# *Oil & Gas Modeling – Certification Quiz Questions*

**Module 2 – Upstream Valuation and 3-Statement Model**

7. You are building a 3-statement model linked to a NAV model for an E&P company. In the 3-statement model, the Book DD&A Expense is projected on a $ / Mcfe basis and linked to the annual gas-equivalent production each year. This is the number that appears on the Income Statement for DD&A.

   In the NAV model, however, the Tax DD&A is projected on a "depletion" basis; this is also the number used to calculate Deferred Taxes in the 3-statement model.

   So, for the PD Reserves, it is based on Annual PD Production / Total PD Reserves * Net PP&E. For the PUD Reserves, it is based on Annual PUD Production / Total PUD Reserves * Total Drilling CapEx Over ~40 Years.

   An image illustrating the impact of these projection methods is shown below this question.

   Which of the following answer choices represents a **POTENTIAL PROBLEM** with these methods of forecasting the Book and Tax DD&A?

   This question has **2 correct answers** and 2 incorrect answers. You must select **BOTH** correct answers and no incorrect answers to earn a point for this question.

| Tax Schedule: | Units: | Projected: FY 25 | FY 26 | FY 27 | FY 28 | FY 29 |
|---|---|---|---|---|---|---|
| **Book Pre-Tax Income:** | $ M | **$ 676.4** | **$ 723.4** | **$ 814.7** | **$ 1,002.2** | **$ 1,112.1** |
| (+) Book DD&A: | $ M | 365.6 | 399.1 | 423.3 | 445.8 | 464.9 |
| (-) Tax DD&A: | $ M | (509.1) | (553.7) | (581.1) | (603.6) | (620.1) |
| (+) Accretion of Asset Retirement Obligation: | $ M | 8.1 | 8.9 | 9.4 | 9.9 | 10.3 |
| (+) Abandonments & Impairments: | $ M | 20.6 | 22.3 | 24.0 | 26.4 | 28.0 |
| (+) Exit Costs: | $ M | 52.3 | 56.5 | 61.0 | 67.0 | 71.3 |
| (+) Deferred and Stock-Based Compensation: | $ M | 83.6 | 90.4 | 97.4 | 107.0 | 113.6 |
| (+) Non-Cash Hedging Losses / (-) Gains | $ M | (288.1) | (118.6) | (12.0) | - | - |
| (-) Cash Hedging Losses / (+) Gains | $ M | 273.7 | 112.7 | 11.4 | - | - |
| **Cash Taxable Income:** | $ M | **683.1** | **740.9** | **848.1** | **1,054.6** | **1,180.1** |
| Beginning Net Operating Loss (NOL) Balance: | $ M | 424.5 | - | - | - | - |
| (+) NOLs Created: | $ M | - | - | - | - | - |
| (-) NOLs Used: | $ M | (424.5) | - | - | - | - |
| **Ending NOL Balance:** | $ M | **-** | **-** | **-** | **-** | **-** |
| NOL-Adjusted Taxable Income: | $ M | 258.6 | 740.9 | 848.1 | 1,054.6 | 1,180.1 |
| Cash Taxes Payable: | $ M | (64.6) | (185.2) | (212.0) | (263.7) | (295.0) |
| **Deferred Income Taxes:** | $ M | **$ 104.4** | **$ (4.4)** | **$ (8.4)** | **$ (13.1)** | **$ (17.0)** |

a. These methods cause the Tax DD&A to exceed the Book DD&A each year, which is incorrect – E&P companies should not benefit from accelerated depreciation/depletion like this.

b. It is unclear how the Maintenance CapEx for the PD Reserves is treated, which could skew the numbers if it is expensed rather than depreciated or if it follows a different depletion/depreciation schedule.

c. The Tax DD&A is likely too large in the early years since it is based on the Total Drilling CapEx Over ~40 years, even though most of it has not yet been spent.

d. It is incorrect to use the Net PP&E for the Tax DD&A corresponding to the PD Reserves because Net PP&E already reflects a deduction for the Accumulated DD&A.

8. As shown in the image below this question, you have created a set of Public Comps for the E&P company you are valuing ("Range Resources" or "RRC"). The screening is based on industry (independent E&P firms), geography (U.S. only), and size (Proved Reserves between 10 and 30 Tcfe).

The companies use a mix of Full Cost and Successful Efforts accounting and operate in varied basins within the U.S.

Which of the following statements are **VALID** interpretations of this set of comparable companies?

This question has **2 correct answers** and 2 incorrect answers. You must select **BOTH** correct answers and no incorrect answers to earn a point for this question.

**Comparable Companies - U.S.-Based Exploration & Production (E&P) Companies with Proved Reserves Between 10,000 and 30,000 Bcfe**
($ in Millions USD Except Per Share and Per Unit Data)

| Operating Statistics: | Capitalization | | EBITDAX: | | | Proved Reserves | Daily Production | Proved Developed / | Oil | R / P Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| Company Name | Equity Value | Enterprise Value | LTM | Year 1 | Year 2 | (Bcfe) | (Mmcfe) | Proved | Mix % | (Years) |
| EOG Resources, Inc. | $ 72,228.9 | $ 71,037.9 | $ 12,753.0 | $ 12,880.5 | $ 13,395.8 | 28,488 | 6,390 | 54.0% | 46.3% | 12.2 |
| Diamondback Energy, Inc. | 33,945.1 | 48,518.3 | 7,383.0 | 10,483.9 | 10,274.2 | 21,344 | 3,600 | 67.0% | 56.3% | 16.2 |
| EQT Corporation | 24,787.9 | 34,432.1 | 2,183.7 | 4,913.3 | 5,748.6 | 26,265 | 6,105 | 71.6% | 0.4% | 11.8 |
| Devon Energy Corporation | 22,963.5 | 30,689.8 | 7,374.0 | 8,037.7 | 8,118.0 | 12,930 | 4,422 | 79.6% | 47.1% | 8.0 |
| Coterra Energy Inc. | 20,107.6 | 21,424.7 | 3,251.0 | 5,526.7 | 5,913.6 | 13,624 | 4,070 | 82.1% | 16.1% | 9.2 |
| Expand Energy Corporation | 15,523.1 | 20,187.4 | 922.0 | 4,241.2 | 4,962.2 | 20,800 | 3,767 | 81.5% | 0.5% | 15.1 |
| Antero Resources Corporation | 12,082.5 | 13,401.1 | 817.2 | 2,271.8 | 2,449.0 | 17,903 | 3,421 | 76.8% | 18.0% | 14.3 |
| Ovintiv Inc. | 11,621.2 | 16,966.4 | 4,338.0 | 4,576.6 | 4,713.9 | 12,343 | 3,510 | 59.0% | 28.8% | 9.6 |
| Maximum | $ 72,228.9 | $ 71,037.9 | $ 12,753.0 | $ 12,880.5 | $ 13,395.8 | 28,488 | 6,390 | 82.1% | 56.3% | 16.2 |
| 75th Percentile | 27,077.2 | 37,953.7 | 7,376.3 | 8,649.2 | 8,657.1 | 22,575 | 4,843 | 80.1% | 46.5% | 14.5 |
| **Median** | **21,535.5** | **26,057.2** | **3,794.5** | **5,220.0** | **5,831.1** | **19,352** | **3,919** | **74.2%** | **23.4%** | **12.0** |
| 25th Percentile | 14,662.9 | 19,382.2 | 1,868.3 | 4,492.7 | 4,900.1 | 13,451 | 3,577 | 65.0% | 12.2% | 9.5 |
| Minimum | 11,621.2 | 13,401.1 | 817.2 | 2,271.8 | 2,449.0 | 12,343 | 3,421 | 54.0% | 0.4% | 8.0 |
| **Range Resources Corporation** | **9,034.5** | **10,221.7** | **754.3** | **1,200.1** | **1,283.1** | **18,131** | **2,181** | **65.8%** | **1.6%** | **22.8** |

| Valuation Statistics: | Capitalization | | Enterprise Value / EBITDAX | | | Enterprise Value / Proved Reserves | Enterprise Value / Daily Production |
|---|---|---|---|---|---|---|---|
| Company Name | Equity Value | Enterprise Value | LTM | Year 1 | Year 2 | ($ / Mcfe) | ($ / Mcfe / d) |
| EOG Resources, Inc. | $ 72,228.9 | $ 71,037.9 | 5.6 x | 5.5 x | 5.3 x | $ 2.49 | $ 11,118 |
| Diamondback Energy, Inc. | 33,945.1 | 48,518.3 | 6.6 x | 4.6 x | 4.7 x | 2.27 | 13,479 |
| EQT Corporation | 24,787.9 | 34,432.1 | 15.8 x | 7.0 x | 6.0 x | 1.31 | 5,640 |
| Devon Energy Corporation | 22,963.5 | 30,689.8 | 4.2 x | 3.8 x | 3.8 x | 2.37 | 6,940 |
| Coterra Energy Inc. | 20,107.6 | 21,424.7 | 6.6 x | 3.9 x | 3.6 x | 1.57 | 5,264 |
| Expand Energy Corporation | 15,523.1 | 20,187.4 | 21.9 x | 4.8 x | 4.1 x | 0.97 | 5,359 |
| Antero Resources Corporation | 12,082.5 | 13,401.1 | 16.4 x | 5.9 x | 5.5 x | 0.75 | 3,917 |
| Ovintiv Inc. | 11,621.2 | 16,966.4 | 3.9 x | 3.7 x | 3.6 x | 1.37 | 4,834 |
| Maximum | $ 72,228.9 | $ 71,037.9 | 21.9 x | 7.0 x | 6.0 x | $ 2.49 | $ 13,479 |
| 75th Percentile | 27,077.2 | 37,953.7 | 15.9 x | 5.6 x | 5.3 x | 2.30 | 7,985 |
| **Median** | **21,535.5** | **26,057.2** | **6.6 x** | **4.7 x** | **4.4 x** | **1.47** | **5,500** |
| 25th Percentile | 14,662.9 | 19,382.2 | 5.2 x | 3.9 x | 3.7 x | 1.23 | 5,157 |
| Minimum | 11,621.2 | 13,401.1 | 3.9 x | 3.7 x | 3.6 x | 0.75 | 3,917 |
| **Range Resources Corporation** | **9,034.5** | **10,221.7** | **13.6 x** | **8.5 x** | **8.0 x** | **$ 0.56** | **$ 4,686** |

a. Range Resources seems substantially overvalued based on the EBITDAX multiples, but EBITDAX may not be relevant since there are no IFRS-based companies.

b. Since each multiple tells a different story, this set is not particularly useful in determining whether RRC is overvalued, undervalued, or valued appropriately.

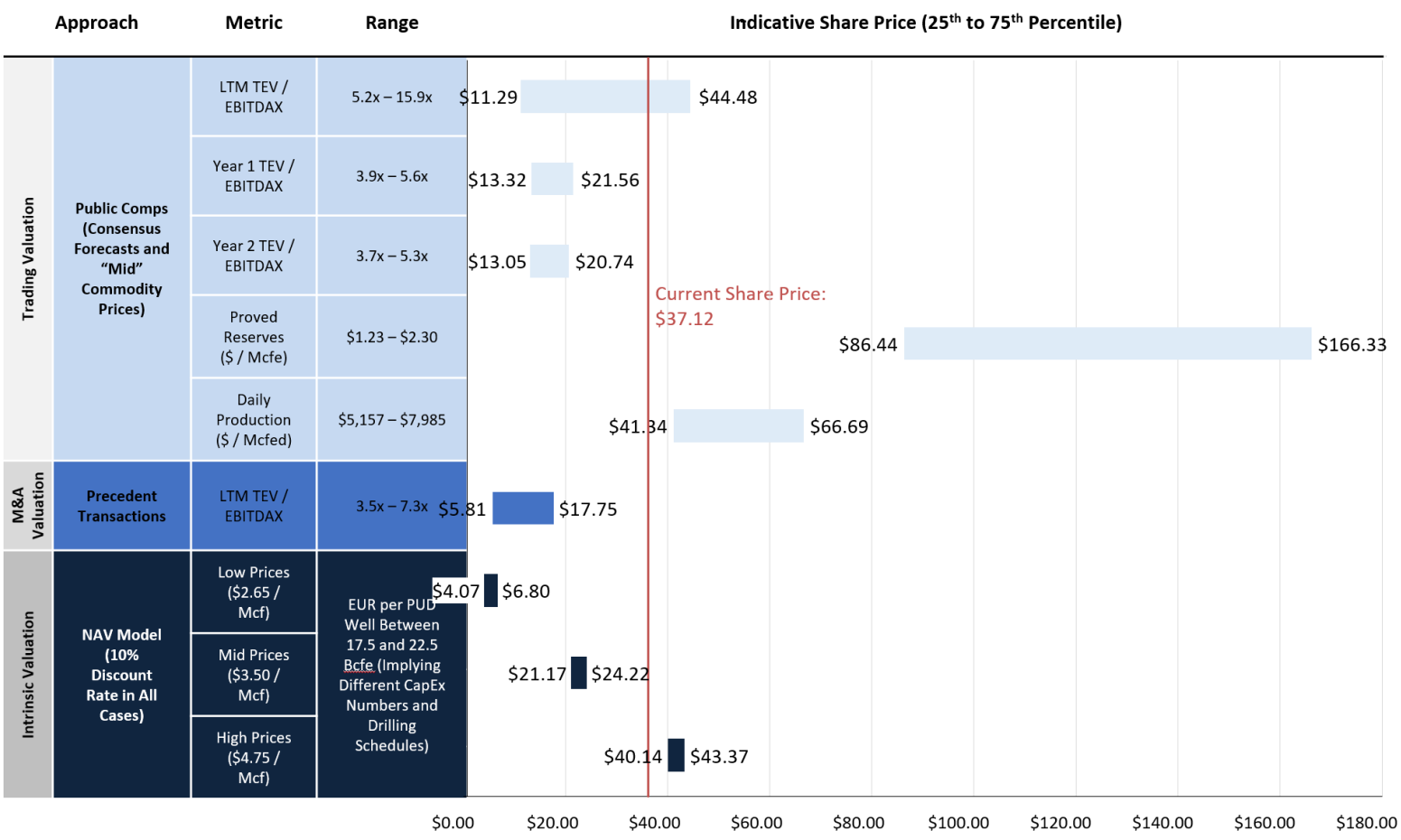
c. One major comparability issue is that RRC's R / P Ratio is far higher than any other company's, which means its EBITDAX and Daily Production may be well below market norms.

d. Screening a set of comparable companies based on Proved Reserves is inappropriate in this vertical; a Daily Production or EBITDAX screen would be more accurate because of their importance in the near-term projections.

9. You have completed the valuation for Range Resources and created the valuation summary chart shown below this question.

   Which of the following statements **BEST** summarize your conclusions from this chart?

   This question has **2 correct answers** and 2 incorrect answers. You must select **BOTH** correct answers and no incorrect answers to earn a point for this question.




a. The company seems to be between "modestly overvalued" and "appropriately valued," depending on the methodologies you weight most heavily.

b. Since the NAV Model produces the narrowest range of output, it is the most reliable methodology (and it points to RRC being overvalued).

c. The Public Comps should not be used at all, given the huge range of implied share prices they produce.

d. Many deals in the Precedent Transactions likely took place in an environment with lower oil/gas/NGL prices, which explains why they produce lower values than the Public Comps.