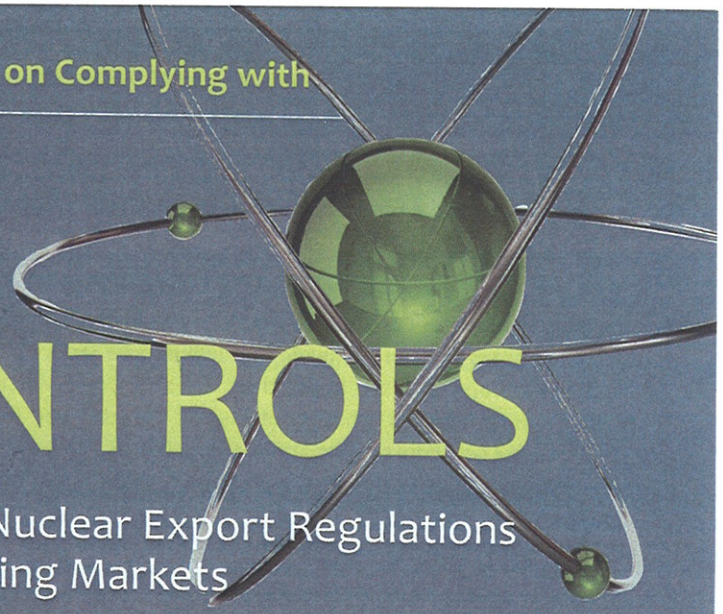
American Conference Institute's 3rd National Summit on Complying with

NUCLEAR EXPORT CONTROLS



Strengthening Compliance with Strict U.S. Nuclear Export Regulations to Maximize Your Business in Global, Emerging Markets

March 20 – 21, 2013 • Washington Hilton • Washington, DC

Hear from Senior US Government Regulators

Steven Clagett, Director, Office of Missile Technology and Nuclear Controls, Bureau of Industry & Security U.S. Department of Commerce

Mark Shaffer, Deputy Director Office of International Programs U.S. Nuclear Regulatory Commission

Katie Strangis, Attorney, Office of the General Counsel National Nuclear Security Administration U.S. Department of Energy

Brooke G. Smith, Senior International Policy Analyst Office of International Programs U.S. Nuclear Regulatory Commission

Update on State Department Priorities, Policies and Trade Restrictions on Nuclear Exports

Dr. Alex R. Burkart, Deputy Director, Nuclear Energy Safety and Security Office, U.S. Department of State

Update on Global Nuclear Export Finance Opportunities

John L. Schuster, Vice President, Structured Finance Export-Import Bank of the United States

Take Away Strategic Compliance Insights from:

GE Hitachi

Westinghouse

AREVA

Arizona Public Service (APS)

United States Enrichment Corporation (USEC)

The 2013 Summit Features Exclusive Panels on How to Resolve Your Most Pressing U.S. Nuclear Export Controls Compliance Challenges, including:

- Clarifying **DOE, NRC, BIS and DDTC jurisdiction,** and the interplay of C.F.R. Part 810, C.F.R. Part 110, the EAR and ITAR
- How to tailor your compliance practices for **new, scalable technologies,** including SMR's and fast reactors
- Strengthening **your policies and IT systems** to reduce heightened **deemed export and re-export risks** affecting the nuclear industry
- **Managing the impact of Rule 810** on your nuclear operations abroad

Special Focus on CHINA:

- How to assess liability risks at the due diligence stage and **implement effective safeguards** throughout the supply chain
- How to **ensure information exchanges are secure** and within the scope of DoE authorizations

Enhanced Focus on Key Global Markets Risks and Opportunities:

- **INDIA: Implementing the U.S.-India Civil Agreement,** and how to meet required approvals, enhanced IP protection measures and reporting obligations under H.R. 7081
- **UAE and SOUTH KOREA:** What unique nuclear export compliance risks and financial opportunities each of these new markets present
- **EU:** How **recent EU directives** impact your competitiveness

March 19, 2013 – Benchmark and Network at Exclusive Working Groups:

Implementing the U.S. – India Civil Nuclear Agreement

March 21, 2013

Vijay K. Sazawal, Ph.D.
Director of Government Programs

Disclaimer: Opinions expressed by the author are solely attributable to him and not to USEC Inc.

Topics

- Overview of the Indian Power Situation
- Indian Nuclear Power Expansion Plans
- Indian Civil Nuclear Program
- Bilateral Issues of Interest
- Techno-Commercial Negotiations
- Pathway to Success
- Global Market Trends
- Concluding Remarks

Overview of the Indian Power Situation

- India's power situation is daunting:
  - 40% of the population has no access to electricity on a sustained basis
  - 40% of the population receives intermittent supply of electricity

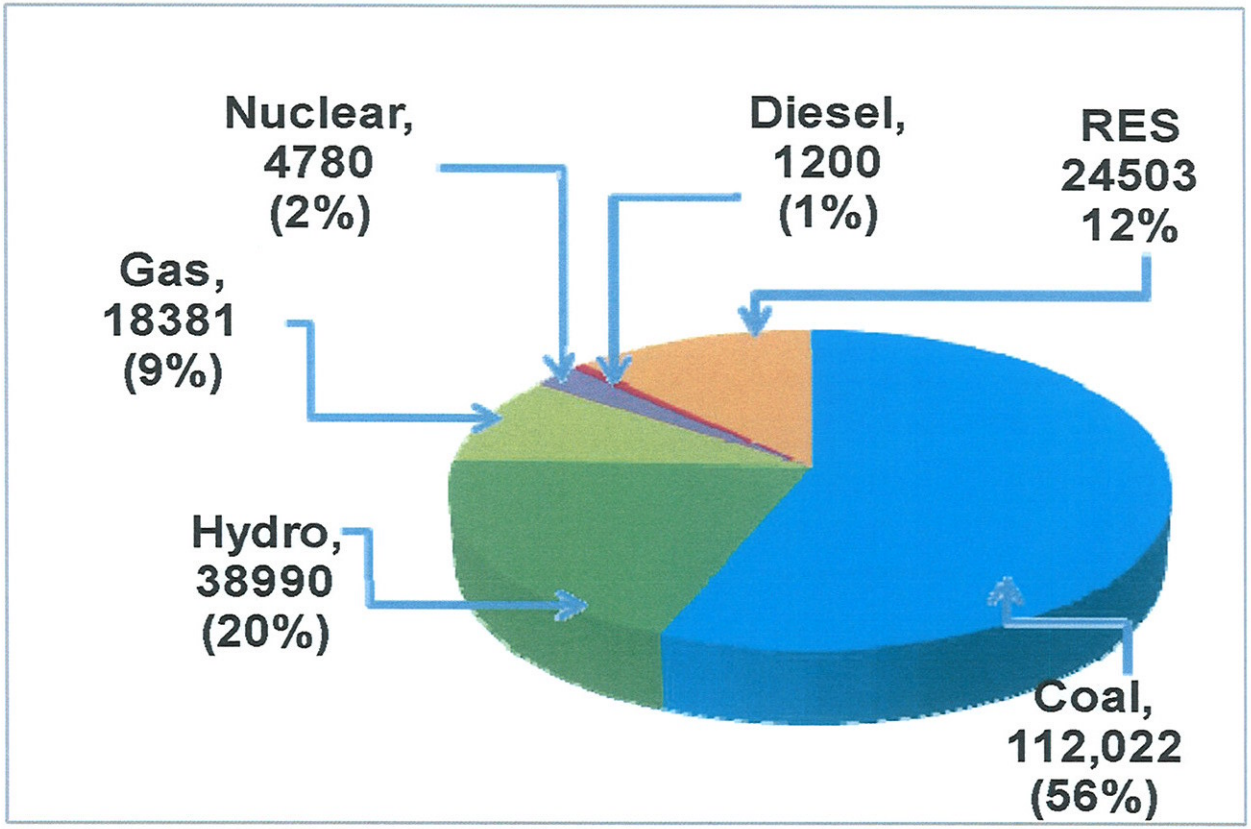
- Total power consumption has no where to go but up:
  - India consumes 6th highest amount of electricity despite being the second most populous country
  - Per capita electricity consumption is around 794 kWh as compared to global average of 2800 kWh
  - The installed generation capacity in India as of the end of the 11th Plan was around 200 GWe, out of which the nuclear segment is about 2%
  - The shortage in 2011-2012 was estimated at about 11 % (Peak Demand)

- Power scenario, circa 2050:
  - The population is expected to stabilize around 1.6 to 1.7 billion
  - Individual power consumption will rise to about 5000 kWh
  - India will require 8000 billion kWh annually

- India's 12th Plan (April 1, 2012 – March 31, 2017)
  - India will increase electricity production capacity by 88,000 MWe

Indian Power Sector

Installed Capacity as on 31/3/2012
1,99,877 MW



Indian Nuclear Power Expansion Plans

- Indian nuclear power expansion plans are proceeding slower than planned:
  - Increased public scrutiny since the Fukushima Daiichi Reactor Accident (11 March 2011)
  - Resistance to acquisition of land for construction of nuclear plants, especially near coastal areas
  - Slow pace of negotiations related to finalization of bilateral civil nuclear agreements, and uncertainty surrounding the Indian Nuclear Liability Law and Rules
  - Rising cost of foreign reactors (Stage I program)

- Likely Indian Nuclear Power Scenario:
  - Installed capacity: 4,780 MWe (20 reactors), under construction (2013): 5,300 Mwe (7 reactors)
  - Total capacity at the end of 12th Plan (2017): 10,080 MWe
  - Future capacity - 2020: 14, 580 MWe
  - Long range plans are unchanged : 63,000 MWe (2032), 150,000 MWe (2050)
  - 25% of electricity through nuclear power by 2050

- India's commitment to nuclear power in general, and to its unique 3-stage program, is unwavering:
  - Stage I program not only includes importation of rector designs and hardware from foreign vendors, but also includes construction of indigenously designed 700 MWe PHWR's and 700 MWe PWR's, as well as 1000 MWe (PHWR's)
  - India will continue to invest in Stage II (FBR's) and Stage III (AHWR's) program development

- Imported Reactors will not be turnkey projects:
  - NPCIL is the Construction Manager for all Stage I reactors

Indian "Civil" Nuclear Program

- India has concurrent civil and strategic nuclear programs, many of which share common facilities. Under the U.S.-India nuclear deal, India is separating the two programs. The "Separation Plan" is underway and will place all civil facilities/programs under the India–specific IAEA Additional Protocol by 2014

- All imported LWR purchases are under the civil nuclear program. Moreover, these purchases will be made only in Stage I of India's 3-Stage nuclear program

- A prototype Stage II reactor (500 MWe FBR) is under construction at Kalpakkam in Tamil Nadu and will be commissioned in 2013. A prototype Stage III reactor (300 Mwe AHWR) design is nearly complete, and undergoing regulatory review prior to construction at a site yet to be announced which may be either Tarapur or Visakhapatnam

- India will procure only a finite number of imported LWR's. The number is based on a complex series of planning scenarios involving the success of indigenous 700 MWe and 1000 MWe reactors, timing of MOX fuel needs for Stage II reactors, success of breeder fuel optimization program, and the start-up dates for Stage III reactors, etc.

- Initial planning was based on importing a total of 40 GWe of LWR's by 2022, but the acquisition process is going slower than expected (for reasons mentioned earlier) and it is possible that India may actually import fewer reactors

- India initially designated Five (5) "Nuclear Energy Parks," with a capacity of 10,000 MWe at each site, for imported reactors. One site has been taken off the list, and one out the four sites has already been approved for construction, two have received environmental clearances, and one is undergoing an environmental review

- The U.S. has been offered two of the four nuclear parks on which American designed NPP's will be built*

Bilateral Issues of Interest

- Contentious Issues (2012):
  - Administrative Arrangements under the bilateral "123 Agreement"
  - Verifications and Assurances required under USG Export Licenses
  - "810" Technology Transfer/"Deemed Export" Issues
  - Early Works Agreements
  - "Techno-Commercial" Negotiations
  - Nuclear Indemnification to suppliers

- Contentious Issues (2013):
  - Techno-Commercial Negotiations
  - Early Works Agreements
  - Nuclear Indemnification to suppliers

Techno-Commercial Negotiations

- A key objective of techno-commercial negotiations is to establish economic viability of a project

  (Viability – "able to be done," or "worth doing" - Macmillan Dictionary)

- Letter from Foreign Secretary, Government of India, to Undersecretary of State, U.S. State Department, September 10, 2008:

  " … It is the intention of the Government of India and its entities to conclude discussions with US nuclear energy firms and conclude agreements …. Construction of nuclear power units at least at two sites approved by the Government of India, which would be capable of generating a minimum of 10,000 MWe on the basis of mutually acceptable technical and commercial terms and conditions that enable a viable tariff regime for electricity generated."

- The Joint Statement Issued by President Obama and Prime Minister Singh, New Delhi, November 8, 2010:

  "They reiterated their commitment to build strong India-U.S. civil nuclear cooperation through the participation of the U.S. nuclear energy firms in India on the basis of mutually acceptable technical and commercial terms and conditions that enable a viable tariff regime for electricity generated."

- The Joint Communique' between U.S. Secretary of State and the Indian Foreign Minister, New Delhi, July 19, 2011:

  "They reiterated their commitment to build strong India-U.S. civil nuclear cooperation through the participation of the U.S. nuclear energy firms in India on the basis of mutually acceptable technical and commercial terms and conditions that enable a viable tariff regime for electricity generated."

Indian Approach to Techno-Commercial Negotiations

- There are three general models for tariff regime:
  - Guaranteed Profit (Model used by US utilities in regulatory market)
  - Guaranteed Price (Model proposed by U.K. and Czech Republic, also called "Strike Price")
  - Guaranteed Viability (Model used by NPCIL)

- *Viable Tariff Regime* means that unit energy cost of any reactor must be competitive against the cost of electricity generated by alternative modes in the region, and is required because of domestic laws

- The up side: NSSS vendors, who meet various Indian legal and administrative requirements, are invited for negotiations. **There is no competition between NSSS vendors.** Some of the requirements may not be met initially by the vendor (at the start of negotiations), but must be met before any contract will be signed

- Nuclear power has been granted exemption from the Indian Electricity Act of 2003 which introduced competition in the electricity generation sector among public and private power producers. The advantage of the "viable tariff regime" is to allow a little bit of flexibility while staying as close to the "competitive tariff regime" as possible

Pathway to Success

- Team Approach is the only way to succeed in India
  - NSSS vendors must have a desire to succeed in the Indian market. It is a win-win situation where NSSS vendor and NPCIL with a group of mutually acceptable foreign and domestic subcontractors work together to finalize a project that meets various technical, regulatory and financial requirements
  - Teams made up from NSSS and NPCIL will jointly rework the entire supply chain to develop most attractive overnight and busbar costs using a combination of suppliers and innovative approaches suggested by both parties
  - Achieving "viable tariff rate" without compromising safety is the over-arching objective of the negotiations, and both parties have to work seamlessly to achieve the objective. There are no "hidden agendas." In fact, the precise goal of the techno-commercial negotiation is clearly stated at the very start of the negotiating process

- Challenges:
  - NSSS designer will be challenged constantly to look at new and innovative ideas for achieving economic viability without sacrificing safety, and must therefore be receptive to new ideas and approaches for achieving program goals
  - Techno-Commercial negotiations are lengthy and perhaps very demanding – Patience and flexibility are keys to success

Global Market Trends

- Fukushima Daiichi nuclear accident has slowed, but not stopped, the growth of nuclear power – China, Russia, India, South Korea, Brazil, U.S., Czech Republic, along with many newcomers to nuclear power are determined to take advantage of this reliable energy source that is free from greenhouse emissions
- Reactor costs and financing are becoming increasingly important to the growth of nuclear power
- Entry of China in the export market adds additional pressures on western nuclear vendors. Good News - India is unlikely ever to buy a Chinese reactor and is committed to U.S. suppliers provided tariff goals are achieved
- India is not seeking competitive bids for its imports, but techno-commercial negotiations with India (as attested by the Russians and the French) are protracted and intense in order to meet its tariff obligations
- India will at some stage be an exporter of 200-250 MWe class PHWR reactors and offer a strong product line to compete against SMR's
- The U.S. nuclear export policies are under severe strain due to ever increasing concerns related to nuclear non-proliferation. The problems get exacerbated because our international business competitors are either owned by governments or have tied national security objectives to their exports

Concluding Remarks

- India remains a land of opportunity for global nuclear power suppliers. It is possibly the only nuclear market where vendors will not be asked to compete against each other to provide the "lowest bid." Each vendor works with the customer (NPCIL) using a win-win approach for success

- Indian pledge to purchase U.S. brand reactors is genuine. The U.S. Government, in turn, is doing its best to work out any administrative and legislative hurdles to help U.S, vendors achieve success in the Indian market

- Indians can be reasonable in settling bilateral disputes and issues of contention. But the process may involve a higher degree of flexibility and ingenuity than what a vendor has experienced elsewhere. It is advisable to invest in local businesses and learn from local entrepreneurs who deal with India's cumbersome bureaucracy and legal system, and still make good money along the way.

- Nuclear power symbolizes a way out for Indians to eradicate poverty in their nation and reduce its carbon footprint. It is critical to India's future, and the U.S. has a big role in making that happen