

# **Oil & Gas Exploration: Phase 2**

Simulation & Risk  
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## Executive Summary

Our goal is to simulate the cost of a single dry well in 2019 and estimate of the Net Present Value (NPV) of a single wet well from 2020 to 2034 for Compagnie Pétrolière et Gazière, INC (the “Company”). According to our analysis, a single wet well will have a median NPV of \$14.3 million in 15 years after being drilled with a 5th percentile of \$6.5 million and a 95th percentile of \$25.6 million approximately. Based on the simulation, the risk that a single producing well will lose money over 15 years is 0.08% in the simulation shown below (Figure 1). The cost of a single dry well will have a median of \$4.3 million, 5th percentile of \$2.5 million and 95th percentile of \$7.7 million (Figure 2).

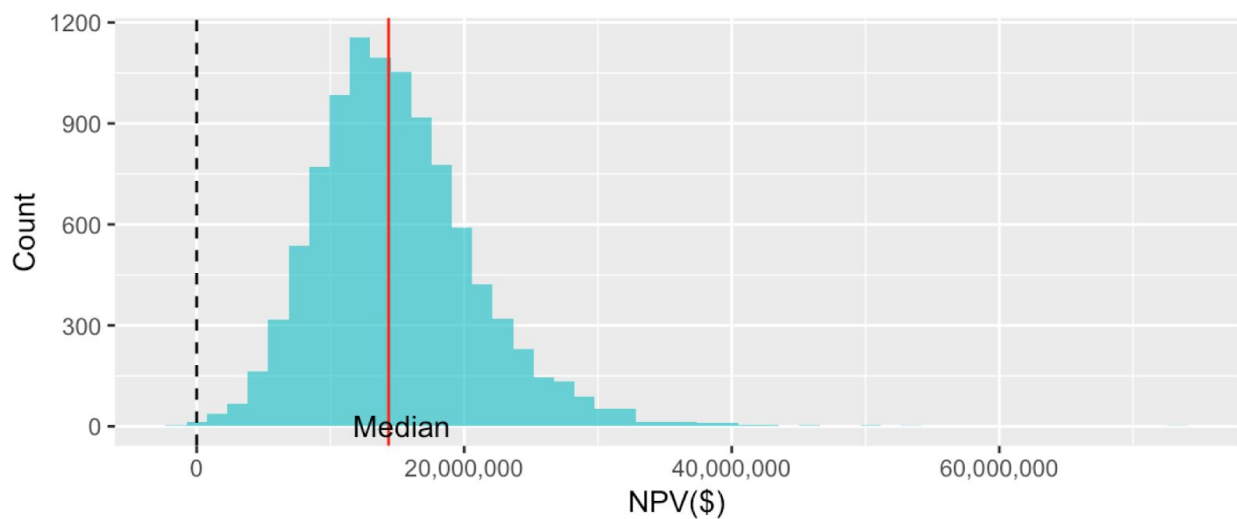
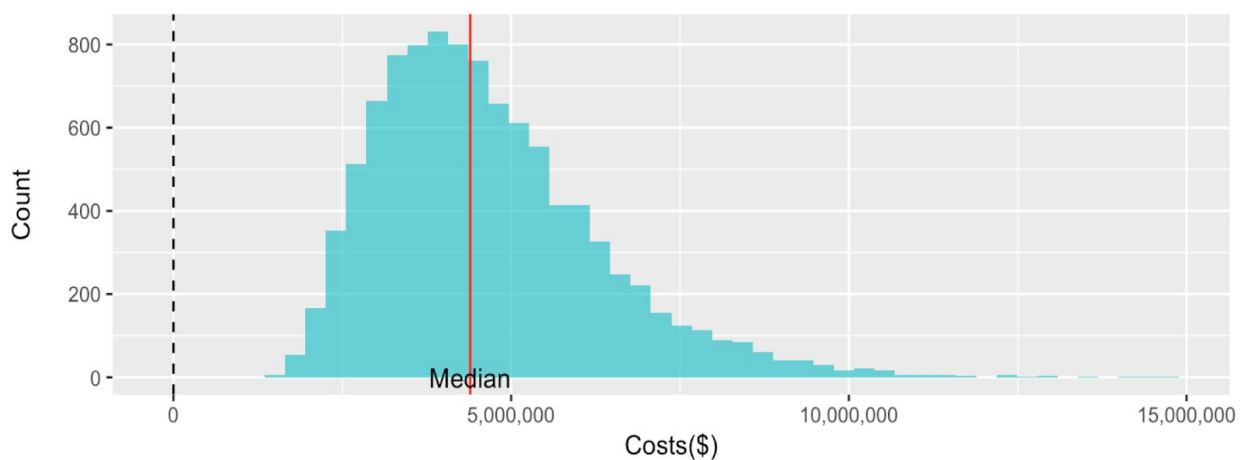


Figure 1. Net Present Value of A Single Wet Well



=Figure 2. Cost of A Single Dry Well

## **Background**

Per RFP SR-F3.H2, we utilized our Phase 1 estimate for the 2019 drilling costs as well as new distribution information from the U.S. Energy Information Association about seismic section, leasing, and professional overhead expenses. We applied these expenses in 2019 as “Year 0” costs in our analysis. Furthermore, for the NPV estimate of a single wet well, we included completion costs in the expenses of Year 0. For the next 15 years, we accounted for oil production rates, NRI, taxes, operating costs, WACC, continued professional overhead, and calculated oil price fluctuation using oil price projection information provided by the company from 2020 to 2034 containing high, low and mode estimation

## **Analysis & Results**

The simulation for the cost of a single dry well in Year 0 follows a bell-shape right-skewed distribution (Figure 2). It has a median of \$4.3 million, 5th percentile of \$2.5 million and 95th percentile of \$7.7 million. In order to obtain the cost for a single dry well, we used our Phase 1 estimation for drilling costs for 2019. Additionally, we included information about seismic sections, estimated leased acres, and the cost of professional overhead for the Year 0.

The NPV of a single wet well from 2020 to 2034 follows a bell-shape right-skewed distribution with a median of \$14.3 million, a 5th percentile of \$6.5 million and a 95th percentile of \$25.6 million. To calculate the NPV, we simulated the various fiscal quantities from 2020 to 2034. The expenses for a wet well are made up with two parts: initial expenses at year 0 and yearly expenses including professional overhead and operating expenses. Using an initial production and a constant decline rate that are specific to a well, the yearly oil production was calculated by averaging the production rate at the beginning of a year and the production rate at the end of the same year and multiplying by 365 days. The oil production, oil price, net revenue interest, and tax are accounted for to estimate the net revenues for each year. Considering all the expenses and the sum of net revenues, discounted at the weighted average cost of capital, 10%, we forecast the NPV for a wet well from 2020 to 2034 (Figure 1).

## **Conclusion**

Based on the simulation, the median cost of a single dry well is \$4.3 million and the median NPV of a single wet well is \$14.3 million. The profit of a wet well appears greater than the cost of a dry well; thus, we recommend investment at this point contingent on our findings during Phase 3 and Phase 4.