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Center for Strategic & International Studies
Forum on “Energy Loan Guarantees: Risk or Rewards ?”

Washington, DC – March 29, 2012

Challenges for Financing Nuclear Power Plants

Opening Remarks

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Disclaimers

- My comments today represent my own views and are not meant to represent the views of Milbank, Tweed, Hadley & McCloy LLP
- Given our firm's involvement with the Department of Energy and the terms of our engagement with the DOE, I will not be speaking directly about the merits of the DOE Loan Guarantee Program. Any references to or comments about the DOE LGP are based on publicly available information and not specific to our firm's representation of the DOE.

Key Motivations for Nuclear Power

- Overall Growth in Demand for Energy
 - Linkage between energy and development
- Energy Security / Self-Reliance
 - Many nations lack fossil fuel reserves to support power generation
 - Many nations with fossil fuel reserves project that such reserves will be exhausted over the course of the 21st century
- Energy Diversity
 - Desire to diversify among forms of power generation to limit reliance and market influence of any one form of power generation
- Emissions / Global Warming
 - Nuclear has a significant advantage relative to other forms of **baseload** generation (coal and natural gas)
- Energy Substitution
 - Use nuclear energy as baseload generation to free up current sources of baseload generation (oil and natural gas for more lucrative applications)

Key Motivations for Nuclear Power (cont.)

■ Economics

- Low operational costs relative to other forms of power

■ Desalination

- Potable water is in short supply in many parts of the world, with one fifth of the world's population lacking access to safe drinking water (with such proportion expected to grow, given projected population growth relative to available water resources)
- Desalination is an energy-intensive process

■ National Development & Government Leadership

- National pride, human resources development (university-level jobs), local content / growth of local industry
- Note major government incentive programs present in countries with long nuclear histories (e.g., the Energy Policy Act of 2005 in the United States, the United Kingdom's EMR)

Notes: Drivers are different, depending on national situation.

Over 60 new countries have approached the IAEA about starting nuclear power programs.

Post-Fukushima Assessment

■ *The aforementioned “Key Motivations” have not changed !*

- Note, too, that Fukushima has not affected nuclear power plant development in the USA. Other factors (shale gas, lower demand, lack of a federal carbon policy) had already stalled the “nuclear renaissance”

■ But what do we see following Fukushima?

- Heightened scrutiny on safety, with heavy emphasis on design basis and the impact of external events on a nuclear power plant
 - Remember: Three Mile Island and Chernobyl were caused by internal problems, whereas the Fukushima incident was initiated by external events
 - Example: EU “stress tests”
 - New safety standards have the potential to drive nuclear power plant costs even higher
- Renewed anti-nuclear sentiment
 - Some countries are turning away from nuclear power (Germany, Italy, Switzerland)
 - Others are delaying their decisions (Thailand)
 - But, many are still going forward (China, India, Russia, UAE, United Kingdom, Czech Republic)
 - Conclusion: Managing the public will be even more critical

Post-Fukushima Assessment (cont.)

- Are banks more “nervous” about financing nuclear power?
 - Perhaps, commercial banks are keeping a low profile right now
 - Renewed focus on project risks:
 - Total loss of multiple generation assets
 - Premature decommissioning, with higher costs
 - Premature shutdown of operating assets (Germany)
 - ✓ ... and without any discussion of compensation for loss of operating life
 - Extended shutdown of assets to address safety and government / public concerns, despite regulatory compliance (Chubu Electric's Hamaoka plant)
 - “All bets are off” regarding nuclear liability structures
 - ✓ Japanese Government does not recognize “grave natural disaster” exception under the nuclear liability law
 - ✓ Actions in Japan lack a basis in the law (shutdown of Hamaoka, retroactive assessment on Japanese nuclear utilities, Tepco taking full blame, etc.)
 - ❖ Conclusion: Need for entity structuring to reduce corporate exposure

Financing – Current Market Conditions

- We are in a period of financial conservatism:
 - Continuing effects of the Global Financial Crisis of 2008
 - Eurozone troubles
 - Basel III requirements
 - Fukushima places renewed focus on project risk

- Result: Money is tight
 - Combined with traditional challenges for the financing of nuclear power plants, there are limited options
 - Export Credit Agencies
 - “Mother Russia” (Vietnam, Turkey, Bangladesh, Belarus, etc.)
 - China for China (and maybe beyond?)
 - Oil Economies (UAE, Saudi Arabia)

Nuclear Financing Concerns

- Primary Concerns for Financiers
 - Long development / construction periods
 - High capital costs
 - Regulatory uncertainty
 - First-of-a-kind risk
 - Safety culture
 - Operational Success
 - Human Resources and Supply Chain
 - Sustainability of government commitment
 - Fuel cycle concerns
 - Environmental responsibility
 - Commitment to International Regimes
 - Reputational Risk

Financing / Structuring Models

- Project Finance (to date, it never has been done for nuclear)
- Sovereign model (People's Republic of China, France, India, S. Korea)
 - Often via ownership by a government-owned utility (EDF, NPCIL)
- Utility Balance Sheet model
 - Consider market structure (regulated vs. deregulated)
- “Tied Equity Investor” model
- Finland & Exeltium / Blue Sky models (heavy end users)
- Multiple-utility model (multiple off-takers)
- Build Own Operate (“BOO”) & Build Own Operate Transfer (“BOOT”)
- Regional Arrangements (Baltic efforts)

Note: Importance of Export Credit Agencies

United States Perspective – Market Values of Companies

<i>Utility</i>	<i>Market Capitalization (Billions)</i>
Southern	\$38.7
Exelon	\$33.1
Dominion	\$28.9
Duke Energy*	\$27.9
NextEra	\$25.2
Progress Energy*	\$15.6
Entergy	\$11.8
SCANA	\$5.9
NRG	\$3.7

- Utilities are small compared to the multi-billion dollar NPP investment
- Building a single new nuclear plant is a “bet the company” proposition
- Publicly traded companies, judged on quarterly and annual results, struggle (because of long NPP development periods and costs) to justify the benefit of an asset that generates revenue for 60 – 80 years
- Whereas corporate entities might not be able to take the “long view”, governments can

■ Source: Bloomberg.com (as of March 29, 2012)

* Merging

Key Provisions – New Nuclear Plant Construction (Energy Policy Act of 2005)

<i>Provisions</i>	<i>EPAct No.</i>	<i>Key Attribute</i>	<i>Comments</i>
Loan guarantees	1703	80% of project cost	<ul style="list-style-type: none"> ■ Allows nuclear plant developer to: <ul style="list-style-type: none"> • Increase leverage • Reduce financing costs
Production tax credits	1306	\$18/MW hr	<ul style="list-style-type: none"> ■ 6,000 MW eligible ■ \$125M/1000 MW per year
Risk insurance (Standby Support)	638	Delay protection from licensing or litigation	<ul style="list-style-type: none"> ■ Protection up to 6 reactors ■ \$500M for 1st 2 plants ■ \$250M for next 4 plants
Price-Anderson	602	Nuclear liability insurance	<ul style="list-style-type: none"> ■ Extension to 2025

Key Question: What are my policy goals?

IF:

- one believes that nuclear power should be part of the national energy portfolio ...
- commercial banks are not willing to take “uncovered” nuclear project risk ...
- nuclear power projects are not “winning” short term propositions from corporations whose results are driven by quarterly and annual statements ...
- the “market” is not driving the desired result ...

THEN:

- Government needs to step to shape the result to achieve the “greater good”
- Governments can take the long term view

THEREFORE:

- Government needs to employ a number of tools to achieve that goal
- Financial tools address the greatest challenge to nuclear power plant development
- Recognize, too, that, globally, NPP development is government-driven in today’s market

Milbank, Tweed, Hadley & McCloy LLP at-a-glance

International Presence | Project Financing | Experience with Nuclear Power



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Paul Murphy's practice focuses on multiple aspects of the nuclear industry – from legal and policy matters, including international regulatory and treaty frameworks and issues regarding nuclear liability, to strategies for creating viable nuclear power programs and the identification and mitigation of associated risks – representing developers/owners, investors, and contractors on nuclear projects internationally. Mr. Murphy is recognized as an expert in the development and financing of nuclear power programs by the International Atomic Energy Agency (IAEA), the OECD's Nuclear Energy Agency (NEA) and the US government. Mr. Murphy currently serves on the IAEA's Technical Cooperation Program team, which assists member states in developing civilian nuclear power programs. Mr. Murphy has served as a designated expert, chairman, and author at several special meetings and for multiple working groups of the IAEA, primarily involving the development, financing, and structuring of nuclear power projects. He continues to work with the IAEA in a number of key areas, including a current revision of the IAEA's *Handbook on Nuclear Law* and as lead author for a new report to be released in the next few months, entitled, *"Alternative Contracting and Ownership Practices for Nuclear Power Plants"*.

Mr. Murphy was recently selected by the US Secretary of Commerce to serve on the Civilian Nuclear Trade Advisory Committee, and he chairs its Finance subcommittee. In addition, Mr. Murphy recently served as the US Government's sole representative on an NEA working group on *"Financing of Nuclear Power Plants"*, acting as chairman for the working group. Mr. Murphy also chaired the IAEA working group that issued, *"Issues to Improve the Prospects of Financing Nuclear Power Projects."* Mr. Murphy has also worked with the Nuclear Energy Institute, the US State Department, the US Mission to the OECD, and the Export-Import Bank of the United States on revisions to the OECD's Guidelines for the financing of nuclear power projects by Export Credit Agencies. For the last three years, Mr. Murphy served as a faculty member for the *"Training Course on Nuclear Power Infrastructure Programs and Related Projects in Emerging Nuclear States"*, held on behalf of the US State Department and the IAEA at the Argonne National Laboratory and attended by representatives of over 20 foreign governments. Mr. Murphy was the lead instructor for the segments on financing and the bidding / evaluation process for nuclear power projects.

In addition to his work in the nuclear sector, Mr. Murphy's representations have included extensive work in the engineering and construction industry, where he has been heavily involved in the nuclear and fossil power sectors, both domestically and internationally. His project experience, both domestic and international, includes nuclear (new build, steam generator replacement, nuclear operating plant services), coal (both new build and environmental retrofit), and gas-fired power projects, ranging from EPC contracting structures to technical support agreements and including major equipment purchase agreements and subcontracting. Recent projects have included work in solar power projects (CSP), IGCC and coal liquefaction plants, and pipelines.

Prior to joining Milbank, he served as Senior Counsel for Bechtel Power Corporation, supporting both the Nuclear and Fossil business lines as a transactional attorney involved in bid evaluations, business development, proposal submittals, contract negotiations, procurement, and project execution.

Mr. Murphy is a graduate of Princeton University's Woodrow Wilson School for Public and International Affairs and a graduate of Harvard Law School. Mr. Murphy is also a member of the International Nuclear Law Association.

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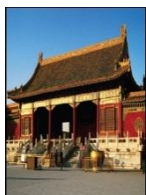
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