

Financing Considerations for Nuclear Power Facilities

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Outline

- Description of the “Problem”
- Lessons from the Past
- Principal Financing Options
- Main Financing Challenges for Nuclear Power Facilities
- Examples of Mitigation Options
- Conclusions

Description of the “Problem”

- Growing – but not universal – consensus that nuclear power will be a critical part of the global solution to world energy demand.
- Still, there is widespread recognition that the construction of new nuclear power generation presents significant financing challenges
- The financing community continues to regard the construction of new nuclear power plants – particularly the first ones – as a high-risk undertaking.

Lessons from the Past

- Unfortunately the record of the construction of nuclear power plants in many (but not all) jurisdictions is not good.
- A long history of construction delays and cost overruns.
- For example, the average cost overrun for 75 nuclear plants built in the US between 1966-1977 was: over 300%

Lessons from the Past

Factors that contributed to the construction problems include:

- Poorly designed regulatory and licensing processes
- Changing regulatory standards and requirements
- No design standardization or modular construction practices
- Immature technology
- Poor management of construction process

Lessons from the Past

These factors boil down to one principal concern from the perspective of the financial community:

- “Delay Equals Death”

The risk that there will be a delay in operations and thus cost overruns and a delay in revenues – which leads to a lack of funds and debt default – due to factors beyond the control of the owners (or lenders) of the nuclear facility

Principal Financing Options

- Balance Sheet Financing – including utility, sovereign and equity financings
- Non-Recourse Project Financing

Note that to date no nuclear power station has been constructed using a project financing structure.

Balance Sheet Financings

- These are “full recourse” financings, where:
 - A creditworthy entity – such as a substantial power utility, a sovereign entity or a group of creditworthy end-users – would assume 100% liability for all debt service payments under the financing
 - Lenders would rely on the general credit of such entity for repayment of the loans and would price the loans in line with its general creditworthiness.

Balance Sheet Financings – Continued

In a balance sheet financing, the sponsor absorbs the full risks of:

- cost overruns,
- revenue shortfalls,
- changes in regulation,
- changes in circumstances, and
- all other “ups and downs” in the project lifespan.

Balance Sheet Financings – Continued

- **Examples of “balance sheet” financings for a nuclear power station include:**
 - **Construction of the nuclear station by a regulated power utility which:**
 - develops the facility under traditional “cost of service” rate regulations and
 - finances it as part of the utility’s ongoing regulated operations.
 - **Construction of the nuclear station by a state-owned power-related entity which:**
 - places the facility within the country’s fleet of generating capacity and
 - finances it as part of the consolidated sovereign debt of the country.
 - **Construction of the nuclear station by a group of creditworthy end-users which:**
 - is looking for a stable, low-cost supply of energy and
 - finances it through equity injections or other recourse financing.

Non-Recourse Project Financings

- A “non-recourse” financing uses a special purpose vehicle – which by definition has no credit history or creditworthiness.
- The project company undertakes the development, construction and operation of the nuclear power station and serves as “borrower” under the debt financing.
- Lenders look principally to the revenues of the project as the source of funds to repay the debt, and the collateral securing the debt is limited to the project assets.

Non-Recourse Project Financings – Continued

The benefits of a project financing include:

- Shields Other Sponsor Assets from Default – reduces credit-rating pressure on the sponsor
- Risk Allocation – lenders absorb some of the risk of project failure
- Leverage – greater “debt to equity ratio” increases return on equity and decreases overall cost of capital
- Private sector participation – taps into experienced operators and managers

Non-Recourse Project Financings – Continued

- However,

“The financial community has indicated that debt investors will be unwilling to lend under a non-recourse project finance structure to a new nuclear project, absent other protection against the risk of default.”

Nuclear Energy Task Force, Final Report to the US Secretary of Energy, January 10, 2005

Main Financing Challenges

- Regulatory Uncertainty – unfortunate history of regulatory rule changes regarding approved designs, inspections, failures to issue operating permits, etc.
- Cost Overruns – need for contingent support to pay for cost overruns and delays.
- High Capital Costs – means longer period for a nuclear facility to provide a return on its original construction capital.

Main Financing Challenges

- Limitations on Nuclear Liability – need clear regime on how the costs of “extraordinary nuclear occurrences” will be allocated and capped.
- Treatment of Spent Fuel – need pathway for disposition of spent fuel.
- Supply Chain Concerns – need to recreate a population of nuclear engineers, scientists and technicians and redevelop certified suppliers of nuclear components. Additional, concerns about creation of “queue”.

Main Financing Challenges

- Public Acceptance and Support – need for a widespread support by the government and public at large.
- Public Safety – designs and operations need to adequately protect public safety – particularly against terrorist attack.
- Education of Financing Community – Bankers (and Independent Engineers) need to be educated/convinced that risks are manageable.

Examples of Mitigation Options

A number of jurisdictions have begun to propose regulatory solutions to some of the financing challenges

For example, the Energy Policy Act of 2005 in the U.S. includes:

- “Streamlined” Combined Construction and Operating Licenses (COL)
- Construction Delay Indemnity
- Federal Loan Guarantee Program

Examples of Mitigation Options

Credible mitigation options – particularly for the initial projects – will involve some form of “risk sharing” among the four main “stakeholders” in the nuclear power equation:

- Host Government
- Exporting Government
- End-Users
- Lenders

Unlikely that Lenders will be prepared to take “unusual” project risks until a strong track record of successful plant construction and operation has been created.

Conclusions

Sustained Governmental Support – a fundamental requirement for successful financing of the next generation of nuclear facilities.

This support will include several distinct elements:

- **Regulatory certainty**
- **Political and economic stability**
- **Clear public acceptance of nuclear power**
- **Financial support to the projects themselves**

Conclusions

The next cluster of nuclear power projects are likely to be financed:

- through a “hybrid” structure that uses existing financing techniques,
- where government support comes from both the host and the exporting countries, AND
- where credible, practical solutions have been adopted to address the key industry problems.

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