

**U.S. Nuclear Regulatory Commission Meeting on Financial Qualifications
for Merchant Power Plant Combined License Applicants**

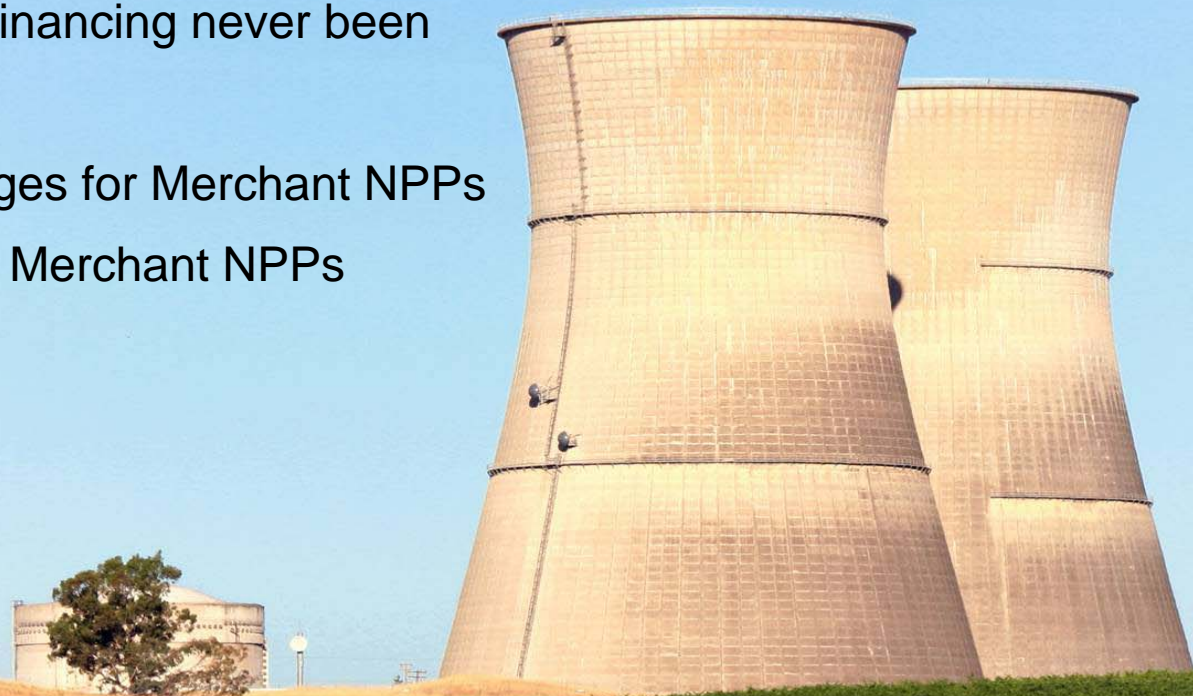
***Considerations on the Financing of Merchant Nuclear Power Projects
in the United States***

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Overview of Presentation

- Financing Concerns & Risks for NPPs
- Why has Project Financing never been used for NPPs?
- Financing Challenges for Merchant NPPs
- Considerations for Merchant NPPs



Nuclear Financing Concerns

- Primary Concerns for Financiers
 - **Long development / construction periods**
 - **High capital costs**
 - **Regulatory uncertainty**
 - **Reputational risk**
 - 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 and standards

Types of Risk

- Political
- Country / State
- Regulatory / Licensing
- Technology
- **Completion**
- Labor & Materials
- Electricity Market
- Operational
- Environmental
- Nuclear Incident
- Reputational

Project Finance – Nuclear

- No history of project finance for nuclear power – Why?
 - Remember, “project finance” is a term of art
 - Limited / Non-Recourse structure
 - Debt / Equity structure
 - Financing Entities look to revenue stream of the asset
 - Repayment is a function of achievement of Commercial Operation
 - Financing Entities can “take” the asset

Financing a Nuclear Power Project

- No history of project finance for nuclear power – Why?
 - Classic nuclear risks
 - Regulatory risk
 - Political risk (a “moment of insanity”; the joys of democracy)
 - Schedule issues
 - Budget issues
 - Project Finance remedies don’t readily suit a nuclear asset
 - Financing Entities can’t “take” the asset
 - Need for a “licensed operator”
 - Strategic asset within many countries
 - Inability to replace the NSSS vendor during construction

Traditional Models / Utility Balance Sheet

■ Utility Balance Sheet Model

- National (or regional in the case of the USA) utility is the developer / owner / operator
- Financing is obtained based on the strength of the utility's balance sheet
 - Regulated power market
 - Ability to pass along development costs to the rate base (during construction and operation)
 - Possible need for a sovereign guarantee (outside the USA)
 - Function of utility's size
 - Function of nuclear liability regime
- But note market capitalization limitations

United States Utilities – Market Values of Companies

<i>Utility</i>	<i>Market Capitalization (Billions)</i>
Duke Energy	\$45.7
Southern	\$40.2
Exelon	\$30.9
Dominion	\$30.5
NextEra	\$29.7
Entergy	\$12.5
SCANA	\$6.4
NRG	\$5.3

- 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 Oct 10, 2012)

European Utilities – Market Values of Companies (Cont'd)

<i>Representative European Utilities</i>	<i>Billions (Oct 2012)</i>	<i>Billions (Oct 2009)</i>
GDF Suez	\$52.2	\$65.8
E.ON	\$46.5	\$74.6
EDF	\$39.7	\$71.0
ENEL	\$34.2	\$39.8
Iberdrola	\$28.8	\$48.9
RWE	\$27.2	\$48.3

- Utilities abroad are larger compared to the multi-billion plant investment
- Building a single nuclear plant might not be a “bet the company” proposition, but capacity constraints still remain
- Note the decline, even since 2009
- Source: Bloomberg.com (as of Oct 10, 2012)

Oil & Gas – Market Values of Companies

<i>Representative Oil & Gas Companies</i>	<i>Billions</i>
ExxonMobil	\$421.4
Royal Dutch Shell	\$225.9
Chevron	\$221.8
BP	\$133.6
Total	\$116.8

- Total was part of the EPR bid in the UAE

- Source: Bloomberg.com (as of Oct 10, 2012)

Traditional Models / Utility Balance Sheet

■ Utility Balance Sheet Model

- Size matters
- Even if the balance sheet can handle one nuclear power plant ...
 - When does the balance sheet capacity run out?
 - What impact does such a burden place on its credit rating?
- If a utility's credit rating goes down, it is more expensive for the utility to borrow money on a going-forward basis
- Rating agencies take a dim / conservative view regarding nuclear power project risk
- Long development periods (without construction period cost recovery mechanisms) are not a winning proposition for corporate executives

So what do banks want to see in an NPP?

- Banks like certainty
 - On time, on budget
 - Have all the project risks been properly identified and allocated?
 - Proven technology
 - Sustained government commitment
 - Clear and predictable regulatory process
 - ❖ Note that receipt of a COL would be a condition precedent to financing the NPP (from a banking perspective)
 - ❖ However, that does not mean that a financing structure would be precluded from “closing” until the COL has been obtained
 - Dedicated revenue stream (e.g., long term PPA with a creditworthy entity for the term of debt) **OR** strong corporate or government credit

- Challenges for nuclear power projects
 - Track record does not support on time / on budget considerations
 - Nuclear power is a “price taker”, not a “price setter”
 - With natural gas prices at historical lows, it is difficult for a new NPP to compete in a merchant environment
 - Hence, the need (re. a merchant NPP) for PPA structures at a level to at least service the debt

However ...

- Any decisions with regard to nuclear power must also consider the following:
 - How does nuclear power fit within a national energy strategy?
 - Would failure to have a diversified energy mix create energy security and energy diversity concerns?
 - While natural gas plants are cleaner than coal plants, they are not on par with nuclear power plants and renewable forms of power generation
 - Is the shale gas / fracking story fully written?
 - If the nation wants to meet its carbon goals (Query: What are they?) and need for baseload generation, a combination of energy conservation, renewable energy (intermittent generation), and gas-fired power will not achieve such goals
 - Therefore, if the NRC were to preclude or marginalize merchant NPP license applicants, such a decision needs to be framed within larger energy policy considerations
 - Then, if the NRC elected not to prejudice merchant NPP license applicants, what might it wish to consider?

Considerations for Merchant NPPs

■ What about a project viability test?

- Is the technology considerably “proven”? How much of it is “first of a kind”?
- What is the financial strength of the project sponsors and how much equity are they willing to commit to the project?
- What sort of EPC contract do the sponsors have in place? Is it lump sum turnkey? If not, how much of the contract price is fixed?
- How experienced are the project participants? Consider here:
 - Key Parties: sponsors, prime contractor, NSSS supplier, other major vendors, operator
 - Prior project delivery history
- What sort of market feasibility study has been done? Does the project make economic sense?
- Does it have a credible financing plan?

GOAL: Is there a “real project” here?

■ As the largest concern about merchant NPPs is whether or not they can be financed (recognizing, too, that financing is the “make-or-break” test for any NPP, not just merchant NPPs), a project viability test becomes a financing test

- Query: Should the NRC be the party that assesses financial viability?

Remember

- Concerning the financing of a merchant NPP
 - The project has to be compelling to the banks on an opportunity cost basis; for the banks, it is a pure commercial decision
 - Consider: If there is a national desire to promote nuclear power projects, and if evidence shows that merchant NPPs are challenged by current market conditions, then the question becomes, “What can the US Government do to facilitate the financing of NPPs?”
 - Energy Policy Act of 2005 (Query: Is this enough? Is it suited for current market conditions?)
 - UK’s Energy Market Reform

■ Thank you for your time and attention.

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

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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 four 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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