

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. W-1300, SUB 60

February 8, 2022

In the Matter of:

Application by Old North State Water)
Company, LLC, 3212 6th Avenue)
South, Suite 200, Birmingham, Alabama)
35222, for Authority to Adjust and)
Increase Rates for Water Utility Service)
in All Its Service Areas in North Carolina)

TESTIMONY OF
JOHN R. HINTON
PUBLIC STAFF – NORTH
CAROLINA UTILITIES
COMMISSION

**BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. W-1300, SUB 60**

**Testimony of John R. Hinton
On Behalf of the Public Staff -
North Carolina Utilities Commission**

February 8, 2022

1 **Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS**
2 **ADDRESS FOR THE RECORD.**

3 A. My name is John R. Hinton and my business address is 430 North
4 Salisbury Street, Raleigh, North Carolina. I am the Director of the
5 Economic Research Division of the Public Staff. My qualifications
6 and experience are provided in Appendix A.

7 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**
8 **PROCEEDING?**

9 A. The purpose of my testimony is to present the results of my analysis
10 and recommendations to the North Carolina Utilities Commission
11 (Commission) regarding the fair rate of return to be used in
12 establishing rates for water utility service provided by Old North State
13 Water Company, LLC (ONSWC or Company).

14

1 **Q. WHAT IS THE COST OF CAPITAL REQUESTED BY ONSWC IN**
2 **THIS PROCEEDING?**

3 A. Company witness John McDonald's testimony filed on June 29, 2021
4 proposes an overall weighted cost of capital of 7.75%. This
5 requested rate of return is based on the Company's capital structure
6 as of December 31, 2020, which is comprised of 83.00% long-term
7 debt and 17.00% common equity. The Company has requested a
8 cost rate of long-term debt of 7.34% and a cost rate for common
9 equity of 9.75%, as shown in Hinton Exhibit I. Through Data Request,
10 the Company's updated balances of long-term debt and common
11 equity indicate that as of August 31, 2021, the degree of its debt
12 leverage has increased to 89.63%.

13 **Q. HOW DOES COMPANY WITNESS McDONALD DEVELOP HIS**
14 **COST OF DEBT?**

15 A. The Company developed its hypothetical cost rate for debt using a
16 methodology derived from a September 10, 2002, Public Staff
17 presentation on utility rate increase applications that included a
18 document entitled "Rate Case Handbook for Small Water and Sewer
19 Utilities." However, the Company's actual debt is associated with two
20 notes payable with Integra Water, LLC, (Integra) and lines of credit
21 with Integra and three of its affiliates, Integra Water Madison County,
22 Integra Water Creola, and Integra Water Vinemont.

1 **Q. HOW DOES COMPANY WITNESS McDONALD DEVELOP HIS**
2 **COST OF COMMON EQUITY?**

3 A. Witness McDonald testified that the 9.75% rate of return on common
4 equity (ROE) is based upon his calculation of the average
5 Commission-approved ROE for two other water utilities: Carolina
6 Water Service, Inc. of North Carolina (CWSNC) in Docket No. W-
7 354, Sub 360, and Aqua North Carolina, Inc. (Aqua NC) in Docket
8 No. W-218, Sub 497.

9 **Q: WHERE DOES ONSWC RECEIVE ITS EQUITY?**

10 A: ONSWC receives all of its equity capital from Integra, which is the
11 ultimate parent company of ONSWC. ONSWC does not have
12 publicly traded stock or additional shareholders.

13 **Q. DO YOU HAVE CONCERNS WITH THE COMPANY'S PROPOSED**
14 **CAPITAL STRUCTURE AND COST RATE OF DEBT AND COST**
15 **RATE FOR COMMON EQUITY?**

16 A. A general concern with small water and sewer companies having
17 extreme capitalization ratios is that there is no public trading of their
18 securities, and, therefore, no market evaluation of their riskiness and
19 expected returns. Given this lack of market data, the determination
20 of a reasonable cost rate of debt capital and equity capital that

1 adheres to the Bluefield¹ and Hope decisions² is a difficult and highly
2 subjective process.

3 In this case, ONSWC's books present a highly leveraged capital
4 structure that is vastly different from the capital structures of market-
5 traded water utility companies and Commission-approved capital
6 structures. As noted above, ONSWC obtains 100% of its debt capital
7 from Integra, meaning the debt is affiliate-related and presumably
8 not the result of an arm's length transaction. Accordingly, I have
9 concerns surrounding its cost rate and characterization. Specifically,
10 I am concerned about whether this debt capital should be considered
11 common equity for ratemaking purposes. The Company's responses
12 to the Public Staff's data requests about the cost rate intensify these
13 concerns because the proposed debt cost rate of 7.34% exceeds the
14 6.00% debt cost rate that Integra reported. For regulatory purposes,
15 this kind of debt is generally viewed as equity capital, which suggests
16 that the Company's assets are financed with 100% common equity.

¹ Bluefield WaterWorks & Improvement Co. v. Public Service Comm'n, 262 U.S. 679, 692-93 (1923).

² Federal Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 603 (1944).

1 **Q: DO YOU BELIEVE ONSWC IS APPROPRIATELY CAPITALIZED?**

2 A: No, I do not believe the Company is appropriately capitalized. In my

3 opinion, a capital structure of 83.00% long-term debt and 17.00%

4 common equity is extreme in the sense that it is highly leveraged and

5 portends a pre-tax interest coverage ratio of only 1.4 times as shown

6 in Hinton Exhibit 1. In the event ONSWC needs external debt capital,

7 it is highly likely ONSWC will be viewed by banks and lending

8 institutions to have a relatively high risk of default, which in turn will

9 likely result in a relatively high cost rate for long-term debt. Likewise,

10 if the debt capital from Integra is considered common equity, then

11 the use of a contemporary ROE would result in a higher overall cost

12 of capital than necessary or appropriate for ratemaking. Both of these

13 extreme capitalization ratios pose an unreasonable risk to

14 ratepayers. These concerns are addressed in a regulatory paper

15 entitled, "Optimal Capital Structures – An Approach," which I found

16 instructive in reaching my conclusions.³ Even though the paper is

17 dated, the market principles discussed therein remain sound and

18 applicable to this proceeding. The regulatory paper is attached as

19 Hinton Exhibit 2 and the pretax interest coverage ratio benchmarks

20 for gas utilities shown on page 10 of the Exhibit are applicable and

³ Samuel L. Kemp and Ronald L. Shackelford. "Optimal Capital Structures – An Approach." Proceedings of the Fifth NAURAC Biennial Regulator Information Conference, September 3-5, 1986, Volume 3, pp. 2293-2308.

1 supportive of my concerns with the Company's proposed capital
2 structure and the resulting 1.4 pre-tax interest coverage ratio.

3 **Q. WHAT IS YOUR RECOMMENDED CAPITAL STRUCUTRE FOR**
4 **USE IN THIS CASE?**

5 A. As with my prior testimony for small water and sewer companies, I
6 recommend the use of a hypothetical capital structure comprised of
7 50.00% common equity and 50.00% long-term debt as reasonable
8 for ratemaking. This capital structure is reflective of capital structures
9 available to investors who seek the business and financial risk
10 profiles associated with water and sewer utilities. It also is the same
11 capital structure approved in several water and wastewater general
12 rate cases, including the recent Aqua NC Order in Docket No. W-
13 218, Sub 526.

14 Given that ONSWC's proposed capital structure contains 83% long-
15 term debt, I recommend that Integra infuse the additional equity
16 capital required to establish a capitalization ratio of 50.00% common
17 equity and 50.00% long-term debt. This capitalization is reasonable
18 and will provide adequate assurance that the utility is appropriately
19 capitalized.

1 **Q: WHAT TIMELINE DO YOU RECOMMEND FOR BRINGING**
2 **ONSWC'S CAPITAL RATIO TO A REASONABLE LEVEL?**

3 A: ONSWC should bring its capital ratio up to approximately 50.00%
4 equity and 50.00% long-term debt by the evidentiary hearing
5 scheduled in this proceeding.

6 **Q: HOW LONG SHOULD ONSWC MAINTAIN THIS CAPITAL RATIO**
7 **AND SHOULD THE COMMISSION REQUIRE ONSWC TO FILE**
8 **PERIODIC REPORTS WITH THE COMMISSION WITH RESPECT**
9 **TO ITS CAPITAL RATIO?**

10 A: ONSWC should continuously maintain a reasonable level of
11 common equity to ensure access to capital at reasonable terms
12 going forward. While I recommend the capital ratio be brought up to
13 approximately 50.00% equity and 50.00% long-term debt, I believe
14 that a capital structure with a minimum of 45.00% common equity
15 would allow the Company to obtain any additional capital at
16 reasonable terms. ONSWC should also be required to file audited
17 financial statements with its Annual Report for the next three years
18 as a means of showing its compliance with the recommended capital
19 ratios.

1 **Q. IS YOUR RECOMMENDATION CONSISTENT WITH THE PUBLIC**
2 **STAFF’S HISTORICAL PRACTICE FOR ADDRESSING**
3 **EXTREME CAPITALIZATION RATIOS AND COST OF CAPITAL**
4 **FOR SMALL WATER AND SEWER COMPANIES?**

5 A. The Public Staff’s Economic Research Division has a long history of
6 recommending hypothetical capital structures in cases where the
7 actual utility capital structure is (1) comprised of an unreasonable
8 level of common equity and long-term debt, and (2) not reflective of
9 other comparable water utilities available to investors in the
10 marketplace. For over 40 years, the Public Staff has applied various
11 versions of the “Montclair Method” that have always included the use
12 of a hypothetical capital structure comprised of 50.00% common
13 equity and 50.00% long-term debt. This approach was derived from
14 the testimony of Public Staff witness Dr. Dick Stevie filed in Docket
15 No. W-173, Sub 14 in 1981, which offers two methods to determine
16 the overall cost of capital for small water and sewer utilities. The
17 Commission approved these methods, which (1) allow small water
18 and sewer utilities with relatively little rate base to recover their net
19 operating income with the use of a margin on their operating
20 expenses, or (2) allow small utilities with a relatively greater level of
21 rate base to recover their net operating income through a rate of
22 return. The determination of the margin on operating expense or the

1 rate of return on rate base involved the use of a risk-free rate that
2 added a 3.00% point risk factor, where the risk-free rate of return was
3 based on the yields of five-year Treasury Securities.

4 While most rate cases have employed a margin applied to the utility's
5 operating expense as seen in recently filed Public Staff affidavits,⁴
6 this method has also been approved by the Commission to
7 determine the overall rate of return on the utility's rate base as is
8 done in this case.⁵

9 **Q. WHAT BENEFITS JUSTIFY THE USE OF THE MONTCLAIR**
10 **METHOD?**

11 A. An advantage of this approach is that it tends to eliminate the need
12 for small water and sewer utilities to hire outside cost of capital
13 witnesses. Hiring these witnesses is not in the best interest of small
14 water and sewer utility owners or customers as it is cost-prohibitive
15 and can lead to significant increases in rate case expense and, in
16 turn, significantly higher utility rates. Another benefit of this method
17 is its transparency and administrative efficiency as compared to
18 methodologies that require proxy groups and various analyses.

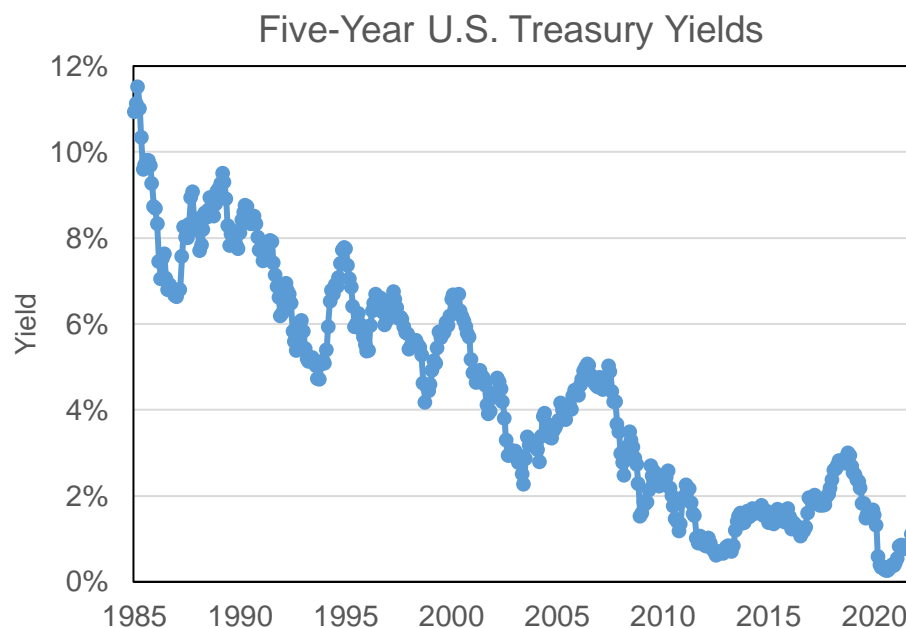
⁴ C&P Enterprises, Inc., Docket No. W-1063, Sub 5, January 19, 2022.

⁵ GGCC Utility, Inc., Docket No. W-755, Sub 10, January 4, 2019; Dutchman Creek, Inc., Docket No. W-1082, Sub 3, February 23, 2010; GGCC Utility, Inc., Docket No. W-755, Sub 5, June 28, 2007.

1 **Q. DOES THE PUBLIC STAFF STILL UTILIZE THE MONTCLAIR**
2 **METHOD?⁶**

3 A. The Public Staff employs some elements of the Montclair Method,
4 such as the 50/50 hypothetical capital structure recommended in this
5 case. However, the Public Staff no longer applies a risk-free rate plus
6 a risk factor to determine the overall margin on operating expense or
7 overall return on rate base when using the Montclair Method. Federal
8 Reserve policies have led to sustained decreases in the yields of
9 five-year U.S. Treasury bonds. These decreasing yields diminished
10 the Montclair Method's ability to produce reasonable rates of return
11 on capital or a reasonable margin on expense. The graph below
12 illustrates the historical decrease in five-year U.S. Treasury bonds
13 yields that made continued use of a risk-free rate plus a risk factor to
14 determine the overall margin on operating expense or overall return
15 on rate base unreasonable for ratemaking purposes.

⁶ Docket No. W-173, Sub 14, Montclair Water Company, May 29, 1981.



Source: 5-Year Treasury Constant Maturity Rate, [St. Louis Federal Reserve Bank](#)

Q. WITH SUCH LOW TREASURY YIELDS, HOW DID THE PUBLIC STAFF ADAPT THE MONTCLAIR METHOD TO DERIVE ITS RECOMMENDED OVERALL RATE OF RETURN OR MARGIN ON EXPENSE?

A. The Public Staff adapted a revised method by basing its recommendations on the average approved overall return for water and sewer utilities. The Public Staff began by tracking the average overall rates of return for water and sewer utilities approved by this Commission and other regulatory commissions. An 8.50% recommended rate of return and margin on expense was the initial rate using the new method. Then, the Public Staff began to adjust its

1 recommendations to reflect the continuous decline in the average
2 return for water and sewer utilities such that, during 2009 and 2010,
3 the Public Staff lowered its recommended overall rate of return and
4 margin on operating expense for small water and sewer companies
5 to 8.25%. The 8.25% overall rate of return or margin on operating
6 expense was recommended and approved in Docket No. W-1049,
7 Subs 12 and 13; Docket No. W-1082, Sub 3; and several other rate
8 case proceedings.

9 The decline in interest rates and approved overall rates of return
10 continued through 2011, which prompted the Public Staff to rely
11 exclusively on the average approved overall cost of capital for
12 CWSNC and Aqua NC as the basis for its recommended overall
13 return on rate base and margin on operating expense. This resulted
14 in lowering the overall rate of return and margin on operating
15 expense for small water and sewer companies to 8.00%. An 8.00%
16 overall rate of return or margin on operating expense was awarded
17 in the following rate case proceedings: Docket No. W-1250, Sub 3;
18 Docket No. W-1079, Sub 11, and several other rate case
19 proceedings.

20 From 2013 through 2019, the Public Staff recommended a 7.50%
21 overall rate of return or margin on operating expense for small water

and sewer companies in rate case proceedings. The table below provides Aqua NC's and CWSNC's overall rates of return allowed by the Commission between 2014 and 2019. The Commission approved the use of a 7.50% overall rate of return on its rate base for GGCC Utility, Inc. on January 4, 2019 in Docket No. W-755, Sub 10 and a 7.50% margin on operating expense for Springdale Water and Sewer, LLC. on October 14, 2020 in Docket No. W-406, Sub 6.

Table I: Approved Overall Rates of Return in NC (2014-2019)

Company	Order Date	Approved Overall Return	%Equity	ROE%	Cost Rate of Debt
Aqua NC	5-2-14	7.52%	50.00%	9.75%	5.29%
Aqua NC	12-18-18	7.17%	50.00%	9.70%	4.63%
CWSNC	12-7-15	8.20%	51.00%	9.75%	6.60%
CWSNC	8-11-17	7.84%	52.00%	9.60%	5.93%
CWSNC	2-21-19	7.75%	50.91%	9.75%	5.68%
Average		7.70%			

Source: Docket No. W-218, Subs 363 & 497, Docket No. W-354, Subs 344, 356, & 360.

Q. WHAT OVERALL RATE OF RETURN AND MARGIN ON OPERATING EXPENSE DOES THE PUBLIC STAFF CURRENTLY RECOMMEND FOR SMALL WATER AND SEWER COMPANIES?

A. Since 2021, the Public Staff has recommended a 7.00% overall rate of return on rate base or margin on operating expense for small water and sewer utilities. These recommendations are based on the

1 allowed overall rates of return approved by the Commission in the
 2 two most recent rate cases involving CWSNC and Aqua NC. Table
 3 2 below lists the two most recently allowed overall rates of return.

4 Table 2: Approved Overall Rates of Return in NC (2020-2021)

Company	Order Date	Allowed Overall Rate of Return	% Equity	ROE%	Cost Rate of Debt
CWSNC.	3-31-20	7.39%	49.10%	9.50%	5.36%
Aqua NC	10-26-20	6.81%	50.00%	9.40%	4.21%
Average		7.10%			

5 Source: Docket No. W-354, Sub 364 and Docket No. W-218, Sub 526

6 **Q. FOR THIS PROCEEDING, WHAT IS YOUR RECOMMENDED ROE**
 7 **AND YOUR RECOMMENDED COST RATE FOR LONG-TERM**
 8 **DEBT?**

9 A. I recommend a 7.00% overall return on rate base that contains a
 10 9.40% ROE and a 4.60% cost rate for debt for ONSWC. The 9.40%
 11 ROE is identical to the Commission-approved ROE in the Aqua NC
 12 rate case Docket No. W-218, Sub 526 Order dated October 26, 2020.
 13 In addition, its reasonableness is supported by the joint stipulation
 14 the Public Staff and CWSNC filed in Docket No. W-354, Sub 384 on
 15 November 30, 2021, containing a 9.40% ROE. The 4.60% cost of
 16 debt is an approximation for the approved cost of debt in the above
 17 two rate cases, which reasonably reflects current market based long-
 18 term debt costs for water and wastewater utilities.

1 **Q. WHAT OTHER EVIDENCE DID YOU CONSIDER IN YOUR**
2 **ASSESSMENT OF THE REASONABLENESS OF YOUR**
3 **RECOMMENDED RETURN?**

4 A. In regards to the reasonableness assessment of financial risk, I
5 considered the pre-tax interest coverage ratio produced by my cost
6 of capital recommendation. Based on the recommended capital
7 structure, the recommended cost of debt, and the ROE of 9.4%, the
8 pre-tax interest coverage ratio is approximately 3.7 times. This level
9 of pre-tax interest coverage is reasonable and could allow ONSWC
10 to qualify for a single "A" bond rating.

11 **Q. WOULD YOU PLEASE SUMMARIZE YOUR**
12 **RECOMMENDATIONS CONCERNING THE COST OF CAPITAL?**

13 A. I recommend a capital structure for ratemaking purposes in this
14 proceeding of 50.00% long-term debt and 50.00% common equity,
15 with an overall weighted cost of capital of 7.00%. My
16 recommendation assumes an embedded cost of long-term debt
17 associated with this capital structure of 4.60% and a recommended
18 cost of common equity of 9.40% as shown in Hinton Exhibit 3.
19 Additionally, I believe that this overall rate of return is based on
20 current competitive overall rates of return within the capital markets
21 and is applicable to both large and small water and sewer utilities.
22 As such, I maintain that the recommended overall rate of return is

1 fair to ONSWC's investors and its ratepayers.

2 **Q. WHY DO YOU NOT RECOMMEND USING THE OPERATING**
3 **RATIO METHOD IN THIS CASE?**

4 **A.** After investigation, I determined ONSWC's rate base is greater than
5 the reasonable level of operating expenses for water service; as
6 such, utilizing the operating ratio method would cause the return to
7 be less than the cost of capital, which is not appropriate.

8 **Q: IF ONSWC DOES NOT BRING ITS CAPITAL RATIO TO YOUR**
9 **RECOMMENDED LEVEL BY THE EVIDENTIARY HEARING**
10 **DATE, WHAT IS YOUR RECOMMENDATION WITH RESPECT TO**
11 **THE COST OF CAPITAL IN THIS DOCKET?**

12 **A:** If ONSWC does not bring its capital ratio to the recommended level
13 by the evidentiary hearing, I recommend that the Company's capital
14 structure be comprised of 89.63% long-term debt and 10.37%
15 common equity. I further recommend the use of a 6.00% cost rate
16 for debt and a 9.40% cost rate for common equity. Hinton Exhibit 4
17 shows the alternative recommendation with a weighted overall cost
18 of capital of 6.35% which is less than my preferred overall cost of
19 capital of 7.00% shown in Hinton Exhibit 3. Lastly, I recommend that
20 the Commission issue an order requiring ONSWC to bring its capital
21 structure to a minimum level of 50.00% common equity.

- 1 Q. DOES THIS CONCLUDE YOUR TESTIMONY?
- 2 A. Yes.

QUALIFICATIONS AND EXPERIENCE

JOHN ROBERT HINTON

I received a Bachelor of Science degree in Economics from the University of North Carolina at Wilmington in 1980 and a Master of Economics degree from North Carolina State University in 1983.

I joined the Public Staff in May 1985 and have been involved in a variety of projects and testified in numerous dockets. Those projects include (1) developing the long-range forecasts of peak demand and energy sales for electricity in North Carolina in 1986, 1989, and 1992; (2) reviewing numerous peak demand and energy sales forecasts and the resource expansion plans filed in electric utilities' annual IRPs; (3) serving as the lead analyst for the Public Staff in numerous avoided cost proceedings and arbitration proceedings; (4) recommending the appropriate rate of return on equity and debt capital for water, local natural gas distribution and pipeline companies, and electric utilities; (5) performing a financial analysis of two audit reports on Mid-South Water Systems, Inc., filed in Docket No. W-100, Sub 21; (6) serving as a member of the Small Systems Working Group that reported to the National Drinking Water Advisory Council of the U.S. Environmental Protection Agency regarding the 1996 Safe Drinking Water Act; and (7) publishing an article in the National Regulatory Research Institute's Quarterly Bulletin entitled "Evaluating Water Utility Financial Capacity".

I have testified or filed affidavits in the dockets listed below.

<u>ISSUE</u>	<u>DOCKETS</u>
Long-range electric peak demand and energy forecast	E-100, Sub 50
Weather normalization of electricity sales	E-7, Subs 620 and 989 E-2, Sub 833
Customer growth adjustments	E-2, Sub 1023
Level of funding for nuclear decommissioning costs	E-2, Subs 1023 and 1219 E-7, Subs 1026 and 1146
Integrated Resource Plans	E-100, Subs 114 and 125
Avoided Costs for Biennial Proceeding	E-100, Subs 106, 136, 140, 148, and 158
Avoided Costs for energy efficiency and demand side management programs	E-7, Subs 1032 and 1130 E-2, Subs 1145 and 1174
Issuance of Certificates of Public Convenience and Necessity (CPCN) for electric generation	E-2, Sub 669 E-7, Subs 790, 791, and 1134 SP-132, Sub 0
Merger of Dominion Energy, Inc., and SCANA Corp.	E-22, Sub 551 G-5, Sub 585

Fair rate of return	E-22, Subs 333, 412, and 532 G-5, Subs 327, 386, and 632 G-9, Subs 351, 382, and 722 G-21, Subs 293 and 442 P-12, Sub 89 P-26, Sub 93 P-31, Sub 125 P-100, Sub 133b P-100, Sub 133d (1997 and 2002) W-218, Subs 319, 497, and 526 W-354, Subs 360, 364, and 384 W-778, Sub 31
Credit metrics and the risk of a downgrade	E-7, Sub 1146
Hedging of natural gas prices	E-2, Subs 1001, 1018, and 1031
Expansion of natural gas	G-5, Subs 337 and 372
Water utility CPCN transfer application	W-1000, Sub 5
Rainfall normalization with respect to water sales	W-274, Sub 160

Company Proposed Cost of Capital
Old North State Water Company
as of December 30, 2020

Item	Ratios	Cost Rate	Weighted Cost Rate	Pre-Tax Cost of Capital ¹
Long-Term Debt	83.00%	7.34%	6.09%	6.10%
Common Equity	17.00%	9.75%	1.66%	2.16%
Total	100.00%		7.75%	8.26%

Pre-Tax Interest Coverage² 1.4

Notes:

¹ The pre-tax cost of debt and equity is grossed up by tax retention factors.

² Pre-Tax Interest Coverage: $1.4 = 8.26 / 6.10$.

OPTIMAL CAPITAL STRUCTURES - AN APPROACH

Samuel L. Kemp
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Introduction

The cost of capital for public utilities has increased sharply since the 1940s when it was often in the range of 5.0 to 6.0 percent. For example, in 1952, the embedded cost of debt was 3.0 percent; the cost of equity had been as low as 9.0 percent in this time frame. Even in the mid-1960s, the cost of capital was only at the 6.5 percent level. By the early 1980s, this cost had approximately doubled. With the higher rates of capital costs occurring in recent years, the mix of capital (debt and equity) that results in the lowest weighted cost of capital has become an increasingly important issue.

Theoretical Considerations

Since the cost of debt is generally less than the cost of equity, firms can use debt capital to decrease their weighted cost of capital. However, the infusion of debt into the capital structure reduces the cost of capital up to a point where additional debt causes both debt and equity costs to increase due to the greater financial risk in meeting interest obligations. Therefore, there is an optimum capital structure that results in the lowest weighted cost of capital which benefits stockholders and ratepayers alike. Responsible managers strive to attain this optimal mix of capital and, likewise, it is the responsibility of regulators to ensure that an optimal capital structure be attained for the fair treatment of ratepayers.

When the tax advantage of using debt is considered, the cost differences between financing with debt versus equity are even greater. Interest on corporate debt is deductible for income tax purposes while dividend payments on common and preferred stocks are not so deductible. This "tax savings" is demonstrated with a hypothetical numerical illustration shown in Table 1, which assumes a company with a 100 percent common equity ratio having debt gradually injected into the capital structure. As the equity ratio decreases, the cost of common equity increases due to the financial risk imposed by the added debt. But the increasing cost of common equity is continually being offset by

the increasing tax savings of additional interest expense. This results in the after-tax weighted cost of capital decreasing until the optimum capital structure is reached. In this hypothetical example, the lowest after-tax cost of capital occurs at about a 40 percent equity ratio. Figure 1 graphically presents this with a cost of capital curve. As may be seen, when the company's equity ratio falls below 40 percent, the after-tax cost of capital curve turns upward as the rise in the cost of equity is no longer being adequately offset by the lower cost debt and the tax deductibility of the interest expense.

Background

Equity ratios for the electric and gas distribution industries from 1976 through 1985 are presented in Table 2 and graphically displayed in Figure 2. These industry composites show the equity ratios for both the electric and gas distribution companies have increased during the past 5 years. Higher earnings, completion of large construction projects, and dividend reinvestment plans have contributed to these increases in equity ratios. Electric and gas utilities attempt to justify their higher equity ratios by maintaining that business risks are higher now than a few years ago and increased equity is needed to reduce overall risk. The increase in the business risks of the electric is attributed to the uncertainties associated with the construction of large generating projects and the recent shifting of risk by regulators from ratepayers to stockholders for these projects. Gas utilities cite the recent drop in fuel prices as creating additional business risk which requires lower financial risk via higher equity ratios. The question that must be addressed by regulators is whether or not these arguments are sufficient to justify the extra cost of equity funds in a given situation.

One set of criteria to use in determining the appropriateness of adjusting the debt to equity mix of a given utility is the Standard and Poor's guidelines for its debt rating categories. Table 3 lists the rating benchmarks for debt ratios and pre-tax interest coverages used by S&P for both electric and gas distribution companies. While additional other criteria are used by S&P in determining ratings, these provide a good framework within which to work in order to maintain a given bond rating for a company.

An Approach

I have selected Laclede Gas Company to illustrate an approach which may be taken in adjusting the debt/equity mix in a rate case setting in order to achieve the optimal capital structure and weighted cost of capital. As of September 30, 1985, the end of the selected test year, Laclede Gas had a capital structure consisting of 65.0 percent common equity and 30.7 percent long-term debt (see Table 4).

Since the gas industry in 1985 had a composite equity ratio of 45.2 percent, it appears that Laclede Gas might be a candidate for some type of capital structure adjustment. The amount of the adjustment can be limited by the S&P bond rating criteria. In this case, Laclede currently has a 'AA' bond rating. It could be argued that this rating is unnecessarily high due to the minimal savings of debt interest cost from the higher rating versus the cost of the common equity. Table 5 shows Moody's Public Utility Bond Averages for four rating categories and the spread between the categories for the first half of 1986. The marginal savings in moving from the 'A' to 'AA' rating is only 28 basis points for the utilities versus 45 basis points in moving from a 'Baa' to 'A' rating. This shows that the cost of debt does not begin to vary significantly until a utility moves down from an 'A' rating to a 'Baa' rating. Thus it appears that an optimum capital structure and cost mix would result from an 'A' rated gas distribution company. Nevertheless, another important consideration is how far may regulation advance in "managing" the affairs of the utilities within its jurisdiction? Therefore with respect to Laclede Gas, it is decided that good propriety would be to try to maintain the 'AA' rating of the company but at the minimum criteria needed. According to Table 3, the minimum criteria for a 'AA' bond rating for a gas distribution company is a debt ratio of less than 45 percent and a pre-tax debt interest coverage of 4.0 times. Table 6 shows the adjusted capital structure of Laclede Gas after "swapping" \$35.331 million of debt for equity in achieving a 44.0 percent debt ratio (i.e., just less than 45.0 percent). The cost to be assigned to the "new" additional debt is 9.375 percent which is the rate at which Indiana Gas, an 'AA'-rated gas distribution company, issued \$30 million of first mortgage bonds on July 11, 1986.

Table 7 shows the weighted cost of capital for Laclede with both an unadjusted capital structure and one adjusted for a 44.0 percent debt ratio. Assigning a midrange return on equity of 13.0 percent, a cost of preferred stock of 4.8 percent, a cost of long-term debt of 7.7 percent, and a cost of short-term debt of 8.0 percent, the after-tax weighted cost of capital with the unadjusted capital structure is 9.90 percent (an income tax rate of 47 percent is assumed). The weighted cost of capital using the adjusted capital structure is 8.83 percent based on the new weighted cost of debt of 8.2 percent, which resulted from adding the "new" debt. The after-tax savings due to the optimal capital structure is about \$2.85 million $((9.90\% - 8.83\%) * \$266,310,000)$ assuming total capital equals rate base.

Pro forma pre-tax interest coverages are presented in Table 8 for Laclede. The coverage before adjusting the capital structure was 7.93 times and the after adjustment coverage was 4.62 times. The 4.62 times figure is more than adequate to meet S&P's minimum coverage guideline of 4.0 times in maintaining Laclede's 'AA' rating. This lends credence to the reasonableness of adjusting Laclede's debt to equity mix in order to achieve an optimum capital structure with lowest cost to the ratepayer.

There is some question as to whether or not Laclede's return on equity should be increased to reflect the injected risk from placing more debt in the capitalization for the purpose of achieving the optimum capital mix. Some would argue there is little statistical correlation between the equity ratio and the cost of equity on an industry-wide basis and therefore no adjustment would be necessary for Laclede. Others would argue the merits of an upward adjustment on theoretical grounds. Financial theory certainly supports an adjustment due to increased debt risk, but in practice the amount of the adjustment is difficult to determine without being able to achieve correlation at an acceptable level of significance. For illustrative purposes, we will allow the expert judgement of the analyst to prevail and he recommends the upper portion of the determined range of return on equity to be sufficient to compensate for any increased risk inherent in the adjusted capital structure. The high end of the return on equity is given to be 13.5 percent and the cost of capital and pro forma pre-tax interest coverage that result are presented in Table 9. Some additional protection is afforded by the increased return on equity in the 4.76 times coverage versus the 4.62 times coverage.

Important Considerations

While advancing the use of debt in adjusting a utility's capital structure in order to achieve optimal mix and cost, it is important to be aware of the dangers of excessive use. Four major arguments are propounded on limiting the use of debt. First, if income varies significantly, a firm may find itself unable to meet its interest payments. Thus interest coverage becomes very meaningful in protecting a utility's financial integrity. Second, the increase in the instability of net income associated with an increased debt ratio is viewed by stockholders as undesirable and it is possible they would increase their required return. Third, the nominal rate of interest is expected to rise as the debt ratio increases creating higher financial costs. Fourth, bond and other credit ratings fall as the debt ratio is pushed beyond well-known limits.

To show we have proceeded fairly with Laclede Gas, it will be pointed out that each of the four (above) dangers has been safely avoided in adjusting the capital structure with additional debt. First, pro forma interest coverage of 4.76 times attests to the ability of Laclede to meet its interest payments. Second, allowance was made for Laclede's stockholders requiring a higher return by permitting a return at the upper end of the range of 13.5 percent. Third, the nominal interest rate assigned to the added debt was for a 'AA-' rated company which compensates Laclede at the appropriate risk level given their adjusted capital structure. (Any new additional debt actually added by the company would simply be swapped debt for debt in the capital structure in future rate cases.) Fourth, bond ratings for Laclede could conceivably fall from 'AA' to 'AA-'. However, since they

✓ remain in the same general category, no major increase in debt costs should occur and the cost benefit of optimal capital structure far outweighs any incremental rise in debt interest rates.

Conclusion

This paper has detailed an approach for adjusting utility capital structures with higher than necessary equity ratios. Some utilities have realized their equity ratios are too "heavy" and have purchased shares of their common stock in an effort to reduce them. Nevertheless, until these utilities achieve a capital mix reasonably close to optimum, it is regulation's responsibility to protect the ratepayers by the use of adjusted capital structures and assumed debt costs. In recommending this approach, the premise is that management controls, to a large degree, the capital structure of their utilities and regulation may provide guidance to management when costs to the ratepayer are not being minimized.

Table 1

Calculation of Points on After-tax Cost of Capital Curve

	(1) Percent of Total	(2) Component Cost	(3) Weighted Cost (1) x (2)	(4) Tax Multiplier	(5) After-Tax Weighted Cost
Debt	0	0.0%	0.0%	0.50	0.0%
Equity	100	10.0	10.0	1.00	10.0
			<u>10.0</u>		<u>10.0</u>
Debt	10	5.0	0.50	0.50	0.25
Equity	90	10.5	9.45	1.00	9.45
			<u>9.95</u>		<u>9.70</u>
Debt	20	5.0	1.00	0.50	0.50
Equity	80	11.0	8.80	1.00	8.80
			<u>9.80</u>		<u>9.30</u>
Debt	30	5.5	1.65	0.50	0.83
Equity	70	11.5	8.05	1.00	8.05
			<u>9.70</u>		<u>8.88</u>
Debt	40	6.0	2.40	0.50	1.20
Equity	60	12.0	7.20	1.00	7.20
			<u>9.60</u>		<u>8.40</u>
Debt	50	6.5	3.25	0.50	1.63
Equity	50	13.0	6.50	1.00	6.50
			<u>9.75</u>		<u>8.13</u>
Debt	60	7.5	4.50	0.50	2.25
Equity	40	14.0	5.60	1.00	5.60
			<u>10.10</u>		<u>7.85</u>
Debt	70	9.5	6.65	0.50	3.33
Equity	30	16.0	4.80	1.00	4.80
			<u>11.45</u>		<u>8.13</u>
Debt	80	13.0	10.40	0.50	5.20
Equity	20	18.0	3.60	1.00	3.60
			<u>14.00</u>		<u>8.80</u>
Debt	90	17.0	15.30	0.50	7.65
Equity	10	25.0	2.50	1.00	2.50
			<u>17.80</u>		<u>10.15</u>
Debt	100	24.0	24.0	0.50	12.00
Equity	0	0.0	0.0	1.00	0.0
			<u>24.0</u>		<u>12.00</u>

Figure 1

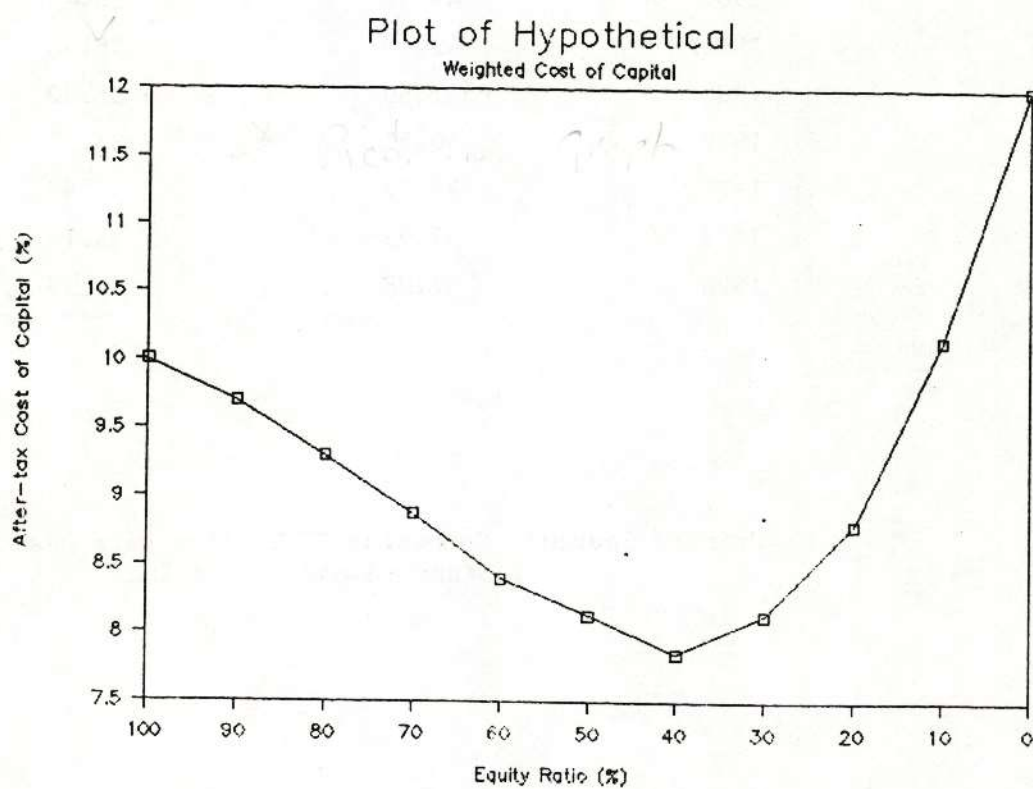


Table 2

Industry Composite Equity Ratios

<u>Year</u>	<u>18 Market-Traded Gas Distribution Companies</u>	<u>87 Market-Traded Electric Companies</u>
1985	45.20%	42.0%
1984	46.52	41.07
1983	43.95	40.03
1982	41.52	38.43
1981	42.40	36.56
1980	41.60	35.80
1979	40.51	35.72
1978	39.17	35.95
1977	37.95	35.14
1976	37.08	34.39

Primary Source: Compustat II Utility Data Base File,
Standard and Poor's Inc.

* Estimate based on Electric Utility Quality
Measurements, Salomon Bros., Inc., April 28, 1986.

Figure 2

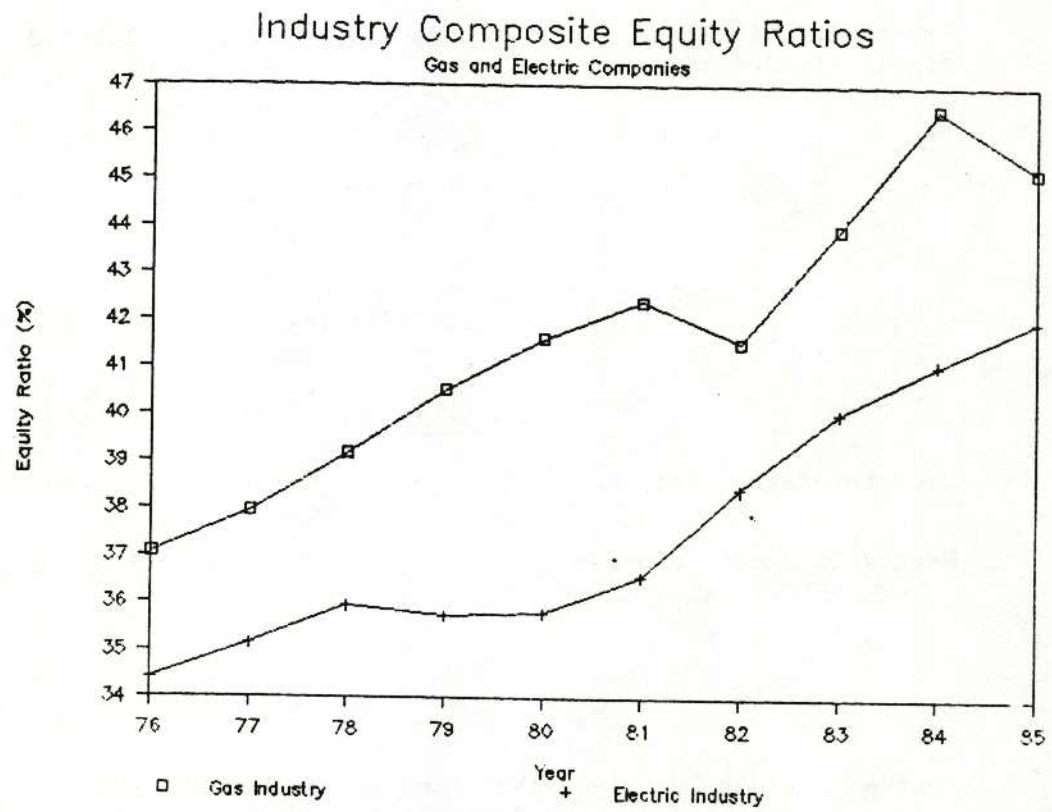


Table 3

Financial Benchmarks for Utility Securities Rating Analyses

Electric Utilities

	<u>'AAA'</u>	<u>'AA'</u>	<u>'A'</u>	<u>'BBB'</u>
Debt Leverage - Percent, Less than 41		39-46	44-52	50-58
Pretax Int. Coverage, Greater than 4.5 (Excl. AFDC) - x		3.5-5.0	2.5-4.0	1.5-3.0

Gas Utilities

	<u>'AAA'</u>	<u>'AA'</u>	<u>'A'</u>	<u>'BBB'</u>
Debt Leverage - Percent	-	Under 45	45-50	Over 50
Pretax Interest Coverage (Incl. AFDC) - x	-	4.0+	3.0-4.0	Under 3.0

Source: Credit Overview, 1983, and revised benchmarks
published January 28, 1985, Standard & Poor's.

Table 4

Laclede Gas Company
Capital Structure at September 30, 1985

<u>Type of Capital</u>	<u>Amount</u>	<u>Percent</u>
Common Stock Equity	\$ 173,065	65.0
Preferred Stock	7,100	2.7
Long-term Debt	81,845	30.7
Short-term Debt	4,300	1.6
Total	\$ 266,310	100.0

Note: Amounts in 1,000s

Table 5

Moody's Corporate Bond Yield Averages
Public Utility Bonds

	<u>Aaa</u>	<u>Aa</u>	<u>A</u>	<u>Baa</u>
Average Yield				
Jan/86 - Jun/86	9.18%	9.53%	9.81%	10.26%
Difference Between Ratings	0.35%	0.28%	0.45%	

Source: Moody's Bond Record, July, 1986

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Table 6

Laclede Gas Company
Adjusted Capital Structure

<u>Type of Capital</u>	<u>Amount</u>	<u>Percent</u>
Common Stock Equity	\$ 137,734	51.7
Preferred Stock	7,100	2.7
Long-term Debt	117,176	44.0
Short-term Debt	4,300	1.6
Total	\$ 266,310	100.0

Note: Amounts in 1,000s

Table 7

Laclede Gas Company
Cost of Capital

Unadjusted Capital Structure

	<u>Percent</u>	<u>Cost (%)</u>	<u>Pre-tax Weighted Cost (%)</u>	<u>After-tax Weighted Cost (%)*</u>
Common Stock	65.0	13.0	8.45	8.45
Preferred Stock	2.7	4.8	0.13	0.13
Long-term Debt	30.7	7.7	2.36	1.25
Short-term Debt	1.6	8.0	0.13	0.07
			<u>11.07</u>	<u>9.90</u>

Adjusted Capital Structure

	<u>Percent</u>	<u>Cost (%)</u>	<u>Pre-tax Weighted Cost (%)</u>	<u>After-tax Weighted Cost (%)*</u>
Common Stock	51.7	13.0	6.72	6.72
Preferred Stock	2.7	4.8	0.13	0.13
Long-term Debt	44.0	8.2	3.61	1.91
Short-term Debt	1.6	8.0	0.13	0.07
			<u>10.59</u>	<u>8.83</u>

* Assumes a 47% income tax rate

Table 8

Laclede Gas Company
Pro Forma Pre-tax Interest Coverage

Unadjusted Capital Structure

1. Return on Equity (.13 x \$173,065)	\$ 22,498
2. Annualized Preferred Dividends	341
3. Net Income (1 + 2)	22,839
4. Tax Multiplier*	1.9
5. Earnings Before Taxes	43,394
6. Annual Interest Cost	6,265
7. Available for Coverage (5 + 6)	49,659
8. Pro Forma Pre-tax Interest Coverage (7/6)	7.93

Adjusted Capital Structure

1. Return on Equity (.13 x \$137,734)	\$ 17,905
2. Annualized Preferred Dividends	341
3. Net Income (1 + 2)	18,246
4. Tax Multiplier*	1.9
5. Earnings Before Taxes	34,667
6. Annual Interest Cost	9,577
7. Available for Coverage (5 + 6)	44,244
8. Pro Forma Pre-tax Interest Coverage (7/6)	4.62

* Assumes 47% income tax rate

Table 9

Laclede Gas Company
Cost of Capital

Adjusted Capital Structure

	<u>Percent</u>	<u>Cost (%)</u>	<u>Pre-tax Weighted Cost (%)</u>	<u>After-tax Weighted Cost (%)</u>
Common Stock	51.7	13.5	6.98	6.98
Preferred Stock	2.7	4.8	0.13	0.13
Long-term Debt	44.0	8.2	3.61	1.91
Short-term Debt	1.6	8.0	0.13	0.07
			<u>10.85</u>	<u>9.09</u>

Pro Forma Pre-tax Interest Coverage

Adjusted Capital Structure

1. Return on Equity (.135 x \$137,734)	\$ 18,594
2. Annualized Preferred Dividends	341
3. Net Income (1 + 2)	18,935
4. Tax Multiplier*	1.9
5. Earnings Before Taxes	35,977
6. Annualized Interest Cost	9,577
7. Available for Coverage	45,554
8. Pro Forma Pre-tax Interest Coverage (7/6)	4.76

* Assumes a 47% income tax rate

Public Staff Recommended Cost of Capital
Old North State Water Company
as of August 31, 2021

Item	Ratios	Cost Rate	Weighted Cost Rate	Pre-Tax Cost of Capital ¹
Long-Term Debt	50.00%	4.60%	2.30%	2.30%
Common Equity	50.00%	9.40%	4.70%	6.11%
Total	100.00%		7.00%	8.41%

Pre-Tax Interest Coverage² 3.7

Notes:

¹ The pre-tax cost of debt and equity is grossed up by tax retention factors.

² Pre-Tax Interest Coverage: $3.7 = 8.41 / 2.30$.

Alternative Old North State Water Company
Cost of Capital as of August 31, 2021

Item	Ratios	Cost Rate	Weighted Cost Rate	Pre-Tax Cost of Capital ¹
Long-Term Debt	89.63%	6.00%	5.38%	5.39%
Common Equity	10.37%	9.40%	0.97%	1.26%
Total	100.00%		6.35%	6.65%

Pre-Tax Interest Coverage² 1.2

Notes:

¹ The pre-tax cost of debt and equity is grossed up by tax retention factors.

² Pre-Tax Interest Coverage: 1.2 = 6.65 / 5.39.