CASE 13:
CAPITAL INVESTMENT FOR UTILITY

Firm Style	Interview Round
Booz, BCG	1

Case Question:

A major East Coast, vertically integrated and regulated electric utility has received a permit to build its first nuclear power plant. It wants to know if this will be a good investment and possible risks associated with this venture.

Clarifying Questions & Answers

Provide the following answers only if the interviewee asks the corresponding questions.

Question	Answer
Can you describe the structure of the company? What does "vertically integrated" and "regulated" mean?	A vertically integrated utility owns the entire value chain – generation, transmission and distribution. It is somewhat of a monopoly and is overseen by state regulators.
What is the competition like?	There is virtually no competition because it is a regulated industry.
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Clarifying Questions & Answers

Provide the following answers only if the interviewee asks the corresponding questions.

Question	Answer
What is the size of the plant?	The new plant is expected to supply about 8,760 GWh (Gigawatt hours) per year and it is expected to be utilized for 30 years.
What is the current demand?	The current annual demand in the utility's service area is 17,000 GWh. For this case assume this demand will remain constant in the near future.
What is the expected revenue on a variable basis?	$80/MWh (1000 MWh = 1 GWh)
What is the expected variable cost?	$10/MWh
Is there any public opposition?	No
Why is the utility building this new plant?	Great question. Currently the company has about 9,000 GWh of supply that comes from old, dirty and inefficient coal fired power plants. It plans to retire them in the near future.
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Clarifying Questions & Answers

Provide the following answers only if the interviewee asks the corresponding questions.

Question	Answer
Who will build the plant?	The utility plans to outsource the building of the nuclear plant and the price quote is about $7 Billion
What is the market cap of our client?	Top question. The market cap of this company is $6 Billion. The candidate should note that the fixed cost of the plant is more than the entire company is worth.

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Framework / Structure

This is a cost-benefit analysis case along with elements of assessing risk associated with developing a new technology.

- Understanding the company structure and industry:
  - This is a regulated industry and hence no competition exists.
  - The main barriers to any project are the cost, subsequent benefits and most importantly the ability to assess the need for this project.
  - Internal barriers can be significant especially with regard to operating this new plant.
- Market information
  - The candidate should quickly be able to calculate the contribution margin generated from this venture.
  - Calculating the estimated value of the fixed cost will give the candidate enough information to figure out the breakeven period.
- Risks
  - There are significant risks associated with this project including financial and organizational. Utilization of the new plant is not an issue because it will be used to capacity.
  - There is a construction cost overrun risk as well.
  - There is also the risk of possible regulatory changes.

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Phase 1

Understand the cost of this new venture. When asked by the candidate, provide the following information:

- The cost of the plant is estimated to be about $7 Billion. However the company's management believes that there are cost overrun risks involved. They are as follows:

Construction Type	Quoted cost	Risk of cost overrun	Cost of overrun
Technology and engineering	$4 Billion	50%	800 M
Structure	$2 Billion	50%	600 M
Other overhead	$1 Billion	20%	250 M
Total	**$7 Billion**		

What is the expected value of the cost of the plant?

Expected value of the fixed cost:
$7 Billion + (50%*800M)+(50%*600M)+(20%*250M) = $7B +$400M+$300M+$50M
= $7.75 Billion

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Phase 2

Evaluate the revenue streams and contribution margin. The capacity of the plant will be 8,760 GWh per year.

The price for each MWh (not GWh) is fixed at $80/MWh. The variable cost is $10/MWh. Contribution = $80-$10 = $70/MWh which translates to **$70,000/GWh**

Annual contribution = 8,760 GWh *$70,000/GWh = **$613.2 M**

The breakeven point of the investment is $7.75B/$0.6132B = 12.6 years ~ 13 years

Phase 3

Qualitatively evaluate the financial and organizational risks.

There are some critical financial risks associated with this investment. The market cap of the firm is $6Billion and this investment alone is estimated to be $7.75Billion. The breakeven period for the plant is almost 13 years which is much longer than the industry average breakeven period of 6-7 years. If the firm goes ahead with this investment it will need to rely heavily on debt financing or more expensive equity. This will likely prevent other capital investments in the near future.

Nuclear technology is complicated and one major risk is the shortage of personnel with the necessary skills to run the plant. The company will have to spend a considerable amount of time and money on training and hiring new personnel. Safety and reliability are issues to consider as well.

The candidate should address most of these issues in evaluating the qualitative risks. If they don't, keep giving them clues and push them to consider the above risks.

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Recommendation

The recommendation should include the following:

- The answer – At this point it does not make sense for the firm to go ahead with this project.
- The number(s) – The expected cost of building the plant is $7.75B and the breakeven period is 13 years.
- Risks or considerations – The firm should look closely at the financial and organizational risks involved with this project.
- Next steps – The client should look carefully at its options and see if they can go with a less expensive technology to replace their old plants

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Strong Recommendation

The client should not go ahead with this project. The expected value of the project is $7.75B and the breakeven period is approximately 13 years, which means that a significant amount of capital will be tied to this investment for a very long time. With a market cap of $6B which is less than the cost of this plant, the financial risk is quite high especially with the large amount of capital needed to be raised. Finally, the organization will need to adjust to the high demand on human resources with regard to running such a complex technology as well as safety and reliability concerns. The client should evaluate other generation technologies which are less expensive with a shorter pay-off period.

Weak Recommendation

The company should not go ahead with this investment because it will be very expensive and will take a long time to recuperate the costs. Also the organization will have a tough time running this new plant because of the complex technology.