The Nuclear Energy Institute is responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including regulatory, financial, technical and legislative issues. NEI members include all companies licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

² April 25, 2013, letter to President Obama from Senator William S. Cohen, Dr. James Schlesinger, Admiral Michael Mullen, Dr. John Hamre, General Brent Scowcroft, General James Jones, Senator Pete Domenici and Ms. Susan Eisenhower (attached).

multilateral guarantees of fuel supply and used fuel disposition, bilateral commitments, and other assurances required by the Atomic Energy Act.

- Opposes inflexible preconditions to U.S. nuclear cooperation with potential partners, especially nontraditional preconditions that potential partners refuse to accept and other supplier nations do not require. Each bilateral relationship is unique and complex. Whether and how E&R provisions should be included in a Section 123 agreement, beyond what is already in practice and in statute, should reflect the unique circumstances of each bilateral relationship. Pragmatism should continue to guide the United States as it negotiates Section 123 agreements.
- Supports prompt negotiation of new and renewal bilateral agreements for peaceful nuclear energy cooperation. These agreements are essential for substantial U.S. nuclear exports. We are concerned that the Republic of Korea (ROK) agreement has required a temporary extension to avoid a lapse. We also note that agreements with Norway and Thailand were allowed to expire this year without renewal.

Prompt negotiation of 123 agreements will allow Congress the necessary time to conduct deliberative and effective oversight. It will also avoid the uncertainty created by the “just in time” nature of new and renewal agreements that, according to foreign customers, casts doubt on the U.S. as a reliable supplier nation.

- Supports a proactive approach for the negotiation of Section 123 agreements with nations with new or expanding peaceful nuclear energy programs. It is in the U.S. national security, nonproliferation, nuclear safety and economic interest to secure agreements early and with a broad set of partners rather than to sit idly by as these nations partner with other nuclear suppliers. Without agreements in force, we forfeit exports, jobs and commercial benefits, and we will fail to influence these programs in terms of their nuclear safety, security and nonproliferation norms.
- Supports federal policies and programs that enhance the competitiveness of U.S. nuclear suppliers in the global market. These include the prompt reauthorization of the U.S. Export-Import Bank with sufficient lending authority and duration to support nuclear exports, entry into force of the Convention on Supplementary Compensation for Nuclear Damage to ensure a predictable global liability regime, and the modernization of export controls under 10 CFR 810 to ensure that they are predictable, transparent and efficient.
- Supports continuing to enhance federal government coordination on international civilian nuclear cooperation. Many of the foreign suppliers that compete in the global market today enjoy their governments’ significant and seamless support. Continuing to improve U.S. government coordination, both within the executive branch and between the executive and legislative branches, is important to ensure a level playing field for U.S. exporters.

The Global Nuclear Market – Reduced U.S. Influence

Today, there are 72 new nuclear power stations under construction worldwide, of which five are under construction in the United States. An additional 172 are in the licensing and advanced planning stages and virtually all of these plants will be built abroad where the demand for reliable, affordable and clean baseload electricity is growing. Electricity from nuclear energy will help developing economies expand and lift hundreds of millions from poverty while having a minimal impact on the environment. For developed economies, nuclear energy is widely recognized as a reliable source of generation that provides significant electricity supplies without emitting greenhouse gases during operation. As we saw during the polar vortex earlier this year, nuclear energy plays a critical role in providing stable and reliable energy during extreme weather events. But with this growing nuclear market comes growing competition from other nuclear supplier nations, which can now provide a full range of products and services.

More than 60 percent of the world's 435 operating reactors are based on technology developed in the United States. Although major components such as ultra-large forgings and reactor pressure vessels are no longer manufactured in the United States, the U.S. nuclear industry continues to manufacture a wide range of equipment, components and fuel for nuclear power plants around the world. U.S. firms also supply the global market with high-value services, including site evaluation, engineering and construction, fuel supply and transport, expertise in plant operation, decommissioning and more. After a nuclear power plant is constructed, U.S. firms can remain engaged throughout its life, which can last half a century or more, thus having a physical presence at nuclear facilities and influence over safe operational practice.

With the world's largest civilian nuclear energy program, the U.S. industry is recognized for reliability, safety and operational excellence. U.S. firms are making major investments in technology development to continue their tradition of innovation. These investments include development of small modular reactors, advanced technologies for uranium enrichment, more advanced large reactors with improved safety features and advanced manufacturing techniques to improve quality and reduce costs. In addition, the U.S. government is investing in research and development in critical areas that will continue to advance innovation. For example, the U.S. Department of Energy has made major investments in advanced simulation technology for light water reactors, research into accident-tolerant fuels, and the licensing and commercialization of small modular reactors. Coupled with the globally recognized "gold-standard" regulator, the U.S. Nuclear Regulatory Commission, many nations place a high value on cooperation with the U.S. as they develop or expand their civilian nuclear energy programs.

Over the past two decades, new supplier nations have entered the growing global nuclear market, and multi-national partnerships and consortia have been formed to develop nuclear energy facilities. According to a 2010 GAO report, "while the value of U.S. exports of nuclear reactors, major components and minor components have increased, the U.S. share of global exports

declined slightly” from 1994 to 2008.³ Over the same period, the U.S. share in the fuel market declined sharply from one-third to one-tenth of the market.

The growth of nuclear suppliers overseas has increased competition for U.S. firms. International competitors often began as suppliers to their domestic markets and over time expanded their offerings to the global market. For example, France’s AREVA and Russia’s Rosatom have steadily increased their presence in the global market. Although 12 of the reactors under construction today are U.S. designs, four are French and 16 are Russian.⁴ One of the newest entrants in the global nuclear market is the Republic of Korea. In December 2009, Emirates Nuclear Energy Corporation awarded a multi-billion dollar contract to a Korea Electric Power Corporation-led consortium to build the first two nuclear power plants in the United Arab Emirates (UAE). In addition, there has been an expansion of indigenous technologies developed for domestic markets. For example, 20 of the 72 nuclear plants under construction globally are Chinese reactors being built in China.⁵

As additional reactors are brought into service, a growing portion of the global nuclear market is nuclear fuel: uranium, conversion, enrichment and fuel fabrication. Over the past 20 years, economically attractive supplies of nuclear fuel have become available from an increasing number of supplier nations. Australia holds the most extensive identified resources, at 31 percent of the world’s total. In recent years, Kazakhstan has emerged at the world’s largest uranium producer, producing over 38 percent of global primary production in 2013. Conversion, enrichment and fabrication of fuel also operate as a wide-ranging international commercial market.

Section 123 Agreements Ensure U.S. Nonproliferation Aims

Section 123 agreements provide critical nonproliferation benefits. These include significant commitments to safeguard materials, to prevent material diversion for non-peaceful purposes, and to provide adequate security for materials. The agreements provide for U.S. consent rights over the enrichment, reprocessing and retransfer of U.S. materials. This means that obligations are attached to these materials, which include stringent nonproliferation assurances that these materials will not contribute to weapons programs.

Within this framework, Section 123 agreements ensure that U.S. partners agree to rigorous nonproliferation and nuclear security requirements as a prerequisite to nuclear cooperation with the United States. The nine U.S. requirements include prior U.S. consent for any enrichment or reprocessing of U.S. materials and, in post-Nuclear Non-Proliferation Act agreements, consent for reprocessing of nuclear fuel that has been used in a U.S.-supplied reactor.

U.S. nuclear energy cooperation is an essential element of the Nuclear Nonproliferation Treaty, which forms the basis of the global nonproliferation regime. Countries commit not to pursue

³ “Global Nuclear Commerce: Governmentwide Strategy Could Help Increase Commercial Benefits From U.S. Nuclear Cooperation Agreements with Other Countries”, United States Government Accountability Office Report to the Committee on Foreign Affairs, House of Representatives, November 2010.

⁴ International Atomic Energy Agency, 2014.

⁵ Ibid.

nuclear weapons and, in exchange, are guaranteed support for their right to develop civil nuclear power and other peaceful uses of nuclear energy, subject to international supervision. The United States has relied on this framework for decades to advance its global nuclear nonproliferation agenda.

Limiting Enrichment and Reprocessing (E&R)

The nuclear industry supports efforts to limit the spread of E&R consistent with current U.S. policy. The United States currently has in force 21 nuclear cooperation agreements covering 48 countries, Taiwan and the IAEA. All agreements negotiated since the Nuclear Non-Proliferation Act of 1978 provide for U.S. consent rights for enrichment or reprocessing of U.S.-flagged materials.

A unilateral and inflexible requirement that potential trading partner countries forswear E&R as a condition for a Section 123 agreement will in some cases have the perverse effect of undermining U.S. nonproliferation interests by significantly reducing the number of countries willing to engage in civil nuclear commerce with the United States.

Other nuclear suppliers – like Russia, France, Japan and South Korea – stand ready to engage in nuclear commerce with other countries, whether or not those countries have concluded a 123 agreement with the United States. As a result, the effect in some cases of refusing to conclude 123 agreements with countries that are unwilling to renounce E&R would be to encourage them to do business with other suppliers, thereby forgoing the economic and national security benefits of commercial nuclear engagement.

When a country is willing, in the context of a Section 123 agreement with the United States, to renounce E&R, the United States should include that commitment in the Section 123 agreement. But when a country, which otherwise demonstrates its intent to develop an exclusively peaceful commercial nuclear energy program, makes clear that it is unwilling to renounce E&R in a bilateral agreement with the United States, it would be self-defeating to forgo the nonproliferation and other benefits to the United States of concluding a Section 123 agreement with that country.

Industry is pleased that Taiwan and UAE have committed not to develop E&R, but we believe it would be unrealistic to assume that the considerations that led these two governments to renounce E&R will apply in all cases.

Section 123 Agreements of Current Interest

NEI and our members are grateful to this Committee for the approval of an extension of the current Section 123 agreement with the Republic of Korea and support for renewal agreements with Taiwan and the International Atomic Energy Agency (IAEA). We also thank Ranking Member Engel and Rep. Kinzinger for their resolution to support the Vietnam agreement. Each of these agreements has significant potential benefits for U.S. exports and U.S. jobs. For every \$1 billion in exports, between 5,000 and 10,000 U.S. jobs are created or sustained.

- **Republic of Korea.** South Korea is the world’s fourth-largest generator of nuclear energy and a major global supplier in its own right. Nineteen of South Korea’s 23 operating plants – and all of South Korea’s power plants under construction, on order or planned – are based on U.S. technology.⁶ South Korea’s licensing of U.S. technologies and export of U.S. components, fuel and services have earned billions for U.S. suppliers. Significant U.S. content in the Korean APR-1400 power plant and other U.S.-South Korea supply relationships has already earned U.S. suppliers more than a \$2 billion role in the U.A.E. project. That project alone is supporting thousands of jobs across 17 states.⁷
- **Vietnam.** To support its rapid economic development, Vietnam is implementing an ambitious plan to develop up to 10,000 megawatts of nuclear generating capacity by 2030, with the first reactors coming on line in the next decade. Russia and Japan have secured agreements to develop nuclear energy projects in Vietnam. Absent a Section 123 agreement with Vietnam, U.S. firms have been sidelined. Industry estimates that the remaining market opportunity could result in \$10 billion-\$20 billion in U.S. nuclear exports. According to Department of Commerce estimates; the Vietnam nuclear energy market could create more than 50,000 high-paying U.S. jobs.

Vietnam has worked closely with the United States and the international community to develop a responsible and transparent nuclear energy program, including cooperation with the U.S. Nuclear Regulatory Commission to lay the foundation for a regulatory infrastructure. Vietnam has also acceded to important nuclear security and nonproliferation treaties. These include: the Nuclear Non-Proliferation Treaty in 1982, the Comprehensive Nuclear Test Ban Treaty in 2006, and completion of a comprehensive safeguards agreement with the International Atomic Energy Agency in 1990. In addition, Vietnam signed the Additional Protocol in 2007, which entered into force in 2012.

- **China.** With 20 nuclear reactors in operation and an additional 28 under construction, China is the world’s largest market for nuclear power plants, equipment and technology and will account for a third of all nuclear infrastructure constructed between 2012 and 2032 when it is slated to become the world’s largest generator of nuclear power. U.S. companies have won major tenders in China that have created billions in U.S. exports and supported tens of thousands of U.S. jobs. In addition, U.S. and Chinese companies have established cooperative arrangements for research and commercial product development.

U.S. nuclear cooperation with China advances U.S. interests in nuclear safety. China is deploying a fleet of advanced Westinghouse AP1000 power plants, ensuring deployment of the only Generation III+ reactor to receive Design Certification from the U.S. Nuclear Regulatory Commission. Currently, there are four Westinghouse AP1000 nuclear units under construction at two sites in China. Negotiation for follow-on scope has begun.

Conclusion

NEI believes that the global expansion of nuclear energy infrastructure provides the United States a unique opportunity to meet several national imperatives at the same time: (1) increasing U.S. influence over nuclear nonproliferation policy and practices around the world; (2) ensuring

⁶ “Nuclear Power in South Korea,” World Nuclear Association, December 2012.

⁷ Ex-Im Bank News Release, September 7, 2012.

the highest possible levels of nuclear power plant safety and reliability around the world, by exporting U.S. advanced reactor designs and America's world-class operational expertise; (3) maintaining U.S. leadership in nuclear energy technology; and, (4) creating tens of thousands of jobs and maintaining a healthy manufacturing base for nuclear energy technology and services.

To maintain U.S. influence over global nonproliferation policy and international nuclear safety, the U.S. commercial nuclear energy sector must participate in the rapidly expanding global market for nuclear energy technologies (435 commercial nuclear reactors in operation around the world, 72 under construction, 172 planned or on order). If U.S. exporters were able to capture 25 percent of the global market – estimated at \$500 billion to \$750 billion over the next 10 years – this would create (or sustain) up to 185,000 high-paying American jobs.

The U.S. nuclear industry is competitive, but we must be allowed to compete. This requires policies that promote international civilian nuclear cooperation. The industry:

- Supports efforts to limit the spread of uranium enrichment and used fuel reprocessing (E&R) technologies consistent with current U.S. policy.
- Opposes inflexible preconditions to U.S. nuclear cooperation potential partners will not accept and that other supplier nations do not impose. Pragmatism should continue to guide the United States as it negotiates Section 123 agreements.
- Supports prompt negotiation of new and renewal bilateral agreements for peaceful nuclear energy cooperation. These agreements are essential for meaningful U.S. nuclear exports.
- Supports a proactive approach for the negotiation of Section 123 agreements with nations with new or expanding peaceful nuclear energy programs, including the ROK, Vietnam and China. It is in the U.S. national security, nonproliferation, nuclear safety and economic interest to secure agreements early and with a broad set of partners rather than to sit idly by as these nations partner with other nuclear suppliers. Without agreements in force, we forfeit exports, jobs and commercial benefits, and we will fail to influence these programs in terms of their nuclear safety, security and nonproliferation norms.
- Supports policies that level the competitive playing field for U.S. exporters including reauthorization of the Export-Import Bank, bringing the Convention on Supplementary Compensation for Nuclear Damages into force, and modernization of export controls under 10 CFR 810.

