Figure: 34 TAC §9.4031(m)

*Estimation of Weighted Average cost of Capital (WACC)*

1. **Derive the typical capital structure of a broad sample of potential purchasers as a proportion of debt and equity.**

   Data can be found in the 12/31/20xx issue of The Value Line Investment Survey under the headings "Petroleum (Integrated) Industry" and "Petroleum (Producing) Industry."

   Outstanding Common Stock (Oil Company)
   = 157,627,284 shares @ 12/31/20xx

   Closing Common Stock Price
   = $106.75/share

   Common Stock Equity
   = (157,627,284 shares) x ($106.75/share)
   = $16,827,000,000 @ 12/31/20xx

   Total Debt
   = $6,791,000,000 @ 12/31/20xx

   Total Capital
   = Debt + Equity
   = $6,791,000,000 + $16,827,000,000
   = $23,618,000,000

   Debt
   = $6,791,000,000/$23,618,000,000
   = .288 or 28.8%

   Equity
   = $16,827,000,000/$23,618,000,000
   = .712 or 71.2%

   The capital structure is 28.8% debt and 71.2% equity.

   Repeat this procedure for each company in the sample.

2. **Calculate the cost of outstanding debt**

   Data can be found using Standard & Poor's Bond Guide (12/20xx issue)

   YTM = Yield-to-Maturity @ 12/31/20xx

| Debt Instrument | Debt (MM$) | YTM (%/yr) | Debt x YTM |
|---|---|---|---|
| Debt A | $ 27 | 6.29 | $ 170 |
| Debt B | 586 | 8.42 | 4,934 |
| Debt C | 132 | 7.52 | 993 |
| Debt D | 600 | 7.84 | 4,704 |
| Debt E | 265 | 4.95 | 1,312 |
| Debt F | 100 | 8.65 | 865 |
| Debt G | 300 | 7.87 | 2,361 |
| Debt H | 450 | 8.28 | 3,726 |
| Debt I | 123 | 8.70 | 1,070 |
| Debt J | 224 | 8.78 | 1,967 |
| Debt K | 300 | 8.29 | 2,487 |
| Debt L | 500 | 8.38 | 4,190 |
| | **$ 3,607** | | **$ 28,779** |

Sum of Debt
= Debt (MM$) x YTM
= $28,779 MM

Cost of Debt
= Sum of Debt (MM$) / Debt (MM$)
= ($28,779 MM) / ($3,607 MM)
= 7.98 %/year

Repeat this procedure for each company in the sample.

**3. Calculate the cost of equity**

Use the Capital Asset Pricing Model (CAPM) equation:

K = Rfc + B(Rm - Rfh)

where:

K = cost of equity (after tax), %/year

Rfc = current risk-free rate, %/yr, can be found in the Federal Reserve Statistical Release (January of current year)

Rfh = historic market return on long-term government bonds, %/year, can be found in Ibbotson & Associates: Stocks, Bonds, Bills and Inflation

Rm = historic market return on equities, %/year, can be found in Ibbotson & Associates: Stocks, Bonds, Bills and Inflation

B = beta coefficient, can be found in The Value Line Investment Survey, 4th Qtr, 20xx

Given:

Rfc = 5.1%/year

Rfh = 5.5%/year

Rm = 12.4%/year

B = .80

K = Rfc + B(Rm - Rfh)
= 5.1 + .8(12.4-5.5)
= 10.6 %/year

K (pre-tax) = 10.6/(1 - .34)
Cost of equity = 16.1 %/year

Repeat this procedure for each company in the sample.

4. **Calculate a typical weighted average cost of capital by plugging the mean (or other measure of central tendency) cost of debt, cost of equity and capital structure from the sample companies into the following formula:**

WACC = ((cost of debt) x (% debt)) +
((cost of equity) x (% equity))

= (7.98 x .288) + (16.1 x .712)

= 13.8 %/year