



NEVADA DEPARTMENT OF TAXATION
Division of Local Government Services

CAPITALIZATION RATE STUDY CALENDAR
YEAR 2022
FOR THE 2024-2025 SECURED AND
2023-2024 UNSECURED TAX YEAR

NEVADA DEPARTMENT OF TAXATION

Capitalization Rate Study per Nevada State Administrative Code Methodology

Calendar Year 2022

**For the 2024-2025 Secured &
2023-2024 Unsecured Tax Year**

The Nevada Tax Commission is required to adopt formulas providing the method or methods pursued in fixing and establishing the taxable value of all property assessed by it pursuant to [NRS 361.320 \(4\)](#) . [NAC 361.425](#) describes the formulas adopted by the Commission for the development of the income indicator of value. Under NAC 361.425, the Department is permitted to develop an equity rate for each industry group based on one or more of the following models:

- (1) Discounted cash flow method;
- (2) Capital asset-pricing; or
- (3) Risk premium analysis.

The Department selected the discounted cash flow model as the preferred income indicator.

The Department also considers four capitalization criteria in its capitalization rate study:

- (1) The estimate of the equity cost of capital must comport with common sense.
- (2) The company's equity risk premium should be reasonably stable over short periods of time.
- (3) The estimate of the cost of equity should apply for the long term.
- (4) The estimation procedure must be sufficiently straightforward so that it can be easily understood, applied, and even adjusted by educated practitioners.

Additionally, the Department's capitalization rate model uses comparables, and:

- (1) It provides development of "pure plays*".
- (2) It uses comparables to reduce measurement error, however, there is a trade-off between the reduced measurement error that averaging makes possible and the potent bias that it introduces. "There is no unambiguous way to identify comparability."
- (3) Because of the impact of diversification, averaging reduces the short-term variation in the estimated cost of equity. From the standpoint of regulatory agencies, which must set policies based on estimates of the cost of capital, this increased stability is a major benefit." (Cornell, p. 9).

The capitalization rate model utilized for development of the 2024-2025 tax year income indicators of value for centrally assessed companies is a forward looking discounted cash flow model. The Department's developed rates use data from select firms and groups within an industry and not from all industries. This is so because the rate developed must be reflective of the "typical" company within an industry or group. See [NAC 361.425](#). Capitalization rates are developed for specific industry segments using data specific to each of those segments.

Value Line, Moody's/Mergent Financial Information Services, Standard & Poor's along with independent studies, studies submitted by industry groups, studies from other states, and studies received from individual companies provide sources for documentation, development and analysis of information contained in this study. The DCF model used by the Department is the generally accepted DCF presentation with the company structure and growth components derived from Value Line data sheets for companies found in Value Line's industry segments. Historical income is used as a predictor of future revenue streams. The Department also considers in its analysis, studies and data submitted by industry groups or individual companies. No comparisons are drawn from companies not related to the industry being appraised.

The income indicator of value is based on the theory that value is equal to the present worth of anticipated future net benefits. From an investment standpoint, the critical element affecting value is the earning power of the asset. The income approach is used to estimate market value because it converts the right to receive future earnings and benefits into an estimate of present value. "Present value is the sum that a prudent purchaser-investor would pay for the right to receive the forecast net income stream over the specified period." W. Kinnard, Jr., *Income Property Valuation* (1971), p. 62, quoted in *Folsum v. County of Spokane*, 725 P.2d 987 (Wash.1986), p. 990. Because the income stream produced by the property is an indication of earning power, reliable measurement of the income stream becomes crucial.

The rates used to convert income are based on the costs of the major sources of capital. The overall cost of capital is estimated by using band-of-investment methodology, as required under Commission rules at [NAC 361.425 \(1\)](#). The band-of-investment method derives the "weighted average cost" of three components of capital: debt, preferred equity, and common equity. "Weighted average cost" is derived by multiplying the average capital structure components (common equity, preferred equity, and debt) of the "typical" company by the cost of capital for each category.

The "capital structure" is derived by developing a representative, or "typical company", within the industry group. The typical company's capital structure is the median average of a selected sample of companies. Selection of companies for the sample is based on comparability of revenues, bond ratings, nature of operations and regulatory environment. (See, [NAC 361.425 \(3-4\)](#)).

The discounted cash flow (DCF) model measures the rate of return requirements of industrial stock (equity) as demonstrated by investors in the market. The basic theory of DCF is that the price paid for a share of stock reflects the investors' discounted present value of expected future returns from holding a stock (dividends and price appreciation).

The basic DCF formula is:

$$K_e = D_1/P_0 + G$$

Where:

K_e = Cost of Capital

D_1 = Projected Dividend

P_0 = Current Stock Price

G = Growth

The division of the D_1 variable by the P_0 variable results in an estimate of dividend yield. Dividend yield is obtained from the Value Line projected dividend yield for the 2022 year. The growth factor in the model was derived by subtracting the published dividend yield from the Value Line projected annual total return for the same period. The Value Line projected annual total return includes both the dividend yield and the overall price appreciation, if any. Overall price appreciation is assumed to represent investor expectations regarding earnings per share and book value per share growth.

The calculation is made for each of the companies contained in the sample. In most cases, the Department selected the median dividend yield plus the median growth rate to determine the overall common equity rate in order to minimize any skewing of the data which might occur with the presence of any non-typical company statistics.

Income Stream

The Department estimates the income stream for yield capitalization by deducting allowable expenses from operating revenues. The result is adjusted to reflect normalized and annualized revenues and expenses, and to reflect disallowed rental expenses, allowed federal income tax and book depreciation if necessary. See [NAC 361.423](#) & [NAC 361.454](#). The operating income to be capitalized into taxable value will be normalized and annualized based on the most recent year's adjusted net operating income. When the most recent year's net operating income is typically not a reasonable representation of the net operating income of the industry under review, such as where the net operating income of the industry tends to be cyclical, a 3 or 5-year average of adjusted net operating incomes will be normalized and annualized and are used as a prediction of future revenue streams. The cash flows (adjusted net operating income) from existing assets are assumed to continue in perpetuity.

Market Capital Structure

Electrics, Gas Pipelines, Telecommunications

Pursuant to [NAC 361.425 \(4\) and \(5\)](#), the Department has derived the capital structure of the typical company from the use of market information for the selected sample of firms. The capital structure is developed using information from Value Line for each firm. The median structure is then calculated and applied to each component cost of capital to determine the weighted-average cost of capital.

The sample of firms was selected on the basis of comparability of Value Line Ratings, S&P Ratings, Moody's/Mergent Ratings, size of capitalization, debt rate, and NAICS code number. In the case of electric companies, western regional companies were selected over central or eastern regional companies. In addition, most nuclear-powered generation companies were rejected from the sample, with the exception of Southern California Edison, a Nevada taxpayer. The pipeline company sample includes a wide range of types, from coal-slurry to natural gas. The telecommunications sample includes inter-exchange and local exchange service as many firms now provide both types of service.

Railroads

The sample of firms selected for inclusion in the study was comprised of Class I carriers controlled by selected major railroad holding companies. Criteria for selection for all industries included a debt rating of at least BBB- (Standard and Poor's) and Baa (Moody's); a listing on a major stock exchange; and listed by Value Line.

Airlines

The sample of firms for each airline sub-group was determined on a wide range of comparability factors that included elements for financial, operating and physical characteristics. For example, the major segmentation of the industry was based on payload, distinguishing pure freight carriers from mixed passenger-freight carriers.

Components of the Cost of Capital

Debt Capital:

Electrics, Gas Pipelines, Telecommunications

The 2022 cost of debt was developed using information from Moody's/Mergent Financial Information Services: Bond Records. At Corporate Bond Yield Averages Record, December, 2022, the 2022 yields for Baa utility bonds ranged from 3.58% to 6.26%. The average of this range is 5.07%. Only long-term debt obligations are included since only long-term liabilities are included in a capital structure. Baa utility bonds are considered to be medium grade obligations, neither high quality nor highly speculative. Baa bonds are typically representative of many utilities, and the resulting cost of debt is conservative.

Railroads

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Airlines

The 2022 cost of debt was developed using information from company annual reports, current Value Line Investment Survey, Standard & Poor's Bond Guide and the Mergent Bond Record for U.S. Corporate Bonds, for December 2021 through November 2022. All the airline bonds were selected and listed with reported issue rate and current yield rate. Mean and median calculations were developed for these rates. Examples of the selected debt rates are as follows: 1) Group All Passenger Companies weighted by issue yield rate was 5.8732% and 2) the weighted by issue yield rate for Group All Freight Carriers was 4.7912%.

Flotation Costs of Debt

The Department adjusts the cost of debt as necessary to reflect additional bond issue costs, called flotation costs. Flotation costs include underwriter's fees and legal expenses and are estimated to be approximately 0.60% of the debt issue. The formula used by the Department is: $(\text{Cost of debt}) * (1/(1-.0060))$. The multiplier for debt is obtained by dividing 1 by 1 minus the flotation cost. The multiplier is then applied to the cost of debt to obtain the adjusted cost of debt. (See, Parcell, The Cost of Capital – A Practitioners Guide (1997), p. 11-2). In addition this formulation was used by the California State Board of Equalization and the Southwest Gas Corporation.

There are several ways in which flotation costs can be recognized with regards to assessed valuations/appraisals. The first method, and the way previously recognized by the Department, has been to adjust upward the return on equity to reflect the flotation costs incurred to issue the securities. This method treats flotation costs like most other operating costs and allows for their recovery or in the assessed valuation process allows these expenses as any other legitimate expenses to offset the cash flows under the income approach. In other words flotation expenses are accounted for in the income stream. Expensing issuance costs in the year incurred has the advantage of simplicity. The alternative recovery can be accomplished via straight line amortization over a short period of time

Preferred Equity Capital:

Preferred equity contains characteristics of both debt and equity. Preferred issues are like common stocks in that they have no maturity dates and represent ownership in the company but they are like debt in that they usually have fixed dividend payments similar to interest payments. However, Moody's/Mergent Financial Information Services ceased providing preferred stock yield averages in July 2011. Given the rarity of the use of preferred stock equity by the subject industries and the absence of available market rate information, it is only utilized in the analysis of large electric companies.

Large Utility Companies

Two of the three companies in the sample group of this sector utilize preferred stock. Due to the absence of market information, the rate utilized for analysis is derived from the weighted average Value Line yields for the subject utility companies. A rate of 5.4562% is utilized for the cost of preferred equity for this sector.

Flotation Costs of Preferred Equity

The Department adjusts the cost of preferred equity as necessary to reflect additional preferred equity issue costs, called flotation costs. Flotation costs include underwriter's fees and legal expenses and in most cases are estimated to be approximately 1.6% of the preferred equity issue. The formula used by the Department is: $(\text{Cost of equity}) * (1/(1-.0270))$. The multiplier for preferred equity is obtained by dividing 1 by 1 minus the flotation cost. The multiplier is then applied to the cost of preferred equity to obtain the adjusted cost. (See, Parcell, The Cost of Capital – A Practitioners Guide (1997), p. 11-2). (See Keown, Martin, Petty and Scott, Foundations of Finance(2006), p. 334). See Brigham-Gapenski, Financial Management -Theory and Practice (Seventh Edition), p. 340).

Common Equity Capital:

Airlines, Electrics, Gas Pipelines, Railroads, Telecommunications

Pursuant to [NAC 361.425](#), the Department developed a common equity rate based on the discounted cash-flow method model. The calculation is made for each of the companies contained in the sample. In most cases, the Department selected the median dividend yield plus the median growth rate to determine the overall common equity rate in order to minimize any skewing of the data which might occur with the presence of any non-typical company statistics. Refer to the method described fully in the introduction and in the yield capitalization technique described above.

Flotation Costs of Equity

The Department adjusts the cost of common equity as necessary to reflect additional equity issue costs, called flotation costs. Flotation costs include underwriter's fees and legal expenses and in most cases are estimated to be approximately 4.0% of the common equity issue. The Department references current used flotation cost adjustments from the recent "Willamette Management Associates Gross Spread Study" referenced in the Union Pacific Railroad Cost of Capital Study for 2022 Assessment Year. Based on recent industry input and request the Department will no longer tax-effect the flotation costs. The formula used by the Department is:

$$K = \frac{D}{P(1-f)} + g$$

The multiplier for common equity is obtained by dividing the dividend yield by 1 minus the flotation cost plus the growth rate. The multiplier is then applied to the cost of common equity to obtain the adjusted cost. (See, Parcell, The Cost of Capital – A Practitioners Guide (1997), p. 11-17). (See Copeland-Weston, Managerial Finance (Ninth Edition), p. 616. (See, Brigham-Houston, Fundamentals of Financial Management (2004), p. 368-369). See Brigham-Gapenski, Financial Management – Theory and Practice (Seventh Edition), p. 358-359).

Pursuant to [NAC 361.425 \(8C\)](#), the Department may, with Director approval, utilize Direct Cap Rates. The cost of equity is earnings divided by price from Value Line and Standard and Poor's Stock Guide. The cost of debt is long-term interest divided by market value long-term debt, also from Value Line. As a check of reasonableness to the Yield Cap Rate method the Department conducted a Direct Cap Rate study. Attached to this narrative are the results of the Yield Cap Rate study.

SOURCES OF INFORMATION AND DATA

The following sources of information were referenced to develop data for the capitalization rate study:

Moody's/Mergent Public Utility Stock and Bond Averages

Moody's/Mergent Industrial Stock and Bond Averages

Value Line Investment Survey, various editions

Other sources referenced for analysis and comparison:

Colorado State Board, Colorado Capitalization Rates for Tax Year 2022, <https://cdola.colorado.gov/cost-capital-study> accessed on 05/25/2023

New York University Annual Industry Capitalization Rate Study 2023, http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/wacc.htm accessed on 05/25/2023

Idaho Power Company's 2023 Assessment Year
Cost of Capital Study

Keown, Martin, Petty and Scott, Foundations of Finance (2006), p. 334

Brigham-Gapenski, Financial Management-Theory and Practice (Seventh Edition), p. 340, 358-359

Copeland-Weston, Managerial Finance (Ninth Edition), p. 616

Brigham-Gapenski, Fundamentals of Financial Management (2004), p. 368-369

Parcell, The Cost of Capital – A Practitioners Guide (1997), p. 11-17

[Nevada Revised Statute, NRS 361](#)

[Nevada Administrative Code, NAC 361](#)

NEVADA DEPARTMENT OF TAXATION - DOAS 2024-2025 CAPITALIZATION RATE COMPARISON - DCF

	INDUSTRY	FIRMS	MODEL	STRUCTURE	EQUITY	EQUITY +	PREF.	PREF. +	DEBT	DEBT +	2024-2025	REF.	REF.	REF.
				C.E. / P.E. / D	COST	FLOTATION	COST	FLOTATION	COST	FLOTATION	WACC - DCF	2023-2024	2022-2023	2021-2022
1	AIRLINE ALL PASSENGER	10	DCF	44.0%/0.0%/56.0%	17.1379%	17.3429%	0.0000%	0.0000%	5.8380%	5.8732%	10.9153%	10.8121%	10.7503%	10.6676%
2	AIRLINE ALL FREIGHT	3	DCF	70.5%/0.0%/29.5%	10.3333%	10.6950%	0.0000%	0.0000%	4.7626%	4.7912%	8.9550%	8.7390%	8.7130%	9.8260%
3	ELECTRIC - LARGE	4	DCF	62.0%/2.5%/35.5%	9.1814%	9.4661%	5.3703%	5.4562%	5.0717%	5.1021%	7.8166%	7.6094%	7.6868%	7.8686%
4	ELECTRIC - SMALL	6	DCF	56.7%/0.0%/43.3%	11.5510%	11.6907%	0.0000%	0.0000%	5.0717%	5.1023%	8.8412%	7.8472%	7.7630%	7.8762%
5	GAS/PIPE DISTRIBUTION	7	DCF	59.3%/0.6%/40.1%	14.4278%	14.8740%	0.0000%	0.0000%	5.0717%	5.1021%	10.8680%	9.0249%	9.0414%	8.9252%
6	GAS/PIPE DIVERSIFIED	7	DCF	69.7%/0.0%/30.3%	14.5571%	15.0666%	0.0000%	0.0000%	5.0717%	5.1023%	12.0481%	11.3967%	11.3177%	11.7097%
7	RAILROAD	5	DCF	79.2%/0.0%/20.8%	13.0781%	13.1451%	0.0000%	0.0000%	5.0717%	5.1023%	11.4736%	11.9037%	11.7404%	11.7925%
8	TELECOM (ALL)	6	DCF	60.6%/0.0%/39.4%	14.2500%	14.7488%	0.0000%	0.0000%	5.0717%	5.1021%	10.9454%	11.0630%	10.4507%	10.1750%
9	ALTERNATIVE ENERGY CO.	9	DCF	55.0%/0.0%/45.0%	15.9009%	15.9549%	0.0000%	0.0000%	5.0717%	5.1023%	11.0712%	10.4288%	10.4177%	10.0991%

NEVADA DEPARTMENT OF TAXATION DOAS 2024-2025 CAPITALIZATION RATE COMPARISON

OTHER 2023-2024 STUDIES

	REFERENCE ONLY	SOURCE	STRUCTURE	EQUITY	EQUITY +	PREF.	PREF. +	DEBT	DEBT +	2024-2025	REF.	REF.	REF.
	INDUSTRY		COST	FLOTATION	COST	FLOTATION	COST	FLOTATION	WACC	2023-2024	2022-2023	2021-2022	
1	AIRLINE *	NEW YORK U.	34.92% / 0.0%/65.08%	12.2900%	NO DATA	NO DATA	NO DATA	5.5000%	NO DATA	6.9800%	4.8300%	4.6100%	5.8600%
2	ELECTRIC/GENERAL *	NEW YORK U.	56.45% / 0.0%/43.55%	8.1900%	NO DATA	NO DATA	NO DATA	4.7300%	NO DATA	6.1700%	3.7000%	2.9000%	3.7100%
3	GAS/PIPELINE DIV (Productic	NEW YORK U.	83.28% / 0.0%/16.72%	11.3500%	NO DATA	NO DATA	NO DATA	5.8800%	NO DATA	10.1900%	6.0400%	4.7000%	7.3700%
4	OIL/GAS DISTRIBUTION *	NEW YORK U.	58.34%/0.0%/41.66%	9.7700%	NO DATA	NO DATA	NO DATA	5.5000%	NO DATA	7.4200%	5.1800%	4.0200%	4.9600%
5	RAILROAD *	NEW YORK U.	77.21%/0.0%/22.79%	10.1700%	NO DATA	NO DATA	NO DATA	5.5000%	NO DATA	8.7900%	4.1500%	4.2700%	11.1700%
6	TELECOM (Services) *	NEW YORK U.	45.93%/0.0%/54.07%	9.1200%	NO DATA	NO DATA	NO DATA	5.8800%	NO DATA	6.5700%	3.7000%	3.2000%	5.3300%
7	AIRLINE PASSENGER *	CO. ST. BD.	40.0%/0.0%/60.0%	16.0900%	NO DATA	NO DATA	NO DATA	8.2900%	NO DATA	11.4100%	11.3500%	11.5900%	10.7500%
8	AIRLINE CARGO *	CO. ST. BD.	75.0%/0.0%/25.0%	10.3600%	NO DATA	NO DATA	NO DATA	4.9300%	NO DATA	9.0100%	8.7600%	8.6600%	10.6100%
9	ELECTRIC *	CO. ST. BD.	62.0%/0.0%/38.0%	9.9100%	NO DATA	NO DATA	NO DATA	5.1500%	NO DATA	8.1000%	7.7500%	7.2800%	7.0100%
10	GAS/PIPELINE DISTRI *	CO. ST. BD.	62.0%/0.0%/38.0%	10.3100%	NO DATA	NO DATA	NO DATA	4.8500%	NO DATA	8.2400%	7.6200%	7.6500%	7.3800%
11	GAS/PIPELINE TRANSM *	CO. ST. BD.	62.0%/0.0%/38.0%	14.3500%	NO DATA	NO DATA	NO DATA	5.0800%	NO DATA	10.8300%	10.2000%	10.9600%	11.0300%
12	RAILROAD *	CO. ST. BD.	85.0%/0.0%/15.0%	12.0000%	NO DATA	NO DATA	NO DATA	4.9000%	NO DATA	10.9300%	11.1000%	10.7400%	11.7100%
13	TELECOM CLECS/LD TELCC	CO. ST. BD.	25.0%/0.0%/75.0%	11.0200%	NO DATA	NO DATA	NO DATA	8.1100%	NO DATA	8.8400%	8.8800%	9.0300%	10.5100%
14	TELECOM LD *	CO. ST. BD.	40.0%/0.0%/60.0%	11.0200%	NO DATA	NO DATA	NO DATA	8.1100%	NO DATA	9.2800%	9.2400%	9.0100%	9.8100%
15	RAILROAD *	UNION PACIFIC	80.0%/0%/20.0%	13.6000%	14.0900%	NO DATA	NO DATA	5.0700%	5.1000%	12.2900%	12.8300%	12.0300%	12.4200%
16	ELECTRIC	IDAHO POWER	60%/0.0%/40%	10.4000%	10.6400%	NO DATA	NO DATA	5.5600%	5.6500%	8.6500%	7.8400%	7.8600%	8.1100%

NOTE: NEW YORK UNIVERSITY COST OF DEBT SHOWN ABOVE IS AFTER-TAX