

Assessment

April 2021

The Economics of Energy Corporations (2)

Homework Question

- Look at the CCGT power station model we created
- Assume that opex and capex calculations remain the same
- Change the following assumptions:
 - Capacity – 1000MW
 - Gas price is \$2.00/mmbtu
 - Electricity price is €45/MWh
 - Utilisation/Load factor is 80%
 - Carbon price is €35/tonne
 - Corporate Tax is 25%
 - Efficiency is 54%
- For the WACC assume that the debt:equity split is 70:30, change the interest rate to 3.5% and the Beta to 0.9. The tax rate is 25%



1. What is the WACC for the project?
2. What is the NPV of the project, and what is the IRR? What is the payback period?
3. What is the breakeven electricity price for the project?
4. What is the breakeven gas price for the model?
5. In one paragraph and using one graph, describe the key features of the investment and whether you would recommend it to your management
 1. Remember to mention some other key assumptions



- Questions on sensitivity
 - What happens if the gas price doubles?
 - What electricity price is needed for the project to breakeven if the load factor falls to 20% (assume gas price of US\$2.00/mmBtu again)
 - If the carbon price doubles, what electricity price is needed to allow the project to breakeven (load factor back to 80%)?
 - If the load factor falls to 10% what capacity payment would you ask for?
- Look at the shale gas model (dated April 15). What adjustments would you make to either or both models to allow the shale gas field and the power plant to work together profitably?
- Please send me your model so I can see your workings
- Please write answers in a Word or Pages document and use graphs where appropriate

