

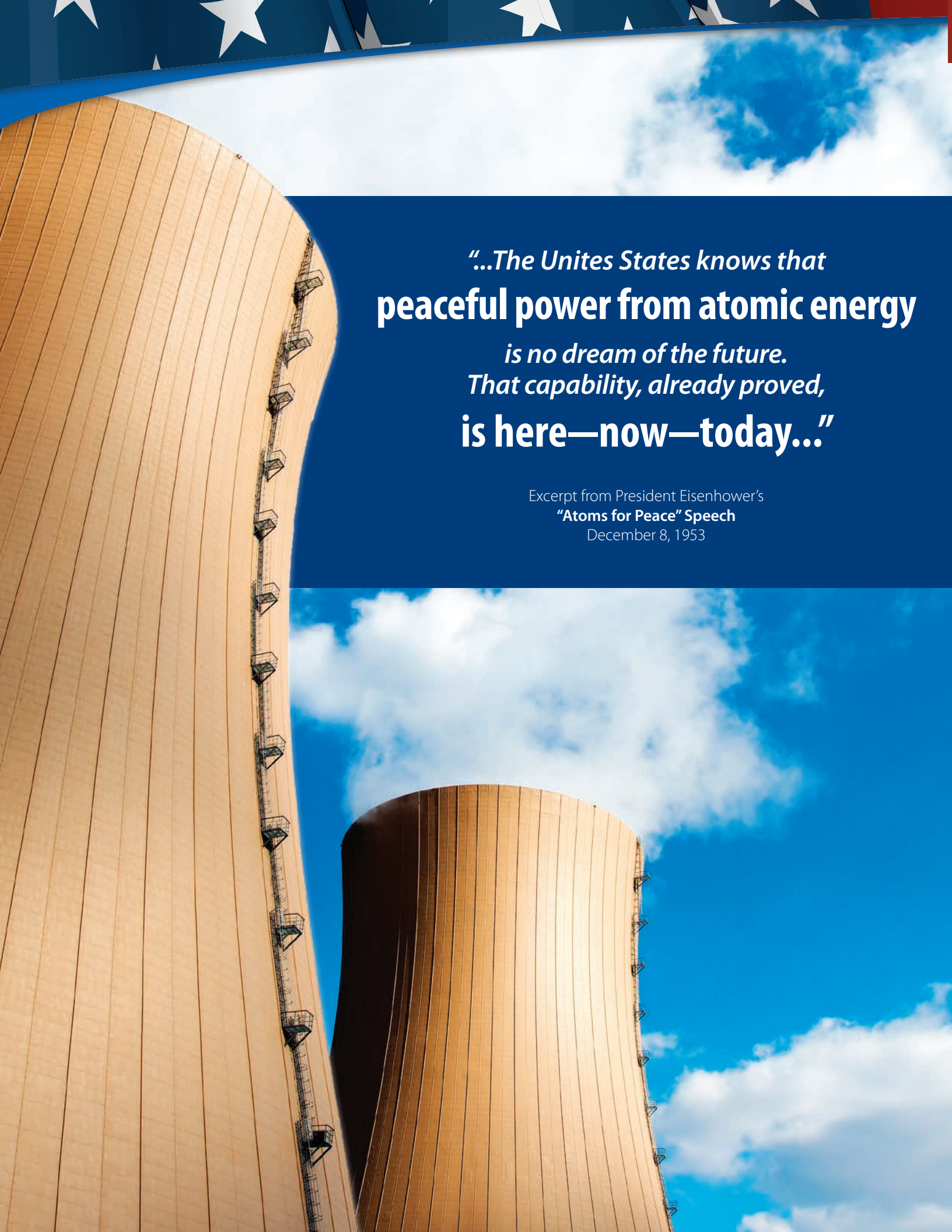


United States Civil Nuclear Energy Framework

USA: Atoms for Prosperity

Energy • Prosperity • Safety • Security



A photograph of two large, cylindrical cooling towers at a nuclear power plant. The towers are made of light-colored, vertically-ribbed metal panels. They are set against a bright blue sky with scattered white clouds. The top of the image features a decorative border with white stars on a dark blue background, reminiscent of the American flag. The towers are positioned on the left and right sides of the frame, with the central area containing text.

"..The United States knows that
peaceful power from atomic energy
is no dream of the future.
That capability, already proved,
is here—now—today.."

Excerpt from President Eisenhower's
"Atoms for Peace" Speech
December 8, 1953



Overview: the United States & Civil Nuclear Power

For more than sixty years, the United States of America has led the development and use of civil nuclear power technology worldwide. Almost one-fourth of all civil nuclear power plants in the world are located in the United States, accounting for approximately one third of the world's global nuclear power generation. The 100 operating nuclear reactors in the United States are among the top-performing reactors in the world.

The United States Government supports the safe, secure, and peaceful expansion of nuclear power. Nuclear power provides clean, domestically-produced baseload energy that contributes to economic growth, a specialized manufacturing base, technological innovations, new jobs, and large-scale trade and investment opportunities.

The United States Government has numerous bilateral programs devoted to supporting nuclear safety, security, safeguards, nonproliferation as well as research and development. The United States participates in many international activities that take place around the world, often in leadership positions and with the support of the expertise found in the U.S. National Laboratory System. In addition to government programs, the U.S. nuclear industry, university system and professional societies all have resources available to engage with counterparts worldwide to help reap the benefits of peaceful uses of nuclear energy.



Plant Vogtle Unit 3 liquid processing tanks inside nuclear island, August 2013.
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U.S. Government Programs that Support International Development of Nuclear Power

The United States Government supports the expansion of safe and secure use of nuclear power worldwide through a variety of bilateral and multilateral mechanisms and engagements to include areas such as nuclear financing, nuclear trade promotion, safeguards and security of nuclear materials, research and development and management of nuclear waste and storage. The agencies' descriptions provide more detail on the responsibilities of each specific program.

Export-Import Bank of the United States (Ex-Im Bank)

Ex-Im Bank is the official export credit agency of the United States. Its mission is to help create and maintain American jobs by supporting the export of U.S. goods and services to international markets. Ex-Im Bank provides working capital loan guarantees (pre-export financing), export credit insurance, and loan guarantees and direct loans (buyer financing).

Ex-Im Bank has provided financial support for numerous nuclear power plants in multiple countries. Ex-Im Bank can provide special extended repayment terms of up to 18 years to support the export of U.S. goods and services required for nuclear power plants. For all requests for financing, Ex-Im Bank performs due diligence on the financial, legal, technical, and environmental aspects of the proposed project. In addition, the technical, environmental and safety-related performance of all nuclear projects is monitored through the full term of Ex-Im Bank's financial support.

On June 27, 2013, Ex-Im Bank released its updated Environmental and Social Due Diligence Procedures and Guidelines, which details environmental and safety guidelines for nuclear power plants (<http://go.usa.gov/jeDm>).

For more information on Ex-Im Bank financing, please contact Steven Mayo at steven.mayo@exim.gov or visit www.exim.gov.

U.S. Department of Commerce

International Trade Administration (ITA)

ITA strengthens the competitiveness of U.S. industry, promotes trade and investment, and ensures fair trade

through the rigorous enforcement of our trade laws and agreements. ITA works to improve the global business environment and helps U.S. organizations compete at home and abroad. ITA supports President Obama's recovery agenda and the National Export Initiative to sustain economic growth and support American jobs. Several ITA offices support the civil nuclear industry.

Industry and Analysis (I&A) Office of Energy and Environmental Industries (OEEI)

I&A's OEEI is dedicated to promoting trade, investment, and commercial partnerships for the energy and environmental sectors. I&A works to expand trade and investment in these sectors by participating in trade negotiations, organizing trade capacity building programs, and evaluating the impact of domestic and international economic and regulatory policies. OEEI's Civil Nuclear Energy Team works with other U.S. Government agencies to develop a public policy environment that advances and promotes civil nuclear engagement and partnerships with our global trading partners. In October 2008, OEEI launched the Civil Nuclear Trade Initiative (CNTI) to increase the commercial benefits from civil nuclear cooperation with other countries. The CNTI coordinates U.S. government civil nuclear activities through the White House Director for Nuclear Energy Policy and the Trade Promotion Coordinating Committee (TPCC), an interagency task force that ensures the coordination and development of a government-wide export promotion plan.

For more information about the Civil Nuclear Trade Initiative, please contact Adam O'Malley at adam.omalley@trade.gov.

U.S. Commercial Service (CS)

Every year, the CS helps thousands of U.S. companies to export goods and services worth billions of dollars to destinations around the world. Located in over 100 cities across the United States and U.S. Embassies and Consulates in more than 70 countries, its global network of trade professionals is dedicated to opening doors for U.S. business. Whether U.S. companies are looking to make their first export sale or expand to additional international markets, the U.S. Commercial Service offers trade counseling, market intelligence, business matchmaking,



Diablo Canyon Nuclear Power Plant, Units 1 and 2. Courtesy ©PG&E

trade promotion events, and commercial diplomacy designed to help U.S. companies succeed.

For more information regarding assistance and in-country contacts, please visit www.export.gov.

Advocacy Center

The Advocacy Center coordinates U.S. Government resources in order to level the playing field on behalf of qualified U.S. nuclear business interests as they compete against foreign firms for specific international nuclear contracts or other U.S. nuclear export opportunities. Specifically, the Advocacy Center advocates on the behalf of approved U.S. civil nuclear companies that are competing for nuclear power tenders abroad by garnering support from U.S. Government officials as they interact with foreign government decision makers.

For more information about the ITA's Advocacy Center, please contact Malcolm Burke at malcolm.burke@trade.gov or visit www.trade.gov/advocacy.

U.S. Department of Energy

Office of Nuclear Energy (NE)

NE works to advance nuclear power by supporting civil nuclear energy research, development and demonstration to support the safe and reliable operation of the current nuclear power reactor fleet, to develop advanced reactor designs and sustainable nuclear fuel cycles, and to minimize the risks of nuclear proliferation. In all of these efforts, NE collaborates with other U.S. government agencies, DOE's national laboratories, U.S. industry and universities, and international partners. The Office of International Nuclear Energy Policy and Cooperation (INEPC) is responsible for

coordinating NE's international engagement. Bilaterally, NE collaborates on nuclear energy Research and Development (R&D) through several vehicles, including the International Nuclear Energy Research Initiative (I-NERI), bilateral working groups, R&D agreements, memoranda of understanding, and bilateral action plans. Multilaterally, in addition to the International Atomic energy Agency (IAEA), the U.S. cooperates with international partners through the Generation IV International Forum, the Nuclear Energy Agency of the Organization for Economic Cooperation and Development, and the International Framework for Nuclear Energy Cooperation. In addition, INEPC manages the Department's international commercial nuclear fuel management initiative, and supports the U.S. Government's initiatives providing advocacy for U.S. nuclear exports.

For more information on NE, please contact Ed McGinnis at edward.mcginis@nuclear.energy.gov or visit <http://go.usa.gov/D2jv>.

Office of Environmental Management (EM)

EM's mission is to complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development and government-sponsored nuclear energy research. EM's capabilities include tank waste management; deactivation and decommissioning; nuclear material disposition; and soil and groundwater remediation. EM invests in research and technology development in all of these areas to improve the efficiency and cost-effectiveness of addressing unprecedented environmental challenges. It also collaborates closely with international and U.S. partners in industry, government, academia, and national laboratories to share technical knowledge and best practices for meeting regulatory and



site cleanup requirements while protecting human and ecological health.

For more information on EM, please contact Ana Han at ana.han@em.doe.gov or visit <http://go.usa.gov/DYR5>.

National Nuclear Security Administration (NNSA)

NNSA, through its Office of Defense Nuclear Nonproliferation, works closely with a wide range of partners to detect, secure, and dispose of dangerous nuclear and radiological material, and related Weapons of Mass Destruction (WMD) technology and expertise. NNSA supports the safe and secure expansion of nuclear power by supporting the Department of State in negotiating Agreements for Cooperation—123 Agreements reviewing export applications for nuclear-specific and WMD-related dual-use equipment, and controlling the export of unclassified U.S. nuclear technology and assistance. NNSA also engages with the IAEA and other international partners to build civil nuclear safeguards and security infrastructure.

NNSA is the United States' premier responder to any nuclear or radiological incident within the U.S. or abroad, to include providing operational planning and training to counter both domestic and international nuclear terrorism.

For more information on NNSA, please contact Cameron Stanuch at cameron.stanuch@nnsa.doe.gov or visit <http://go.usa.gov/DWx5>.

U.S. Department of State

Office of Nuclear Energy, Safety and Security (ISN/NESS)

ISN/NESS develops U.S. policy relating to peaceful nuclear cooperation, nuclear safety, nuclear export controls, and the physical protection of nuclear materials and facilities,

in furtherance of U.S. nuclear nonproliferation goals. It works bilaterally, including negotiating nuclear cooperation agreements and implementing nuclear cooperation programs, and multilaterally, interacting with the IAEA, the G-8, the OECD/Nuclear Energy Agency and the Nuclear Suppliers Group. ISN/NESS also coordinates interagency efforts to implement the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management and to secure ratification of the Convention on Supplementary Compensation for Nuclear Damage and the Amendment to the Convention on the Physical Protection of Nuclear Material.

For more information on the ISN/NESS, please contact Richard Stratford at stratfordrj@state.gov or visit www.state.gov/t/isn.

Bureau of Energy Resources (ENR)

ENR ensures our U.S. diplomatic relationships advance our interests in having access to secure, reliable, and ever-cleaner sources of energy. The ENR focus is to manage the geopolitics of today's energy economy through energy diplomacy; to enable global energy transformation through energy policy that stimulates market forces for alternative energy, clean electricity, development, and reconstruction; and to expand good governance, increase transparency, and improve commercially viable and environmentally sustainable access for the 1.3 billion people without access to electricity and 2.7 billion people without access to modern energy services.

For more information on ENR, please contact Avi Gopstein at gopsteinam@state.gov or visit www.state.gov/e/enr.



U.S. Nuclear Export Policies

U.S. nuclear export laws and regulations establish the United States as a reliable supplier of nuclear materials and technologies to countries exercising the highest standards of safety, security, and nonproliferation. These policies prevent the misuse of nuclear material, related equipment and technologies. Policy implementation is accomplished using the U.S. regulatory framework, which includes government-to-government agreements on Peaceful Uses of Nuclear Energy (123 Agreements), and the application of Part 810 licenses, Part 110 licenses and Dual-Use licenses.

Peaceful Uses of Nuclear Energy Cooperation Agreements—123 Agreements

Nuclear cooperation agreements are required in order for the U.S. industry to export nuclear material, nuclear reactors, and major reactor components. The United States currently has twenty four 123 Agreements in effect with more than 47 countries (the Euratom Agreement includes all member states of the European Union), the IAEA and Taiwan. The Agreements must comply with the requirements of Section 123 of the U.S. Atomic Energy Act of 1954 as amended, which authorizes Agreements for Cooperation in the Peaceful Uses of Nuclear Energy.

123 Agreements are negotiated by the U.S. Department of State, with technical assistance from the U.S. Department of Energy (DOE) and concurrence from the U.S. Nuclear Regulatory Commission (NRC). DOE negotiates and implements administrative arrangements to the agreements. The NRC reviews and approves license requests for all exported nuclear material and equipment subject to the Agreement.

Section 123 of the Atomic Energy Act requires the following:

- Safeguard guarantees for all non-nuclear weapons states on all transferred nuclear material and equipment;
- Full-scope safeguards (non-weapons states only);
- Peaceful uses assurances;
- Right of return to the United States in the event the other party detonates an explosive device or violates/terminates an IAEA agreement for safeguards;
- No alteration in form or content, including reprocessing and enrichment, without U.S. permission;
- No retransfer without U.S. permission;
- Physical security guarantees; and
- U.S. prior approval of storage facilities for special nuclear material

Transfers that do not require a 123 Agreement, e.g. zirconium and graphite; and nuclear-related dual-use exports, e.g. computers, simulators, detectors and other dual-use items are licensed by the U.S. Department of Commerce.

For more information, please visit the National Nuclear Security Administration (NNSA)'s website at <http://go.usa.gov/DxjR>.

Licensing Process

Several U.S. government agencies are responsible for export controls that impact civil nuclear products and services:

Process	Agency	Jurisdiction
Part 810	U.S. Department of Energy	Nuclear technology and services related to the production of Special Nuclear Material
Part 110	U.S. Nuclear Regulatory Commission	Nuclear equipment and material
Export Administration Regulations	U.S. Department of Commerce	Dual-use items listed on the Commerce Control List

U.S. Department of Energy— Part 810 Licenses

Title 10 of the U.S. Code of Federal Regulations (10 CFR) Part 810 implements the Atomic Energy Act of 1954, which controls the export of unclassified nuclear technology and assistance. These regulations enable peaceful nuclear trade by ensuring that nuclear technologies and assistance exported from the United States will be used for peaceful purposes.

Countries that would receive the technology transfer may be asked to provide government-to-government assurances that the technology provided will be used for peaceful purposes. Such an assurance alerts the host government as to the types of technologies that its companies are importing and assures the U.S. government that the company is a legitimate importer. The assurances take the form of a diplomatic note through the U.S. Embassy in country.

For more information, visit the U.S. Department of Energy's website at <http://go.usa.gov/DxDm>.

U.S. Nuclear Regulatory Commission— Part 110 Licenses

The U.S. Nuclear Regulatory Commission (NRC) is delegated, by the Atomic Energy Act, responsibility and authority to regulate the export and import of nuclear equipment and materials. These regulations are codified in 10 CFR 110 and apply to all individuals in the United States who export and import nuclear equipment and material under NRC licensing authority. Unless the export or import transaction falls under an exemption by the agency, it must be authorized by an appropriate NRC license. NRC issues two types of export and import licenses: general and specific.

For more information, visit the U.S. Nuclear Regulatory Commission's website at <http://go.usa.gov/DxDJ>.

U.S. Department of Commerce— Dual Use Civil Nuclear Licensing:

The Bureau of Industry and Security (BIS) in the Department of Commerce is charged with the licensing, development, implementation and interpretation of U.S. export control policy for dual-use commodities, software, and technology. Dual-use items subject to BIS regulatory jurisdiction have predominantly commercial uses, but may also have military, nuclear, missile or Chemical, Biological, and Weapons (CBW) applications. The statutory authority for Commerce to regulate dual use exports is the Export Administration Act of 1979 and is implemented through the Export Administration Regulations.

For more information, visit the U.S. Department of Commerce's website at <http://go.usa.gov/DY5A>.

U.S. Nuclear Industry Supply Chain Subsectors

The U.S. civil nuclear energy supply chain spans reactors, fuel services, nuclear engineering, procurement and construction, and advisory services to meet the needs of the global expansion of nuclear power. Here is further detail on each subsector's specialty.

Advisory and Legal Support Services

This subsector contains companies that provide advisory and consulting services that address the development of legal and regulatory regimes, licensing support, siting, environmental impact analyses, legal advice, and tender writing and development. Standards development and trade association activities are also included within this subsector.

Design, Construction, and Operation

Companies in this subsector are responsible for technology design and engineering, procurement, project management, site preparation, power plant construction and power plant operation and maintenance. This subsector addresses all activities in the engineering, procurement and construction (EPC) phase of a project and also covers utilities that operate plants and companies that provide plant maintenance and repair.

Components

Companies in this subsector are generally manufacturers that may seek commercial opportunities throughout a plant's lifecycle, including parts required for operation and maintenance, uprates and upgrades. We delineate this subsector to reflect commercial opportunities for component manufacturers independent of the Nuclear Steam Supply System (NSSS) providers.

Fuels

The fuels subsector includes all aspects of the fuel cycle including mining and milling uranium, enrichment, conversion, fabrication of assemblies, refueling, transportation of fuel, and fuel storage.

Back-End Services

This subsector contains companies that provide services related to plant decommissioning and used fuel management, including waste management and removal, remediation; used fuel management, interim storage and transportation; geologic disposal and reprocessing and recycling of plant byproducts.



St. Lucie Nuclear Power Plant, Hutchinson Island, Florida



U.S. Department of Commerce

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