**Mini Case:**

**Nuke Energy Inc.'s Capital Structure Decision**

**Background:**
Nuke Energy Inc., a battery company based in British Columbia (BC), has established a strong position in the energy sector with its diverse range of portable batteries for the consumer technology market. The company is now considering expanding its production capacity, which involves raising an additional $150 million to construct a new factory in Langley. At this crucial juncture, the CEO and CFO are responsible for providing recommendations to the board regarding capital structure and evaluating capital options.

**Capital Structure Analysis:**
Currently, Nuke Energy Inc. operates with a capital structure of 70% equity and 30% debt, with the equity consisting of 200,000 common shares. The company is contemplating adjusting its capital structure to 40% equity and 60% debt, believing this shift could reduce its overall cost of capital.

**Additional Information:**

* **Beta:** 1.2
* **20-Year Bond:** Trading at $990 with a semi-annual coupon rate of 5%
* **Corporate Tax Rate:** 30%
* **Market Risk Premium:** 10%
* **Risk-Free Rate:** 4%

**Requirements:**

1. **Calculate the company's Weighted Average Cost of Capital (WACC)** under both the current and proposed capital structures.
2. **Provide recommendations** regarding the use of debt versus equity financing based on your analysis.
3. **Evaluate the advantages and disadvantages** of both capital structure options, considering both quantitative and qualitative factors.

**Format:**
Prepare a 2-page business memo that includes your quantitative and qualitative analysis along with your recommendations.