

# CASE 20:

## GAS LIQUEFACTION



| Firm Style | Interview Round |
|------------|-----------------|
| BCG        | 2               |

### Case Question:

Our client is a U.S. regional power company. They currently use natural gas fired power plants to produce electricity which is then transmitted via the existing power grid. Our client currently gets their gas directly from a field located in the Gulf of Mexico, but they are concerned about the capacity of this supplier going forward. They are considering investing in capabilities to allow them to utilize liquefied natural gas.

Natural gas is a cleaner burning and relatively low cost fuel, however in gas form cannot be transported over long distances. The gas can be liquefied essentially through a combination of dropping the temperature and pressurizing the gas. The compression factor for LNG vs. normal gas is 1/600th of the gas volume.

How would you go about analyzing this decision and what would you recommend.

### Clarifying Questions & Answers

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

| Question                | • Answer   |
|-------------------------|--|
| How do you utilize LNG? | <ul style="list-style-type: none"><li>• Extraction</li><li>• Liquefaction</li><li>• Transport</li><li>• Gasification</li></ul> |

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## Additional Information to Give when Asked

- Our client currently just pays for the extraction costs. Cost of gas from their current supplier is shown in the graph on the following page. Interviewer should be directed to use a cost of \$5 per mcf.
- Unit of measure is 1000 cubic feet: mcf.
- We are looking to utilize gas from a field in Nigeria.
- Extraction cost is \$1/mcf
- Liquefaction cost is \$1/mcf
- Transport- Interviewer should push back...ask 'How would you go about estimating transport costs?'
- Transport breakdown:
  - Charter tanker cost: \$60,000/day
  - Speed: 10 mph
  - Miles: 6000 miles
  - (So total tanker cost per trip comes to \$1.5 M)
  - Tanker volume: 300,000 meters cubed.
  - So per mcf of GAS you would have to run the following conversion:
- $300,000 \text{ meters cubed liquid} \times ((3 \text{ ft}^3)/(\text{meter}^3)) \times (1/1000) \times (600 \text{ gas}/1 \text{ liquid}) = 4,860,000.00$
- Which is the total mcf of Gas per tanker trip.
- Transport cost per mcf =  $\$3,000,000/4,860,000 = \text{Approximately } 0.31.$
- Gasification is \$1/mcf

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## Recommendation

- Because of the compression factor, the transport costs for LNG are relatively low and as such there are significant savings to be had by switching to LNG. We would need to look at our current volumes to see if this would justify investments in gasification facilities. Because LNG is an already traded product, we shouldn't necessarily invest in our own liquefaction capabilities, but treat it as a variable cost included in what we pay LNG suppliers.
- Conclusion: This was a second round BCG case, given by a principal. The main thing she seemed to be trying to test was the ability to keep up with all of the conversions. I had done two relatively low-quant cases earlier in the day and this was a number crunching exercise.

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## Exhibit

