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INFORMATION SHEET

PRESIDING: Commissioner Brown-Bland, Chair Mitchell, Commissioners Gray, Clodfelter

PLACE: Dobbs Building, Raleigh, North Carolina

DATE: August 19, 2019

TIME: 2:00: p.m. to 5:12 p.m.

DOCKET NO.: G-9, Sub 743

COMPANIES: Piedmont Natural Gas Company, Inc.

DESCRIPTION: In the Matter of Application of Piedmont Natural Gas Company, Inc.,
for an Adjustment of Rates, Charges, and Tariffs Applicable to Service
in North Carolina, Continuation of its IMR Mechanism, Adoption of
EDIT Rider, and Other Relief

VOLUME: 4

APPEARANCES

(See attached.)

EXHIBITS

(See attached.)

COPIES ORDERED: Email: Jeffries, West, Harrod, Force, Culpepper, Jost, Creech

REPORTED BY: Linda Garrett

TRANSCRIPT PAGES: 140

TRANSCRIBED BY: Linda Garrett

PREFILED PAGES: 230

DATE TRANSCRIBED: August 22, 2019

FILED

AUG 22 2019

Clerk's Office
N.C. Utilities Commission

1 PLACE: Dobbs Building
2 Raleigh, North Carolina
3 DATE: Monday, August 19, 2019
4 DOCKET NO.: G-9, Sub 743
5 TIME IN SESSION: 2:00 P.M. TO 5:12 P.M.
6 BEFORE: Commissioner ToNola D. Brown-Bland, Presiding
7 Chair Charlotte A. Mitchell
8 Commissioner Lyons Gray
9 Commissioner Daniel G. Clodfelter
10

11 IN THE MATTER OF:

12 Application of Piedmont Natural Gas Company, Inc.,
13 for an Adjustment of Rates, Charges, and Tariffs
14 Applicable to Service in North Carolina, Continuation
15 of its IMR Mechanism, Adoption of an EDIT Rider,
16 and Other Relief
17

18 Volume 4
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1 A P P E A R A N C E S:

2 FOR PIEDMONT NATURAL GAS:

3 James H. Jeffries, IV, Esq.

4 McGuireWoods, LLP

5 201 North Tryon Street, Suite 3000

6 Charlotte, North Carolina 28202-2146

7

8 Brian Heslin, Esq.

9 Deputy General Counsel

10 Duke Energy Corporation

11 550 South Tryon Street

12 Charlotte, North Carolina 28202

13

14 FOR CAROLINA INDUSTRIAL GROUP FOR FAIR

15 UTILITY RATES IV:

16 Warren K. Hicks, Esq.

17 Bailey & Dixon, LLP

18 Post Office Box 1351

19 Raleigh, North Carolina 27602

20

21

22

23

24

1 A P P E A R A N C E S Cont'd.:

2 FOR CAROLINA UTILITY CUSTOMERS ASSOCIATION, INC.:

3 Robert F. Page, Esq.

4 Crisp & Page, PLLC

5 4010 Barrett Drive, Suite 205

6 Raleigh, North Carolina 27609

7

8 FOR FAYETTEVILLE PUBLIC WORKS COMMISSION:

9 James P. West, Esq.

10 Chief Legal Officer

11 Post Office Box 1089

12 Fayetteville, North Carolina 28302-1089

13

14 FOR NUCOR STEEL-HERTFORD:

15 Joseph W. Eason, Esq.

16 Nelson, Mullins, Riley & Scarborough, LLP

17 GlenLake One, Suite 200

18 4140 Parklake Avenue

19 Raleigh, North Carolina 27612

20

21

22

23

24

1 A P P E A R A N C E S (Cont'd.):

2 FOR THE USING AND CONSUMING PUBLIC AND ON BEHALF OF
3 THE STATE AND ITS CITIZENS IN THIS MATTER AFFECTING
4 THE PUBLIC INTEREST:

5 Margaret A. Force, Esq.

6 Assistant Attorney General

7 Jennifer T. Harrod, Esq.

8 Special Deputy Attorney General

9 Office of the North Carolina Attorney General

10 114 West Edenton Street

11 Raleigh, North Carolina 27603

12

13 FOR THE USING AND CONSUMING PUBLIC:

14 Elizabeth Culpepper, Esq.

15 Megan Jost, Esq.

16 William E.H. Creech, Esq.

17 Public Staff - North Carolina Utilities Commission

18 4326 Mail Service Center

19 Raleigh, North Carolina 27699-4300

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**NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP**

DATE: 8/19/19 DOCKET NO.: G-9, SUB 743
ATTORNEY NAME and TITLE: JAMES H. SEFFRIES IV
FIRM NAME: MCGUIRE WOODS LLP
ADDRESS: 201 N. TRYON STREET, SUITE 3000
CITY: CHARLOTTE STATE: NC ZIP CODE: 28202
APPEARING FOR: PIEDMONT NATURAL GAS COMPANY, INC.

APPLICANT: ☒ COMPLAINANT: _____ INTERVENOR: _____
PROTESTANT: _____ RESPONDENT: _____ DEFENDANT: _____

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NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE: 8/19/19 DOCKET NO.: 6-9, Sub 743

ATTORNEY NAME and TITLE: Brian Heslin

FIRM NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP CODE: _____

APPEARING FOR: Piedmont Natural Gas

APPLICANT: X COMPLAINANT: _____ INTERVENOR: _____

PROTESTANT: _____ RESPONDENT: _____ DEFENDANT: _____

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NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE: 08/19/2019 DOCKET NO.: G-9, SUB 743
ATTORNEY NAME and TITLE: Jamie West, Chief legal officer
FIRM NAME: Fayetteville Public Works Commission
ADDRESS: 955 Old Wilmington Road,
CITY: Fayetteville STATE: NC ZIP CODE: 28301
APPEARING FOR: Fayetteville Public Works Commission

APPLICANT: _____ COMPLAINANT: _____ INTERVENOR: ☒
PROTESTANT: _____ RESPONDENT: _____ DEFENDANT: _____

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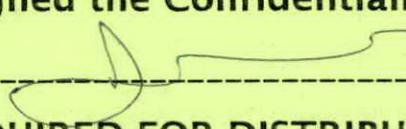
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Email: ~~jamie.west@fayetteville.com~~ jamie.west@faypw.com

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NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE: 8/19/2019 DOCKET NO.: G-9, Sub 743
ATTORNEY NAME and TITLE: Joseph W. Eason
FIRM NAME: Nelson, Mullins, Riley & Scarborough, LLP
ADDRESS: Olen Lake One Suite 200, 4140 Park Lake Avenue
CITY: Raleigh STATE: NC ZIP CODE: 27612
APPEARING FOR: No Co. Steel

APPLICANT: _____ COMPLAINANT: _____ INTERVENOR: ☒
PROTESTANT: _____ RESPONDENT: _____ DEFENDANT: _____

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Signature: Joseph W. Eason

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NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE: 8/19/19 DOCKET NO.: G-9, Sub 743

ATTORNEY NAME and TITLE: Warren Hicks

FIRM NAME: Bailey & Dixon

ADDRESS: _____

CITY: _____ STATE: _____ ZIP CODE: _____

APPEARING FOR: Carolina Electrical Group for Fair Utility Rates IV (CEGFR)

APPLICANT: ___ COMPLAINANT: ___ INTERVENOR: ☒

PROTESTANT: ___ RESPONDENT: ___ DEFENDANT: ___

PLEASE NOTE: Non-confidential transcripts may be accessed by visiting the Commission's website at <https://ncuc.net>. Hover over the Dockets tab, select Docket Search from the drop-down menu, and enter the docket number.

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SIGNATURE: Warren Hicks

(Signature required for distribution of ALL transcripts)

NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP

DATE 08/19/19 DOCKET #: G-9, Sub 743
NAME AND TITLE OF ATTORNEY Robert F. Page
FIRM NAME Crisp & Page, PLLC
ADDRESS 4010 Barrett Dr., Suite 205
CITY Raleigh ZIP 27609

APPEARING FOR: Carolina Utility Customers Association, Inc.

APPLICANT _____	COMPLAINANT _____	INTERVENER ☒
PROTESTANT _____	RESPONDENT _____	DEFENDANT _____

PLEASE NOTE: Electronic Copies of the regular transcript can be obtained from the NCUC web site at [HTTP://NCUC.commerce.state.nc.us/docksrch.html](http://NCUC.commerce.state.nc.us/docksrch.html) under the respective docket number.

_____ Number of Electronic Copies for regular transcript. There will be a charge of \$5.00 for each emailed copy. Please indicate your name, phone number and email below.

_____ Number of copies of Confidential portion of regular transcript (assuming a confidentiality agreement has been signed). This will be mailed.

Name: _____
Phone #: _____
Email: _____

Signature: _____

PLEASE SIGN BELOW IF YOU HAVE SIGNED A CONFIDENTIALITY AGREEMENT. CONFIDENTIAL PORTIONS OF TRANSCRIPT WILL ONLY BE PROVIDED UPON SIGNATURE!

Signature: _____

NORTH CAROLINA UTILITIES COMMISSION

APPEARANCE SLIP

DATE: 8/19/19 DOCKET NO.: G-9, Sub 743
ATTORNEY NAME and TITLE: Special Deputy A.G. Jennifer Harroff
Assistant A.G. Peggy Force
FIRM NAME: Attorney General
ADDRESS: 114 West Elenton St
CITY: Raleigh STATE: NC ZIP CODE: 27603

APPEARING FOR: using and consuming public,
the State and its citizens

APPLICANT: _____ COMPLAINANT: _____ INTERVENOR: X

PROTESTANT: _____ RESPONDENT: _____ DEFENDANT: _____

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Email: jharroff@ncdoj.gov; pforce@ncdoj.gov

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Signature: [Signature] P. Force

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NORTH CAROLINA UTILITIES COMMISSION
PUBLIC STAFF - APPEARANCE SLIP

DATE August 19, 2019 DOCKET #: G-9, Sub 743

PUBLIC STAFF MEMBER Elizabeth Culpepper

ORDER FOR TRANSCRIPT OF TESTIMONY TO BE **EMAILED** TO THE
PUBLIC STAFF - PLEASE INDICATE YOUR DIVISION AS WELL AS
YOUR EMAIL ADDRESS BELOW:

ACCOUNTING _____
WATER _____
COMMUNICATIONS _____
ELECTRIC _____
GAS _____
TRANSPORTATION _____
ECONOMICS _____
LEGAL elizabeth.culpepper@psncuc.nc.gov
CONSUMER SERVICES _____

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regular transcript (assuming a confidentiality agreement
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***PLEASE INDICATE BELOW WHO HAS SIGNED A CONFIDENTIALITY
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CONFIDENTIAL PORTIONS!!!!

ELIZABETH D. CULPEPPER

Elizabeth D. Culpepper
Signature of Public Staff Member

NORTH CAROLINA UTILITIES COMMISSION
PUBLIC STAFF - APPEARANCE SLIP

DATE August 19, 2019 DOCKET #: G-9, Sub 743

PUBLIC STAFF MEMBER Megan Jost

ORDER FOR TRANSCRIPT OF TESTIMONY TO BE **EMAILED** TO THE
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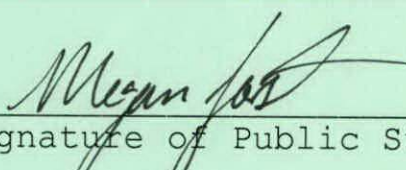
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ECONOMICS _____
LEGAL megan.jost@psncuc.nc.gov _____
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Megan Jost _____



Signature of Public Staff Member

NORTH CAROLINA UTILITIES COMMISSION
PUBLIC STAFF - APPEARANCE SLIP

DATE August 19, 2019 DOCKET #: G-9, Sub 743

PUBLIC STAFF MEMBER William E. H. Creech

ORDER FOR TRANSCRIPT OF TESTIMONY TO BE **EMAILED** TO THE
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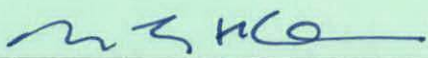
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William E. H. Creech


Signature of Public Staff Member

Cumulative Cost of PHMSA Compliance Activity since the Company's Last General Rate Case through December 31, 2018

<u>Integrity Management Capital Investments (Gross Plant Additions)¹:</u>		
1	Corrosion Control	\$ 87,882,371
2	Casing Remediation	\$ 59,835,564
3	Distribution Integrity	\$ 58,033,069
4	Transmission Integrity	\$ 829,552,318
5	OASIS	\$ 100,208,658
6	Total	\$ 1,135,511,979
 <u>Transmission Pipeline Integrity Management Program:</u>		
7	Incremental O&M Expenses, As Deferred	\$ 49,909,068
8	Grand Total	<u>\$ 1,185,421,047</u>

1/ These amounts were also shown in Schedule 1 of the Company's IMR Monthly Report for December 2018 filed in Docket No. G-9, Sub 642 on February 14, 2019.

1/19

Projected Gross Integrity Management Plant Investment Amount by Integrity Project Category¹
(\$ millions)

		<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>Total</u>
1	Corrosion Control	\$ 8.6	\$ 16.4	\$ 17.0	\$ 42.0
2	Casing Remediation	8.7	12.6	14.4	35.7
3	Distribution Integrity	34.0	11.4	10.1	55.5
4	Transmission Integrity	177.1	75.7	132.2	385.0
5	Gross Total	\$ 228.4	\$ 116.1	\$ 173.7	\$ 518.2

1/ Represents the projected gross additions to Utility Plant in Service by calendar year for Integrity Management projects. These amounts were also shown in Schedule 16A of the Company's 2018 IMR Annual Report filed in Docket No. G-9, Sub 734 on October 31,

1/19

Summary of New DIMP Initiatives Proposed for Regulatory Asset Treatment

	Area	Program Name	Description & Justification	Projected Annual Incremental O&M Expense					Total
				2020	2021	2022	2023	2024	
1	Damage Prevention	Legacy Cross Bore	Cross Bore investigation is necessary in order to enhance the safety of the distribution system.	\$ 3,600,000	\$ 3,708,000	\$ 3,819,240	\$ 3,933,817	\$ 4,051,832	\$ 19,112,889
2	Damage Prevention	Watch & Protect	This program runs all 811 dig tickets through an series of algorithms and risk ranks each one. We then have a contractor go out and speak with the excavators on the top 10% riskiest tickets. Other LDC have seen a 30% decrease in excavation damages as a result of this program.	\$ 2,280,000	\$ 2,348,400	\$ 2,418,852	\$ 2,491,418	\$ 2,566,160	\$ 12,104,830
3	Damage Prevention		Necessary to ensure all assets can be located. Prevents excavation damages and gives provides Company with location verification:						
		Locatability Investigations	<i>Proactive</i> portion of the program	\$ 853,760	\$ 879,373	\$ 905,754	\$ 932,927	\$ 960,915	\$ 4,532,730
		Repair Untoneable Assets	<i>Reactive</i> portion of the program.	\$ 670,700	\$ 690,821	\$ 711,546	\$ 732,892	\$ 754,879	\$ 3,560,837
4	Records	Map Services in GIS	Map physical locations of NC services, populate service data attributes, verify connection point between main and service, remediate service record gaps, perform field locate, create service card record, use newly created service card to map service in GIS.	\$ 3,000,000	\$ 3,090,000	\$ 3,182,700	\$ 3,278,181	\$ 3,376,526	\$ 15,927,407
5	Corrosion	Perform close interval surveys on high pressure distribution piping	Survey the ~600 miles of NC high pressure piping on a 5 year cycle, obtain instant off potentials, develop remediation projects.	\$ 500,000	\$ 515,000	\$ 530,450	\$ 546,364	\$ 562,754	\$ 2,654,568
6	Total			10,904,460	11,231,594	11,568,542	11,915,598	12,273,066	57,893,261

Annual cost Increase
3%

Average 11,578,652

1/19

Capital Structure for Piedmont

	[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
	Actuals @ 12/31/2018	Ratio @ 12/31/2018	Projected @ 12/31/2019	Projected @ 12/31/2019	Projected @ 06/30/2020	Projected @ 06/30/2020	Projected @ 12/31/2020	Projected @ 12/31/2020	Proposed Capital Structure	Proposed Cost Rates
1 Long-Term Debt	\$ 1,783,237,924	45.56%	\$ 2,376,734,116	49.09%	\$ 2,217,060,812	45.87%	\$ 2,513,689,768	47.99%	47.18%	4.55%
2 Short-Term Debt ⁽¹⁾	39,714,182	1.01%	39,788,868	0.82%	39,788,868	0.82%	39,788,868	0.76%	0.82%	2.82%
3 Common Equity	2,091,229,831	53.43%	2,425,216,239	50.09%	2,576,976,766	53.31%	2,684,835,012	51.25%	52.00%	10.60% ⁽²⁾
4 Total Capitalization	<u>\$ 3,914,181,937</u>	<u>100.00%</u>	<u>\$ 4,841,739,223</u>	<u>100.00%</u>	<u>\$ 4,833,826,446</u>	<u>100.00%</u>	<u>\$ 5,238,313,648</u>	<u>100.00%</u>	<u>100.00%</u>	

Notes:

(1) Piedmont's 13-month average natural gas inventory is shown as the proxy for per books Short Term Debt.

(2) Piedmont supports Witness Robert Hevert's recommended ROE of 10.60%

Long-Term Debt (a)	Principal Amount	Unamortized Debt Discount	Unamortized Debt Expense	Less Unamortized Debt Discount and Expense	Pro Forma LTD Total	Annual Cost		
						Coupon Interest	Debt Expense Amortization	Total
Senior Notes:								
4.24% - due 2021	\$160,000,000	0	326,696	326,696	159,673,304	6,784,000	134,341	6,918,341
3.47% - due 2027	\$100,000,000	0	465,542	465,542	99,534,458	3,470,000	64,510	3,524,510
3.57% - due 2027	\$200,000,000	0	953,166	953,166	199,046,834	7,140,000	111,634	7,251,634
4.65% - due 2043	\$300,000,000	117,600	2,560,034	2,677,634	297,322,366	13,950,000	108,937	14,058,937
4.10% - due 2034	\$250,000,000	341,777	1,858,760	2,200,537	247,799,463	10,250,000	140,038	10,390,038
3.60% - due 2025	\$150,000,000	65,236	884,211	949,447	149,050,553	5,400,000	142,417	5,542,417
3.64% - due 2046	\$300,000,000	336,668	2,953,817	3,290,485	296,709,515	10,920,000	118,220	11,038,220
4.10% - due TBD (b)	\$600,000,000	3,000,000	3,742,088	6,742,088	593,257,912	24,600,000	187,104	24,787,104
Medium-Term Notes:								
6.87% - due 2023	\$45,000,000	0	68,744	68,744	44,931,256	3,091,500	14,430	3,105,930
8.45% - due 2024	\$40,000,000	0	73,705	73,705	39,926,295	3,380,000	12,892	3,392,892
7.40% - due 2025	\$55,000,000	0	116,721	116,721	54,883,279	4,070,000	17,278	4,087,278
7.50% - due 2026	\$40,000,000	0	89,394	89,394	39,910,606	3,000,000	11,820	3,011,820
7.95% - due 2029	\$60,000,000	0	210,601	210,601	59,789,399	4,770,000	19,656	4,789,656
6.0% - due 2033	\$100,000,000	0	594,332	594,332	99,405,668	6,000,000	39,753	6,039,753
Unamortized Loss on Recquired Debt - 6.25% IQ Notes	0	0	3,673,482	3,673,482	(3,673,482)	0	238,280	238,280
Shelf Registration	0	0	833,310	833,310	(833,310)	0	0	0
	2,400,000,000	3,861,281	19,404,603	23,265,884	2,376,734,116	106,825,500	1,351,310	108,176,810

Embedded Cost of LTD 4.55%

(a) This schedule reflects the non-current portion of long term debt.

(b) A long term debt issuance of approximately \$600 million is forecasted for Q2 2019, tenor TBD. Interest rate assumes blended average rate of indicative pricing for Piedmont's senior unsecured notes with 10-year and 30-year tenors as of February 7, 2019.

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I/A

Piedmont Natural Gas Company, Inc. - Docket No. G-9, Sub 743
 2019 NC General Rate Case
 Short-Term Borrowing Costs

Exhibit_(JLS-3)

Projected InterCompany Money Pool Borrowings by Piedmont

	[A]	[B]	[C]
@ Month End	O/S Balance	Accrued Interest	Average Interest Rate [= Col B / Col A]
Jan 2019	220,018,585	487,578	
Feb 2019	197,302,200	486,874	
Mar 2019	263,762,238	537,909	
Apr 2019	289,757,865	645,773	
May 2019	101,707,364	456,709	
Jun 2019	36,758,315	161,543	
Jul 2019	118,955,223	194,642	
Aug 2019	187,754,525	383,387	
Sep 2019	239,929,631	534,605	
Oct 2019	314,824,256	693,442	
Nov 2019	377,405,437	865,287	
Dec 2019	361,871,754	924,096	
Average Bal. / Total Int.	\$ 225,837,283	\$ 6,371,847	2.82%

NC Approved ROE from 2008-2018

n Company	Service	Docket	Date of NCUC Order	NCUC Allowed Overall Cost Rate	%Equity	NCUC Allowed Return on Equity
1 PNG	GAS	Docket G-9, Sub 550	10/24/2008	8.55%	51.00%	10.60%
2 PSNC	GAS	Docket G-5, Sub 495	10/24/2008	8.54%	54.00%	10.60%
3 DEC	ELE	Docket E-7, Sub 909	12/7/2009	8.38%	52.50%	10.70%
4 DENC	ELE	Docket E-22, Sub 459	12/13/2010	8.22%	51.00%	10.70%
5 DEC	ELE	Docket E-7, Sub 989	1/27/2012	8.11%	53.00%	10.50%
6 DENC	ELE	Docket E-22, Sub 479	12/21/2012	7.80%	51.00%	10.20%
7 DEP	ELE	Docket E-2, Sub 1023	5/30/2013	7.55%	53.00%	10.20%
8 DEC	ELE	Docket E-7, Sub 1026	9/24/2013	7.88%	53.00%	10.20%
9 PNG	GAS	Docket G-9, Sub 631	12/17/2013	7.51%	50.66%	10.00%
10 PSNC	GAS	Docket G-5, Sub 565	10/26/2016	7.53%	52.00%	9.70%
11 DENC	ELE	Docket E-22, Sub 532	12/22/2016	7.37%	51.75%	9.90%
12 DEP	ELE	Docket E-2, Sub 1142	2/23/2018	7.09%	52.00%	9.90%
13 DEC	ELE	Docket E-7, Sub 1146	6/22/2018	7.35%	52.00%	9.90%

Total Pro forma Revenues for the Sale and Transportation of Gas

	(dekatherms)	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
	Rate Schedule										
1	101 - Residential Service										
2	Bills - Winter	3,358,241			47,083		3,403,324	10.00	34,033,237		34,033,237
3	Bills - Summer	4,644,245			65,106		4,709,351	10.00	47,083,510		47,083,510
4	DTs - Winter	31,358,695	(768,577)	30,590,118	433,628	31,023,748		8.7354	271,004,828	(145,055)	270,859,773
5	DTs - Summer	9,210,542	(1,038,575)	8,171,967	114,500	8,286,467		8.2350	68,239,060	2,618,729	70,857,789
6	Integrity Management Rider Revenues								52,247,466	3,698,925	55,946,391
7											
8											
9	Experimental Motor Vehicle Fuel										
10	143 / 101 - Residential Service										
11	Bills - Winter	-			-		-	10.00	-		-
12	Bills - Summer	-			-		-	10.00	-		-
13	DTs - Winter	-	-	-	-	-		8.7354	-	-	-
14	DTs - Summer	-	-	-	-	-		8.2350	-	-	-
15											
16											
17	<u>RESIDENTIAL SERVICE</u>										
18	Bills	8,000,486	-	-	112,189	-	8,112,675				
19	Winter Dts	31,358,695	(768,577)	30,590,118	433,628	31,023,748					
20	Summer Dts	9,210,542	(1,038,575)	8,171,967	114,500	8,286,467					
21	Total Dts	40,569,237	(1,807,152)	38,762,085	548,128	39,310,213					
22											
23	<u>Revenues</u>								472,618,101	6,172,600	478,790,701

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Total Pro forma Revenues for the Sale and Transportation of Gas

	(dekatherms)	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
	Rate Schedule										
24											
25											
26	[102- Small General Service										
27	Bills	842,661			11,817		854,478	22.00	18,798,526		18,798,526
28	DTs - Winter	18,078,392	(200,051)	17,878,341	250,725	18,129,066		7.3453	133,163,428	(7,026,750)	126,136,678
29	DTs - Summer	9,446,837	(647,437)	8,799,400	123,402	8,922,803		6.9557	62,064,338	(1,685,085)	60,389,243
30	Integrity Management Rider Revenues								20,721,972	1,487,038	22,189,010
31	Minimum Margin Agreement Revenues								55,648	(55,648)	-
32											
33											
34	Experimental Motor Vehicle Fuel										
35	[143 / 102- Small General Service										
36	Bills	102			(6)		96	22.00	2,119		2,119
37	Winter Dts	5,113	-	5,113	(284)	4,829		7.3453	35,467	(9,918)	25,549
38	Summer Dts	8,100	-	8,100	(450)	7,650		6.9557	53,208	(23,254)	29,955
39											
40											
41	[152- Medium General Service										
42	Bills	5,662			(177)		5,485	75.00	411,355		411,355
43	Winter - First 500 DTs	1,053,649	(6,616)	1,047,031	(32,781)	1,014,250		6.9907	7,090,314	(229,724)	6,860,590
44	Winter - Over 500 DTs	1,710,375	(10,743)	1,699,633	(53,213)	1,646,419		6.6657	10,974,538	(372,909)	10,601,629
45	Total Winter DTs	2,764,024	(17,360)	2,746,664	(85,995)	2,660,669			18,064,852	(602,633)	17,462,219
46											
47											
48	Summer - First 500 DTs	1,249,687	(32,262)	1,217,425	(38,116)	1,179,309		6.4157	7,566,091	(272,508)	7,293,583
49	Summer - Over 500 DTs	1,137,892	(29,378)	1,108,515	(34,706)	1,073,809		6.1157	6,567,094	(248,130)	6,318,964
50	Total Summer DTs	2,387,579	(61,638)	2,325,940	(72,822)	2,253,118			14,133,186	(520,638)	13,612,548
51											
52	Integrity Management Rider Revenues								3,018,940	213,730	3,232,670
53	Minimum Margin Agreement Revenues								95,687	(49,428)	46,559
54											
55											
56	Experimental Motor Vehicle Fuel										
57	[143 / 152- Medium General Service										
58	Bills	-	-	-	-	-	-	75.00	-	-	-
59	Winter - First 500 DTs	-	-	-	-	-		6.9907	-	-	-
60	Winter - Over 500 DTs	-	-	-	-	-		6.6657	-	-	-
61	Total Winter DTs	-	-	-	-	-			-	-	-
62											
63											
64	Summer - First 500 DTs	-	-	-	-	-		6.4157	-	-	-
65	Summer - Over 500 DTs	-	-	-	-	-		6.1157	-	-	-
66	Total Summer DTs	-	-	-	-	-			-	-	-
67											
68											
69	Experimental Motor Vehicle Fuel										
70	[144- Medium General Transportation Service										
71	Bills	-	-	-	-	-	-	75.00	-	-	-
72	Winter - First 500 DTs	-	-	-	-	-		4.2407	-	-	-
73	Winter - Over 500 DTs	-	-	-	-	-		3.9157	-	-	-
74	Total Winter DTs	-	-	-	-	-			-	-	-
75											
76											
77	Summer - First 500 DTs	-	-	-	-	-		3.6657	-	-	-
78	Summer - Over 500 DTs	-	-	-	-	-		3.3657	-	-	-
79	Total Summer DTs	-	-	-	-	-			-	-	-
80											
81											
82	[142 - Natural Gas Vehicle Fuel - Company Stations										
83	DTs - Winter	30,503	-	30,503	-	30,503		6.8507	208,968		208,968
84	DTs - Summer	47,315	-	47,315	-	47,315		6.8507	324,139		324,139
85	Compression Charge Revenues							4.0000	311,272		311,272
86	Integrity Management Rider Revenues								50,114	3,548	53,661
87											
88	SMALL & MEDIUM GENERAL / NGV FUEL SERVICE										
89	Bills	848,425	-	-	11,634	-	860,059				
90	Winter Dts	20,878,032	(217,411)	20,660,621	164,446	20,825,067					
91	Summer Dts	11,889,830	(709,075)	11,180,755	50,130	11,230,885					
92	Total Dts	32,767,862	(926,486)	31,841,375	214,576	32,055,951					
93											
94	Revenues								271,513,519	(8,269,049)	263,244,471

	(dekatherms)	Test Period Actual	Normalized Adjustment	Normalized	Growth Adjustment Thru 6/30/2019	Proforma Dekatherms	Proforma Bills	Revenue Clean Rates	Calculated Revenues	Revenue Adjustments	Proforma Revenues
	Rate Schedule	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
95											
96											
97	103 - Large General Sales Service										
98	Bills	773									
99	Demand	148,524			46		819	350.00	286,487		286,487
100	Winter - First 1,500 DTs	439,773	-	439,773	8,749	157,272		14,7500	2,319,766		2,319,766
101	Winter - Next 3,000 DTs	416,993	-	416,993	25,904	465,678		4,4534	2,073,849		2,073,849
102	Winter - Next 9,000 DTs	179,657	-	179,657	24,563	441,556		3,8734	1,710,323		1,710,323
103	Winter - Next 16,500 DTs	36,110	-	36,110	10,583	199,240		3,5734	679,802		679,802
104	Winter - Next 30,000 DTs	-	-	-	2,127	38,237		3,3534	128,225		128,225
105	Winter - Over 60,000 DTs	-	-	-	-	-		3,3534	-		-
106	Total Winter DTs	1,072,534	-	1,072,534	-	-		2,9834	-		-
107									4,592,199		4,592,199
108	Summer - First 1,500 DTs	576,369	-	576,369	33,951	610,320		3,8974	2,378,659		2,378,659
109	Summer - Next 3,000 DTs	371,464	-	371,464	21,881	393,345		3,3974	1,336,351		1,336,351
110	Summer - Next 9,000 DTs	114,445	-	114,445	8,741	121,186		3,1974	387,481		387,481
111	Summer - Next 16,500 DTs	78,270	-	78,270	4,610	82,881		3,0724	254,642		254,642
112	Summer - Next 30,000 DTs	-	-	-	-	-		2,9474	-		-
113	Summer - Over 60,000 DTs	-	-	-	-	-		2,8974	-		-
114	Total Summer DTs	1,140,548	-	1,140,548	67,183	1,207,731			4,357,133		4,357,133
115											
116	Integrity Management Rider Revenues								183,480	12,990	196,470
117	Minimum Margin Agreement Revenues								78,618	-	78,618
118											
119											
120	Experimental Motor Vehicle Fuel										
121	143 / 103 - Large General Sales Service										
122	Bills	43			19		62	350.00	21,572		21,572
123	Demand	7,040			3,051	10,090		14,7500	148,831		148,831
124	Winter - First 1,500 DTs	24,073	-	24,073	10,432	34,505		4,4534	153,663		153,663
125	Winter - Next 3,000 DTs	27,014	-	27,014	11,706	38,720		3,8734	149,979		149,979
126	Winter - Next 9,000 DTs	4,683	-	4,683	2,116	6,998		3,5734	25,008		25,008
127	Winter - Next 16,500 DTs	-	-	-	-	-		3,3534	-		-
128	Winter - Next 30,000 DTs	-	-	-	-	-		3,3534	-		-
129	Winter - Over 60,000 DTs	-	-	-	-	-		2,9834	-		-
130	Total Winter DTs	55,970	-	55,970	24,254	80,223			328,650		328,650
131											
132	Summer - First 1,500 DTs	37,372	-	37,372	16,195	53,567		3,8974	208,772		208,772
133	Summer - Next 3,000 DTs	48,935	-	48,935	21,205	70,140		3,3974	238,293		238,293
134	Summer - Next 9,000 DTs	14,538	-	14,538	6,300	20,838		3,1974	66,627		66,627
135	Summer - Next 16,500 DTs	-	-	-							

	(dekatherms)	Test Period Actual	Normalized Adjustment	Normalized	Growth Adjustment Thru 6/30/2019	Proforma Dekatherms	Proforma Bills	Revenue Clean Rates	Calculated Revenues	Revenue Adjustments	Proforma Revenues
	Rate Schedule	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Experimental Motor Vehicle Fuel											
143 / 104 - Interruptible Sales Service	Bills	-	-	-	-	-	-	350.00	-	-	-
Winter - First 1,500 DTs		-	-	-	-	-	-	4.6581	-	-	-
Winter - Next 3,000 DTs		-	-	-	-	-	-	4.4031	-	-	-
Winter - Next 9,000 DTs		-	-	-	-	-	-	4.1031	-	-	-
Winter - Next 16,500 DTs		-	-	-	-	-	-	3.7431	-	-	-
Winter - Next 30,000 DTs		-	-	-	-	-	-	3.5581	-	-	-
Winter - Over 60,000 DTs		-	-	-	-	-	-	3.4247	-	-	-
Total Winter DTs		-	-	-	-	-	-	-	-	-	-
Summer - First 1,500 DTs		-	-	-	-	-	-	4.3731	-	-	-
Summer - Next 3,000 DTs		-	-	-	-	-	-	4.0631	-	-	-
Summer - Next 9,000 DTs		-	-	-	-	-	-	3.6031	-	-	-
Summer - Next 16,500 DTs		-	-	-	-	-	-	3.6781	-	-	-
Summer - Next 30,000 DTs		-	-	-	-	-	-	3.5231	-	-	-
Summer - Over 60,000 DTs		-	-	-	-	-	-	3.3772	-	-	-
Total Summer DTs		-	-	-	-	-	-	-	-	-	-
113 - Large General Transportation Service											
Bills		3,611	-	-	(106)	-	3,505	350.00	1,226,818	-	1,226,818
Demand		1,661,230	-	-	(48,676)	1,612,554	-	2,7500	4,434,624	-	4,434,524
Standby DTs		-	-	-	-	-	-	12.0000	-	-	-
Winter - First 1,500 DTs		2,010,192	-	2,010,192	(68,901)	1,951,291	-	1.7034	3,323,829	-	3,323,829
Winter - Next 3,000 DTs		2,840,512	-	2,840,512	(83,230)	2,757,282	-	1.1234	3,097,530	-	3,097,530
Winter - Next 9,000 DTs		2,910,877	-	2,910,877	(95,292)	2,825,585	-	0.8234	2,326,587	-	2,326,587
Winter - Next 16,500 DTs		1,933,655	-	1,933,655	(56,658)	1,876,997	-	0.6034	1,132,580	-	1,132,580
Winter - Next 30,000 DTs		1,701,371	-	1,701,371	(49,852)	1,651,519	-	0.6034	996,627	-	996,627
Winter - Over 60,000 DTs		2,782,340	-	2,782,340	(81,526)	2,700,814	-	0.2334	630,370	-	630,370
Total Winter DTs		14,178,947	-	14,178,947	(416,458)	13,763,488	-	-	11,507,423	-	11,507,423
Summer - First 1,500 DTs		2,712,613	-	2,712,613	(78,482)	2,633,130	-	1.1474	3,021,254	-	3,021,254
Summer - Next 3,000 DTs		3,343,969	-	3,343,969	(97,982)	3,245,987	-	0.6474	2,101,452	-	2,101,452
Summer - Next 9,000 DTs		3,388,085	-	3,388,085	(99,275)	3,288,811	-	0.4474	1,471,414	-	1,471,414
Summer - Next 16,500 DTs		2,360,563	-	2,360,563	(69,167)	2,291,396	-	0.3224	738,746	-	738,746
Summer - Next 30,000 DTs		2,129,656	-	2,129,656	(62,401)	2,067,254	-	0.1974	408,076	-	408,076
Summer - Over 60,000 DTs		3,196,566	-	3,196,566	(93,663)	3,102,903	-	0.0529	164,144	-	164,144
Total Summer DTs		17,131,451	-	17,131,451	(601,970)	16,629,481	-	-	7,605,085	-	7,605,085
Integrity Management Rider Revenues									1,785,198	127,093	1,822,292
Minimum Margin Agreement Revenues									628,660	(247,500)	381,160
Experimental Motor Vehicle Fuel											
143 / 113 - Large General Transportation Service											
Bills		86	-	-	37	-	123	350.00	43,143	-	43,143
Demand		30,									

Total Pro forma Revenues for the Sale and Transportation of Gas

	(dekatherms)	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
	Rate Schedule										
237	114 - Interruptible Transportation Service										
238	Bills	2,938			(11)		2,927	350.00	1,024,464		1,024,464
239	Winter - First 1,500 DTs	1,593,934	-	1,593,934	(5,945)	1,587,989		1.0081	1,600,851		1,600,851
240	Winter - Next 3,000 DTs	2,420,506	-	2,420,506	(9,029)	2,411,477		0.9356	2,256,178		2,256,178
241	Winter - Next 9,000 DTs	3,101,609	-	3,101,609	(11,570)	3,090,338		0.7631	2,327,334		2,327,334
242	Winter - Next 16,500 DTs	2,221,916	-	2,221,916	(8,288)	2,213,628		0.4931	1,091,540		1,091,540
243	Winter - Next 30,000 DTs	1,991,676	-	1,991,676	(7,429)	1,984,247		0.3081	611,346		611,346
244	Winter - Over 60,000 DTs	1,878,837	-	1,878,837	(6,262)	1,872,575		0.1747	292,199		292,199
245	Total Winter DTs	13,008,778	-	13,008,778	(48,524)	12,960,254			8,179,448	-	8,179,448
246											
247	Summer - First 1,500 DTs	2,298,148	-	2,298,148	(8,572)	2,289,575		1.1231	2,571,422		2,571,422
248	Summer - Next 3,000 DTs	3,359,393	-	3,359,393	(12,627)	3,346,766		0.8531	2,854,358		2,854,358
249	Summer - Next 9,000 DTs	3,955,977	-	3,955,977	(14,756)	3,941,221		0.7031	2,771,072		2,771,072
250	Summer - Next 16,500 DTs	2,590,797	-	2,590,797	(9,694)	2,581,133		0.4739	1,223,199		1,223,199
251	Summer - Next 30,000 DTs	2,332,451	-	2,332,451	(8,700)	2,323,751		0.4459	1,036,160		1,036,160
252	Summer - Over 60,000 DTs	1,610,935	-	1,610,935	(6,009)	1,604,926		0.1481	237,690		237,690
253	Total Summer DTs	16,146,700	-	16,146,700	(60,228)	16,086,472			10,693,902	-	10,693,902
254											
255	Integrity Management Rider Revenues								2,550,135	180,540	2,730,675
256	Minimum Margin Agreement Revenues								1,052,269	(188,719)	863,550
257											
258											
259	Experimental Motor Vehicle Fuel										
260	143 / 114 - Interruptible Transportation Service										
261	Bills	-	-	-	-	-	-	350.00	-	-	-
262	Winter - First 1,500 DTs	-	-	-	-	-	-	1.0081	-	-	-
263	Winter - Next 3,000 DTs	-	-	-	-	-	-	0.9356	-	-	-
264	Winter - Next 9,000 DTs	-	-	-	-	-	-	0.7531	-	-	-
265	Winter - Next 16,500 DTs	-	-	-	-	-	-	0.4931	-	-	-
266	Winter - Next 30,000 DTs	-	-	-	-	-	-	0.3081	-	-	-
267	Winter - Over 60,000 DTs	-	-	-	-	-	-	0.1747	-	-	-
268	Total Winter DTs	-	-	-	-	-	-	-	-	-	-
269											
270	Summer - First 1,500 DTs	-	-	-	-	-	-	1.1231	-	-	-
271	Summer - Next 3,000 DTs	-	-	-	-	-	-	0.8531	-	-	-
272	Summer - Next 9,000 DTs	-	-	-	-	-	-	0.7031	-	-	-
273	Summer - Next 16,500 DTs	-	-	-	-	-	-	0.4739	-	-	-
274	Summer - Next 30,000 DTs	-	-	-	-	-	-	0.4459	-	-	-
275	Summer - Over 60,000 DTs	-	-	-	-	-	-	0.1481	-	-	-
276	Total Summer DTs	-	-	-	-	-	-	-	-	-	-
277											
278											
279	LARGE GENERALSERVICE										
280	Bills	7,646	-	-	(18)	-	7,628				
281	Demand Dts	1,847,710	-	-	(29,260)	1,818,450					
282	Winter Dts	29,023,084	-	29,023,084	(315,581)	28,707,503					
283	Summer Dts	35,358,916	-	35,358,916	(364,230)	34,994,685					
284	Total Dts	64,381,999	-	64,381,999	(679,811)	63,702,188					
285											
286	Revenues								69,625,804	(165,338)	69,470,466

Total Pro forma Revenues for the Sale and Transportation of Gas

	(dekatherms)	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
287	Rate Schedule										
288											
289	105 - Outdoor Gas Light Service										
290	Bills	744			(43)		701				
291	Fixtures	5,537			(322)		5,215	18.50	88,041		88,041
292	DTs - Winter	3,694	-	3,694	(215)	3,479					
293	DTs - Summer	5,165	-	5,165	(301)	4,864					
294											
295											
296	T-10 (675) - Military Operations Transportation										
297	Bills	12			-		12		-		
298	Demand	84,000			-	84,000		10.00	840,000		840,000
299	DTs - Winter	835,938	-	835,938	20,932	856,870		1.2684	1,088,854		1,088,854
300	DTs - Summer	479,521	-	479,521	6,932	486,453		0.3584	174,345		174,345
301	Integrity Management Rider Revenues								176,206	12,475	188,681
302											
303	12 (667) Military Installations in Onslow County - Sales										
304	Bills	-			-		-				
305	DTs - Winter	-	-	-	-	-		6.8602	-		-
306	DTs - Summer	-	-	-	-	-		5.1513	-		-
307											
308											
309	T-12 (676) Military Installation in Onslow County - Transportation										
310	Bills	-			-		-				
311	DTs - Winter	-	-	-	-	-		2.9402	-		-
312	DTs - Summer	-	-	-	-	-		2.4013	-		-
313											
314											
315	Power Generation Contracts										
316	Bills	173			(12)		161				
317	DTs - Winter	123,110,706	-	123,110,706	5,037,620	128,148,326			35,744,668	(752,204)	34,992,463
318	DTs - Summer	194,333,184	-	194,333,184	11,464,976	205,798,160			50,130,768	(1,342,357)	48,788,411
319											
320											
321	Municipals Contracts										
322	Bills	37			-		37				
323	DTs - Winter	4,656,388	-	4,656,388	-	4,656,388			4,442,201	(247,120)	4,195,081
324	DTs - Summer	2,685,539	-	2,685,539	-	2,685,539			5,685,737	(345,959)	5,339,768
325											
326											
327	Special Contracts Military										
328	Bills	20			4		24				
329	DTs - Winter	414,340	-	414,340	63,349	477,690			3,042,891	55,610	3,098,501
330	DTs - Summer	336,223	-	336,223	66,297	402,520			3,259,414	51,019	3,310,432
331											
332											
333	Special Contracts										
334	Bills	147			14		161				
335	DTs - Winter	2,066,166	-	2,066,166	-	2,066,166			1,478,188	(248,831)	1,229,337
336	DTs - Summer	2,655,109	-	2,655,109	-	2,655,109			2,009,648	(578,090)	1,431,558
337											
338											
339	SPECIAL TARIFFS & CONTRACTS										
340	Bills	1,133	-	-	(37)	-	1,096				
341	Demand Dts	84,000	-	-	-	84,000					
342	Winter Dts	131,087,232	-	131,087,232	5,121,885	136,208,919					
343	Summer Dts	200,494,740	-	200,494,740	11,537,905	212,032,645					
344	Total Dts	331,581,973	-	331,581,973	16,659,591	348,241,564					
345											
346	Revenues								108,166,838	(3,395,468)	104,761,470

Total Pro forma Revenues for the Sale and Transportation of Gas

	(dekatherms)	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
	Rate Schedule										
347											
348											
349	GRAND TOTAL - ALL TARIFFS & CONTRACTS										
350	Bills	8,857,690	-	-	123,768	-	8,981,458				
351	Demand Dts	1,931,710	-	-	(29,260)	1,902,450					
352	Winter Dts	212,347,043	(985,988)	211,361,055	6,404,179	216,785,234					
353	Summer Dts	256,954,028	(1,747,650)	255,206,378	11,338,305	266,544,682					
354	Total Dts	469,301,071	(2,733,638)	466,567,432	18,742,484	483,309,916					
355											
356	Revenues								921,914,362	(5,647,255)	916,267,107
357											
358											
359	SALES AND TRANSPORTATION										
360	Total Sales								766,314,026	(2,065,697)	764,248,329
361	Total Transportation								165,600,336	(3,581,558)	162,018,778
362	Total Annual								921,914,362	(5,647,255)	916,267,107

Components of Pro forma Revenues

	(dekatherms)	Proforma	Proforma	Margin	Calculated	Revenue	Proforma	COG Demand	Proforma	COG Demand	COG Commodity	Proforma
	Rate Schedule	Dekatherms	Bills	Clean	Margin	Adjustments	Margin	"Clean" Rates	COG Demand	"Clean" Rates	Commodity	COG Commodity
		(1)	(2)	Rates	Revenues	(5)	Revenues	(7)	Revenues	(9)	Revenues	Revenues
				(3)	(4)		(6)		(8)		(10)	(10)
1	101 - Residential Service											
2	Bills - Winter		3,403,324	10.00	34,033,237		34,033,237					
3	Bills - Summer		4,709,351	10.00	47,093,510		47,093,510					
4	DTs - Winter	31,023,748		4.8202	143,335,910	(145,055)	143,190,855	1.3129	40,731,078	2.8023	88,937,843	
5	DTs - Summer	8,288,467		4.8202	39,285,137	2,818,729	40,903,866	0.8125	6,732,755	2.8023	23,221,168	
6	Integrity Management Rider Revenues				52,247,496	3,688,825	55,946,381					
7												
8												
9	Experimental Motor Vehicle Fuel											
10	143 / 101 - Residential Service											
11	Bills - Winter		-	10.00	-		-					
12	Bills - Summer		-	10.00	-		-					
13	DTs - Winter	-		4.8202	-	-	-	1.3129	-	2.8023	-	
14	DTs - Summer	-		4.8202	-	-	-	0.8125	-	2.8023	-	
15												
16												
17	<u>RESIDENTIAL SERVICE</u>											
18	Bills	-	8,112,875									
19	Winter Dts	31,023,748										
20	Summer Dts	8,288,467										
21	Total Dts	39,310,215										
22												
23	<u>Revenues</u>				314,985,280	6,172,800	321,167,880		47,463,831		110,169,010	

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Components of Pro forma Revenues

	(dekatherms)	Proforma	Proforma	Margin	Calculated	Revenue	Proforma	COG Demand	Proforma	COG Commodity	Proforma
	Rate Schedule	Dekatherms	Bills	Clean	Margin	Adjustments	Margin	"Clean" Rates	COG Demand	"Clean" Rates	COG Commodity
		(1)	(2)	Rates	Revenues	(5)	Revenues	(7)	Revenues	(9)	Revenues
				(3)	(4)		(6)		(8)		(10)
24											
25											
26	102- Small General Service										
27	Bills		854,478	22.00	18,798,526		18,798,526				
28	DTs - Winter	18,129,068		3.4437	62,431,064	(7,026,750)	55,404,314	1.0993	19,929,282	2.8023	50,803,082
29	DTs - Summer	8,922,803		3.4437	30,727,455	(1,665,095)	29,062,361	0.7097	6,332,513	2.8023	25,004,370
30	Integrity Management Rider Revenues				20,721,972	1,467,038	22,189,010				
31	Minimum Margin Agreement Revenues				55,648	(55,648)	-				
32											
33											
34	Experimental Motor Vehicle Fuel										
35	143 / 102- Small General Service										
36	Bills		96	22.00	2,119		2,119				
37	Winter Dts	4,829		3.4437	16,828	(9,918)	6,710	1.0993	5,308	2.8023	13,531
38	Summer Dts	7,650		3.4437	26,343	(23,254)	3,089	0.7097	5,429	2.8023	21,437
39											
40											
41	152- Medium General Service										
42	Bills		5,485	75.00	411,355		411,355				
43	Winter - First 500 DTs	1,014,250		3.2319	3,277,953	(229,724)	3,048,229	0.9585	970,130	2.8023	2,842,232
44	Winter - Over 500 DTs	1,846,419		3.2319	5,321,083	(372,909)	4,948,174	0.8315	1,039,714	2.8023	4,813,791
45	Total Winter DTs	2,860,669			8,599,016	(602,633)	7,996,383		2,009,844		7,455,893
46											
47											
48	Summer - First 500 DTs	1,179,309		2.7134	3,199,836	(272,508)	2,927,328	0.9000	1,061,378	2.8023	3,304,777
49	Summer - Over 500 DTs	1,073,809		2.7134	2,913,674	(248,130)	2,665,544	0.6000	844,285	2.8023	3,009,135
50	Total Summer DTs	2,253,118			6,113,510	(520,638)	5,592,872		1,705,663		6,313,512
51											
52	Integrity Management Rider Revenues				3,018,840	213,730	3,232,570				
53	Minimum Margin Agreement Revenues				95,987	(49,428)	46,559				
54											
55											
56	Experimental Motor Vehicle Fuel										
57	143 / 152- Medium General Service										
58	Bills			75.00	-		-				
59	Winter - First 500 DTs	-		3.2319	-	-	-	0.9585	-	2.8023	-
60	Winter - Over 500 DTs	-		3.2319	-	-	-	0.8315	-	2.8023	-
61	Total Winter DTs	-			-	-	-		-		-
62											
63											
64	Summer - First 500 DTs	-		2.7134	-	-	-	0.9000	-	2.8023	-
65	Summer - Over 500 DTs	-		2.7134	-	-	-	0.6000	-	2.8023	-
66	Total Summer DTs	-			-	-	-		-		-
67											
68											
69	Experimental Motor Vehicle Fuel										
70	144- Medium General Transportation Service										
71	Bills			75.00	-		-				
72	Winter - First 500 DTs	-		3.2319	-	-	-	0.9585	-	0.0523	-
73	Winter - Over 500 DTs	-		3.2319	-	-	-	0.8315	-	0.0523	-
74	Total Winter DTs	-			-	-	-		-		-
75											
76											
77	Summer - First 500 DTs	-		2.7134	-	-	-	0.9000	-	0.0523	-
78	Summer - Over 500 DTs	-		2.7134	-	-	-	0.6000	-	0.0523	-
79	Total Summer DTs	-			-	-	-		-		-
80											
81											
82	142 - Natural Gas Vehicle Fuel - Company Stations										
83	DTs - Winter	30,503		2.7035	82,465		82,465	1.3449	41,024	2.8023	85,479
84	DTs - Summer	47,315		2.7035	127,915		127,915	1.3449	63,834	2.8023	132,590
85	Compression Charge Revenues			4.0000	311,272		311,272				
86	Integrity Management Rider Revenues				50,114	3,548	53,661				
87											
88	SMALL & MEDIUM GENERAL / NGV FUEL SERVICE										
89	Bills		860,059								
90	Winter Dts	20,825,067									
91	Summer Dts	11,230,885									
92	Total Dts	32,055,951									
93											
94	Revenues				151,690,430	(8,269,049)	143,321,382		30,092,686		89,830,393

Components of Pro forma Revenues

	(dekatherms)	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
	Rate Schedule										
95											
96											
97	103 - Large General Sales Service										
98	Bills		819	350.00	288,487		288,487				
99	Demand	157,272		2.0000	314,545		314,545	12.7500	2,005,221	-	-
100	Winter - First 1,500 DTs	465,878		0.7543	351,281		351,281	0.8968	417,820	2.8023	1,304,086
101	Winter - Next 3,000 DTs	441,556		0.1793	79,171		79,171	0.8918	393,760	2.8023	1,237,372
102	Winter - Next 9,000 DTs	190,240		0.2243	42,871		42,871	0.5468	104,023	2.8023	533,109
103	Winter - Next 18,500 DTs	38,237		0.1073	4,103		4,103	0.4438	16,970	2.8023	107,153
104	Winter - Next 30,000 DTs	-		0.1143	-		-	0.4368	-	2.8023	-
105	Winter - Over 60,000 DTs	-		0.0843	-		-	0.0968	-	2.8023	-
106	Total Winter DTs	1,135,711			477,205		477,205		932,392		3,182,602
107											
108	Summer - First 1,500 DTs	610,320		0.2595	158,378		158,378	0.8356	509,893	2.8023	1,710,298
109	Summer - Next 3,000 DTs	393,345		0.0095	3,737		3,737	0.5856	230,343	2.8023	1,102,271
110	Summer - Next 9,000 DTs	121,186		0.0345	4,181		4,181	0.3606	43,700	2.8023	339,600
111	Summer - Next 18,500 DTs	82,881		0.0045	373		373	0.2656	22,013	2.8023	232,258
112	Summer - Next 30,000 DTs	-		0.0095	-		-	0.1356	-	2.8023	-
113	Summer - Over 60,000 DTs	-		0.0945	-		-	0.0006	-	2.8023	-
114	Total Summer DTs	1,207,731			166,669		166,669		806,039		3,384,428
115											
116	Integrity Management Rider Revenues				183,480	12,990	196,470				
117	Minimum Margin Agreement Revenues				78,618	-	78,618				
118											
119											
120	Experimental Motor Vehicle Fuel										
121	143 / 103 - Large General Sales Service										
122	Bills		62	350.00	21,572		21,572				
123	Demand	10,090		2.0000	20,180		20,180	12.7500	128,651	-	-
124	Winter - First 1,500 DTs	34,505		0.7543	26,027		26,027	0.8968	30,944	2.8023	98,692
125	Winter - Next 3,000 DTs	38,720		0.1793	6,943		6,943	0.8918	34,531	2.8023	108,506
126	Winter - Next 9,000 DTs	6,998		0.2243	1,570		1,570	0.5468	3,927	2.8023	18,612
127	Winter - Next 18,500 DTs	-		0.1073	-		-	0.4438	-	2.8023	-
128	Winter - Next 30,000 DTs	-		0.1143	-		-	0.4368	-	2.8023	-
129	Winter - Over 60,000 DTs	-		0.0843	-		-	0.0968	-	2.8023	-
130	Total Winter DTs	80,223			34,539		34,539		69,301		224,810
131											
132	Summer - First 1,500 DTs	53,597		0.2595	13,901		13,901	0.8356	44,791	2.8023	150,111
133	Summer - Next 3,000 DTs	70,140		0.0095	666		666	0.5856	41,074	2.8023	196,553
134	Summer - Next 9,000 DTs	20,838		0.0345	719		719	0.3606	7,514	2.8023	58,384
135	Summer - Next 18,500 DTs	-		0.0045	-		-	0.2656	-	2.8023	-
136	Summer - Next 30,000 DTs	-		0.0095	-		-	0.1356	-	2.8023	-
137	Summer - Over 60,000 DTs	-		0.0945	-		-	0.0006	-	2.8023	-
138	Total Summer DTs	144,545			15,285		15,285		93,349		405,058
139											
140	Integrity Management Rider Revenues				-	-	-				
141	Minimum Margin Agreement Revenues				-	-	-				
142	Compression Charge Revenues				144,522	-	144,522				
143											
144											
145	104 - Interruptible Sales Service										
146	Bills		182	350.00	67,216		67,216				
147	Winter - First 1,500 DTs	113,488		0.7640	85,570		85,570	1.1018	125,041	2.8023	318,027
148	Winter - Next 3,000 DTs	168,727		0.1793	30,202		30,202	1.4218	239,898	2.8023	472,823
149	Winter - Next 9,000 DTs	137,274		0.2240	30,749		30,749	1.0768	147,617	2.8023	384,684
150	Winter - Next 18,500 DTs	6,724		0.1070	719		719	0.8338	5,607	2.8023	18,843
151	Winter - Next 30,000 DTs	-		0.1140	-		-	0.6418	-	2.8023	-
152	Winter - Over 60,000 DTs	-		0.0840	-		-	0.5384	-	2.8023	-
153	Total Winter DTs	426,213			147,241		147,241		518,361		1,194,376
154											
155	Summer - First 1,500 DTs	151,215		0.5859	90,109		90,109	0.9748	147,420	2.8023	423,751
156	Summer - Next 3,000 DTs	180,569		0.3959	63,569		63,569	0.8549	137,271	2.8023	449,684
157	Summer - Next 9,000 DTs	134,731		0.2859	39,867		39,867	0.8049	109,445	2.8023	377,558
158	Summer - Next 18,500 DTs	4,303		0.1959	843		843	0.6799	2,826	2.8023	12,080
159	Summer - Next 30,000 DTs	-		0.0859	-		-	0.6549	-	2.8023	-
160	Summer - Over 60,000 DTs	-		-	-		-	0.5749	-	2.8023	-
161	Total Summer DTs	450,819			194,389		194,389		398,081		1,293,330
162											
163	Integrity Management Rider Revenues				84,870	6,008	90,878				
164	Minimum Margin Agreement Revenues				-	-	-				

	(dekatherms)	Proforma Dekatherms	Proforma Bills	Margin Clean Rates	Calculated Margin Revenues	Revenue Adjustments	Proforma Margin Revenues	COG Demand "Clean" Rates	Proforma COG Demand Revenues	COG Commodity "Clean" Rates	Proforma COG Commodity Revenues
	Rate Schedule	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
185											
186											
187	Experimental Motor Vehicle Fuel										
188	143 / 104 - Interruptible Sales Service										
189	Bills		-	350.00	-		-				
190											
191	Winter - First 1,500 DTs	-		0.7540	-		-	1.1018	-	2.8023	-
192	Winter - Next 3,000 DTs	-		0.1780	-		-	1.4218	-	2.8023	-
193	Winter - Next 9,000 DTs	-		0.2240	-		-	1.0758	-	2.8023	-
194	Winter - Next 16,500 DTs	-		0.1070	-		-	0.8338	-	2.8023	-
195	Winter - Next 30,000 DTs	-		0.1140	-		-	0.6418	-	2.8023	-
196	Winter - Over 60,000 DTs	-		0.0940	-		-	0.5384	-	2.8023	-
197	Total Winter DTs	-			-	-	-		-		-
198											
199	Summer - First 1,500 DTs	-		0.5958	-		-	0.9749	-	2.8023	-
200	Summer - Next 3,000 DTs	-		0.3859	-		-	0.8549	-	2.8023	-
201	Summer - Next 9,000 DTs	-		0.2959	-		-	0.8049	-	2.8023	-
202	Summer - Next 16,500 DTs	-		0.1959	-		-	0.6799	-	2.8023	-
203	Summer - Next 30,000 DTs	-		0.0859	-		-	0.8549	-	2.8023	-
204	Summer - Over 60,000 DTs	-		-	-		-	0.5749	-	2.8023	-
205	Total Summer DTs	-			-	-	-		-		-
206											
207	113 - Large General Transportation Service										
208	Bills		3,505	350.00	1,228,818		1,228,818		-		-
209	Demand	1,012,554		2.0000	3,225,109		3,225,109	0.7500	1,209,416	-	-
210								12.0000			
211	Standby DTs	-		-	-		-				
212	Winter - First 1,500 DTs	1,951,291		0.7543	1,471,859		1,471,859	0.8968	1,749,018	0.0523	102,053
213	Winter - Next 3,000 DTs	2,757,282		0.1793	494,381		494,381	0.8918	2,458,944	0.0523	144,208
214	Winter - Next 9,000 DTs	2,825,585		0.2243	633,779		633,779	0.5468	1,545,030	0.0523	147,778
215	Winter - Next 16,500 DTs	1,876,897		0.1073	201,402		201,402	0.4438	833,011	0.0523	98,167
216	Winter - Next 30,000 DTs	1,651,519		0.1143	188,769		188,769	0.4368	721,384	0.0523	86,374
217	Winter - Over 60,000 DTs	2,709,814		0.0843	227,678		227,678	0.0968	281,439	0.0523	141,253
218	Total Winter DTs	13,763,488			3,217,887	-	3,217,887		7,589,725		719,830
219											
220	Summer - First 1,500 DTs	2,633,130		0.2585	863,297		863,297	0.8358	2,200,244	0.0523	137,713
221	Summer - Next 3,000 DTs	3,245,987		0.0895	30,837		30,837	0.5858	1,900,850	0.0523	189,785
222	Summer - Next 9,000 DTs	3,289,811		0.0345	113,484		113,484	0.3808	1,185,945	0.0523	172,005
223	Summer - Next 16,500 DTs	2,291,396		0.0045	10,311		10,311	0.2658	680,595	0.0523	119,840
224	Summer - Next 30,000 DTs	2,067,254		0.0095	19,639		19,639	0.1358	280,320	0.0523	108,117
225	Summer - Over 60,000 DTs	3,102,903</									

Components of Pro forma Revenues

	(dekatherms)	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
	Rate Schedule										
236											
237	114 - Interruptible Transportation Service										
238	Bills		2,927								
239	Winter - First 1,500 DTs	1,587,989		0.0409	1,024,464		1,024,464				
240	Winter - Next 3,000 DTs	2,411,477		0.0184	84,949		84,949	0.9149	1,452,851	0.0523	83,052
241	Winter - Next 9,000 DTs	3,090,339		0.1359	44,371		44,371	0.8649	2,085,807	0.0523	128,120
242	Winter - Next 18,500 DTs	2,213,628		0.1759	419,977		419,977	0.5649	1,745,732	0.0523	181,825
243	Winter - Next 30,000 DTs	1,884,247		0.0909	389,377		389,377	0.2849	586,390	0.0523	115,773
244	Winter - Over 60,000 DTs	1,672,575		0.0575	180,368		180,368	0.1649	327,202	0.0523	103,776
245	Total Winter DTs	12,880,254			98,173		98,173	0.0849	108,550	0.0523	87,476
246					1,195,215	-	1,195,215		6,306,412		677,821
247	Summer - First 1,500 DTs	2,289,575		0.6408	1,467,180		1,467,180	0.4300	984,517	0.0523	119,745
248	Summer - Next 3,000 DTs	3,345,866		0.5008	1,675,610		1,675,610	0.3000	1,003,760	0.0523	174,989
249	Summer - Next 9,000 DTs	3,941,221		0.4508	1,776,702		1,776,702	0.2000	768,244	0.0523	206,126
250	Summer - Next 18,500 DTs	2,581,133		0.3218	830,092		830,092	0.1000	258,113	0.0523	134,993
251	Summer - Next 30,000 DTs	2,323,751		0.3438	798,441		798,441	0.0500	116,188	0.0523	121,532
252	Summer - Over 60,000 DTs	1,604,826		0.0858	153,752		153,752	-	-	0.0523	83,938
253	Total Summer DTs	16,086,472			8,701,757	-	8,701,757		3,150,822		841,322
254											
255	Integrity Management Rider Revenues				2,550,135	180,540	2,730,675				
256	Minimum Margin Agreement Revenues				1,052,289	(188,719)	863,550				
257											
258											
259	Experimental Motor Vehicle Fuel										
260	143 / 114 - Interruptible Transportation Service										
261	Bills			350.00	-		-				
262	Winter - First 1,500 DTs	-		0.0409	-		-	0.9149	-	0.0523	-
263	Winter - Next 3,000 DTs	-		0.0184	-		-	0.8649	-	0.0523	-
264	Winter - Next 9,000 DTs	-		0.1359	-		-	0.5649	-	0.0523	-
265	Winter - Next 18,500 DTs	-		0.1759	-		-	0.2849	-	0.0523	-
266	Winter - Next 30,000 DTs	-		0.0909	-		-	0.1649	-	0.0523	-
267	Winter - Over 60,000 DTs	-		0.0575	-		-	0.0849	-	0.0523	-
268	Total Winter DTs	-			-		-		-		-
269											
270	Summer - First 1,500 DTs	-		0.6408	-		-	0.4300	-	0.0523	-
271	Summer - Next 3,000 DTs	-		0.5008	-		-	0.3000	-	0.0523	-
272	Summer - Next 9,000 DTs	-		0.4508	-		-	0.2000	-	0.0523	-
273	Summer - Next 18,500 DTs	-		0.3218	-		-	0.1000	-	0.0523	-
274	Summer - Next 30,000 DTs	-		0.3438	-		-	0.0500	-	0.0523	-
275	Summer - Over 60,000 DTs	-		0.0858	-		-	-	-	0.0523	-
276	Total Summer DTs	-			-		-		-		-
277											
278											
279	LARGE GENERALSERVICE										
280	Bills		7,828								
281	Demand Dts	1,818,450									
282	Winter Dts	28,707,503									
283	Summer Dts	34,994,685									
284	Total Dts	63,702,188									
285											
286	Revenues				26,983,061	(188,338)	26,827,722		29,836,702		12,806,041

Components of Pro forma Revenues

	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
287											
288											
289	105 - Outdoor Gas Light Service										
290	Bills		701								
291	Fixtures		5,215	18.50	88,041		88,041				
292	DTs - Winter	3,479									
293	DTs - Summer	4,884									
294											
295											
296	T-10 (675) - Military Operations Transportation										
297	Bills		12								
298	Demand	84,000		-	-		-	10.0000	840,000		
299	DTs - Winter	858,870		0.9845	826,451		826,451	0.2518	215,588	0.0523	44,814
300	DTs - Summer	488,453		0.0545	26,512		26,512	0.2518	122,392	0.0523	25,441
301	Integrity Management Rider Revenues				178,206	12,475	188,681				
302											
303	12 (667) Military Installations in Onslow County - Sales										
304	Bills		-								
305	DTs - Winter	-		2.8879	-		-	-	-	2.8023	-
306	DTs - Summer	-		2.3490	-		-	-	-	2.8023	-
307											
308											
309	T-12 (676) Military Installation in Onslow County - Transportation										
310	Bills		-								
311	DTs - Winter	-		2.8879	-		-	-	-	0.0523	-
312	DTs - Summer	-		2.3490	-		-	-	-	0.0523	-
313											
314											
315	Power Generation Contracts										
316	Bills		181								
317	DTs - Winter	128,148,328			32,014,040		32,014,040		2,252,241		726,183
318	DTs - Summer	205,798,160			44,886,879		44,886,879		3,178,413		813,319
319											
320											
321	Municipals Contracts										
322	Bills		37								
323	DTs - Winter	4,858,388			2,940,235		2,940,235		1,170,000		84,848
324	DTs - Summer	2,895,539			3,701,788		3,701,788		1,838,000		-
325											
326											
327	Special Contracts Military										
328	Bills		24								
329	DTs - Winter	477,690			2,050,125		2,050,125		328,487		719,880
330	DTs - Summer	402,520			2,793,175		2,793,175		159,276		357,682
331											
332											
333	Special Contracts										
334	Bills		181								
335	DTs - Winter	2,089,188			1,017,888		1,017,888		192,734		18,716
336	DTs - Summer	2,855,109			1,288,110		1,288,110		124,830		18,517
337											
338											
339	<u>SPECIAL TARIFFS & CONTRACTS</u>										
340	Bills		1,098								
341	Demand Dts	84,000									
342	Winter Dts	136,208,919									
343	Summer Dts	212,032,645									
344	Total Dts	348,241,564									
345											
346	Revenues				91,917,229	12,475	91,929,704		10,222,069		2,609,697

Components of Pro forma Revenues

	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
347											
348											
349	GRAND TOTAL - ALL TARIFFS & CONTRACTS										
350	Bills		8,981,458								
351	Demand Dts	1,902,460									
352	Winter Dts	216,765,234									
353	Summer Dts	266,544,682									
354	Total Dts	483,309,916									
355											
356	Revenues				585,486,980	(2,239,313)	583,246,668		117,615,288		215,405,141
357											
358											
359	SALES AND TRANSPORTATION										
360	Total Sales				472,636,649	(2,077,451)	470,559,199		82,993,674		210,695,466
361	Total Transportation				112,849,331	(181,862)	112,667,469		34,621,624		4,709,686
362	Total Annual				585,486,980	(2,239,313)	583,246,668		117,615,288		215,405,141

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PIEDMONT NATURAL GAS COMPANY, INC.
PRESENT RATES
DOCKET G-9 SUB 743

Rate Schedule	Present Revenue Rates	Present Margin Revenue Rates	Present IMR Base Revenue Rates ¹	Present COG Demand Revenue Rates	Present COG Commodity Revenue Rates
101 - Residential Service					
Monthly Charge	10.00	10.00			
Monthly Charge	10.00	10.00			
Winter per DT	10.1667	4.6202	1.4313	1.3129	2.8023
Summer per DT	9.6663	4.6202	1.4313	0.8125	2.8023
102- Small General Service					
Monthly Charge	22.00	22.00			
Winter per DT	8.2119	3.4437	0.8666	1.0993	2.8023
Summer per DT	7.8223	3.4437	0.8666	0.7097	2.8023
162- Medium General Service					
Monthly Charge	75.00	75.00			
Winter - First 500 per DT	7.8573	3.2319	0.8666	0.9565	2.8023
Winter - Over 500 per DT	7.5323	3.2319	0.8666	0.6315	2.8023
Summer - First 500 per DT	7.2823	2.7134	0.8666	0.9000	2.8023
Summer - Over 500 per DT	6.9823	2.7134	0.8666	0.6000	2.8023
142 - Natural Gas Vehicle Fuel					
Winter per DT	7.7173	2.7035	0.8666	1.3449	2.8023
Summer per DT	7.7173	2.7035	0.8666	1.3449	2.8023
Compression Charge per DT (maximum rate)	4.0000	4.0000			
143- Experimental Motor Vehicle Fuel					
Monthly Charge	Monthly charge is reflected on corresponding rate schedule				
Winter per DT	Volumetric charge is reflected on corresponding rate schedule				
Summer per DT	Volumetric charge is reflected on corresponding rate schedule				
Compression Charge per DT (maximum rate)	4.0000	4.0000			
144- Experimental Medium Gen Motor Fuel - Transportation					
Monthly Charge	75.00	75.00			
Winter - First 500 per DT	5.1073	3.2319	0.8666	0.9565	0.0523
Winter - Over 500 per DT	4.7823	3.2319	0.8666	0.6315	0.0523
Summer - First 500 per DT	4.5323	2.7134	0.8666	0.9000	0.0523
Summer - Over 500 per DT	4.2323	2.7134	0.8666	0.6000	0.0523
Compression Charge per DT (maximum rate)	4.0000	4.0000			
103 - Large General Sales Service					
Monthly Charge	350.00	350.00			
Demand Charge per DT	14.7500	2.0000	0.0000	12.7500	0.0000
Winter - First 1,500 per DT	4.5249	0.7543	0.0715	0.8968	2.8023
Winter - Next 3,000 per DT	3.9449	0.1793	0.0715	0.8918	2.8023
Winter - Next 9,000 per DT	3.6449	0.2243	0.0715	0.5468	2.8023
Winter - Next 16,500 per DT	3.4249	0.1073	0.0715	0.4438	2.8023
Winter - Next 30,000 per DT	3.4249	0.1143	0.0715	0.4368	2.8023
Winter - Over 60,000 per DT	3.0549	0.0843	0.0715	0.0968	2.8023
Summer - First 1,500 per DT	3.9689	0.2595	0.0715	0.8356	2.8023
Summer - Next 3,000 per DT	3.4689	0.0095	0.0715	0.5856	2.8023
Summer - Next 9,000 per DT	3.2689	0.0345	0.0715	0.3606	2.8023
Summer - Next 16,500 per DT	3.1439	0.0045	0.0715	0.2656	2.8023
Summer - Next 30,000 per DT	3.0189	0.0095	0.0715	0.1356	2.8023
Summer - Over 60,000 per DT	2.9689	0.0945	0.0715	0.0006	2.8023
104 - Interruptible Sales Service					
Monthly Charge	350.00	350.00			
Winter - First 1,500 per DT	4.7341	0.7540	0.0760	1.1018	2.8023
Winter - Next 3,000 per DT	4.4791	0.1790	0.0760	1.4218	2.8023
Winter - Next 9,000 per DT	4.1791	0.2240	0.0760	1.0768	2.8023
Winter - Next 16,500 per DT	3.8191	0.1070	0.0760	0.8338	2.8023
Winter - Next 30,000 per DT	3.6341	0.1140	0.0760	0.6418	2.8023
Winter - Over 60,000 per DT	3.5007	0.0840	0.0760	0.5384	2.8023
Summer - First 1,500 per DT	4.4491	0.5959	0.0760	0.9749	2.8023
Summer - Next 3,000 per DT	4.1291	0.3959	0.0760	0.8549	2.8023
Summer - Next 9,000 per DT	3.9791	0.2959	0.0760	0.8049	2.8023
Summer - Next 16,500 per DT	3.7541	0.1959	0.0760	0.6799	2.8023
Summer - Next 30,000 per DT	3.5991	0.0659	0.0760	0.6549	2.8023
Summer - Over 60,000 per DT	3.4532	0.0000	0.0760	0.5749	2.8023

PIEDMONT NATURAL GAS COMPANY, INC.
PRESENT RATES
DOCKET G-9 SUB 734

Rate Schedule	Present Revenue Rates	Present Margin Revenue Rates	Present IMR Base Revenue Rates ¹	Present COG Demand Revenue Rates	Present COG Commodity Revenue Rates
113 - Large General Transportation Service					
Monthly Charge	350.00	350.00			
Demand Charge per DT	2.7500	2.0000	0.0000	0.7500	0.0000
Standby Charge per DT	12.0000	0.0000	0.0000	12.0000	0.0000
Winter - First 1,500 per DT	1.7749	0.7543	0.0715	0.8968	0.0523
Winter - Next 3,000 per DT	1.1949	0.1793	0.0715	0.8918	0.0523
Winter - Next 9,000 per DT	0.8949	0.2243	0.0715	0.5468	0.0523
Winter - Next 16,500 per DT	0.6749	0.1073	0.0715	0.4438	0.0523
Winter - Next 30,000 per DT	0.6749	0.1143	0.0715	0.4358	0.0523
Winter - Over 60,000 per DT	0.3049	0.0843	0.0715	0.0968	0.0523
Summer - First 1,500 per DT	1.2189	0.2595	0.0715	0.8356	0.0523
Summer - Next 3,000 per DT	0.7189	0.0095	0.0715	0.5856	0.0523
Summer - Next 9,000 per DT	0.5189	0.0345	0.0715	0.3606	0.0523
Summer - Next 16,500 per DT	0.3939	0.0045	0.0715	0.2656	0.0523
Summer - Next 30,000 per DT	0.2699	0.0095	0.0715	0.1356	0.0523
Summer - Over 60,000 per DT	0.1244	0.0000	0.0715	0.0006	0.0523
114 - Interruptible Transportation Service					
Monthly Charge	350.00	350.00			
Winter - First 1,500 per DT	1.0841	0.0409	0.0760	0.9149	0.0523
Winter - Next 3,000 per DT	1.0116	0.0184	0.0760	0.8649	0.0523
Winter - Next 9,000 per DT	0.8291	0.1359	0.0760	0.5649	0.0523
Winter - Next 16,500 per DT	0.5691	0.1759	0.0760	0.2649	0.0523
Winter - Next 30,000 per DT	0.3841	0.0909	0.0760	0.1649	0.0523
Winter - Over 60,000 per DT	0.2507	0.0575	0.0760	0.0649	0.0523
Summer - First 1,500 per DT	1.1991	0.6408	0.0760	0.4300	0.0523
Summer - Next 3,000 per DT	0.9291	0.5008	0.0760	0.3000	0.0523
Summer - Next 9,000 per DT	0.7791	0.4508	0.0760	0.2000	0.0523
Summer - Next 16,500 per DT	0.5499	0.3216	0.0760	0.1000	0.0523
Summer - Next 30,000 per DT	0.5219	0.3436	0.0760	0.0500	0.0523
Summer - Over 60,000 per DT	0.2241	0.0958	0.0760	0.0000	0.0523
105 - Outdoor Gas Light Service					
Per Fixture Charge	16.50	16.50	0.00	0.00	0.00
T-10 - Military Operations Transportation					
Demand Charge per DT	10.0000	0.0000	0.0000	10.0000	0.0000
Winter per DT	1.3399	0.9645	0.0715	0.2516	0.0523
Summer per DT	0.4299	0.0545	0.0715	0.2516	0.0523
12 - Military Installations In Onslow County - Sales					
Winter per DT	5.7617	2.8879	0.0715	0.0000	2.8023
Summer per DT	5.2228	2.3490	0.0715	0.0000	2.8023
T-12 - Military Installation In Onslow County - Transportation					
Winter per DT	3.0117	2.8879	0.0715	0.0000	0.0523
Summer per DT	2.4728	2.3490	0.0715	0.0000	0.0523
ST-1 - Standby On-Peak Supply Service					
Demand Charge per DT	4.2600	4.2600	0.0000	0.0000	0.0000
Capacity Charge per DT	1.2700	1.2700	0.0000	0.0000	0.0000
106 - Schedule For Limiting and Curtailing					
Emergency Gas per DT	10.0000	0.0000	0.0000	10.0000	0.0000
Unauthorized Gas per DT	25.0000	0.0000	0.0000	25.0000	0.0000
Reconnect Fees					
<u>Residential</u>					
February Through August	55.00				
September Through January	65.00				
<u>All Others</u>					
February Through August	55.00				
September Through January	110.00				
Returned Check Charge					
Returned Check Charge	25.00				

1/ The IMR rates shown above are only for the recovery of the current approved IMR revenue requirement of \$80,826,382, as approved by the NCUC in Docket No. G-9, Sub 734. Therefore, the IMR rates shown above exclude the portion of the current IMR billing rate designed to recover the IMR Deferred Account balance of \$(7,864,609) approved by the NCUC in Docket No. G-9, Sub 734.

PIEDMONT NATURAL GAS COMPANY, INC.
PROPOSED RATES
DOCKET G-9 SUB 743

Rate Schedule	Proposed Revenue Rates	Proposed Margin Revenue Rates	Proposed IMR Base Revenue Rates ¹	Proposed COG Demand Revenue Rates	Proposed COG Commodity Revenue Rates	Proposed EDIT Rider Rates
101 - Residential Service						
Monthly Charge	10.00	10.00				
Monthly Charge	10.00	10.00				
Winter per DT	11.4197	7.8763	0.0000	1.3377	2.8023	(0.5966)
Summer per DT	10.9098	7.8763	0.0000	0.8278	2.8023	(0.5966)
102- Small General Service						
Monthly Charge	22.00	22.00				
Winter per DT	8.7781	5.1631	0.0000	1.1225	2.8023	(0.3098)
Summer per DT	8.3803	5.1631	0.0000	0.7247	2.8023	(0.3098)
152- Medium General Service						
Monthly Charge	75.00	75.00				
Winter - First 500 per DT	7.9217	4.4552	0.0000	0.9740	2.8023	(0.3098)
Winter - Over 500 per DT	7.5908	4.4552	0.0000	0.6431	2.8023	(0.3098)
Summer - First 500 per DT	7.8642	4.4552	0.0000	0.9165	2.8023	(0.3098)
Summer - Over 500 per DT	7.5587	4.4552	0.0000	0.6110	2.8023	(0.3098)
142 - Natural Gas Vehicle Fuel						
Winter per DT	8.9075	5.0701	0.0000	1.3449	2.8023	(0.3098)
Summer per DT	8.9075	5.0701	0.0000	1.3449	2.8023	(0.3098)
Compression Charge per DT (maximum rate)	4.0000	4.0000				
143- Experimental Motor Vehicle Fuel						
Monthly Charge	<i>Monthly charge is reflected on corresponding rate schedule</i>					
Winter per DT	<i>Volumetric charge is reflected on corresponding rate schedule</i>					
Summer per DT	<i>Volumetric charge is reflected on corresponding rate schedule</i>					
Compression Charge per DT (maximum rate)	4.0000	4.0000				
144- Experimental Medium Gen Motor Fuel - Transportation						
Monthly Charge	75.00	75.00				
Winter - First 500 per DT	5.1717	4.4552	0.0000	0.9740	0.0523	(0.3098)
Winter - Over 500 per DT	4.8408	4.4552	0.0000	0.6431	0.0523	(0.3098)
Summer - First 500 per DT	5.1142	4.4552	0.0000	0.9165	0.0523	(0.3098)
Summer - Over 500 per DT	4.8087	4.4552	0.0000	0.6110	0.0523	(0.3098)
Compression Charge per DT (maximum rate)	4.0000	4.0000				
103 - Large General Sales Service						
Monthly Charge	350.00	350.00				
Demand Charge per DT	15.2500	2.5000	0.0000	12.7500	0.0000	0.0000
Winter - First 1,500 per DT	4.8885	1.2840	0.0000	0.8968	2.8023	(0.0946)
Winter - Next 3,000 per DT	4.2800	0.6805	0.0000	0.8918	2.8023	(0.0946)
Winter - Next 9,000 per DT	3.6095	0.3550	0.0000	0.5468	2.8023	(0.0946)
Winter - Next 18,500 per DT	3.3527	0.2012	0.0000	0.4438	2.8023	(0.0946)
Winter - Next 30,000 per DT	3.2747	0.1302	0.0000	0.4368	2.8023	(0.0946)
Winter - Over 60,000 per DT	2.8459	0.0414	0.0000	0.0968	2.8023	(0.0946)
Summer - First 1,500 per DT	4.4078	0.8645	0.0000	0.8358	2.8023	(0.0948)
Summer - Next 3,000 per DT	3.5720	0.2787	0.0000	0.5856	2.8023	(0.0946)
Summer - Next 9,000 per DT	3.2287	0.1604	0.0000	0.3606	2.8023	(0.0946)
Summer - Next 18,500 per DT	3.0686	0.0953	0.0000	0.2656	2.8023	(0.0946)
Summer - Next 30,000 per DT	2.9090	0.0657	0.0000	0.1356	2.8023	(0.0946)
Summer - Over 60,000 per DT	2.7185	0.0112	0.0000	0.0006	2.8023	(0.0946)
104 - Interruptible Sales Service						
Monthly Charge	350.00	350.00				
Winter - First 1,500 per DT	5.5813	1.6858	0.0000	1.1018	2.8023	(0.0086)
Winter - Next 3,000 per DT	5.1089	0.8934	0.0000	1.4218	2.8023	(0.0086)
Winter - Next 9,000 per DT	4.3366	0.4681	0.0000	1.0788	2.8023	(0.0086)
Winter - Next 18,500 per DT	3.8916	0.2641	0.0000	0.8338	2.8023	(0.0086)
Winter - Next 30,000 per DT	3.6064	0.1709	0.0000	0.6418	2.8023	(0.0086)
Winter - Over 60,000 per DT	3.3865	0.0544	0.0000	0.5384	2.8023	(0.0086)
Summer - First 1,500 per DT	4.7008	0.9322	0.0000	0.9749	2.8023	(0.0088)
Summer - Next 3,000 per DT	4.2701	0.6215	0.0000	0.8549	2.8023	(0.0086)
Summer - Next 9,000 per DT	4.0647	0.4681	0.0000	0.8048	2.8023	(0.0086)
Summer - Next 18,500 per DT	3.7843	0.3107	0.0000	0.6799	2.8023	(0.0086)
Summer - Next 30,000 per DT	3.5574	0.1088	0.0000	0.6549	2.8023	(0.0086)
Summer - Over 60,000 per DT	3.3989	0.0303	0.0000	0.5749	2.8023	(0.0086)

PIEDMONT NATURAL GAS COMPANY, INC.
PROPOSED RATES
DOCKET G-9 SUB 743

Rate Schedule	Proposed Revenue Rates	Proposed Margin Revenue Rates	Proposed IMR Base Revenue Rates ¹	Proposed COG Demand Revenue Rates	Proposed COG Commodity Revenue Rates	Proposed EDIT Rider Rates
113 - Large General Transportation Service						
Monthly Charge	350.00	350.00				
Demand Charge per DT	3.2500	2.5000	0.0000	0.7500	0.0000	0.0000
Standby Charge per DT	n/a	n/a	n/a	n/a	n/a	n/a
Winter - First 1,500 per DT	2.1385	1.2840	0.0000	0.8968	0.0523	(0.0946)
Winter - Next 3,000 per DT	1.5300	0.6805	0.0000	0.8918	0.0523	(0.0946)
Winter - Next 9,000 per DT	0.8585	0.3550	0.0000	0.5468	0.0523	(0.0946)
Winter - Next 16,500 per DT	0.6027	0.2012	0.0000	0.4438	0.0523	(0.0946)
Winter - Next 30,000 per DT	0.5247	0.1302	0.0000	0.4368	0.0523	(0.0946)
Winter - Over 60,000 per DT	0.0959	0.0414	0.0000	0.0968	0.0523	(0.0946)
Summer - First 1,500 per DT	1.6578	0.8845	0.0000	0.8356	0.0523	(0.0946)
Summer - Next 3,000 per DT	0.8220	0.2787	0.0000	0.5858	0.0523	(0.0946)
Summer - Next 9,000 per DT	0.4787	0.1604	0.0000	0.3606	0.0523	(0.0946)
Summer - Next 16,500 per DT	0.3186	0.0953	0.0000	0.2656	0.0523	(0.0946)
Summer - Next 30,000 per DT	0.1590	0.0657	0.0000	0.1356	0.0523	(0.0946)
Summer - Over 60,000 per DT	(0.0305)	0.0112	0.0000	0.0006	0.0523	(0.0946)
114 - Interruptible Transportation Service						
Monthly Charge	350.00	350.00				
Winter - First 1,500 per DT	2.6588	1.6858	0.0000	0.9291	0.0523	(0.0086)
Winter - Next 3,000 per DT	1.8155	0.8934	0.0000	0.8784	0.0523	(0.0086)
Winter - Next 9,000 per DT	1.0835	0.4661	0.0000	0.5737	0.0523	(0.0086)
Winter - Next 16,500 per DT	0.5768	0.2641	0.0000	0.2690	0.0523	(0.0086)
Winter - Next 30,000 per DT	0.3821	0.1709	0.0000	0.1675	0.0523	(0.0086)
Winter - Over 60,000 per DT	0.1640	0.0544	0.0000	0.0659	0.0523	(0.0086)
Summer - First 1,500 per DT	1.4126	0.9322	0.0000	0.4367	0.0523	(0.0086)
Summer - Next 3,000 per DT	0.9699	0.6215	0.0000	0.3047	0.0523	(0.0086)
Summer - Next 9,000 per DT	0.7129	0.4661	0.0000	0.2031	0.0523	(0.0086)
Summer - Next 16,500 per DT	0.4560	0.3107	0.0000	0.1018	0.0523	(0.0086)
Summer - Next 30,000 per DT	0.2033	0.1088	0.0000	0.0508	0.0523	(0.0086)
Summer - Over 60,000 per DT	0.0740	0.0303	0.0000	0.0000	0.0523	(0.0086)
105 - Outdoor Gas Light Service						
Per Fixture Charge	18.90	18.90				
T-10 - Military Operations Transportation						
Demand Charge per DT	10.0000	0.0000	0.0000	10.0000	0.0000	0.0000
Winter per DT	1.5620	1.3527	0.0000	0.2516	0.0523	(0.0946)
Summer per DT	0.6520	0.4427	0.0000	0.2516	0.0523	(0.0946)
12 - Military Installations in Onslow County - Sales						
Winter per DT	5.6902	2.8879	0.0000	0.0000	2.8023	0.0000
Summer per DT	5.1513	2.3490	0.0000	0.0000	2.8023	0.0000
T-12 - Military Installation in Onslow County - Transportation						
Winter per DT	2.9402	2.8879	0.0000	0.0000	0.0523	0.0000
Summer per DT	2.4013	2.3490	0.0000	0.0000	0.0523	0.0000
ST-1 - Standby On-Peak Supply Service						
Demand Charge per DT	4.2600	4.2600	0.0000	0.0000	0.0000	0.0000
Capacity Charge per DT	1.2700	1.2700	0.0000	0.0000	0.0000	0.0000
106 - Schedule For Limiting and Curtailing						
Emergency Gas per DT	10.0000	0.0000	0.0000	10.0000	0.0000	0.0000
Unauthorized Gas per DT	25.0000	0.0000	0.0000	25.0000	0.0000	0.0000
Reconnect Fees						
<u>Residential</u>						
February Through August	55.00					
September Through January	85.00					
<u>All Others</u>						
February Through August	55.00					
September Through January	110.00					
Returned Check Charge						
Returned Check Charge	25.00					

^{1/} The IMR rates shown above only represent the proposed IMR base revenue requirement component of the IMR billing rate to take effect upon the Commission's order in this general rate case proceeding.

71A

Exhibit_(KAC-4)

Piedmont Natural Gas Company, Inc
Proposed Factors for the Margin Decoupling Tracker Mechanism
Docket No. G-9 Sub 743

	Winter (\$/therm)	Summer (\$/therm)	Heat Factor (therms/DDD)	Base Factor (therms/DDD)
101 - Residential Service	0.78763	0.78763	0.15203	7.80576
102- Small General Service	0.51631	0.51631	0.67579	136.17303
152- Medium General Service				
First 5,000 therms	0.44552	0.44552	9.27590	6475.30726
Over 5,000 therms	0.44552	0.44552	9.27590	6475.30726
<u>Normal Degree Days¹</u>	<u>15 - 15</u>	<u>1 - 31</u>		
January	708.4	727.6		
February	701.7	571.5		
March	470.4	402.1		
April	279.3	157.7		
May	84.5	37.9		
June	12.0	1.2		
July	0.2	0.1		
August	-	-		
September	1.5	17.9		
October	69.2	176.8		
November	317.3	432.8		
December	541.8	660.7		
Winter	2,739.6	2,794.7		
Summer	446.7	391.6		
Annual	<u>3,186.3</u>	<u>3,186.3</u>		

1/ Degree days are computed using 30 year average actual degree days through December 15, 2018.

Updated Total Pro forma Revenues for the Sale and Transportation of Gas

Line	(dekatherms) Rate Schedule	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
1	101 - Residential Service										
2	Bills - Winter	3,356,241			47,083		3,403,324	10.00	34,033,237		34,033,237
3	Bills - Summer	4,644,245			65,106		4,709,351	10.00	47,093,510		47,093,510
4	DTs - Winter	31,358,695	(768,577)	30,590,118	429,141	31,019,259		8.3515	259,057,342	(113,994)	258,943,347
5	DTs - Summer	9,210,542	(1,038,575)	8,171,967	114,595	8,286,562		7.8511	65,056,623	2,400,736	67,459,359
6	Integrity Management Rider Revenues								52,247,466	5,537,811	57,785,277
7											
8											
9	Experimental Motor Vehicle Fuel										
10	143 / 101 - Residential Service										
11	Bills - Winter	-			-		-	10.00	-		-
12	Bills - Summer	-			-		-	10.00	-		-
13	DTs - Winter	-			-		-	8.3515	-		-
14	DTs - Summer	-			-		-	7.8511	-		-
15											
16											
17	RESIDENTIAL SERVICE										
18	Bills	8,000,486			112,189		8,112,675				
19	Winter Dts	31,358,695	(768,577)	30,590,118	429,141	31,019,259					
20	Summer Dts	9,210,542	(1,038,575)	8,171,967	114,595	8,286,562					
21	Total Dts	40,569,237	(1,807,152)	38,762,085	543,736	39,305,821					
22											
23	Revenues								457,490,178	7,824,653	465,314,830

Updated Total Pro forma Revenues for the Sale and Transportation of Gas

Line	(dekatherms) Rate Schedule	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
24											
25											
26	102- Small General Service										
27	Bills	842,661			11,817		854,478	22.00	18,798,526		18,798,526
28	DTs - Winter	18,078,392	(200,051)	17,878,341	250,725	18,129,066		7.1129	128,950,233	(6,552,545)	122,397,688
29	DTs - Summer	9,446,837	(647,437)	8,799,400	123,402	8,922,803		6.7233	59,990,679	(1,552,725)	58,437,954
30	Integrity Management Rider Revenues								20,721,972	2,196,402	22,918,374
31	Minimum Margin Agreement Revenues								55,648	(55,648)	-
32											
33											
34	Experimental Motor Vehicle Fuel										
35	143 / 102- Small General Service										
36	Bills	102			(6)		96	22.00	2,119		2,119
37	Winter Dts	5,113	-	5,113	(284)	4,829		7.1129	34,345	(9,249)	25,096
38	Summer Dts	8,100	-	8,100	(450)	7,650		6.7233	51,431	(21,685)	29,746
39											
40											
41	152- Medium General Service										
42	Bills	5,662			(177)		5,485	75.00	411,355		411,355
43	Winter - First 500 DTs	1,053,649	(6,618)	1,047,031	(32,781)	1,014,250		6.7583	6,854,803	(213,205)	6,641,398
44	Winter - Over 500 DTs	1,710,375	(10,743)	1,699,633	(53,213)	1,646,419		6.4333	10,591,910	(346,093)	10,245,817
45	Total Winter DTs	2,764,024	(17,360)	2,746,664	(85,995)	2,660,669			17,446,513	(559,298)	16,887,215
46											
47											
48	Summer - First 500 DTs	1,249,687	(32,262)	1,217,425	(38,116)	1,179,309		6.1833	7,292,020	(249,169)	7,042,851
49	Summer - Over 500 DTs	1,137,892	(29,376)	1,108,515	(34,709)	1,073,809		5.8833	6,317,541	(226,879)	6,090,662
50	Total Summer DTs	2,387,579	(61,638)	2,325,940	(72,822)	2,253,118			13,609,561	(476,048)	13,133,513
51											
52	Integrity Management Rider Revenues								3,018,940	319,989	3,338,929
53	Minimum Margin Agreement Revenues								95,987	(49,428)	46,559
54											
55											
56	Experimental Motor Vehicle Fuel										
57	143 / 152- Medium General Service										
58	Bills	-	-	-	-	-	-	75.00	-	-	-
59	Winter - First 500 DTs	-	-	-	-	-	-	6.7583	-	-	-
60	Winter - Over 500 DTs	-	-	-	-	-	-	6.4333	-	-	-
61	Total Winter DTs	-	-	-	-	-	-		-	-	-
62											
63											
64	Summer - First 500 DTs	-	-	-	-	-	-	6.1833	-	-	-
65	Summer - Over 500 DTs	-	-	-	-	-	-	5.8833	-	-	-
66	Total Summer DTs	-	-	-	-	-	-		-	-	-
67											
68											
69	Experimental Motor Vehicle Fuel										
70	144- Medium General Transportation Service										
71	Bills	-	-	-	-	-	-	75.00	-	-	-
72	Winter - First 500 DTs	-	-	-	-	-	-	4.0083	-	-	-
73	Winter - Over 500 DTs	-	-	-	-	-	-	3.6833	-	-	-
74	Total Winter DTs	-	-	-	-	-	-		-	-	-
75											
76											
77	Summer - First 500 DTs	-	-	-	-	-	-	3.4333	-	-	-
78	Summer - Over 500 DTs	-	-	-	-	-	-	3.1333	-	-	-
79	Total Summer DTs	-	-	-	-	-	-		-	-	-
80											
81											
82	142 - Natural Gas Vehicle Fuel - Company Stations										
83	DTs - Winter	30,503	-	30,503	-	30,503		6.6183	201,879		201,879
84	DTs - Summer	47,315	-	47,315	-	47,315		6.6183	313,143		313,143
85	Compression Charge Revenues							4.0000	311,272		311,272
86	Integrity Management Rider Revenues								50,114	5,312	55,425
87											
88	SMALL & MEDIUM GENERAL / NGV FUEL SERVICE										
89	Bills	848,425			11,634		860,059				
90	Winter Dts	20,878,032	(217,411)	20,660,621	164,446	20,825,067					
91	Summer Dts	11,889,830	(709,075)	11,180,755	50,130	11,230,885					
92	Total Dts	32,767,862	(926,486)	31,841,375	214,576	32,055,951					
93											
94	Revenues								264,063,716	(6,754,923)	257,308,793

Updated Total Pro forma Revenues for the Sale and Transportation of Gas

Line	(dekatherms) Rate Schedule	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
95											
96											
97	103 - Large General Sales Service										
98	Bills	773			46		819	350.00	286,487		286,487
99	Demand	148,524			8,749	157,272		14,7500	2,319,766		2,319,766
100	Winter - First 1,500 DTs	439,773	-	439,773	25,904	465,678		4.4342	2,064,908		2,064,908
101	Winter - Next 3,000 DTs	416,993	-	416,993	24,563	441,556		3.8542	1,701,845		1,701,845
102	Winter - Next 9,000 DTs	179,657	-	179,657	10,583	190,240		3.5542	676,150		676,150
103	Winter - Next 16,500 DTs	36,110	-	36,110	2,127	38,237		3.3342	127,491		127,491
104	Winter - Next 30,000 DTs	-	-	-	-	-		3.3342	-		-
105	Winter - Over 60,000 DTs	-	-	-	-	-		2.9642	-		-
106	Total Winter DTs	1,072,534	-	1,072,534	63,177	1,135,711			4,570,394		4,570,394
107											
108	Summer - First 1,500 DTs	576,369	-	576,369	33,951	610,320		3.8782	2,366,941		2,366,941
109	Summer - Next 3,000 DTs	371,464	-	371,464	21,881	393,345		3.3879	1,332,614		1,332,614
110	Summer - Next 9,000 DTs	114,445	-	114,445	6,741	121,186		3.1782	385,154		385,154
111	Summer - Next 16,500 DTs	78,270	-	78,270	4,610	82,881		3.0679	254,269		254,269
112	Summer - Next 30,000 DTs	-	-	-	-	-		2.9379	-		-
113	Summer - Over 60,000 DTs	-	-	-	-	-		2.8782	-		-
114	Total Summer DTs	1,140,548	-	1,140,548	67,183	1,207,731			4,338,978		4,338,978
115											
116	Integrity Management Rider Revenues								183,460	19,446	202,928
117	Minimum Margin Agreement Revenues								78,618	-	78,618
118											
119											
120	Experimental Motor Vehicle Fuel										
121	143 / 103 - Large General Sales Service										
122	Bills	43			19		62	350.00	21,572		21,572
123	Demand	7,040			3,051	10,090		14,7500	148,831		148,831
124	Winter - First 1,500 DTs	24,073	-	24,073	10,432	34,505		4.4342	153,000		153,000
125	Winter - Next 3,000 DTs	27,014	-	27,014	11,706	38,720		3.8542	149,235		149,235
126	Winter - Next 9,000 DTs	4,883	-	4,883	2,116	6,998		3.5542	24,874		24,874
127	Winter - Next 16,500 DTs	-	-	-	-	-		3.3342	-		-
128	Winter - Next 30,000 DTs	-	-	-	-	-		3.3342	-		-
129	Winter - Over 60,000 DTs	-	-	-	-	-		2.9642	-		-
130	Total Winter DTs	55,970	-	55,970	24,254	80,223			327,110		327,110
131											
132	Summer - First 1,500 DTs	37,372	-	37,372	16,195	53,567		3.8782	207,744		207,744
133	Summer - Next 3,000 DTs	48,935	-	48,935	21,205	70,140		3.3879	237,626		237,626
134	Summer - Next 9,000 DTs	14,538	-	14,538	6,300	20,838		3.1782	66,227		66,227
135	Summer - Next 16,500 DTs	-	-	-	-	-		3.0679	-		-
136	Summer - Next 30,000 DTs	-	-	-	-	-		2.9379	-		-
137	Summer - Over 60,000 DTs	-	-	-	-	-		2.8782	-		-
138	Total Summer DTs	100,845	-	100,845	43,700	144,545			511,598		511,598
139											
140	Integrity Management Rider Revenues								-	-	-
141	Minimum Margin Agreement Revenues								-	-	-
142	Compression Charge Revenues								144,522	-	144,522
143											
144											
145	104 - Interruptible Sales Service										
146	Bills	195			(3)		192	350.00	67,216		67,216
147	Winter - First 1,500 DTs	115,234	-	115,234	(1,746)	113,488		4.6377	526,323		526,323
148	Winter - Next 3,000 DTs	171,323	-	171,323	(2,596)	168,727		4.3827	739,479		739,479
149	Winter - Next 9,000 DTs	139,386	-	139,386	(2,112)	137,274		4.0827	560,450		560,450
150	Winter - Next 16,500 DTs	6,828	-	6,828	(103)	6,724		3.7227	25,032		25,032
151	Winter - Next 30,000 DTs	-	-	-	-	-		3.5377	-		-
152	Winter - Over 60,000 DTs	-	-	-	-	-		3.4043	-		-
153	Total Winter DTs	432,771	-	432,771	(6,557)	426,213			1,851,285		1,851,285
154											
155	Summer - First 1,500 DTs	153,542	-	153,542	(2,326)	151,215		4.3527	658,195		658,195
156	Summer - Next 3,000 DTs	163,040	-	163,040	(2,470)	160,569		4.0327	647,528		647,528
157	Summer - Next 9,000 DTs	136,804	-	136,804	(2,073)	134,731		3.8827	523,119		523,119
158	Summer - Next 16,500 DTs	4,370	-	4,370	(66)	4,303		3.6577	15,741		15,741
159	Summer - Next 30,000 DTs	-	-	-	-	-		3.5027	-		-
160	Summer - Over 60,000 DTs	-	-	-	-	-		3.3772	-		-
161	Total Summer DTs	457,755	-	457,755	(6,936)	450,819			1,844,583		1,844,583
162											
163	Integrity Management Rider Revenues								84,870	8,996	93,865
164	Minimum Margin Agreement Revenues								-	-	-
165											
166											

Updated Total Pro forma Revenues for the Sale and Transportation of Gas

Line	(dekatherms) Rate Schedule	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
167	Experimental Motor Vehicle Fuel										
168	143 / 104 - Interruptible Sales Service										
169	Bills	-	-	-	-	-	-	350.00	-	-	-
170	Winter - First 1,500 DTs	-	-	-	-	-	-	4.6377	-	-	-
171	Winter - Next 3,000 DTs	-	-	-	-	-	-	4.3827	-	-	-
172	Winter - Next 9,000 DTs	-	-	-	-	-	-	4.0627	-	-	-
173	Winter - Next 16,500 DTs	-	-	-	-	-	-	3.7227	-	-	-
174	Winter - Next 30,000 DTs	-	-	-	-	-	-	3.5377	-	-	-
175	Winter - Over 60,000 DTs	-	-	-	-	-	-	3.4043	-	-	-
176	Total Winter DTs	-	-	-	-	-	-	-	-	-	-
177											
178	Summer - First 1,500 DTs	-	-	-	-	-	-	4.3527	-	-	-
179	Summer - Next 3,000 DTs	-	-	-	-	-	-	4.0327	-	-	-
180	Summer - Next 9,000 DTs	-	-	-	-	-	-	3.8827	-	-	-
181	Summer - Next 16,500 DTs	-	-	-	-	-	-	3.6577	-	-	-
182	Summer - Next 30,000 DTs	-	-	-	-	-	-	3.5027	-	-	-
183	Summer - Over 60,000 DTs	-	-	-	-	-	-	3.3772	-	-	-
184	Total Summer DTs	-	-	-	-	-	-	-	-	-	-
185											
186											
187	113 - Large General Transportation Service										
188	Bills	3,611	-	-	(106)	-	3,505	350.00	1,226,818	-	1,226,818
189	Demand	1,661,230	-	-	(48,676)	1,612,554	-	2,7500	4,434,524	-	4,434,524
190	Standby DTs	-	-	-	-	-	-	12.0000	-	-	-
191	Winter - First 1,500 DTs	2,010,192	-	2,010,192	(58,901)	1,951,291	-	1.6842	3,286,364	-	3,286,364
192	Winter - Next 3,000 DTs	2,840,512	-	2,840,512	(83,230)	2,757,282	-	1.1042	3,044,591	-	3,044,591
193	Winter - Next 9,000 DTs	2,910,877	-	2,910,877	(85,292)	2,825,585	-	0.8042	2,272,336	-	2,272,336
194	Winter - Next 16,500 DTs	1,933,655	-	1,933,655	(56,658)	1,876,997	-	0.5842	1,096,641	-	1,096,641
195	Winter - Next 30,000 DTs	1,701,371	-	1,701,371	(49,852)	1,651,519	-	0.5842	964,817	-	964,817
196	Winter - Over 60,000 DTs	2,782,340	-	2,782,340	(81,526)	2,700,814	-	0.2142	578,514	-	578,514
197	Total Winter DTs	14,178,947	-	14,178,947	(415,458)	13,763,488	-	-	11,243,164	-	11,243,164
198											
199	Summer - First 1,500 DTs	2,712,613	-	2,712,613	(79,482)	2,633,130	-	1.1282	2,970,697	-	2,970,697
200	Summer - Next 3,000 DTs	3,343,969	-	3,343,969	(97,982)	3,245,987	-	0.6379	2,070,615	-	2,070,615
201	Summer - Next 9,000 DTs	3,388,085	-	3,388,085	(99,275)	3,288,811	-	0.4282	1,408,269	-	1,408,269
202	Summer - Next 16,500 DTs	2,360,563	-	2,360,563	(69,167)	2,291,396	-	0.3179	728,435	-	728,435
203	Summer - Next 30,000 DTs	2,129,656	-	2,129,656	(62,401)	2,067,254	-	0.1879	388,437	-	388,437
204	Summer - Over 60,000 DTs	3,196,566	-	3,196,566	(93,663)	3,102,903	-	0.0529	164,144	-	164,144
205	Total Summer DTs	17,131,451	-	17,131,451	(501,970)	16,629,481	-	-	7,730,597	-	7,730,597
206											
207	Integrity Management Rider Revenues								1,795,198	190,280	1,985,478
208	Minimum Margin Agreement Revenues								628,660	(247,500)	381,160
209											
210											
211	Experimental Motor Vehicle Fuel										
212	143 / 113 - Large General Transportation Service										
213	Bills	86	-	-	37	-	123	350.00	43,143	-	43,143
214	Demand	30,916	-	-	7,617	38,533	-	2,7500	105,967	-	105,967
215	Standby DTs	-	-	-	-	-	-	12.0000	-	-	-
216	Winter - First 1,500 DTs	50,571	-	50,571	12,459	63,030	-	1.6842	106,155	-	106,155
217	Winter - Next 3,000 DTs	63,605	-	63,605	15,671	79,275	-	1.1042	87,536	-	87,536
218	Winter - Next 9,000 DTs	52,755	-	52,755	12,998	65,753	-	0.8042	52,879	-	52,879
219	Winter - Next 16,500 DTs	82,500	-	82,500	20,326	102,826	-	0.5842	60,071	-	60,071
220	Winter - Next 30,000 DTs	24,655	-	24,655	6,074	30,729	-	0.5842	17,952	-	17,952
221	Winter - Over 60,000 DTs	-	-	-	-	-	-	0.2142	-	-	-
222	Total Winter DTs	274,085	-	274,085	67,528	341,614	-	-	324,593	-	324,593
223											
224	Summer - First 1,500 DTs	75,802	-	75,802	18,676	94,477	-	1.1282	106,589	-	106,589
225	Summer - Next 3,000 DTs	93,471	-	93,471	23,029	116,501	-	0.6379	74,316	-	74,316
226	Summer - Next 9,000 DTs	72,153	-	72,153	17,777	89,929	-	0.4282	38,508	-	38,508
227	Summer - Next 16,500 DTs	115,500	-	115,500	28,457	143,957	-	0.3179	45,764	-	45,764
228	Summer - Next 30,000 DTs	24,690	-	24,690	6,083	30,773	-	0.1879	5,782	-	5,782
229	Summer - Over 60,000 DTs	-	-	-	-	-	-	0.0529	-	-	-
230	Total Summer DTs	381,615	-	381,615	94,021	475,636	-	-	270,959	-	270,959
231											
232	Integrity Management Rider Revenues								-	-	-
233	Minimum Margin Agreement Revenues								109,249	(45,751)	63,498
234	Compression Charge Revenues								921,025	-	921,025
235											
236											

Updated Total Pro forma Revenues for the Sale and Transportation of Gas

Line	(dekatherms) Rate Schedule	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
237	114 - Interruptible Transportation Service										
238	Bills	2,938			(11)		2,927	350.00	1,024,464		1,024,464
239	Winter - First 1,500 DTs	1,593,934	-	1,593,934	(5,945)	1,587,989		0.9877	1,568,456		1,568,456
240	Winter - Next 3,000 DTs	2,420,506	-	2,420,506	(9,029)	2,411,477		0.9172	2,211,807		2,211,807
241	Winter - Next 9,000 DTs	3,101,909	-	3,101,909	(11,570)	3,090,338		0.7327	2,264,291		2,264,291
242	Winter - Next 16,500 DTs	2,221,916	-	2,221,916	(8,288)	2,213,628		0.4727	1,046,382		1,046,382
243	Winter - Next 30,000 DTs	1,991,676	-	1,991,676	(7,429)	1,984,247		0.2877	570,858		570,858
244	Winter - Over 60,000 DTs	1,678,837	-	1,678,837	(6,262)	1,672,575		0.1543	258,078		258,078
245	Total Winter DTs	13,008,778	-	13,008,778	(48,524)	12,960,254			7,919,882		7,919,882
246											
247	Summer - First 1,500 DTs	2,298,148	-	2,298,148	(8,572)	2,289,575		1.1027	2,524,715		2,524,715
248	Summer - Next 3,000 DTs	3,358,393	-	3,358,393	(12,527)	3,345,866		0.8327	2,785,102		2,785,102
249	Summer - Next 9,000 DTs	3,955,977	-	3,955,977	(14,756)	3,941,221		0.6827	2,690,672		2,690,672
250	Summer - Next 16,500 DTs	2,590,797	-	2,590,797	(9,664)	2,581,133		0.4535	1,170,544		1,170,544
251	Summer - Next 30,000 DTs	2,332,451	-	2,332,451	(8,700)	2,323,751		0.4255	988,756		988,756
252	Summer - Over 60,000 DTs	1,610,935	-	1,610,935	(6,009)	1,604,926		0.1277	204,949		204,949
253	Total Summer DTs	16,145,700	-	16,145,700	(60,228)	16,086,472			10,365,738		10,365,738
254											
255	Integrity Management Rider Revenues								2,550,135	270,299	2,820,434
256	Minimum Margin Agreement Revenues								1,052,269	(188,719)	863,550
257											
258											
259	Experimental Motor Vehicle Fuel										
260	143 / 114 - Interruptible Transportation Service										
261	Bills	-	-	-	-	-	-	350.00	-	-	-
262	Winter - First 1,500 DTs	-	-	-	-	-	-	0.9877	-	-	-
263	Winter - Next 3,000 DTs	-	-	-	-	-	-	0.9172	-	-	-
264	Winter - Next 9,000 DTs	-	-	-	-	-	-	0.7327	-	-	-
265	Winter - Next 16,500 DTs	-	-	-	-	-	-	0.4727	-	-	-
266	Winter - Next 30,000 DTs	-	-	-	-	-	-	0.2877	-	-	-
267	Winter - Over 60,000 DTs	-	-	-	-	-	-	0.1543	-	-	-
268	Total Winter DTs	-	-	-	-	-	-		-	-	-
269											
270	Summer - First 1,500 DTs	-	-	-	-	-	-	1.1027	-	-	-
271	Summer - Next 3,000 DTs	-	-	-	-	-	-	0.8327	-	-	-
272	Summer - Next 9,000 DTs	-	-	-	-	-	-	0.6827	-	-	-
273	Summer - Next 16,500 DTs	-	-	-	-	-	-	0.4535	-	-	-
274	Summer - Next 30,000 DTs	-	-	-	-	-	-	0.4255	-	-	-
275	Summer - Over 60,000 DTs	-	-	-	-	-	-	0.1277	-	-	-
276	Total Summer DTs	-	-	-	-	-	-		-	-	-
277											
278											
279	LARGE GENERAL SERVICE										
280	Bills	7,546	-	-	(18)	-	7,528				
281	Demand Dts	1,847,710	-	-	(29,260)	1,818,450					
282	Winter Dts	29,023,084	-	29,023,084	(315,581)	28,707,503					
283	Summer Dts	35,358,915	-	35,358,915	(364,230)	34,994,685					
284	Total Dts	64,381,999	-	64,381,999	(679,811)	63,702,188					
285											
286	Revenues								68,525,693	7,052	68,532,745

Updated Total Pro forma Revenues for the Sale and Transportation of Gas

Line	(dekatherms) Rate Schedule	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
287											
288											
289	105 - Outdoor Gas Light Service										
290	Bills	744			(43)		701				
291	Fixtures	5,537			(322)		5,215	16.50	86,041		86,041
292	DTs - Winter	3,694	-	3,694	(215)	3,479					
293	DTs - Summer	5,165	-	5,165	(301)	4,864					
294											
295											
296	T-10 (675) - Military Operations Transportation										
297	Bills	12			-		12				
298	Demand	84,000			-	84,000		10.00	840,000		840,000
299	DTs - Winter	835,938	-	835,938	20,932	856,870		1.2492	1,070,402		1,070,402
300	DTs - Summer	479,521	-	479,521	6,932	486,453		0.3392	165,005		165,005
301	Integrity Management Rider Revenues								176,206	18,677	194,883
302											
303	12 (667) Military Installations in Onslow County - Sales										
304	Bills	-			-		-				
305	DTs - Winter	-	-	-	-	-		5.6710	-		-
306	DTs - Summer	-	-	-	-	-		5.1321	-		-
307											
308											
309	T-12 (676) Military Installation in Onslow County - Transportation										
310	Bills	-			-		-				
311	DTs - Winter	-	-	-	-	-		2.9210	-		-
312	DTs - Summer	-	-	-	-	-		2.3821	-		-
313											
314											
315	Power Generation Contracts										
316	Bills	173			(12)		161				
317	DTs - Winter	123,110,706	-	123,110,706	5,037,620	128,148,326			35,744,668	(752,204)	34,992,463
318	DTs - Summer	194,333,184	-	194,333,184	11,464,976	205,798,160			50,130,768	(1,342,357)	48,788,411
319											
320											
321	Municipals Contracts										
322	Bills	37			-		37				
323	DTs - Winter	4,656,388	-	4,656,388	-	4,656,388			4,442,201	(247,120)	4,195,081
324	DTs - Summer	2,685,539	-	2,685,539	-	2,685,539			5,685,737	(345,869)	5,339,768
325											
326											
327	Special Contracts Military										
328	Bills	20			4		24				
329	DTs - Winter	414,340	-	414,340	63,349	477,690			3,042,891	55,610	3,098,501
330	DTs - Summer	336,223	-	336,223	68,297	402,520			3,269,414	51,019	3,310,432
331											
332											
333	Special Contracts										
334	Bills	147			14		161				
335	DTs - Winter	2,066,166	-	2,066,166	-	2,066,166			1,478,168	(250,388)	1,227,780
336	DTs - Summer	2,655,109	-	2,655,109	-	2,655,109			2,009,646	(580,260)	1,429,386
337											
338											
339	SPECIAL TARIFFS & CONTRACTS										
340	Bills	1,133	-	-	(37)	-	1,096				
341	Demand Dts	84,000	-	-	-	84,000					
342	Winter Dts	131,087,232	-	131,087,232	5,121,686	136,208,919					
343	Summer Dts	200,494,740	-	200,494,740	11,537,905	212,032,645					
344	Total Dts	331,581,973	-	331,581,973	16,659,591	348,241,564					
345											
346	Revenues								108,131,146	(3,392,992)	104,738,154

Updated Total Pro forma Revenues for the Sale and Transportation of Gas

Line	(dekatherms) Rate Schedule	Test Period Actual (1)	Normalized Adjustment (2)	Normalized (3)	Growth Adjustment Thru 6/30/2019 (4)	Proforma Dekatherms (5)	Proforma Bills (6)	Revenue Clean Rates (7)	Calculated Revenues (8)	Revenue Adjustments (9)	Proforma Revenues (10)
347											
348											
349	GRAND TOTAL - ALL TARIFFS & CONTRACTS										
350	Bills	8,857,690			123,768		8,981,458				
351	Demand Dts	1,931,710			(29,260)	1,902,450					
352	Winter Dts	212,347,043	(985,988)	211,361,055	5,399,693	216,760,747					
353	Summer Dts	256,954,028	(1,747,650)	255,206,378	11,338,399	266,544,776					
354	Total Dts	469,301,071	(2,733,638)	466,567,432	16,738,091	483,305,524					
355											
356	Revenues								898,210,733	(2,316,210)	895,894,522
357								ck			
358											
359	SALES AND TRANSPORTATION										
360	Total Sales								743,674,812	1,109,926	744,784,739
361	Total Transportation								154,635,920	(3,426,137)	151,109,784
362	Total Annual								898,210,733	(2,316,210)	895,894,522

Updated Components of Pro forma Revenues

Line	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments -(5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
1	101 - Residential Service										
2	Bills - Winter		3,403,324	10.00	34,033,237		34,033,237				
3	Bills - Summer		4,709,351	10.00	47,093,510		47,093,510				
4	DTs - Winter	31,019,259		4.2363	131,406,887	(113,994)	131,292,893	1.3129	40,725,185	2.8023	86,925,269
5	DTs - Summer	8,286,562		4.2363	35,104,360	2,400,736	37,505,097	0.8125	6,732,831	2.8023	23,221,431
6	Integrity Management Rider Revenues				62,247,466	5,537,911	57,785,377				
7											
8											
9	Experimental Motor Vehicle Fuel										
10	143 / 101 - Residential Service										
11	Bills - Winter		-	10.00	-		-				
12	Bills - Summer		-	10.00	-		-				
13	DTs - Winter	-		4.2363	-	-	-	1.3129	-	2.8023	-
14	DTs - Summer	-		4.2363	-	-	-	0.8125	-	2.8023	-
15											
16											
17	RESIDENTIAL SERVICE										
18	Bills		8,112,676								
19	Winter Dts	31,019,259									
20	Summer Dts	8,286,562									
21	Total Dts	39,305,821									
22											
23	Revenues				299,885,461	7,824,653	307,710,113		47,458,016		110,146,701

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Updated Components of Pro forma Revenues

Line	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
24											
25											
26	102- Small General Service										
27	Bills		854,478	22.00	18,798,526		18,798,526				
28	DTs - Winter	18,129,066		3.2113	58,217,869	(6,552,545)	51,665,324	1.0993	19,929,282	2.8023	50,803,082
29	DTs - Summer	8,922,803		3.2113	28,653,796	(1,552,725)	27,101,071	0.7097	6,332,513	2.8023	25,004,370
30	Integrity Management Rider Revenues				20,721,972	2,196,402	22,918,374				
31	Minimum Margin Agreement Revenues				55,648	(55,648)	-				
32											
33											
34	Experimental Motor Vehicle Fuel										
35	143 / 102- Small General Service										
36	Bills		96	22.00	2,119		2,119				
37	Winter Dts	4,829		3.2113	15,506	(9,249)	6,257	1.0993	5,308	2.8023	13,531
38	Summer Dts	7,650		3.2113	24,565	(21,685)	2,881	0.7097	5,429	2.8023	21,437
39											
40											
41	152- Medium General Service										
42	Bills		5,485	75.00	411,355		411,355				
43	Winter - First 500 DTs	1,014,250		2.9995	3,042,242	(213,205)	2,829,037	0.9565	970,130	2.8023	2,842,232
44	Winter - Over 500 DTs	1,646,419		2.9995	4,938,435	(346,093)	4,592,342	0.6315	1,039,714	2.8023	4,613,761
45	Total Winter DTs	2,660,669			7,980,676	(559,298)	7,421,379		2,009,844		7,455,993
46											
47											
48	Summer - First 500 DTs	1,179,309		2.4810	2,925,855	(249,169)	2,676,686	0.9000	1,061,378	2.8023	3,304,777
49	Summer - Over 500 DTs	1,073,809		2.4810	2,664,120	(226,879)	2,437,242	0.6000	644,285	2.8023	3,009,135
50	Total Summer DTs	2,253,118			5,589,965	(476,048)	5,113,938		1,705,663		6,313,912
51											
52	Integrity Management Rider Revenues				3,018,940	319,989	3,338,929				
53	Minimum Margin Agreement Revenues				95,987	(49,428)	46,559				
54											
55											
56	Experimental Motor Vehicle Fuel										
57	143 / 152- Medium General Service										
58	Bills		-	75.00	-		-				
59	Winter - First 500 DTs	-		2.9995	-	-	-	0.9565	-	2.8023	-
60	Winter - Over 500 DTs	-		2.9995	-	-	-	0.6315	-	2.8023	-
61	Total Winter DTs	-			-	-	-		-		-
62											
63											
64	Summer - First 500 DTs	-		2.4810	-	-	-	0.9000	-	2.8023	-
65	Summer - Over 500 DTs	-		2.4810	-	-	-	0.6000	-	2.8023	-
66	Total Summer DTs	-			-	-	-		-		-
67											
68											
69	Experimental Motor Vehicle Fuel										
70	144- Medium General Transportation Service										
71	Bills		-	75.00	-		-				
72	Winter - First 500 DTs	-		2.9995	-	-	-	0.9565	-	0.0523	-
73	Winter - Over 500 DTs	-		2.9995	-	-	-	0.6315	-	0.0523	-
74	Total Winter DTs	-			-	-	-		-		-
75											
76											
77	Summer - First 500 DTs	-		2.4810	-	-	-	0.9000	-	0.0523	-
78	Summer - Over 500 DTs	-		2.4810	-	-	-	0.6000	-	0.0523	-
79	Total Summer DTs	-			-	-	-		-		-
80											
81											
82	142 - Natural Gas Vehicle Fuel - Company Stations										
83	DTs - Winter	30,503		2.4711	75,376		75,376	1.3449	41,024	2.8023	85,479
84	DTs - Summer	47,315		2.4711	116,919		116,919	1.3449	63,634	2.8023	132,590
85	Compression Charge Revenues			4.0000	311,272		311,272				
86	Integrity Management Rider Revenues				50,114	5,312	55,425				
87											
88	SMALL & MEDIUM GENERAL / NGV FUEL SERVICE		860,059								
89	Bills										
90	Winter Dts	20,825,067									
91	Summer Dts	11,230,885									
92	Total Dts	32,055,951									
93											
94	Revenues				144,140,627	(6,754,923)	137,385,704		30,092,696		89,830,393

Updated Components of Pro forma Revenues

Line	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
95											
96											
97	103 - Large General Sales Service										
98	Bills		819	350.00	286,487		286,487				
99	Demand	157,272		2.0000	314,545		314,545	12.7500	2,005,221	-	-
100	Winter - First 1,500 DTs	465,678		0.7351	342,320		342,320	0.8968	417,620	2.8023	1,304,568
101	Winter - Next 3,000 DTs	441,556		0.1601	70,693		70,693	0.8918	393,780	2.8023	1,237,372
102	Winter - Next 9,000 DTs	190,240		0.2051	39,018		39,018	0.5468	104,023	2.8023	533,109
103	Winter - Next 16,500 DTs	35,237		0.0881	3,369		3,369	0.4438	16,970	2.8023	107,153
104	Winter - Next 30,000 DTs	-		0.0951	-		-	0.4368	-	2.8023	-
105	Winter - Over 60,000 DTs	-		0.0651	-		-	0.0968	-	2.8023	-
106	Total Winter DTs	1,135,711			455,400		455,400		932,392		3,182,602
107											
108	Summer - First 1,500 DTs	610,320		0.2403	146,660		146,660	0.8356	509,983	2.8023	1,710,298
109	Summer - Next 3,000 DTs	393,345		0.0000	0		0	0.5856	230,343	2.8023	1,102,271
110	Summer - Next 9,000 DTs	121,186		0.0153	1,854		1,854	0.3606	43,700	2.8023	339,600
111	Summer - Next 16,500 DTs	82,881		0.0000	0		0	0.2656	22,013	2.8023	232,256
112	Summer - Next 30,000 DTs	-		0.0000	-		-	0.1356	-	2.8023	-
113	Summer - Over 60,000 DTs	-		0.0753	-		-	0.0006	-	2.8023	-
114	Total Summer DTs	1,207,731			148,514		148,514		806,039		3,384,426
115											
116	Integrity Management Rider Revenues				183,480	19,448	202,928				
117	Minimum Margin Agreement Revenues				78,618	-	78,618				
118											
119											
120	Experimental Motor Vehicle Fuel										
121	103 / 103 - Large General Sales Service										
122	Bills		62	350.00	21,572		21,572				
123	Demand	10,090		2.0000	20,180		20,180	12.7500	128,651	-	-
124	Winter - First 1,500 DTs	34,505		0.7351	25,364		25,364	0.8968	30,944	2.8023	96,692
125	Winter - Next 3,000 DTs	38,720		0.1601	6,199		6,199	0.8918	34,531	2.8023	108,505
126	Winter - Next 9,000 DTs	6,998		0.2051	1,435		1,435	0.5468	3,827	2.8023	19,612
127	Winter - Next 16,500 DTs	-		0.0881	-		-	0.4438	-	2.8023	-
128	Winter - Next 30,000 DTs	-		0.0951	-		-	0.4368	-	2.8023	-
129	Winter - Over 60,000 DTs	-		0.0651	-		-	0.0968	-	2.8023	-
130	Total Winter DTs	80,223			32,999		32,999		69,301		224,810
131											
132	Summer - First 1,500 DTs	53,567		0.2403	12,872		12,872	0.8356	44,761	2.8023	150,111
133	Summer - Next 3,000 DTs	70,140		0.0000	0		0	0.5856	41,074	2.8023	196,653
134	Summer - Next 9,000 DTs	20,836		0.0153	319		319	0.3606	7,514	2.8023	58,394
135	Summer - Next 16,500 DTs	-		0.0000	-		-	0.2656	-	2.8023	-
136	Summer - Next 30,000 DTs	-		0.0000	-		-	0.1356	-	2.8023	-
137	Summer - Over 60,000 DTs	-		0.0753	-		-	0.0006	-	2.8023	-
138	Total Summer DTs	144,545			13,191		13,191		93,349		406,058
139											
140	Integrity Management Rider Revenues				-	-	-				
141	Minimum Margin Agreement Revenues				-	-	-				
142	Compression Charge Revenues				144,522	-	144,522				
143											
144											
145	104 - Interruptible Sales Service										
146	Bills		192	350.00	67,216		67,216				
147	Winter - First 1,500 DTs	113,488		0.7336	83,255		83,255	1.1018	125,041	2.8023	318,027
148	Winter - Next 3,000 DTs	168,727		0.1586	26,760		26,760	1.4218	239,896	2.8023	472,823
149	Winter - Next 9,000 DTs	137,274		0.2036	27,949		27,949	1.0768	147,817	2.8023	384,684
150	Winter - Next 16,500 DTs	6,724		0.0866	582		582	0.8338	5,607	2.8023	18,843
151	Winter - Next 30,000 DTs	-		0.0936	-		-	0.6418	-	2.8023	-
152	Winter - Over 60,000 DTs	-		0.0636	-		-	0.5384	-	2.8023	-
153	Total Winter DTs	426,213			138,546		138,546		518,361		1,194,378
154											
155	Summer - First 1,500 DTs	151,215		0.5755	87,024		87,024	0.9749	147,420	2.8023	423,751
156	Summer - Next 3,000 DTs	160,569		0.3755	60,294		60,294	0.8549	137,271	2.8023	449,964
157	Summer - Next 9,000 DTs	134,731		0.2755	37,118		37,118	0.8049	108,445	2.8023	377,558
158	Summer - Next 16,500 DTs	4,303		0.1755	755		755	0.6799	2,926	2.8023	12,060
159	Summer - Next 30,000 DTs	-		0.0455	-		-	0.6549	-	2.8023	-
160	Summer - Over 60,000 DTs	-		-	-		-	0.5749	-	2.8023	-
161	Total Summer DTs	450,819			185,192		185,192		396,061		1,263,330
162											
163	Integrity Management Rider Revenues				84,870	8,996	93,865				
164	Minimum Margin Agreement Revenues				-	-	-				

Updated Components of Pro forma Revenues

Line	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
165											
166											
167	Experimental Motor Vehicle Fuel										
168	143 / 104 - Interruptible Sales Service										
169	Bills			350.00	-		-				
170	Winter - First 1,500 DTs	-		0.7336	-		-	1.1018	-	2.8023	-
171	Winter - Next 3,000 DTs	-		0.1586	-		-	1.4218	-	2.8023	-
172	Winter - Next 9,000 DTs	-		0.2036	-		-	1.0768	-	2.8023	-
173	Winter - Next 16,500 DTs	-		0.0866	-		-	0.8338	-	2.8023	-
174	Winter - Next 30,000 DTs	-		0.0936	-		-	0.6418	-	2.8023	-
175	Winter - Over 60,000 DTs	-		0.0636	-		-	0.5384	-	2.8023	-
176	Total Winter DTs	-			-		-		-		-
177											
178	Summer - First 1,500 DTs	-		0.5755	-		-	0.9749	-	2.8023	-
179	Summer - Next 3,000 DTs	-		0.3755	-		-	0.8549	-	2.8023	-
180	Summer - Next 9,000 DTs	-		0.2755	-		-	0.8049	-	2.8023	-
181	Summer - Next 16,500 DTs	-		0.1755	-		-	0.6799	-	2.8023	-
182	Summer - Next 30,000 DTs	-		0.0455	-		-	0.6549	-	2.8023	-
183	Summer - Over 60,000 DTs	-		-	-		-	0.5749	-	2.8023	-
184	Total Summer DTs	-			-		-		-		-
185											
186											
187	113 - Large General Transportation Service										
188	Bills		3,505	350.00	1,226,818		1,226,818		-		
189	Demand	1,612,554		2.0000	3,225,109		3,225,109	0.7500	1,209,416	-	-
190	Standby DTs	-			-		-	12.0000	-	-	-
191	Winter - First 1,500 DTs	1,951,291		0.7351	1,434,394		1,434,394	0.8968	1,749,918	0.0523	102,053
192	Winter - Next 3,000 DTs	2,757,282		0.1601	441,441		441,441	0.8918	2,458,944	0.0523	144,206
193	Winter - Next 9,000 DTs	2,825,585		0.2051	579,528		579,528	0.5468	1,545,030	0.0523	147,778
194	Winter - Next 16,500 DTs	1,876,997		0.0881	165,363		165,363	0.4438	833,011	0.0523	98,167
195	Winter - Next 30,000 DTs	1,651,519		0.0951	157,059		157,059	0.4368	721,384	0.0523	86,374
196	Winter - Over 60,000 DTs	2,700,814		0.0651	175,823		175,823	0.0968	261,439	0.0523	141,253
197	Total Winter DTs	13,763,468			2,953,608		2,953,608		7,569,725		719,830
198											
199	Summer - First 1,500 DTs	2,633,130		0.2403	632,741		632,741	0.8356	2,200,244	0.0523	137,713
200	Summer - Next 3,000 DTs	3,245,987		0.0000	0		0	0.5856	1,900,850	0.0523	169,765
201	Summer - Next 9,000 DTs	3,288,811		0.0153	50,319		50,319	0.3606	1,185,945	0.0523	172,005
202	Summer - Next 16,500 DTs	2,291,396		0.0000	0		0	0.2656	608,595	0.0523	119,840
203	Summer - Next 30,000 DTs	2,067,254		0.0000	0		0	0.1356	280,320	0.0523	108,117
204	Summer - Over 60,000 DTs	3,102,903		-	-		-	0.0006	1,862	0.0523	162,282
205	Total Summer DTs	16,628,481			683,060		683,060		6,177,815		869,722
206											
207	Integrity Management Rider Revenues				1,795,198	190,280	1,985,478				
208	Minimum Margin Agreement Revenues				628,660	(247,500)	381,160				
209											
210											
211	Experimental Motor Vehicle Fuel										
212	143 / 113 - Large General Transportation Service										
213	Bills		123	350.00	43,143		43,143				
214	Demand	38,533		2.0000	77,067		77,067	0.7500	28,900	-	-
215	Standby DTs	-			-		-	12.0000	-	-	-
216	Winter - First 1,500 DTs	63,030		0.7351	46,333		46,333	0.8968	56,525	0.0523	3,296
217	Winter - Next 3,000 DTs	79,275		0.1601	12,692		12,692	0.8918	70,698	0.0523	4,146
218	Winter - Next 9,000 DTs	65,753		0.2051	13,486		13,486	0.5468	35,954	0.0523	3,439
219	Winter - Next 16,500 DTs	102,826		0.0881	9,059		9,059	0.4438	45,634	0.0523	5,378
220	Winter - Next 30,000 DTs	30,729		0.0951	2,922		2,922	0.4368	13,422	0.0523	1,607
221	Winter - Over 60,000 DTs	-		0.0651	-		-	0.0968	-	0.0523	-
222	Total Winter DTs	341,814			84,493		84,493		222,234		17,866
223											
224	Summer - First 1,500 DTs	94,477		0.2403	22,703		22,703	0.8356	78,945	0.0523	4,941
225	Summer - Next 3,000 DTs	118,501		0.0000	0		0	0.5856	68,223	0.0523	6,093
226	Summer - Next 9,000 DTs	89,929		0.0153	1,376		1,376	0.3606	32,429	0.0523	4,703
227	Summer - Next 16,500 DTs	143,957		0.0000	0		0	0.2656	38,235	0.0523	7,529
228	Summer - Next 30,000 DTs	30,773		0.0000	0		0	0.1356	4,173	0.0523	1,609
229	Summer - Over 60,000 DTs	-		-	-		-	0.0006	-	0.0523	-
230	Total Summer DTs	475,636			24,079		24,079		222,004		24,876
231											
232	Integrity Management Rider Revenues				-	-	-				
233	Minimum Margin Agreement Revenues				109,249	(45,751)	63,498				
234	Compression Charge Revenues				921,025	-	921,025				
235											

Updated Components of Pro forma Revenues

Line	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
236											
237	114 - Interruptible Transportation Service										
238	Bills		2,927								
239	Winter - First 1,500 DTs	1,587,989		350.00	1,024,464		1,024,464				
240	Winter - Next 3,000 DTs	2,411,477		0.0205	32,554		32,554	0.9149	1,452,851	0.0523	83,052
241	Winter - Next 9,000 DTs	3,090,338		0.0000	0		0	0.8649	2,085,687	0.0523	126,120
242	Winter - Next 16,500 DTs	2,213,628		0.1155	356,934		356,934	0.5649	1,745,732	0.0523	161,625
243	Winter - Next 30,000 DTs	1,984,247		0.1555	344,219		344,219	0.2649	586,390	0.0523	115,773
244	Winter - Over 60,000 DTs	1,672,575		0.0705	139,889		139,889	0.1649	327,202	0.0523	103,776
245	Total Winter DTs	12,960,254		0.0371	62,053		62,053	0.0649	108,550	0.0523	87,476
246					935,649	-	935,649		6,306,412		677,821
247	Summer - First 1,500 DTs	2,289,575		0.6204	1,420,453		1,420,453	0.4300	984,517	0.0523	119,745
248	Summer - Next 3,000 DTs	3,345,866		0.4804	1,607,354		1,607,354	0.3000	1,003,760	0.0523	174,989
249	Summer - Next 9,000 DTs	3,941,221		0.4304	1,696,302		1,696,302	0.2000	788,244	0.0523	206,126
250	Summer - Next 16,500 DTs	2,581,133		0.3012	777,437		777,437	0.1000	258,113	0.0523	134,993
251	Summer - Next 30,000 DTs	2,323,751		0.3232	751,036		751,036	0.0500	116,168	0.0523	121,532
252	Summer - Over 60,000 DTs	1,604,926		0.0754	121,011		121,011	-	-	0.0523	83,938
253	Total Summer DTs	16,086,472			6,373,593	-	6,373,593		3,150,822		841,322
254											
255	Integrity Management Rider Revenues				2,550,135	270,299	2,820,434				
256	Minimum Margin Agreement Revenues				1,052,269	(188,719)	863,550		-		-
257											
258											
259	Experimental Motor Vehicle Fuel										
260	143 / 114 - Interruptible Transportation Service										
261	Bills			350.00	-		-				
262	Winter - First 1,500 DTs	-		0.0205	-		-	0.9149	-	0.0523	-
263	Winter - Next 3,000 DTs	-		0.0000	-		-	0.8649	-	0.0523	-
264	Winter - Next 9,000 DTs	-		0.1155	-		-	0.5649	-	0.0523	-
265	Winter - Next 16,500 DTs	-		0.1555	-		-	0.2649	-	0.0523	-
266	Winter - Next 30,000 DTs	-		0.0705	-		-	0.1649	-	0.0523	-
267	Winter - Over 60,000 DTs	-		0.0371	-		-	0.0649	-	0.0523	-
268	Total Winter DTs	-			-		-		-		-
269											
270	Summer - First 1,500 DTs	-		0.6204	-		-	0.4300	-	0.0523	-
271	Summer - Next 3,000 DTs	-		0.4804	-		-	0.3000	-	0.0523	-
272	Summer - Next 9,000 DTs	-		0.4304	-		-	0.2000	-	0.0523	-
273	Summer - Next 16,500 DTs	-		0.3012	-		-	0.1000	-	0.0523	-
274	Summer - Next 30,000 DTs	-		0.3232	-		-	0.0500	-	0.0523	-
275	Summer - Over 60,000 DTs	-		0.0754	-		-	-	-	0.0523	-
276	Total Summer DTs	-			-		-		-		-
277											
278											
279	LARGE GENERAL SERVICE										
280	Bills	-	7,628								
281	Demand Dts	1,818,450									
282	Winter Dts	28,707,503									
283	Summer Dts	34,994,685									
284	Total Dts	63,702,188									
285											
286	Revenues				25,882,950	7,052	25,890,002		29,836,702		12,806,041

Updated Components of Pro forma Revenues

Line	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
287											
288											
289	105 - Outdoor Gas Light Service										
290	Bills		701								
291	Fixtures		5,215	16.50	86,041		86,041				
292	DTs - Winter	3,479									
293	DTs - Summer	4,864									
294											
295											
296	T-10 (675) - Military Operations Transportation										
297	Bills		12								
298	Demand	84,000		-	-		-	10.0000	840,000		
299	DTs - Winter	856,870		0.9453	809,999		809,999	0.2516	215,588	0.0523	44,814
300	DTs - Summer	488,453		0.0353	17,172		17,172	0.2516	122,392	0.0523	25,441
301	Integrity Management Rider Revenues				176,206	18,677	194,883				
302											
303	12 (667) Military Installations in Onslow County - Sales										
304	Bills		-								
305	DTs - Winter	-		2.8687	-		-	-	-	2.8023	-
306	DTs - Summer	-		2.3298	-		-	-	-	2.8023	-
307											
308											
309	T-12 (676) Military Installation in Onslow County - Transportation										
310	Bills		-								
311	DTs - Winter	-		2.8687	-		-	-	-	0.0523	-
312	DTs - Summer	-		2.3298	-		-	-	-	0.0523	-
313											
314											
315	Power Generation Contracts										
316	Bills		161								
317	DTs - Winter	128,148,326			32,014,040		32,014,040		2,252,241		726,183
318	DTs - Summer	205,798,160			44,996,679		44,996,679		3,178,413		613,319
319											
320											
321	Municipals Contracts										
322	Bills		37								
323	DTs - Winter	4,656,388			2,940,235		2,940,235		1,170,000		84,846
324	DTs - Summer	2,685,539			3,701,768		3,701,768		1,638,000		-
325											
326											
327	Special Contracts Military										
328	Bills		24								
329	DTs - Winter	477,690			2,050,125		2,050,125		328,497		719,880
330	DTs - Summer	402,520			2,793,175		2,793,175		159,276		357,982
331											
332											
333	Special Contracts										
334	Bills		161								
335	DTs - Winter	2,055,166			1,016,331		1,016,331		192,734		18,716
336	DTs - Summer	2,655,109			1,285,940		1,285,940		124,930		18,517
337											
338											
339	SPECIAL TARIFFS & CONTRACTS										
340	Bills		1,096								
341	Demand Dis	84,000									
342	Winter Dis	136,208,919									
343	Summer Dis	212,032,645									
344	Total Dis	348,241,564									
345											
346	Revenues				91,887,711	18,677	91,906,388		10,222,069		2,609,697

Updated Components of Pro forma Revenues

Line	(dekatherms) Rate Schedule	Proforma Dekatherms (1)	Proforma Bills (2)	Margin Clean Rates (3)	Calculated Margin Revenues (4)	Revenue Adjustments (5)	Proforma Margin Revenues (6)	COG Demand "Clean" Rates (7)	Proforma COG Demand Revenues (8)	COG Commodity "Clean" Rates (9)	Proforma COG Commodity Revenues (10)
347											
348											
349	GRAND TOTAL - ALL TARIFFS & CONTRACTS										
350	Bills		8,981,458								
351	Demand Dts	1,902,450									
352	Winter Dts	216,760,747									
353	Summer Dts	266,544,776									
354	Total Dts	483,305,524									
355											
356	Revenues				561,796,748	1,095,458	562,892,207		117,609,484		215,392,832
357											
358											
359	SALES AND TRANSPORTATION										
360	Total Sales				450,015,560	1,098,173	451,113,733		82,987,860		210,683,146
361	Total Transportation				111,781,189	(2,715)	111,778,474		34,621,624		4,709,685
362	Total Annual				561,796,748	1,095,458	562,892,207		117,609,484		215,392,832

PIEDMONT NATURAL GAS COMPANY, INC.
PRESENT RATES
DOCKET G-9 SUB 743

Rate Schedule	Updated Present Revenue Rates	Updated Present Margin Revenue Rates	Updated Present IMR Base Revenue Rates ¹	Updated Present COG Demand Revenue Rates	Updated Present COG Commodity Revenue Rates
Rates Effective June 2019, Docket G-9 Sub 748					
101 - Residential Service					
Monthly Charge	10.00	10.00			
Monthly Charge	10.00	10.00			
Winter per DT	9.9345	4.2363	1.583	1.3129	2.8023
Summer per DT	9.4341	4.2363	1.583	0.8125	2.8023
102 - Small General Service					
Monthly Charge	22.00	22.00			
Winter per DT	8.0714	3.2113	0.9585	1.0993	2.8023
Summer per DT	7.6818	3.2113	0.9585	0.7097	2.8023
152 - Medium General Service					
Monthly Charge	75.00	75.00			
Winter - First 500 per DT	7.7168	2.9995	0.9585	0.9565	2.8023
Winter - Over 500 per DT	7.3918	2.9995	0.9585	0.6315	2.8023
Summer - First 500 per DT	7.1418	2.481	0.9585	0.9000	2.8023
Summer - Over 500 per DT	6.8418	2.481	0.9585	0.6000	2.8023
142 - Natural Gas Vehicle Fuel					
Winter per DT	7.5768	2.4711	0.9585	1.3449	2.8023
Summer per DT	7.5768	2.4711	0.9585	1.3449	2.8023
Compression Charge per DT (maximum rate)	4.0000	4.0000			
143 - Experimental Motor Vehicle Fuel					
Monthly Charge	<i>Monthly charge is reflected on corresponding rate schedule</i>				
Winter per DT	<i>Volumetric charge is reflected on corresponding rate schedule</i>				
Summer per DT	<i>Volumetric charge is reflected on corresponding rate schedule</i>				
Compression Charge per DT (maximum rate)	4.0000	4.0000			
144 - Experimental Medium Gen Motor Fuel - Transportation					
Monthly Charge	75.00	75.00			
Winter - First 500 per DT	4.9668	2.9995	0.9585	0.9565	0.0523
Winter - Over 500 per DT	4.6418	2.9995	0.9585	0.6315	0.0523
Summer - First 500 per DT	4.3918	2.481	0.9585	0.9000	0.0523
Summer - Over 500 per DT	4.0918	2.481	0.9585	0.6000	0.0523
Compression Charge per DT (maximum rate)	4.0000	4.0000			
103 - Large General Sales Service					
Monthly Charge	350.00	350.00			
Demand Charge per DT	14.7500	2.0000	0.0000	12.7500	0.0000
Winter - First 1,500 per DT	4.5133	0.7351	0.0791	0.8968	2.8023
Winter - Next 3,000 per DT	3.9333	0.1601	0.0791	0.8918	2.8023
Winter - Next 9,000 per DT	3.6333	0.2051	0.0791	0.5468	2.8023
Winter - Next 16,500 per DT	3.4133	0.0881	0.0791	0.4438	2.8023
Winter - Next 30,000 per DT	3.4133	0.0951	0.0791	0.4368	2.8023
Winter - Over 60,000 per DT	3.0433	0.0651	0.0791	0.0968	2.8023
Summer - First 1,500 per DT	3.9573	0.2403	0.0791	0.8356	2.8023
Summer - Next 3,000 per DT	3.4670	0.0000	0.0791	0.5856	2.8023
Summer - Next 9,000 per DT	3.2573	0.0153	0.0791	0.3606	2.8023
Summer - Next 16,500 per DT	3.1470	0.0000	0.0791	0.2656	2.8023
Summer - Next 30,000 per DT	3.0170	0.0000	0.0791	0.1356	2.8023
Summer - Over 60,000 per DT	2.9573	0.0753	0.0791	0.0006	2.8023
104 - Interruptible Sales Service					
Monthly Charge	350.00	350.00			
Winter - First 1,500 per DT	4.7218	0.7336	0.0841	1.1018	2.8023
Winter - Next 3,000 per DT	4.4668	0.1586	0.0841	1.4218	2.8023
Winter - Next 9,000 per DT	4.1668	0.2036	0.0841	1.0768	2.8023
Winter - Next 16,500 per DT	3.8068	0.0866	0.0841	0.8338	2.8023
Winter - Next 30,000 per DT	3.6218	0.0936	0.0841	0.6418	2.8023
Winter - Over 60,000 per DT	3.4884	0.0636	0.0841	0.5384	2.8023
Summer - First 1,500 per DT	4.4368	0.5755	0.0841	0.9749	2.8023
Summer - Next 3,000 per DT	4.1168	0.3755	0.0841	0.8549	2.8023
Summer - Next 9,000 per DT	3.9668	0.2755	0.0841	0.8049	2.8023
Summer - Next 16,500 per DT	3.7418	0.1755	0.0841	0.6799	2.8023
Summer - Next 30,000 per DT	3.5868	0.0455	0.0841	0.6549	2.8023
Summer - Over 60,000 per DT	3.4613	0.0000	0.0841	0.5749	2.8023

PIEDMONT NATURAL GAS COMPANY, INC.
PRESENT RATES
DOCKET G-9 SUB 743

Rate Schedule	Updated Present Revenue Rates	Updated Present Margin Revenue Rates	Updated Present IMR Base Revenue Rates ¹	Updated Present COG Demand Revenue Rates	Updated Present COG Commodity Revenue Rates
Rates Effective June 2019, Docket G-9 Sub 748					
113 - Large General Transportation Service					
Monthly Charge	350.00	350.00			
Demand Charge per DT	2.7500	2.0000	0.0000	0.7500	0.0000
Standby Charge per DT	12.0000	0.0000	0.0000	12.0000	0.0000
Winter - First 1,500 per DT	1.7633	0.7351	0.0791	0.8968	0.0523
Winter - Next 3,000 per DT	1.1833	0.1601	0.0791	0.8918	0.0523
Winter - Next 9,000 per DT	0.8833	0.2051	0.0791	0.5468	0.0523
Winter - Next 16,500 per DT	0.6633	0.0881	0.0791	0.4438	0.0523
Winter - Next 30,000 per DT	0.6633	0.0951	0.0791	0.4368	0.0523
Winter - Over 60,000 per DT	0.2933	0.0651	0.0791	0.0968	0.0523
Summer - First 1,500 per DT	1.2073	0.2403	0.0791	0.8356	0.0523
Summer - Next 3,000 per DT	0.7170	0.0000	0.0791	0.5856	0.0523
Summer - Next 9,000 per DT	0.5073	0.0153	0.0791	0.3606	0.0523
Summer - Next 16,500 per DT	0.3970	0.0000	0.0791	0.2656	0.0523
Summer - Next 30,000 per DT	0.2670	0.0000	0.0791	0.1356	0.0523
Summer - Over 60,000 per DT	0.1320	0.0000	0.0791	0.0006	0.0523
114 - Interruptible Transportation Service					
Monthly Charge	350.00	350.00			
Winter - First 1,500 per DT	1.0718	0.0205	0.0841	0.9149	0.0523
Winter - Next 3,000 per DT	1.0013	0.0000	0.0841	0.8649	0.0523
Winter - Next 9,000 per DT	0.8168	0.1155	0.0841	0.5649	0.0523
Winter - Next 16,500 per DT	0.5568	0.1555	0.0841	0.2649	0.0523
Winter - Next 30,000 per DT	0.3718	0.0705	0.0841	0.1649	0.0523
Winter - Over 60,000 per DT	0.2384	0.0371	0.0841	0.0649	0.0523
Summer - First 1,500 per DT	1.1868	0.6204	0.0841	0.4300	0.0523
Summer - Next 3,000 per DT	0.9168	0.4804	0.0841	0.3000	0.0523
Summer - Next 9,000 per DT	0.7668	0.4304	0.0841	0.2000	0.0523
Summer - Next 16,500 per DT	0.5376	0.3012	0.0841	0.1000	0.0523
Summer - Next 30,000 per DT	0.5096	0.3232	0.0841	0.0500	0.0523
Summer - Over 60,000 per DT	0.2118	0.0754	0.0841	0.0000	0.0523
105 - Outdoor Gas Light Service					
Per Fixture Charge	16.50	16.50	0.00	0.00	0.00
T-10 - Military Operations Transportation					
Demand Charge per DT	10.0000	0.0000	0.0000	10.0000	0.0000
Winter per DT	1.3283	0.9453	0.0791	0.2516	0.0523
Summer per DT	0.4183	0.0353	0.0791	0.2516	0.0523
12 - Military Installations In Onslow County - Sales					
Winter per DT	5.7501	2.8687	0.0791	0.0000	2.8023
Summer per DT	5.2112	2.3298	0.0791	0.0000	2.8023
T-12 - Military Installation In Onslow County - Transportation					
Winter per DT	3.0001	2.8687	0.0791	0.0000	0.0523
Summer per DT	2.4612	2.3298	0.0791	0.0000	0.0523
ST-1 - Standby On-Peak Supply Service					
Demand Charge per DT	4.2600	4.2600	0.0000	0.0000	0.0000
Capacity Charge per DT	1.2700	1.2700	0.0000	0.0000	0.0000
106 - Schedule For Limiting and Curtailing					
Emergency Gas per DT	10.0000	0.0000	0.0000	10.0000	0.0000
Unauthorized Gas per DT	25.0000	0.0000	0.0000	25.0000	0.0000
Reconnect Fees					
<u>Residential</u>					
February Through August	55.00				
September Through January	85.00				
<u>All Others</u>					
February Through August	55.00				
September Through January	110.00				
Returned Check Charge					
Returned Check Charge	25.00				

¹ The IMR rates shown above are only for the recovery of the current approved IMR revenue requirement of \$89,395,694, as approved by the NCUC in Docket No. G-9, Sub 748. Therefore, the IMR rates shown above exclude the portion of the current IMR billing rate designed to recover the IMR Deferred Account balance of \$(15,906,884) approved by the NCUC in Docket No. G-9, Sub 748.

PIEDMONT NATURAL GAS COMPANY, INC.
PROPOSED RATES
DOCKET G-9 SUB 743

Rate Schedule	Updated Proposed Revenue Rates	Updated Proposed Margin Revenue Rates	Updated Proposed IMR Base Revenue Rates	Updated Proposed COG Demand Revenue Rates	Updated Proposed COG Commodity Revenue Rates	Updated Proposed Tax Rider Decrement Rates
101 - Residential Service						
Monthly Charge	10.00	10.00				
Monthly Charge	10.00	10.00				
Winter per DT	11.4553	7.9104	0.0000	1.3377	2.8023	(0.5951)
Summer per DT	10.9455	7.9104	0.0000	0.8279	2.8023	(0.5951)
102- Small General Service						
Monthly Charge	22.00	22.00				
Winter per DT	8.8642	5.2484	0.0000	1.1225	2.8023	(0.3090)
Summer per DT	8.4664	5.2484	0.0000	0.7247	2.8023	(0.3090)
152- Medium General Service						
Monthly Charge	75.00	75.00				
Winter - First 500 per DT	7.9490	4.4816	0.0000	0.9741	2.8023	(0.3090)
Winter - Over 500 per DT	7.6180	4.4816	0.0000	0.6431	2.8023	(0.3090)
Summer - First 500 per DT	7.8914	4.4816	0.0000	0.9165	2.8023	(0.3090)
Summer - Over 500 per DT	7.5859	4.4816	0.0000	0.6110	2.8023	(0.3090)
142 - Natural Gas Vehicle Fuel						
Winter per DT	9.0753	5.2371	0.0000	1.3449	2.8023	(0.3090)
Summer per DT	9.0753	5.2371	0.0000	1.3449	2.8023	(0.3090)
Compression Charge per DT (maximum rate)	4.0000	4.0000				
143- Experimental Motor Vehicle Fuel						
Monthly Charge	<i>Monthly charge is reflected on corresponding rate schedule</i>					
Winter per DT	<i>Volumetric charge is reflected on corresponding rate schedule</i>					
Summer per DT	<i>Volumetric charge is reflected on corresponding rate schedule</i>					
Compression Charge per DT (maximum rate)	4.0000	4.0000				
144- Experimental Medium Gen Motor Fuel - Transportation						
Monthly Charge	75.00	75.00				
Winter - First 500 per DT	5.1990	4.4816	0.0000	0.9741	0.0523	(0.3090)
Winter - Over 500 per DT	4.8680	4.4816	0.0000	0.6431	0.0523	(0.3090)
Summer - First 500 per DT	5.1414	4.4816	0.0000	0.9165	0.0523	(0.3090)
Summer - Over 500 per DT	4.8359	4.4816	0.0000	0.6110	0.0523	(0.3090)
Compression Charge per DT (maximum rate)	4.0000	4.0000				
103 - Large General Sales Service						
Monthly Charge	350.00	350.00				
Demand Charge per DT	15.2500	2.5000	0.0000	12.7500	0.0000	0.0000
Winter - First 1,500 per DT	4.9904	1.3857	0.0000	0.8968	2.8023	(0.0944)
Winter - Next 3,000 per DT	4.3340	0.7343	0.0000	0.8918	2.8023	(0.0944)
Winter - Next 9,000 per DT	3.6378	0.3831	0.0000	0.5468	2.8023	(0.0944)
Winter - Next 16,500 per DT	3.3688	0.2171	0.0000	0.4438	2.8023	(0.0944)
Winter - Next 30,000 per DT	3.2852	0.1405	0.0000	0.4368	2.8023	(0.0944)
Winter - Over 60,000 per DT	2.8494	0.0447	0.0000	0.0968	2.8023	(0.0944)
Summer - First 1,500 per DT	4.4764	0.9329	0.0000	0.8356	2.8023	(0.0944)
Summer - Next 3,000 per DT	3.5943	0.3008	0.0000	0.5856	2.8023	(0.0944)
Summer - Next 9,000 per DT	3.2415	0.1730	0.0000	0.3606	2.8023	(0.0944)
Summer - Next 16,500 per DT	3.0763	0.1028	0.0000	0.2656	2.8023	(0.0944)
Summer - Next 30,000 per DT	2.9144	0.0709	0.0000	0.1356	2.8023	(0.0944)
Summer - Over 60,000 per DT	2.7206	0.0121	0.0000	0.0006	2.8023	(0.0944)
104 - Interruptible Sales Service						
Monthly Charge	350.00	350.00				
Winter - First 1,500 per DT	5.6233	1.7278	0.0000	1.1018	2.8023	(0.0086)
Winter - Next 3,000 per DT	5.1311	0.9156	0.0000	1.4218	2.8023	(0.0086)
Winter - Next 9,000 per DT	4.3482	0.4777	0.0000	1.0768	2.8023	(0.0086)
Winter - Next 16,500 per DT	3.8982	0.2707	0.0000	0.8338	2.8023	(0.0086)
Winter - Next 30,000 per DT	3.6107	0.1752	0.0000	0.6418	2.8023	(0.0086)
Winter - Over 60,000 per DT	3.3878	0.0557	0.0000	0.5384	2.8023	(0.0086)
Summer - First 1,500 per DT	4.7240	0.9554	0.0000	0.9749	2.8023	(0.0086)
Summer - Next 3,000 per DT	4.2856	0.6370	0.0000	0.8549	2.8023	(0.0086)
Summer - Next 9,000 per DT	4.0763	0.4777	0.0000	0.8049	2.8023	(0.0086)
Summer - Next 16,500 per DT	3.7921	0.3185	0.0000	0.6799	2.8023	(0.0086)
Summer - Next 30,000 per DT	3.5601	0.1115	0.0000	0.6549	2.8023	(0.0086)
Summer - Over 60,000 per DT	3.3997	0.0311	0.0000	0.5749	2.8023	(0.0086)

PIEDMONT NATURAL GAS COMPANY, INC.
PROPOSED RATES
DOCKET G-9 SUB 743

Rate Schedule	Updated Proposed Revenue Rates	Updated Proposed Margin Revenue Rates	Updated Proposed IMR Base Revenue Rates	Updated Proposed COG Demand Revenue Rates	Updated Proposed COG Commodity Revenue Rates	Updated Proposed Tax Rider Decrement Rates
113 - Large General Transportation Service						
Monthly Charge	350.00	350.00				
Demand Charge per DT	3.2500	2.5000	0.0000	0.7500	0.0000	0.0000
Winter - First 1,500 per DT	2.2404	1.3657	0.0000	0.8968	0.0523	(0.0944)
Winter - Next 3,000 per DT	1.5840	0.7343	0.0000	0.8918	0.0523	(0.0944)
Winter - Next 9,000 per DT	0.8878	0.3831	0.0000	0.5468	0.0523	(0.0944)
Winter - Next 16,500 per DT	0.8188	0.2171	0.0000	0.4438	0.0523	(0.0944)
Winter - Next 30,000 per DT	0.5352	0.1405	0.0000	0.4368	0.0523	(0.0944)
Winter - Over 60,000 per DT	0.0994	0.0447	0.0000	0.0968	0.0523	(0.0944)
Summer - First 1,500 per DT	1.7264	0.9329	0.0000	0.8356	0.0523	(0.0944)
Summer - Next 3,000 per DT	0.8443	0.3008	0.0000	0.5856	0.0523	(0.0944)
Summer - Next 9,000 per DT	0.4915	0.1730	0.0000	0.3606	0.0523	(0.0944)
Summer - Next 16,500 per DT	0.3263	0.1028	0.0000	0.2656	0.0523	(0.0944)
Summer - Next 30,000 per DT	0.1644	0.0709	0.0000	0.1356	0.0523	(0.0944)
Summer - Over 60,000 per DT	(0.0294)	0.0121	0.0000	0.0006	0.0523	(0.0944)
114 - Interruptible Transportation Service						
Monthly Charge	350.00	350.00				
Winter - First 1,500 per DT	2.7007	1.7278	0.0000	0.9292	0.0523	(0.0086)
Winter - Next 3,000 per DT	1.8377	0.9156	0.0000	0.8784	0.0523	(0.0086)
Winter - Next 9,000 per DT	1.0951	0.4777	0.0000	0.5737	0.0523	(0.0086)
Winter - Next 16,500 per DT	0.5834	0.2707	0.0000	0.2690	0.0523	(0.0086)
Winter - Next 30,000 per DT	0.3864	0.1752	0.0000	0.1675	0.0523	(0.0086)
Winter - Over 60,000 per DT	0.1653	0.0557	0.0000	0.0659	0.0523	(0.0086)
Summer - First 1,500 per DT	1.4358	0.9554	0.0000	0.4367	0.0523	(0.0086)
Summer - Next 3,000 per DT	0.9854	0.6370	0.0000	0.3047	0.0523	(0.0086)
Summer - Next 9,000 per DT	0.7245	0.4777	0.0000	0.2031	0.0523	(0.0086)
Summer - Next 16,500 per DT	0.4638	0.3185	0.0000	0.1016	0.0523	(0.0086)
Summer - Next 30,000 per DT	0.2060	0.1115	0.0000	0.0508	0.0523	(0.0086)
Summer - Over 60,000 per DT	0.0748	0.0311	0.0000	0.0000	0.0523	(0.0086)
105 - Outdoor Gas Light Service						
Per Fixture Charge	19.49	19.49				
T-10 - Military Operations Transportation						
Demand Charge per DT	10.0000	0.0000	0.0000	10.0000	0.0000	0.0000
Winter per DT	1.6062	1.3967	0.0000	0.2516	0.0523	(0.0944)
Summer per DT	0.6962	0.4867	0.0000	0.2516	0.0523	(0.0944)
12 - Military Installations in Onslow County - Sales						
Winter per DT	5.6710	2.8687	0.0000	0.0000	2.8023	0.0000
Summer per DT	5.1321	2.3298	0.0000	0.0000	2.8023	0.0000
T-12 - Military Installation in Onslow County - Transportation						
Winter per DT	2.9210	2.8687	0.0000	0.0000	0.0523	0.0000
Summer per DT	2.3821	2.3298	0.0000	0.0000	0.0523	0.0000
106 - Schedule For Limiting and Curtailing						
Emergency Gas per DT	10.0000	0.0000	0.0000	10.0000	0.0000	0.0000
Unauthorized Gas per DT	25.0000	0.0000	0.0000	25.0000	0.0000	0.0000
Reconnect Fees						
<u>Residential</u>						
February Through August	55.00					
September Through January	85.00					
<u>All Others</u>						
February Through August	55.00					
September Through January	110.00					
Returned Check Charge						
Returned Check Charge	25.00					

Piedmont Natural Gas Company, Inc
Updated Proposed Factors for the Margin Decoupling Tracker Mechanism
Docket No. G-9 Sub 743

	Updated Winter (\$/therm)	Updated Summer (\$/therm)	Heat Factor (therms/HDD)	Base Factor (therms/HDD)
101 - Residential Service	0.79104	0.79104	0.15203	7.80576
102- Small General Service	0.52484	0.52484	0.67579	136.17303
152- Medium General Service				
First 5,000 therms	0.44816	0.44816	9.27590	6475.30726
Over 5,000 therms	0.44816	0.44816	9.27590	6475.30726
<u>Normal Degree Days¹</u>	<u>15 - 15</u>	<u>1 - 31</u>		
January	708.4	727.6		
February	701.7	571.5		
March	470.4	402.1		
April	279.3	157.7		
May	84.5	37.9		
June	12.0	1.2		
July	0.2	0.1		
August	-	-		
September	1.5	17.9		
October	69.2	176.8		
November	317.3	432.8		
December	541.8	660.7		
 Winter	 2,739.6	 2,794.7		
Summer	446.7	391.6		
 Annual	 <u>3,186.3</u>	 <u>3,186.3</u>		

1/ Degree days are computed using 30 year average actual degree days through December 15, 2018.

Constant Growth Discounted Cash Flow Model
30 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] First Call Earnings Growth	[7] Value Line Earnings Growth	[8] Retention Growth Estimate	[9] Average Earnings Growth	[10] Low ROE	[11] Mean ROE	[12] High ROE
Atmos Energy Corporation	ATO	\$2.10	\$96.72	2.17%	2.25%	6.50%	6.40%	7.50%	10.09%	7.62%	8.64%	9.88%	12.37%
Chesapeake Utilities Corporation	CPK	\$1.48	\$88.93	1.66%	1.73%	6.00%	6.00%	9.00%	10.63%	7.91%	7.71%	9.64%	12.39%
New Jersey Resources Corporation	NJR	\$1.17	\$47.14	2.48%	2.55%	7.00%	6.00%	2.50%	5.48%	5.25%	5.01%	7.79%	9.57%
Northwest Natural Gas Company	NWN	\$1.90	\$62.45	3.04%	3.20%	4.30%	4.00%	25.50%	6.42%	10.06%	7.10%	13.25%	28.93%
ONE Gas, Inc.	OGS	\$2.00	\$83.09	2.41%	2.48%	5.90%	5.00%	9.00%	5.27%	6.29%	7.47%	8.78%	11.52%
South Jersey Industries, Inc.	SJI	\$1.15	\$30.34	3.79%	3.96%	9.50%	9.50%	9.50%	7.05%	8.89%	10.97%	12.85%	13.47%
Southwest Gas Corporation	SWX	\$2.18	\$79.24	2.75%	2.84%	5.00%	6.20%	8.50%	7.18%	6.72%	7.82%	9.56%	11.37%
Spire Inc.	SR	\$2.37	\$77.55	3.06%	3.12%	3.90%	2.42%	5.50%	5.85%	4.42%	5.51%	7.54%	9.00%
Proxy Group Mean				2.67%	2.77%	6.01%	5.69%	9.63%	7.25%	7.14%	7.53%	9.91%	13.58%
Proxy Group Median				2.62%	2.70%	5.95%	6.00%	8.75%	6.73%	7.17%	7.59%	9.60%	11.94%

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals indicated number of trading day average as of February 28, 2019

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [9])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Source: Exhibit RBH-3, Value Line

[9] Equals Average([5], [6], [7], [8])

[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

4/1/19

Constant Growth Discounted Cash Flow Model
90 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.10	\$95.68	2.19%	2.28%	6.50%	6.40%	7.50%	10.09%	7.62%	8.66%	9.90%	12.40%
Chesapeake Utilities Corporation	CPK	\$1.48	\$85.38	1.73%	1.80%	6.00%	6.00%	9.00%	10.63%	7.91%	7.79%	9.71%	12.46%
New Jersey Resources Corporation	NJR	\$1.17	\$47.08	2.49%	2.55%	7.00%	6.00%	2.50%	5.48%	5.25%	5.02%	7.80%	9.57%
Northwest Natural Gas Company	NWN	\$1.90	\$64.21	2.96%	3.11%	4.30%	4.00%	25.50%	6.42%	10.06%	7.02%	13.16%	28.84%
ONE Gas, Inc.	OGS	\$2.00	\$82.19	2.43%	2.51%	5.90%	5.00%	9.00%	5.27%	6.29%	7.49%	8.80%	11.54%
South Jersey Industries, Inc.	SJI	\$1.15	\$30.34	3.79%	3.96%	9.50%	9.50%	9.50%	7.05%	8.89%	10.97%	12.84%	13.47%
Southwest Gas Corporation	SWX	\$2.18	\$79.49	2.74%	2.83%	5.00%	6.20%	8.50%	7.18%	6.72%	7.81%	9.55%	11.36%
Spire Inc.	SR	\$2.37	\$76.40	3.10%	3.17%	3.90%	2.42%	5.50%	5.85%	4.42%	5.56%	7.59%	9.04%
Proxy Group Mean				2.68%	2.78%	6.01%	5.69%	9.63%	7.25%	7.14%	7.54%	9.92%	13.59%
Proxy Group Median				2.61%	2.69%	5.95%	6.00%	8.75%	6.73%	7.17%	7.64%	9.63%	11.97%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals indicated number of trading day average as of February 28, 2019
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.5 x [9])
- [5] Source: Zacks
- [6] Source: Yahoo! Finance
- [7] Source: Value Line
- [8] Source: Exhibit RBH-3, Value Line
- [9] Equals Average([5], [6], [7], [8])
- [10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
- [11] Equals [4] + [9]
- [12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model
180 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.10	\$93.81	2.24%	2.32%	6.50%	6.40%	7.50%	10.09%	7.62%	8.71%	9.95%	12.44%
Chesapeake Utilities Corporation	CPK	\$1.48	\$84.44	1.75%	1.82%	6.00%	6.00%	9.00%	10.63%	7.91%	7.81%	9.73%	12.48%
New Jersey Resources Corporation	NJR	\$1.17	\$46.36	2.52%	2.59%	7.00%	6.00%	2.50%	5.48%	5.25%	5.06%	7.84%	9.61%
Northwest Natural Gas Company	NWN	\$1.90	\$64.71	2.94%	3.08%	4.30%	4.00%	25.50%	6.42%	10.06%	6.99%	13.14%	28.81%
ONE Gas, Inc.	OGS	\$2.00	\$80.11	2.50%	2.58%	5.90%	5.00%	9.00%	5.27%	6.29%	7.56%	8.87%	11.61%
South Jersey Industries, Inc.	SJI	\$1.15	\$32.11	3.58%	3.74%	9.50%	9.50%	9.50%	7.05%	8.89%	10.75%	12.63%	13.25%
Southwest Gas Corporation	SWX	\$2.18	\$79.10	2.76%	2.85%	5.00%	6.20%	8.50%	7.18%	6.72%	7.82%	9.57%	11.37%
Spire Inc.	SR	\$2.37	\$74.75	3.17%	3.24%	3.90%	2.42%	5.50%	5.85%	4.42%	5.63%	7.66%	9.11%
Proxy Group Mean				2.68%	2.78%	6.01%	5.69%	9.63%	7.25%	7.14%	7.54%	9.92%	13.59%
Proxy Group Median				2.64%	2.72%	5.95%	6.00%	8.75%	6.73%	7.17%	7.68%	9.65%	12.03%

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals indicated number of trading day average as of February 28, 2019

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [9])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Source: Exhibit RBH-3, Value Line

[9] Equals Average([5], [6], [7], [8])

[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Retention Growth Estimate

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
Company	Ticker	Projected Earnings per share 2022-24	Projected Dividend per share 2022-24	Retention Ratio (B)	Projected Book Value per Share 2022-24	Return on Book Value (R)	B x R	Projected Common Shares Outstanding 2019	Projected Common Shares Outstanding 2022-24	Common Shares Growth Rate	2019 High Price	2019 Low Price	2019 price midpoint	Projected Book Value per Share 2019	Market/Book Ratio	"S"	"V"	S x V	BR + SV
Atmos Energy Corporation	ATO	5.60	2.70	51.79%	56.05	9.99%	5.17%	120.00	145.00	4.94%	\$ 98.40	\$ 89.20	\$ 93.80	46.55	2.02	9.76%	50.37%	4.92%	10.09%
Chesapeake Utilities Corporation	CPK	5.00	2.15	57.00%	49.00	10.20%	5.82%	17.50	20.00	3.38%	\$ 91.50	\$ 77.60	\$ 84.55	34.95	2.42	8.21%	58.66%	4.82%	10.83%
New Jersey Resources Corporation	NJR	2.40	1.33	44.58%	21.40	11.21%	5.00%	88.00	69.00	0.28%	\$ 48.60	\$ 43.90	\$ 46.25	17.05	2.71	0.77%	63.14%	0.48%	5.48%
Northwest Natural Gas Company	NWN	3.50	2.20	37.14%	29.40	11.90%	4.42%	30.00	32.00	1.63%	\$ 64.50	\$ 57.20	\$ 60.85	27.30	2.23	3.63%	55.14%	2.00%	6.42%
ONE Gas, Inc.	OGS	4.75	2.65	44.21%	47.90	9.92%	4.38%	53.00	55.00	0.93%	\$ 84.70	\$ 75.80	\$ 80.25	41.05	1.95	1.82%	48.85%	0.89%	5.27%
South Jersey Industries, Inc.	SJI	2.50	1.40	44.00%	20.40	12.25%	5.39%	90.00	98.00	2.15%	\$ 31.40	\$ 26.80	\$ 29.00	18.40	1.77	3.80%	43.45%	1.85%	7.05%
Southwest Gas Corporation	SWX	5.75	2.60	54.78%	53.60	10.67%	5.84%	54.00	58.00	1.80%	\$ 82.80	\$ 73.30	\$ 78.10	44.90	1.74	3.14%	42.51%	1.33%	7.18%
Spire Inc.	SR	5.00	2.67	46.60%	47.80	10.46%	4.87%	52.00	55.00	1.41%	\$ 79.50	\$ 71.70	\$ 75.60	44.70	1.69	2.39%	40.87%	0.88%	5.85%
																		Average:	7.25%

Notes:

- [1] Source: Value Line
- [2] Source: Value Line
- [3] Equals 1 - [2] / [1]
- [4] Source: Value Line
- [5] Equals [1] / [4]
- [6] Equals [3] x [5]
- [7] Source: Value Line
- [8] Source: Value Line
- [9] Equals ([6] / [7]) ^ 0.25 - 1
- [10] Source: Value Line
- [11] Source: Value Line
- [12] Equals Average ([10], [11])
- [13] Source: Value Line
- [14] Equals [12] / [13]
- [15] Equals [9] x [14]
- [16] Equals 1 - (1 / [14])
- [17] Equals [15] x [16]
- [18] Equals [6] + [17]

1/18

I/A

Ex-Ante Market Risk Premium
Market DCF Method Based - Bloomberg

[1]	[2]	[3]
S&P 500	Current 30-Year	
Est. Required	Treasury (30-day	Implied Market
Market Return	average)	Risk Premium
13.68%	3.04%	10.65%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	25,231.38	0.10%	0.84%	9.50%	10.38%	0.0107%
American Airlines Group Inc	AAL	15,999.85	0.07%	1.14%	15.20%	16.43%	0.0107%
Advance Auto Parts Inc	AAP	11,594.79	0.05%	0.15%	16.17%	16.34%	0.0077%
Apple Inc	AAPL	816,450.73	3.33%	1.70%	9.40%	11.18%	0.3725%
AbbVie Inc	ABBV	116,885.62	0.48%	5.45%	8.81%	14.51%	0.0692%
AmerisourceBergen Corp	ABC	17,583.79	0.07%	1.93%	8.70%	10.71%	0.0077%
ABIOMED Inc	ABMD	15,081.20	0.06%	0.00%	29.00%	29.00%	0.0179%
Abbott Laboratories	ABT	136,337.22	0.56%	1.58%	11.69%	13.36%	0.0744%
Accenture PLC	ACN	103,026.32	0.42%	1.82%	10.27%	12.18%	0.0512%
Adobe Inc	ADBE	128,028.05	0.52%	0.00%	16.75%	16.75%	0.0876%
Analog Devices Inc	ADI	39,394.90	0.16%	1.94%	11.98%	14.03%	0.0226%
Archer-Daniels-Midland Co	ADM	23,803.77	0.10%	3.34%	1.40%	4.76%	0.0046%
Automatic Data Processing Inc	ADP	66,664.41	0.27%	1.89%	14.00%	16.02%	0.0436%
Alliance Data Systems Corp	ADS	9,168.60	0.04%	1.43%	2.54%	3.99%	0.0015%
Autodesk Inc	ADSK	35,700.63	N/A	0.00%	N/A	N/A	N/A
Ameren Corp	AEE	17,428.07	0.07%	2.73%	6.70%	9.53%	0.0068%
American Electric Power Co Inc	AEP	40,030.29	0.16%	3.31%	6.08%	9.49%	0.0155%
AES Corp/VA	AES	11,412.43	0.05%	3.24%	7.97%	11.34%	0.0053%
Aflac Inc	AFL	36,871.33	0.15%	2.23%	3.43%	5.69%	0.0086%
Allergan PLC	AGN	45,804.34	0.19%	2.17%	5.57%	7.80%	0.0146%
American International Group Inc	AIG	37,561.81	0.15%	3.15%	11.00%	14.32%	0.0220%
Apartment Investment & Management Co	AIV	7,058.98	0.03%	3.46%	5.75%	9.31%	0.0027%
Assurant Inc	AIZ	6,354.08	N/A	2.42%	N/A	N/A	N/A
Arthur J Gallagher & Co	AJG	14,776.34	0.06%	2.14%	10.17%	12.41%	0.0075%
Akamai Technologies Inc	AKAM	11,369.38	0.05%	0.00%	14.50%	14.50%	0.0067%
Albemarle Corp	ALB	9,654.27	0.04%	1.49%	11.41%	12.99%	0.0051%
Align Technology Inc	ALGN	20,714.84	0.08%	0.00%	23.19%	23.19%	0.0196%
Alaska Air Group Inc	ALK	7,596.28	0.03%	2.21%	25.37%	27.86%	0.0086%
Allstate Corp/The	ALL	31,330.68	0.13%	2.05%	7.10%	9.22%	0.0118%
Allegion PLC	ALLE	8,497.47	0.03%	1.15%	11.24%	12.46%	0.0043%
Alexion Pharmaceuticals Inc	ALXN	30,242.11	0.12%	0.00%	15.94%	15.94%	0.0197%
Applied Materials Inc	AMAT	36,399.71	0.15%	2.24%	9.23%	11.58%	0.0172%
Advanced Micro Devices Inc	AMD	23,654.68	0.10%	0.00%	15.67%	15.67%	0.0151%
AMETEK Inc	AME	18,075.15	0.07%	0.72%	8.98%	9.73%	0.0072%
Affiliated Managers Group Inc	AMG	5,705.06	0.02%	1.27%	4.37%	5.66%	0.0013%
Amgen Inc	AMGN	118,282.61	0.48%	2.99%	5.83%	8.91%	0.0430%
Ameriprise Financial Inc	AMP	17,835.37	0.07%	2.88%	11.80%	14.85%	0.0108%
American Tower Corp	AMT	77,705.91	0.32%	2.10%	15.31%	17.57%	0.0558%
Amazon.com Inc	AMZN	805,489.24	3.29%	0.00%	37.60%	37.60%	1.2367%
Arista Networks Inc	ANET	21,602.23	0.09%	0.00%	21.64%	21.64%	0.0191%
ANSYS Inc	ANSS	14,849.39	0.06%	0.00%	12.20%	12.20%	0.0074%
Anthem Inc	ANTM	77,291.20	0.32%	1.03%	11.14%	12.22%	0.0386%
Aon PLC	AON	41,167.10	0.17%	1.00%	10.90%	11.95%	0.0201%
AO Smith Corp	AOS	8,719.70	0.04%	1.66%	9.33%	11.07%	0.0039%
Apache Corp	APA	12,593.26	0.05%	5.33%	-5.19%	0.00%	0.0000%
Anadarko Petroleum Corp	APC	21,731.56	0.09%	2.70%	23.31%	26.33%	0.0234%
Air Products & Chemicals Inc	APD	39,792.78	0.16%	2.54%	12.30%	14.99%	0.0244%
Amphenol Corp	APH	28,011.26	0.11%	0.95%	10.64%	11.64%	0.0133%
Aptiv PLC	APTIV	21,611.47	0.09%	1.10%	10.66%	11.82%	0.0104%
Alexandria Real Estate Equities Inc	ARE	15,318.67	0.06%	2.93%	4.80%	7.79%	0.0049%
Arconic Inc	ARNC	8,966.56	0.04%	0.54%	14.35%	14.93%	0.0055%
Alamos Energy Corp	ATO	11,555.31	0.05%	2.12%	6.50%	8.69%	0.0041%
Activision Blizzard Inc	ATVI	32,187.96	0.13%	0.87%	6.65%	7.55%	0.0099%
AvalonBay Communities Inc	AVB	26,957.92	0.11%	3.13%	6.01%	9.24%	0.0102%
Broadcom Inc	AVGO	109,071.17	0.45%	3.55%	13.15%	16.94%	0.0754%
Avery Dennison Corp	AVY	9,073.28	0.04%	1.95%	5.75%	7.76%	0.0029%
American Water Works Co Inc	AWK	18,367.99	0.07%	1.94%	8.45%	10.47%	0.0079%
American Express Co	AXP	90,864.54	0.37%	1.50%	14.99%	16.60%	0.0616%
AutoZone Inc	AZO	23,666.86	0.10%	0.00%	13.22%	13.22%	0.0128%
Boeing Co/The	BA	248,570.85	1.01%	1.84%	15.15%	17.13%	0.1738%
Bank of America Corp	BAC	280,876.73	1.15%	2.36%	9.70%	12.17%	0.1396%
Baxter International Inc	BAX	38,301.98	0.16%	1.12%	12.20%	13.39%	0.0209%
BB&T Corp	BBT	38,923.52	0.16%	3.35%	9.85%	13.36%	0.0212%
Best Buy Co Inc	BBY	18,524.95	0.08%	2.88%	10.65%	13.69%	0.0104%
Becton Dickinson and Co	BDX	66,940.28	0.27%	1.27%	12.41%	13.76%	0.0376%
Franklin Resources Inc	BEN	16,615.14	0.07%	3.13%	10.00%	13.29%	0.0090%
Brown-Forman Corp	BF/B	23,572.63	0.10%	1.33%	9.86%	11.26%	0.0108%
Brighthouse Financial Inc	BHF	4,517.48	0.02%	0.00%	11.14%	11.14%	0.0021%
Baker Hughes a GE Co	BHGE	27,340.61	0.11%	2.59%	40.82%	43.93%	0.0490%
Biogen Inc	BIIB	64,522.45	0.26%	0.00%	5.08%	5.08%	0.0134%

Bank of New York Mellon Corp/The	BK	50,110.09	0.20%	2.30%	7.33%	9.72%	0.0199%
Booking Holdings Inc	BKNG	76,388.39	0.31%	0.00%	12.50%	12.50%	0.0390%
BlackRock Inc	BLK	70,329.68	0.29%	2.99%	9.69%	12.82%	0.0368%
Ball Corp	BLL	18,315.12	0.07%	0.74%	6.50%	7.27%	0.0054%
Bristol-Myers Squibb Co	BMJ	84,344.04	0.34%	3.19%	11.02%	14.39%	0.0495%
Broadridge Financial Solutions Inc	BR	11,712.68	0.05%	1.89%	10.00%	11.88%	0.0057%
Berkshire Hathaway Inc	BRK/B	495,673.82	2.02%	0.00%	-1.60%	-1.60%	-0.0324%
Boston Scientific Corp	BSX	55,604.79	0.23%	0.00%	33.46%	33.46%	0.0760%
BorgWarner Inc	BWA	8,434.73	0.03%	1.68%	5.78%	7.50%	0.0026%
Boston Properties Inc	BXP	20,495.10	0.08%	2.93%	6.24%	9.26%	0.0078%
Citigroup Inc	C	150,450.49	0.61%	3.04%	11.07%	14.28%	0.0877%
Conagra Brands Inc	CAG	11,349.45	0.05%	3.60%	8.00%	11.74%	0.0054%
Cardinal Health Inc	CAH	16,194.22	0.07%	3.63%	4.77%	8.48%	0.0056%
Caterpillar Inc	CAT	79,045.04	0.32%	2.55%	13.35%	16.07%	0.0519%
Chubb Ltd	CB	61,487.33	0.25%	2.27%	10.00%	12.38%	0.0311%
Cboe Global Markets Inc	CBOE	10,703.18	0.04%	1.36%	13.46%	14.91%	0.0065%
CBRE Group Inc	CBRE	16,962.20	0.07%	0.00%	8.55%	8.55%	0.0059%
CBS Corp	CBS	18,729.35	0.08%	1.56%	14.79%	16.47%	0.0126%
Crown Castle International Corp	CCI	49,348.75	0.20%	3.86%	15.50%	19.68%	0.0396%
Carnival Corp	CCL	39,623.14	0.16%	3.57%	10.93%	14.70%	0.0238%
Cadence Design Systems Inc	CDNS	16,052.04	0.07%	0.00%	10.35%	10.35%	0.0068%
Celanese Corp	CE	13,103.36	0.05%	2.30%	7.05%	9.43%	0.0050%
Celgene Corp	CELG	58,363.90	0.24%	0.00%	20.70%	20.70%	0.0493%
Cerner Corp	CERN	18,147.99	0.07%	0.00%	13.20%	13.20%	0.0098%
CF Industries Holdings Inc	CF	9,405.98	0.04%	2.86%	19.75%	22.89%	0.0088%
Citizens Financial Group Inc	CFG	17,006.81	0.07%	3.64%	16.69%	20.64%	0.0143%
Church & Dwight Co Inc	CHD	16,180.29	0.07%	1.40%	8.21%	9.66%	0.0064%
CH Robinson Worldwide Inc	CHRW	12,368.84	0.05%	2.24%	9.07%	11.41%	0.0058%
Charter Communications Inc	CHTR	86,628.83	0.35%	0.00%	41.16%	41.16%	0.1456%
Cigna Corp	CI	66,297.49	0.27%	0.02%	12.65%	12.67%	0.0343%
Cincinnati Financial Corp	CINF	14,146.27	N/A	2.68%	N/A	N/A	N/A
Colgate-Palmolive Co	CL	56,758.63	0.23%	2.63%	6.24%	8.95%	0.0207%
Clorox Co/The	CLX	20,253.80	0.08%	2.46%	4.91%	7.43%	0.0061%
Comerica Inc	CMA	13,850.53	0.06%	2.99%	16.41%	19.65%	0.0111%
Comcast Corp	CMCSA	175,018.97	0.71%	2.16%	11.03%	13.31%	0.0951%
CME Group Inc	CME	65,080.27	0.27%	3.05%	13.40%	16.66%	0.0443%
Chipotle Mexican Grill Inc	CMG	16,803.84	0.07%	0.00%	20.31%	20.31%	0.0139%
Cummins Inc	CMI	24,244.35	0.10%	3.00%	6.81%	9.92%	0.0098%
CMS Energy Corp	CMS	15,416.97	0.06%	2.81%	6.61%	9.51%	0.0060%
Centene Corp	CNC	25,157.94	0.10%	0.00%	13.68%	13.68%	0.0141%
CenterPoint Energy Inc	CNP	15,166.36	0.06%	3.89%	6.92%	10.95%	0.0068%
Capital One Financial Corp	COF	39,105.47	0.16%	1.98%	4.77%	6.79%	0.0108%
Cabot Oil & Gas Corp	COG	10,423.30	0.04%	1.15%	26.58%	27.88%	0.0119%
Cooper Cos Inc/The	COO	14,110.51	0.06%	0.02%	4.70%	4.72%	0.0027%
ConocoPhillips	COP	76,969.32	0.31%	1.82%	6.00%	7.88%	0.0248%
Costco Wholesale Corp	COST	96,352.89	0.39%	1.07%	10.58%	11.71%	0.0461%
Coty Inc	COTY	8,263.83	0.03%	4.55%	8.76%	13.51%	0.0046%
Campbell Soup Co	CPB	10,843.07	0.04%	3.92%	1.75%	5.70%	0.0025%
Capri Holdings Ltd	CPRI	6,872.31	0.03%	0.00%	6.73%	6.73%	0.0019%
Copart Inc	CPRT	13,729.69	0.06%	0.00%	20.00%	20.00%	0.0112%
salesforce.com Inc	CRM	125,192.25	0.51%	0.00%	23.98%	23.98%	0.1226%
Cisco Systems Inc	CSCO	227,892.97	0.93%	2.64%	6.84%	9.57%	0.0890%
CSX Corp	CSX	59,271.86	0.24%	1.25%	10.47%	11.79%	0.0285%
Cintas Corp	CTAS	21,598.77	0.09%	0.97%	12.02%	13.05%	0.0115%
CenturyLink Inc	CTL	14,253.90	0.06%	9.98%	-2.80%	7.03%	0.0041%
Cognizant Technology Solutions Corp	CTSH	40,820.55	0.17%	1.10%	11.40%	12.57%	0.0209%
Citrix Systems Inc	CTXS	13,897.08	0.06%	0.00%	11.85%	11.85%	0.0067%
CVS Health Corp	CVS	75,010.26	0.31%	3.43%	8.68%	12.26%	0.0375%
Chevron Corp	CVX	227,209.50	0.93%	3.95%	6.36%	10.43%	0.0967%
Concho Resources Inc	CXO	22,065.37	0.09%	0.23%	31.00%	31.26%	0.0282%
Dominion Energy Inc	D	59,035.49	0.24%	4.95%	5.72%	10.81%	0.0261%
Delta Air Lines Inc	DAL	33,662.35	0.14%	2.95%	13.07%	16.21%	0.0223%
Deere & Co	DE	52,245.67	0.21%	1.80%	10.39%	12.29%	0.0262%
Discover Financial Services	DFS	23,515.77	0.10%	2.31%	8.80%	11.20%	0.0108%
Dollar General Corp	DG	31,141.28	0.13%	0.97%	15.75%	16.80%	0.0214%
Quest Diagnostics Inc	DGX	11,620.36	0.05%	2.41%	7.88%	10.39%	0.0049%
DR Horton Inc	DHI	14,522.43	0.06%	1.55%	11.80%	13.44%	0.0080%
Danaher Corp	DHR	90,640.24	0.37%	0.54%	9.01%	9.58%	0.0354%
Walt Disney Co/The	DIS	168,219.25	0.69%	1.58%	3.76%	5.37%	0.0369%
Discovery Inc	DISCA	20,031.18	0.08%	0.00%	12.30%	12.30%	0.0101%
DISH Network Corp	DISH	15,210.91	0.06%	0.00%	-20.68%	-20.68%	-0.0128%
Digital Realty Trust Inc	DLR	24,705.94	0.10%	3.78%	18.00%	22.12%	0.0223%
Dollar Tree Inc	DLTR	22,923.65	0.09%	0.00%	9.96%	9.96%	0.0093%
Dover Corp	DOV	13,121.47	0.05%	2.19%	10.97%	13.28%	0.0071%
Duke Realty Corp	DRE	10,622.83	0.04%	2.90%	4.50%	7.47%	0.0032%
Darden Restaurants Inc	DRI	13,846.60	0.06%	2.68%	10.31%	13.13%	0.0074%
DTE Energy Co	DTE	22,478.66	0.09%	3.07%	5.53%	8.69%	0.0080%
Duke Energy Corp	DUK	65,182.82	0.27%	4.22%	4.97%	9.29%	0.0247%
DaVita Inc	DVA	9,468.16	0.04%	0.00%	19.15%	19.15%	0.0074%
Devon Energy Corp	DVN	12,934.23	0.05%	1.18%	1.15%	2.34%	0.0012%
DowDuPont Inc	DWDP	120,020.98	0.49%	2.96%	6.17%	9.21%	0.0452%
DXC Technology Co	DXC	17,668.34	0.07%	1.16%	6.70%	7.89%	0.0057%
Electronic Arts Inc	EA	28,695.26	0.12%	3.46%	11.87%	15.53%	0.0182%
eBay Inc	EBAY	33,987.81	0.14%	0.69%	10.67%	11.40%	0.0158%
Ecolab Inc	ECL	48,793.55	0.20%	1.10%	13.43%	14.60%	0.0291%

Consolidated Edison Inc	ED	26,472.81	0.11%	3.59%	3.73%	7.38%	0.0080%
Equifax Inc	EFX	13,217.84	0.05%	1.46%	7.16%	8.67%	0.0047%
Edison International	EIX	19,512.83	N/A	4.18%	N/A	N/A	N/A
Estee Lauder Cos Inc/The	EL	56,680.84	0.23%	1.06%	12.38%	13.50%	0.0312%
Eastman Chemical Co	EMN	11,558.19	0.05%	2.87%	6.73%	9.70%	0.0046%
Emerson Electric Co	EMR	41,886.34	0.17%	2.88%	8.85%	11.96%	0.0205%
EOG Resources Inc	EOG	54,525.00	0.22%	0.90%	11.57%	12.53%	0.0279%
Equinix Inc	EQIX	35,345.98	0.14%	2.34%	20.50%	23.08%	0.0333%
Equity Residential	EQR	27,260.42	0.11%	3.04%	6.28%	9.42%	0.0105%
Eversource Energy	ES	22,128.45	0.09%	3.07%	5.62%	8.78%	0.0079%
Essex Property Trust Inc	ESS	18,383.28	0.08%	2.78%	6.06%	8.92%	0.0067%
E*TRADE Financial Corp	ETFC	12,066.83	0.05%	1.02%	12.08%	13.16%	0.0065%
Eaton Corp PLC	ETN	33,790.57	0.14%	3.59%	9.23%	12.98%	0.0179%
Entergy Corp	ETR	17,693.55	0.07%	3.96%	-0.96%	2.98%	0.0022%
Evergy Inc	EVRG	14,236.37	0.06%	3.45%	7.43%	11.00%	0.0064%
Edwards Lifesciences Corp	EW	35,172.76	0.14%	0.00%	14.00%	14.00%	0.0201%
Exelon Corp	EXC	46,933.41	0.19%	2.98%	4.12%	7.16%	0.0137%
Expeditors International of Washington	EXPD	12,866.63	0.05%	1.27%	7.70%	9.02%	0.0047%
Expedia Group Inc	EXPE	18,150.04	0.07%	1.06%	17.20%	18.35%	0.0136%
Extra Space Storage Inc	EXR	12,213.02	0.05%	3.68%	4.39%	8.15%	0.0041%
Ford Motor Co	F	34,891.90	0.14%	6.55%	-0.70%	5.82%	0.0083%
Diamondback Energy Inc	FANG	16,919.79	0.07%	0.61%	16.11%	16.77%	0.0116%
Fastenal Co	FAST	18,010.80	0.07%	2.71%	14.85%	17.76%	0.0131%
Facebook Inc	FB	460,776.65	1.88%	0.00%	21.88%	21.88%	0.4117%
Fortune Brands Home & Security Inc	FBHS	6,622.68	0.03%	1.78%	9.97%	11.83%	0.0032%
Freight-McMorgan Inc	FCX	18,692.86	0.08%	1.74%	-12.55%	-10.82%	-0.0083%
FedEx Corp	FDX	47,248.90	0.19%	1.42%	14.25%	15.77%	0.0304%
FirstEnergy Corp	FE	21,603.70	0.09%	3.73%	-0.02%	3.72%	0.0033%
F5 Networks Inc	FFIV	9,994.47	0.04%	0.00%	9.39%	9.39%	0.0038%
Fidelity National Information Services	FIS	34,923.86	0.14%	1.29%	12.00%	13.37%	0.0191%
Fiserv Inc	FISV	33,163.50	0.14%	0.00%	7.40%	7.40%	0.0100%
Fifth Third Bancorp	FITB	18,946.96	0.08%	3.51%	3.95%	7.53%	0.0058%
Foot Locker Inc	FL	6,719.22	0.03%	2.30%	6.24%	8.60%	0.0024%
FLIR Systems Inc	FLIR	6,969.79	N/A	1.32%	N/A	N/A	N/A
Fluor Corp	FLR	5,289.13	0.02%	2.23%	17.99%	20.42%	0.0044%
Flowserv Corp	FLS	5,816.95	0.02%	1.81%	13.05%	14.98%	0.0036%
FleetCor Technologies Inc	FLT	20,026.00	0.08%	0.00%	16.50%	16.50%	0.0135%
FMC Corp	FMC	12,051.88	0.05%	1.58%	10.27%	11.92%	0.0059%
Twenty-First Century Fox Inc	FOXA	93,429.35	0.38%	0.79%	2.66%	3.46%	0.0132%
First Republic Bank/CA	FRC	17,495.05	0.07%	0.72%	12.39%	13.15%	0.0094%
Federal Realty Investment Trust	FRT	9,934.53	0.04%	3.12%	6.15%	9.37%	0.0038%
TechnipFMC PLC	FTI	10,059.97	0.04%	2.36%	15.43%	17.96%	0.0074%
Fortinet Inc	FTNT	14,809.30	0.06%	0.00%	22.10%	22.10%	0.0134%
Fortiva Corp	FTV	27,295.87	0.11%	0.37%	13.89%	14.29%	0.0159%
General Dynamics Corp	GD	49,063.52	0.20%	2.32%	10.09%	12.53%	0.0251%
General Electric Co	GE	80,445.78	0.37%	0.38%	1.60%	1.99%	0.0073%
Gilead Sciences Inc	GILD	82,933.70	0.34%	3.86%	-1.48%	2.35%	0.0080%
General Mills Inc	GIS	28,124.78	0.11%	4.19%	6.43%	10.75%	0.0123%
Corning Inc	GLW	27,387.15	0.11%	2.29%	10.39%	12.80%	0.0143%
General Motors Co	GM	55,646.23	0.23%	3.87%	6.03%	10.02%	0.0228%
Alphabet Inc	GOOGL	780,692.17	3.19%	0.00%	15.22%	15.22%	0.4853%
Genuine Parts Co	GPC	15,875.76	0.06%	2.84%	8.99%	11.96%	0.0078%
Global Payments Inc	GPN	20,548.32	0.08%	0.03%	14.67%	14.70%	0.0123%
Gap Inc/The	GPS	9,688.43	N/A	3.85%	N/A	N/A	N/A
Garmin Ltd	GRMN	15,854.29	0.06%	2.68%	7.28%	10.05%	0.0065%
Goldman Sachs Group Inc/The	GS	75,311.25	0.31%	1.73%	7.27%	9.06%	0.0279%
WW Grainger Inc	GWG	17,164.79	0.07%	1.87%	12.47%	14.46%	0.0101%
Halliburton Co	HAL	26,778.34	0.11%	2.30%	30.08%	32.72%	0.0358%
Hasbro Inc	HAS	10,684.03	0.04%	3.20%	10.67%	14.04%	0.0061%
Huntington Bancshares Inc/OH	HBAN	15,084.58	0.06%	4.11%	8.20%	12.48%	0.0077%
Hanesbrands Inc	HBI	6,718.87	0.03%	3.37%	3.72%	7.15%	0.0020%
HCA Healthcare Inc	HCA	47,604.06	0.19%	0.98%	11.56%	12.59%	0.0245%
HCP Inc	HCP	14,701.04	0.06%	4.83%	3.23%	8.13%	0.0049%
Home Depot Inc/The	HD	209,120.77	0.85%	2.84%	10.72%	13.71%	0.1171%
Hess Corp	HES	17,530.53	0.07%	1.75%	-9.49%	-7.82%	-0.0056%
HollyFrontier Corp	HFC	8,743.19	0.04%	2.65%	7.07%	9.81%	0.0035%
Hartford Financial Services Group Inc/TH	HIG	17,743.46	0.07%	2.52%	9.50%	12.14%	0.0088%
Huntington Ingalls Industries Inc	HII	8,686.78	0.04%	1.63%	40.00%	41.95%	0.0149%
Hilton Worldwide Holdings Inc	HLT	24,335.61	0.10%	0.79%	13.62%	14.46%	0.0144%
Harley-Davidson Inc	HOG	5,922.27	0.02%	4.19%	10.30%	14.70%	0.0036%
Hologic Inc	HOLX	13,735.49	0.06%	0.00%	3.10%	3.10%	0.0017%
Honeywell International Inc	HON	112,330.26	0.46%	2.16%	7.88%	10.12%	0.0464%
Helmerich & Payne Inc	HP	5,929.77	0.02%	5.25%	96.36%	104.14%	0.0252%
Hewlett Packard Enterprise Co	HPE	22,554.64	0.09%	2.80%	6.09%	8.98%	0.0083%
HP Inc	HPQ	30,255.99	0.12%	3.22%	3.08%	6.35%	0.0078%
H&R Block Inc	HRB	4,963.50	0.02%	4.15%	10.00%	14.36%	0.0029%
Hormel Foods Corp	HRL	23,180.07	0.09%	1.92%	5.80%	7.78%	0.0074%
Harris Corp	HRS	19,455.29	0.08%	1.63%	7.00%	8.69%	0.0069%
Henry Schein Inc	HSIC	8,978.24	0.04%	0.00%	7.11%	7.11%	0.0026%
Host Hotels & Resorts Inc	HST	14,520.68	0.06%	4.40%	4.57%	9.07%	0.0054%
Hershey Co/The	HSY	23,078.97	0.09%	2.67%	8.00%	10.77%	0.0102%
Humana Inc	HUM	38,641.99	0.16%	0.69%	14.11%	14.85%	0.0234%
International Business Machines Corp	IBM	122,917.23	0.50%	4.71%	0.72%	5.45%	0.0274%
Intercontinental Exchange Inc	ICE	43,859.63	0.18%	1.39%	8.02%	9.47%	0.0170%
IDEXX Laboratories Inc	IDXX	18,149.96	0.07%	0.00%	18.66%	18.66%	0.0138%

International Flavors & Fragrances Inc	IFF	13,595.75	0.06%	2.22%	4.00%	6.27%	0.0035%
Illumina Inc	ILMN	45,977.19	0.19%	0.00%	25.16%	25.16%	0.0472%
Incyte Corp	INCY	18,457.39	0.08%	0.00%	47.53%	47.53%	0.0358%
IHS Markit Ltd	INFO	21,235.41	0.09%	0.00%	11.21%	11.21%	0.0097%
Intel Corp	INTC	238,161.12	0.97%	2.38%	8.54%	11.03%	0.1072%
Intuit Inc	INTU	64,024.71	0.26%	0.69%	15.82%	16.56%	0.0433%
International Paper Co	IP	18,338.82	0.07%	4.40%	6.08%	10.61%	0.0079%
Interpublic Group of Cos Inc/The	IPG	8,864.54	0.04%	4.07%	13.93%	18.28%	0.0066%
IPG Photonics Corp	IPGP	8,210.70	0.03%	0.00%	12.00%	12.00%	0.0040%
IQVIA Holdings Inc	IQV	27,711.68	0.11%	0.00%	16.15%	16.15%	0.0183%
Ingersoll-Rand PLC	IR	25,563.32	0.10%	2.07%	9.92%	12.09%	0.0126%
Iron Mountain Inc	IRM	10,143.07	0.04%	6.96%	7.16%	14.37%	0.0060%
Intuitive Surgical Inc	ISRG	62,695.10	0.26%	0.00%	12.62%	12.62%	0.0323%
Gartner Inc	IT	12,765.98	0.05%	0.00%	14.02%	14.02%	0.0073%
Illinois Tool Works Inc	ITW	47,273.86	0.19%	2.79%	7.27%	10.16%	0.0196%
Invesco Ltd	IVZ	7,683.34	0.03%	6.41%	4.30%	10.85%	0.0034%
JB Hunt Transport Services Inc	JBHT	11,707.91	0.05%	0.94%	18.78%	19.81%	0.0095%
Johnson Controls International plc	JCI	32,191.39	0.13%	3.07%	7.63%	10.82%	0.0142%
Jacobs Engineering Group Inc	JEC	10,293.55	0.04%	0.77%	13.57%	14.39%	0.0061%
Jefferies Financial Group Inc	JEF	6,127.44	N/A	2.47%	N/A	N/A	N/A
Jack Henry & Associates Inc	JKHY	10,235.93	0.04%	1.16%	11.00%	12.22%	0.0051%
Johnson & Johnson	JNJ	363,891.26	1.49%	2.79%	7.26%	10.15%	0.1508%
Juniper Networks Inc	JNPR	9,421.74	0.04%	2.78%	8.63%	11.53%	0.0044%
JPMorgan Chase & Co	JPM	341,699.87	1.40%	3.24%	7.00%	10.36%	0.1445%
Nordstrom Inc	JWN	7,911.07	N/A	3.28%	N/A	N/A	N/A
Kellogg Co	K	19,347.51	0.08%	4.19%	3.68%	7.95%	0.0063%
KeyCorp	KEY	17,815.19	0.07%	4.20%	13.17%	17.65%	0.0128%
Keysight Technologies Inc	KEYS	15,860.64	0.06%	0.00%	17.00%	17.00%	0.0110%
Kraft Heinz Co/The	KHC	40,473.04	0.17%	5.47%	2.60%	8.14%	0.0135%
Kimco Realty Corp	KIM	7,412.18	0.03%	6.42%	3.86%	10.40%	0.0031%
KLA-Tencor Corp	KLAC	18,901.55	0.08%	2.58%	8.58%	11.28%	0.0087%
Kimberly-Clark Corp	KMB	40,239.95	0.16%	3.51%	6.09%	9.71%	0.0159%
Kinder Morgan Inc/DE	KMI	43,371.66	0.18%	5.19%	10.00%	15.45%	0.0274%
CarMax Inc	KMX	10,562.41	0.04%	0.00%	12.92%	12.92%	0.0056%
Coca-Cola Co/The	KO	193,843.92	0.79%	3.63%	6.72%	10.47%	0.0829%
Kroger Co/The	KR	23,397.80	0.10%	1.85%	6.43%	8.34%	0.0080%
Kohl's Corp	KSS	11,151.19	0.05%	3.61%	10.60%	14.40%	0.0066%
Kansas City Southern	KSU	10,965.29	0.04%	1.40%	8.97%	10.43%	0.0047%
Loews Corp	L	14,824.07	N/A	0.59%	N/A	N/A	N/A
L Brands Inc	LB	7,191.77	0.03%	4.60%	10.72%	15.56%	0.0046%
Leggett & Platt Inc	LEG	5,953.27	0.02%	3.39%	10.00%	13.56%	0.0033%
Lennar Corp	LEN	15,171.91	0.06%	0.33%	12.74%	13.09%	0.0081%
Laboratory Corp of America Holdings	LH	14,616.46	0.06%	0.00%	7.61%	7.61%	0.0045%
Linde PLC	LIN	94,600.13	0.39%	1.80%	19.10%	21.07%	0.0814%
LKQ Corp	LKQ	8,814.21	0.04%	0.00%	13.85%	13.85%	0.0050%
L3 Technologies Inc	LLL	16,794.94	0.07%	1.61%	5.00%	6.66%	0.0046%
Eli Lilly & Co	LLY	130,763.01	0.53%	2.00%	10.72%	12.82%	0.0585%
Lockheed Martin Corp	LMT	87,427.67	0.36%	2.89%	7.61%	10.60%	0.0379%
Lincoln National Corp	LNC	12,772.45	0.05%	2.39%	9.00%	11.50%	0.0060%
Alliant Energy Corp	LNT	10,828.74	0.04%	3.10%	6.29%	9.49%	0.0042%
Lowe's Cos Inc	LOW	84,382.75	0.34%	1.98%	15.80%	17.93%	0.0518%
Lam Research Corp	LRCX	26,870.18	0.11%	2.31%	-0.42%	1.89%	0.0021%
Southwest Airlines Co	LUV	30,972.68	0.13%	1.24%	10.01%	11.31%	0.0143%
Lamb Weston Holdings Inc	LW	10,153.36	0.04%	1.14%	11.02%	12.22%	0.0051%
LyondellBasell Industries NV	LYB	31,741.35	0.13%	4.76%	6.80%	11.72%	0.0152%
Macy's Inc	M	7,622.93	0.03%	6.08%	1.67%	7.80%	0.0024%
Mastercard Inc	MA	230,593.58	0.94%	0.51%	19.66%	20.22%	0.1904%
Mid-America Apartment Communities Inc	MAA	11,796.55	0.05%	3.72%	7.00%	10.85%	0.0052%
Macerich Co/The	MAC	6,154.63	0.03%	6.94%	-0.12%	6.81%	0.0017%
Marriott International Inc/MC	MAR	42,733.39	N/A	1.37%	N/A	N/A	N/A
Masco Corp	MAS	11,061.14	0.05%	1.26%	12.50%	13.84%	0.0063%
Mattel Inc	MAT	4,980.61	0.02%	0.00%	10.00%	10.00%	0.0020%
McDonald's Corp	MCD	140,695.94	0.57%	2.54%	8.74%	11.39%	0.0654%
Microchip Technology Inc	MCHP	20,585.49	0.08%	1.68%	12.39%	14.17%	0.0119%
McKesson Corp	MCK	24,392.50	0.10%	1.16%	8.08%	9.29%	0.0093%
Moody's Corp	MCO	33,065.92	0.14%	1.14%	12.80%	14.02%	0.0189%
Mondelez International Inc	MDLZ	68,107.03	0.28%	2.22%	7.33%	9.62%	0.0268%
Medtronic PLC	MDT	121,323.63	0.50%	2.19%	7.70%	9.98%	0.0494%
MetLife Inc	MET	43,259.07	0.18%	3.88%	8.46%	12.50%	0.0221%
MGM Resorts International	MGM	14,362.52	0.06%	1.91%	3.32%	5.26%	0.0031%
Mohawk Industries Inc	MHK	10,099.96	0.04%	0.00%	7.59%	7.59%	0.0031%
McComick & Co Inc/MD	MKC	17,968.38	0.07%	1.68%	6.10%	7.83%	0.0057%
Martin Marietta Materials Inc	MLM	11,724.46	0.05%	1.04%	13.29%	14.40%	0.0069%
Marsh & McLennan Cos Inc	MMC	46,985.24	0.19%	1.88%	11.80%	13.79%	0.0265%
3M Co	MMM	119,415.16	0.49%	2.77%	7.70%	10.57%	0.0516%
Monster Beverage Corp	MNST	34,669.15	0.14%	0.00%	15.00%	15.00%	0.0212%
Altria Group Inc	MO	98,238.92	0.40%	6.26%	8.50%	15.03%	0.0603%
Mosaic Co/The	MOS	12,053.65	0.05%	0.60%	8.40%	9.02%	0.0044%
Marathon Petroleum Corp	MPC	41,771.13	0.17%	3.38%	16.14%	19.79%	0.0338%
Merck & Co Inc	MRK	209,827.40	0.86%	2.71%	8.76%	11.59%	0.0993%
Marathon Oil Corp	MRO	13,587.17	0.06%	1.20%	0.45%	1.66%	0.0009%
Morgan Stanley	MS	71,734.90	0.29%	3.12%	13.50%	16.83%	0.0493%
MSCI Inc	MSCI	15,576.20	0.06%	1.21%	13.10%	14.39%	0.0092%
Microsoft Corp	MSFT	859,518.07	3.51%	1.60%	11.66%	13.37%	0.4692%
Motorola Solutions Inc	MSI	23,453.26	0.10%	1.62%	4.10%	5.75%	0.0055%

M&T Bank Corp	MTB	23,973.36	0.10%	2.48%	7.98%	10.56%	0.0103%
Mettler-Toledo International Inc	MTD	16,883.32	0.07%	0.00%	12.66%	12.66%	0.0087%
Micron Technology Inc	MU	45,828.39	0.19%	0.35%	-3.30%	-2.96%	-0.0055%
Maxim Integrated Products Inc	MXIM	14,881.07	0.06%	3.38%	8.93%	12.46%	0.0076%
Mylan NV	MYL	13,615.92	0.06%	0.00%	5.98%	5.98%	0.0033%
Noble Energy Inc	NBL	10,579.80	0.04%	1.99%	14.55%	16.69%	0.0072%
Norwegian Cruise Line Holdings Ltd	NCLH	12,090.43	0.05%	0.22%	12.53%	12.76%	0.0063%
Nasdaq Inc	NDAQ	15,147.51	0.06%	2.04%	9.11%	11.24%	0.0070%
NextEra Energy Inc	NEE	89,761.60	0.37%	2.66%	4.90%	7.62%	0.0279%
Newmont Mining Corp	NEM	18,174.68	0.07%	1.64%	14.10%	15.86%	0.0118%
Netflix Inc	NFLX	156,345.96	0.64%	0.00%	32.07%	32.07%	0.2047%
NiSource Inc	NI	10,049.90	0.04%	3.02%	5.75%	8.86%	0.0036%
NIKE Inc	NKE	134,921.66	0.55%	0.99%	18.34%	19.42%	0.1070%
Nektar Therapeutics	NKTR	7,016.88	N/A	0.00%	N/A	N/A	N/A
Nielsen Holdings PLC	NLSN	9,312.72	N/A	4.94%	N/A	N/A	N/A
Northrop Grumman Corp	NOC	49,217.09	0.20%	1.80%	8.89%	10.77%	0.0216%
National Oilwell Varco Inc	NOV	10,789.81	0.04%	0.78%	77.76%	78.84%	0.0347%
NRG Energy Inc	NRG	12,084.28	0.05%	0.29%	46.03%	46.38%	0.0229%
Norfolk Southern Corp	NSC	47,954.74	0.20%	1.90%	13.97%	16.00%	0.0313%
NetApp Inc	NTAP	16,102.75	0.07%	2.40%	13.23%	15.79%	0.0104%
Northern Trust Corp	NTRS	20,355.98	0.08%	2.63%	12.53%	15.32%	0.0127%
Nucor Corp	NUE	18,496.96	0.08%	2.62%	0.85%	3.48%	0.0026%
NVIDIA Corp	NVDA	93,481.56	0.38%	0.43%	7.86%	8.31%	0.0317%
Newell Brands Inc	NWL	7,576.16	0.03%	5.66%	-11.86%	-6.53%	-0.0020%
News Corp	NWSA	7,674.02	0.03%	1.64%	-9.13%	-7.56%	-0.0024%
Realty Income Corp	O	21,010.24	0.09%	3.93%	4.39%	8.41%	0.0072%
ONEOK Inc	OKE	26,450.15	0.11%	5.62%	16.89%	22.99%	0.0248%
Omnicom Group Inc	OMC	16,933.39	0.07%	3.42%	5.22%	8.73%	0.0060%
Oracle Corp	ORCL	187,090.35	0.76%	1.46%	7.54%	9.06%	0.0692%
O'Reilly Automotive Inc	ORLY	29,152.59	0.12%	0.00%	15.58%	15.58%	0.0185%
Occidental Petroleum Corp	OXY	49,582.50	0.20%	4.74%	-0.50%	4.22%	0.0086%
Paycom Inc	PAYC	27,657.20	0.11%	2.96%	9.25%	12.35%	0.0139%
People's United Financial Inc	PBCT	6,704.67	0.03%	4.02%	2.00%	6.06%	0.0017%
PACCAR Inc	PCAR	23,507.50	0.10%	4.00%	6.10%	10.22%	0.0098%
Public Service Enterprise Group Inc	PEG	29,699.02	0.12%	3.20%	6.73%	10.04%	0.0122%
PepsiCo Inc	PEP	162,437.90	0.66%	3.30%	5.48%	8.87%	0.0589%
Pfizer Inc	PFE	240,670.74	0.98%	3.32%	5.45%	8.86%	0.0871%
Principal Financial Group Inc	PFG	14,650.43	0.06%	4.23%	4.16%	8.48%	0.0051%
Procter & Gamble Co/The	PG	246,530.68	1.01%	2.95%	6.51%	9.55%	0.0962%
Progressive Corp/The	PGR	42,566.04	0.17%	1.94%	8.00%	10.02%	0.0174%
Parker-Hannifin Corp	PH	22,789.00	0.09%	1.70%	9.52%	11.30%	0.0105%
PulteGroup Inc	PHM	7,482.83	0.03%	1.62%	7.17%	8.85%	0.0027%
Packaging Corp of America	PKG	9,032.87	0.04%	3.22%	8.25%	11.60%	0.0043%
PerkinElmer Inc	PKI	10,432.93	0.04%	0.31%	15.49%	15.82%	0.0067%
Prologis Inc	PLD	44,103.79	0.18%	2.88%	6.87%	9.85%	0.0177%
Philip Morris International Inc	PM	135,155.56	0.55%	5.40%	9.06%	14.70%	0.0811%
PNC Financial Services Group Inc/The	PNC	57,591.14	0.24%	3.25%	7.37%	10.73%	0.0252%
Pentair PLC	PNR	7,289.81	0.03%	1.86%	10.29%	12.25%	0.0036%
Pinnacle West Capital Corp	PNW	10,512.61	0.04%	3.21%	5.18%	8.46%	0.0036%
PPG Industries Inc	PPG	26,413.61	0.11%	1.73%	7.49%	9.29%	0.0100%
PPL Corp	PPL	23,172.79	0.09%	5.21%	6.17%	11.54%	0.0109%
Perrigo Co PLC	PRGO	6,617.02	0.03%	1.53%	1.17%	2.70%	0.0007%
Prudential Financial Inc	PRU	39,202.65	0.16%	4.24%	9.00%	13.43%	0.0215%
Public Storage	PSA	36,904.74	0.15%	3.88%	5.26%	9.24%	0.0139%
Phillips 66	PSX	43,835.43	0.18%	3.57%	5.70%	9.37%	0.0168%
PVH Corp	PVH	8,697.43	0.04%	0.13%	11.03%	11.17%	0.0040%
Quanta Services Inc	PWR	5,221.86	0.02%	0.11%	25.00%	25.13%	0.0054%
Pioneer Natural Resources Co	PXD	23,731.68	0.10%	0.30%	26.85%	27.19%	0.0263%
PayPal Holdings Inc	PYPL	115,056.64	0.47%	0.00%	22.12%	22.12%	0.1039%
QUALCOMM Inc	QCOM	64,618.22	0.26%	4.73%	11.71%	16.72%	0.0441%
Qorvo Inc	QRVO	8,612.39	0.04%	0.00%	11.83%	11.83%	0.0042%
Royal Caribbean Cruises Ltd	RCL	24,784.43	0.10%	2.36%	11.72%	14.21%	0.0144%
Everest Re Group Ltd	RE	9,191.60	0.04%	2.44%	10.00%	12.56%	0.0047%
Regency Centers Corp	REG	10,940.59	0.04%	3.53%	4.78%	8.39%	0.0037%
Regeneron Pharmaceuticals Inc	REGN	47,070.06	0.19%	0.00%	13.88%	13.88%	0.0267%
Regions Financial Corp	RF	16,690.59	0.07%	3.69%	10.88%	14.77%	0.0101%
Robert Half International Inc	RHI	8,119.96	0.03%	1.79%	13.20%	15.10%	0.0050%
Red Hat Inc	RHT	32,276.46	0.13%	0.00%	18.40%	18.40%	0.0242%
Raymond James Financial Inc	RJF	11,646.92	0.05%	1.57%	12.30%	13.96%	0.0066%
Ralph Lauren Corp	RL	9,841.11	0.04%	1.95%	6.84%	8.86%	0.0036%
ResMed Inc	RMD	14,678.22	0.06%	1.46%	12.50%	14.06%	0.0084%
Rockwell Automation Inc	ROK	21,345.77	0.09%	2.18%	8.94%	11.22%	0.0098%
Rollins Inc	ROL	12,981.45	0.05%	1.98%	10.00%	12.08%	0.0064%
Roper Technologies Inc	ROP	33,532.66	0.14%	0.66%	11.33%	11.93%	0.0163%
Ross Stores Inc	ROST	35,142.94	0.14%	0.95%	10.50%	11.50%	0.0165%
Republic Services Inc	RSI	25,224.31	0.10%	1.93%	13.01%	15.06%	0.0155%
Raytheon Co	RTN	52,637.57	0.21%	1.99%	10.03%	12.11%	0.0260%
SBA Communications Corp	SBAC	20,300.90	0.08%	0.00%	27.95%	27.95%	0.0232%
Starbucks Corp	SBUX	87,375.34	0.36%	2.13%	13.22%	15.49%	0.0552%
Charles Schwab Corp/The	SCHW	61,326.43	0.25%	1.33%	19.78%	21.24%	0.0532%
Sealed Air Corp	SEE	6,788.70	0.03%	1.52%	6.04%	7.61%	0.0021%
Sherwin-Williams Co/The	SHW	40,165.55	0.16%	0.98%	10.74%	11.77%	0.0193%
SVB Financial Group	SIVB	12,997.28	0.05%	0.01%	11.00%	11.01%	0.0058%
JM Smucker Co/The	SJM	12,046.90	0.05%	3.13%	3.20%	6.38%	0.0031%
Schlumberger Ltd	SLB	61,065.95	0.25%	4.54%	33.69%	38.99%	0.0972%

SL Green Realty Corp	SLG	7,742.80	0.03%	3.76%	-0.59%	3.16%	0.0010%
Snap-on Inc	SNA	8,898.58	0.04%	2.35%	7.93%	0.38%	0.0038%
Synopsys Inc	SNPS	15,219.04	0.06%	0.00%	14.50%	14.50%	0.0090%
Southern Co/The	SO	50,392.42	0.21%	4.97%	3.38%	8.43%	0.0173%
Simon Property Group Inc	SPG	55,972.93	0.23%	4.58%	5.23%	9.93%	0.0227%
S&P Global Inc	SPGI	48,811.98	0.20%	1.11%	11.05%	12.23%	0.0249%
Sempra Energy	SRE	33,005.29	0.13%	3.23%	10.10%	13.49%	0.0182%
SunTrust Banks Inc	STI	28,753.96	0.12%	3.27%	8.04%	11.44%	0.0134%
State Street Corp	STT	27,214.28	0.11%	2.81%	8.69%	11.63%	0.0129%
Seagate Technology PLC	STX	13,117.82	0.05%	5.41%	3.37%	8.87%	0.0048%
Constellation Brands Inc	STZ	32,168.90	0.13%	1.75%	8.92%	10.75%	0.0141%
Stanley Black & Decker Inc	SWK	20,044.21	0.08%	2.02%	10.50%	12.63%	0.0103%
Skyworks Solutions Inc	SWKS	14,214.12	0.06%	1.91%	8.87%	10.86%	0.0063%
Synchrony Financia	SYF	23,148.61	0.09%	2.77%	1.55%	4.34%	0.0041%
Stryker Corp	SYK	70,251.01	0.29%	1.19%	8.72%	9.96%	0.0286%
Symantec Corp	SYM	14,375.99	0.06%	1.36%	7.50%	8.91%	0.0052%
Sysco Corp	SY	34,684.40	0.14%	2.24%	12.53%	14.91%	0.0211%
AT&T Inc	T	226,696.44	0.93%	6.57%	4.92%	11.65%	0.1079%
Molson Coors Brewing Co	TAP	13,344.11	0.05%	3.32%	0.26%	3.58%	0.0020%
TransDigm Group Inc	TDG	22,962.13	0.09%	0.00%	11.07%	11.07%	0.0104%
TE Connectivity Ltd	TEL	27,816.56	0.11%	2.16%	11.18%	13.46%	0.0153%
Teleflex Inc	TFX	13,338.56	0.05%	0.47%	12.45%	12.85%	0.0071%
Target Corp	TGT	37,905.99	0.15%	3.55%	6.35%	10.01%	0.0155%
Tiffany & Co	TIF	11,585.11	0.05%	2.25%	10.53%	12.90%	0.0061%
TJX Cos Inc/The	TJX	63,248.02	0.26%	1.69%	11.57%	13.36%	0.0345%
Torchmark Corp	TMK	9,208.78	0.04%	0.82%	7.53%	8.38%	0.0032%
Thermo Fisher Scientific Inc	TMO	103,569.39	0.42%	0.28%	12.00%	12.30%	0.0520%
Tapestry Inc	TPR	10,131.83	0.04%	3.89%	11.75%	15.87%	0.0066%
TripAdvisor Inc	TRIP	7,344.70	0.03%	0.00%	11.39%	11.39%	0.0034%
T Rowe Price Group Inc	TROW	23,727.96	0.10%	2.98%	4.27%	7.32%	0.0071%
Travelers Cos Inc/The	TRV	35,007.30	0.14%	2.41%	17.69%	20.31%	0.0290%
Tractor Supply Co	TSCO	11,564.03	0.05%	1.40%	12.09%	13.57%	0.0064%
Tyson Foods Inc	TSN	22,522.39	N/A	2.55%	N/A	N/A	N/A
Total System Services Inc	TSS	16,700.83	0.07%	0.56%	12.14%	12.74%	0.0087%
Take-Two Interactive Software Inc	TTWO	9,874.51	0.04%	3.55%	10.30%	14.04%	0.0057%
Twitter Inc	TWTR	23,602.86	0.10%	0.00%	37.35%	37.35%	0.0360%
Texas Instruments Inc	TXN	99,272.90	0.41%	2.97%	10.48%	13.60%	0.0551%
Textron Inc	TXT	12,743.07	0.05%	0.16%	12.56%	12.73%	0.0066%
Under Armour Inc	UA	9,517.37	0.04%	0.00%	34.93%	34.93%	0.0136%
United Continental Holdings Inc	UAL	23,925.10	0.10%	0.00%	14.17%	14.17%	0.0138%
UDR Inc	UDR	12,242.64	0.05%	3.05%	5.54%	8.67%	0.0043%
Universal Health Services Inc	UHS	12,603.65	0.05%	0.25%	9.54%	9.80%	0.0050%
Ultra Beauty Inc	ULTA	18,534.45	0.08%	0.00%	21.00%	21.00%	0.0159%
UnitedHealth Group Inc	UNH	232,419.42	0.95%	1.49%	13.73%	15.32%	0.1454%
Unum Group	UNM	8,018.42	0.03%	2.86%	9.00%	11.99%	0.0039%
Union Pacific Corp	UNP	121,226.61	0.49%	2.10%	13.86%	16.11%	0.0797%
United Parcel Service Inc	UPS	94,797.23	0.39%	3.46%	8.96%	12.57%	0.0487%
United Rentals Inc	URI	10,712.16	0.04%	0.00%	17.76%	17.76%	0.0078%
US Bancorp	USB	82,736.16	0.34%	3.06%	6.70%	9.86%	0.0333%
United Technologies Corp	UTX	108,295.97	0.44%	2.37%	9.80%	12.29%	0.0543%
Visa Inc	V	297,332.66	1.21%	0.67%	15.59%	16.32%	0.1981%
Varian Medical Systems Inc	VAR	12,196.87	0.05%	0.00%	16.10%	16.10%	0.0080%
VF Corp	VFC	34,560.09	0.14%	2.07%	-16.64%	-14.75%	-0.0208%
Viacom Inc	VIAB	12,021.41	0.05%	2.76%	4.93%	7.76%	0.0038%
Valero Energy Corp	VLO	34,606.58	0.14%	4.39%	19.17%	23.98%	0.0339%
Vulcan Materials Co	VMC	14,693.87	0.06%	1.10%	15.34%	16.53%	0.0099%
Vornado Realty Trust	VNO	12,824.94	0.05%	3.86%	0.74%	4.62%	0.0024%
Verisk Analytics Inc	VRSK	20,672.51	0.08%	0.79%	9.57%	10.39%	0.0088%
VeriSign Inc	VRSN	21,314.05	0.09%	0.00%	8.80%	8.80%	0.0077%
Vertex Pharmaceuticals Inc	VRTX	48,255.24	0.20%	0.00%	49.41%	49.41%	0.0973%
Ventas Inc	VTR	22,379.61	0.09%	5.10%	2.08%	7.24%	0.0066%
Verizon Communications Inc	VZ	235,196.05	0.96%	4.28%	2.30%	6.63%	0.0637%
Wabtec Corp	WAB	7,077.89	0.03%	0.00%	14.00%	14.00%	0.0040%
Waters Corp	WAT	17,321.73	0.07%	0.00%	11.25%	11.25%	0.0080%
Walgreens Boots Alliance Inc	WBA	67,163.83	0.27%	2.51%	9.77%	12.40%	0.0340%
WeillCare Health Plans Inc	WCG	12,677.66	0.05%	0.00%	17.08%	17.08%	0.0088%
Western Digital Corp	WDC	14,629.80	0.06%	3.98%	2.72%	6.75%	0.0040%
WEC Energy Group Inc	WEC	24,062.93	0.10%	3.08%	4.89%	8.05%	0.0079%
Welltower Inc	WELL	28,710.50	0.12%	4.76%	6.74%	11.66%	0.0137%
Wells Fargo & Co	WFC	226,970.65	0.93%	3.65%	11.26%	15.11%	0.1400%
Whirlpool Corp	WHR	8,995.75	0.04%	3.36%	5.75%	9.20%	0.0034%
Willis Towers Watson PLC	WLTW	22,208.10	0.09%	1.49%	10.00%	11.57%	0.0105%
Waste Management Inc	WM	42,907.68	0.18%	2.00%	8.03%	10.11%	0.0177%
Williams Cos Inc/The	WMB	32,321.09	0.13%	5.71%	3.90%	9.73%	0.0128%
Walmart Inc	WMT	287,591.69	1.17%	2.16%	5.20%	7.41%	0.0870%
Westrock Co	WRK	9,545.83	0.04%	4.85%	4.73%	9.69%	0.0038%
Western Union Co/The	WU	7,789.37	0.03%	4.42%	5.00%	5.93%	0.0030%
Weyerhaeuser Co	WY	18,580.98	0.08%	5.44%	8.70%	14.38%	0.0109%
Wynn Resorts Ltd	WYNN	13,759.77	0.06%	2.39%	31.10%	33.86%	0.0180%
Cimarex Energy Co	XEC	6,885.76	0.03%	1.03%	66.37%	67.75%	0.0190%
Xcel Energy Inc	XEL	28,209.64	0.12%	2.92%	5.89%	8.90%	0.0102%
Xilinx Inc	XLNX	31,721.44	0.13%	1.15%	9.33%	10.53%	0.0136%
Exxon Mobil Corp	XOM	334,676.44	1.37%	4.28%	15.74%	20.35%	0.2781%
DENTSPLY SIRONA Inc	XRAY	9,293.59	0.04%	0.83%	6.90%	7.76%	0.0029%
Xerox Corp	XR	7,098.55	0.03%	3.32%	-0.10%	3.22%	0.0009%

Xylem Inc/NY	XYL	13,565.21	0.06%	1.27%	14.00%	15.36%	0.0085%
Yum! Brands Inc	YUM	28,956.14	0.12%	1.75%	13.12%	14.98%	0.0177%
Zimmer Biomet Holdings Inc	ZBH	25,374.27	0.10%	0.81%	4.74%	5.57%	0.0058%
Zions Bancorp NA	ZION	9,512.76	0.04%	2.58%	6.78%	9.44%	0.0037%
Zoetis Inc	ZTS	45,114.68	0.18%	0.65%	15.36%	16.06%	0.0296%
Total Market Capitalization:		24,491,062.00					13.68%

Notes:

- [1] Equals sum of Col. [9]
- [2] Source: Bloomberg Professional
- [3] Equals [1] - [2]
- [4] Source: Bloomberg Professional
- [5] Equals weight in S&P 500 based on market capitalization
- [6] Source: Bloomberg Professional
- [7] Source: Bloomberg Professional
- [8] Equals $([6] \times (1 + (0.5 \times [7]))) + [7]$
- [9] Equals Col. [5] x Col. [8]

Ex-Ante Market Risk Premium
Market DCF Method Based - Value Line

[1]	[2]	[3]
S&P 500 Est. Required Market Return	Current 30-Year Treasury (30-day average)	Implied Market Risk Premium
16.81%	3.04%	13.77%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	\$ 24,769.02	0.11%	0.85%	9.50%	10.39%	0.0116%
American Airlines Group Inc	AAL	\$ 16,110.36	0.07%	1.14%	1.00%	2.15%	0.0016%
Advance Auto Parts Inc	AAP	\$ 11,758.53	0.05%	0.15%	13.00%	13.16%	0.0070%
Apple Inc	AAPL	\$ 809,080.10	3.63%	1.88%	17.50%	19.54%	0.7104%
AbbVie Inc	ABBV	\$ 118,452.60	0.53%	5.44%	14.50%	20.33%	0.1082%
AmerisourceBergen Corp	ABC	\$ 17,932.90	0.08%	1.88%	8.00%	9.96%	0.0080%
ABIOMED Inc	ABMD	\$ 16,146.98	0.07%	0.00%	24.50%	24.50%	0.0178%
Abbott Laboratories	ABT	\$ 131,970.90	0.59%	1.70%	10.00%	11.79%	0.0699%
Accenture PLC	ACN	\$ 101,784.30	0.46%	1.92%	9.50%	11.51%	0.0526%
Adobe Inc	ADBE	\$ 125,700.00	0.56%	0.00%	22.00%	22.00%	0.1242%
Analog Devices Inc	ADI	\$ 38,776.10	0.17%	2.05%	10.50%	12.66%	0.0220%
Archer-Daniels-Midland Co	ADM	\$ 23,839.20	0.11%	3.29%	9.50%	12.95%	0.0139%
Automatic Data Processing Inc	ADP	\$ 65,857.48	0.30%	2.23%	15.00%	17.40%	0.0515%
Alliance Data Systems Corp	ADS	\$ 9,339.33	0.04%	1.47%	13.50%	15.07%	0.0063%
Autodesk Inc	ADSK	\$ 35,004.21	N/A	0.00%	N/A	N/A	N/A
Ameren Corp	AEE	\$ 17,387.04	0.08%	2.71%	7.50%	10.31%	0.0081%
American Electric Power Co Inc	AEP	\$ 40,014.82	0.18%	3.35%	4.50%	7.93%	0.0142%
AES Corp/VA	AES	\$ 11,470.98	N/A	3.18%	N/A	N/A	N/A
Aflac Inc	AFL	\$ 37,316.23	0.17%	2.29%	8.50%	10.89%	0.0183%
Allergan PLC	AGN	\$ 46,061.52	0.21%	2.17%	4.50%	6.72%	0.0139%
American International Group Inc	AIG	\$ 38,048.71	0.17%	2.98%	52.00%	55.75%	0.0953%
Apartment Investment & Management Co	AIV	\$ 8,175.84	0.04%	3.25%	5.50%	8.84%	0.0032%
Assurant Inc	AIZ	\$ 6,123.45	0.03%	2.45%	7.50%	10.04%	0.0028%
Arthur J Gallagher & Co	AJG	\$ 14,813.57	0.07%	2.13%	17.00%	19.31%	0.0129%
Akamai Technologies Inc	AKAM	\$ 11,692.04	0.05%	0.00%	17.50%	17.50%	0.0092%
Albemarle Corp	ALB	\$ 9,478.25	0.04%	1.50%	8.50%	10.06%	0.0043%
Align Technology Inc	ALGN	\$ 20,358.46	0.09%	0.00%	28.50%	28.50%	0.0261%
Alaska Air Group Inc	ALK	\$ 7,754.47	0.03%	2.23%	3.50%	5.77%	0.0020%
Allstate Corp/The	ALL	\$ 32,647.35	0.15%	2.11%	12.00%	14.24%	0.0209%
Allegion PLC	ALLE	\$ 8,386.44	0.04%	1.22%	10.50%	11.78%	0.0044%
Alexion Pharmaceuticals Inc	ALXN	\$ 28,456.41	0.13%	0.00%	24.50%	24.50%	0.0313%
Applied Materials Inc	AMAT	\$ 37,548.61	0.17%	2.06%	19.00%	21.26%	0.0359%
Advanced Micro Devices Inc	AMD	\$ 23,896.08	N/A	0.00%	N/A	N/A	N/A
AMETEK Inc	AME	\$ 18,397.51	0.08%	0.71%	10.50%	11.25%	0.0093%
Affiliated Managers Group Inc	AMG	\$ 6,318.59	0.03%	1.48%	6.50%	8.03%	0.0023%
Amgen Inc	AMGN	\$ 116,790.80	0.52%	3.13%	8.50%	11.76%	0.0617%
Ameriprise Financial Inc	AMP	\$ 18,412.90	0.08%	2.73%	16.00%	18.95%	0.0157%
American Tower Corp	AMT	\$ 77,801.20	0.35%	2.02%	9.50%	11.62%	0.0406%
Amazon.com Inc	AMZN	\$ 791,906.10	3.56%	0.00%	57.00%	57.00%	2.0279%
Arista Networks Inc	ANET	\$ 20,393.81	0.09%	0.00%	19.00%	19.00%	0.0174%
ANSYS Inc	ANSS	\$ 14,661.00	0.07%	0.00%	13.00%	13.00%	0.0086%
Anthem Inc	ANTM	\$ 80,605.53	0.36%	1.03%	18.00%	19.12%	0.0692%
Aon PLC	AON	\$ 41,582.88	0.19%	0.93%	9.50%	10.47%	0.0196%
AO Smith Corp	AOS	\$ 8,941.12	0.04%	1.67%	12.50%	14.27%	0.0057%
Apache Corp	APA	\$ 12,732.92	N/A	3.00%	N/A	N/A	N/A
Anadarko Petroleum Corp	APC	\$ 21,652.57	N/A	2.74%	N/A	N/A	N/A
Air Products & Chemicals Inc	APD	\$ 39,241.47	0.18%	2.60%	9.50%	12.22%	0.0215%
Amphenol Corp	APH	\$ 28,120.33	0.13%	0.99%	10.00%	11.04%	0.0139%
Aptiv PLC	APTIV	\$ 21,090.47	0.09%	1.09%	10.00%	11.14%	0.0106%
Alexandria Real Estate Equities Inc	ARE	\$ 13,519.73	N/A	2.86%	N/A	N/A	N/A
Arconic Inc	ARNC	\$ 8,814.34	N/A	1.32%	N/A	N/A	N/A
Atmos Energy Corp	ATO	\$ 11,587.60	0.05%	2.19%	7.50%	9.77%	0.0051%
Activision Blizzard Inc	ATVI	\$ 31,969.24	0.14%	0.91%	14.50%	15.48%	0.0222%
AvalonBay Communities Inc	AVB	\$ 27,053.99	0.12%	3.11%	5.50%	8.70%	0.0106%
Broadcom Inc	AVGO	\$ 116,028.20	0.52%	3.77%	47.50%	52.17%	0.2718%
Avery Dennison Corp	AVY	\$ 9,189.44	0.04%	2.08%	11.50%	13.70%	0.0057%
American Water Works Co Inc	AWK	\$ 18,128.23	0.08%	1.93%	10.00%	12.03%	0.0098%
American Express Co	AXP	\$ 91,044.94	0.41%	1.55%	9.00%	10.62%	0.0434%
AutoZone Inc	AZO	\$ 22,854.02	0.10%	0.00%	12.50%	12.50%	0.0128%
Boeing Co/The	BA	\$ 237,035.50	1.06%	1.97%	18.00%	20.15%	0.2145%
Bank of America Corp	BAC	\$ 288,748.30	1.30%	2.05%	13.00%	15.18%	0.1970%
Baxter International Inc	BAX	\$ 39,478.79	0.18%	1.03%	12.50%	13.59%	0.0241%
BB&T Corp	BBT	\$ 39,941.23	0.18%	3.13%	10.00%	13.29%	0.0238%
Best Buy Co Inc	BBY	\$ 16,257.44	0.07%	3.68%	12.00%	15.90%	0.0116%
Becton Dickinson and Co	BDX	\$ 66,644.22	0.30%	1.26%	10.00%	11.32%	0.0339%
Franklin Resources Inc	BEN	\$ 16,490.18	0.07%	3.32%	9.00%	12.47%	0.0092%
Brown-Forman Corp	BFB	\$ 23,169.03	0.10%	1.36%	15.50%	16.97%	0.0177%
BrightHouse Financial Inc	BHF	N/A	N/A	0.00%	N/A	N/A	N/A

Baker Hughes a GE Co	BHGE	\$	10,823.24	N/A	2.74%	N/A	N/A	N/A
Biogen Inc	BIIB	\$	64,710.29	0.23%	0.00%	6.50%	6.50%	0.0189%
Bank of New York Mellon Corp/The	BK	\$	52,355.74	0.24%	2.12%	9.00%	11.22%	0.0264%
Booking Holdings Inc	BKNG	\$	88,883.61	0.40%	0.00%	14.00%	14.00%	0.0559%
BlackRock Inc	BLK	\$	69,097.71	0.31%	3.03%	9.00%	12.17%	0.0378%
Ball Corp	BLL	\$	18,560.36	0.08%	0.73%	22.00%	22.81%	0.0190%
Bristol-Myers Squibb Co	BMJ	\$	81,822.13	0.37%	3.27%	13.50%	16.99%	0.0625%
Broadridge Financial Solutions Inc	BR	\$	11,523.72	0.05%	2.02%	11.00%	13.13%	0.0068%
Berkshire Hathaway Inc	BRK/B	\$	-	N/A	0.00%	N/A	N/A	N/A
Boston Scientific Corp	BSX	\$	55,514.25	0.25%	0.00%	17.00%	17.00%	0.0424%
BorgWarner Inc	BWA	\$	8,501.70	0.04%	1.67%	8.50%	10.24%	0.0039%
Boston Properties Inc	BXP	\$	20,765.97	0.09%	2.90%	3.50%	6.45%	0.0060%
Citigroup Inc	C	\$	157,078.30	0.71%	3.08%	8.50%	11.71%	0.0826%
Conagra Brands Inc	CAG	\$	11,689.40	0.05%	3.53%	4.50%	8.11%	0.0043%
Cardinal Health Inc	CAH	\$	16,315.50	0.07%	3.56%	10.00%	13.74%	0.0101%
Caterpillar Inc	CAT	\$	81,954.06	0.37%	2.48%	17.00%	19.69%	0.0725%
Chubb Ltd	CB	\$	62,114.91	0.28%	2.17%	9.50%	11.77%	0.0329%
Cboe Global Markets Inc	CBOE	\$	10,586.61	0.05%	1.31%	17.00%	18.42%	0.0088%
CBRE Group Inc	CBRE	\$	17,238.30	0.08%	0.00%	10.50%	10.50%	0.0081%
CBS Corp	CBS	\$	19,095.00	0.09%	1.41%	10.50%	11.98%	0.0103%
Crown Castle International Corp	CCI	\$	49,534.40	0.22%	3.85%	10.50%	14.55%	0.0324%
Carnival Corp	CCL	\$	40,789.00	0.18%	3.43%	13.50%	17.16%	0.0314%
Cadence Design Systems Inc	CDNS	\$	15,630.67	0.07%	0.00%	12.50%	12.50%	0.0088%
Celanese Corp	CE	\$	13,888.65	0.06%	2.34%	10.00%	12.46%	0.0078%
Celgene Corp	CELG	\$	61,957.48	0.28%	0.00%	14.50%	14.50%	0.0404%
Cerner Corp	CERN	\$	18,853.28	0.08%	0.00%	9.00%	9.00%	0.0076%
CF Industries Holdings Inc	CF	\$	10,188.73	0.05%	2.96%	48.50%	52.18%	0.0239%
Citizens Financial Group Inc	CFG	\$	17,651.53	0.08%	3.44%	12.50%	16.16%	0.0128%
Church & Dwight Co Inc	CHD	\$	16,274.22	0.07%	1.38%	10.00%	11.45%	0.0084%
CH Robinson Worldwide Inc	CHRW	\$	12,720.84	0.06%	2.17%	9.50%	11.77%	0.0067%
Charter Communications Inc	CHTR	\$	78,789.88	0.35%	0.00%	19.50%	19.50%	0.0690%
Cigna Corp	CI	\$	46,726.87	0.21%	0.02%	13.00%	13.02%	0.0273%
Cincinnati Financial Corp	CINF	\$	13,917.36	0.06%	2.62%	7.00%	9.71%	0.0061%
Colgate-Palmolive Co	CL	\$	57,850.24	0.26%	2.52%	10.50%	13.15%	0.0342%
Clorox Co/The	CLX	\$	20,358.63	0.09%	2.42%	7.50%	10.01%	0.0092%
Comerica Inc	CMA	\$	14,559.66	0.07%	3.05%	18.00%	21.32%	0.0139%
Comcast Corp	CMCSA	\$	174,113.80	0.78%	2.18%	13.00%	15.32%	0.1198%
CME Group Inc	CME	\$	59,982.42	0.27%	1.70%	4.50%	6.24%	0.0168%
Chipotle Mexican Grill Inc	CMG	\$	16,708.27	0.08%	0.00%	16.50%	16.50%	0.0124%
Cummins Inc	CMI	\$	24,728.24	0.11%	2.96%	8.00%	11.08%	0.0123%
CMS Energy Corp	CMS	\$	15,135.01	0.07%	2.87%	7.00%	9.97%	0.0068%
Centene Corp	CNC	\$	26,084.07	0.12%	0.00%	17.00%	17.00%	0.0189%
CenterPoint Energy Inc	CNP	\$	13,473.15	0.06%	3.68%	3.50%	7.24%	0.0044%
Capital One Financial Corp	COF	\$	38,873.03	0.17%	1.95%	10.00%	12.05%	0.0210%
Cabot Oil & Gas Corp	COG	\$	10,650.58	N/A	1.14%	N/A	N/A	N/A
Cooper Cos Inc/The	COO	\$	14,058.80	0.06%	0.02%	14.50%	14.52%	0.0092%
ConocoPhillips	COP	\$	80,863.24	N/A	1.74%	N/A	N/A	N/A
Costco Wholesale Corp	COST	\$	94,818.72	0.43%	1.13%	8.50%	9.68%	0.0412%
Coty Inc	COTY	\$	8,345.83	0.04%	4.50%	11.00%	15.75%	0.0059%
Campbell Soup Co	CPB	\$	11,447.12	N/A	3.95%	N/A	N/A	N/A
Capri Holdings Ltd	CPRI	\$	6,466.45	0.03%	0.00%	7.50%	7.50%	0.0022%
Copart Inc	CPRT	\$	13,228.47	0.06%	0.00%	13.00%	13.00%	0.0077%
salesforce.com Inc	CRM	\$	122,117.00	0.55%	0.00%	65.00%	65.00%	0.3566%
Cisco Systems Inc	CSCO	\$	218,589.90	0.98%	2.85%	8.00%	10.96%	0.1077%
CSX Corp	CSX	\$	61,279.57	0.28%	1.32%	16.50%	17.93%	0.0494%
Cintas Corp	CTAS	\$	21,338.07	0.10%	1.11%	15.50%	16.70%	0.0160%
CenturyLink Inc	CTL	\$	14,404.04	0.06%	7.50%	2.50%	10.09%	0.0085%
Cognizant Technology Solutions Corp	CTSH	\$	41,377.20	0.19%	1.12%	10.00%	11.18%	0.0208%
Citrix Systems Inc	CTXS	\$	14,137.85	0.06%	1.33%	7.50%	8.88%	0.0056%
CVS Health Corp	CVS	\$	63,534.65	0.29%	3.21%	8.50%	11.85%	0.0338%
Chevron Corp	CVX	\$	227,649.60	1.02%	4.00%	25.00%	29.50%	0.3017%
Concho Resources Inc	CXO	\$	20,764.89	0.09%	0.48%	30.00%	30.55%	0.0285%
Dominion Energy Inc	D	\$	48,692.70	0.22%	4.94%	6.50%	11.60%	0.0254%
Delta Air Lines Inc	DAL	\$	35,295.67	0.16%	2.89%	9.50%	12.53%	0.0199%
Deere & Co	DE	\$	51,860.40	0.23%	1.87%	14.00%	16.00%	0.0373%
Discover Financial Services	DFS	\$	24,063.29	0.11%	2.25%	8.00%	10.34%	0.0112%
Dollar General Corp	DG	\$	31,141.24	0.14%	0.98%	13.00%	14.04%	0.0196%
Quest Diagnostics Inc	DGX	\$	11,942.16	0.05%	2.41%	9.50%	12.02%	0.0065%
DR Horton Inc	DHI	\$	15,030.45	0.07%	1.49%	8.00%	9.55%	0.0064%
Danaher Corp	DHR	\$	78,790.94	0.35%	0.57%	10.50%	11.10%	0.0393%
Walt Disney Co/The	DIS	\$	171,435.00	0.77%	1.54%	7.00%	8.59%	0.0662%
Discovery Inc	DISCA	\$	15,181.50	0.07%	0.00%	17.00%	17.00%	0.0116%
DISH Network Corp	DISH	\$	14,649.45	0.07%	0.00%	1.00%	1.00%	0.0007%
Digital Realty Trust Inc	DLR	\$	23,910.54	0.11%	3.70%	6.50%	10.32%	0.0111%
Dollar Tree Inc	DLTR	\$	23,349.62	0.10%	0.00%	17.50%	17.50%	0.0184%
Dover Corp	DOV	\$	13,398.80	0.06%	2.10%	13.00%	15.24%	0.0092%
Duke Realty Corp	DRE	\$	10,687.27	0.05%	2.93%	7.00%	10.03%	0.0048%
Darden Restaurants Inc	DRI	\$	13,721.85	0.06%	2.90%	12.00%	15.07%	0.0093%
DTE Energy Co	DTE	\$	22,329.47	0.10%	3.13%	7.50%	10.75%	0.0108%
Duke Energy Corp	DUK	\$	63,877.67	0.29%	4.26%	5.50%	9.88%	0.0283%
DaVita Inc	DVA	\$	9,827.91	0.04%	0.00%	10.00%	10.00%	0.0044%
Devon Energy Corp	DVN	\$	14,122.03	0.06%	1.21%	19.00%	20.32%	0.0129%
DowDuPont Inc	DWDP	\$	126,768.70	N/A	3.04%	N/A	N/A	N/A
DXC Technology Co	DXC	\$	17,841.57	0.08%	1.15%	14.00%	15.23%	0.0122%

Electronic Arts Inc	EA	\$	29,154.86	0.13%	0.00%	11.50%	11.50%	0.0151%
eBay Inc	EBAY	\$	35,611.74	0.16%	1.51%	14.50%	16.12%	0.0258%
Ecolab Inc	ECL	\$	48,267.79	0.22%	1.10%	9.00%	10.15%	0.0220%
Consolidated Edison Inc	ED	\$	24,913.52	0.11%	3.74%	3.00%	6.80%	0.0076%
Equifax Inc	EFX	\$	13,325.09	0.06%	1.41%	7.50%	8.66%	0.0054%
Edison International	EIX	\$	19,959.18	0.09%	4.02%	4.50%	8.61%	0.0077%
Estee Lauder Cos Inc/The	EL	\$	56,641.35	0.25%	1.10%	12.50%	13.67%	0.0348%
Eastman Chemical Co	EMN	\$	11,715.85	0.05%	2.96%	9.50%	12.60%	0.0066%
Emerson Electric Co	EMR	\$	41,714.30	0.19%	2.91%	14.00%	17.11%	0.0321%
EOG Resources Inc	EOG	\$	55,286.89	N/A	0.97%	N/A	N/A	N/A
Equinix Inc	EQIX	\$	34,065.82	0.15%	2.44%	25.50%	28.25%	0.0432%
Equity Residential	EQR	\$	27,161.81	0.12%	2.92%	-15.00%	-12.30%	-0.0150%
Eversource Energy	ES	\$	22,349.97	0.10%	3.03%	5.50%	8.61%	0.0086%
Essex Property Trust Inc	ESS	\$	18,495.78	0.08%	2.73%	0.50%	3.24%	0.0027%
E*TRADE Financial Corp	ETFC	\$	12,383.78	0.06%	1.16%	26.00%	27.31%	0.0152%
Eaton Corp PLC	ETN	\$	34,537.65	0.16%	3.31%	10.00%	13.48%	0.0209%
Entergy Corp	ETR	\$	16,517.34	0.07%	4.01%	1.00%	5.03%	0.0037%
Evergy Inc	EVRG	\$	-	N/A	3.24%	N/A	N/A	N/A
Edwards Lifesciences Corp	EW	\$	36,370.86	0.16%	0.00%	15.00%	15.00%	0.0245%
Exelon Corp	EXC	\$	46,889.83	0.21%	2.99%	7.50%	10.60%	0.0223%
Expeditors International of Washington I	EXPD	\$	13,032.03	0.06%	1.19%	8.50%	9.74%	0.0057%
Expedia Group Inc	EXPE	\$	19,115.08	0.09%	1.00%	20.00%	21.10%	0.0181%
Extra Space Storage Inc	EXR	\$	11,627.93	0.05%	3.86%	5.00%	8.66%	0.0047%
Ford Motor Co	F	\$	34,647.53	0.16%	6.89%	0.50%	7.41%	0.0115%
Diamondback Energy Inc	FANG	\$	10,078.58	N/A	0.73%	N/A	N/A	N/A
Fastenal Co	FAST	\$	17,926.71	0.08%	2.75%	11.50%	14.41%	0.0116%
Facebook Inc	FB	\$	459,794.90	2.07%	0.00%	26.00%	26.00%	0.5371%
Fortune Brands Home & Security Inc	FBHS	\$	6,786.03	0.03%	1.83%	13.50%	15.45%	0.0047%
Freeport-McMoRan Inc	FCX	\$	18,865.98	N/A	1.84%	N/A	N/A	N/A
FedEx Corp	FDX	\$	47,583.10	0.21%	1.62%	7.50%	9.18%	0.0196%
FirstEnergy Corp	FE	\$	20,483.37	0.09%	3.85%	6.50%	10.48%	0.0096%
F5 Networks Inc	FFIV	\$	10,199.05	0.05%	0.00%	10.50%	10.50%	0.0048%
Fidelity National Information Services I	FIS	\$	35,135.36	0.16%	1.31%	15.50%	16.91%	0.0267%
Fiserv Inc	FISV	\$	33,984.75	0.15%	0.00%	13.50%	13.50%	0.0206%
Fifth Third Bancorp	FITB	\$	18,186.79	0.08%	3.17%	7.00%	10.28%	0.0084%
Foot Locker Inc	FL	\$	6,804.59	0.03%	2.30%	8.00%	10.39%	0.0032%
FLIR Systems Inc	FLIR	\$	7,227.85	0.03%	1.30%	13.50%	14.89%	0.0048%
Fluor Corp	FLR	\$	5,323.13	0.02%	2.22%	8.50%	10.81%	0.0026%
Flowserve Corp	FLS	\$	6,052.44	0.03%	1.64%	7.50%	9.20%	0.0025%
FleetCor Technologies Inc	FLT	\$	20,012.29	0.09%	0.00%	14.50%	14.50%	0.0130%
FMC Corp	FMC	\$	11,876.83	0.05%	1.81%	22.50%	24.51%	0.0131%
Twenty-First Century Fox Inc	FOXA	\$	94,183.44	0.42%	0.71%	12.50%	13.25%	0.0561%
First Republic Bank/CA	FRC	\$	17,018.16	0.08%	0.70%	11.50%	12.24%	0.0094%
Federal Realty Investment Trust	FRT	\$	9,827.82	0.04%	3.05%	3.50%	6.60%	0.0029%
TechnipFMC PLC	FTI	N/A	N/A	N/A	0.00%	N/A	N/A	N/A
Fortinet Inc	FTNT	\$	14,388.65	0.06%	0.00%	39.50%	39.50%	0.0255%
Fortive Corp	FTV	\$	28,197.38	N/A	0.35%	N/A	N/A	N/A
General Dynamics Corp	GD	\$	50,828.05	0.23%	2.17%	9.00%	11.27%	0.0257%
General Electric Co	GE	\$	87,242.10	N/A	0.40%	N/A	N/A	N/A
Gilead Sciences Inc	GILD	\$	84,821.70	0.38%	3.84%	-6.50%	-2.78%	-0.0108%
General Mills Inc	GIS	\$	28,015.06	0.13%	4.22%	3.00%	7.28%	0.0092%
Coming Inc	GLW	\$	27,613.77	0.12%	2.32%	15.50%	18.00%	0.0223%
General Motors Co	GM	\$	55,468.00	0.25%	3.94%	3.00%	7.00%	0.0174%
Alphabet Inc	GOOGL	N/A	N/A	N/A	0.00%	N/A	N/A	N/A
Genuine Parts Co	GPC	\$	16,128.81	0.07%	2.78%	9.00%	11.91%	0.0086%
Global Payments Inc	GPN	\$	20,029.51	0.09%	0.03%	20.00%	20.03%	0.0180%
Gap Inc/The	GPS	\$	9,465.96	0.04%	3.91%	7.00%	11.05%	0.0047%
Garmin Ltd	GRMN	\$	15,561.64	0.07%	2.57%	10.50%	13.20%	0.0092%
Goldman Sachs Group Inc/The	GS	\$	73,191.02	0.33%	1.63%	9.50%	11.21%	0.0369%
WW Grainger Inc	GWW	\$	17,436.11	0.08%	1.76%	9.50%	11.34%	0.0089%
Halliburton Co	HAL	\$	27,488.88	N/A	2.29%	N/A	N/A	N/A
Hasbro Inc	HAS	\$	10,934.32	0.05%	3.15%	8.00%	11.28%	0.0055%
Huntington Bancshares Inc/OH	HBAN	\$	15,073.71	0.07%	3.94%	13.00%	17.20%	0.0116%
Hanesbrands Inc	HBI	\$	6,903.05	0.03%	3.14%	4.00%	7.20%	0.0022%
HCA Healthcare Inc	HCA	\$	49,005.66	0.22%	1.13%	15.00%	16.21%	0.0357%
HCP Inc	HCP	\$	14,557.21	0.07%	4.90%	35.50%	41.27%	0.0270%
Home Depot Inc/The	HD	\$	216,948.40	0.97%	2.40%	12.50%	15.05%	0.1467%
Hess Corp	HES	\$	17,087.87	N/A	1.73%	N/A	N/A	N/A
HollyFrontier Corp	HFC	\$	9,638.75	0.04%	2.46%	22.50%	25.24%	0.0109%
Hartford Financial Services Group Inc/Th	HIG	\$	17,514.15	0.08%	2.46%	13.00%	15.62%	0.0123%
Huntington Ingalls Industries Inc	HII	\$	9,093.98	0.04%	1.59%	12.50%	14.19%	0.0058%
Hilton Worldwide Holdings Inc	HLT	\$	24,722.09	0.11%	0.72%	9.00%	9.75%	0.0108%
Harley-Davidson Inc	HOG	\$	6,084.84	0.03%	3.95%	9.00%	13.13%	0.0036%
Hologic Inc	HOLX	\$	12,417.20	0.06%	0.00%	18.50%	18.50%	0.0103%
Honeywell International Inc	HON	\$	112,975.30	0.51%	2.15%	9.00%	11.25%	0.0571%
Heimerich & Payne Inc	HP	\$	6,078.54	0.03%	5.11%	56.50%	63.05%	0.0172%
Hewlett Packard Enterprise Co	HPE	\$	23,095.29	0.10%	2.77%	7.50%	10.37%	0.0108%
HP Inc	HPQ	\$	36,488.40	0.16%	2.74%	9.50%	12.37%	0.0203%
H&R Block Inc	HRB	\$	5,049.80	0.02%	4.19%	8.50%	12.87%	0.0029%
Hormel Foods Corp	HRL	\$	22,428.33	0.10%	2.00%	9.00%	11.09%	0.0112%
Harris Corp	HRS	\$	19,382.07	0.09%	1.67%	13.50%	15.28%	0.0133%
Henry Schein Inc	HSIC	\$	9,143.23	0.04%	0.00%	8.50%	8.50%	0.0035%
Host Hotels & Resorts Inc	HST	\$	14,626.79	N/A	4.19%	N/A	N/A	N/A
Hershey Co/The	HSY	\$	23,320.97	0.10%	2.60%	6.50%	9.18%	0.0096%

Humana Inc	HUM	\$	42,192.93	0.19%	0.72%	14.00%	14.77%	0.0280%
International Business Machines Corp	IBM	\$	125,268.20	N/A	4.73%	N/A	N/A	N/A
Intercontinental Exchange Inc	ICE	\$	42,750.77	0.19%	1.47%	12.50%	14.06%	0.0270%
IDEXX Laboratories Inc	IDXX	\$	17,827.61	0.08%	0.00%	15.00%	15.00%	0.0120%
International Flavors & Fragrances Inc	IFF	\$	11,807.65	0.05%	2.35%	8.00%	10.44%	0.0055%
Illumina Inc	ILMN	\$	43,641.36	0.20%	0.00%	15.50%	15.50%	0.0304%
Incyte Corp	INCY	\$	17,836.62	N/A	0.00%	N/A	N/A	N/A
IHS Markit Ltd	INFO	\$	21,091.82	0.09%	0.00%	15.50%	15.50%	0.0147%
Intel Corp	INTC	\$	234,635.30	1.05%	2.45%	12.50%	15.10%	0.1592%
Intuit Inc	INTU	\$	61,006.97	0.27%	0.80%	14.50%	15.36%	0.0421%
International Paper Co	IP	\$	18,933.75	0.09%	4.28%	15.50%	20.11%	0.0171%
Interpublic Group of Cos Inc/The	IPG	\$	9,155.65	0.04%	4.02%	11.50%	15.75%	0.0065%
IPG Photonics Corp	IPGP	\$	8,374.62	0.04%	0.00%	10.50%	10.50%	0.0040%
IQVIA Holdings Inc	IQV	\$	28,063.01	0.13%	0.00%	14.50%	14.50%	0.0183%
Ingersoll-Rand PLC	IR	\$	25,928.99	0.12%	2.01%	13.50%	15.65%	0.0182%
Iron Mountain Inc	IRM	\$	10,258.16	0.05%	6.81%	6.50%	13.53%	0.0062%
Intuitive Surgical Inc	ISRG	\$	62,795.15	0.28%	0.00%	15.00%	15.00%	0.0423%
Gartner Inc	IT	\$	12,888.63	0.06%	0.00%	13.50%	13.50%	0.0078%
Illinois Tool Works Inc	ITW	\$	47,520.39	0.21%	2.79%	11.00%	13.94%	0.0298%
Invesco Ltd	IVZ	\$	7,744.78	0.03%	6.37%	4.00%	10.50%	0.0037%
JB Hunt Transport Services Inc	JBHT	\$	12,167.67	0.05%	0.93%	11.50%	12.48%	0.0068%
Johnson Controls International plc	JCI	\$	32,483.45	0.15%	2.92%	6.00%	9.01%	0.0131%
Jacobs Engineering Group Inc	JEC	\$	10,355.90	0.05%	0.92%	13.00%	13.88%	0.0065%
Jefferies Financial Group Inc	JEF	\$	6,774.12	0.03%	2.45%	20.50%	23.20%	0.0071%
Jack Henry & Associates Inc	JKHY	\$	10,158.02	0.05%	1.22%	11.50%	12.79%	0.0058%
Johnson & Johnson	JNJ	\$	363,352.90	1.63%	2.77%	10.50%	13.42%	0.2190%
Juniper Networks Inc	JNPR	\$	9,400.53	0.04%	2.79%	4.50%	7.35%	0.0031%
JPMorgan Chase & Co	JPM	\$	350,731.10	1.58%	3.07%	9.50%	12.72%	0.2004%
Nordstrom Inc	JWN	\$	7,514.36	0.03%	3.33%	7.00%	10.45%	0.0035%
Kellogg Co	K	\$	20,240.51	0.09%	3.88%	5.50%	8.49%	0.0086%
KeyCorp	KEY	\$	18,306.88	0.08%	3.84%	13.00%	17.09%	0.0141%
Keysight Technologies Inc	KEYS	\$	15,311.78	0.07%	0.00%	16.00%	16.00%	0.0110%
Kraft Heinz Co/The	KHC	\$	58,731.42	0.26%	5.19%	9.50%	14.94%	0.0394%
Kimco Realty Corp	KIM	\$	7,504.14	0.03%	6.47%	-0.50%	5.95%	0.0020%
KLA-Tencor Corp	KLAC	\$	17,102.62	0.08%	2.66%	10.50%	13.30%	0.0102%
Kimberly-Clark Corp	KMB	\$	41,462.62	0.19%	3.44%	10.50%	14.12%	0.0263%
Kinder Morgan Inc/DE	KMI	\$	43,410.96	0.20%	4.17%	34.50%	39.39%	0.0768%
CarMax Inc	KMX	\$	10,568.21	0.05%	0.00%	11.50%	11.50%	0.0055%
Coca-Cola Co/The	KO	\$	195,180.20	0.88%	3.62%	6.50%	10.24%	0.0898%
Kroger Co/The	KR	\$	22,806.84	0.10%	2.17%	5.00%	7.22%	0.0074%
Kohl's Corp	KSS	\$	10,761.30	0.05%	4.02%	11.00%	15.24%	0.0074%
Kansas City Southern	KSU	\$	11,275.24	0.05%	1.29%	12.00%	13.37%	0.0088%
Loews Corp	L	\$	14,988.24	0.07%	0.53%	16.50%	17.07%	0.0115%
L Brands Inc	LB	\$	7,359.00	0.03%	4.48%	-4.50%	-0.12%	0.0000%
Leggett & Platt Inc	LEG	\$	5,949.67	0.03%	3.33%	9.00%	12.48%	0.0033%
Lennar Corp	LEN	\$	16,256.63	0.07%	0.33%	12.00%	12.35%	0.0090%
Laboratory Corp of America Holdings	LH	\$	15,039.65	0.07%	0.00%	9.50%	9.50%	0.0064%
Linde PLC	LIN	\$	-	N/A	1.93%	N/A	N/A	N/A
LKQ Corp	LKQ	\$	8,699.51	0.04%	0.00%	12.00%	12.00%	0.0047%
L3 Technologies Inc	LLL	\$	16,660.42	0.07%	1.60%	11.00%	12.89%	0.0095%
Eli Lilly & Co	LLY	\$	130,000.00	0.58%	2.10%	12.00%	14.23%	0.0831%
Lockheed Martin Corp	LMT	\$	85,567.31	0.38%	3.02%	13.50%	16.72%	0.0643%
Lincoln National Corp	LNC	\$	13,434.30	0.06%	2.43%	10.50%	13.06%	0.0079%
Alliant Energy Corp	LNT	\$	10,765.76	0.05%	3.11%	6.50%	9.71%	0.0047%
Lowe's Cos Inc	LOW	\$	85,049.13	0.38%	1.99%	13.00%	15.12%	0.0578%
Lam Research Corp	LRCX	\$	27,531.31	0.12%	2.46%	13.00%	15.62%	0.0183%
Southwest Airlines Co	LUV	\$	30,538.89	0.14%	1.18%	11.50%	12.75%	0.0175%
Lamb Weston Holdings Inc	LW	\$	10,398.00	N/A	1.13%	N/A	N/A	N/A
LyondellBasell Industries NV	LYB	\$	34,265.25	0.15%	4.52%	5.50%	10.14%	0.0156%
Macy's Inc	M	\$	7,517.57	0.03%	6.18%	5.00%	11.33%	0.0038%
Mastercard Inc	MA	\$	226,985.80	1.02%	0.60%	16.00%	18.65%	0.1698%
Mid-America Apartment Communities Inc	MAA	\$	11,850.69	0.05%	3.68%	-4.50%	-0.90%	-0.0005%
Macerich Co/The	MAC	\$	6,198.10	0.03%	6.87%	8.00%	15.14%	0.0042%
Marriott International Inc/MD	MAR	\$	43,449.73	0.20%	1.29%	12.50%	13.87%	0.0271%
Masco Corp	MAS	\$	11,432.93	0.05%	1.27%	14.50%	15.86%	0.0081%
Mattel Inc	MAT	\$	4,828.99	0.02%	0.00%	22.00%	22.00%	0.0048%
McDonald's Corp	MCD	\$	140,928.20	0.63%	2.58%	9.50%	12.20%	0.0773%
Microchip Technology Inc	MCHP	\$	21,089.71	0.09%	1.69%	15.00%	16.82%	0.0159%
McKesson Corp	MCK	\$	25,334.40	0.11%	1.18%	9.00%	10.23%	0.0116%
Moody's Corp	MCO	\$	32,688.50	0.15%	1.17%	11.50%	12.74%	0.0187%
Mondelez International Inc	MDLZ	\$	70,537.49	0.32%	2.23%	9.50%	11.84%	0.0375%
Medtronic PLC	MDT	\$	124,669.60	0.56%	2.29%	7.50%	9.88%	0.0553%
MetLife Inc	MET	\$	44,162.19	0.20%	3.89%	7.00%	11.03%	0.0219%
MGM Resorts International	MGM	\$	15,080.41	0.07%	1.83%	31.00%	33.11%	0.0224%
Mohawk Industries Inc	MHK	\$	10,446.52	0.05%	0.00%	4.50%	4.50%	0.0021%
McCormick & Co Inc/MD	MKC	\$	17,611.51	0.08%	1.71%	10.00%	11.80%	0.0093%
Martin Marietta Materials Inc	MLM	\$	11,939.11	0.05%	1.02%	13.00%	14.09%	0.0076%
Marsh & McLennan Cos Inc	MMC	\$	46,370.54	0.21%	1.80%	9.00%	10.88%	0.0227%
3M Co	MMM	\$	120,981.80	0.54%	2.77%	9.00%	11.89%	0.0646%
Monster Beverage Corp	MNST	\$	32,557.81	0.15%	0.00%	15.00%	15.00%	0.0219%
Altria Group Inc	MO	\$	94,699.03	0.43%	6.35%	10.50%	17.18%	0.0731%
Mosaic Co/The	MOS	\$	12,786.04	0.06%	0.60%	12.00%	12.64%	0.0073%
Marathon Petroleum Corp	MPC	\$	29,161.66	0.13%	3.28%	13.50%	17.00%	0.0223%
Merck & Co Inc	MRK	\$	212,247.10	0.95%	2.76%	5.50%	8.34%	0.0795%

Marathon Oil Corp	MRO	\$	13,977.84	N/A	1.32%	N/A	N/A	N/A
Morgan Stanley	MS	\$	72,414.23	0.33%	2.86%	11.00%	14.02%	0.0456%
MSCI Inc	MSCI	\$	15,434.67	0.07%	1.50%	19.50%	21.15%	0.0147%
Microsoft Corp	MSFT	\$	840,597.10	3.78%	1.68%	15.00%	16.81%	0.6347%
Motorola Solutions Inc	MSI	\$	22,626.77	0.10%	1.65%	13.00%	14.76%	0.0150%
M&T Bank Corp	MTB	\$	24,482.86	0.11%	2.31%	13.00%	15.46%	0.0170%
Mettler-Toledo International Inc	MTD	\$	16,802.66	0.08%	0.00%	10.00%	10.00%	0.0075%
Micron Technology Inc	MU	\$	46,513.60	0.21%	0.00%	7.50%	7.50%	0.0157%
Maxim Integrated Products Inc	MXIM	\$	15,107.97	0.07%	3.33%	11.50%	15.02%	0.0102%
Mylan NV	MYL	\$	16,014.94	0.07%	0.00%	14.00%	14.00%	0.0101%
Noble Energy Inc	NBL	\$	11,448.00	N/A	1.84%	N/A	N/A	N/A
Norwegian Cruise Line Holdings Ltd	NCLH	\$	12,304.51	0.06%	0.00%	16.50%	16.50%	0.0091%
Nasdaq Inc	NDAQ	\$	14,438.99	0.06%	2.00%	9.50%	11.60%	0.0075%
NextEra Energy Inc	NEE	\$	89,165.42	0.40%	2.68%	9.00%	11.80%	0.0473%
Newmont Mining Corp	NEM	\$	18,861.49	0.08%	1.58%	5.00%	6.62%	0.0056%
Netflix Inc	NFLX	\$	155,669.30	0.70%	0.00%	47.00%	47.00%	0.3287%
NiSource Inc	NI	\$	9,602.14	0.04%	3.03%	15.00%	18.26%	0.0079%
NIKE Inc	NKE	\$	132,389.10	0.59%	1.05%	16.00%	17.13%	0.1019%
Nektar Therapeutics	NKTR	\$	6,967.28	N/A	0.00%	N/A	N/A	N/A
Nielsen Holdings PLC	NLSN	\$	9,183.41	0.04%	5.41%	5.00%	10.55%	0.0044%
Northrop Grumman Corp	NOC	\$	49,049.51	0.22%	1.67%	13.00%	14.78%	0.0326%
National Oilwell Varco Inc	NOV	\$	11,025.00	0.05%	0.70%	41.50%	42.35%	0.0210%
NRG Energy Inc	NRG	\$	12,310.43	N/A	0.28%	N/A	N/A	N/A
Norfolk Southern Corp	NSC	\$	49,923.16	0.22%	1.88%	13.50%	15.51%	0.0347%
NetApp Inc	NTAP	\$	16,163.68	0.07%	2.45%	20.50%	23.20%	0.0168%
Northern Trust Corp	NTRS	\$	20,521.10	0.09%	2.59%	11.00%	13.73%	0.0127%
Nucor Corp	NUE	\$	19,168.75	0.09%	2.62%	20.50%	23.39%	0.0201%
NVIDIA Corp	NVDA	\$	95,019.70	0.43%	0.41%	23.00%	23.46%	0.1001%
Newell Brands Inc	NWL	\$	8,473.83	0.04%	5.32%	9.50%	15.07%	0.0057%
News Corp	NWSA	\$	7,486.59	N/A	1.56%	N/A	N/A	N/A
Realty Income Corp	O	\$	19,769.92	0.09%	3.90%	4.50%	8.49%	0.0075%
ONEOK Inc	OKE	\$	27,890.14	0.13%	5.31%	18.50%	24.30%	0.0304%
Omnicom Group Inc	OMC	\$	16,787.71	0.08%	3.47%	7.00%	10.59%	0.0080%
Oracle Corp	ORCL	\$	189,263.50	0.85%	1.46%	9.50%	11.03%	0.0938%
O'Reilly Automotive Inc	ORLY	\$	30,571.65	0.14%	0.00%	13.00%	13.00%	0.0179%
Occidental Petroleum Corp	OXY	\$	50,215.61	N/A	4.72%	N/A	N/A	N/A
Paychex Inc	PAYX	\$	27,058.19	0.12%	3.29%	11.00%	14.47%	0.0176%
People's United Financial Inc	PBCT	\$	6,039.23	0.03%	4.03%	11.00%	15.25%	0.0041%
PACCAR Inc	PCAR	\$	24,195.66	0.11%	4.77%	7.00%	11.94%	0.0130%
Public Service Enterprise Group Inc	PEG	\$	28,682.64	0.13%	3.34%	4.50%	7.92%	0.0102%
PepsiCo Inc	PEP	\$	163,833.20	0.74%	3.20%	7.50%	10.82%	0.0797%
Pfizer Inc	PFZ	\$	243,589.20	1.09%	3.42%	14.00%	17.66%	0.1933%
Principal Financial Group Inc	PFG	\$	14,761.38	0.07%	4.15%	6.50%	10.78%	0.0072%
Procter & Gamble Co/The	PG	\$	249,607.70	1.12%	2.89%	10.50%	13.54%	0.1519%
Progressive Corp/The	PGR	\$	42,047.34	0.19%	0.56%	15.50%	16.10%	0.0304%
Parker-Hannifin Corp	PH	\$	22,631.11	0.10%	1.74%	14.00%	15.86%	0.0161%
PulteGroup Inc	PHM	\$	7,785.05	0.03%	1.59%	15.50%	17.21%	0.0060%
Packaging Corp of America	PKG	\$	9,284.63	0.04%	3.22%	9.50%	12.87%	0.0054%
PerkinElmer Inc	PKI	\$	10,352.20	0.05%	0.30%	11.50%	11.82%	0.0055%
Prologis Inc	PLD	\$	37,801.17	0.17%	2.82%	9.00%	11.95%	0.0203%
Philip Morris International Inc	PM	\$	133,035.80	0.60%	5.33%	7.50%	13.03%	0.0779%
PNC Financial Services Group Inc/The	PNC	\$	57,708.42	0.26%	3.04%	9.50%	12.68%	0.0329%
Pentair PLC	PNR	\$	7,384.99	0.03%	1.69%	5.50%	7.24%	0.0024%
Pinnacle West Capital Corp	PNW	\$	10,300.55	0.05%	3.31%	6.00%	9.41%	0.0044%
PPG Industries Inc	PPG	\$	26,418.54	0.12%	1.74%	4.50%	6.28%	0.0075%
PPL Corp	PPL	\$	22,613.04	0.10%	5.35%	3.00%	8.43%	0.0086%
Perigo Co PLC	PRGO	\$	6,564.61	0.03%	1.74%	0.50%	2.24%	0.0007%
Prudential Financial Inc	PRU	\$	39,155.81	0.18%	4.23%	6.50%	10.87%	0.0191%
Public Storage	PSA	\$	34,854.05	0.16%	4.34%	7.00%	11.49%	0.0180%
Phillips 66	PSX	\$	44,641.51	0.20%	3.60%	12.50%	16.33%	0.0327%
PVH Corp	PVH	\$	8,737.36	0.04%	0.13%	11.00%	11.14%	0.0044%
Quanta Services Inc	PWR	\$	5,380.89	0.02%	0.44%	19.50%	19.98%	0.0048%
Pioneer Natural Resources Co	PXD	\$	23,208.40	0.10%	0.37%	75.00%	75.51%	0.0787%
PayPal Holdings Inc	PYPL	\$	111,862.90	0.50%	0.00%	18.50%	18.50%	0.0930%
QUALCOMM Inc	QCOM	\$	63,343.50	0.28%	5.02%	10.50%	15.78%	0.0449%
Qorvo Inc	QRVO	\$	8,125.45	N/A	0.00%	N/A	N/A	N/A
Royal Caribbean Cruises Ltd	RCL	\$	25,280.07	0.11%	2.32%	11.00%	13.45%	0.0153%
Everest Re Group Ltd	RE	\$	9,056.56	0.04%	2.56%	10.00%	12.69%	0.0052%
Regency Centers Corp	REG	\$	11,335.60	0.05%	3.53%	14.00%	17.78%	0.0091%
Regeneron Pharmaceuticals Inc	REGN	\$	45,632.09	0.21%	0.00%	16.50%	16.50%	0.0338%
Regions Financial Corp	RF	\$	17,817.46	0.08%	3.57%	13.50%	17.31%	0.0139%
Robert Half International Inc	RHI	\$	8,179.46	0.04%	1.84%	9.00%	10.92%	0.0040%
Red Hat Inc	RHT	\$	32,329.40	0.15%	0.00%	17.50%	17.50%	0.0254%
Raymond James Financial Inc	RJF	\$	11,658.56	0.05%	1.69%	12.00%	13.79%	0.0072%
Ralph Lauren Corp	RL	\$	9,922.46	0.04%	1.98%	7.00%	9.05%	0.0040%
ResMed Inc	RMD	\$	14,342.23	0.06%	1.48%	14.50%	16.09%	0.0104%
Rockwell Automation Inc	ROK	\$	21,284.02	0.10%	2.21%	10.50%	12.83%	0.0123%
Rollins Inc	ROL	\$	12,968.34	0.06%	1.06%	13.50%	14.63%	0.0085%
Roper Technologies Inc	ROP	\$	32,560.08	0.15%	0.59%	14.50%	15.13%	0.0221%
Ross Stores Inc	ROST	\$	34,705.05	0.16%	1.03%	11.50%	12.59%	0.0196%
Republic Services Inc	RSG	\$	25,201.94	0.11%	2.00%	12.00%	14.12%	0.0160%
Raytheon Co	RTN	\$	52,833.30	0.24%	1.87%	11.00%	12.97%	0.0308%
SBA Communications Corp	SBAC	\$	21,270.03	0.10%	0.00%	35.50%	35.50%	0.0339%
Starbucks Corp	SBUX	\$	87,901.30	0.39%	2.21%	13.50%	15.86%	0.0626%

Charles Schwab Corp/The	SCHW	\$	61,801.42	0.28%	1.49%	16.00%	17.61%	0.0489%
Sealed Air Corp	SEE	\$	6,762.37	0.03%	1.49%	19.00%	20.63%	0.0063%
Sherwin-Williams Co/The	SHW	\$	41,167.35	0.18%	1.03%	13.00%	14.10%	0.0261%
SVB Financial Group	SIVB	\$	13,080.88	0.06%	0.00%	21.50%	21.50%	0.0126%
JM Smucker Co/The	SJM	\$	12,150.43	0.05%	3.24%	4.50%	7.81%	0.0043%
Schlumberger Ltd	SLB	\$	61,928.35	0.28%	4.47%	26.00%	31.05%	0.0864%
SL Green Realty Corp	SLG	\$	8,587.07	0.04%	3.77%	6.50%	10.39%	0.0040%
Snap-on Inc	SNA	\$	9,036.31	0.04%	2.36%	8.00%	10.45%	0.0042%
Synopsys Inc	SNPS	\$	14,191.39	0.06%	0.00%	10.50%	10.50%	0.0067%
Southern Co/The	SO	\$	50,169.78	0.23%	4.94%	3.50%	8.53%	0.0192%
Simon Property Group Inc	SPG	\$	56,677.61	0.25%	4.67%	3.00%	7.74%	0.0197%
S&P Global Inc	SPGI	\$	49,715.83	0.22%	1.15%	13.00%	14.22%	0.0318%
Sempra Energy	SRE	\$	32,241.58	0.14%	3.30%	9.50%	12.96%	0.0188%
SunTrust Banks Inc	STI	\$	29,949.34	0.13%	3.23%	13.50%	16.95%	0.0228%
State Street Corp	STT	\$	27,391.59	0.12%	2.61%	9.00%	11.73%	0.0144%
Seagate Technology PLC	STX	\$	12,771.99	0.08%	5.59%	9.00%	14.84%	0.0085%
Constellation Brands Inc	STZ	\$	31,450.31	0.14%	1.93%	11.00%	13.04%	0.0184%
Stanley Black & Decker Inc	SWK	\$	20,776.79	0.09%	1.96%	10.00%	12.06%	0.0113%
Skyworks Solutions Inc	SWKS	\$	14,234.42	0.06%	1.86%	11.00%	12.96%	0.0083%
Synchrony Financial	SYF	\$	22,840.60	0.10%	2.64%	11.00%	13.79%	0.0141%
Stryker Corp	SYK	\$	70,189.99	0.32%	1.11%	15.00%	16.19%	0.0511%
Symantec Corp	SYMC	\$	14,275.26	0.06%	1.34%	9.50%	10.90%	0.0070%
Sysco Corp	SYU	\$	34,528.82	0.16%	2.32%	13.00%	15.47%	0.0240%
AT&T Inc	T	\$	224,492.60	1.01%	6.62%	7.00%	13.85%	0.1397%
Molson Coors Brewing Co	TAP	\$	13,398.86	0.06%	2.64%	11.00%	13.79%	0.0083%
TransDigm Group Inc	TDG	\$	22,908.82	0.10%	0.00%	8.00%	8.00%	0.0082%
TE Connectivity Ltd	TEL	\$	29,301.50	0.13%	2.13%	9.50%	11.73%	0.0154%
Teleflex Inc	TFX	\$	12,655.63	0.06%	0.49%	12.00%	12.52%	0.0071%
Target Corp	TGT	\$	37,586.05	0.17%	3.55%	7.00%	10.67%	0.0180%
Tiffany & Co	TIF	\$	11,152.63	0.05%	2.57%	12.00%	14.72%	0.0074%
TJX Cos Inc/The	TJX	\$	61,817.55	0.28%	1.60%	13.00%	14.70%	0.0408%
Torchmark Corp	TMK	\$	9,332.38	0.04%	0.77%	10.00%	10.81%	0.0045%
Thermo Fisher Scientific Inc	TMO	\$	101,227.70	0.45%	0.27%	10.50%	10.78%	0.0490%
Tapestry Inc	TPR	\$	10,100.70	0.05%	3.88%	13.00%	17.13%	0.0078%
TripAdvisor Inc	TRIP	\$	7,483.40	0.03%	0.00%	10.50%	10.50%	0.0035%
T Rowe Price Group Inc	TROW	\$	23,556.36	0.11%	3.13%	11.50%	14.81%	0.0157%
Travelers Cos Inc/The	TRV	\$	34,376.34	0.15%	2.37%	5.50%	7.94%	0.0123%
Tractor Supply Co	TSCO	\$	11,846.86	0.05%	1.40%	10.50%	11.97%	0.0064%
Tyson Foods Inc	TSN	\$	23,079.96	0.10%	2.38%	7.00%	9.46%	0.0098%
Total System Services Inc	TSS	\$	17,010.80	0.08%	0.56%	11.50%	12.09%	0.0092%
Take-Two Interactive Software Inc	TTWO	\$	9,905.90	0.04%	0.00%	29.50%	29.50%	0.0131%
Twitter Inc	TWTR	\$	23,389.99	N/A	0.00%	N/A	N/A	N/A
Texas Instruments Inc	TXN	\$	102,893.00	0.46%	2.89%	12.50%	15.57%	0.0720%
Textron Inc	TXT	\$	13,283.76	0.06%	0.15%	15.00%	15.16%	0.0090%
Under Armour Inc	UAA	\$	9,603.12	0.04%	0.00%	11.50%	11.50%	0.0050%
United Continental Holdings Inc	UAL	\$	24,205.70	0.11%	0.00%	8.50%	8.50%	0.0092%
UDR Inc	UDR	\$	11,982.36	0.05%	2.88%	-2.50%	0.34%	0.0002%
Universal Health Services Inc	UHS	\$	12,447.49	0.06%	0.30%	11.00%	11.32%	0.0063%
Ultra Beauty Inc	ULTA	\$	18,315.18	0.08%	0.00%	20.00%	20.00%	0.0165%
UnitedHealth Group Inc	UNH	\$	255,744.00	1.15%	1.35%	15.00%	16.45%	0.1890%
Unum Group	UNM	\$	8,114.62	0.04%	2.80%	9.50%	12.43%	0.0045%
Union Pacific Corp	UNP	\$	125,503.40	0.56%	2.07%	14.50%	16.72%	0.0943%
United Parcel Service Inc	UPS	\$	96,001.84	0.43%	3.47%	8.50%	12.12%	0.0523%
United Rentals Inc	URI	\$	10,786.85	0.05%	0.00%	17.00%	17.00%	0.0082%
US Bancorp	USB	\$	82,856.86	0.37%	3.02%	7.50%	10.63%	0.0396%
United Technologies Corp	UTX	\$	101,180.30	0.45%	2.33%	9.50%	11.94%	0.0543%
Visa Inc	V	\$	289,584.00	1.30%	0.75%	14.50%	15.30%	0.1991%
Varian Medical Systems Inc	VAR	\$	12,011.95	0.05%	0.00%	9.50%	9.50%	0.0051%
VF Corp	VFC	\$	33,931.50	0.15%	2.38%	12.00%	14.52%	0.0221%
Viacom Inc	VIAB	\$	11,766.48	0.05%	2.74%	4.00%	6.79%	0.0036%
Valero Energy Corp	VLO	\$	35,874.09	0.16%	4.26%	9.00%	13.45%	0.0217%
Vulcan Materials Co	VMC	\$	14,919.78	0.07%	1.10%	18.00%	19.20%	0.0129%
Vornado Realty Trust	VNO	\$	13,019.37	0.06%	3.86%	-5.50%	-1.75%	-0.0010%
Verisk Analytics Inc	VRSK	\$	20,523.91	0.09%	0.80%	9.50%	10.34%	0.0095%
VeriSign Inc	VRSN	\$	21,323.81	0.10%	0.00%	12.00%	12.00%	0.0115%
Vertex Pharmaceuticals Inc	VRTX	\$	46,792.15	N/A	0.00%	N/A	N/A	N/A
Ventas Inc	VTR	\$	22,724.87	0.10%	5.06%	3.50%	8.65%	0.0088%
Verizon Communications Inc	VZ	\$	232,012.70	1.04%	4.29%	4.50%	8.89%	0.0926%
Wabtec Corp	WAB	\$	7,108.34	0.03%	0.65%	10.00%	10.68%	0.0034%
Waters Corp	WAT	\$	17,764.74	0.08%	0.00%	11.00%	11.00%	0.0088%
Walgreens Boots Alliance Inc	WBA	\$	66,484.57	0.30%	2.50%	11.00%	13.64%	0.0407%
WellCare Health Plans Inc	WCG	\$	13,703.02	0.06%	0.00%	22.50%	22.50%	0.0139%
Western Digital Corp	WDC	\$	13,732.29	0.06%	4.24%	1.50%	5.77%	0.0036%
WEC Energy Group Inc	WEC	\$	23,891.63	0.11%	3.12%	7.00%	10.23%	0.0110%
Welltower Inc	WELL	\$	27,671.58	0.12%	4.78%	8.50%	13.48%	0.0168%
Wells Fargo & Co	WFC	\$	233,505.00	1.05%	3.69%	6.00%	9.80%	0.1028%
Whirlpool Corp	WHR	\$	9,139.20	0.04%	3.22%	8.00%	11.35%	0.0047%
Willis Towers Watson PLC	WLTTW	\$	22,125.99	N/A	1.41%	N/A	N/A	N/A
Waste Management Inc	WM	\$	42,422.06	0.19%	2.06%	9.00%	11.15%	0.0213%
Williams Cos Inc/The	WMB	\$	32,757.27	0.15%	5.62%	19.00%	25.15%	0.0370%
Walmart Inc	WMT	\$	288,753.80	1.30%	2.13%	7.00%	9.20%	0.1194%
Westrock Co	WRK	\$	10,019.15	0.05%	4.64%	14.50%	19.48%	0.0088%
Western Union Co/The	WU	\$	7,822.43	0.04%	4.54%	7.00%	11.70%	0.0041%
Weyerhaeuser Co	WY	\$	19,284.38	0.09%	5.28%	17.50%	23.24%	0.0201%

Wynn Resorts Ltd	WYNN	\$	14,094.80	0.06%	2.31%	20.00%	22.54%	0.0143%
Cimarex Energy Co	XEC	\$	7,009.61	0.03%	0.98%	32.50%	33.64%	0.0106%
Xcel Energy Inc	XEL	\$	28,118.52	0.13%	2.96%	5.50%	8.54%	0.0108%
Xilinx Inc	XLNX	\$	30,192.34	0.14%	1.21%	11.00%	12.28%	0.0167%
Exxon Mobil Corp	XOM	\$	329,489.90	1.48%	4.32%	14.00%	18.62%	0.2757%
DENTSPLY SIRONA Inc	XRAY	\$	9,291.60	0.04%	0.84%	3.00%	3.85%	0.0016%
Xerox Corp	XRX	\$	7,680.93	0.03%	3.19%	2.50%	5.73%	0.0020%
Xylem Inc/NY	XYL	\$	13,355.30	0.06%	1.29%	15.50%	16.89%	0.0101%
Yum! Brands Inc	YUM	\$	29,697.44	0.13%	1.77%	10.00%	11.86%	0.0158%
Zimmer Biomet Holdings Inc	ZBH	\$	25,189.92	0.11%	0.78%	4.50%	5.30%	0.0060%
Zions Bancorp NA	ZION	\$	9,781.40	0.04%	2.36%	15.00%	17.54%	0.0077%
Zoetis Inc	ZTS	\$	44,957.20	0.20%	0.71%	13.50%	14.26%	0.0288%
Total Market Capitalization:			22,259,184.79					16.81%

Notes:

[1] Equals sum of Col. [9]

[2] Source: Bloomberg Professional

[3] Equals [1] - [2]

[4] Source: Value Line

[5] Equals weight in S&P 500 based on market capitalization

[6] Source: Value Line

[7] Source: Value Line

[8] Equals $([6] \times (1 + (0.5 \times [7]))) + [7]$

[9] Equals Col. [5] x Col. [8]

I/A

Bloomberg, Value Line, and Calculated Beta Coefficients

Company	Ticker	[1]	[2]
		Bloomberg	Value Line
Atmos Energy Corporation	ATO	0.504	0.600
Chesapeake Utilities Corporation	CPK	0.629	0.700
New Jersey Resources Corporation	NJR	0.629	0.700
Northwest Natural Gas Company	NWN	0.592	0.650
ONE Gas, Inc.	OGS	0.529	0.650
South Jersey Industries, Inc.	SJI	0.746	0.850
Southwest Gas Corporation	SWX	0.587	0.700
Spire Inc.	SR	0.460	0.650
Mean		0.584	0.688

Notes:

[1] Source: Bloomberg Professional

[2] Source: Value Line

Capital Asset Pricing Model Results
Bloomberg, and Value Line Derived Market Risk Premium

	[1]	[2]	[3]	[4]	[5]	[6]
	Risk-Free Rate	Average Beta Coefficient	Ex-Ante Market Risk Premium Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT						
Current 30-Year Treasury [7]	3.04%	0.584	10.65%	13.77%	9.26%	11.08%
Projected 30-Year Treasury [8]	3.25%	0.584	10.65%	13.77%	9.47%	11.30%
Long-Term Projected 30-Year Treasury [9]	4.05%	0.584	10.65%	13.77%	10.27%	12.10%
Mean					9.67%	11.49%

	Risk-Free Rate	Average Beta Coefficient	Ex-Ante Market Risk Premium Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT						
Current 30-Year Treasury [7]	3.04%	0.688	10.65%	13.77%	10.36%	12.50%
Projected 30-Year Treasury [8]	3.25%	0.688	10.65%	13.77%	10.57%	12.72%
Long-Term Projected 30-Year Treasury [11]	4.05%	0.688	10.65%	13.77%	11.37%	13.52%
Mean					10.77%	12.91%

Notes:

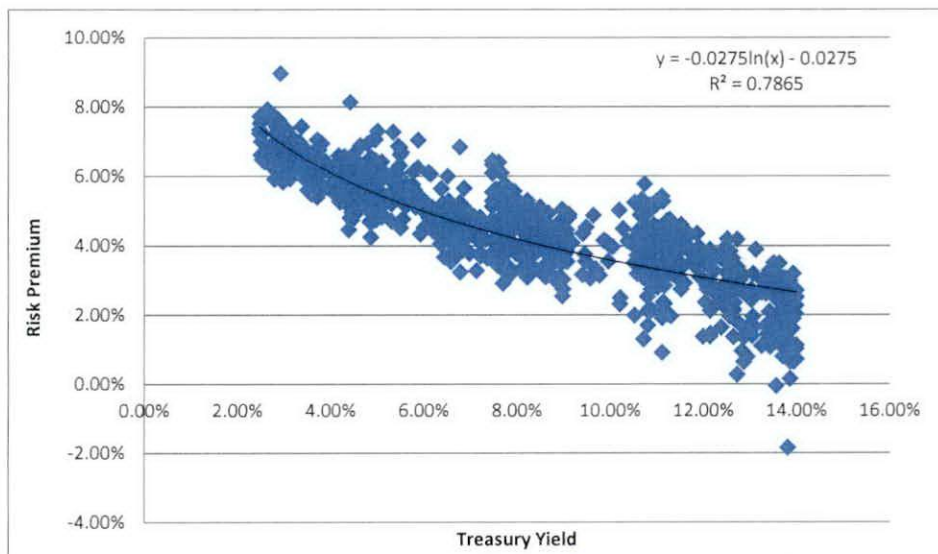
- [1] See Notes [9], [10], and [11]
[2] Source: Schedule RBH-4
[3] Source: Schedule RBH-3
[4] Source: Schedule RBH-3
[5] Equals Col. [1] + (Col. [2] x Col. [3])
[6] Equals Col. [1] + (Col. [2] x Col. [4])
[7] Source: Bloomberg Professional
[8] Source: Blue Chip Financial Forecasts, Vol. 38, No. 3, March 1, 2019, at 2.
[9] Source: Blue Chip Financial Forecasts, Vol. 37, No. 12, December 1, 2018, at 14.

1/19

I/A

Bond Yield Plus Risk Premium

	[1]	[2]	[3]	[4]	[5]
	Constant	Slope	30-Year Treasury Yield	Risk Premium	Return on Equity
	-2.75%	-2.75%			
Current 30-Year Treasury			3.04%	6.85%	9.89%
Near-Term Projected 30-Year Treasury			3.25%	6.67%	9.92%
Long-Term Projected 30-Year Treasury			4.05%	6.06%	10.11%



Notes:

[1] Constant of regression equation

[2] Slope of regression equation

[3] Source: Current = Bloomberg Professional

Near Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 3, March 1, 2019, at 2.

Long Term Projected = Blue Chip Financial Forecasts, Vol. 37, No. 12, December 1, 2018, at 14.

[4] Equals [1] + $\ln([3]) \times [2]$

[5] Equals [3] + [4]

[6] Source: S&P Global Market Intelligence

[7] Source: S&P Global Market Intelligence

[8] Source: Bloomberg Professional, equals 187-trading day average (i.e. lag period)

[9] Equals [7] - [8]

[6] Date of Natural Gas Rate Case	[7] Return on Equity	[8] 30-Year Treasury Yield	[9] Risk Premium
1/3/1980	12.55%	9.40%	3.15%
1/4/1980	13.75%	9.40%	4.35%
1/14/1980	13.20%	9.45%	3.75%
1/18/1980	14.00%	9.48%	4.52%
1/31/1980	12.61%	9.56%	3.05%
2/8/1980	14.50%	9.63%	4.87%
2/14/1980	13.00%	9.68%	3.32%
2/15/1980	13.00%	9.69%	3.31%
2/29/1980	14.00%	9.86%	4.14%
3/5/1980	14.00%	9.91%	4.09%
3/7/1980	13.50%	9.95%	3.55%
3/14/1980	14.00%	10.04%	3.96%
3/27/1980	12.69%	10.21%	2.48%
4/1/1980	14.75%	10.27%	4.48%
4/29/1980	12.50%	10.51%	1.99%
5/7/1980	14.27%	10.56%	3.71%
5/8/1980	13.75%	10.57%	3.18%
5/19/1980	15.50%	10.63%	4.87%
5/27/1980	14.60%	10.66%	3.94%
5/29/1980	16.00%	10.68%	5.32%
6/10/1980	13.78%	10.72%	3.06%
6/25/1980	14.25%	10.74%	3.51%
7/9/1980	14.51%	10.78%	3.73%
7/17/1980	12.90%	10.79%	2.11%
7/18/1980	13.80%	10.80%	3.00%
7/22/1980	14.10%	10.80%	3.30%
7/23/1980	14.19%	10.79%	3.40%
8/1/1980	12.50%	10.80%	1.70%
8/11/1980	14.85%	10.82%	4.03%
8/21/1980	13.03%	10.85%	2.18%
8/28/1980	13.61%	10.88%	2.73%
8/28/1980	14.00%	10.88%	3.12%
9/4/1980	14.00%	10.90%	3.10%
9/24/1980	15.00%	10.99%	4.01%
10/9/1980	14.50%	11.06%	3.44%
10/9/1980	14.50%	11.06%	3.44%
10/24/1980	14.00%	11.09%	2.91%
10/27/1980	15.20%	11.10%	4.10%
10/27/1980	15.20%	11.10%	4.10%
10/28/1980	12.00%	11.10%	0.90%
10/28/1980	13.00%	11.10%	1.90%
10/31/1980	14.50%	11.12%	3.38%
11/4/1980	15.00%	11.12%	3.88%
11/6/1980	14.35%	11.13%	3.22%
11/10/1980	13.25%	11.14%	2.11%
11/17/1980	15.50%	11.14%	4.36%
11/19/1980	13.50%	11.13%	2.37%
12/5/1980	14.60%	11.13%	3.47%
12/8/1980	16.40%	11.13%	5.27%
12/12/1980	15.45%	11.14%	4.31%
12/17/1980	14.20%	11.15%	3.05%

12/17/1980	14.40%	11.15%	3.25%
12/18/1980	14.00%	11.16%	2.84%
12/22/1980	13.45%	11.15%	2.30%
12/26/1980	14.00%	11.14%	2.86%
12/30/1980	14.50%	11.13%	3.37%
12/31/1980	14.56%	11.13%	3.43%
1/7/1981	14.30%	11.13%	3.17%
1/12/1981	14.95%	11.14%	3.81%
1/26/1981	15.25%	11.20%	4.05%
1/30/1981	13.25%	11.24%	2.01%
2/11/1981	14.50%	11.34%	3.16%
2/20/1981	14.50%	11.40%	3.10%
3/12/1981	15.65%	11.61%	4.04%
3/25/1981	15.30%	11.75%	3.55%
4/1/1981	15.30%	11.83%	3.47%
4/9/1981	15.00%	11.92%	3.08%
4/29/1981	13.50%	12.13%	1.37%
4/29/1981	14.25%	12.13%	2.12%
4/30/1981	13.60%	12.15%	1.45%
4/30/1981	15.00%	12.15%	2.85%
5/21/1981	14.00%	12.38%	1.62%
6/3/1981	14.67%	12.46%	2.21%
6/22/1981	16.00%	12.58%	3.42%
6/25/1981	14.75%	12.61%	2.14%
7/2/1981	14.00%	12.65%	1.35%
7/10/1981	16.00%	12.70%	3.30%
7/14/1981	16.90%	12.72%	4.18%
7/21/1981	15.78%	12.78%	3.00%
7/27/1981	13.77%	12.83%	0.94%
7/27/1981	15.50%	12.83%	2.67%
7/31/1981	13.50%	12.87%	0.63%
7/31/1981	14.20%	12.87%	1.33%
8/12/1981	13.72%	12.94%	0.78%
8/12/1981	13.72%	12.94%	0.78%
8/12/1981	14.41%	12.94%	1.47%
8/25/1981	15.45%	13.02%	2.43%
8/27/1981	14.43%	13.05%	1.38%
8/28/1981	15.00%	13.06%	1.94%
9/23/1981	14.34%	13.25%	1.09%
9/24/1981	16.25%	13.26%	2.99%
9/29/1981	14.50%	13.31%	1.19%
9/30/1981	15.94%	13.33%	2.61%
10/2/1981	14.80%	13.37%	1.43%
10/12/1981	16.25%	13.43%	2.82%
10/20/1981	15.25%	13.51%	1.74%
10/20/1981	16.50%	13.51%	2.99%
10/20/1981	17.00%	13.51%	3.49%
10/23/1981	15.50%	13.55%	1.95%
10/26/1981	13.50%	13.56%	-0.06%
10/29/1981	16.50%	13.60%	2.90%
11/4/1981	15.33%	13.63%	1.70%
11/6/1981	15.17%	13.64%	1.53%
11/12/1981	15.00%	13.65%	1.35%
11/25/1981	15.25%	13.66%	1.59%
11/25/1981	16.10%	13.66%	2.44%

11/25/1981	16.10%	13.66%	2.44%
11/30/1981	16.75%	13.66%	3.09%
12/1/1981	15.70%	13.66%	2.04%
12/1/1981	16.00%	13.66%	2.34%
12/15/1981	15.81%	13.70%	2.11%
12/17/1981	14.75%	13.71%	1.04%
12/22/1981	15.70%	13.72%	1.98%
12/22/1981	16.00%	13.72%	2.28%
12/30/1981	16.00%	13.75%	2.25%
12/30/1981	16.25%	13.75%	2.50%
1/4/1982	15.50%	13.75%	1.75%
1/14/1982	11.95%	13.81%	-1.86%
1/25/1982	16.25%	13.84%	2.41%
1/27/1982	16.84%	13.85%	2.99%
1/31/1982	14.00%	13.86%	0.14%
2/2/1982	16.24%	13.86%	2.38%
2/8/1982	15.50%	13.88%	1.62%
2/9/1982	14.95%	13.88%	1.07%
2/9/1982	15.75%	13.88%	1.87%
2/11/1982	16.00%	13.89%	2.11%
3/1/1982	15.96%	13.91%	2.05%
3/3/1982	15.00%	13.92%	1.08%
3/8/1982	17.10%	13.92%	3.18%
3/26/1982	16.00%	13.97%	2.03%
3/31/1982	16.25%	13.98%	2.27%
4/1/1982	16.50%	13.98%	2.52%
4/6/1982	15.00%	13.99%	1.01%
4/9/1982	16.50%	13.99%	2.51%
4/12/1982	15.10%	13.99%	1.11%
4/12/1982	16.70%	13.99%	2.71%
4/18/1982	14.70%	13.99%	0.71%
4/27/1982	15.00%	13.97%	1.03%
5/10/1982	14.57%	13.94%	0.63%
5/14/1982	15.80%	13.92%	1.88%
5/20/1982	15.82%	13.91%	1.91%
5/21/1982	15.50%	13.90%	1.60%
5/25/1982	16.25%	13.89%	2.36%
6/2/1982	14.50%	13.86%	0.64%
6/7/1982	16.00%	13.85%	2.15%
6/23/1982	15.50%	13.81%	1.69%
6/25/1982	16.50%	13.81%	2.69%
7/1/1982	15.55%	13.79%	1.76%
7/1/1982	16.00%	13.79%	2.21%
7/2/1982	15.10%	13.78%	1.32%
7/13/1982	16.80%	13.75%	3.05%
7/22/1982	14.50%	13.71%	0.79%
7/28/1982	16.10%	13.67%	2.43%
7/30/1982	14.82%	13.66%	1.16%
8/4/1982	15.58%	13.64%	1.94%
8/6/1982	16.50%	13.63%	2.87%
8/11/1982	17.11%	13.62%	3.49%
8/25/1982	16.00%	13.59%	2.41%
8/30/1982	16.25%	13.58%	2.67%
9/3/1982	15.50%	13.57%	1.93%
9/9/1982	16.04%	13.55%	2.49%

9/15/1982	16.04%	13.52%	2.52%
9/17/1982	15.25%	13.51%	1.74%
9/29/1982	14.50%	13.43%	1.07%
9/30/1982	14.74%	13.42%	1.32%
9/30/1982	15.50%	13.42%	2.08%
9/30/1982	16.50%	13.42%	3.08%
9/30/1982	16.70%	13.42%	3.28%
10/1/1982	16.50%	13.40%	3.10%
10/8/1982	15.00%	13.33%	1.67%
10/15/1982	15.90%	13.25%	2.65%
10/19/1982	15.90%	13.22%	2.68%
10/27/1982	17.00%	13.12%	3.88%
10/28/1982	14.75%	13.10%	1.65%
11/2/1982	16.25%	13.07%	3.18%
11/4/1982	15.75%	13.02%	2.73%
11/5/1982	14.73%	13.00%	1.73%
11/17/1982	16.00%	12.86%	3.14%
11/23/1982	15.50%	12.79%	2.71%
11/24/1982	14.50%	12.77%	1.73%
11/24/1982	16.02%	12.77%	3.25%
11/30/1982	12.98%	12.72%	0.26%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.65%	12.72%	2.93%
11/30/1982	16.00%	12.72%	3.28%
11/30/1982	16.10%	12.72%	3.38%
12/3/1982	15.33%	12.68%	2.65%
12/8/1982	15.75%	12.63%	3.12%
12/13/1982	16.00%	12.58%	3.42%
12/14/1982	16.40%	12.56%	3.84%
12/17/1982	16.25%	12.52%	3.73%
12/20/1982	15.00%	12.50%	2.50%
12/21/1982	15.70%	12.49%	3.21%
12/28/1982	15.25%	12.42%	2.83%
12/28/1982	15.25%	12.42%	2.83%
12/29/1982	16.25%	12.40%	3.85%
12/29/1982	16.25%	12.40%	3.85%
1/11/1983	15.90%	12.25%	3.65%
1/12/1983	15.50%	12.24%	3.26%
1/18/1983	15.00%	12.18%	2.82%
1/24/1983	15.50%	12.13%	3.37%
1/24/1983	16.00%	12.13%	3.87%
1/28/1983	14.90%	12.07%	2.83%
1/31/1983	15.00%	12.06%	2.94%
2/10/1983	15.00%	11.97%	3.03%
2/25/1983	15.70%	11.83%	3.87%
3/2/1983	15.25%	11.78%	3.47%
3/16/1983	16.00%	11.61%	4.39%
3/21/1983	14.96%	11.55%	3.41%
3/23/1983	15.40%	11.52%	3.88%
3/23/1983	16.10%	11.52%	4.58%
3/24/1983	15.00%	11.50%	3.50%
4/12/1983	13.25%	11.29%	1.96%
4/29/1983	15.05%	11.08%	3.97%
5/3/1983	15.40%	11.05%	4.35%

5/9/1983	15.50%	10.99%	4.51%
5/19/1983	14.85%	10.89%	3.96%
5/31/1983	14.00%	10.83%	3.17%
6/2/1983	14.50%	10.81%	3.69%
6/7/1983	14.50%	10.79%	3.71%
6/9/1983	14.85%	10.78%	4.07%
6/20/1983	14.15%	10.73%	3.42%
6/20/1983	16.50%	10.73%	5.77%
6/27/1983	14.50%	10.71%	3.79%
6/30/1983	14.80%	10.70%	4.10%
6/30/1983	15.90%	10.70%	5.20%
7/1/1983	14.80%	10.69%	4.11%
7/5/1983	15.00%	10.69%	4.31%
7/8/1983	15.50%	10.69%	4.81%
7/19/1983	15.00%	10.70%	4.30%
7/19/1983	15.10%	10.70%	4.40%
8/18/1983	15.30%	10.81%	4.49%
8/19/1983	15.79%	10.82%	4.97%
8/29/1983	16.00%	10.85%	5.15%
8/31/1983	14.75%	10.87%	3.88%
8/31/1983	15.25%	10.87%	4.38%
9/8/1983	14.75%	10.90%	3.85%
9/16/1983	15.51%	10.93%	4.58%
9/26/1983	14.50%	10.96%	3.54%
9/28/1983	14.25%	10.97%	3.28%
9/30/1983	16.15%	10.98%	5.17%
9/30/1983	16.25%	10.98%	5.27%
10/1/1983	16.25%	10.98%	5.27%
10/13/1983	15.52%	11.02%	4.50%
10/19/1983	15.20%	11.04%	4.16%
10/26/1983	14.75%	11.07%	3.68%
10/27/1983	14.88%	11.07%	3.81%
10/27/1983	15.33%	11.07%	4.26%
11/9/1983	14.82%	11.10%	3.72%
11/9/1983	16.51%	11.10%	5.41%
11/9/1983	16.51%	11.10%	5.41%
12/1/1983	14.50%	11.17%	3.33%
12/8/1983	15.90%	11.21%	4.69%
12/9/1983	15.30%	11.21%	4.09%
12/12/1983	14.50%	11.22%	3.28%
12/12/1983	15.50%	11.22%	4.28%
12/20/1983	15.40%	11.26%	4.14%
12/20/1983	16.00%	11.26%	4.74%
12/22/1983	15.75%	11.27%	4.48%
12/29/1983	15.00%	11.30%	3.70%
12/30/1983	15.00%	11.30%	3.70%
1/10/1984	15.90%	11.34%	4.56%
1/13/1984	15.50%	11.37%	4.13%
1/18/1984	15.53%	11.39%	4.14%
1/26/1984	15.90%	11.42%	4.48%
2/14/1984	14.25%	11.52%	2.73%
2/28/1984	14.50%	11.59%	2.91%
3/20/1984	16.00%	11.70%	4.30%
3/23/1984	15.50%	11.73%	3.77%
4/9/1984	15.20%	11.81%	3.39%

4/18/1984	16.20%	11.86%	4.34%
4/27/1984	15.85%	11.90%	3.95%
5/15/1984	13.35%	11.99%	1.36%
5/16/1984	15.00%	12.00%	3.00%
5/22/1984	14.40%	12.04%	2.36%
6/13/1984	15.50%	12.19%	3.31%
7/10/1984	16.00%	12.37%	3.63%
8/7/1984	16.69%	12.51%	4.18%
8/9/1984	15.33%	12.52%	2.81%
8/17/1984	14.82%	12.54%	2.28%
8/21/1984	14.64%	12.55%	2.09%
8/27/1984	14.52%	12.57%	1.95%
8/28/1984	14.75%	12.57%	2.18%
8/30/1984	15.60%	12.58%	3.02%
9/12/1984	15.60%	12.60%	3.00%
9/12/1984	15.90%	12.60%	3.30%
9/25/1984	16.25%	12.62%	3.63%
10/2/1984	14.80%	12.63%	2.17%
10/9/1984	14.75%	12.64%	2.11%
10/10/1984	15.50%	12.64%	2.86%
10/18/1984	15.00%	12.65%	2.35%
10/24/1984	15.50%	12.65%	2.85%
11/7/1984	15.00%	12.64%	2.36%
11/20/1984	15.92%	12.63%	3.29%
11/30/1984	15.50%	12.60%	2.90%
12/18/1984	15.00%	12.55%	2.45%
12/20/1984	15.00%	12.54%	2.46%
12/28/1984	15.75%	12.51%	3.24%
12/28/1984	16.25%	12.51%	3.74%
1/2/1985	16.00%	12.50%	3.50%
1/31/1985	14.75%	12.37%	2.38%
2/7/1985	14.85%	12.32%	2.53%
2/15/1985	15.00%	12.26%	2.74%
2/20/1985	14.50%	12.24%	2.26%
2/22/1985	14.86%	12.24%	2.62%
3/14/1985	15.50%	12.15%	3.35%
3/28/1985	14.80%	12.08%	2.72%
4/9/1985	15.50%	12.01%	3.49%
4/16/1985	15.70%	11.96%	3.74%
6/10/1985	15.75%	11.58%	4.17%
6/26/1985	14.82%	11.46%	3.36%
7/9/1985	15.00%	11.38%	3.62%
7/26/1985	14.50%	11.26%	3.24%
8/29/1985	14.50%	11.11%	3.39%
8/30/1985	14.38%	11.10%	3.28%
9/12/1985	15.25%	11.07%	4.18%
9/23/1985	15.30%	11.03%	4.27%
9/25/1985	14.50%	11.02%	3.48%
9/26/1985	13.80%	11.01%	2.79%
9/26/1985	14.50%	11.01%	3.49%
10/25/1985	15.25%	10.91%	4.34%
11/8/1985	12.94%	10.85%	2.09%
11/20/1985	14.90%	10.81%	4.09%
11/25/1985	13.30%	10.79%	2.51%
12/6/1985	12.00%	10.71%	1.29%

12/11/1985	14.90%	10.67%	4.23%
12/20/1985	14.88%	10.58%	4.30%
12/20/1985	15.00%	10.58%	4.42%
12/20/1985	15.00%	10.58%	4.42%
12/30/1985	15.75%	10.52%	5.23%
12/31/1985	14.00%	10.51%	3.49%
12/31/1985	14.50%	10.51%	3.99%
1/17/1986	14.50%	10.37%	4.13%
2/11/1986	12.50%	10.20%	2.30%
2/12/1986	15.20%	10.19%	5.01%
3/11/1986	14.00%	9.97%	4.03%
4/2/1986	12.90%	9.76%	3.14%
4/28/1986	13.01%	9.46%	3.55%
5/21/1986	13.25%	9.17%	4.08%
5/28/1986	14.00%	9.11%	4.89%
5/29/1986	13.90%	9.10%	4.80%
6/2/1986	13.00%	9.07%	3.93%
6/11/1986	14.00%	8.96%	5.04%
6/13/1986	13.55%	8.93%	4.62%
6/27/1986	11.88%	8.76%	3.12%
7/14/1986	12.60%	8.57%	4.03%
7/30/1986	13.30%	8.37%	4.93%
8/14/1986	13.50%	8.21%	5.29%
9/5/1986	13.30%	8.01%	5.29%
9/23/1986	12.75%	7.90%	4.85%
10/30/1986	13.00%	7.66%	5.34%
10/31/1986	13.75%	7.65%	6.10%
11/10/1986	14.00%	7.60%	6.40%
11/19/1986	13.75%	7.56%	6.19%
11/25/1986	13.15%	7.54%	5.61%
12/22/1986	13.80%	7.47%	6.33%
12/30/1986	13.90%	7.47%	6.43%
1/20/1987	12.75%	7.47%	5.28%
1/23/1987	13.55%	7.47%	6.08%
1/27/1987	12.16%	7.47%	4.69%
2/13/1987	12.60%	7.47%	5.13%
2/24/1987	12.00%	7.47%	4.53%
3/30/1987	12.20%	7.46%	4.74%
3/31/1987	13.00%	7.47%	5.53%
5/5/1987	12.85%	7.60%	5.25%
5/28/1987	13.50%	7.73%	5.77%
6/15/1987	13.20%	7.81%	5.39%
6/30/1987	12.60%	7.85%	4.75%
7/10/1987	12.90%	7.88%	5.02%
7/27/1987	13.50%	7.94%	5.56%
8/25/1987	11.40%	8.09%	3.31%
9/18/1987	13.00%	8.28%	4.72%
10/20/1987	12.60%	8.55%	4.05%
10/20/1987	12.98%	8.55%	4.43%
11/12/1987	12.75%	8.68%	4.07%
11/13/1987	12.75%	8.69%	4.06%
11/24/1987	12.50%	8.74%	3.76%
12/8/1987	12.50%	8.82%	3.68%
12/22/1987	12.00%	8.91%	3.09%
12/31/1987	12.85%	8.95%	3.90%

12/31/1987	13.25%	8.95%	4.30%
1/15/1988	13.15%	8.99%	4.16%
1/20/1988	12.75%	8.99%	3.76%
1/29/1988	13.20%	8.99%	4.21%
2/4/1988	12.60%	8.99%	3.61%
3/23/1988	13.00%	8.95%	4.05%
5/27/1988	13.18%	9.02%	4.16%
6/14/1988	13.50%	9.00%	4.50%
6/17/1988	11.72%	8.98%	2.74%
6/24/1988	11.50%	8.97%	2.53%
7/1/1988	12.75%	8.94%	3.81%
7/8/1988	12.00%	8.93%	3.07%
7/18/1988	12.00%	8.90%	3.10%
7/20/1988	13.40%	8.89%	4.51%
8/8/1988	12.74%	8.90%	3.84%
9/20/1988	12.90%	8.93%	3.97%
9/26/1988	12.40%	8.93%	3.47%
9/27/1988	13.65%	8.93%	4.72%
9/30/1988	13.25%	8.94%	4.31%
10/13/1988	13.10%	8.93%	4.17%
10/21/1988	12.80%	8.94%	3.86%
10/25/1988	13.25%	8.94%	4.31%
10/26/1988	13.50%	8.94%	4.56%
10/27/1988	12.95%	8.95%	4.00%
10/28/1988	13.00%	8.95%	4.05%
11/15/1988	12.00%	8.98%	3.02%
11/29/1988	12.75%	9.02%	3.73%
12/19/1988	13.00%	9.05%	3.95%
12/21/1988	12.90%	9.05%	3.85%
12/22/1988	13.50%	9.06%	4.44%
1/26/1989	12.60%	9.06%	3.54%
1/27/1989	13.00%	9.06%	3.94%
2/8/1989	13.37%	9.05%	4.32%
3/8/1989	13.00%	9.04%	3.96%
5/4/1989	13.00%	9.04%	3.96%
6/8/1989	13.50%	8.96%	4.54%
7/19/1989	11.80%	8.84%	2.96%
7/25/1989	12.80%	8.82%	3.98%
7/31/1989	13.00%	8.81%	4.19%
8/14/1989	12.50%	8.76%	3.74%
8/22/1989	12.80%	8.73%	4.07%
8/23/1989	12.90%	8.72%	4.18%
9/21/1989	12.10%	8.62%	3.48%
10/6/1989	13.00%	8.57%	4.43%
10/17/1989	12.41%	8.54%	3.87%
10/18/1989	13.25%	8.54%	4.71%
10/20/1989	12.90%	8.53%	4.37%
10/31/1989	13.60%	8.49%	5.11%
11/3/1989	12.93%	8.48%	4.45%
11/5/1989	13.20%	8.48%	4.72%
11/9/1989	12.60%	8.45%	4.15%
11/9/1989	13.00%	8.45%	4.55%
11/28/1989	12.75%	8.37%	4.38%
12/7/1989	13.25%	8.32%	4.93%
12/15/1989	13.00%	8.27%	4.73%

12/20/1989	12.90%	8.25%	4.65%
12/21/1989	12.80%	8.25%	4.55%
12/21/1989	12.90%	8.25%	4.65%
12/27/1989	12.50%	8.23%	4.27%
1/9/1990	13.00%	8.19%	4.81%
1/18/1990	12.50%	8.16%	4.34%
1/26/1990	12.10%	8.14%	3.96%
3/21/1990	12.80%	8.15%	4.65%
3/28/1990	13.00%	8.16%	4.84%
4/5/1990	12.20%	8.17%	4.03%
4/12/1990	13.25%	8.19%	5.06%
4/30/1990	12.45%	8.24%	4.21%
5/31/1990	12.40%	8.31%	4.09%
6/15/1990	13.20%	8.33%	4.87%
6/27/1990	12.90%	8.34%	4.56%
6/29/1990	13.25%	8.35%	4.90%
7/6/1990	12.10%	8.36%	3.74%
7/19/1990	11.70%	8.39%	3.31%
8/31/1990	12.50%	8.53%	3.97%
8/31/1990	12.50%	8.53%	3.97%
9/13/1990	12.50%	8.58%	3.92%
9/18/1990	12.75%	8.60%	4.15%
9/20/1990	12.50%	8.61%	3.89%
10/2/1990	13.00%	8.65%	4.35%
10/17/1990	11.90%	8.68%	3.22%
10/31/1990	12.95%	8.70%	4.25%
11/9/1990	13.25%	8.71%	4.54%
11/19/1990	13.00%	8.70%	4.30%
11/21/1990	12.10%	8.70%	3.40%
11/21/1990	12.50%	8.70%	3.80%
11/28/1990	12.75%	8.70%	4.05%
11/29/1990	12.75%	8.70%	4.05%
12/18/1990	13.10%	8.68%	4.42%
12/20/1990	12.50%	8.67%	3.83%
12/21/1990	12.50%	8.67%	3.83%
12/21/1990	13.00%	8.67%	4.33%
12/21/1990	13.60%	8.67%	4.93%
1/3/1991	13.02%	8.66%	4.36%
1/16/1991	13.25%	8.63%	4.62%
1/25/1991	11.70%	8.60%	3.10%
2/15/1991	12.70%	8.56%	4.14%
2/15/1991	12.80%	8.56%	4.24%
4/3/1991	13.00%	8.51%	4.49%
4/30/1991	12.45%	8.47%	3.98%
4/30/1991	13.00%	8.47%	4.53%
6/25/1991	11.70%	8.34%	3.36%
6/28/1991	12.50%	8.33%	4.17%
7/1/1991	11.70%	8.33%	3.37%
7/19/1991	12.10%	8.30%	3.80%
7/19/1991	12.30%	8.30%	4.00%
7/22/1991	12.90%	8.30%	4.60%
8/15/1991	12.25%	8.27%	3.98%
8/29/1991	13.30%	8.26%	5.04%
9/27/1991	12.50%	8.23%	4.27%
9/30/1991	12.40%	8.23%	4.17%

10/3/1991	11.30%	8.22%	3.08%
10/9/1991	11.70%	8.21%	3.49%
10/15/1991	13.40%	8.20%	5.20%
11/1/1991	12.90%	8.20%	4.70%
11/8/1991	12.75%	8.20%	4.55%
11/26/1991	11.60%	8.18%	3.42%
11/26/1991	12.00%	8.18%	3.82%
11/27/1991	12.70%	8.18%	4.52%
12/6/1991	12.70%	8.16%	4.54%
12/10/1991	11.75%	8.15%	3.60%
12/19/1991	12.60%	8.14%	4.46%
12/19/1991	12.80%	8.14%	4.66%
12/30/1991	12.10%	8.11%	3.99%
1/22/1992	12.84%	8.05%	4.79%
1/31/1992	12.00%	8.03%	3.97%
2/20/1992	13.00%	8.00%	5.00%
2/27/1992	11.75%	7.98%	3.77%
3/18/1992	12.50%	7.94%	4.56%
5/15/1992	12.75%	7.86%	4.89%
6/24/1992	12.20%	7.85%	4.35%
6/29/1992	11.00%	7.85%	3.15%
7/14/1992	12.00%	7.83%	4.17%
7/22/1992	11.20%	7.82%	3.38%
8/10/1992	12.10%	7.79%	4.31%
8/26/1992	12.43%	7.75%	4.68%
9/30/1992	11.60%	7.72%	3.88%
10/6/1992	12.25%	7.72%	4.53%
10/13/1992	12.75%	7.71%	5.04%
10/23/1992	11.65%	7.71%	3.94%
10/28/1992	12.25%	7.71%	4.54%
10/29/1992	12.75%	7.70%	5.05%
10/30/1992	11.40%	7.70%	3.70%
11/9/1992	10.60%	7.70%	2.90%
11/25/1992	11.00%	7.67%	3.33%
11/25/1992	12.00%	7.67%	4.33%
12/3/1992	11.85%	7.66%	4.19%
12/16/1992	11.90%	7.63%	4.27%
12/22/1992	12.30%	7.62%	4.68%
12/22/1992	12.40%	7.62%	4.78%
12/30/1992	12.00%	7.61%	4.39%
12/31/1992	12.00%	7.60%	4.40%
1/12/1993	12.00%	7.58%	4.42%
1/12/1993	12.00%	7.58%	4.42%
2/2/1993	11.40%	7.53%	3.87%
2/22/1993	11.60%	7.47%	4.13%
4/23/1993	11.75%	7.27%	4.48%
5/3/1993	11.50%	7.25%	4.25%
5/3/1993	11.75%	7.25%	4.50%
6/3/1993	12.00%	7.20%	4.80%
6/7/1993	11.50%	7.20%	4.30%
6/22/1993	11.75%	7.16%	4.59%
7/21/1993	11.78%	7.06%	4.72%
7/21/1993	11.90%	7.06%	4.84%
7/23/1993	11.50%	7.05%	4.45%
7/29/1993	11.50%	7.03%	4.47%

8/12/1993	10.75%	6.97%	3.78%
8/24/1993	11.50%	6.91%	4.59%
8/31/1993	11.90%	6.88%	5.02%
9/1/1993	11.25%	6.87%	4.38%
9/1/1993	11.47%	6.87%	4.60%
9/27/1993	10.50%	6.74%	3.76%
9/29/1993	11.00%	6.72%	4.28%
9/30/1993	11.60%	6.71%	4.89%
10/8/1993	11.50%	6.67%	4.83%
10/14/1993	11.20%	6.65%	4.55%
10/15/1993	11.75%	6.64%	5.11%
10/25/1993	11.55%	6.60%	4.95%
10/28/1993	11.50%	6.58%	4.92%
10/29/1993	10.10%	6.57%	3.53%
10/29/1993	10.20%	6.57%	3.63%
10/29/1993	11.25%	6.57%	4.68%
11/2/1993	10.80%	6.56%	4.24%
11/12/1993	11.80%	6.53%	5.27%
11/23/1993	12.50%	6.50%	6.00%
11/26/1993	11.00%	6.50%	4.50%
12/1/1993	11.45%	6.49%	4.96%
12/16/1993	10.60%	6.45%	4.15%
12/16/1993	11.20%	6.45%	4.75%
12/21/1993	11.30%	6.44%	4.86%
12/22/1993	11.00%	6.44%	4.56%
12/23/1993	10.10%	6.43%	3.67%
1/5/1994	11.50%	6.41%	5.09%
1/10/1994	11.00%	6.40%	4.60%
1/25/1994	12.00%	6.37%	5.63%
2/2/1994	10.40%	6.35%	4.05%
2/9/1994	10.70%	6.33%	4.37%
4/6/1994	11.24%	6.34%	4.90%
4/25/1994	11.00%	6.39%	4.61%
6/16/1994	10.50%	6.64%	3.86%
6/23/1994	10.60%	6.68%	3.92%
7/19/1994	10.70%	6.84%	3.86%
9/29/1994	10.90%	7.21%	3.69%
9/29/1994	11.00%	7.21%	3.79%
10/7/1994	11.87%	7.26%	4.61%
10/18/1994	11.50%	7.32%	4.18%
10/18/1994	11.50%	7.32%	4.18%
10/24/1994	11.00%	7.36%	3.64%
11/22/1994	12.12%	7.53%	4.59%
11/29/1994	11.30%	7.55%	3.75%
12/1/1994	11.00%	7.57%	3.43%
12/8/1994	11.50%	7.59%	3.91%
12/8/1994	11.70%	7.59%	4.11%
12/12/1994	11.82%	7.60%	4.22%
12/14/1994	11.50%	7.61%	3.89%
12/19/1994	11.50%	7.62%	3.88%
4/19/1995	11.00%	7.72%	3.28%
9/11/1995	11.30%	7.16%	4.14%
9/15/1995	10.40%	7.13%	3.27%
9/29/1995	11.50%	7.06%	4.44%
10/13/1995	10.76%	6.98%	3.78%

11/7/1995	12.50%	6.86%	5.64%
11/8/1995	11.10%	6.85%	4.25%
11/8/1995	11.30%	6.85%	4.45%
11/17/1995	10.90%	6.80%	4.10%
11/20/1995	11.40%	6.80%	4.60%
11/27/1995	13.60%	6.76%	6.84%
12/14/1995	11.30%	6.67%	4.63%
12/20/1995	11.60%	6.64%	4.96%
1/31/1996	11.30%	6.45%	4.85%
3/11/1996	11.60%	6.40%	5.20%
4/3/1996	11.13%	6.40%	4.73%
4/15/1996	10.50%	6.40%	4.10%
4/17/1996	10.77%	6.40%	4.37%
4/26/1996	10.60%	6.40%	4.20%
5/10/1996	11.00%	6.40%	4.60%
5/13/1996	11.25%	6.40%	4.85%
7/3/1996	11.25%	6.49%	4.76%
7/22/1996	11.25%	6.54%	4.71%
10/3/1996	10.00%	6.77%	3.23%
10/29/1996	11.30%	6.85%	4.45%
11/26/1996	11.30%	6.86%	4.44%
11/27/1996	11.30%	6.86%	4.44%
11/29/1996	11.00%	6.86%	4.14%
12/12/1996	11.96%	6.85%	5.11%
12/17/1996	11.50%	6.85%	4.65%
1/22/1997	11.30%	6.83%	4.47%
1/27/1997	11.25%	6.83%	4.42%
1/31/1997	11.25%	6.83%	4.42%
2/13/1997	11.00%	6.82%	4.18%
2/13/1997	11.80%	6.82%	4.98%
2/20/1997	11.80%	6.81%	4.99%
3/27/1997	10.75%	6.79%	3.96%
4/29/1997	11.70%	6.81%	4.89%
7/17/1997	12.00%	6.77%	5.23%
10/29/1997	10.75%	6.70%	4.05%
10/31/1997	11.25%	6.70%	4.55%
12/24/1997	10.75%	6.53%	4.22%
4/28/1998	10.90%	6.10%	4.80%
4/30/1998	12.20%	6.10%	6.10%
6/30/1998	11.00%	5.94%	5.06%
8/26/1998	10.93%	5.82%	5.11%
9/3/1998	11.40%	5.80%	5.60%
9/15/1998	11.90%	5.77%	6.13%
10/7/1998	11.06%	5.70%	5.36%
10/30/1998	11.40%	5.63%	5.77%
12/10/1998	12.20%	5.51%	6.69%
12/17/1998	12.10%	5.49%	6.61%
2/19/1999	11.15%	5.31%	5.84%
3/1/1999	10.65%	5.31%	5.34%
3/1/1999	10.65%	5.31%	5.34%
6/8/1999	11.25%	5.36%	5.89%
11/12/1999	10.25%	5.92%	4.33%
12/14/1999	10.50%	6.00%	4.50%
1/28/2000	10.71%	6.16%	4.55%
2/17/2000	10.60%	6.20%	4.40%

5/25/2000	10.80%	6.20%	4.60%
6/19/2000	11.05%	6.18%	4.87%
6/22/2000	11.25%	6.18%	5.07%
7/17/2000	11.06%	6.15%	4.91%
7/20/2000	12.20%	6.14%	6.06%
8/11/2000	11.00%	6.11%	4.89%
9/27/2000	11.25%	6.00%	5.25%
9/29/2000	11.16%	5.99%	5.17%
10/5/2000	11.30%	5.98%	5.32%
11/28/2000	12.90%	5.87%	7.03%
11/30/2000	12.10%	5.86%	6.24%
2/5/2001	11.50%	5.75%	5.75%
3/15/2001	11.25%	5.66%	5.59%
5/8/2001	10.75%	5.61%	5.14%
10/24/2001	10.30%	5.54%	4.76%
10/24/2001	11.00%	5.54%	5.46%
1/9/2002	10.00%	5.50%	4.50%
1/30/2002	11.00%	5.47%	5.53%
1/31/2002	11.00%	5.47%	5.53%
4/17/2002	11.50%	5.44%	6.06%
4/29/2002	11.00%	5.44%	5.56%
6/11/2002	11.77%	5.47%	6.30%
6/20/2002	12.30%	5.48%	6.82%
8/28/2002	11.00%	5.49%	5.51%
9/11/2002	11.20%	5.45%	5.75%
9/12/2002	12.30%	5.45%	6.85%
10/28/2002	11.30%	5.34%	5.96%
10/30/2002	10.60%	5.34%	5.26%
11/1/2002	12.60%	5.34%	7.26%
11/7/2002	11.40%	5.33%	6.07%
11/8/2002	10.75%	5.33%	5.42%
11/20/2002	10.00%	5.30%	4.70%
11/20/2002	10.50%	5.30%	5.20%
12/4/2002	10.75%	5.26%	5.49%
12/30/2002	11.20%	5.18%	6.02%
1/6/2003	11.25%	5.16%	6.09%
2/28/2003	12.30%	5.00%	7.30%
3/7/2003	9.96%	4.98%	4.98%
3/12/2003	11.40%	4.97%	6.43%
3/20/2003	12.00%	4.95%	7.05%
4/3/2003	12.00%	4.92%	7.08%
5/2/2003	11.40%	4.88%	6.52%
5/15/2003	11.05%	4.87%	6.18%
6/26/2003	11.00%	4.80%	6.20%
7/1/2003	11.00%	4.80%	6.20%
7/29/2003	11.71%	4.78%	6.93%
8/22/2003	10.20%	4.81%	5.39%
9/17/2003	9.90%	4.85%	5.05%
9/25/2003	10.25%	4.85%	5.40%
10/17/2003	10.54%	4.87%	5.67%
10/22/2003	10.46%	4.87%	5.59%
10/22/2003	10.71%	4.87%	5.84%
10/30/2003	11.00%	4.88%	6.12%
10/31/2003	10.20%	4.88%	5.32%
10/31/2003	10.75%	4.88%	5.87%

11/10/2003	10.60%	4.89%	5.71%
12/9/2003	10.50%	4.93%	5.57%
12/18/2003	10.50%	4.94%	5.56%
12/19/2003	12.00%	4.94%	7.06%
12/19/2003	12.00%	4.94%	7.06%
1/13/2004	10.25%	4.95%	5.30%
1/13/2004	12.00%	4.95%	7.05%
2/9/2004	11.25%	4.99%	6.26%
3/16/2004	10.90%	5.05%	5.85%
3/16/2004	10.90%	5.05%	5.85%
5/25/2004	10.00%	5.06%	4.94%
6/2/2004	11.22%	5.07%	6.15%
6/30/2004	10.50%	5.10%	5.40%
7/8/2004	10.00%	5.10%	4.90%
7/22/2004	10.25%	5.10%	5.15%
8/26/2004	10.50%	5.10%	5.40%
8/26/2004	10.50%	5.10%	5.40%
9/9/2004	10.40%	5.10%	5.30%
9/21/2004	10.50%	5.09%	5.41%
9/27/2004	10.30%	5.09%	5.21%
9/27/2004	10.50%	5.09%	5.41%
10/20/2004	10.20%	5.08%	5.12%
11/30/2004	10.60%	5.08%	5.52%
12/8/2004	9.90%	5.09%	4.81%
12/21/2004	11.50%	5.09%	6.41%
12/22/2004	11.50%	5.09%	6.41%
12/28/2004	10.25%	5.09%	5.16%
2/18/2005	10.30%	4.95%	5.35%
3/29/2005	11.00%	4.86%	6.14%
4/13/2005	10.60%	4.83%	5.77%
4/28/2005	11.00%	4.80%	6.20%
5/17/2005	10.00%	4.76%	5.24%
6/8/2005	10.18%	4.71%	5.47%
6/10/2005	10.90%	4.71%	6.19%
7/6/2005	10.50%	4.65%	5.85%
7/19/2005	11.50%	4.63%	6.87%
8/11/2005	10.40%	4.60%	5.80%
9/19/2005	9.45%	4.53%	4.92%
9/30/2005	10.51%	4.52%	5.99%
10/4/2005	9.90%	4.52%	5.38%
10/4/2005	10.75%	4.52%	6.23%
10/14/2005	10.40%	4.51%	5.89%
10/31/2005	10.25%	4.53%	5.72%
11/2/2005	9.70%	4.53%	5.17%
11/30/2005	10.00%	4.53%	5.47%
12/9/2005	9.70%	4.53%	5.17%
12/12/2005	11.00%	4.53%	6.47%
12/20/2005	10.13%	4.52%	5.61%
12/21/2005	10.40%	4.52%	5.88%
12/21/2005	11.00%	4.52%	6.48%
12/22/2005	10.20%	4.52%	5.68%
12/22/2005	11.00%	4.52%	6.48%
12/28/2005	10.00%	4.52%	5.48%
1/5/2006	11.00%	4.52%	6.48%
1/25/2006	11.20%	4.52%	6.68%

1/25/2006	11.20%	4.52%	6.68%
2/3/2006	10.50%	4.52%	5.98%
2/15/2006	9.50%	4.53%	4.97%
4/26/2006	10.60%	4.65%	5.95%
7/24/2006	9.60%	4.87%	4.73%
7/24/2006	10.00%	4.87%	5.13%
9/20/2006	11.00%	4.93%	6.07%
9/26/2006	10.75%	4.94%	5.81%
10/20/2006	9.80%	4.96%	4.84%
11/2/2006	9.71%	4.97%	4.74%
11/9/2006	10.00%	4.98%	5.02%
11/21/2006	11.00%	4.98%	6.02%
12/5/2006	10.20%	4.97%	5.23%
1/5/2007	10.40%	4.95%	5.45%
1/9/2007	11.00%	4.94%	6.06%
1/11/2007	10.90%	4.94%	5.96%
1/19/2007	10.80%	4.93%	5.87%
1/26/2007	10.00%	4.92%	5.08%
2/8/2007	10.40%	4.91%	5.49%
3/14/2007	10.10%	4.85%	5.25%
3/20/2007	10.25%	4.84%	5.41%
3/21/2007	11.35%	4.84%	6.51%
3/22/2007	10.50%	4.84%	5.66%
3/29/2007	10.00%	4.83%	5.17%
6/13/2007	10.75%	4.82%	5.93%
6/29/2007	9.53%	4.84%	4.69%
6/29/2007	10.10%	4.84%	5.26%
7/3/2007	10.25%	4.85%	5.40%
7/13/2007	9.50%	4.86%	4.64%
7/24/2007	10.40%	4.87%	5.53%
8/1/2007	10.15%	4.88%	5.27%
8/29/2007	10.50%	4.91%	5.59%
9/10/2007	9.71%	4.92%	4.79%
9/19/2007	10.00%	4.91%	5.09%
9/25/2007	9.70%	4.92%	4.78%
10/8/2007	10.48%	4.92%	5.56%
10/19/2007	10.50%	4.91%	5.59%
10/25/2007	9.65%	4.91%	4.74%
11/15/2007	10.00%	4.89%	5.11%
11/20/2007	9.90%	4.89%	5.01%
11/27/2007	10.00%	4.89%	5.11%
11/29/2007	10.90%	4.88%	6.02%
12/14/2007	10.80%	4.87%	5.93%
12/18/2007	10.40%	4.86%	5.54%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	10.20%	4.86%	5.34%
12/21/2007	9.10%	4.86%	4.24%
1/8/2008	10.75%	4.83%	5.92%
1/17/2008	10.75%	4.81%	5.94%
1/17/2008	10.75%	4.81%	5.94%
2/5/2008	9.99%	4.77%	5.22%
2/5/2008	10.19%	4.77%	5.42%
2/13/2008	10.20%	4.76%	5.44%
3/31/2008	10.00%	4.63%	5.37%

5/28/2008	10.50%	4.53%	5.97%
6/24/2008	10.00%	4.52%	5.48%
6/27/2008	10.00%	4.52%	5.48%
7/31/2008	10.70%	4.50%	6.20%
7/31/2008	10.82%	4.50%	6.32%
8/27/2008	10.25%	4.50%	5.75%
9/2/2008	10.25%	4.50%	5.75%
9/19/2008	10.70%	4.48%	6.22%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/30/2008	10.20%	4.48%	5.72%
10/3/2008	10.30%	4.48%	5.82%
10/8/2008	10.15%	4.47%	5.68%
10/20/2008	10.06%	4.47%	5.59%
10/24/2008	10.60%	4.46%	6.14%
10/24/2008	10.60%	4.46%	6.14%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/24/2008	10.50%	4.41%	6.09%
12/3/2008	10.39%	4.38%	6.01%
12/24/2008	10.00%	4.26%	5.74%
12/26/2008	10.10%	4.24%	5.86%
12/29/2008	10.20%	4.23%	5.97%
1/13/2009	10.45%	4.14%	6.31%
2/2/2009	10.05%	4.03%	6.02%
3/9/2009	10.30%	3.89%	6.41%
3/25/2009	10.17%	3.83%	6.34%
4/2/2009	10.75%	3.80%	6.95%
5/5/2009	10.75%	3.71%	7.04%
5/15/2009	10.20%	3.70%	6.50%
5/29/2009	9.54%	3.70%	5.84%
6/3/2009	10.10%	3.70%	6.40%
6/22/2009	10.00%	3.73%	6.27%
6/29/2009	10.21%	3.73%	6.48%
6/30/2009	9.31%	3.74%	5.57%
7/17/2009	9.26%	3.75%	5.51%
7/17/2009	10.50%	3.75%	6.75%
10/16/2009	10.40%	4.09%	6.31%
10/26/2009	10.10%	4.11%	5.99%
10/28/2009	10.15%	4.12%	6.03%
10/28/2009	10.15%	4.12%	6.03%
10/30/2009	9.95%	4.13%	5.82%
11/20/2009	9.45%	4.19%	5.26%
12/14/2009	10.50%	4.25%	6.25%
12/16/2009	10.75%	4.26%	6.49%
12/17/2009	10.30%	4.26%	6.04%
12/18/2009	10.40%	4.27%	6.13%
12/18/2009	10.40%	4.27%	6.13%
12/18/2009	10.50%	4.27%	6.23%
12/22/2009	10.20%	4.28%	5.92%
12/22/2009	10.40%	4.28%	6.12%
12/28/2009	10.85%	4.30%	6.55%
12/29/2009	10.38%	4.30%	6.08%

1/11/2010	10.24%	4.34%	5.90%
1/21/2010	10.23%	4.37%	5.86%
1/21/2010	10.33%	4.37%	5.96%
1/26/2010	10.40%	4.37%	6.03%
2/10/2010	10.00%	4.39%	5.61%
2/23/2010	10.50%	4.40%	6.10%
3/9/2010	9.60%	4.40%	5.20%
3/24/2010	10.13%	4.42%	5.71%
3/31/2010	10.70%	4.43%	6.27%
4/1/2010	9.50%	4.43%	5.07%
4/2/2010	10.10%	4.44%	5.66%
4/8/2010	10.35%	4.44%	5.91%
4/29/2010	9.19%	4.46%	4.73%
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5/17/2010	10.55%	4.46%	6.09%
5/24/2010	10.05%	4.46%	5.59%
6/3/2010	11.00%	4.46%	6.54%
6/16/2010	10.00%	4.46%	5.54%
6/18/2010	10.30%	4.46%	5.84%
8/9/2010	12.55%	4.41%	8.14%
8/17/2010	10.10%	4.40%	5.70%
9/16/2010	9.60%	4.31%	5.29%
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.30%	4.31%	5.99%
10/21/2010	10.40%	4.20%	6.20%
11/2/2010	9.75%	4.17%	5.58%
11/2/2010	9.75%	4.17%	5.58%
11/3/2010	10.75%	4.17%	6.58%
11/19/2010	10.20%	4.14%	6.06%
12/1/2010	10.00%	4.12%	5.88%
12/6/2010	9.56%	4.12%	5.44%
12/6/2010	10.09%	4.12%	5.97%
12/9/2010	10.25%	4.12%	6.13%
12/14/2010	10.33%	4.11%	6.22%
12/17/2010	10.10%	4.11%	5.99%
12/20/2010	10.10%	4.11%	5.99%
12/23/2010	9.92%	4.10%	5.82%
1/6/2011	10.35%	4.09%	6.26%
1/12/2011	10.30%	4.08%	6.22%
1/13/2011	10.30%	4.08%	6.22%
3/10/2011	10.10%	4.16%	5.94%
3/31/2011	9.45%	4.20%	5.25%
4/18/2011	10.05%	4.24%	5.81%
5/26/2011	10.50%	4.32%	6.18%
6/21/2011	10.00%	4.36%	5.64%
6/29/2011	8.83%	4.38%	4.45%
8/1/2011	9.20%	4.41%	4.79%
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12/20/2011	10.00%	3.71%	6.29%
12/22/2011	10.40%	3.70%	6.70%
1/10/2012	9.06%	3.59%	5.47%

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1/23/2012	10.20%	3.52%	6.68%
1/31/2012	10.00%	3.48%	6.52%
4/24/2012	9.50%	3.15%	6.35%
4/24/2012	9.75%	3.15%	6.60%
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10/31/2012	9.90%	2.91%	6.99%
10/31/2012	10.00%	2.91%	7.09%
11/1/2012	9.45%	2.91%	6.54%
11/8/2012	10.10%	2.91%	7.19%
11/9/2012	10.30%	2.90%	7.40%
11/26/2012	10.00%	2.88%	7.12%
11/28/2012	10.40%	2.88%	7.52%
11/28/2012	10.50%	2.88%	7.62%
12/4/2012	10.00%	2.87%	7.13%
12/4/2012	10.50%	2.87%	7.63%
12/20/2012	9.50%	2.84%	6.66%
12/20/2012	10.10%	2.84%	7.26%
12/20/2012	10.25%	2.84%	7.41%
12/20/2012	10.30%	2.84%	7.46%
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5/10/2013	9.25%	2.96%	6.29%
6/13/2013	9.40%	3.02%	6.38%
6/18/2013	9.28%	3.02%	6.26%
6/18/2013	9.28%	3.02%	6.26%
6/25/2013	9.80%	3.04%	6.76%
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11/14/2013	10.25%	3.45%	6.80%
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12/13/2013	9.60%	3.52%	6.08%
12/16/2013	9.73%	3.53%	6.20%
12/17/2013	10.00%	3.53%	6.47%
12/18/2013	9.08%	3.54%	5.54%
12/23/2013	9.72%	3.55%	6.17%
12/30/2013	10.00%	3.58%	6.42%
1/21/2014	9.65%	3.66%	5.99%

1/22/2014	9.18%	3.66%	5.52%
2/20/2014	9.30%	3.72%	5.58%
2/21/2014	9.85%	3.72%	6.13%
2/28/2014	9.55%	3.73%	5.82%
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5/8/2014	9.59%	3.71%	5.88%
6/6/2014	10.40%	3.66%	6.74%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
7/7/2014	9.30%	3.63%	5.67%
7/25/2014	9.30%	3.60%	5.70%
7/31/2014	9.90%	3.59%	6.31%
9/4/2014	9.10%	3.50%	5.60%
9/24/2014	9.35%	3.46%	5.89%
9/30/2014	9.75%	3.44%	6.31%
10/29/2014	10.80%	3.37%	7.43%
11/6/2014	10.20%	3.35%	6.85%
11/14/2014	10.20%	3.33%	6.87%
11/14/2014	10.30%	3.33%	6.97%
11/26/2014	10.20%	3.30%	6.90%
12/3/2014	10.00%	3.28%	6.72%
1/13/2015	10.30%	3.16%	7.14%
1/21/2015	9.05%	3.13%	5.92%
1/21/2015	9.05%	3.13%	5.92%
4/9/2015	9.50%	2.88%	6.62%
5/11/2015	9.80%	2.81%	6.99%
6/17/2015	9.00%	2.79%	6.21%
8/21/2015	9.75%	2.78%	6.97%
10/7/2015	9.55%	2.82%	6.73%
10/13/2015	9.75%	2.83%	6.92%
10/15/2015	9.00%	2.84%	6.16%
10/30/2015	9.80%	2.87%	6.93%
11/19/2015	10.00%	2.90%	7.10%
12/3/2015	10.00%	2.91%	7.09%
12/9/2015	9.60%	2.92%	6.68%
12/11/2015	9.90%	2.93%	6.97%
12/18/2015	9.50%	2.94%	6.56%
1/6/2016	9.50%	2.97%	6.53%
1/6/2016	9.50%	2.97%	6.53%
1/28/2016	9.40%	2.97%	6.43%
2/10/2016	9.60%	2.95%	6.65%
2/16/2016	9.50%	2.94%	6.56%
2/29/2016	9.40%	2.92%	6.48%
4/29/2016	9.80%	2.83%	6.97%
5/5/2016	9.49%	2.82%	6.67%
6/1/2016	9.55%	2.80%	6.75%
6/3/2016	9.65%	2.79%	6.86%
6/15/2016	9.00%	2.77%	6.23%
6/15/2016	9.00%	2.77%	6.23%
9/2/2016	9.50%	2.56%	6.94%
9/23/2016	9.75%	2.51%	7.24%

9/27/2016	9.50%	2.51%	6.99%
9/29/2016	9.11%	2.50%	6.61%
10/13/2016	10.20%	2.48%	7.72%
10/28/2016	9.70%	2.47%	7.23%
11/9/2016	9.80%	2.47%	7.33%
11/18/2016	10.00%	2.49%	7.51%
12/9/2016	10.10%	2.51%	7.59%
12/15/2016	9.00%	2.52%	6.48%
12/15/2016	9.00%	2.52%	6.48%
12/20/2016	9.75%	2.53%	7.22%
12/22/2016	9.50%	2.54%	6.96%
1/24/2017	9.00%	2.59%	6.41%
2/21/2017	10.55%	2.63%	7.92%
3/1/2017	9.25%	2.65%	6.60%
4/11/2017	9.50%	2.77%	6.73%
4/20/2017	8.70%	2.79%	5.91%
4/28/2017	9.50%	2.82%	6.68%
5/23/2017	9.60%	2.88%	6.72%
6/6/2017	9.70%	2.91%	6.79%
6/22/2017	9.70%	2.94%	6.76%
6/30/2017	9.60%	2.95%	6.65%
7/20/2017	9.55%	2.97%	6.58%
7/31/2017	10.10%	2.98%	7.12%
9/13/2017	9.40%	2.93%	6.47%
9/19/2017	9.70%	2.92%	6.78%
9/22/2017	11.88%	2.92%	8.96%
9/27/2017	10.20%	2.92%	7.28%
10/20/2017	9.60%	2.90%	6.70%
10/26/2017	10.20%	2.90%	7.30%
10/30/2017	10.05%	2.90%	7.15%
12/5/2017	9.50%	2.86%	6.64%
12/7/2017	9.80%	2.85%	6.95%
12/13/2017	9.25%	2.85%	6.40%
12/28/2017	9.50%	2.84%	6.66%
1/31/2018	9.80%	2.83%	6.97%
2/21/2018	9.80%	2.84%	6.96%
2/21/2018	9.80%	2.84%	6.96%
2/28/2018	9.50%	2.85%	6.65%
3/15/2018	9.00%	2.87%	6.13%
3/26/2018	10.19%	2.88%	7.31%
4/26/2018	9.50%	2.91%	6.59%
4/27/2018	9.30%	2.91%	6.39%
5/2/2018	9.50%	2.91%	6.59%
5/3/2018	9.70%	2.91%	6.79%
5/29/2018	9.40%	2.95%	6.45%
6/6/2018	9.80%	2.96%	6.84%
6/14/2018	8.80%	2.97%	5.83%
7/16/2018	9.60%	2.98%	6.62%
7/20/2018	9.40%	2.99%	6.41%
8/24/2018	9.28%	3.02%	6.26%
8/28/2018	10.00%	3.03%	6.97%
9/13/2018	10.00%	3.04%	6.96%
9/14/2018	10.00%	3.05%	6.95%
9/19/2018	9.85%	3.05%	6.80%
9/20/2018	9.80%	3.06%	6.74%

9/26/2018	9.40%	3.06%	6.34%
9/26/2018	10.20%	3.06%	7.14%
9/28/2018	9.50%	3.07%	6.43%
9/28/2018	9.50%	3.07%	6.43%
10/5/2018	9.61%	3.08%	6.53%
10/15/2018	9.80%	3.09%	6.71%
10/26/2018	9.40%	3.11%	6.29%
10/29/2018	9.60%	3.11%	6.49%
11/1/2018	9.87%	3.11%	6.76%
11/8/2018	9.70%	3.12%	6.58%
11/8/2018	9.70%	3.12%	6.58%
12/11/2018	9.70%	3.14%	6.56%
12/12/2018	9.30%	3.14%	6.16%
12/13/2018	9.60%	3.14%	6.46%
12/19/2018	9.30%	3.15%	6.15%
12/21/2018	9.35%	3.15%	6.20%
12/24/2018	9.25%	3.15%	6.10%
12/24/2018	9.25%	3.15%	6.10%
1/4/2019	9.80%	3.14%	6.66%
1/18/2019	9.70%	3.14%	6.56%

Average:	4.69%
Count:	1,116

1/A

Expected Earnings Analysis

Company	Ticker	[1] Expected ROE	[2] Shares Outstanding			[5] Adjustment Factor	[6] Adjusted ROE
		2022-24	2019	2022-24	% Increase		
Atmos Energy Corporation	ATO	10.0%	120.00	145.00	4.84%	1.024	10.24%
Chesapeake Utilities Corporation	CPK	10.0%	17.50	20.00	3.39%	1.017	10.17%
New Jersey Resources Corporation	NJR	11.0%	88.00	89.00	0.28%	1.001	11.02%
Northwest Natural Gas Company	NWN	12.0%	30.00	32.00	1.63%	1.008	12.10%
ONE Gas, Inc.	OGS	10.0%	53.00	55.00	0.93%	1.005	10.05%
South Jersey Industries, Inc.	SJI	12.0%	90.00	98.00	2.15%	1.011	12.13%
Southwest Gas Corporation	SWX	9.5%	54.00	58.00	1.80%	1.009	9.58%
Spire Inc.	SR	10.5%	52.00	55.00	1.41%	1.007	10.57%
						Median	10.41%
						Average	10.73%

Notes:

[1] Source: Value Line

[2] Source: Value Line

[3] Source: Value Line

[4] Equals = $([3] / [2])^{(1/4)} - 1$

[5] Equals $(2 \times (1 + [4])) / (2 + [4])$

[6] Equals $[1] \times [5]$

Summary of Adjustment Clauses & Alternative Regulation/Incentive Plans

Company	Parent	State	Adjustment Clauses					Alternative Regulation / Incentive Plans					
			Fuel/ Purchased Power	Decoupling (F/P) [1]	Capital Investment [2]	Energy Efficiency [3]	Other [4]	Formula- Based Rates	Price Freeze/ Cap	Earnings Sharing/PBR	Formula- Based ROE	Service Quality/ Performance	Merger Savings
Atmos Energy	ATO	Colorado	✓		✓	✓							
Atmos Energy	ATO	Kansas	✓	P	✓		✓						
Atmos Energy	ATO	Kentucky	✓	P		✓				✓			
Atmos Energy	ATO	Louisiana	✓	P	✓			✓		✓			✓
Atmos Energy	ATO	Mississippi	✓	P	✓	✓	✓	✓			✓	✓	
Atmos Energy	ATO	Tennessee	✓	P	✓			✓		✓			
Atmos Energy	ATO	Texas	✓	P	✓	✓	✓	✓					
Atmos Energy	ATO	Virginia	✓	P	✓								
Chesapeake Utilities	CPK	Delaware	✓				✓						
Chesapeake Utilities	CPK	Maryland	✓	P		✓	✓						
Florida Public Utilities Company	CPK	Florida	✓		✓	✓	✓						
New Jersey Natural Gas	NJR	New Jersey	✓	F	✓	✓	✓						
Northwest Natural Gas	NWN	Oregon	✓	P	✓	✓	✓						
Northwest Natural Gas	NWN	Washington	✓			✓	✓						
Kansas Gas Service	OGS	Kansas	✓	P	✓		✓						
Oklahoma Natural Gas	OGS	Oklahoma	✓	P	✓	✓		✓		✓			
Texas Gas Service	OGS	Texas	✓	P	✓		✓	✓					
Alabama Gas Corporation	SR	Alabama	✓	P	✓		✓	✓					
Spire Gulf Inc. (Mobile Gas Corporation)	SR	Alabama	✓	P	✓		✓	✓					
Spire Missouri East	SR	Missouri	✓	P	✓		✓						
Spire Missouri West	SR	Missouri	✓	P	✓		✓						
Elizabethtown Gas	SJI	New Jersey	✓	P		✓	✓						
South Jersey Gas	SJI	New Jersey	✓	F	✓	✓	✓						
Southwest Gas Corporation	SWX	Arizona	✓	F	✓	✓	✓		✓				
Southwest Gas Corporation	SWX	California	✓	F	✓	✓	✓		✓				
Southwest Gas Corporation	SWX	Nevada	✓	F	✓	✓	✓						

Notes:

Note: A mechanism may cover one or more cost categories; therefore, designations may not indicate separate mechanisms for each category.

[1] Full or partial decoupling (such as Fixed Variable rate design, weather normalization clauses, and recovery of lost revenues as a result of Energy Efficiency programs).

[2] Includes recovery of costs related to infrastructure replacement, system integrity/hardening, and other capital expenditures.

[3] Utility-sponsored conservation, energy efficiency, or other demand side management programs.

[4] Pension expenses, bad debt costs, storm costs, transmission/transportation costs, environmental, regulatory fee, government & franchise fees and taxes, economic development, and low income programs.

Sources: Operating company tariffs; Regulatory Research Associates, *Alternative Regulation/Incentive Plans: A State-by-State Overview*, November 19, 2013; Regulatory Research Associates, *Adjustment Clauses: A State-by-State Overview*, September 28, 2018; Edison Electric Institute, *Alternative Regulation for Emerging Utility Challenges: 2015 Update*, November 11, 2015.

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Two most recent open market common stock issuances per company, if available

Company	Date	Shares Issued	Offering Price	Underwriting Discount	Offering Expense	Net Proceeds Per Share	Total Flotation Costs	Gross Equity Issue Before Costs	Net Proceeds	Flotation Cost Percentage
Duke Energy Corporation	3/6/2018	21,275,000	\$74.07	\$0.0000	\$450,000	\$74.05	\$450,000	\$1,575,881,800	\$1,575,431,800	0.028%
Duke Energy Corporation	3/1/2016	10,637,500	\$72.00	\$2.1600	\$400,000	\$69.80	\$23,377,000	\$765,900,000	\$742,523,000	3.052%
Atmos Energy Corporation	11/28/2018	7,008,087	\$92.75	\$0.9769	\$1,000,000	\$91.63	\$7,846,200	\$650,000,069	\$642,153,869	1.207%
Atmos Energy Corporation	11/28/2017	4,558,404	\$88.56	\$1.7700	\$600,000	\$86.66	\$8,668,375	\$403,682,258	\$395,023,883	2.147%
Chesapeake Utilities Corporation	9/21/2016	860,488	\$62.26	\$2.3300	\$157,000	\$59.77	\$2,394,937	\$59,799,983	\$57,405,046	4.005%
Chesapeake Utilities Corporation	11/13/2006	690,345	\$30.10	\$1.1300	\$225,000	\$28.64	\$1,005,090	\$20,779,385	\$19,774,295	4.837%
Northwest Natural Gas Company	11/10/2016	1,012,000	\$54.63	\$2.0500	\$250,000	\$52.33	\$2,324,600	\$55,285,560	\$52,960,960	4.205%
Northwest Natural Gas Company	3/30/2004	1,290,000	\$31.00	\$1.0100	\$175,000	\$29.85	\$1,477,900	\$39,980,000	\$38,512,100	3.696%
South Jersey Industries, Inc.	4/17/2018	12,669,491	\$29.50	\$1.0325	\$700,000	\$28.41	\$13,781,249	\$373,749,885	\$359,968,735	3.687%
South Jersey Industries, Inc.	5/10/2016	8,050,000	\$26.25	\$0.9200	\$330,000	\$25.29	\$7,736,000	\$211,312,500	\$203,576,500	3.661%
Southwest Gas Corporation	11/27/2018	3,565,000	\$75.50	\$2.5481	\$600,000	\$72.78	\$9,683,977	\$259,157,500	\$259,473,524	3.598%
Spire Inc.	5/7/2018	2,300,000	\$68.75	\$2.1094	\$325,000	\$66.50	\$5,176,574	\$158,125,000	\$152,948,426	3.274%
Spire Inc.	5/11/2016	2,185,000	\$63.05	\$2.0491	\$300,000	\$60.86	\$4,777,284	\$137,764,250	\$132,986,967	3.468%
Mean							\$5,823,014	\$363,187,561		
WEIGHTED AVERAGE FLOTATION COSTS:										1.879%

Constant Growth Discounted Cash Flow Model Adjusted for Flotation Costs - 30 Day Average Stock Price

Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield		Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Value Line Retention Growth	Average Earnings Growth	DCF k(e)	Flotation Adjusted DCF k(e)
					Current	Adjusted for Flot. Costs							
Atmos Energy Corporation	ATO	\$2.10	\$98.72	2.17%	2.25%	2.30%	6.50%	8.40%	7.50%	10.09%	7.62%	9.88%	9.92%
Chesapeake Utilities Corporation	CPK	\$1.48	\$88.93	1.66%	1.73%	1.76%	6.00%	6.00%	9.00%	10.63%	7.91%	9.64%	9.67%
New Jersey Resources Corporation	NJR	\$1.17	\$47.14	2.48%	2.55%	2.60%	7.00%	6.00%	2.50%	5.48%	5.25%	7.79%	7.84%
Northwest Natural Gas Company	NWN	\$1.90	\$62.45	3.04%	3.20%	3.28%	4.30%	4.00%	25.50%	6.42%	10.06%	13.25%	13.31%
ONE Gas, Inc.	OGS	\$2.00	\$83.09	2.41%	2.48%	2.53%	5.90%	5.00%	9.00%	5.27%	6.28%	8.78%	8.82%
South Jersey Industries, Inc.	SJI	\$1.15	\$30.34	3.79%	3.96%	4.03%	9.50%	9.50%	9.50%	7.05%	8.89%	12.85%	12.92%
Southwest Gas Corporation	SWX	\$2.18	\$78.24	2.75%	2.84%	2.90%	5.00%	6.20%	8.50%	7.18%	6.72%	9.56%	9.62%
Spire Inc.	SR	\$2.37	\$77.55	3.06%	3.12%	3.18%	3.90%	2.42%	5.50%	5.85%	4.42%	7.54%	7.60%
PROXY GROUP MEAN												9.91%	9.96%

Notes:

The proxy group DCF result is adjusted for flotation costs by dividing each company's expected dividend yield by (1 - flotation cost). The flotation cost adjustment is derived as the difference between the unadjusted DCF result and the DCF result adjusted for flotation costs.

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [10])

[5] Equals [4] / (1 - 1.879%)

[6] Source: Zacks

[7] Source: Yahoo! Finance

[8] Source: Value Line

[9] Source: Exhibit RBH-3, Value Line

[10] Equals Average([6], [7], [8], [9])

[11] Equals [4] + [10]

[12] Equals [5] + [10]

[13] Equals average [12] - average [11]

DCF Result Adjusted For Flotation Costs: 9.96%
DCF Result Unadjusted For Flotation Costs: 9.91%
Difference (Flotation Cost Adjustment): 0.05% [13]

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Constant Growth Discounted Cash Flow Model
30 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.10	\$103.85	2.02%	2.10%	6.50%	6.45%	7.50%	10.20%	7.66%	8.54%	9.76%	12.32%
Chesapeake Utilities Corporation	CPK	\$1.62	\$93.31	1.74%	1.81%	7.00%	6.00%	9.00%	12.29%	8.57%	7.79%	10.38%	14.13%
New Jersey Resources Corporation	NJR	\$1.17	\$49.18	2.38%	2.45%	7.00%	6.00%	3.50%	5.84%	5.59%	5.92%	8.03%	9.46%
Northwest Natural Holding Company	NWN	\$1.90	\$68.91	2.76%	2.90%	4.50%	4.00%	27.00%	6.66%	10.54%	6.81%	13.44%	30.13%
ONE Gas, Inc.	OGS	\$2.00	\$89.61	2.23%	2.30%	5.90%	5.00%	8.00%	5.32%	6.06%	7.29%	8.36%	10.32%
South Jersey Industries, Inc.	SJI	\$1.15	\$32.77	3.51%	3.64%	7.20%	5.50%	10.50%	6.12%	7.33%	9.11%	10.97%	14.19%
Spire Inc.	SR	\$2.37	\$84.59	2.80%	2.87%	4.90%	3.43%	5.50%	5.18%	4.75%	6.28%	7.62%	8.38%
Southwest Gas Corporation	SWX	\$2.18	\$87.38	2.49%	2.58%	6.20%	6.10%	9.00%	6.79%	7.02%	8.67%	9.61%	11.61%
Proxy Group Mean				2.49%	2.58%	6.15%	5.31%	10.00%	7.30%	7.19%	7.55%	9.77%	13.82%
Proxy Group Median				2.44%	2.51%	6.35%	5.75%	8.50%	6.39%	7.18%	7.54%	9.68%	11.97%

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals indicated number of trading day average as of June 28, 2019

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [9])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Source: Exhibit RBH-2, Value Line

[9] Equals Average([5], [6], [7], [8])

[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

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Constant Growth Discounted Cash Flow Model
90 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.10	\$101.92	2.06%	2.14%	6.50%	6.45%	7.50%	10.20%	7.66%	8.58%	9.80%	12.36%
Chesapeake Utilities Corporation	CPK	\$1.62	\$92.48	1.75%	1.83%	7.00%	6.00%	9.00%	12.29%	8.57%	7.80%	10.40%	14.14%
New Jersey Resources Corporation	NJR	\$1.17	\$49.29	2.37%	2.44%	7.00%	6.00%	3.50%	5.84%	5.59%	5.92%	8.03%	9.46%
Northwest Natural Holding Company	NWN	\$1.90	\$66.83	2.84%	2.99%	4.50%	4.00%	27.00%	6.66%	10.54%	6.90%	13.53%	30.23%
ONE Gas, Inc.	OGS	\$2.00	\$88.32	2.26%	2.33%	5.90%	5.00%	8.00%	5.32%	6.06%	7.32%	8.39%	10.36%
South Jersey Industries, Inc.	SJI	\$1.15	\$31.94	3.60%	3.73%	7.20%	5.50%	10.50%	6.12%	7.33%	9.20%	11.06%	14.29%
Spire Inc.	SR	\$2.37	\$82.68	2.87%	2.93%	4.90%	3.43%	5.50%	5.18%	4.75%	6.35%	7.69%	8.45%
Southwest Gas Corporation	SWX	\$2.18	\$84.32	2.59%	2.68%	6.20%	6.10%	9.00%	6.79%	7.02%	8.76%	9.70%	11.70%
Proxy Group Mean				2.54%	2.63%	6.15%	5.31%	10.00%	7.30%	7.19%	7.60%	9.82%	13.87%
Proxy Group Median				2.48%	2.56%	6.35%	5.75%	8.50%	6.39%	7.18%	7.56%	9.75%	12.03%

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals indicated number of trading day average as of June 28, 2019

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [9])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Source: Exhibit RBH-2, Value Line

[9] Equals Average([5], [6], [7], [8])

[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model
180 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.10	\$98.65	2.13%	2.21%	6.50%	6.45%	7.50%	10.20%	7.66%	8.65%	9.87%	12.44%
Atmos Energy Corporation	ATO	\$1.62	\$88.63	1.83%	1.91%	7.00%	6.00%	9.00%	12.29%	8.57%	7.88%	10.48%	14.23%
New Jersey Resources Corporation	NJR	\$1.17	\$48.09	2.43%	2.50%	7.00%	6.00%	3.50%	5.84%	5.59%	5.98%	8.09%	9.52%
Northwest Natural Gas Company	NWN	\$1.90	\$65.65	2.89%	3.05%	4.50%	4.00%	27.00%	6.66%	10.54%	6.95%	13.59%	30.28%
ONE Gas, Inc.	OGS	\$2.00	\$85.11	2.35%	2.42%	5.90%	5.00%	8.00%	5.32%	6.06%	7.41%	8.48%	10.44%
South Jersey Industries, Inc.	SJI	\$1.15	\$31.28	3.68%	3.81%	7.20%	5.50%	10.50%	6.12%	7.33%	9.28%	11.14%	14.37%
Spire Inc.	SR	\$2.37	\$79.37	2.99%	3.06%	4.90%	3.43%	5.50%	5.18%	4.75%	6.47%	7.81%	8.57%
Southwest Gas Corporation	SWX	\$2.18	\$81.80	2.67%	2.76%	6.20%	6.10%	9.00%	6.79%	7.02%	8.85%	9.78%	11.78%
Proxy Group Mean				2.62%	2.71%	6.15%	5.31%	10.00%	7.30%	7.19%	7.68%	9.90%	13.95%
Proxy Group Median				2.55%	2.63%	6.35%	5.75%	8.50%	6.39%	7.18%	7.65%	9.83%	12.11%

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals indicated number of trading day average as of June 28, 2019

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [9])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Source: Exhibit RBH-2, Value Line

[9] Equals Average([5], [6], [7], [8])

[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Retention Growth Estimate

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
		Projected Earnings per share 2022-2024	Projected Dividend Declared per share 2022-24	Retention Ratio (B)	Projected Book Value per Share 2022-24	Return on Book Value (R)	B x R	Projected Common Shares Outstanding 2020	Projected Common Shares Outstanding 2022-24	Common Shares Growth Rate	2019 High Price	2019 Low Price	2019 Price Midpoint	Projected Book Value per Share 2019	Market/Book Ratio	"S"	"V"	S x V	BR + SV
Company	Ticker																		
Almos Energy Corporation	ATO	5.60	2.70	51.79%	56.05	9.99%	5.17%	125.00	145.00	5.02%	\$ 104.10	\$ 89.20	\$ 96.65	48.30	2.00	10.04%	50.03%	5.02%	10.20%
Chesapeake Utilities Corporation	CPK	5.00	2.15	57.00%	49.00	10.20%	5.02%	17.50	20.00	4.51%	\$ 95.60	\$ 77.60	\$ 86.60	35.55	2.44	10.97%	58.95%	6.47%	12.28%
New Jersey Resources Corporation	NJR	2.50	1.33	46.80%	21.85	11.44%	5.35%	88.25	80.00	0.28%	\$ 51.00	\$ 43.80	\$ 47.45	17.25	2.75	0.77%	63.65%	0.46%	5.84%
Northwest Natural Holding Company	NWN	3.50	2.20	37.14%	29.40	11.90%	4.42%	30.50	32.00	1.60%	\$ 70.20	\$ 57.20	\$ 63.70	26.55	2.40	3.63%	58.32%	2.23%	6.66%
ONE Gas, Inc.	OGS	4.75	2.65	44.21%	47.90	9.92%	4.38%	53.50	55.00	0.92%	\$ 90.50	\$ 75.80	\$ 83.15	41.05	2.03	1.66%	50.63%	0.94%	5.32%
South Jersey Industries, Inc.	SJI	2.40	1.40	41.67%	20.00	12.00%	5.00%	95.00	100.00	1.36%	\$ 33.70	\$ 26.60	\$ 30.15	16.50	1.83	2.48%	45.27%	1.12%	6.12%
Spire Inc.	SR	5.00	2.67	46.50%	52.75	9.46%	4.42%	53.00	55.00	1.23%	\$ 87.10	\$ 71.70	\$ 79.40	49.00	1.62	1.99%	38.28%	0.76%	5.18%
Southwest Gas Corporation	SWX	5.85	2.60	55.56%	59.50	8.83%	5.45%	55.00	58.00	1.77%	\$ 85.70	\$ 73.30	\$ 79.50	45.35	1.75	3.10%	42.96%	1.33%	6.79%
Average																		7.30%	

Notes:

[1] Source: Value Line

[2] Source: Value Line

[3] Equals 1 - [2] / [1]

[4] Source: Value Line

[5] Source: Bloomberg Professional, equals indicated number of trading day average as of June 28, 2019

[6] Equals [3] x [5]

[7] Source: Value Line

[8] Source: Value Line

[9] Equals ([8] / [7]) ^ 0.33 - 1

[10] Source: Value Line

[11] Source: Value Line

[12] Equals Average ([10], [11])

[13] Source: Value Line

[14] Equals [12] / [13]

[15] Equals [9] x [14]

[16] Equals 1 - (1 / [14])

[17] Equals [15] x [16]

[18] Equals [6] + [17]

I/M

I/A

Ex-Ante Market Risk Premium
Market DCF Method Based - Bloomberg

[1]	[2]	[3]
S&P 500	Current 30-Year	
Est. Required	Treasury (30-day	Implied Market
Market Return	average)	Risk Premium
14.88%	2.63%	12.25%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	23,595.22	0.09%	0.88%	11.00%	11.93%	0.0109%
American Airlines Group Inc	AAL	14,506.07	0.06%	1.48%	14.51%	16.09%	0.0090%
Advance Auto Parts Inc	AAP	11,057.52	0.04%	0.16%	15.68%	15.85%	0.0068%
Apple Inc	AAPL	910,644.76	3.53%	1.51%	9.35%	10.93%	0.3855%
AbbVie Inc	ABBV	107,506.72	0.42%	5.84%	5.12%	11.11%	0.0463%
AmerisourceBergen Corp	ABC	17,919.69	0.07%	1.88%	4.99%	6.92%	0.0048%
ABIOMED Inc	ABMD	11,795.82	0.05%	0.00%	29.00%	29.00%	0.0133%
Abbott Laboratories	ABT	148,367.64	0.57%	1.46%	9.70%	11.23%	0.0645%
Accenture PLC	ACN	124,342.68	0.48%	1.60%	10.43%	12.12%	0.0584%
Adobe Inc	ADBE	143,034.53	0.55%	0.00%	17.16%	17.16%	0.0951%
Analog Devices Inc	ADI	41,734.95	0.16%	1.84%	12.10%	14.06%	0.0227%
Archer-Daniels-Midland Co	ADM	22,854.74	0.09%	3.47%	0.60%	4.08%	0.0036%
Automatic Data Processing Inc	ADP	71,956.28	0.28%	1.74%	13.50%	15.36%	0.0428%
Alliance Data Systems Corp	ADS	7,340.50	0.03%	1.76%	12.47%	14.34%	0.0041%
Autodesk Inc	ADSK	35,776.03	0.14%	0.00%	64.51%	64.51%	0.0894%
Ameren Corp	AEE	18,433.42	0.07%	2.59%	5.81%	8.48%	0.0081%
American Electric Power Co Inc	AEP	43,427.26	0.17%	3.08%	5.98%	9.15%	0.0154%
AES Corp/VA	AES	11,124.07	0.04%	3.29%	8.33%	11.76%	0.0051%
Aflac Inc	AFL	40,859.16	0.16%	1.99%	3.43%	5.45%	0.0086%
Allergan PLC	AGN	54,883.87	0.21%	1.77%	5.37%	7.18%	0.0153%
American International Group Inc	AIG	46,340.47	0.18%	2.44%	11.00%	13.57%	0.0244%
Apartment Investment & Management Co	AIV	7,459.28	0.03%	4.15%	8.76%	13.09%	0.0038%
Assurant Inc	AIZ	6,539.68	N/A	2.33%	N/A	N/A	N/A
Arthur J Gallagher & Co	AJG	16,226.22	0.06%	1.96%	9.63%	11.68%	0.0073%
Akamai Technologies Inc	AKAM	13,150.73	0.05%	0.00%	13.70%	13.70%	0.0070%
Albemarle Corp	ALB	7,460.41	0.03%	2.01%	13.41%	15.56%	0.0045%
Align Technology Inc	ALGN	21,897.34	0.08%	0.00%	22.22%	22.22%	0.0188%
Alaska Air Group Inc	ALK	7,886.49	0.03%	2.15%	13.20%	15.49%	0.0047%
Allstate Corp/The	ALL	33,873.63	0.13%	1.90%	9.00%	10.99%	0.0144%
Allegion PLC	ALLE	10,385.70	0.04%	0.96%	10.49%	11.50%	0.0046%
Alexion Pharmaceuticals Inc	ALXN	29,370.59	0.11%	0.00%	17.50%	17.50%	0.0199%
Applied Materials Inc	AMAT	42,040.47	0.16%	1.85%	9.37%	11.30%	0.0184%
Amcor PLC	AMCR	18,654.36	0.07%	4.05%	5.38%	9.54%	0.0069%
Advanced Micro Devices Inc	AMD	32,848.21	0.13%	0.00%	18.30%	18.30%	0.0233%
AMETEK Inc	AME	20,697.07	0.08%	0.63%	9.13%	9.79%	0.0078%
Affiliated Managers Group Inc	AMG	4,717.51	0.02%	1.39%	9.10%	10.55%	0.0019%
Amgen Inc	AMGN	112,398.95	0.44%	3.10%	5.70%	8.89%	0.0387%
Ameriprise Financial Inc	AMP	19,437.55	0.08%	2.62%	3.20%	5.86%	0.0044%
American Tower Corp	AMT	90,371.69	0.35%	1.83%	20.09%	22.11%	0.0774%
Amazon.com Inc	AMZN	932,294.22	3.61%	0.00%	44.95%	44.95%	1.6232%
Arista Networks Inc	ANET	19,892.74	0.08%	0.00%	21.79%	21.79%	0.0168%
ANSYS Inc	ANSS	17,190.22	0.07%	0.00%	10.60%	10.60%	0.0071%
Anthem Inc	ANTM	72,583.20	0.28%	1.14%	14.85%	16.07%	0.0452%
Aon PLC	AON	46,415.87	0.18%	0.89%	10.00%	10.94%	0.0197%
AO Smith Corp	AOS	7,884.99	0.03%	1.93%	8.00%	10.01%	0.0031%
Apache Corp	APA	10,890.42	0.04%	3.45%	-17.05%	-13.89%	-0.0059%
Anadarko Petroleum Corp	APC	35,429.50	0.14%	1.51%	16.91%	18.54%	0.0254%
Air Products & Chemicals Inc	APD	49,831.41	0.19%	2.02%	12.48%	14.63%	0.0282%
Amphenol Corp	APH	28,660.37	0.11%	0.93%	9.98%	10.96%	0.0122%
Aptiv PLC	APTIV	20,840.83	0.08%	1.12%	8.89%	10.06%	0.0081%
Alexandria Real Estate Equities Inc	ARE	16,644.25	0.06%	2.79%	4.76%	7.61%	0.0049%
Arconic Inc	ARNC	11,583.60	0.04%	0.41%	9.90%	10.33%	0.0046%
Atmos Energy Corp	ATO	12,348.28	0.05%	1.99%	7.00%	9.06%	0.0043%
Activision Blizzard Inc	ATVI	36,155.52	0.14%	0.78%	10.45%	11.27%	0.0158%
AvalonBay Communities Inc	AVB	28,323.96	0.11%	2.98%	5.42%	8.47%	0.0093%
Broadcom Inc	AVGO	114,589.46	0.44%	3.68%	13.31%	17.23%	0.0765%
Avery Dennison Corp	AVY	9,765.23	0.04%	1.81%	5.55%	7.41%	0.0028%
American Water Works Co Inc	AWK	20,940.18	0.08%	1.70%	9.00%	10.77%	0.0087%
American Express Co	AXP	103,082.34	0.40%	1.31%	12.40%	13.78%	0.0550%
AutoZone Inc	AZO	28,988.58	0.10%	0.00%	12.58%	12.58%	0.0131%
Boeing Co/The	BA	204,803.10	0.79%	2.22%	12.26%	14.81%	0.1159%
Bank of America Corp	BAC	275,737.89	1.07%	2.35%	10.10%	12.57%	0.1343%
Baxter International Inc	BAX	41,860.51	0.16%	0.97%	11.90%	12.93%	0.0210%
BB&T Corp	BBT	37,632.72	0.15%	3.45%	8.48%	12.08%	0.0176%
Best Buy Co Inc	BBY	18,620.92	0.07%	2.87%	6.89%	9.85%	0.0071%
Becton Dickinson and Co	BDX	67,975.14	0.26%	1.28%	11.35%	12.71%	0.0335%
Franklin Resources Inc	BEN	17,663.08	0.07%	2.98%	10.00%	13.13%	0.0090%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Brown-Forman Corp	BF/B	26,396.71	0.10%	1.25%	8.41%	9.71%	0.0099%
Baker Hughes a GE Co	BHGE	25,543.81	0.10%	2.67%	41.88%	45.10%	0.0446%
Biogen Inc	BIIB	45,345.85	0.18%	0.00%	5.87%	5.87%	0.0103%
Bank of New York Mellon Corp/The	BK	42,274.39	0.16%	2.70%	6.77%	9.56%	0.0156%
Booking Holdings Inc	BKNG	81,158.72	0.31%	0.00%	16.99%	16.99%	0.0534%
BlackRock Inc	BLK	72,970.71	0.28%	2.84%	9.00%	11.96%	0.0338%
Ball Corp	BLL	23,428.83	0.09%	0.71%	6.77%	7.51%	0.0068%
Bristol-Myers Squibb Co	BMJ	74,180.11	0.29%	3.63%	8.63%	12.42%	0.0357%
Broadridge Financial Solutions Inc	BR	14,828.62	N/A	1.51%	N/A	N/A	N/A
Berkshire Hathaway Inc	BRK/B	521,871.81	2.02%	0.00%	60.60%	60.60%	1.2250%
Boston Scientific Corp	BSX	59,770.24	0.23%	0.00%	8.88%	8.88%	0.0206%
BorgWarner Inc	BWA	8,701.05	0.03%	1.62%	4.37%	6.02%	0.0020%
Boston Properties Inc	BXP	19,933.06	0.08%	3.00%	4.91%	7.97%	0.0062%
Citigroup Inc	C	161,942.11	0.63%	2.80%	12.72%	15.69%	0.0984%
Conagra Brands Inc	CAG	12,886.46	0.05%	3.21%	7.17%	10.49%	0.0052%
Cardinal Health Inc	CAH	14,038.62	0.05%	4.16%	14.02%	18.47%	0.0100%
Caterpillar Inc	CAT	77,940.92	0.30%	2.65%	13.23%	16.05%	0.0485%
Chubb Ltd	CB	67,439.78	0.26%	2.06%	10.60%	12.77%	0.0333%
Cboe Global Markets Inc	CBOE	11,568.53	0.04%	1.26%	5.35%	6.64%	0.0030%
CBRE Group Inc	CBRE	17,251.04	0.07%	0.00%	7.30%	7.30%	0.0049%
CBS Corp	CBS	18,706.34	0.07%	1.53%	20.13%	21.81%	0.0158%
Crown Castle International Corp	CCI	54,191.87	0.21%	3.52%	16.33%	20.14%	0.0423%
Carnival Corp	CCL	31,749.45	0.12%	4.34%	8.47%	12.99%	0.0160%
Cadence Design Systems Inc	CDNS	19,899.73	0.08%	0.00%	10.03%	10.03%	0.0077%
Celanese Corp	CE	13,648.83	0.05%	2.24%	7.95%	10.28%	0.0054%
Celgene Corp	CELG	65,194.19	0.25%	0.00%	18.42%	18.42%	0.0465%
Cerner Corp	CERN	23,853.33	0.09%	0.33%	13.65%	14.00%	0.0129%
CF Industries Holdings Inc	CF	10,326.54	0.04%	2.58%	20.27%	23.11%	0.0092%
Citizens Financial Group Inc	CFG	16,207.45	0.06%	3.77%	8.04%	11.96%	0.0075%
Church & Dwight Co Inc	CHD	17,988.77	0.07%	1.26%	7.96%	9.27%	0.0065%
CH Robinson Worldwide Inc	CHRW	11,519.05	0.04%	2.40%	8.93%	11.44%	0.0051%
Charter Communications Inc	CHTR	98,485.91	0.38%	0.00%	44.24%	44.24%	0.1688%
Cigna Corp	CI	59,817.37	0.23%	0.06%	12.74%	12.81%	0.0297%
Cincinnati Financial Corp	CINF	16,922.04	N/A	2.31%	N/A	N/A	N/A
Colgate-Palmolive Co	CL	61,529.76	0.24%	2.40%	4.08%	6.53%	0.0156%
Clorox Co/The	CLX	19,501.29	0.08%	2.52%	4.43%	7.00%	0.0053%
Comerica Inc	CMA	11,198.24	0.04%	3.79%	12.60%	16.62%	0.0072%
Comcast Corp	CMCSA	191,900.08	0.74%	1.97%	11.42%	13.50%	0.1003%
CME Group Inc	CME	69,486.54	0.27%	2.74%	7.90%	10.75%	0.0289%
Chipotle Mexican Grill Inc	CMG	20,310.71	0.08%	0.00%	20.24%	20.24%	0.0159%
Cummins Inc	CMI	26,984.73	0.10%	2.72%	7.15%	9.96%	0.0104%
CMS Energy Corp	CMS	16,432.19	0.08%	2.64%	7.32%	10.06%	0.0084%
Centene Corp	CNC	21,676.96	0.08%	0.00%	13.90%	13.90%	0.0117%
CenterPoint Energy Inc	CNP	14,356.24	0.06%	4.07%	5.92%	10.11%	0.0056%
Capital One Financial Corp	COF	42,611.19	0.17%	1.79%	5.20%	7.04%	0.0116%
Cabot Oil & Gas Corp	COG	9,718.65	0.04%	1.46%	35.02%	36.74%	0.0138%
Cooper Cos Inc/The	COO	16,671.93	0.06%	0.02%	6.18%	6.20%	0.0040%
ConocoPhillips	COP	68,940.73	0.27%	2.04%	5.00%	7.09%	0.0189%
Costco Wholesale Corp	COST	116,218.69	0.45%	0.91%	10.51%	11.47%	0.0516%
Coty Inc	COTY	10,088.73	0.04%	3.69%	8.05%	11.89%	0.0046%
Campbell Soup Co	CPB	12,067.08	0.05%	3.51%	2.74%	6.31%	0.0029%
Capri Holdings Ltd	CPRI	5,234.57	0.02%	0.00%	7.32%	7.32%	0.0015%
Copart Inc	CPRT	17,123.90	0.07%	0.00%	20.00%	20.00%	0.0133%
salesforce.com Inc	CRM	117,557.86	0.46%	0.00%	23.01%	23.01%	0.1048%
Cisco Systems Inc	CSCO	234,284.52	0.91%	2.49%	6.96%	9.54%	0.0866%
CSX Corp	CSX	62,604.99	0.24%	1.21%	11.15%	12.42%	0.0301%
Cintas Corp	CTAS	24,813.62	0.10%	0.86%	12.02%	12.94%	0.0124%
CenturyLink Inc	CTL	12,822.09	0.05%	8.50%	1.78%	10.36%	0.0051%
Cognizant Technology Solutions Corp	CTSH	36,086.85	0.14%	1.27%	11.05%	12.39%	0.0173%
Corteva Inc	CTVA	22,142.46	N/A	1.65%	N/A	N/A	N/A
Citrix Systems Inc	CTXS	12,920.31	0.05%	1.43%	37.42%	39.11%	0.0196%
CVS Health Corp	CVS	70,787.53	0.27%	3.65%	6.04%	9.81%	0.0269%
Chevron Corp	CVX	237,025.56	0.92%	3.81%	1.32%	5.15%	0.0473%
Concho Resources Inc	CXO	20,697.29	0.08%	0.40%	11.70%	12.13%	0.0097%
Dominion Energy Inc	D	62,038.81	0.24%	4.73%	4.89%	9.74%	0.0234%
Delta Air Lines Inc	DAL	37,151.18	0.14%	2.80%	12.72%	15.48%	0.0223%
DuPont de Nemours Inc	DD	56,212.11	0.22%	1.36%	65.59%	67.39%	0.1467%
Deere & Co	DE	52,529.33	0.20%	1.83%	9.45%	11.37%	0.0231%
Discover Financial Services	DFS	25,118.12	0.10%	2.12%	7.79%	10.00%	0.0097%
Dollar General Corp	DG	34,914.91	0.14%	0.95%	10.60%	11.59%	0.0157%
Quest Diagnostics Inc	DGX	13,680.73	0.05%	2.06%	7.13%	9.27%	0.0049%
DR Horton Inc	DHI	16,095.12	0.06%	1.39%	12.47%	13.95%	0.0087%
Danaher Corp	DHR	102,321.24	0.40%	0.47%	8.44%	8.93%	0.0354%
Walt Disney Co/The	DIS	251,309.96	0.97%	1.27%	2.08%	3.36%	0.0327%
Discovery Inc	DISCA	21,138.39	0.08%	0.00%	13.35%	13.35%	0.0109%
DISH Network Corp	DISH	18,020.72	0.07%	0.00%	-21.96%	-21.96%	-0.0153%
Digital Realty Trust Inc	DLR	25,649.53	0.10%	3.66%	7.30%	11.09%	0.0110%
Dollar Tree Inc	DLTR	25,513.61	0.10%	0.00%	8.52%	8.52%	0.0084%
Dover Corp	DOV	14,562.01	0.06%	1.99%	11.50%	13.60%	0.0077%
Dow Inc	DOW	36,924.52	0.14%	5.68%	7.15%	13.03%	0.0186%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Duke Realty Corp	DRE	11,361.52	0.04%	2.76%	4.62%	7.45%	0.0033%
Darden Restaurants Inc	DRI	14,969.84	0.06%	2.90%	10.75%	13.80%	0.0080%
DTE Energy Co	DTE	23,429.21	0.09%	2.98%	7.43%	10.52%	0.0095%
Duke Energy Corp	DUK	64,238.72	0.25%	4.29%	5.03%	9.43%	0.0235%
DaVita Inc	DVA	9,361.66	0.04%	0.00%	18.83%	18.83%	0.0068%
Devon Energy Corp	DVN	11,841.50	0.05%	1.19%	5.34%	6.56%	0.0030%
DXC Technology Co	DXC	14,813.14	0.06%	1.48%	5.28%	6.80%	0.0039%
Electronic Arts Inc	EA	30,009.29	0.12%	0.00%	13.20%	13.20%	0.0153%
eBay Inc	EBAY	34,425.33	0.13%	1.42%	10.66%	12.15%	0.0162%
Ecolab Inc	ECL	56,910.53	0.22%	0.94%	13.13%	14.13%	0.0312%
Consolidated Edison Inc	ED	29,188.83	0.11%	3.37%	4.18%	7.62%	0.0086%
Equifax Inc	EFX	16,340.24	0.06%	1.16%	11.63%	12.86%	0.0081%
Edison International	EIX	21,982.93	0.09%	3.64%	5.52%	9.26%	0.0079%
Estee Lauder Cos Inc/The	EL	66,262.49	0.26%	0.90%	11.84%	12.80%	0.0328%
Eastman Chemical Co	EMN	10,801.71	0.04%	3.15%	6.50%	9.75%	0.0041%
Emerson Electric Co	EMR	41,034.57	0.16%	2.94%	8.84%	11.91%	0.0189%
EOG Resources Inc	EOG	54,063.04	0.21%	1.02%	7.79%	8.85%	0.0185%
Equinix Inc	EQIX	42,395.68	0.16%	1.95%	18.37%	20.50%	0.0337%
Equity Residential	EQR	28,131.07	0.11%	2.88%	6.73%	9.80%	0.0107%
Eversource Energy	ES	24,503.90	0.09%	2.83%	5.94%	8.85%	0.0084%
Essex Property Trust Inc	ESS	19,184.63	0.07%	2.67%	5.28%	8.00%	0.0059%
E*TRADE Financial Corp	ETFC	10,912.31	0.04%	1.10%	12.73%	13.90%	0.0059%
Eaton Corp PLC	ETN	35,235.77	0.14%	3.42%	8.95%	12.52%	0.0171%
Entergy Corp	ETR	19,549.13	0.08%	3.58%	0.38%	3.96%	0.0030%
Evergy Inc	EVRG	14,682.52	0.06%	3.19%	8.85%	12.18%	0.0069%
Edwards Lifesciences Corp	EW	38,518.59	0.15%	0.00%	14.75%	14.75%	0.0220%
Exelon Corp	EXC	46,499.51	0.18%	3.02%	2.35%	5.41%	0.0097%
Expeditors International of Washington I	EXPD	13,047.61	0.05%	1.27%	9.80%	11.14%	0.0056%
Expedia Group Inc	EXPE	19,808.50	0.08%	0.95%	21.84%	22.90%	0.0176%
Extra Space Storage Inc	EXR	13,522.83	0.05%	3.34%	5.43%	8.86%	0.0046%
Ford Motor Co	F	40,813.05	0.16%	5.87%	-4.77%	0.96%	0.0015%
Diamondback Energy Inc	FANG	17,944.33	0.07%	0.61%	14.55%	15.20%	0.0106%
Fastenal Co	FAST	18,662.00	0.07%	2.84%	7.55%	10.60%	0.0077%
Facebook Inc	FB	550,957.10	2.13%	0.00%	19.22%	19.22%	0.4101%
Fortune Brands Home & Security Inc	FBHS	7,991.39	0.03%	1.53%	9.47%	11.07%	0.0034%
Freeport-McMoRan Inc	FCX	16,841.87	0.07%	1.72%	-7.91%	-6.26%	-0.0041%
FedEx Corp	FDX	42,783.75	0.17%	1.63%	14.40%	16.15%	0.0268%
FirstEnergy Corp	FE	22,751.05	0.09%	3.56%	3.80%	7.42%	0.0065%
F5 Networks Inc	FFIV	8,693.42	0.03%	0.00%	9.95%	9.95%	0.0034%
Fidelity National Information Services I	FIS	39,728.44	0.15%	1.14%	10.92%	12.12%	0.0186%
Fiserv Inc	FISV	35,774.82	0.14%	0.00%	13.00%	13.00%	0.0180%
Fifth Third Bancorp	FITB	20,489.37	0.08%	3.45%	3.95%	7.47%	0.0059%
Foot Locker Inc	FL	4,598.67	0.02%	3.61%	6.55%	10.28%	0.0018%
FLIR Systems Inc	FLIR	7,326.28	N/A	1.26%	N/A	N/A	N/A
Flowserve Corp	FLS	6,909.68	0.03%	1.48%	19.15%	20.77%	0.0056%
FleetCor Technologies Inc	FLT	24,207.42	0.09%	0.00%	19.67%	19.67%	0.0184%
FMC Corp	FMC	10,921.01	0.04%	1.82%	9.33%	11.23%	0.0048%
Fox Corp	FOXA	22,706.76	0.09%	0.22%	1.67%	1.89%	0.0017%
First Republic Bank/CA	FRC	16,273.49	0.06%	0.77%	12.14%	12.95%	0.0082%
Federal Realty Investment Trust	FRT	9,644.90	0.04%	3.23%	5.61%	8.94%	0.0033%
TechnipFMC PLC	FTI	11,622.76	0.05%	2.00%	17.52%	19.69%	0.0089%
Fortinet Inc	FTNT	13,119.54	0.05%	0.00%	24.04%	24.04%	0.0122%
Fortive Corp	FTV	27,317.30	0.11%	0.38%	11.52%	11.92%	0.0126%
General Dynamics Corp	GD	52,522.71	0.20%	2.20%	8.76%	11.05%	0.0225%
General Electric Co	GE	91,568.48	0.35%	0.38%	8.87%	9.26%	0.0329%
Gilead Sciences Inc	GILD	85,906.23	0.33%	3.71%	8.62%	12.49%	0.0416%
General Mills Inc	GIS	31,614.92	0.12%	3.79%	5.53%	9.42%	0.0115%
Coming Inc	GLW	26,077.38	0.10%	2.43%	11.04%	13.60%	0.0137%
General Motors Co	GM	54,650.68	0.21%	3.99%	11.70%	15.92%	0.0337%
Alphabet Inc	GOOGL	751,025.00	2.91%	0.00%	12.45%	12.45%	0.3622%
Genuine Parts Co	GPC	15,129.30	0.06%	2.95%	5.84%	8.87%	0.0052%
Global Payments Inc	GPX	25,090.58	0.10%	0.02%	16.73%	16.76%	0.0163%
Gap Inc/The	GPS	6,792.15	0.03%	5.44%	5.24%	10.82%	0.0028%
Garmin Ltd	GRMN	15,149.80	0.06%	2.91%	7.00%	10.01%	0.0059%
Goldman Sachs Group Inc/The	GS	77,838.06	0.30%	1.67%	1.14%	2.81%	0.0085%
WW Grainger Inc	GWW	14,871.63	0.08%	2.09%	12.47%	14.68%	0.0085%
Halliburton Co	HAL	19,874.27	0.08%	3.20%	8.84%	12.19%	0.0094%
Hasbro Inc	HAS	13,300.26	0.05%	2.57%	9.47%	12.16%	0.0063%
Huntington Bancshares Inc/OH	HBAN	14,461.80	0.06%	4.23%	8.24%	12.64%	0.0071%
Hanesbrands Inc	HBI	6,224.53	0.02%	3.62%	3.25%	6.93%	0.0017%
HCA Healthcare Inc	HCA	46,269.69	0.18%	0.91%	11.62%	12.59%	0.0226%
HCP Inc	HCP	15,285.90	0.06%	4.63%	2.68%	7.37%	0.0044%
Home Depot Inc/The	HD	228,826.50	0.89%	2.60%	9.37%	12.10%	0.1072%
Hess Corp	HES	19,289.60	0.07%	1.66%	-23.46%	-21.99%	-0.0164%
HollyFrontier Corp	HFC	7,903.02	0.03%	2.89%	1.05%	3.96%	0.0012%
Hartford Financial Services Group Inc/Th	HIG	20,142.73	0.08%	2.23%	9.50%	11.83%	0.0092%
Huntington Ingalls Industries Inc	HI	9,338.45	0.04%	1.53%	40.00%	41.84%	0.0151%
Hilton Worldwide Holdings Inc	HLT	28,448.46	0.11%	0.82%	13.10%	13.76%	0.0152%
Harley-Davidson Inc	HOG	5,699.58	0.02%	4.31%	8.60%	13.10%	0.0029%
Hologic Inc	HOLX	12,871.77	0.05%	0.00%	8.39%	8.39%	0.0042%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Honeywell International Inc	HON	127,056.48	0.49%	1.90%	8.18%	10.16%	0.0500%
Helmerich & Payne Inc	HP	5,538.57	0.02%	5.63%	25.62%	31.97%	0.0069%
Hewlett Packard Enterprise Co	HPE	20,020.27	0.08%	3.06%	5.79%	8.94%	0.0069%
HP Inc	HPQ	31,315.81	0.12%	3.05%	3.11%	6.21%	0.0075%
H&R Block Inc	HRB	5,917.44	0.02%	3.47%	10.00%	13.64%	0.0031%
Hormel Foods Corp	HRL	21,642.06	0.08%	2.07%	5.70%	7.83%	0.0066%
Harris Corp	HRS	22,341.09	N/A	1.45%	N/A	N/A	N/A
Henry Schein Inc	HSIC	10,420.31	0.04%	0.00%	3.25%	3.25%	0.0013%
Host Hotels & Resorts Inc	HST	13,499.08	0.05%	4.62%	15.05%	20.01%	0.0105%
Hershey Co/The	HSY	27,985.40	0.11%	2.24%	7.07%	9.38%	0.0102%
Humana Inc	HUM	35,824.79	0.14%	0.79%	13.47%	14.31%	0.0199%
International Business Machines Corp	IBM	122,268.05	0.47%	4.69%	1.92%	6.65%	0.0315%
Intercontinental Exchange Inc	ICE	48,458.56	0.19%	1.27%	9.35%	10.68%	0.0200%
IDEXX Laboratories Inc	IDXX	23,680.12	0.09%	0.00%	18.30%	18.30%	0.0168%
International Flavors & Fragrances Inc	IFF	15,479.82	0.06%	1.97%	7.80%	9.85%	0.0059%
Illumina Inc	ILMN	54,118.05	0.21%	0.00%	27.09%	27.09%	0.0568%
Incyte Corp	INCY	18,218.70	0.07%	0.00%	43.10%	43.10%	0.0304%
IHS Markit Ltd	INFO	25,555.18	0.10%	0.00%	11.15%	11.15%	0.0110%
Intel Corp	INTC	214,313.99	0.83%	2.60%	8.88%	11.59%	0.0962%
Intuit Inc	INTU	67,748.07	0.26%	0.71%	16.16%	16.93%	0.0444%
International Paper Co	IP	17,212.51	0.07%	4.65%	4.77%	9.53%	0.0084%
Interpublic Group of Cos Inc/The	IPG	8,743.21	0.03%	4.16%	11.75%	16.15%	0.0055%
IPG Photonics Corp	IPGP	8,197.44	0.03%	0.00%	10.49%	10.49%	0.0033%
IQVIA Holdings Inc	IQV	31,736.03	0.12%	0.00%	15.96%	15.96%	0.0196%
Ingersoll-Rand PLC	IR	30,547.51	0.12%	1.71%	9.16%	10.94%	0.0130%
Iron Mountain Inc	IRM	8,979.36	0.03%	7.84%	7.32%	15.45%	0.0054%
Intuitive Surgical Inc	ISRG	60,558.59	0.23%	0.00%	12.30%	12.30%	0.0289%
Gartner Inc	IT	14,499.15	0.06%	0.00%	14.00%	14.00%	0.0079%
Illinois Tool Works Inc	ITW	49,130.14	0.19%	2.66%	7.27%	10.02%	0.0191%
Invesco Ltd	IVZ	9,750.71	0.04%	6.06%	7.12%	13.40%	0.0051%
JB Hunt Transport Services Inc	JBHT	9,939.82	0.04%	1.12%	13.13%	14.32%	0.0055%
Johnson Controls International plc	JCI	37,099.22	0.14%	2.59%	7.80%	10.49%	0.0151%
Jacobs Engineering Group Inc	JEC	11,528.42	0.04%	0.69%	13.10%	13.84%	0.0062%
Jefferies Financial Group Inc	JEF	5,589.91	N/A	2.60%	N/A	N/A	N/A
Jack Henry & Associates Inc	JKHY	10,339.11	0.04%	1.14%	9.03%	10.22%	0.0041%
Johnson & Johnson	JNJ	369,796.20	1.43%	2.70%	5.98%	8.76%	0.1255%
Juniper Networks Inc	JNPR	9,169.39	0.04%	2.84%	7.92%	10.87%	0.0039%
JPMorgan Chase & Co	JPM	362,676.18	1.40%	3.04%	6.80%	9.95%	0.1398%
Nordstrom Inc	JWN	4,927.21	0.02%	4.78%	5.97%	10.89%	0.0021%
Kellogg Co	K	18,240.42	0.07%	4.25%	2.29%	6.58%	0.0046%
KeyCorp	KEY	17,897.12	0.07%	4.01%	6.26%	10.40%	0.0072%
Keysight Technologies Inc	KEYS	16,899.63	N/A	0.00%	N/A	N/A	N/A
Kraft Heinz Co/The	KHC	37,866.90	0.15%	5.15%	0.45%	5.82%	0.0082%
Kimco Realty Corp	KIM	7,799.31	0.03%	6.13%	3.83%	10.08%	0.0030%
KLA-Tencor Corp	KLAC	19,103.51	0.07%	2.52%	9.44%	12.07%	0.0089%
Kimberly-Clark Corp	KMB	45,821.04	0.18%	3.08%	4.17%	7.31%	0.0130%
Kinder Morgan Inc/DE	KMI	47,266.94	0.18%	4.76%	13.90%	18.99%	0.0348%
CarMax Inc	KMX	14,361.26	0.06%	0.00%	10.61%	10.61%	0.0059%
Coca-Cola Co/The	KO	217,230.58	0.84%	3.11%	6.30%	9.51%	0.0800%
Kroger Co/The	KR	17,341.92	0.07%	2.69%	6.00%	8.77%	0.0059%
Kohl's Corp	KSS	7,704.33	0.03%	5.64%	5.55%	11.34%	0.0034%
Kansas City Southern	KSU	12,253.51	0.05%	1.24%	12.50%	13.82%	0.0066%
Loews Corp	L	16,668.23	N/A	0.46%	N/A	N/A	N/A
L Brands Inc	LB	7,212.49	0.03%	4.65%	9.38%	14.25%	0.0040%
Leggett & Platt Inc	LEG	5,036.78	0.02%	4.07%	10.00%	14.27%	0.0028%
Lennar Corp	LEN	15,285.48	0.06%	0.33%	10.09%	10.43%	0.0062%
Laboratory Corp of America Holdings	LH	17,061.46	0.07%	0.00%	7.28%	7.28%	0.0048%
Linde PLC	LIN	108,987.46	0.42%	1.75%	15.05%	16.93%	0.0715%
LKQ Corp	LKQ	8,355.38	0.03%	0.00%	13.30%	13.30%	0.0043%
L3 Technologies Inc	LLL	19,479.04	0.08%	1.42%	5.00%	6.45%	0.0049%
Eli Lilly & Co	LLY	107,558.35	0.42%	2.24%	9.32%	11.66%	0.0486%
Lockheed Martin Corp	LMT	102,714.16	0.40%	2.46%	7.82%	10.38%	0.0413%
Lincoln National Corp	LNC	13,041.02	0.05%	2.34%	9.00%	11.45%	0.0058%
Alliant Energy Corp	LNT	11,651.32	0.05%	2.90%	5.56%	8.54%	0.0039%
Lowe's Cos Inc	LOW	79,004.10	0.31%	2.09%	14.66%	16.90%	0.0517%
Lam Research Corp	LRCX	28,162.20	0.11%	2.22%	9.10%	11.42%	0.0125%
Southwest Airlines Co	LUV	27,576.83	0.11%	1.39%	5.01%	8.44%	0.0069%
Lamb Weston Holdings Inc	LW	9,267.91	0.04%	1.24%	11.83%	13.14%	0.0047%
LyondellBasell Industries NV	LYB	31,896.28	0.12%	4.94%	6.20%	11.29%	0.0139%
Macy's Inc	M	6,628.38	0.03%	7.03%	1.83%	8.92%	0.0023%
Mastercard Inc	MA	270,196.19	1.05%	0.47%	17.28%	17.78%	0.1861%
Mid-America Apartment Communities Inc	MAA	13,424.12	0.05%	3.28%	7.00%	10.39%	0.0054%
Macerich Co/The	MAC	4,730.08	0.02%	8.98%	0.13%	9.12%	0.0017%
Marriott International Inc/MD	MAR	46,715.00	0.18%	1.29%	8.26%	9.61%	0.0174%
Masco Corp	MAS	11,518.86	0.04%	1.21%	11.10%	12.37%	0.0055%
McDonald's Corp	MCD	158,560.12	0.61%	2.26%	8.69%	11.05%	0.0679%
Microchip Technology Inc	MCHP	20,628.23	0.08%	1.69%	10.87%	12.65%	0.0101%
McKesson Corp	MCK	25,047.22	0.10%	1.20%	4.01%	5.23%	0.0051%
Moody's Corp	MCO	37,030.78	0.14%	0.98%	7.05%	8.06%	0.0116%
Mondelez International Inc	MDLZ	77,639.49	0.30%	1.98%	6.94%	8.99%	0.0270%

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Medtronic PLC	MDT	130,615.25	0.51%	2.17%	7.34%	9.59%	0.0485%
MetLife Inc	MET	47,204.85	0.18%	3.50%	8.46%	12.11%	0.0221%
MGM Resorts International	MGM	15,347.84	0.06%	1.82%	12.35%	14.28%	0.0085%
Mohawk Industries Inc	MHK	10,679.96	0.04%	0.00%	6.82%	6.82%	0.0028%
McCormick & Co Inc/MD	MKC	20,542.51	0.08%	1.44%	6.20%	7.68%	0.0061%
Martin Marietta Materials Inc	MLM	14,377.15	0.06%	0.86%	13.90%	14.81%	0.0083%
Marsh & McLennan Cos Inc	MMC	51,006.58	0.20%	1.75%	11.73%	13.58%	0.0268%
3M Co	MMM	99,917.81	0.39%	3.27%	7.10%	10.49%	0.0406%
Monster Beverage Corp	MNST	34,696.47	0.13%	0.00%	14.45%	14.45%	0.0194%
Altria Group Inc	MO	88,589.06	0.34%	6.96%	6.53%	13.71%	0.0471%
Mosaic Co/The	MOS	9,656.28	0.04%	0.76%	14.00%	14.82%	0.0055%
Marathon Petroleum Corp	MPC	37,027.09	0.14%	3.83%	9.33%	13.34%	0.0191%
Merck & Co Inc	MRK	215,883.93	0.84%	2.62%	11.17%	13.94%	0.1166%
Marathon Oil Corp	MRO	11,622.59	0.05%	1.41%	-2.65%	-1.26%	-0.0006%
Morgan Stanley	MS	73,698.70	0.29%	2.97%	9.49%	12.60%	0.0360%
MSCI Inc	MSCI	20,220.42	0.08%	0.97%	10.00%	11.02%	0.0086%
Microsoft Corp	MSFT	1,026,511.09	3.98%	1.35%	11.85%	13.28%	0.5282%
Motorola Solutions Inc	MSI	27,474.82	0.11%	1.38%	9.00%	10.44%	0.0111%
M&T Bank Corp	MTB	23,235.33	0.09%	2.52%	7.28%	9.89%	0.0089%
Mettler-Toledo International Inc	MTD	20,834.76	0.08%	0.00%	12.97%	12.97%	0.0105%
Micron Technology Inc	MU	42,595.77	0.16%	0.00%	-1.90%	-1.90%	-0.0031%
Maxim Integrated Products Inc	MXIM	16,296.47	0.06%	3.08%	8.97%	12.18%	0.0077%
Mylan NV	MYL	9,814.51	0.04%	0.00%	4.71%	4.71%	0.0018%
Noble Energy Inc	NBL	10,712.39	0.04%	2.02%	6.31%	8.39%	0.0035%
Norwegian Cruise Line Holdings Ltd	NCLH	11,551.66	0.04%	0.36%	10.18%	10.56%	0.0047%
Nasdaq Inc	NDAQ	15,935.80	0.06%	1.92%	7.09%	9.08%	0.0056%
NextEra Energy Inc	NEE	98,114.69	0.38%	2.43%	5.31%	7.81%	0.0297%
Newmont Goldcorp Corp	NEM	31,531.30	0.12%	1.46%	5.10%	6.60%	0.0081%
Netflix Inc	NFLX	160,599.63	0.62%	0.00%	43.23%	43.23%	0.2689%
NiSource Inc	NI	10,745.37	0.04%	2.79%	5.51%	8.37%	0.0035%
NIKE Inc	NKE	131,948.38	0.51%	1.10%	17.48%	18.67%	0.0954%
Nektar Therapeutics	NKTR	6,201.84	0.02%	0.00%	-2.40%	-2.40%	-0.0006%
Nielsen Holdings PLC	NLSN	8,034.16	0.03%	6.33%	12.00%	18.71%	0.0058%
Northrop Grumman Corp	NOC	54,863.97	0.21%	1.62%	5.95%	7.62%	0.0162%
National Oilwell Varco Inc	NOV	8,579.01	0.03%	0.80%	24.00%	25.01%	0.0083%
NRG Energy Inc	NRG	9,382.42	0.04%	0.34%	32.57%	32.97%	0.0120%
Norfolk Southern Corp	NSC	53,015.21	0.21%	1.73%	13.37%	15.21%	0.0312%
NetApp Inc	NTAP	14,809.37	0.06%	3.11%	9.73%	12.99%	0.0075%
Northem Trust Corp	NTRS	19,590.89	0.08%	2.74%	8.75%	11.62%	0.0088%
Nucor Corp	NUE	16,793.69	0.07%	2.91%	0.65%	3.57%	0.0023%
NVIDIA Corp	NVDA	100,016.07	0.39%	0.39%	9.76%	10.17%	0.0394%
Newell Brands Inc	NWL	6,524.20	0.03%	5.96%	-4.75%	1.07%	0.0003%
News Corp	NWSA	7,987.66	0.03%	1.53%	-10.26%	-8.81%	-0.0027%
Realty Income Corp	O	21,826.72	0.08%	3.95%	4.69%	8.73%	0.0074%
ONEOK Inc	OKE	28,401.76	0.11%	5.16%	11.96%	17.42%	0.0192%
Omnicom Group Inc	OMC	18,042.74	0.07%	3.17%	4.06%	7.29%	0.0051%
Oracle Corp	ORCL	190,041.61	0.74%	1.60%	7.63%	9.30%	0.0684%
O'Reilly Automotive Inc	ORLY	28,909.16	0.11%	0.00%	15.22%	15.22%	0.0170%
Occidental Petroleum Corp	OXY	37,610.46	0.15%	6.21%	12.23%	18.82%	0.0274%
Paychex Inc	PAYX	29,566.80	0.11%	3.01%	7.15%	10.27%	0.0118%
People's United Financial Inc	PBCT	6,684.49	0.03%	4.22%	2.00%	6.26%	0.0016%
PACCAR Inc	PCAR	24,826.13	0.10%	4.67%	5.00%	9.79%	0.0094%
Public Service Enterprise Group Inc	PEG	29,729.42	0.12%	3.20%	6.14%	9.43%	0.0109%
PepsiCo Inc	PEP	183,820.87	0.71%	2.89%	5.45%	8.42%	0.0600%
Pfizer Inc	PFE	240,856.13	0.93%	3.31%	5.09%	8.48%	0.0791%
Principal Financial Group Inc	PFG	16,133.51	0.06%	3.81%	4.60%	8.50%	0.0053%
Procter & Gamble Co/The	PG	275,038.36	1.07%	2.65%	7.15%	9.89%	0.1054%
Progressive Corp/The	PGR	46,687.11	0.18%	3.45%	6.23%	9.79%	0.0177%
Parker-Hannifin Corp	PH	21,809.80	0.08%	1.82%	9.02%	10.91%	0.0092%
PulteGroup Inc	PHM	8,763.08	0.03%	1.39%	8.15%	9.59%	0.0033%
Packaging Corp of America	PKG	9,007.17	0.03%	3.35%	8.33%	11.83%	0.0041%
PerkinElmer Inc	PKI	10,685.89	0.04%	0.29%	16.09%	16.41%	0.0068%
Prologis Inc	PLD	50,519.09	0.20%	2.64%	7.04%	9.77%	0.0191%
Philip Morris International Inc	PM	122,177.19	0.47%	5.99%	6.78%	12.97%	0.0614%
PNC Financial Services Group Inc/The	PNC	61,973.40	0.24%	3.00%	7.48%	10.59%	0.0254%
Pentair PLC	PNR	6,394.38	0.02%	1.99%	7.24%	9.30%	0.0023%
Pinnacle West Capital Corp	PNW	10,564.18	0.04%	3.20%	5.29%	8.58%	0.0035%
PPG Industries Inc	PPG	27,550.56	0.11%	1.68%	8.62%	10.36%	0.0111%
PPL Corp	PPL	22,369.71	N/A	5.35%	N/A	N/A	N/A
Perrigo Co PLC	PRGO	6,475.91	0.03%	1.59%	-0.80%	0.78%	0.0002%
Prudential Financial Inc	PRU	41,006.00	0.16%	3.99%	9.00%	13.16%	0.0209%
Public Storage	PSA	41,565.89	0.16%	3.39%	5.23%	8.71%	0.0140%
Phillips 66	PSX	42,425.18	0.16%	3.69%	2.05%	5.78%	0.0095%
PVH Corp	PVH	7,089.78	0.03%	0.18%	8.12%	8.29%	0.0023%
Quanta Services Inc	PWR	5,444.66	0.02%	0.42%	22.00%	22.47%	0.0047%
Pioneer Natural Resources Co	PXD	25,913.68	0.10%	0.51%	24.90%	25.48%	0.0256%
PayPal Holdings Inc	PYPL	134,482.83	0.52%	0.00%	19.06%	19.06%	0.0993%
QUALCOMM Inc	QCOM	92,478.22	0.36%	3.32%	15.42%	18.99%	0.0680%
Qorvo Inc	QRVO	7,863.51	0.03%	0.25%	9.62%	9.88%	0.0030%
Royal Caribbean Cruises Ltd	RCL	25,411.42	0.10%	2.35%	11.71%	14.19%	0.0140%

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Everest Re Group Ltd	RE	10,068.54	0.04%	2.28%	10.00%	12.39%	0.0048%
Regency Centers Corp	REG	11,191.26	0.04%	3.47%	4.32%	7.86%	0.0034%
Regeneron Pharmaceuticals Inc	REGN	34,316.94	0.13%	0.00%	11.92%	11.92%	0.0158%
Regions Financial Corp	RF	15,137.58	0.06%	4.05%	9.22%	13.46%	0.0079%
Robert Half International Inc	RHI	6,758.97	0.03%	2.18%	9.05%	11.34%	0.0030%
Red Hat Inc	RHT	33,438.74	0.13%	0.00%	20.30%	20.30%	0.0263%
Raymond James Financial Inc	RJF	11,905.09	0.05%	1.57%	11.10%	12.75%	0.0059%
Ralph Lauren Corp	RL	8,778.26	0.03%	2.42%	7.84%	10.35%	0.0035%
ResMed Inc	RMD	17,498.20	0.07%	1.33%	11.05%	12.45%	0.0084%
Rockwell Automation Inc	ROK	19,391.25	0.08%	2.34%	11.48%	13.96%	0.0105%
Rollins Inc	ROL	11,748.49	0.05%	1.55%	10.00%	11.63%	0.0053%
Roper Technologies Inc	ROP	38,032.81	0.15%	0.53%	12.93%	13.49%	0.0199%
Ross Stores Inc	ROST	36,148.63	0.14%	1.03%	9.40%	10.48%	0.0147%
Republic Services Inc	RSG	27,862.22	0.11%	1.76%	13.26%	15.13%	0.0163%
Raytheon Co	RTN	48,432.73	0.19%	2.16%	9.31%	11.56%	0.0217%
SBA Communications Corp	SBAC	25,463.38	0.10%	0.00%	42.50%	42.50%	0.0419%
Starbucks Corp	SBUX	101,534.90	0.39%	1.78%	12.72%	14.60%	0.0574%
Charles Schwab Corp/The	SCHW	53,654.03	0.21%	1.69%	11.14%	12.93%	0.0269%
Sealed Air Corp	SEE	6,661.00	0.03%	1.54%	5.73%	7.32%	0.0019%
Sherwin-Williams Co/The	SHW	42,307.59	0.16%	0.94%	9.46%	10.44%	0.0171%
SVB Financial Group	SIVB	11,684.79	0.05%	0.00%	11.00%	11.00%	0.0050%
JM Smucker Co/The	SJM	13,136.20	0.05%	3.06%	4.03%	7.15%	0.0036%
Schlumberger Ltd	SLB	55,044.76	0.21%	5.03%	31.36%	37.18%	0.0793%
SL Green Realty Corp	SLG	6,859.57	0.03%	4.25%	-0.84%	3.39%	0.0009%
Snap-on Inc	SNA	9,177.19	0.04%	2.30%	7.35%	9.73%	0.0035%
Synopsys Inc	SNPS	19,290.52	0.07%	0.00%	13.60%	13.60%	0.0102%
Southern Co/The	SO	57,537.25	0.22%	4.46%	3.75%	8.29%	0.0185%
Simon Property Group Inc	SPG	49,364.82	0.19%	5.17%	4.87%	10.17%	0.0194%
S&P Global Inc	SPGI	56,081.90	0.22%	0.99%	9.20%	10.24%	0.0222%
Sempra Energy	SRE	37,715.37	0.15%	2.82%	8.74%	11.69%	0.0171%
SunTrust Banks Inc	STI	27,895.49	0.11%	3.36%	6.22%	9.68%	0.0105%
State Street Corp	STT	20,919.57	0.08%	3.55%	7.27%	10.94%	0.0089%
Seagate Technology PLC	STX	13,044.83	0.05%	5.34%	4.60%	10.07%	0.0051%
Constellation Brands Inc	STZ	37,804.60	0.15%	1.51%	8.09%	9.66%	0.0142%
Stanley Black & Decker Inc	SWK	21,913.10	0.08%	1.86%	9.10%	11.05%	0.0094%
Skyworks Solutions Inc	SWKS	13,344.03	0.05%	2.00%	10.57%	12.67%	0.0065%
Synchrony Financial	SYF	23,898.60	0.09%	2.61%	4.03%	6.69%	0.0062%
Stryker Corp	SYK	76,847.88	0.30%	1.11%	8.10%	9.26%	0.0276%
Symantec Corp	SYMC	13,451.90	0.05%	1.44%	7.26%	8.76%	0.0046%
Sysco Corp	SYU	36,348.34	0.14%	2.17%	12.13%	14.44%	0.0203%
AT&T Inc	T	244,555.98	0.85%	6.11%	5.54%	11.82%	0.1119%
Molson Coors Brewing Co	TAP	12,128.28	0.05%	3.69%	-0.23%	3.45%	0.0016%
TransDigm Group Inc	TDG	25,728.44	0.10%	0.00%	13.09%	13.09%	0.0130%
TE Connectivity Ltd	TEL	32,285.04	0.12%	1.86%	9.93%	11.89%	0.0149%
Teleflex Inc	TFX	15,283.93	0.06%	0.41%	12.97%	13.40%	0.0079%
Target Corp	TGT	44,373.29	0.17%	3.04%	6.75%	9.89%	0.0170%
Tiffany & Co	TIF	11,368.59	0.04%	2.48%	9.25%	11.84%	0.0052%
TJX Cos Inc/The	TJX	64,125.86	0.25%	1.72%	10.05%	11.86%	0.0295%
Torchmark Corp	TMK	9,835.28	0.04%	0.75%	7.91%	8.69%	0.0033%
Thermo Fisher Scientific Inc	TMO	117,466.46	0.46%	0.26%	10.83%	11.09%	0.0505%
Tapestry Inc	TPR	9,208.01	0.04%	4.25%	10.20%	14.67%	0.0052%
TripAdvisor Inc	TRIP	6,435.65	0.02%	0.00%	9.34%	9.34%	0.0023%
T Rowe Price Group Inc	TROW	25,943.72	0.10%	2.72%	7.10%	9.92%	0.0100%
Travelers Cos Inc/The	TRV	39,160.52	0.15%	2.16%	13.06%	15.36%	0.0233%
Tractor Supply Co	TSCO	13,125.83	0.05%	1.23%	11.00%	12.29%	0.0062%
Tyson Foods Inc	TSN	29,455.12	0.11%	1.86%	3.10%	4.98%	0.0057%
Total System Services Inc	TSS	22,689.58	0.09%	0.42%	12.14%	12.58%	0.0111%
Take-Two Interactive Software Inc	TTWO	12,776.84	0.05%	0.00%	8.80%	8.80%	0.0044%
Twitter Inc	TWTR	26,825.23	0.10%	0.00%	31.76%	31.76%	0.0330%
Texas Instruments Inc	TXN	107,668.54	0.42%	2.73%	9.87%	12.73%	0.0531%
Textron Inc	TXT	12,345.71	0.05%	0.15%	12.06%	12.21%	0.0058%
Under Armour Inc	UA	10,658.97	0.04%	0.00%	31.19%	31.19%	0.0129%
United Continental Holdings Inc	UAL	23,136.94	0.09%	0.00%	13.81%	13.81%	0.0124%
UDR Inc	UDR	12,649.77	0.05%	3.05%	5.49%	8.62%	0.0042%
Universal Health Services Inc	UHS	11,753.36	0.05%	0.31%	9.38%	9.71%	0.0044%
Ultra Beauty Inc	ULTA	20,278.41	0.08%	0.00%	21.00%	21.00%	0.0165%
UnitedHealth Group Inc	UNH	231,893.22	0.80%	1.58%	13.74%	15.44%	0.1387%
Unum Group	UNM	7,108.60	0.03%	3.18%	9.00%	12.33%	0.0034%
Union Pacific Corp	UNP	119,702.51	0.46%	2.12%	13.02%	15.28%	0.0708%
United Parcel Service Inc	UPS	88,890.23	0.34%	3.70%	8.79%	12.65%	0.0436%
United Rentals Inc	URI	10,427.91	0.04%	0.00%	12.00%	12.00%	0.0048%
US Bancorp	USB	83,424.07	0.32%	3.02%	6.70%	9.82%	0.0317%
United Technologies Corp	UTX	112,350.33	0.44%	2.28%	8.87%	11.25%	0.0489%
Visa Inc	V	346,417.34	1.34%	0.58%	15.54%	16.17%	0.2169%
Varian Medical Systems Inc	VAR	12,380.44	0.05%	0.00%	8.55%	8.55%	0.0041%
VF Corp	VFC	34,691.72	0.13%	2.22%	-19.07%	-17.05%	-0.0229%
Viacom Inc	VIAB	12,248.94	0.05%	2.70%	3.51%	6.25%	0.0030%
Valero Energy Corp	VLO	35,720.04	0.14%	4.20%	13.02%	17.49%	0.0242%
Vulcan Materials Co	VMC	18,137.57	0.07%	0.88%	16.30%	17.25%	0.0121%
Vornado Realty Trust	VNO	12,231.09	0.05%	4.32%	4.23%	8.63%	0.0041%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Verisk Analytics Inc	VRSK	23,970.47	0.09%	0.51%	9.46%	9.99%	0.0093%
VeriSign Inc	VRSN	24,928.39	0.10%	0.00%	8.80%	8.80%	0.0085%
Vertex Pharmaceuticals Inc	VRTX	46,867.53	0.18%	0.00%	51.00%	51.00%	0.0928%
Ventas Inc	VTR	25,249.30	0.10%	4.65%	4.34%	9.09%	0.0089%
Verizon Communications Inc	VZ	236,272.92	0.92%	4.25%	2.34%	6.64%	0.0608%
Wabtec Corp	WAB	13,499.32	0.05%	0.00%	15.00%	15.00%	0.0078%
Waters Corp	WAT	14,953.85	0.06%	0.00%	9.90%	9.90%	0.0057%
Walgreens Boots Alliance Inc	WBA	49,374.85	0.19%	3.31%	5.36%	8.75%	0.0167%
WellCare Health Plans Inc	WCG	14,342.40	0.06%	0.00%	17.22%	17.22%	0.0096%
Western Digital Corp	WDC	13,932.04	0.05%	4.21%	-5.24%	-1.14%	-0.0006%
WEC Energy Group Inc	WEC	26,298.10	0.10%	2.83%	6.13%	9.05%	0.0092%
Welltower Inc	WELL	33,014.81	0.13%	4.27%	6.11%	10.51%	0.0134%
Wells Fargo & Co	WFC	212,672.31	0.82%	3.91%	10.36%	14.47%	0.1192%
Whirlpool Corp	WHR	9,016.98	0.03%	3.33%	4.97%	8.38%	0.0029%
Willis Towers Watson PLC	WLTW	24,753.90	0.10%	1.32%	13.97%	15.38%	0.0147%
Waste Management Inc	WM	49,004.50	0.19%	1.76%	7.51%	9.34%	0.0177%
Williams Cos Inc/The	WMB	33,978.04	0.13%	5.40%	3.90%	9.40%	0.0124%
Walmart Inc	WMT	315,418.25	1.22%	1.92%	3.56%	5.52%	0.0674%
Westrock Co	WRK	9,374.35	0.04%	4.97%	3.17%	8.21%	0.0030%
Western Union Co/The	WU	8,566.79	0.03%	3.91%	3.36%	7.34%	0.0024%
Weyerhaeuser Co	WY	19,617.67	0.08%	5.17%	5.20%	10.51%	0.0080%
Wynn Resorts Ltd	WYNN	13,348.98	0.05%	2.98%	23.23%	26.56%	0.0137%
Cimarex Energy Co	XEC	6,018.03	0.02%	1.21%	29.26%	30.64%	0.0071%
Xcel Energy Inc	XEL	30,617.91	0.12%	2.71%	5.42%	8.20%	0.0097%
Xilinx Inc	XLNX	29,599.38	0.11%	1.26%	9.60%	10.92%	0.0125%
Exxon Mobil Corp	XOM	324,228.73	1.26%	4.45%	15.93%	20.73%	0.2604%
DENTSPLY SIRONA Inc	XRAY	13,654.93	0.05%	0.59%	12.57%	13.20%	0.0070%
Xerox Corp	XRX	7,954.03	0.03%	2.86%	6.50%	9.45%	0.0029%
Xylem Inc/NY	XYL	15,049.60	0.06%	1.15%	13.97%	15.20%	0.0089%
Yum! Brands Inc	YUM	33,862.27	0.13%	1.52%	12.43%	14.05%	0.0184%
Zimmer Biomet Holdings Inc	ZBH	24,112.95	0.09%	0.84%	5.66%	6.52%	0.0061%
Zions Bancorp NA	ZION	8,394.35	0.03%	2.83%	7.60%	10.54%	0.0034%
Zoetis Inc	ZTS	54,322.69	0.21%	0.55%	10.81%	11.39%	0.0240%
Total Market Capitalization:		25,816,650.84					14.88%

Notes:

[1] Equals sum of Col. [9]

[2] Source: Bloomberg Professional

[3] Equals [1] - [2]

[4] Source: Bloomberg Professional

[5] Equals weight in S&P 500 based on market capitalization

[6] Source: Bloomberg Professional

[7] Source: Bloomberg Professional

[8] Equals ([6] x (1 + (0.5 x [7]))) + [7]

[9] Equals Col. [5] x Col. [8]

Ex-Ante Market Risk Premium
Market DCF Method Based - Value Line

[1]	[2]	[3]
S&P 500 Est. Required Market Return	Current 30-Year Treasury (30-day average)	Implied Market Risk Premium
14.78%	2.63%	12.15%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	23,262.68	0.10%	0.90%	9.50%	10.44%	0.0101%
American Airlines Group Inc	AAL	14,281.54	0.06%	1.24%	6.50%	7.78%	0.0046%
Advance Auto Parts Inc	AAP	10,995.13	0.05%	0.16%	14.00%	14.17%	0.0065%
Apple Inc	AAPL	918,968.80	3.81%	1.57%	12.50%	14.17%	0.5396%
AbbVie Inc	ABBV	123,839.20	0.51%	5.46%	12.50%	18.30%	0.0938%
AmerisourceBergen Corp	ABC	17,981.89	0.07%	1.92%	8.00%	10.00%	0.0074%
ABIOMED Inc	ABMD	11,746.67	0.05%	0.00%	24.50%	24.50%	0.0119%
Abbott Laboratories	ABT	149,849.50	0.62%	1.51%	10.00%	11.59%	0.0719%
Accenture PLC	ACN	119,105.00	0.49%	1.64%	9.00%	10.71%	0.0529%
Adobe Inc	ADBE	147,581.90	0.61%	0.00%	19.50%	19.50%	0.1193%
Analog Devices Inc	ADI	41,620.30	0.17%	1.92%	10.00%	12.02%	0.0207%
Archer-Daniels-Midland Co	ADM	23,128.00	0.10%	3.39%	9.50%	13.05%	0.0125%
Automatic Data Processing Inc	ADP	73,865.15	0.31%	2.04%	13.50%	15.68%	0.0480%
Alliance Data Systems Corp	ADS	7,227.34	0.03%	1.82%	12.00%	13.93%	0.0042%
Autodesk Inc	ADSK	37,214.61	N/A	0.00%	N/A	N/A	N/A
Ameren Corp	AEE	18,999.62	0.08%	2.57%	6.50%	9.15%	0.0072%
American Electric Power Co Inc	AEP	44,837.80	0.19%	3.08%	4.00%	7.14%	0.0133%
AES Corp/VA	AES	11,236.36	N/A	3.25%	N/A	N/A	N/A
Aflac Inc	AFL	41,310.59	0.17%	1.97%	7.50%	9.54%	0.0163%
Allergan PLC	AGN	42,882.80	0.18%	2.26%	4.00%	6.31%	0.0112%
American International Group Inc	AIG	47,183.23	N/A	2.36%	N/A	N/A	N/A
Apartment Investment & Management Co	AIV	7,887.84	0.03%	3.02%	-3.00%	-0.03%	0.0000%
Assurant Inc	AIZ	6,643.45	0.03%	2.23%	6.50%	8.80%	0.0024%
Arthur J Gallagher & Co	AJG	16,213.75	0.07%	1.97%	15.50%	17.62%	0.0118%
Akamai Technologies Inc	AKAM	13,060.62	0.05%	0.00%	18.00%	18.00%	0.0097%
Albemarle Corp	ALB	7,362.47	0.03%	2.12%	5.50%	7.68%	0.0023%
Align Technology Inc	ALGN	23,653.60	0.10%	0.00%	27.00%	27.00%	0.0265%
Alaska Air Group Inc	ALK	7,499.16	0.03%	2.31%	5.50%	7.87%	0.0024%
Allstate Corp/The	ALL	34,482.15	0.14%	1.93%	10.50%	12.53%	0.0179%
Allegion PLC	ALLE	10,166.40	0.04%	1.00%	8.50%	9.54%	0.0040%
Alexion Pharmaceuticals Inc	ALXN	28,883.68	0.12%	0.00%	21.00%	21.00%	0.0251%
Applied Materials Inc	AMAT	40,444.56	0.17%	1.97%	8.50%	10.55%	0.0177%
Amcor PLC	AMCR	N/A	N/A	0.00%	N/A	N/A	N/A
Advanced Micro Devices Inc	AMD	32,470.82	0.13%	0.00%	27.50%	27.50%	0.0370%
AMETEK Inc	AME	20,182.16	0.08%	0.63%	10.50%	11.16%	0.0093%
Affiliated Managers Group Inc	AMG	5,183.10	0.02%	1.48%	10.00%	11.55%	0.0025%
Amgen Inc	AMGN	113,098.70	0.47%	3.21%	7.00%	10.32%	0.0484%
Ameriprise Financial Inc	AMP	20,032.33	0.08%	2.60%	13.00%	15.77%	0.0131%
American Tower Corp	AMT	96,136.88	0.40%	1.88%	9.50%	11.47%	0.0457%
Amazon.com Inc	AMZN	943,749.40	3.91%	0.00%	39.00%	39.00%	1.5253%
Arista Networks Inc	ANET	19,016.16	0.08%	0.00%	11.00%	11.00%	0.0087%
ANSYS Inc	ANSS	17,085.95	0.07%	0.00%	11.00%	11.00%	0.0078%
Anthem Inc	ANTM	74,949.20	0.31%	1.10%	19.00%	20.20%	0.0628%
Aon PLC	AON	46,618.96	0.19%	0.91%	10.00%	10.96%	0.0212%
AO Smith Corp	AOS	7,660.92	0.03%	1.82%	9.50%	11.51%	0.0037%
Apache Corp	APA	11,093.10	0.05%	3.39%	50.00%	54.24%	0.0249%
Anadarko Petroleum Corp	APC	34,556.34	N/A	1.70%	N/A	N/A	N/A
Air Products & Chemicals Inc	APD	48,880.53	0.20%	2.09%	9.00%	11.18%	0.0227%
Amphenol Corp	APH	28,572.24	0.12%	0.96%	9.50%	10.51%	0.0124%
Aptiv PLC	APTIV	20,232.71	0.08%	1.12%	11.00%	12.18%	0.0102%
Alexandria Real Estate Equities Inc	ARE	16,644.03	N/A	2.67%	N/A	N/A	N/A
Arconic Inc	ARNC	10,834.39	N/A	0.33%	N/A	N/A	N/A
Atmos Energy Corp	ATO	12,388.50	0.05%	2.09%	7.50%	9.67%	0.0050%
Activision Blizzard Inc	ATVI	34,979.75	0.14%	0.81%	9.50%	10.35%	0.0150%
AvalonBay Communities Inc	AVB	29,151.78	0.12%	2.93%	4.00%	6.99%	0.0084%
Broadcom Inc	AVGO	111,340.90	0.46%	3.80%	33.50%	37.94%	0.1750%
Avery Dennison Corp	AVY	9,523.58	0.04%	2.11%	11.00%	13.23%	0.0052%
American Water Works Co Inc	AWK	21,334.83	0.09%	1.69%	9.50%	11.27%	0.0100%
American Express Co	AXP	104,558.00	0.43%	1.37%	10.00%	11.44%	0.0496%
AutoZone Inc	AZO	27,766.13	0.12%	0.00%	13.50%	13.50%	0.0155%
Boeing Co/The	BA	211,211.50	0.88%	2.33%	15.50%	18.01%	0.1576%
Bank of America Corp	BAC	270,498.40	1.12%	2.34%	10.50%	12.96%	0.1453%
Baxter International Inc	BAX	41,844.34	0.17%	1.07%	10.50%	11.63%	0.0202%
BB&T Corp	BBT	37,307.96	0.15%	3.61%	8.00%	11.75%	0.0182%
Best Buy Co Inc	BBY	18,260.13	0.08%	2.92%	10.50%	13.57%	0.0103%
Becton Dickinson and Co	BDX	66,116.70	0.27%	1.27%	10.00%	11.33%	0.0311%
Franklin Resources Inc	BEN	17,536.44	0.07%	3.19%	7.50%	10.81%	0.0079%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Brown-Forman Corp	BF/B	26,444.87	0.11%	1.21%	13.50%	14.79%	0.0162%
Baker Hughes a GE Co	BHGE	12,545.40	N/A	2.96%	N/A	N/A	N/A
Biogen Inc	BIIB	45,559.04	0.19%	0.00%	5.50%	5.50%	0.0104%
Bank of New York Mellon Corp/The	BK	41,288.14	0.17%	2.60%	8.50%	11.21%	0.0192%
Booking Holdings Inc	BKNG	82,243.84	0.34%	0.00%	11.50%	11.50%	0.0392%
BlackRock Inc	BLK	71,932.11	0.30%	2.84%	9.50%	12.47%	0.0372%
Ball Corp	BLL	22,493.04	0.09%	0.89%	23.00%	23.99%	0.0224%
Bristol-Myers Squibb Co	BMJ	79,969.66	0.33%	3.35%	11.50%	15.04%	0.0499%
Broadridge Financial Solutions Inc	BR	15,117.69	0.06%	1.65%	11.00%	12.74%	0.0080%
Berkshire Hathaway Inc	BRK/B	-	N/A	0.00%	N/A	N/A	N/A
Boston Scientific Corp	BSX	58,209.80	0.24%	0.00%	16.00%	16.00%	0.0386%
BorgWarner Inc	BWA	8,750.77	0.04%	1.61%	7.00%	8.67%	0.0031%
Boston Properties Inc	BXP	21,434.14	0.09%	2.77%	4.50%	7.33%	0.0065%
Citigroup Inc	C	157,479.10	0.65%	2.91%	10.00%	13.06%	0.0852%
Conagra Brands Inc	CAG	14,188.72	0.06%	3.01%	5.50%	8.59%	0.0051%
Cardinal Health Inc	CAH	13,341.46	0.06%	4.29%	17.00%	21.65%	0.0120%
Caterpillar Inc	CAT	76,396.54	0.32%	3.08%	13.00%	16.28%	0.0515%
Chubb Ltd	CB	68,433.61	0.28%	2.01%	10.00%	12.11%	0.0343%
Cboe Global Markets Inc	CBOE	11,953.45	0.05%	1.16%	14.50%	15.74%	0.0078%
CBRE Group Inc	CBRE	16,998.25	0.07%	0.00%	10.50%	10.50%	0.0074%
CBS Corp	CBS	18,987.98	0.08%	1.42%	9.50%	10.99%	0.0086%
Crown Castle International Corp	CCI	56,958.73	0.24%	3.51%	10.50%	14.19%	0.0335%
Carnival Corp	CCL	25,717.60	0.11%	4.10%	10.00%	14.31%	0.0152%
Cadence Design Systems Inc	CDNS	20,422.45	0.08%	0.00%	12.50%	12.50%	0.0106%
Celanese Corp	CE	13,308.19	0.06%	2.36%	11.00%	13.49%	0.0074%
Celgene Corp	CELG	69,162.02	0.29%	0.00%	13.50%	13.50%	0.0387%
Cerner Corp	CERN	23,319.76	0.10%	1.00%	9.00%	10.05%	0.0097%
CF Industries Holdings Inc	CF	10,380.62	N/A	2.60%	N/A	N/A	N/A
Citizens Financial Group Inc	CFG	16,120.65	0.07%	3.72%	12.00%	15.94%	0.0107%
Church & Dwight Co Inc	CHD	18,789.60	0.08%	1.19%	9.00%	10.24%	0.0080%
CH Robinson Worldwide Inc	CHRW	11,498.68	0.05%	2.38%	9.00%	11.49%	0.0055%
Charter Communications Inc	CHTR	89,088.41	0.37%	0.00%	16.00%	16.00%	0.0591%
Cigna Corp	CI	60,618.26	0.25%	0.03%	14.50%	14.53%	0.0365%
Cincinnati Financial Corp	CINF	17,289.41	0.07%	2.11%	8.50%	10.70%	0.0077%
Colgate-Palmolive Co	CL	63,186.71	0.26%	2.34%	6.00%	8.41%	0.0220%
Clorox Co/The	CLX	19,768.93	0.08%	2.74%	6.50%	9.33%	0.0076%
Comerica Inc	CMA	10,882.37	0.05%	3.83%	12.00%	16.06%	0.0072%
Comcast Corp	CMCSA	198,242.30	0.82%	1.92%	13.50%	15.55%	0.1277%
CME Group Inc	CME	70,981.92	0.29%	1.51%	3.00%	4.53%	0.0133%
Chipotle Mexican Grill Inc	CMG	20,481.02	0.08%	0.00%	26.00%	26.00%	0.0221%
Cummins Inc	CMI	27,027.00	0.11%	2.66%	8.00%	10.77%	0.0121%
CMS Energy Corp	CMS	16,768.67	0.07%	2.69%	7.00%	9.78%	0.0068%
Centene Corp	CNC	22,888.83	0.09%	0.00%	15.50%	15.50%	0.0147%
CenterPoint Energy Inc	CNP	15,085.13	0.06%	3.90%	12.50%	16.64%	0.0104%
Capital One Financial Corp	COF	43,029.18	0.18%	1.75%	6.00%	7.80%	0.0139%
Cabot Oil & Gas Corp	COG	9,987.23	0.04%	1.53%	50.00%	51.91%	0.0215%
Cooper Cos Inc/The	COO	16,208.28	0.07%	0.02%	14.50%	14.52%	0.0098%
ConocoPhillips	COP	68,601.68	0.28%	2.01%	37.00%	39.38%	0.1120%
Costco Wholesale Corp	COST	117,583.50	0.49%	0.97%	8.50%	9.51%	0.0463%
Coty Inc	COTY	10,136.39	0.04%	3.71%	9.00%	12.88%	0.0054%
Campbell Soup Co	CPB	12,350.03	0.05%	3.41%	1.00%	4.43%	0.0023%
Capri Holdings Ltd	CPRI	5,275.07	0.02%	0.00%	7.50%	7.50%	0.0016%
Copart Inc	CPRT	17,103.85	0.07%	0.00%	12.50%	12.50%	0.0089%
salesforce.com Inc	CRM	121,987.20	0.51%	0.00%	57.00%	57.00%	0.2881%
Cisco Systems Inc	CSCO	247,609.30	1.03%	2.44%	8.00%	10.54%	0.1081%
CSX Corp	CSX	69,196.73	0.29%	1.21%	14.50%	15.80%	0.0453%
Cintas Corp	CTAS	24,410.33	0.10%	0.97%	16.00%	17.05%	0.0172%
CenturyLink Inc	CTL	12,376.55	0.05%	8.81%	1.00%	9.85%	0.0051%
Cognizant Technology Solutions Corp	CTSH	36,512.73	0.15%	1.25%	5.00%	6.28%	0.0095%
Corteva Inc	CTVA	N/A	N/A	0.00%	N/A	N/A	N/A
Citrix Systems Inc	CTXS	13,108.22	0.05%	1.41%	7.00%	8.46%	0.0046%
CVS Health Corp	CVS	69,923.27	0.29%	3.71%	6.50%	10.33%	0.0299%
Chevron Corp	CVX	236,719.30	0.98%	3.83%	16.50%	20.65%	0.2025%
Concho Resources Inc	CXO	21,056.98	0.09%	0.48%	21.00%	21.53%	0.0188%
Dominion Energy Inc	D	62,082.82	0.26%	4.81%	6.50%	11.47%	0.0295%
Delta Air Lines Inc	DAL	36,660.13	0.15%	2.75%	9.50%	12.38%	0.0188%
DuPont de Nemours Inc	DD	N/A	N/A	0.00%	N/A	N/A	N/A
Deere & Co	DE	51,594.27	0.21%	1.87%	14.00%	16.00%	0.0342%
Discover Financial Services	DFS	25,507.01	0.11%	2.04%	7.50%	9.62%	0.0102%
Dollar General Corp	DG	35,857.82	0.15%	0.92%	12.50%	13.48%	0.0200%
Quest Diagnostics Inc	DGX	13,445.56	0.06%	2.11%	8.50%	10.70%	0.0080%
DR Horton Inc	DHI	17,048.45	0.07%	1.34%	6.50%	7.88%	0.0056%
Danaher Corp	DHR	102,824.70	0.43%	0.47%	12.50%	13.00%	0.0554%
Walt Disney Co/The	DIS	252,653.60	1.05%	1.24%	6.50%	7.78%	0.0815%
Discovery Inc	DISCA	16,235.62	0.07%	0.00%	15.00%	15.00%	0.0101%
DISH Network Corp	DISH	18,297.13	0.08%	0.00%	-2.00%	-2.00%	-0.0015%
Digital Realty Trust Inc	DLR	25,778.48	0.11%	3.46%	5.00%	8.55%	0.0091%
Dollar Tree Inc	DLTR	26,323.70	0.11%	0.00%	15.50%	15.50%	0.0169%
Dover Corp	DOV	14,249.51	0.06%	1.96%	11.00%	13.07%	0.0077%
Dow Inc	DOW	36,639.96	N/A	5.83%	N/A	N/A	N/A

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Duke Realty Corp	DRE	11,637.54	0.05%	2.74%	7.00%	9.84%	0.0047%
Darden Restaurants Inc	DRI	14,593.56	0.06%	2.97%	12.00%	15.15%	0.0092%
DTE Energy Co	DTE	24,033.75	0.10%	3.02%	5.50%	8.60%	0.0086%
Duke Energy Corp	DUK	64,486.24	0.27%	4.28%	6.00%	10.41%	0.0278%
DaVita Inc	DVA	8,720.82	0.04%	0.00%	11.00%	11.00%	0.0040%
Devon Energy Corp	DVN	11,663.08	0.05%	1.28%	26.50%	27.95%	0.0135%
DXC Technology Co	DXC	14,884.01	0.06%	1.54%	14.50%	16.15%	0.0098%
Electronic Arts Inc	EA	27,780.59	0.12%	0.00%	10.00%	10.00%	0.0115%
eBay Inc	EBAY	34,969.92	0.14%	1.43%	10.00%	11.50%	0.0167%
Ecolab Inc	ECL	55,438.15	0.23%	0.98%	10.00%	11.01%	0.0253%
Consolidated Edison Inc	ED	29,063.76	0.12%	3.39%	3.00%	6.44%	0.0078%
Equifax Inc	EFX	16,305.58	0.07%	1.16%	8.00%	9.21%	0.0062%
Edison International	EIX	20,780.22	0.09%	3.84%	15.00%	19.13%	0.0165%
Estee Lauder Cos Inc/The	EL	66,189.98	0.27%	0.95%	12.50%	13.51%	0.0371%
Eastman Chemical Co	EMN	10,483.80	0.04%	3.28%	8.00%	11.41%	0.0050%
Emerson Electric Co	EMR	41,218.89	0.17%	3.01%	12.00%	15.19%	0.0259%
EOG Resources Inc	EOG	53,069.80	0.22%	1.26%	34.50%	35.98%	0.0791%
Equinix Inc	EQIX	42,738.66	0.18%	1.97%	25.00%	27.22%	0.0482%
Equity Residential	EQR	29,120.20	0.12%	2.91%	-12.00%	-9.26%	-0.0112%
Eversource Energy	ES	24,603.91	0.10%	2.80%	5.50%	8.38%	0.0085%
Essex Property Trust Inc	ESS	19,958.74	0.08%	2.61%	2.00%	4.64%	0.0038%
E*TRADE Financial Corp	ETFC	11,119.21	0.05%	1.23%	17.50%	18.84%	0.0087%
Eaton Corp PLC	ETN	34,964.98	0.14%	3.44%	9.00%	12.59%	0.0182%
Entergy Corp	ETR	19,644.91	0.08%	3.58%	0.50%	4.09%	0.0033%
Evergy Inc	EVRG	15,011.08	N/A	3.28%	N/A	N/A	N/A
Edwards Lifesciences Corp	EW	40,194.11	0.17%	0.00%	15.00%	15.00%	0.0250%
Exelon Corp	EXC	48,783.04	0.20%	2.93%	10.50%	13.58%	0.0275%
Expeditors International of Washington I	EXPD	13,101.89	0.05%	1.31%	7.50%	8.86%	0.0048%
Expedia Group Inc	EXPE	19,276.45	0.08%	0.99%	24.00%	25.11%	0.0201%
Extra Space Storage Inc	EXR	13,864.50	0.06%	3.35%	6.00%	9.45%	0.0054%
Ford Motor Co	F	39,343.69	0.16%	5.98%	3.50%	9.58%	0.0156%
Diamondback Energy Inc	FANG	17,709.28	0.07%	0.70%	17.00%	17.76%	0.0130%
Fastenal Co	FAST	19,030.96	0.08%	2.59%	8.50%	11.20%	0.0088%
Facebook Inc	FB	541,011.10	2.24%	0.00%	16.50%	16.50%	0.3699%
Fortune Brands Home & Security Inc	FBHS	7,788.52	0.03%	1.58%	10.50%	12.16%	0.0039%
Freight-McMoRan Inc	FCX	16,512.38	0.07%	1.78%	22.50%	24.46%	0.0167%
FedEx Corp	FDX	43,906.89	0.18%	1.89%	7.50%	9.25%	0.0168%
FirstEnergy Corp	FE	23,208.07	0.10%	3.57%	8.00%	11.71%	0.0113%
F5 Networks Inc	FFIV	8,494.00	0.04%	0.00%	12.00%	12.00%	0.0042%
Fidelity National Information Services I	FIS	40,013.24	0.17%	1.13%	18.00%	19.23%	0.0319%
Fiserv Inc	FISV	35,969.99	0.15%	0.00%	10.50%	10.50%	0.0157%
Fifth Third Bancorp	FITB	20,185.78	0.08%	3.52%	7.00%	10.64%	0.0089%
Foot Locker Inc	FL	4,694.41	0.02%	3.64%	12.00%	15.86%	0.0031%
FLIR Systems Inc	FLIR	7,305.11	0.03%	1.30%	12.00%	13.38%	0.0040%
Flowserve Corp	FLS	6,685.11	0.03%	1.49%	13.50%	15.09%	0.0042%
FleetCor Technologies Inc	FLT	23,940.72	0.10%	0.00%	12.50%	12.50%	0.0124%
FMC Corp	FMC	10,803.86	0.04%	2.01%	15.00%	17.16%	0.0077%
Fox Corp	FOXA	N/A	N/A	0.00%	N/A	N/A	N/A
First Republic Bank/CA	FRC	16,063.03	0.07%	0.79%	10.50%	11.33%	0.0075%
Federal Realty Investment Trust	FRT	9,976.97	0.04%	3.07%	4.00%	7.13%	0.0029%
TechnipFMC PLC	FTI	N/A	N/A	0.00%	N/A	N/A	N/A
Fortinet Inc	FTNT	13,133.66	0.05%	0.00%	25.00%	25.00%	0.0136%
Fortive Corp	FTV	27,074.70	N/A	0.35%	N/A	N/A	N/A
General Dynamics Corp	GD	51,407.66	0.21%	2.29%	6.00%	8.36%	0.0178%
General Electric Co	GE	92,702.18	0.38%	0.38%	3.50%	3.89%	0.0149%
Gilead Sciences Inc	GILD	87,358.19	0.36%	3.68%	-5.50%	-1.92%	-0.0070%
General Mills Inc	GIS	32,336.37	0.13%	3.67%	4.00%	7.74%	0.0104%
Coming Inc	GLW	25,899.84	0.11%	2.42%	15.00%	17.60%	0.0189%
General Motors Co	GM	52,423.80	0.22%	4.22%	2.50%	6.77%	0.0147%
Alphabet Inc	GOOGL	N/A	N/A	0.00%	N/A	N/A	N/A
Genuine Parts Co	GPC	15,159.98	0.06%	2.94%	8.50%	11.56%	0.0073%
Global Payments Inc	GPN	25,417.35	0.11%	0.03%	17.50%	17.53%	0.0185%
Gap Inc/The	GPS	6,841.80	0.03%	5.36%	6.00%	11.52%	0.0033%
Garmin Ltd	GRMN	15,518.09	0.06%	2.78%	10.00%	12.93%	0.0083%
Goldman Sachs Group Inc/The	GS	71,777.09	0.30%	1.74%	8.50%	10.31%	0.0307%
WW Grainger Inc	GWW	15,348.90	0.06%	2.08%	8.50%	10.67%	0.0068%
Halliburton Co	HAL	19,951.36	0.08%	3.15%	24.50%	28.04%	0.0232%
Hasbro Inc	HAS	13,580.72	0.06%	2.52%	7.50%	10.11%	0.0057%
Huntington Bancshares Inc/OH	HBAN	13,875.79	0.06%	4.53%	11.50%	16.29%	0.0094%
Hanesbrands Inc	HBI	6,343.82	0.03%	3.42%	4.00%	7.49%	0.0020%
HCA Healthcare Inc	HCA	43,935.41	0.18%	1.25%	12.50%	13.83%	0.0252%
HCP Inc	HCP	15,895.84	0.07%	4.45%	32.50%	37.67%	0.0248%
Home Depot Inc/The	HD	232,586.30	0.96%	2.58%	9.00%	11.70%	0.1127%
Hess Corp	HES	18,658.51	N/A	1.63%	N/A	N/A	N/A
HollyFrontier Corp	HFC	7,453.89	0.03%	3.14%	18.50%	21.93%	0.0058%
Hartford Financial Services Group Inc/Th	HIG	20,074.92	0.08%	2.16%	11.00%	13.28%	0.0110%
Huntington Ingalls Industries Inc	HII	9,350.02	0.04%	1.53%	7.00%	8.58%	0.0033%
Hilton Worldwide Holdings Inc	HLT	28,258.91	0.12%	0.62%	17.00%	17.67%	0.0207%
Harley-Davidson Inc	HOG	5,728.22	0.02%	4.17%	8.50%	12.85%	0.0030%
Hologic Inc	HOLX	13,190.10	0.05%	0.00%	18.50%	18.50%	0.0101%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Honeywell International Inc	HON	128,293.60	0.53%	1.86%	8.00%	9.93%	0.0528%
Helmerich & Payne Inc	HP	5,587.67	N/A	5.56%	N/A	N/A	N/A
Hewlett Packard Enterprise Co	HPE	20,193.48	0.08%	3.27%	6.50%	9.88%	0.0083%
HP Inc	HPQ	31,415.16	0.13%	3.21%	8.50%	11.85%	0.0154%
H&R Block Inc	HRB	5,749.35	0.02%	3.71%	7.00%	10.84%	0.0026%
Hormel Foods Corp	HRL	22,280.02	0.09%	2.07%	9.00%	11.16%	0.0103%
Harris Corp	HRS	23,543.58	0.10%	1.39%	12.00%	13.47%	0.0131%
Henry Schein Inc	HSIC	10,569.78	0.04%	0.00%	7.00%	7.00%	0.0031%
Host Hotels & Resorts Inc	HST	13,808.46	0.06%	4.29%	4.00%	8.38%	0.0048%
Hershey Co/The	HSY	28,715.29	0.12%	2.10%	6.00%	8.16%	0.0097%
Humana Inc	HUM	34,951.11	0.14%	0.85%	11.50%	12.40%	0.0180%
International Business Machines Corp	IBM	123,110.40	0.51%	4.69%	2.00%	6.74%	0.0344%
Intercontinental Exchange Inc	ICE	48,832.95	0.20%	1.27%	10.50%	11.84%	0.0240%
IDEXX Laboratories Inc	IDXX	23,482.69	0.10%	0.00%	13.00%	13.00%	0.0127%
International Flavors & Fragrances Inc	IFF	16,073.84	0.07%	2.04%	8.50%	10.63%	0.0071%
Illumina Inc	ILMN	52,709.79	0.22%	0.00%	14.00%	14.00%	0.0306%
Incyte Corp	INCY	18,553.77	N/A	0.00%	N/A	N/A	N/A
IHS Markit Ltd	INFO	23,938.03	0.10%	0.00%	17.00%	17.00%	0.0169%
Intel Corp	INTC	211,269.60	0.88%	2.67%	10.50%	13.31%	0.1165%
Intuit Inc	INTU	69,154.00	0.29%	0.71%	13.00%	13.76%	0.0394%
International Paper Co	IP	17,384.43	0.07%	4.59%	11.50%	16.35%	0.0118%
Interpublic Group of Cos Inc/The	IPG	8,700.64	0.04%	4.32%	11.00%	15.56%	0.0056%
IPG Photonics Corp	IPGP	7,679.95	0.03%	0.00%	10.50%	10.50%	0.0033%
IQVIA Holdings Inc	IQV	30,471.34	0.13%	0.00%	12.50%	12.50%	0.0158%
Ingersoll-Rand PLC	IR	30,412.44	0.13%	1.68%	12.00%	13.78%	0.0174%
Iron Mountain Inc	IRM	9,336.32	0.04%	7.50%	8.50%	16.32%	0.0063%
Intuitive Surgical Inc	ISRG	61,513.98	0.25%	0.00%	14.00%	14.00%	0.0357%
Gartner Inc	IT	14,451.12	0.06%	0.00%	14.00%	14.00%	0.0084%
Illinois Tool Works Inc	ITW	49,580.24	0.21%	2.63%	9.00%	11.75%	0.0241%
Invesco Ltd	IVZ	8,313.80	0.03%	5.88%	7.00%	13.19%	0.0045%
JB Hunt Transport Services Inc	JBHT	9,881.11	0.04%	1.17%	10.00%	11.23%	0.0046%
Johnson Controls International plc	JCI	35,653.34	0.15%	2.62%	2.00%	4.65%	0.0069%
Jacobs Engineering Group Inc	JEC	11,173.78	0.05%	0.83%	12.50%	13.38%	0.0062%
Jefferies Financial Group Inc	JEF	5,491.94	0.02%	2.72%	18.50%	21.47%	0.0049%
Jack Henry & Associates Inc	JKHY	10,676.65	0.04%	1.15%	10.50%	11.71%	0.0052%
Johnson & Johnson	JNJ	377,658.00	1.57%	2.71%	12.00%	14.87%	0.2328%
Juniper Networks Inc	JNPR	9,482.88	0.04%	2.82%	6.00%	8.90%	0.0035%
JPMorgan Chase & Co	JPM	357,453.40	1.48%	2.96%	8.50%	11.59%	0.1716%
Nordstrom Inc	JWN	5,134.27	0.02%	4.46%	6.50%	11.10%	0.0024%
Kellogg Co	K	18,764.60	0.08%	4.13%	4.50%	8.72%	0.0068%
KeyCorp	KEY	17,102.58	0.07%	4.33%	10.50%	15.06%	0.0107%
Keysight Technologies Inc	KEYS	16,583.84	0.07%	0.00%	16.00%	16.00%	0.0110%
Kraft Heinz Co/The	KHC	37,947.47	0.16%	5.20%	3.50%	8.79%	0.0138%
Kimco Realty Corp	KIM	8,061.17	0.03%	5.96%	5.00%	11.11%	0.0037%
KLA-Tencor Corp	KLAC	18,390.74	0.08%	2.64%	11.50%	14.29%	0.0109%
Kimberly-Clark Corp	KMB	46,862.70	0.19%	3.02%	7.00%	10.13%	0.0197%
Kinder Morgan Inc/DE	KMI	47,737.14	0.20%	4.74%	35.50%	41.08%	0.0813%
CarMax Inc	KMX	14,258.16	0.06%	0.00%	11.50%	11.50%	0.0068%
Coca-Cola Co/The	KO	220,484.90	0.91%	3.10%	6.50%	9.70%	0.0886%
Kroger Co/The	KR	18,457.74	0.08%	2.68%	4.50%	7.24%	0.0055%
Kohl's Corp	KSS	7,594.56	0.03%	5.72%	11.00%	17.03%	0.0054%
Kansas City Southern	KSU	11,872.58	0.05%	1.22%	12.00%	13.29%	0.0065%
Loews Corp	L	16,515.60	0.07%	0.46%	12.00%	12.49%	0.0085%
L Brands Inc	LB	6,601.92	0.03%	5.02%	-4.00%	0.92%	0.0003%
Leggett & Platt Inc	LEG	5,031.54	0.02%	4.17%	9.00%	13.36%	0.0028%
Lennar Corp	LEN	17,040.97	0.07%	0.30%	8.50%	8.81%	0.0062%
Laboratory Corp of America Holdings	LH	16,580.61	0.07%	0.00%	8.00%	8.00%	0.0055%
Linde PLC	LIN	110,009.40	N/A	1.85%	N/A	N/A	N/A
LKQ Corp	LKQ	8,373.69	0.03%	0.00%	10.00%	10.00%	0.0035%
L3 Technologies Inc	LLL	20,547.94	0.09%	1.31%	7.00%	8.36%	0.0071%
Eli Lilly & Co	LLY	112,189.20	0.46%	2.23%	11.50%	13.86%	0.0644%
Lockheed Martin Corp	LMT	102,505.10	0.42%	2.54%	11.50%	14.19%	0.0603%
Lincoln National Corp	LNC	12,976.96	0.05%	2.38%	9.00%	11.49%	0.0062%
Alliant Energy Corp	LNT	11,864.95	0.05%	2.84%	6.50%	9.43%	0.0046%
Lowe's Cos Inc	LOW	80,644.80	0.33%	2.17%	11.50%	13.79%	0.0461%
Lam Research Corp	LRCX	27,573.03	0.11%	2.39%	11.00%	13.52%	0.0155%
Southwest Airlines Co	LUV	27,978.71	0.12%	1.40%	11.00%	12.48%	0.0145%
Lamb Weston Holdings Inc	LW	8,979.13	N/A	1.30%	N/A	N/A	N/A
LyondellBasell Industries NV	LYB	32,066.53	0.13%	4.85%	5.50%	10.48%	0.0139%
Macy's Inc	M	6,770.47	0.03%	6.89%	3.50%	10.51%	0.0029%
Mastercard Inc	MA	273,192.90	1.13%	0.50%	16.00%	16.54%	0.1873%
Mid-America Apartment Communities Inc	MAA	13,659.00	0.06%	3.20%	-3.00%	0.15%	0.0001%
Macerich Co/The	MAC	4,815.67	0.02%	8.92%	3.00%	12.05%	0.0024%
Mariott International Inc/MD	MAR	45,682.76	0.19%	1.40%	12.50%	13.99%	0.0265%
Masco Corp	MAS	11,348.61	0.05%	1.29%	10.50%	11.86%	0.0056%
McDonald's Corp	MCD	156,620.60	0.65%	2.34%	8.50%	10.94%	0.0710%
Microchip Technology Inc	MCHP	20,332.95	0.08%	1.76%	10.50%	12.35%	0.0104%
McKesson Corp	MCK	25,814.40	0.11%	1.16%	9.00%	10.21%	0.0109%
Moody's Corp	MCO	38,799.60	0.16%	1.01%	11.00%	12.07%	0.0194%
Mondelez International Inc	MDLZ	80,076.86	0.33%	1.98%	8.50%	10.56%	0.0351%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Medtronic PLC	MDT	133,067.30	0.55%	2.11%	7.50%	9.69%	0.0534%
MetLife Inc	MET	46,900.93	0.19%	3.57%	7.50%	11.20%	0.0218%
MGM Resorts International	MGM	15,045.74	0.06%	1.86%	22.50%	24.57%	0.0153%
Mohawk Industries Inc	MHK	10,751.05	0.04%	0.00%	3.50%	3.50%	0.0016%
McCormick & Co Inc/MD	MKC	20,589.29	0.09%	1.48%	8.50%	10.04%	0.0086%
Martin Marietta Materials Inc	MLM	14,021.68	0.06%	0.88%	9.00%	9.92%	0.0058%
Marsh & McLennan Cos Inc	MMC	49,419.05	0.20%	1.87%	9.50%	11.46%	0.0235%
3M Co	MMM	100,263.70	0.42%	3.31%	8.50%	11.95%	0.0497%
Monster Beverage Corp	MNST	34,526.11	0.14%	0.00%	13.50%	13.50%	0.0193%
Altria Group Inc	MO	94,074.36	0.39%	6.37%	8.50%	15.14%	0.0590%
Mosaic Co/The	MOS	9,116.17	0.04%	0.89%	22.00%	22.99%	0.0087%
Marathon Petroleum Corp	MPC	34,650.65	0.14%	4.08%	11.50%	15.81%	0.0227%
Merck & Co Inc	MRK	218,527.80	0.91%	2.60%	8.50%	11.21%	0.1015%
Marathon Oil Corp	MRO	11,570.20	N/A	1.84%	N/A	N/A	N/A
Morgan Stanley	MS	73,273.38	0.30%	2.76%	10.00%	12.90%	0.0392%
MSCI Inc	MSCI	20,105.23	0.08%	1.06%	18.50%	19.66%	0.0164%
Microsoft Corp	MSFT	1,049,859.00	4.35%	1.34%	13.50%	14.93%	0.6496%
Motorola Solutions Inc	MSI	27,498.53	0.11%	1.37%	10.50%	11.94%	0.0136%
M&T Bank Corp	MTB	22,654.86	0.09%	2.41%	9.50%	12.02%	0.0113%
Mettler-Toledo International Inc	MTD	20,372.84	0.08%	0.00%	10.00%	10.00%	0.0084%
Micron Technology Inc	MU	40,228.70	0.17%	0.00%	11.50%	11.50%	0.0192%
Maxim Integrated Products Inc	MXIM	15,893.27	0.07%	3.15%	8.00%	11.28%	0.0074%
Mylan NV	MYL	9,404.59	0.04%	0.00%	6.50%	6.50%	0.0025%
Noble Energy Inc	NBL	10,505.25	N/A	2.21%	N/A	N/A	N/A
Norwegian Cruise Line Holdings Ltd	NCLH	11,320.69	0.05%	0.00%	18.00%	16.00%	0.0075%
Nasdaq Inc	NDAQ	16,195.62	0.07%	1.92%	8.00%	10.00%	0.0067%
NextEra Energy Inc	NEE	98,856.02	0.41%	2.50%	10.00%	12.63%	0.0517%
Newmont Goldcorp Corp	NEM	20,180.46	0.08%	1.49%	2.50%	4.01%	0.0034%
Netflix Inc	NFLX	159,666.90	0.66%	0.00%	32.00%	32.00%	0.2117%
NiSource Inc	NI	10,973.75	0.05%	2.72%	12.50%	15.39%	0.0070%
NIKE Inc	NKE	134,082.50	0.56%	1.03%	14.50%	15.60%	0.0867%
Nektar Therapeutics	NKTR	6,165.93	N/A	0.00%	N/A	N/A	N/A
Nielsen Holdings PLC	NLSN	8,336.34	0.03%	5.97%	45.50%	52.83%	0.0183%
Northrop Grumman Corp	NOC	55,008.60	0.23%	1.63%	9.50%	11.21%	0.0255%
National Oilwell Varco Inc	NOV	8,382.44	N/A	0.92%	N/A	N/A	N/A
NRG Energy Inc	NRG	9,374.53	N/A	0.34%	N/A	N/A	N/A
Norfolk Southern Corp	NSC	52,211.98	0.22%	1.75%	15.00%	16.88%	0.0365%
NetApp Inc	NTAP	15,479.49	0.08%	3.06%	18.50%	21.84%	0.0140%
Northern Trust Corp	NTRS	18,663.63	0.08%	2.80%	8.50%	11.42%	0.0088%
Nucor Corp	NUE	16,400.53	0.07%	2.97%	13.00%	16.16%	0.0110%
NVIDIA Corp	NVDA	93,846.91	0.39%	0.42%	11.50%	11.94%	0.0465%
Newell Brands Inc	NWL	6,376.12	0.03%	6.11%	4.50%	10.75%	0.0028%
News Corp	NWSA	7,933.62	N/A	1.48%	N/A	N/A	N/A
Realty Income Corp	O	22,261.25	0.09%	3.75%	4.50%	8.33%	0.0077%
ONEOK Inc	OKE	27,968.14	0.12%	5.42%	16.00%	21.85%	0.0253%
Omnicom Group Inc	OMC	17,774.16	0.07%	3.28%	6.50%	9.89%	0.0073%
Oracle Corp	ORCL	196,216.60	0.81%	1.69%	10.00%	11.77%	0.0957%
O'Reilly Automotive Inc	ORLY	29,416.34	0.12%	0.00%	12.00%	12.00%	0.0146%
Occidental Petroleum Corp	OXY	38,366.14	0.16%	6.14%	27.50%	34.48%	0.0548%
Paychex Inc	PAYX	31,469.06	0.13%	2.83%	10.50%	13.48%	0.0178%
People's United Financial Inc	PBCT	6,525.14	0.03%	4.34%	9.00%	13.54%	0.0037%
PACCAR Inc	PCAR	25,027.69	0.10%	4.57%	7.50%	12.24%	0.0127%
Public Service Enterprise Group Inc	PEG	30,809.52	0.13%	3.11%	6.00%	9.20%	0.0118%
PepsiCo Inc	PEP	188,068.30	0.78%	2.85%	6.50%	9.44%	0.0736%
Pfizer Inc	PFE	242,285.20	1.00%	3.30%	11.00%	14.48%	0.1454%
Principal Financial Group Inc	PFG	16,057.70	0.07%	3.74%	5.50%	9.34%	0.0062%
Procter & Gamble Co/The	PG	280,280.80	1.16%	2.67%	8.50%	11.28%	0.1311%
Progressive Corp/The	PGR	47,812.08	0.20%	0.49%	15.50%	16.03%	0.0318%
Parker-Hannifin Corp	PH	22,075.28	0.09%	2.05%	11.50%	13.67%	0.0125%
PulteGroup Inc	PHM	9,074.59	0.04%	1.38%	8.00%	9.44%	0.0035%
Packaging Corp of America	PKG	8,939.70	0.04%	3.34%	6.00%	9.44%	0.0035%
PerkinElmer Inc	PKI	10,652.19	0.04%	0.29%	11.00%	11.31%	0.0050%
Prologis Inc	PLD	51,930.72	0.22%	2.62%	6.50%	9.21%	0.0198%
Philip Morris International Inc	PM	120,153.50	0.50%	5.91%	7.00%	13.12%	0.0653%
PNC Financial Services Group Inc/The	PNC	60,070.80	0.25%	2.86%	8.00%	10.97%	0.0273%
Pentair PLC	PNR	6,390.85	0.03%	1.94%	6.50%	8.50%	0.0023%
Pinnacle West Capital Corp	PNW	11,066.02	0.05%	3.08%	5.00%	8.16%	0.0037%
PPG Industries Inc	PPG	27,191.75	0.11%	1.67%	7.50%	9.23%	0.0104%
PPL Corp	PPL	22,752.04	0.09%	5.23%	1.50%	6.77%	0.0064%
Penigo Co PLC	PRGO	5,913.28	0.02%	1.93%	2.50%	4.45%	0.0011%
Prudential Financial Inc	PRU	40,787.96	0.17%	4.00%	7.00%	11.14%	0.0188%
Public Storage	PSA	42,223.29	0.17%	3.46%	5.50%	9.06%	0.0158%
Phillips 66	PSX	41,196.04	0.17%	4.07%	10.00%	14.27%	0.0244%
PVH Corp	PVH	6,792.65	0.03%	0.17%	9.50%	9.68%	0.0027%
Quanta Services Inc	PWR	5,578.10	0.02%	0.41%	15.50%	15.94%	0.0037%
Pioneer Natural Resources Co	PXD	25,994.25	0.11%	0.42%	37.50%	38.00%	0.0409%
PayPal Holdings Inc	PYPL	139,221.90	0.58%	0.00%	19.00%	19.00%	0.1096%
QUALCOMM Inc	QCOM	88,306.37	0.37%	3.41%	10.50%	14.09%	0.0516%
Qorvo Inc	QRVO	7,975.38	N/A	0.00%	N/A	N/A	N/A
Royal Caribbean Cruises Ltd	RCL	24,881.97	0.10%	2.36%	12.50%	15.01%	0.0155%

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Everest Re Group Ltd	RE	10,297.12	0.04%	2.30%	9.00%	11.40%	0.0049%
Regency Centers Corp	REG	11,736.56	0.05%	3.35%	16.00%	19.62%	0.0095%
Regeneron Pharmaceuticals Inc	REGN	34,506.72	0.14%	0.00%	10.00%	10.00%	0.0143%
Regions Financial Corp	RF	14,788.84	0.06%	3.97%	10.50%	14.68%	0.0090%
Robert Half International Inc	RHI	6,782.16	0.03%	2.20%	9.50%	11.80%	0.0033%
Red Hat Inc	RHT	33,282.79	0.14%	0.00%	15.50%	15.50%	0.0214%
Raymond James Financial Inc	RJF	11,332.02	0.05%	1.74%	10.00%	11.83%	0.0056%
Ralph Lauren Corp	RL	8,974.47	0.04%	2.39%	7.50%	9.98%	0.0037%
ResMed Inc	RMD	17,670.26	0.07%	1.20%	14.50%	15.79%	0.0116%
Rockwell Automation Inc	ROK	19,298.92	0.08%	2.40%	9.50%	12.01%	0.0096%
Rollins Inc	ROL	12,436.31	0.05%	1.11%	13.00%	14.18%	0.0073%
Roper Technologies Inc	ROP	38,172.99	0.16%	0.50%	11.50%	12.03%	0.0190%
Ross Stores Inc	ROST	38,195.24	0.16%	1.00%	11.00%	12.06%	0.0191%
Republic Services Inc	RSG	30,799.44	0.13%	1.81%	11.50%	13.41%	0.0171%
Raytheon Co	RTN	50,999.20	0.21%	2.07%	10.00%	12.17%	0.0257%
SBA Communications Corp	SBAC	26,453.74	0.11%	0.00%	28.50%	28.50%	0.0312%
Starbucks Corp	SBUX	102,474.90	0.42%	1.89%	13.50%	15.52%	0.0659%
Charles Schwab Corp/The	SCHW	53,416.07	0.22%	1.70%	12.00%	13.80%	0.0306%
Sealed Air Corp	SEE	6,801.73	0.03%	1.47%	22.50%	24.14%	0.0068%
Sherwin-Williams Co/The	SHW	43,541.76	0.18%	0.96%	10.50%	11.51%	0.0208%
SVB Financial Group	SIVB	11,214.70	0.05%	0.00%	19.50%	19.50%	0.0091%
JM Smucker Co/The	SJM	13,781.18	0.06%	2.86%	5.50%	8.44%	0.0048%
Schlumberger Ltd	SLB	52,980.92	0.22%	5.23%	24.00%	29.86%	0.0656%
SL Green Realty Corp	SLG	7,292.64	0.03%	4.04%	4.00%	8.12%	0.0025%
Snap-on Inc	SNA	9,307.15	0.04%	2.34%	7.00%	9.42%	0.0036%
Synopsys Inc	SNPS	18,552.95	0.08%	0.00%	10.00%	10.00%	0.0077%
Southern Co/The	SO	58,277.38	0.24%	4.46%	3.50%	8.04%	0.0194%
Simon Property Group Inc	SPG	50,940.13	0.21%	5.28%	5.50%	10.93%	0.0231%
S&P Global Inc	SPGI	56,918.01	0.24%	0.99%	13.00%	14.05%	0.0332%
Sempra Energy	SRE	38,447.68	0.16%	2.82%	11.00%	13.98%	0.0223%
SunTrust Banks Inc	STI	27,763.12	0.12%	3.20%	10.00%	13.36%	0.0154%
State Street Corp	STT	20,874.11	0.09%	3.50%	6.00%	9.61%	0.0083%
Seagate Technology PLC	STX	12,794.63	0.05%	5.46%	6.00%	11.62%	0.0062%
Constellation Brands Inc	STZ	35,264.59	0.15%	1.64%	9.50%	11.22%	0.0164%
Stanley Black & Decker Inc	SWK	22,178.22	0.09%	1.85%	9.50%	11.44%	0.0105%
Skyworks Solutions Inc	SWKS	13,097.57	0.05%	2.00%	7.50%	9.58%	0.0052%
Synchrony Financial	SYF	23,585.81	0.10%	2.57%	10.00%	12.70%	0.0124%
Stryker Corp	SYK	75,988.09	0.31%	1.02%	15.00%	16.10%	0.0507%
Symantec Corp	SYMC	13,137.84	0.05%	1.46%	9.00%	10.53%	0.0057%
Sysco Corp	SYU	36,086.83	0.15%	2.20%	12.00%	14.33%	0.0214%
AT&T Inc	T	237,451.70	0.98%	6.33%	5.50%	12.00%	0.1181%
Molson Coors Brewing Co	TAP	11,897.67	0.05%	3.18%	5.50%	8.77%	0.0043%
TransDigm Group Inc	TDG	26,396.66	0.11%	0.00%	11.00%	11.00%	0.0120%
TE Connectivity Ltd	TEL	32,361.33	0.13%	1.92%	8.50%	10.50%	0.0141%
Teleflex Inc	TFX	15,845.63	0.07%	0.41%	15.00%	15.44%	0.0101%
Target Corp	TGT	44,166.42	0.18%	3.06%	8.00%	11.18%	0.0205%
Tiffany & Co	TIF	11,668.97	0.05%	2.50%	10.50%	13.13%	0.0063%
TJX Cos Inc/The	TJX	65,277.92	0.27%	1.71%	13.50%	15.33%	0.0415%
Torchmark Corp	TMK	9,824.09	0.04%	0.77%	10.00%	10.81%	0.0044%
Thermo Fisher Scientific Inc	TMO	117,330.40	0.49%	0.26%	10.00%	10.27%	0.0499%
Tapestry Inc	TPR	8,958.29	0.04%	4.37%	12.00%	16.63%	0.0062%
TripAdvisor Inc	TRIP	6,498.25	0.03%	0.00%	18.00%	18.00%	0.0048%
T Rowe Price Group Inc	TROW	25,910.58	0.11%	2.81%	10.00%	12.95%	0.0139%
Travelers Cos Inc/The	TRV	39,858.56	0.17%	2.16%	9.00%	11.26%	0.0186%
Tractor Supply Co	TSCO	12,884.36	0.05%	1.31%	11.50%	12.89%	0.0069%
Tyson Foods Inc	TSN	28,699.95	0.12%	1.97%	6.50%	8.53%	0.0101%
Total System Services Inc	TSS	22,951.28	0.10%	0.40%	10.00%	10.42%	0.0099%
Take-Two Interactive Software Inc	TTWO	12,512.67	0.05%	0.00%	28.00%	28.00%	0.0145%
Twitter Inc	TWTR	27,214.84	N/A	0.00%	N/A	N/A	N/A
Texas Instruments Inc	TXN	105,812.00	0.44%	2.73%	6.00%	8.81%	0.0386%
Textron Inc	TXT	12,213.02	0.05%	0.15%	13.00%	13.16%	0.0067%
Under Armour Inc	UAA	11,985.43	0.05%	0.00%	12.00%	12.00%	0.0060%
United Continental Holdings Inc	UAL	23,028.57	0.10%	0.00%	8.50%	8.50%	0.0081%
UDR Inc	UDR	12,829.42	0.05%	2.94%	1.50%	4.46%	0.0024%
Universal Health Services Inc	UHS	11,209.81	0.05%	0.32%	11.00%	11.34%	0.0053%
Ulta Beauty Inc	ULTA	20,994.07	0.09%	0.00%	19.00%	19.00%	0.0165%
UnitedHealth Group Inc	UNH	236,115.30	0.98%	1.74%	13.50%	15.36%	0.1503%
Unum Group	UNM	6,960.99	0.03%	3.48%	9.00%	12.64%	0.0036%
Union Pacific Corp	UNP	118,616.80	0.49%	2.10%	14.50%	16.75%	0.0823%
United Parcel Service Inc	UPS	89,027.40	0.37%	3.71%	8.50%	12.37%	0.0456%
United Rentals Inc	URI	10,304.80	0.04%	0.00%	14.50%	14.50%	0.0062%
US Bancorp	USB	83,405.77	0.35%	3.01%	6.00%	9.10%	0.0315%
United Technologies Corp	UTX	112,123.70	0.46%	2.26%	9.00%	11.36%	0.0528%
Visa Inc	V	347,132.50	1.44%	0.62%	15.00%	15.67%	0.2254%
Varian Medical Systems Inc	VAR	12,436.03	0.05%	0.00%	10.00%	10.00%	0.0052%
VF Corp	VFC	35,042.77	0.15%	2.30%	10.00%	12.42%	0.0180%
Viacom Inc	VIAB	12,385.34	0.05%	2.61%	6.00%	8.69%	0.0045%
Valero Energy Corp	VLO	33,273.93	0.14%	4.51%	11.50%	16.27%	0.0224%
Vulcan Materials Co	VMC	17,658.95	0.07%	0.93%	14.00%	15.00%	0.0110%
Vornado Realty Trust	VNO	12,880.18	0.05%	3.91%	-3.50%	0.34%	0.0002%

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Verisk Analytics Inc	VRSK	23,894.98	0.10%	0.69%	9.50%	10.22%	0.0101%
VeriSign Inc	VRSN	25,193.89	0.10%	0.00%	10.50%	10.50%	0.0110%
Vertex Pharmaceuticals Inc	VRTX	46,699.46	0.19%	0.00%	50.00%	50.00%	0.0968%
Ventas Inc	VTR	25,587.61	0.11%	4.50%	3.00%	7.57%	0.0080%
Verizon Communications Inc	VZ	237,141.40	0.98%	4.27%	4.00%	8.36%	0.0821%
Wabtec Corp	WAB	11,770.11	0.05%	0.66%	13.50%	14.20%	0.0069%
Waters Corp	WAT	14,856.91	0.06%	0.00%	10.50%	10.50%	0.0065%
Walgreens Boots Alliance Inc	WBA	52,439.30	0.22%	3.33%	9.50%	12.99%	0.0282%
WellCare Health Plans Inc	WCG	14,852.17	0.06%	0.00%	21.50%	21.50%	0.0132%
Western Digital Corp	WDC	11,614.52	0.05%	5.05%	0.50%	5.56%	0.0027%
WEC Energy Group Inc	WEC	26,935.25	0.11%	2.85%	6.00%	8.94%	0.0100%
Welltower Inc	WELL	30,687.01	0.13%	4.15%	8.00%	12.32%	0.0157%
Wells Fargo & Co	WFC	206,917.90	0.86%	4.01%	5.00%	9.11%	0.0781%
Whirlpool Corp	WHR	8,898.12	0.04%	3.40%	6.50%	10.01%	0.0037%
Willis Towers Watson PLC	WLTW	24,759.41	0.10%	1.36%	16.50%	17.97%	0.0184%
Waste Management Inc	WM	49,293.82	0.20%	1.77%	8.00%	9.84%	0.0201%
Williams Cos Inc/The	WMB	34,053.18	0.14%	5.56%	20.00%	26.12%	0.0369%
Walmart Inc	WMT	315,735.90	1.31%	1.94%	7.00%	9.01%	0.1179%
Westrock Co	WRK	9,376.85	0.04%	4.99%	9.50%	14.73%	0.0057%
Western Union Co/The	WU	8,610.38	0.04%	4.02%	6.00%	10.14%	0.0036%
Weyerhaeuser Co	WY	19,781.01	0.08%	5.12%	17.50%	23.07%	0.0189%
Wynn Resorts Ltd	WYNN	13,182.97	0.05%	3.27%	18.00%	21.56%	0.0118%
Cimarex Energy Co	XEC	5,770.12	0.02%	1.41%	18.00%	19.54%	0.0047%
Xcel Energy Inc	XEL	31,554.29	0.13%	2.69%	5.50%	8.26%	0.0108%
Xilinx Inc	XLNX	29,053.10	0.12%	1.29%	11.50%	12.86%	0.0155%
Exxon Mobil Corp	XOM	324,144.10	1.34%	4.54%	14.50%	19.37%	0.2602%
DENTSPLY SIRONA Inc	XRAY	12,852.83	0.05%	0.61%	3.00%	3.62%	0.0019%
Xerox Corp	XRX	8,026.27	0.03%	2.82%	10.50%	13.47%	0.0045%
Xylem Inc/NY	XYL	14,985.67	0.06%	1.15%	14.00%	15.23%	0.0095%
Yum! Brands Inc	YUM	33,849.72	0.14%	1.57%	12.00%	13.66%	0.0192%
Zimmer Biomet Holdings Inc	ZBH	24,516.61	0.10%	0.82%	4.50%	5.34%	0.0054%
Zions Bancorp NA	ZION	8,103.58	0.03%	2.84%	10.00%	12.98%	0.0044%
Zoetis Inc	ZTS	54,115.57	0.22%	0.58%	13.00%	13.62%	0.0305%
Total Market Capitalization:		24,130,896.91					14.78%

Notes:

[1] Equals sum of Col. [9]

[2] Source: Bloomberg Professional

[3] Equals [1] - [2]

[4] Source: Value Line

[5] Equals weight in S&P 500 based on market capitalization

[6] Source: Value Line

[7] Source: Value Line

[8] Equals $([6] \times (1 + (0.5 \times [7]))) + [7]$

[9] Equals Col. [5] x Col. [8]

Bloomberg and Value Line Beta Coefficients

Company	Ticker	[1]	[2]
		Bloomberg	Value Line
Atmos Energy Corporation	ATO	0.501	0.650
Chesapeake Utilities Corporation	CPK	0.614	0.650
New Jersey Resources Corporation	NJR	0.624	0.700
Northwest Natural Holding Company	NWN	0.558	0.600
ONE Gas, Inc.	OGS	0.535	0.650
South Jersey Industries, Inc.	SJI	0.708	0.800
Spire Inc.	SR	0.479	0.650
Southwest Gas Corporation	SWX	0.582	0.700
Mean		0.575	0.675

Notes:

[1] Source: Bloomberg Professional

[2] Source: Value Line

Capital Asset Pricing Model Results
Bloomberg and Value Line Derived Market Risk Premium

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
			Ex-Ante Market Risk Premium		CAPM Result		ECAPM Result	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT								
Current 30-Year Treasury [9]	2.63%	0.575	12.25%	12.15%	9.68%	9.62%	10.98%	10.91%
Near Term Projected 30-Year Treasury [10]	2.70%	0.575	12.25%	12.15%	9.75%	9.69%	11.05%	10.98%
Long Term Projected 30-Year Treasury [11]	3.70%	0.575	12.25%	12.15%	10.75%	10.69%	12.05%	11.98%
Mean					10.06%	10.00%	11.36%	11.29%

			Ex-Ante Market Risk Premium		CAPM Result		ECAPM Result	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT								
Current 30-Year Treasury [9]	2.63%	0.675	12.25%	12.15%	10.90%	10.83%	11.89%	11.82%
Near Term Projected 30-Year Treasury [10]	2.70%	0.675	12.25%	12.15%	10.97%	10.90%	11.96%	11.89%
Long Term Projected 30-Year Treasury [11]	3.70%	0.675	12.25%	12.15%	11.97%	11.90%	12.96%	12.89%
Mean					11.28%	11.21%	12.27%	12.20%

Notes:

[1] See Notes [9], [10], and [11]

[2] Source: Exhibit RBH-R-4

[3] Source: Exhibit RBH-R-3

[4] Source: Exhibit RBH-R-3

[5] Equals Col. [1] + (Col. [2] x Col. [3])

[6] Equals Col. [1] + (Col. [2] x Col. [4])

[7] Equals Col. [1] + (0.75 x Col. [2] x Col. [3]) + (0.25 x Col. [3])

[8] Equals Col. [1] + (0.75 x Col. [2] x Col. [4]) + (0.25 x Col. [4])

[9] Source: Bloomberg Professional

[10] Source: Blue Chip Financial Forecasts, Vol. 38, No. 7, July 1, 2019, at 2.

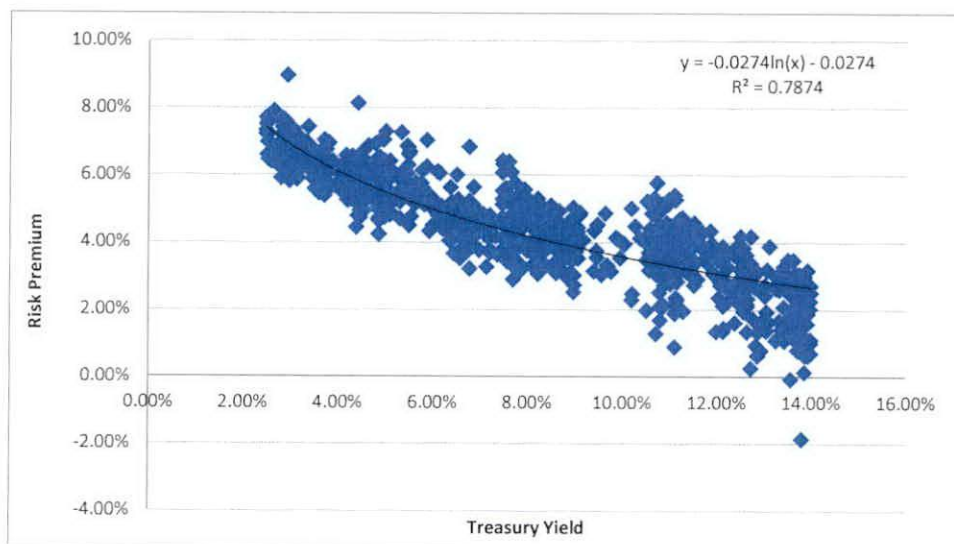
[11] Source: Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14.

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I/A

Bond Yield Plus Risk Premium

[1]	[2]	[3]	[4]	[5]
Constant	Slope	30-Year Treasury Yield	Risk Premium	Return on Equity
-2.74%	-2.74%			
Current 30-Year Treasury		2.63%	7.24%	9.87%
Near Term Projected 30-Year Treasury		2.70%	7.17%	9.87%
Long Term Projected 30-Year Treasury		3.70%	6.31%	10.01%



Notes:

[1] Constant of regression equation

[2] Slope of regression equation

[3] Source: Current = Bloomberg Professional

Near Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 7, July 1, 2019, at 2.

Long Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1 2019, at 14.

[4] Equals [1] + $\ln([3]) \times [2]$

[5] Equals [3] + [4]

[6] Source: S&P Global Market Intelligence

[7] Source: S&P Global Market Intelligence

[8] Source: Bloomberg Professional, equals 186-trading day average (i.e. lag period)

[9] Equals [7] - [8]

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/3/1980	12.55%	9.40%	3.15%
1/4/1980	13.75%	9.40%	4.35%
1/14/1980	13.20%	9.45%	3.75%
1/18/1980	14.00%	9.48%	4.52%
1/31/1980	12.61%	9.56%	3.05%
2/8/1980	14.50%	9.63%	4.87%
2/14/1980	13.00%	9.68%	3.32%
2/15/1980	13.00%	9.69%	3.31%
2/29/1980	14.00%	9.86%	4.14%
3/5/1980	14.00%	9.91%	4.09%
3/7/1980	13.50%	9.95%	3.55%
3/14/1980	14.00%	10.04%	3.96%
3/27/1980	12.69%	10.21%	2.48%
4/1/1980	14.75%	10.27%	4.48%
4/29/1980	12.50%	10.51%	1.99%
5/7/1980	14.27%	10.56%	3.71%
5/8/1980	13.75%	10.57%	3.18%
5/19/1980	15.50%	10.63%	4.87%
5/27/1980	14.60%	10.66%	3.94%
5/29/1980	16.00%	10.68%	5.32%
6/10/1980	13.78%	10.72%	3.06%
6/25/1980	14.25%	10.74%	3.51%
7/9/1980	14.51%	10.78%	3.73%
7/17/1980	12.90%	10.79%	2.11%
7/18/1980	13.80%	10.80%	3.00%
7/22/1980	14.10%	10.80%	3.30%
7/23/1980	14.19%	10.79%	3.40%
8/1/1980	12.50%	10.80%	1.70%
8/11/1980	14.85%	10.82%	4.03%
8/21/1980	13.03%	10.85%	2.18%
8/28/1980	13.61%	10.88%	2.73%
8/28/1980	14.00%	10.88%	3.12%
9/4/1980	14.00%	10.90%	3.10%
9/24/1980	15.00%	10.99%	4.01%
10/9/1980	14.50%	11.06%	3.44%
10/9/1980	14.50%	11.06%	3.44%
10/24/1980	14.00%	11.09%	2.91%
10/27/1980	15.20%	11.10%	4.10%
10/27/1980	15.20%	11.10%	4.10%
10/28/1980	12.00%	11.10%	0.90%
10/28/1980	13.00%	11.10%	1.90%
10/31/1980	14.50%	11.12%	3.38%
11/4/1980	15.00%	11.12%	3.88%
11/6/1980	14.35%	11.13%	3.22%
11/10/1980	13.25%	11.14%	2.11%
11/17/1980	15.50%	11.14%	4.36%
11/19/1980	13.50%	11.13%	2.37%
12/5/1980	14.60%	11.13%	3.47%
12/8/1980	16.40%	11.13%	5.27%
12/12/1980	15.45%	11.14%	4.31%
12/17/1980	14.20%	11.15%	3.05%
12/17/1980	14.40%	11.15%	3.25%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/18/1980	14.00%	11.16%	2.84%
12/22/1980	13.45%	11.15%	2.30%
12/26/1980	14.00%	11.14%	2.86%
12/30/1980	14.50%	11.13%	3.37%
12/31/1980	14.56%	11.13%	3.43%
1/7/1981	14.30%	11.13%	3.17%
1/12/1981	14.95%	11.14%	3.81%
1/26/1981	15.25%	11.20%	4.05%
1/30/1981	13.25%	11.24%	2.01%
2/11/1981	14.50%	11.34%	3.16%
2/20/1981	14.50%	11.40%	3.10%
3/12/1981	15.65%	11.61%	4.04%
3/25/1981	15.30%	11.75%	3.55%
4/1/1981	15.30%	11.83%	3.47%
4/9/1981	15.00%	11.92%	3.08%
4/29/1981	13.50%	12.13%	1.37%
4/29/1981	14.25%	12.13%	2.12%
4/30/1981	13.60%	12.15%	1.45%
4/30/1981	15.00%	12.15%	2.85%
5/21/1981	14.00%	12.38%	1.62%
6/3/1981	14.67%	12.46%	2.21%
6/22/1981	16.00%	12.58%	3.42%
6/25/1981	14.75%	12.61%	2.14%
7/2/1981	14.00%	12.65%	1.35%
7/10/1981	16.00%	12.70%	3.30%
7/14/1981	16.90%	12.72%	4.18%
7/21/1981	15.78%	12.78%	3.00%
7/27/1981	13.77%	12.83%	0.94%
7/27/1981	15.50%	12.83%	2.67%
7/31/1981	13.50%	12.87%	0.63%
7/31/1981	14.20%	12.87%	1.33%
8/12/1981	13.72%	12.94%	0.78%
8/12/1981	13.72%	12.94%	0.78%
8/12/1981	14.41%	12.94%	1.47%
8/25/1981	15.45%	13.02%	2.43%
8/27/1981	14.43%	13.05%	1.38%
8/28/1981	15.00%	13.06%	1.94%
9/23/1981	14.34%	13.25%	1.09%
9/24/1981	16.25%	13.26%	2.99%
9/29/1981	14.50%	13.31%	1.19%
9/30/1981	15.94%	13.33%	2.61%
10/2/1981	14.80%	13.37%	1.43%
10/12/1981	16.25%	13.43%	2.82%
10/20/1981	15.25%	13.51%	1.74%
10/20/1981	16.50%	13.51%	2.99%
10/20/1981	17.00%	13.51%	3.49%
10/23/1981	15.50%	13.55%	1.95%
10/26/1981	13.50%	13.56%	-0.06%
10/29/1981	16.50%	13.60%	2.90%
11/4/1981	15.33%	13.63%	1.70%
11/6/1981	15.17%	13.64%	1.53%
11/12/1981	15.00%	13.65%	1.35%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/25/1981	15.25%	13.66%	1.59%
11/25/1981	16.10%	13.66%	2.44%
11/25/1981	16.10%	13.66%	2.44%
11/30/1981	16.75%	13.66%	3.09%
12/1/1981	15.70%	13.66%	2.04%
12/1/1981	16.00%	13.66%	2.34%
12/15/1981	15.81%	13.70%	2.11%
12/17/1981	14.75%	13.71%	1.04%
12/22/1981	15.70%	13.72%	1.98%
12/22/1981	16.00%	13.72%	2.28%
12/30/1981	16.00%	13.75%	2.25%
12/30/1981	16.25%	13.75%	2.50%
1/4/1982	15.50%	13.75%	1.75%
1/14/1982	11.95%	13.81%	-1.86%
1/25/1982	16.25%	13.84%	2.41%
1/27/1982	16.84%	13.85%	2.99%
1/31/1982	14.00%	13.86%	0.14%
2/2/1982	16.24%	13.86%	2.38%
2/8/1982	15.50%	13.88%	1.62%
2/9/1982	14.95%	13.88%	1.07%
2/9/1982	15.75%	13.88%	1.87%
2/11/1982	16.00%	13.89%	2.11%
3/1/1982	15.96%	13.91%	2.05%
3/3/1982	15.00%	13.92%	1.08%
3/8/1982	17.10%	13.92%	3.18%
3/26/1982	16.00%	13.97%	2.03%
3/31/1982	16.25%	13.98%	2.27%
4/1/1982	16.50%	13.98%	2.52%
4/6/1982	15.00%	13.99%	1.01%
4/9/1982	16.50%	13.99%	2.51%
4/12/1982	15.10%	13.99%	1.11%
4/12/1982	16.70%	13.99%	2.71%
4/18/1982	14.70%	13.99%	0.71%
4/27/1982	15.00%	13.97%	1.03%
5/10/1982	14.57%	13.94%	0.63%
5/14/1982	15.80%	13.92%	1.88%
5/20/1982	15.82%	13.91%	1.91%
5/21/1982	15.50%	13.90%	1.60%
5/25/1982	16.25%	13.89%	2.36%
6/2/1982	14.50%	13.86%	0.64%
6/7/1982	16.00%	13.85%	2.15%
6/23/1982	15.50%	13.81%	1.69%
6/25/1982	16.50%	13.81%	2.69%
7/1/1982	15.55%	13.79%	1.76%
7/1/1982	16.00%	13.79%	2.21%
7/2/1982	15.10%	13.78%	1.32%
7/13/1982	16.80%	13.75%	3.05%
7/22/1982	14.50%	13.71%	0.79%
7/28/1982	16.10%	13.67%	2.43%
7/30/1982	14.82%	13.66%	1.16%
8/4/1982	15.58%	13.64%	1.94%
8/6/1982	16.50%	13.63%	2.87%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
8/11/1982	17.11%	13.62%	3.49%
8/25/1982	16.00%	13.59%	2.41%
8/30/1982	16.25%	13.58%	2.67%
9/3/1982	15.50%	13.57%	1.93%
9/9/1982	16.04%	13.55%	2.49%
9/15/1982	16.04%	13.52%	2.52%
9/17/1982	15.25%	13.51%	1.74%
9/29/1982	14.50%	13.43%	1.07%
9/30/1982	14.74%	13.42%	1.32%
9/30/1982	15.50%	13.42%	2.08%
9/30/1982	16.50%	13.42%	3.08%
9/30/1982	16.70%	13.42%	3.28%
10/1/1982	16.50%	13.40%	3.10%
10/8/1982	15.00%	13.33%	1.67%
10/15/1982	15.90%	13.25%	2.65%
10/19/1982	15.90%	13.22%	2.68%
10/27/1982	17.00%	13.12%	3.88%
10/28/1982	14.75%	13.10%	1.65%
11/2/1982	16.25%	13.07%	3.18%
11/4/1982	15.75%	13.02%	2.73%
11/5/1982	14.73%	13.00%	1.73%
11/17/1982	16.00%	12.86%	3.14%
11/23/1982	15.50%	12.79%	2.71%
11/24/1982	14.50%	12.77%	1.73%
11/24/1982	16.02%	12.77%	3.25%
11/30/1982	12.98%	12.72%	0.26%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.65%	12.72%	2.93%
11/30/1982	16.00%	12.72%	3.28%
11/30/1982	16.10%	12.72%	3.38%
12/3/1982	15.33%	12.68%	2.65%
12/8/1982	15.75%	12.63%	3.12%
12/13/1982	16.00%	12.58%	3.42%
12/14/1982	16.40%	12.56%	3.84%
12/17/1982	16.25%	12.52%	3.73%
12/20/1982	15.00%	12.50%	2.50%
12/21/1982	15.70%	12.49%	3.21%
12/28/1982	15.25%	12.42%	2.83%
12/28/1982	15.25%	12.42%	2.83%
12/29/1982	16.25%	12.40%	3.85%
12/29/1982	16.25%	12.40%	3.85%
1/11/1983	15.90%	12.25%	3.65%
1/12/1983	15.50%	12.24%	3.26%
1/18/1983	15.00%	12.18%	2.82%
1/24/1983	15.50%	12.13%	3.37%
1/24/1983	16.00%	12.13%	3.87%
1/28/1983	14.90%	12.07%	2.83%
1/31/1983	15.00%	12.06%	2.94%
2/10/1983	15.00%	11.97%	3.03%
2/25/1983	15.70%	11.83%	3.87%
3/2/1983	15.25%	11.78%	3.47%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
3/16/1983	16.00%	11.61%	4.39%
3/21/1983	14.96%	11.55%	3.41%
3/23/1983	15.40%	11.52%	3.88%
3/23/1983	16.10%	11.52%	4.58%
3/24/1983	15.00%	11.50%	3.50%
4/12/1983	13.25%	11.29%	1.96%
4/29/1983	15.05%	11.08%	3.97%
5/3/1983	15.40%	11.05%	4.35%
5/9/1983	15.50%	10.99%	4.51%
5/19/1983	14.85%	10.89%	3.96%
5/31/1983	14.00%	10.83%	3.17%
6/2/1983	14.50%	10.81%	3.69%
6/7/1983	14.50%	10.79%	3.71%
6/9/1983	14.85%	10.78%	4.07%
6/20/1983	14.15%	10.73%	3.42%
6/20/1983	16.50%	10.73%	5.77%
6/27/1983	14.50%	10.71%	3.79%
6/30/1983	14.80%	10.70%	4.10%
6/30/1983	15.90%	10.70%	5.20%
7/1/1983	14.80%	10.69%	4.11%
7/5/1983	15.00%	10.69%	4.31%
7/8/1983	15.50%	10.69%	4.81%
7/19/1983	15.00%	10.70%	4.30%
7/19/1983	15.10%	10.70%	4.40%
8/18/1983	15.30%	10.81%	4.49%
8/19/1983	15.79%	10.82%	4.97%
8/29/1983	16.00%	10.85%	5.15%
8/31/1983	14.75%	10.87%	3.88%
8/31/1983	15.25%	10.87%	4.38%
9/8/1983	14.75%	10.90%	3.85%
9/16/1983	15.51%	10.93%	4.58%
9/26/1983	14.50%	10.96%	3.54%
9/28/1983	14.25%	10.97%	3.28%
9/30/1983	16.15%	10.98%	5.17%
9/30/1983	16.25%	10.98%	5.27%
10/1/1983	16.25%	10.98%	5.27%
10/13/1983	15.52%	11.02%	4.50%
10/19/1983	15.20%	11.04%	4.16%
10/26/1983	14.75%	11.07%	3.68%
10/27/1983	14.88%	11.07%	3.81%
10/27/1983	15.33%	11.07%	4.26%
11/9/1983	14.82%	11.10%	3.72%
11/9/1983	16.51%	11.10%	5.41%
11/9/1983	16.51%	11.10%	5.41%
12/1/1983	14.50%	11.17%	3.33%
12/8/1983	15.90%	11.21%	4.69%
12/9/1983	15.30%	11.21%	4.09%
12/12/1983	14.50%	11.22%	3.28%
12/12/1983	15.50%	11.22%	4.28%
12/20/1983	15.40%	11.26%	4.14%
12/20/1983	16.00%	11.26%	4.74%
12/22/1983	15.75%	11.27%	4.48%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/29/1983	15.00%	11.30%	3.70%
12/30/1983	15.00%	11.30%	3.70%
1/10/1984	15.90%	11.34%	4.56%
1/13/1984	15.50%	11.37%	4.13%
1/18/1984	15.53%	11.39%	4.14%
1/26/1984	15.90%	11.42%	4.48%
2/14/1984	14.25%	11.52%	2.73%
2/28/1984	14.50%	11.59%	2.91%
3/20/1984	16.00%	11.70%	4.30%
3/23/1984	15.50%	11.73%	3.77%
4/9/1984	15.20%	11.81%	3.39%
4/18/1984	16.20%	11.86%	4.34%
4/27/1984	15.85%	11.90%	3.95%
5/15/1984	13.35%	11.99%	1.36%
5/16/1984	15.00%	12.00%	3.00%
5/22/1984	14.40%	12.04%	2.36%
6/13/1984	15.50%	12.19%	3.31%
7/10/1984	16.00%	12.37%	3.63%
8/7/1984	16.69%	12.51%	4.18%
8/9/1984	15.33%	12.52%	2.81%
8/17/1984	14.82%	12.54%	2.28%
8/21/1984	14.64%	12.55%	2.09%
8/27/1984	14.52%	12.57%	1.95%
8/28/1984	14.75%	12.57%	2.18%
8/30/1984	15.60%	12.58%	3.02%
9/12/1984	15.60%	12.60%	3.00%
9/12/1984	15.90%	12.60%	3.30%
9/25/1984	16.25%	12.62%	3.63%
10/2/1984	14.80%	12.63%	2.17%
10/9/1984	14.75%	12.64%	2.11%
10/10/1984	15.50%	12.64%	2.86%
10/18/1984	15.00%	12.65%	2.35%
10/24/1984	15.50%	12.65%	2.85%
11/7/1984	15.00%	12.64%	2.36%
11/20/1984	15.92%	12.63%	3.29%
11/30/1984	15.50%	12.60%	2.90%
12/18/1984	15.00%	12.55%	2.45%
12/20/1984	15.00%	12.54%	2.46%
12/28/1984	15.75%	12.51%	3.24%
12/28/1984	16.25%	12.51%	3.74%
1/2/1985	16.00%	12.50%	3.50%
1/31/1985	14.75%	12.37%	2.38%
2/7/1985	14.85%	12.32%	2.53%
2/15/1985	15.00%	12.26%	2.74%
2/20/1985	14.50%	12.24%	2.26%
2/22/1985	14.86%	12.24%	2.62%
3/14/1985	15.50%	12.15%	3.35%
3/28/1985	14.80%	12.08%	2.72%
4/9/1985	15.50%	12.01%	3.49%
4/16/1985	15.70%	11.96%	3.74%
6/10/1985	15.75%	11.58%	4.17%
6/26/1985	14.82%	11.46%	3.36%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/9/1985	15.00%	11.38%	3.62%
7/26/1985	14.50%	11.26%	3.24%
8/29/1985	14.50%	11.11%	3.39%
8/30/1985	14.38%	11.10%	3.28%
9/12/1985	15.25%	11.07%	4.18%
9/23/1985	15.30%	11.03%	4.27%
9/25/1985	14.50%	11.02%	3.48%
9/26/1985	13.80%	11.01%	2.79%
9/26/1985	14.50%	11.01%	3.49%
10/25/1985	15.25%	10.91%	4.34%
11/8/1985	12.94%	10.85%	2.09%
11/20/1985	14.90%	10.81%	4.09%
11/25/1985	13.30%	10.79%	2.51%
12/6/1985	12.00%	10.71%	1.29%
12/11/1985	14.90%	10.67%	4.23%
12/20/1985	14.88%	10.58%	4.30%
12/20/1985	15.00%	10.58%	4.42%
12/20/1985	15.00%	10.58%	4.42%
12/30/1985	15.75%	10.52%	5.23%
12/31/1985	14.00%	10.51%	3.49%
12/31/1985	14.50%	10.51%	3.99%
1/17/1986	14.50%	10.37%	4.13%
2/11/1986	12.50%	10.20%	2.30%
2/12/1986	15.20%	10.19%	5.01%
3/11/1986	14.00%	9.97%	4.03%
4/2/1986	12.90%	9.76%	3.14%
4/28/1986	13.01%	9.46%	3.55%
5/21/1986	13.25%	9.17%	4.08%
5/28/1986	14.00%	9.11%	4.89%
5/29/1986	13.90%	9.10%	4.80%
6/2/1986	13.00%	9.07%	3.93%
6/11/1986	14.00%	8.96%	5.04%
6/13/1986	13.55%	8.93%	4.62%
6/27/1986	11.88%	8.76%	3.12%
7/14/1986	12.60%	8.57%	4.03%
7/30/1986	13.30%	8.37%	4.93%
8/14/1986	13.50%	8.21%	5.29%
9/5/1986	13.30%	8.01%	5.29%
9/23/1986	12.75%	7.90%	4.85%
10/30/1986	13.00%	7.66%	5.34%
10/31/1986	13.75%	7.65%	6.10%
11/10/1986	14.00%	7.60%	6.40%
11/19/1986	13.75%	7.56%	6.19%
11/25/1986	13.15%	7.54%	5.61%
12/22/1986	13.80%	7.47%	6.33%
12/30/1986	13.90%	7.47%	6.43%
1/20/1987	12.75%	7.47%	5.28%
1/23/1987	13.55%	7.47%	6.08%
1/27/1987	12.16%	7.47%	4.69%
2/13/1987	12.60%	7.47%	5.13%
2/24/1987	12.00%	7.47%	4.53%
3/30/1987	12.20%	7.46%	4.74%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
3/31/1987	13.00%	7.47%	5.53%
5/5/1987	12.85%	7.60%	5.25%
5/28/1987	13.50%	7.73%	5.77%
6/15/1987	13.20%	7.81%	5.39%
6/30/1987	12.60%	7.85%	4.75%
7/10/1987	12.90%	7.88%	5.02%
7/27/1987	13.50%	7.94%	5.56%
8/25/1987	11.40%	8.09%	3.31%
9/18/1987	13.00%	8.28%	4.72%
10/20/1987	12.60%	8.55%	4.05%
10/20/1987	12.98%	8.55%	4.43%
11/12/1987	12.75%	8.68%	4.07%
11/13/1987	12.75%	8.69%	4.06%
11/24/1987	12.50%	8.74%	3.76%
12/8/1987	12.50%	8.82%	3.68%
12/22/1987	12.00%	8.91%	3.09%
12/31/1987	12.85%	8.95%	3.90%
12/31/1987	13.25%	8.95%	4.30%
1/15/1988	13.15%	8.99%	4.16%
1/20/1988	12.75%	8.99%	3.76%
1/29/1988	13.20%	8.99%	4.21%
2/4/1988	12.60%	8.99%	3.61%
3/23/1988	13.00%	8.95%	4.05%
5/27/1988	13.18%	9.02%	4.16%
6/14/1988	13.50%	9.00%	4.50%
6/17/1988	11.72%	8.98%	2.74%
6/24/1988	11.50%	8.97%	2.53%
7/1/1988	12.75%	8.94%	3.81%
7/8/1988	12.00%	8.93%	3.07%
7/18/1988	12.00%	8.90%	3.10%
7/20/1988	13.40%	8.89%	4.51%
8/8/1988	12.74%	8.90%	3.84%
9/20/1988	12.90%	8.93%	3.97%
9/26/1988	12.40%	8.93%	3.47%
9/27/1988	13.65%	8.93%	4.72%
9/30/1988	13.25%	8.94%	4.31%
10/13/1988	13.10%	8.93%	4.17%
10/21/1988	12.80%	8.94%	3.86%
10/25/1988	13.25%	8.94%	4.31%
10/26/1988	13.50%	8.94%	4.56%
10/27/1988	12.95%	8.95%	4.00%
10/28/1988	13.00%	8.95%	4.05%
11/15/1988	12.00%	8.98%	3.02%
11/29/1988	12.75%	9.02%	3.73%
12/19/1988	13.00%	9.05%	3.95%
12/21/1988	12.90%	9.05%	3.85%
12/22/1988	13.50%	9.06%	4.44%
1/26/1989	12.60%	9.06%	3.54%
1/27/1989	13.00%	9.06%	3.94%
2/8/1989	13.37%	9.05%	4.32%
3/8/1989	13.00%	9.04%	3.96%
5/4/1989	13.00%	9.04%	3.96%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/8/1989	13.50%	8.96%	4.54%
7/19/1989	11.80%	8.84%	2.96%
7/25/1989	12.80%	8.82%	3.98%
7/31/1989	13.00%	8.81%	4.19%
8/14/1989	12.50%	8.76%	3.74%
8/22/1989	12.80%	8.73%	4.07%
8/23/1989	12.90%	8.72%	4.18%
9/21/1989	12.10%	8.62%	3.48%
10/6/1989	13.00%	8.57%	4.43%
10/17/1989	12.41%	8.54%	3.87%
10/18/1989	13.25%	8.54%	4.71%
10/20/1989	12.90%	8.53%	4.37%
10/31/1989	13.60%	8.49%	5.11%
11/3/1989	12.93%	8.48%	4.45%
11/5/1989	13.20%	8.48%	4.72%
11/9/1989	12.60%	8.45%	4.15%
11/9/1989	13.00%	8.45%	4.55%
11/28/1989	12.75%	8.37%	4.38%
12/7/1989	13.25%	8.32%	4.93%
12/15/1989	13.00%	8.27%	4.73%
12/20/1989	12.90%	8.25%	4.65%
12/21/1989	12.80%	8.25%	4.55%
12/21/1989	12.90%	8.25%	4.65%
12/27/1989	12.50%	8.23%	4.27%
1/9/1990	13.00%	8.19%	4.81%
1/18/1990	12.50%	8.16%	4.34%
1/26/1990	12.10%	8.14%	3.96%
3/21/1990	12.80%	8.15%	4.65%
3/28/1990	13.00%	8.16%	4.84%
4/5/1990	12.20%	8.17%	4.03%
4/12/1990	13.25%	8.19%	5.06%
4/30/1990	12.45%	8.24%	4.21%
5/31/1990	12.40%	8.31%	4.09%
6/15/1990	13.20%	8.33%	4.87%
6/27/1990	12.90%	8.34%	4.56%
6/29/1990	13.25%	8.35%	4.90%
7/6/1990	12.10%	8.36%	3.74%
7/19/1990	11.70%	8.39%	3.31%
8/31/1990	12.50%	8.53%	3.97%
8/31/1990	12.50%	8.53%	3.97%
9/13/1990	12.50%	8.58%	3.92%
9/18/1990	12.75%	8.60%	4.15%
9/20/1990	12.50%	8.61%	3.89%
10/2/1990	13.00%	8.65%	4.35%
10/17/1990	11.90%	8.68%	3.22%
10/31/1990	12.95%	8.70%	4.25%
11/9/1990	13.25%	8.71%	4.54%
11/19/1990	13.00%	8.70%	4.30%
11/21/1990	12.10%	8.70%	3.40%
11/21/1990	12.50%	8.70%	3.80%
11/28/1990	12.75%	8.70%	4.05%
11/29/1990	12.75%	8.70%	4.05%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/18/1990	13.10%	8.68%	4.42%
12/20/1990	12.50%	8.67%	3.83%
12/21/1990	12.50%	8.67%	3.83%
12/21/1990	13.00%	8.67%	4.33%
12/21/1990	13.60%	8.67%	4.93%
1/3/1991	13.02%	8.66%	4.36%
1/16/1991	13.25%	8.63%	4.62%
1/25/1991	11.70%	8.60%	3.10%
2/15/1991	12.70%	8.56%	4.14%
2/15/1991	12.80%	8.56%	4.24%
4/3/1991	13.00%	8.51%	4.49%
4/30/1991	12.45%	8.47%	3.98%
4/30/1991	13.00%	8.47%	4.53%
6/25/1991	11.70%	8.34%	3.36%
6/28/1991	12.50%	8.33%	4.17%
7/1/1991	11.70%	8.33%	3.37%
7/19/1991	12.10%	8.30%	3.80%
7/19/1991	12.30%	8.30%	4.00%
7/22/1991	12.90%	8.30%	4.60%
8/15/1991	12.25%	8.27%	3.98%
8/29/1991	13.30%	8.26%	5.04%
9/27/1991	12.50%	8.23%	4.27%
9/30/1991	12.40%	8.23%	4.17%
10/3/1991	11.30%	8.22%	3.08%
10/9/1991	11.70%	8.21%	3.49%
10/15/1991	13.40%	8.20%	5.20%
11/1/1991	12.90%	8.20%	4.70%
11/8/1991	12.75%	8.20%	4.55%
11/26/1991	11.60%	8.18%	3.42%
11/26/1991	12.00%	8.18%	3.82%
11/27/1991	12.70%	8.18%	4.52%
12/6/1991	12.70%	8.16%	4.54%
12/10/1991	11.75%	8.15%	3.60%
12/19/1991	12.60%	8.14%	4.46%
12/19/1991	12.80%	8.14%	4.66%
12/30/1991	12.10%	8.11%	3.99%
1/22/1992	12.84%	8.05%	4.79%
1/31/1992	12.00%	8.03%	3.97%
2/20/1992	13.00%	8.00%	5.00%
2/27/1992	11.75%	7.98%	3.77%
3/18/1992	12.50%	7.94%	4.56%
5/15/1992	12.75%	7.86%	4.89%
6/24/1992	12.20%	7.85%	4.35%
6/29/1992	11.00%	7.85%	3.15%
7/14/1992	12.00%	7.83%	4.17%
7/22/1992	11.20%	7.82%	3.38%
8/10/1992	12.10%	7.79%	4.31%
8/26/1992	12.43%	7.75%	4.68%
9/30/1992	11.60%	7.72%	3.88%
10/6/1992	12.25%	7.72%	4.53%
10/13/1992	12.75%	7.71%	5.04%
10/23/1992	11.65%	7.71%	3.94%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/28/1992	12.25%	7.71%	4.54%
10/29/1992	12.75%	7.70%	5.05%
10/30/1992	11.40%	7.70%	3.70%
11/9/1992	10.60%	7.70%	2.90%
11/25/1992	11.00%	7.67%	3.33%
11/25/1992	12.00%	7.67%	4.33%
12/3/1992	11.85%	7.66%	4.19%
12/16/1992	11.90%	7.63%	4.27%
12/22/1992	12.30%	7.62%	4.68%
12/22/1992	12.40%	7.62%	4.78%
12/30/1992	12.00%	7.61%	4.39%
12/31/1992	12.00%	7.60%	4.40%
1/12/1993	12.00%	7.58%	4.42%
1/12/1993	12.00%	7.58%	4.42%
2/2/1993	11.40%	7.53%	3.87%
2/22/1993	11.60%	7.47%	4.13%
4/23/1993	11.75%	7.27%	4.48%
5/3/1993	11.50%	7.25%	4.25%
5/3/1993	11.75%	7.25%	4.50%
6/3/1993	12.00%	7.20%	4.80%
6/7/1993	11.50%	7.20%	4.30%
6/22/1993	11.75%	7.16%	4.59%
7/21/1993	11.78%	7.06%	4.72%
7/21/1993	11.90%	7.06%	4.84%
7/23/1993	11.50%	7.05%	4.45%
7/29/1993	11.50%	7.03%	4.47%
8/12/1993	10.75%	6.97%	3.78%
8/24/1993	11.50%	6.91%	4.59%
8/31/1993	11.90%	6.88%	5.02%
9/1/1993	11.25%	6.87%	4.38%
9/1/1993	11.47%	6.87%	4.60%
9/27/1993	10.50%	6.74%	3.76%
9/29/1993	11.00%	6.72%	4.28%
9/30/1993	11.60%	6.71%	4.89%
10/8/1993	11.50%	6.67%	4.83%
10/14/1993	11.20%	6.65%	4.55%
10/15/1993	11.75%	6.64%	5.11%
10/25/1993	11.55%	6.60%	4.95%
10/28/1993	11.50%	6.58%	4.92%
10/29/1993	10.10%	6.57%	3.53%
10/29/1993	10.20%	6.57%	3.63%
10/29/1993	11.25%	6.57%	4.68%
11/2/1993	10.80%	6.56%	4.24%
11/12/1993	11.80%	6.53%	5.27%
11/23/1993	12.50%	6.50%	6.00%
11/26/1993	11.00%	6.50%	4.50%
12/1/1993	11.45%	6.49%	4.96%
12/16/1993	10.60%	6.45%	4.15%
12/16/1993	11.20%	6.45%	4.75%
12/21/1993	11.30%	6.44%	4.86%
12/22/1993	11.00%	6.44%	4.56%
12/23/1993	10.10%	6.43%	3.67%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/5/1994	11.50%	6.41%	5.09%
1/10/1994	11.00%	6.40%	4.60%
1/25/1994	12.00%	6.37%	5.63%
2/2/1994	10.40%	6.35%	4.05%
2/9/1994	10.70%	6.33%	4.37%
4/6/1994	11.24%	6.34%	4.90%
4/25/1994	11.00%	6.39%	4.61%
6/16/1994	10.50%	6.64%	3.86%
6/23/1994	10.60%	6.68%	3.92%
7/19/1994	10.70%	6.84%	3.86%
9/29/1994	10.90%	7.21%	3.69%
9/29/1994	11.00%	7.21%	3.79%
10/7/1994	11.87%	7.26%	4.61%
10/18/1994	11.50%	7.32%	4.18%
10/18/1994	11.50%	7.32%	4.18%
10/24/1994	11.00%	7.36%	3.64%
11/22/1994	12.12%	7.53%	4.59%
11/29/1994	11.30%	7.55%	3.75%
12/1/1994	11.00%	7.57%	3.43%
12/8/1994	11.50%	7.59%	3.91%
12/8/1994	11.70%	7.59%	4.11%
12/12/1994	11.82%	7.60%	4.22%
12/14/1994	11.50%	7.61%	3.89%
12/19/1994	11.50%	7.62%	3.88%
4/19/1995	11.00%	7.72%	3.28%
9/11/1995	11.30%	7.16%	4.14%
9/15/1995	10.40%	7.13%	3.27%
9/29/1995	11.50%	7.06%	4.44%
10/13/1995	10.76%	6.98%	3.78%
11/7/1995	12.50%	6.86%	5.64%
11/8/1995	11.10%	6.85%	4.25%
11/8/1995	11.30%	6.85%	4.45%
11/17/1995	10.90%	6.80%	4.10%
11/20/1995	11.40%	6.80%	4.60%
11/27/1995	13.60%	6.76%	6.84%
12/14/1995	11.30%	6.67%	4.63%
12/20/1995	11.60%	6.64%	4.96%
1/31/1996	11.30%	6.45%	4.85%
3/11/1996	11.60%	6.40%	5.20%
4/3/1996	11.13%	6.40%	4.73%
4/15/1996	10.50%	6.40%	4.10%
4/17/1996	10.77%	6.40%	4.37%
4/26/1996	10.60%	6.40%	4.20%
5/10/1996	11.00%	6.40%	4.60%
5/13/1996	11.25%	6.40%	4.85%
7/3/1996	11.25%	6.49%	4.76%
7/22/1996	11.25%	6.54%	4.71%
10/3/1996	10.00%	6.77%	3.23%
10/29/1996	11.30%	6.85%	4.45%
11/26/1996	11.30%	6.86%	4.44%
11/27/1996	11.30%	6.86%	4.44%
11/29/1996	11.00%	6.86%	4.14%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/12/1996	11.96%	6.85%	5.11%
12/17/1996	11.50%	6.85%	4.65%
1/22/1997	11.30%	6.83%	4.47%
1/27/1997	11.25%	6.83%	4.42%
1/31/1997	11.25%	6.83%	4.42%
2/13/1997	11.00%	6.82%	4.18%
2/13/1997	11.80%	6.82%	4.98%
2/20/1997	11.80%	6.81%	4.99%
3/27/1997	10.75%	6.79%	3.96%
4/29/1997	11.70%	6.81%	4.89%
7/17/1997	12.00%	6.77%	5.23%
10/29/1997	10.75%	6.70%	4.05%
10/31/1997	11.25%	6.70%	4.55%
12/24/1997	10.75%	6.53%	4.22%
4/28/1998	10.90%	6.10%	4.80%
4/30/1998	12.20%	6.10%	6.10%
6/30/1998	11.00%	5.94%	5.06%
8/26/1998	10.93%	5.82%	5.11%
9/3/1998	11.40%	5.80%	5.60%
9/15/1998	11.90%	5.77%	6.13%
10/7/1998	11.06%	5.70%	5.36%
10/30/1998	11.40%	5.63%	5.77%
12/10/1998	12.20%	5.51%	6.69%
12/17/1998	12.10%	5.49%	6.61%
2/19/1999	11.15%	5.31%	5.84%
3/1/1999	10.65%	5.31%	5.34%
3/1/1999	10.65%	5.31%	5.34%
6/8/1999	11.25%	5.36%	5.89%
11/12/1999	10.25%	5.92%	4.33%
12/14/1999	10.50%	6.00%	4.50%
1/28/2000	10.71%	6.16%	4.55%
2/17/2000	10.60%	6.20%	4.40%
5/25/2000	10.80%	6.20%	4.60%
6/19/2000	11.05%	6.18%	4.87%
6/22/2000	11.25%	6.18%	5.07%
7/17/2000	11.06%	6.15%	4.91%
7/20/2000	12.20%	6.14%	6.06%
8/11/2000	11.00%	6.11%	4.89%
9/27/2000	11.25%	6.00%	5.25%
9/29/2000	11.16%	5.99%	5.17%
10/5/2000	11.30%	5.98%	5.32%
11/28/2000	12.90%	5.87%	7.03%
11/30/2000	12.10%	5.86%	6.24%
2/5/2001	11.50%	5.75%	5.75%
3/15/2001	11.25%	5.66%	5.59%
5/8/2001	10.75%	5.61%	5.14%
10/24/2001	10.30%	5.54%	4.76%
10/24/2001	11.00%	5.54%	5.46%
1/9/2002	10.00%	5.50%	4.50%
1/30/2002	11.00%	5.47%	5.53%
1/31/2002	11.00%	5.47%	5.53%
4/17/2002	11.50%	5.44%	6.06%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/29/2002	11.00%	5.44%	5.56%
6/11/2002	11.77%	5.47%	6.30%
6/20/2002	12.30%	5.48%	6.82%
8/28/2002	11.00%	5.49%	5.51%
9/11/2002	11.20%	5.45%	5.75%
9/12/2002	12.30%	5.45%	6.85%
10/28/2002	11.30%	5.34%	5.96%
10/30/2002	10.60%	5.34%	5.26%
11/1/2002	12.60%	5.34%	7.26%
11/7/2002	11.40%	5.33%	6.07%
11/8/2002	10.75%	5.33%	5.42%
11/20/2002	10.00%	5.30%	4.70%
11/20/2002	10.50%	5.30%	5.20%
12/4/2002	10.75%	5.26%	5.49%
12/30/2002	11.20%	5.18%	6.02%
1/6/2003	11.25%	5.16%	6.09%
2/28/2003	12.30%	5.00%	7.30%
3/7/2003	9.96%	4.98%	4.98%
3/12/2003	11.40%	4.97%	6.43%
3/20/2003	12.00%	4.95%	7.05%
4/3/2003	12.00%	4.92%	7.08%
5/2/2003	11.40%	4.88%	6.52%
5/15/2003	11.05%	4.87%	6.18%
6/26/2003	11.00%	4.80%	6.20%
7/1/2003	11.00%	4.80%	6.20%
7/29/2003	11.71%	4.78%	6.93%
8/22/2003	10.20%	4.81%	5.39%
9/17/2003	9.90%	4.85%	5.05%
9/25/2003	10.25%	4.85%	5.40%
10/17/2003	10.54%	4.87%	5.67%
10/22/2003	10.46%	4.87%	5.59%
10/22/2003	10.71%	4.87%	5.84%
10/30/2003	11.00%	4.88%	6.12%
10/31/2003	10.20%	4.88%	5.32%
10/31/2003	10.75%	4.88%	5.87%
11/10/2003	10.60%	4.89%	5.71%
12/9/2003	10.50%	4.93%	5.57%
12/18/2003	10.50%	4.94%	5.56%
12/19/2003	12.00%	4.94%	7.06%
12/19/2003	12.00%	4.94%	7.06%
1/13/2004	10.25%	4.95%	5.30%
1/13/2004	12.00%	4.95%	7.05%
2/9/2004	11.25%	4.99%	6.26%
3/16/2004	10.90%	5.05%	5.85%
3/16/2004	10.90%	5.05%	5.85%
5/25/2004	10.00%	5.06%	4.94%
6/2/2004	11.22%	5.07%	6.15%
6/30/2004	10.50%	5.10%	5.40%
7/8/2004	10.00%	5.10%	4.90%
7/22/2004	10.25%	5.10%	5.15%
8/26/2004	10.50%	5.10%	5.40%
8/26/2004	10.50%	5.10%	5.40%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/9/2004	10.40%	5.10%	5.30%
9/21/2004	10.50%	5.09%	5.41%
9/27/2004	10.30%	5.09%	5.21%
9/27/2004	10.50%	5.09%	5.41%
10/20/2004	10.20%	5.08%	5.12%
11/30/2004	10.60%	5.08%	5.52%
12/8/2004	9.90%	5.09%	4.81%
12/21/2004	11.50%	5.09%	6.41%
12/22/2004	11.50%	5.09%	6.41%
12/28/2004	10.25%	5.09%	5.16%
2/18/2005	10.30%	4.95%	5.35%
3/29/2005	11.00%	4.86%	6.14%
4/13/2005	10.60%	4.83%	5.77%
4/28/2005	11.00%	4.80%	6.20%
5/17/2005	10.00%	4.76%	5.24%
6/8/2005	10.18%	4.71%	5.47%
6/10/2005	10.90%	4.71%	6.19%
7/6/2005	10.50%	4.65%	5.85%
7/19/2005	11.50%	4.63%	6.87%
8/11/2005	10.40%	4.60%	5.80%
9/19/2005	9.45%	4.53%	4.92%
9/30/2005	10.51%	4.52%	5.99%
10/4/2005	9.90%	4.52%	5.38%
10/4/2005	10.75%	4.52%	6.23%
10/14/2005	10.40%	4.51%	5.89%
10/31/2005	10.25%	4.53%	5.72%
11/2/2005	9.70%	4.53%	5.17%
11/30/2005	10.00%	4.53%	5.47%
12/9/2005	9.70%	4.53%	5.17%
12/12/2005	11.00%	4.53%	6.47%
12/20/2005	10.13%	4.52%	5.61%
12/21/2005	10.40%	4.52%	5.88%
12/21/2005	11.00%	4.52%	6.48%
12/22/2005	10.20%	4.52%	5.68%
12/22/2005	11.00%	4.52%	6.48%
12/28/2005	10.00%	4.52%	5.48%
1/5/2006	11.00%	4.52%	6.48%
1/25/2006	11.20%	4.52%	6.68%
1/25/2006	11.20%	4.52%	6.68%
2/3/2006	10.50%	4.52%	5.98%
2/15/2006	9.50%	4.53%	4.97%
4/26/2006	10.60%	4.65%	5.95%
7/24/2006	9.60%	4.87%	4.73%
7/24/2006	10.00%	4.87%	5.13%
9/20/2006	11.00%	4.93%	6.07%
9/26/2006	10.75%	4.94%	5.81%
10/20/2006	9.80%	4.96%	4.84%
11/2/2006	9.71%	4.97%	4.74%
11/9/2006	10.00%	4.98%	5.02%
11/21/2006	11.00%	4.98%	6.02%
12/5/2006	10.20%	4.97%	5.23%
1/5/2007	10.40%	4.95%	5.45%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/9/2007	11.00%	4.94%	6.06%
1/11/2007	10.90%	4.94%	5.96%
1/19/2007	10.80%	4.93%	5.87%
1/26/2007	10.00%	4.92%	5.08%
2/8/2007	10.40%	4.91%	5.49%
3/14/2007	10.10%	4.85%	5.25%
3/20/2007	10.25%	4.84%	5.41%
3/21/2007	11.35%	4.84%	6.51%
3/22/2007	10.50%	4.84%	5.66%
3/29/2007	10.00%	4.83%	5.17%
6/13/2007	10.75%	4.82%	5.93%
6/29/2007	9.53%	4.84%	4.69%
6/29/2007	10.10%	4.84%	5.26%
7/3/2007	10.25%	4.85%	5.40%
7/13/2007	9.50%	4.86%	4.64%
7/24/2007	10.40%	4.87%	5.53%
8/1/2007	10.15%	4.88%	5.27%
8/29/2007	10.50%	4.91%	5.59%
9/10/2007	9.71%	4.92%	4.79%
9/19/2007	10.00%	4.91%	5.09%
9/25/2007	9.70%	4.92%	4.78%
10/8/2007	10.48%	4.92%	5.56%
10/19/2007	10.50%	4.91%	5.59%
10/25/2007	9.65%	4.91%	4.74%
11/15/2007	10.00%	4.89%	5.11%
11/20/2007	9.90%	4.89%	5.01%
11/27/2007	10.00%	4.89%	5.11%
11/29/2007	10.90%	4.88%	6.02%
12/14/2007	10.80%	4.87%	5.93%
12/18/2007	10.40%	4.86%	5.54%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	10.20%	4.86%	5.34%
12/21/2007	9.10%	4.86%	4.24%
1/8/2008	10.75%	4.83%	5.92%
1/17/2008	10.75%	4.81%	5.94%
1/17/2008	10.75%	4.81%	5.94%
2/5/2008	9.99%	4.77%	5.22%
2/5/2008	10.19%	4.77%	5.42%
2/13/2008	10.20%	4.76%	5.44%
3/31/2008	10.00%	4.63%	5.37%
5/28/2008	10.50%	4.53%	5.97%
6/24/2008	10.00%	4.52%	5.48%
6/27/2008	10.00%	4.52%	5.48%
7/31/2008	10.70%	4.50%	6.20%
7/31/2008	10.82%	4.50%	6.32%
8/27/2008	10.25%	4.50%	5.75%
9/2/2008	10.25%	4.50%	5.75%
9/19/2008	10.70%	4.48%	6.22%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/30/2008	10.20%	4.48%	5.72%
10/3/2008	10.30%	4.48%	5.82%
10/8/2008	10.15%	4.47%	5.68%
10/20/2008	10.06%	4.47%	5.59%
10/24/2008	10.60%	4.46%	6.14%
10/24/2008	10.60%	4.46%	6.14%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/24/2008	10.50%	4.41%	6.09%
12/3/2008	10.39%	4.38%	6.01%
12/24/2008	10.00%	4.26%	5.74%
12/26/2008	10.10%	4.24%	5.86%
12/29/2008	10.20%	4.23%	5.97%
1/13/2009	10.45%	4.14%	6.31%
2/2/2009	10.05%	4.03%	6.02%
3/9/2009	10.30%	3.89%	6.41%
3/25/2009	10.17%	3.83%	6.34%
4/2/2009	10.75%	3.80%	6.95%
5/5/2009	10.75%	3.71%	7.04%
5/15/2009	10.20%	3.70%	6.50%
5/29/2009	9.54%	3.70%	5.84%
6/3/2009	10.10%	3.70%	6.40%
6/22/2009	10.00%	3.73%	6.27%
6/29/2009	10.21%	3.73%	6.48%
6/30/2009	9.31%	3.74%	5.57%
7/17/2009	9.26%	3.75%	5.51%
7/17/2009	10.50%	3.75%	6.75%
10/16/2009	10.40%	4.09%	6.31%
10/26/2009	10.10%	4.11%	5.99%
10/28/2009	10.15%	4.12%	6.03%
10/28/2009	10.15%	4.12%	6.03%
10/30/2009	9.95%	4.13%	5.82%
11/20/2009	9.45%	4.19%	5.26%
12/14/2009	10.50%	4.25%	6.25%
12/16/2009	10.75%	4.26%	6.49%
12/17/2009	10.30%	4.26%	6.04%
12/18/2009	10.40%	4.27%	6.13%
12/18/2009	10.40%	4.27%	6.13%
12/18/2009	10.50%	4.27%	6.23%
12/22/2009	10.20%	4.28%	5.92%
12/22/2009	10.40%	4.28%	6.12%
12/28/2009	10.85%	4.30%	6.55%
12/29/2009	10.38%	4.30%	6.08%
1/11/2010	10.24%	4.34%	5.90%
1/21/2010	10.23%	4.37%	5.86%
1/21/2010	10.33%	4.37%	5.96%
1/26/2010	10.40%	4.37%	6.03%
2/10/2010	10.00%	4.39%	5.61%
2/23/2010	10.50%	4.40%	6.10%
3/9/2010	9.60%	4.40%	5.20%
3/24/2010	10.13%	4.42%	5.71%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
3/31/2010	10.70%	4.43%	6.27%
4/1/2010	9.50%	4.43%	5.07%
4/2/2010	10.10%	4.44%	5.66%
4/8/2010	10.35%	4.44%	5.91%
4/29/2010	9.19%	4.46%	4.73%
4/29/2010	9.40%	4.46%	4.94%
4/29/2010	9.40%	4.46%	4.94%
5/17/2010	10.55%	4.46%	6.09%
5/24/2010	10.05%	4.46%	5.59%
6/3/2010	11.00%	4.46%	6.54%
6/16/2010	10.00%	4.46%	5.54%
6/18/2010	10.30%	4.46%	5.84%
8/9/2010	12.55%	4.41%	8.14%
8/17/2010	10.10%	4.40%	5.70%
9/16/2010	9.60%	4.31%	5.29%
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.30%	4.31%	5.99%
10/21/2010	10.40%	4.20%	6.20%
11/2/2010	9.75%	4.17%	5.58%
11/2/2010	9.75%	4.17%	5.58%
11/3/2010	10.75%	4.17%	6.58%
11/19/2010	10.20%	4.14%	6.06%
12/1/2010	10.00%	4.12%	5.88%
12/6/2010	9.56%	4.12%	5.44%
12/6/2010	10.09%	4.12%	5.97%
12/9/2010	10.25%	4.12%	6.13%
12/14/2010	10.33%	4.11%	6.22%
12/17/2010	10.10%	4.11%	5.99%
12/20/2010	10.10%	4.11%	5.99%
12/23/2010	9.92%	4.10%	5.82%
1/6/2011	10.35%	4.09%	6.26%
1/12/2011	10.30%	4.08%	6.22%
1/13/2011	10.30%	4.08%	6.22%
3/10/2011	10.10%	4.16%	5.94%
3/31/2011	9.45%	4.20%	5.25%
4/18/2011	10.05%	4.24%	5.81%
5/26/2011	10.50%	4.32%	6.18%
6/21/2011	10.00%	4.36%	5.64%
6/29/2011	8.83%	4.38%	4.45%
8/1/2011	9.20%	4.41%	4.79%
9/1/2011	10.10%	4.32%	5.78%
11/14/2011	9.60%	3.93%	5.67%
12/13/2011	9.50%	3.76%	5.74%
12/20/2011	10.00%	3.71%	6.29%
12/22/2011	10.40%	3.70%	6.70%
1/10/2012	9.06%	3.59%	5.47%
1/10/2012	9.45%	3.59%	5.86%
1/10/2012	9.45%	3.59%	5.86%
1/23/2012	10.20%	3.52%	6.68%
1/31/2012	10.00%	3.48%	6.52%
4/24/2012	9.50%	3.15%	6.35%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/24/2012	9.75%	3.15%	6.60%
5/7/2012	9.80%	3.13%	6.67%
5/22/2012	9.60%	3.10%	6.50%
5/24/2012	9.70%	3.09%	6.61%
6/7/2012	10.30%	3.06%	7.24%
6/15/2012	10.40%	3.05%	7.35%
6/18/2012	9.60%	3.05%	6.55%
7/2/2012	9.75%	3.04%	6.71%
10/24/2012	10.30%	2.92%	7.38%
10/26/2012	9.50%	2.92%	6.58%
10/31/2012	9.30%	2.91%	6.39%
10/31/2012	9.90%	2.91%	6.99%
10/31/2012	10.00%	2.91%	7.09%
11/1/2012	9.45%	2.91%	6.54%
11/8/2012	10.10%	2.91%	7.19%
11/9/2012	10.30%	2.90%	7.40%
11/26/2012	10.00%	2.88%	7.12%
11/28/2012	10.40%	2.88%	7.52%
11/28/2012	10.50%	2.88%	7.62%
12/4/2012	10.00%	2.87%	7.13%
12/4/2012	10.50%	2.87%	7.63%
12/20/2012	9.50%	2.84%	6.66%
12/20/2012	10.10%	2.84%	7.26%
12/20/2012	10.25%	2.84%	7.41%
12/20/2012	10.30%	2.84%	7.46%
12/20/2012	10.40%	2.84%	7.56%
12/20/2012	10.50%	2.84%	7.66%
12/26/2012	9.80%	2.83%	6.97%
2/22/2013	9.60%	2.86%	6.74%
3/14/2013	9.30%	2.89%	6.41%
3/27/2013	9.80%	2.92%	6.88%
4/23/2013	9.80%	2.96%	6.84%
5/10/2013	9.25%	2.96%	6.29%
6/13/2013	9.40%	3.02%	6.38%
6/18/2013	9.28%	3.02%	6.26%
6/18/2013	9.28%	3.02%	6.26%
6/25/2013	9.80%	3.04%	6.76%
9/23/2013	9.60%	3.33%	6.27%
11/6/2013	10.20%	3.42%	6.78%
11/13/2013	9.84%	3.44%	6.40%
11/14/2013	10.25%	3.45%	6.80%
11/22/2013	9.50%	3.47%	6.03%
12/5/2013	10.20%	3.50%	6.70%
12/13/2013	9.60%	3.52%	6.08%
12/16/2013	9.73%	3.53%	6.20%
12/17/2013	10.00%	3.53%	6.47%
12/18/2013	9.08%	3.54%	5.54%
12/23/2013	9.72%	3.55%	6.17%
12/30/2013	10.00%	3.58%	6.42%
1/21/2014	9.65%	3.66%	5.99%
1/22/2014	9.18%	3.66%	5.52%
2/20/2014	9.30%	3.72%	5.58%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
2/21/2014	9.85%	3.72%	6.13%
2/28/2014	9.55%	3.73%	5.82%
3/16/2014	9.72%	3.74%	5.98%
4/21/2014	9.50%	3.73%	5.77%
4/22/2014	9.80%	3.73%	6.07%
5/8/2014	9.10%	3.71%	5.39%
5/8/2014	9.59%	3.71%	5.88%
6/6/2014	10.40%	3.66%	6.74%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
7/7/2014	9.30%	3.63%	5.67%
7/25/2014	9.30%	3.60%	5.70%
7/31/2014	9.90%	3.59%	6.31%
9/4/2014	9.10%	3.50%	5.60%
9/24/2014	9.35%	3.46%	5.89%
9/30/2014	9.75%	3.44%	6.31%
10/29/2014	10.80%	3.37%	7.43%
11/6/2014	10.20%	3.35%	6.85%
11/14/2014	10.20%	3.33%	6.87%
11/14/2014	10.30%	3.33%	6.97%
11/26/2014	10.20%	3.30%	6.90%
12/3/2014	10.00%	3.28%	6.72%
1/13/2015	10.30%	3.16%	7.14%
1/21/2015	9.05%	3.13%	5.92%
1/21/2015	9.05%	3.13%	5.92%
4/9/2015	9.50%	2.88%	6.62%
5/11/2015	9.80%	2.81%	6.99%
6/17/2015	9.00%	2.79%	6.21%
8/21/2015	9.75%	2.78%	6.97%
10/7/2015	9.55%	2.82%	6.73%
10/13/2015	9.75%	2.83%	6.92%
10/15/2015	9.00%	2.84%	6.16%
10/30/2015	9.80%	2.87%	6.93%
11/19/2015	10.00%	2.90%	7.10%
12/3/2015	10.00%	2.91%	7.09%
12/9/2015	9.60%	2.92%	6.68%
12/11/2015	9.90%	2.93%	6.97%
12/18/2015	9.50%	2.94%	6.56%
1/6/2016	9.50%	2.97%	6.53%
1/6/2016	9.50%	2.97%	6.53%
1/28/2016	9.40%	2.97%	6.43%
2/10/2016	9.60%	2.95%	6.65%
2/16/2016	9.50%	2.94%	6.56%
2/29/2016	9.40%	2.92%	6.48%
4/29/2016	9.80%	2.83%	6.97%
5/5/2016	9.49%	2.82%	6.67%
6/1/2016	9.55%	2.80%	6.75%
6/3/2016	9.65%	2.79%	6.86%
6/15/2016	9.00%	2.77%	6.23%
6/15/2016	9.00%	2.77%	6.23%
9/2/2016	9.50%	2.56%	6.94%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/23/2016	9.75%	2.51%	7.24%
9/27/2016	9.50%	2.51%	6.99%
9/29/2016	9.11%	2.50%	6.61%
10/13/2016	10.20%	2.48%	7.72%
10/28/2016	9.70%	2.47%	7.23%
11/9/2016	9.80%	2.47%	7.33%
11/18/2016	10.00%	2.49%	7.51%
12/9/2016	10.10%	2.51%	7.59%
12/15/2016	9.00%	2.52%	6.48%
12/15/2016	9.00%	2.52%	6.48%
12/20/2016	9.75%	2.53%	7.22%
12/22/2016	9.50%	2.54%	6.96%
1/24/2017	9.00%	2.59%	6.41%
2/21/2017	10.55%	2.63%	7.92%
3/1/2017	9.25%	2.65%	6.60%
4/11/2017	9.50%	2.77%	6.73%
4/20/2017	8.70%	2.79%	5.91%
4/28/2017	9.50%	2.82%	6.68%
5/23/2017	9.60%	2.88%	6.72%
6/6/2017	9.70%	2.91%	6.79%
6/22/2017	9.70%	2.94%	6.76%
6/30/2017	9.60%	2.95%	6.65%
7/20/2017	9.55%	2.97%	6.58%
7/31/2017	10.10%	2.98%	7.12%
9/13/2017	9.40%	2.93%	6.47%
9/19/2017	9.70%	2.92%	6.78%
9/22/2017	11.88%	2.92%	8.96%
9/27/2017	10.20%	2.92%	7.28%
10/20/2017	9.60%	2.90%	6.70%
10/26/2017	10.20%	2.90%	7.30%
10/30/2017	10.05%	2.90%	7.15%

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/5/2017	9.50%	2.86%	6.64%
12/7/2017	9.80%	2.85%	6.95%
12/13/2017	9.25%	2.85%	6.40%
12/28/2017	9.50%	2.84%	6.66%
1/31/2018	9.80%	2.83%	6.97%
2/21/2018	9.80%	2.84%	6.96%
2/21/2018	9.80%	2.84%	6.96%
2/28/2018	9.50%	2.85%	6.65%
3/15/2018	9.00%	2.87%	6.13%
3/26/2018	10.19%	2.88%	7.31%
4/26/2018	9.50%	2.91%	6.59%
4/27/2018	9.30%	2.91%	6.39%
5/2/2018	9.50%	2.91%	6.59%
5/3/2018	9.70%	2.91%	6.79%
5/29/2018	9.40%	2.95%	6.45%
6/6/2018	9.80%	2.96%	6.84%
6/14/2018	8.80%	2.97%	5.83%
7/16/2018	9.60%	2.98%	6.62%
7/20/2018	9.40%	2.99%	6.41%
8/24/2018	9.28%	3.02%	6.26%
8/28/2018	10.00%	3.03%	6.97%
9/13/2018	10.00%	3.04%	6.96%
9/14/2018	10.00%	3.05%	6.95%
9/19/2018	9.85%	3.05%	6.80%
9/20/2018	9.80%	3.06%	6.74%
9/26/2018	9.40%	3.06%	6.34%
9/26/2018	10.20%	3.06%	7.14%
9/28/2018	9.50%	3.07%	6.43%
9/28/2018	9.50%	3.07%	6.43%
10/5/2018	9.61%	3.08%	6.53%
10/15/2018	9.80%	3.09%	6.71%
10/26/2018	9.40%	3.11%	6.29%
10/29/2018	9.60%	3.11%	6.49%
11/1/2018	9.87%	3.11%	6.76%
11/8/2018	9.70%	3.12%	6.58%
11/8/2018	9.70%	3.12%	6.58%
12/11/2018	9.70%	3.14%	6.56%
12/12/2018	9.30%	3.14%	6.16%
12/13/2018	9.60%	3.14%	6.46%
12/19/2018	9.30%	3.15%	6.15%
12/21/2018	9.35%	3.15%	6.20%
12/24/2018	9.25%	3.15%	6.10%
12/24/2018	9.25%	3.15%	6.10%
1/4/2019	9.80%	3.14%	6.66%
1/18/2019	9.70%	3.14%	6.56%
3/14/2019	9.00%	3.12%	5.88%
3/27/2019	9.70%	3.12%	6.58%
4/30/2019	9.73%	3.11%	6.62%
5/7/2019	9.65%	3.10%	6.55%
5/21/2019	9.80%	3.10%	6.70%
Average:			4.70%
Count:			1,121

I/A

Expected Earnings Analysis

		[1] Expected ROE 2022-24	[2]	[3] Shares Outstanding 2022-24	[4] % Increase	[5] Adjustment Factor	[6] Adjusted ROE
Company	Ticker		2019				
Atmos Energy Corporation	ATO	10.0%	120.00	145.00	3.86%	1.019	10.19%
Chesapeake Utilities Corporation	CPK	10.0%	17.00	20.00	3.30%	1.016	10.16%
New Jersey Resources Corporation	NJR	11.5%	88.00	89.00	0.23%	1.001	11.51%
Northwest Natural Holding Company	NWN	12.0%	30.00	32.00	1.30%	1.006	12.08%
ONE Gas, Inc.	OGS	10.0%	53.00	55.00	0.74%	1.004	10.04%
South Jersey Industries, Inc.	SJI	12.0%	94.00	100.00	1.25%	1.006	12.07%
Spire Inc.	SR	4.5%	51.00	55.00	1.52%	1.008	4.53%
Southwest Gas Corporation	SWX	9.5%	54.00	58.00	1.44%	1.007	9.57%
						Median	10.18%
						Average	10.02%

Notes:

[1] Source: Value Line

[2] Source: Value Line

[3] Source: Value Line

[4] Equals $\left(\frac{[3]}{[2]}\right)^{(1/5)} - 1$ [5] Equals $(2 \times (1 + [4])) / (2 + [4])$ [6] Equals $[1] \times [5]$

Proof Concept: Earnings, Dividends, Book Value and
Stock Price Growth Rate Equivalence in Constant Growth DCF

Line Description	IMPLIED GROWTH RATE AT ALLOWED ROE:	
Input	Dividend Yield	3.90% [1]
Assumes g = Allowed ROE - Div. Yield	Assumed Growth Rate	6.70%
Input	Total Return	10.60% [1]
Input	Payout Ratio	64.42% [2]
Input	Book Value/Share	20 [2]

		0	1	2	3	4	5	6	7	8	9	10	250
BV/S Escalates at Constant Growth g	Book Value/Share	\$ 20.00	\$ 21.34	\$ 22.77	\$ 24.30	\$ 25.92	\$ 27.66	\$ 29.51	\$ 31.49	\$ 33.60	\$ 35.85	\$ 38.25	\$ 219,854,243.12
Demonstrating Constant BV/S growth			6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%
Earnings based on ROE applied to BV/S	Earnings/share	\$ 2.12	\$ 2.26	\$ 2.41	\$ 2.58	\$ 2.75	\$ 2.93	\$ 3.13	\$ 3.34	\$ 3.56	\$ 3.80	\$ 4.05	\$ 23,304,549.77
Demonstrating Constant EPS growth			6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%
Demonstrating Constant Return Earned based on BV/S and EPS	Allowed ROE	10.60%	10.60%	10.60%	10.60%	10.60%	10.60%	10.60%	10.60%	10.60%	10.60%	10.60%	10.60%
Div/S based on EPS and Constant Payout ratio	Dividends/Share	\$ 1.37	\$ 1.46	\$ 1.55	\$ 1.65	\$ 1.77	\$ 1.89	\$ 2.02	\$ 2.15	\$ 2.29	\$ 2.45	\$ 2.61	\$ 15,012,856.84
Demonstrating Constant Div/S growth			6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%
Retained Earnings based on difference between EPS and Div/S	Earnings retained to book value	\$ 0.75	\$ 0.80	\$ 0.86	\$ 0.92	\$ 0.98	\$ 1.04	\$ 1.11	\$ 1.19	\$ 1.27	\$ 1.35	\$ 1.44	\$ 8,291,692.93
Demonstrating Constant growth in Retained Earnings			6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%
Demonstrating Constant Market/Book ratio	Market/Book Ratio	1.868	1.868	1.868	1.868	1.868	1.868	1.868	1.868	1.868	1.868	1.868	1.868
DCF calculation of market price = [Div/S]/[1+g]/[ROE-g]	Market Price	\$ 37.36	\$ 39.87	\$ 42.54	\$ 45.39	\$ 48.43	\$ 51.67	\$ 55.14	\$ 58.83	\$ 62.77	\$ 66.98	\$ 71.47	\$ 410,736,365.30
Demonstrating Price Appreciation equals Long Term Growth Rate	Price Appreciation	6.70%	OK	<== Price appreciation should equal long term growth rate									
Demonstrating Constant Price/Earnings Ratio	Price/Earnings	17.62	17.62	17.62	17.62	17.62	17.62	17.62	17.62	17.62	17.62	17.62	17.62
Present Value Factor calculated based upon the current period and the Constant ROE	Present Value Factor		0.9042	0.8175	0.7392	0.6683	0.6043	0.5463	0.4940	0.4466	0.4038	0.3651	0.00

CASE 1	DIVIDENDS IN PERPETUITY												
Present value of Div/S obtained by multiplying nominal Div/S by the Present Value Factor for the period	Present Value Dividend	1.3176	1.2711	1.2253	1.1830	1.1413	1.1011	1.0622	1.0248	0.9886	0.9538		0.00
Total Value of Investment sum of all Present Value Dividends in perpetuity (250 instances for demonstration purposes)	Value of Investment	\$ 37.36											

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CASE 2		10-YEAR HOLDING PERIOD																			
Present value of Div/S obtained by multiplying nominal Div/S by the Present Value Factor for the period	Present Value of Dividend	\$	1.32	\$	1.27	\$	1.23	\$	1.18	\$	1.14	\$	1.10	\$	1.06	\$	1.02	\$	0.99	\$	0.95
Present value of Stock Price obtained by multiplying nominal Stock Price by the Present Value Factor for the 10th Period (Terminal Value)	Present Value of Stock Price		—		—		—		—		—		—		—		—		—		26.09
Value of dividends = sum of all Present Value Dividends for periods 1-10	Value of Dividends	\$	11.27																		
Present value of Stock Price obtained by multiplying nominal Stock Price by the Present Value Factor for the 10th Period (Terminal Value)	Value of Stock Price	\$	26.09																		
Total Value of investment sum of all Present Value Dividends for periods 1-10 and Present Value of Stock in period 10 (Terminal Value)	Value of Investment	\$	37.36																		

CASE 3		5-YEAR HOLDING PERIOD									
Present value of Div/S obtained by multiplying nominal Div/S by the Present Value Factor for the period	Present Value of Dividend	\$	1.32	\$	1.27	\$	1.23	\$	1.18	\$	1.14
Present value of Stock Price obtained by multiplying nominal Stock Price by the Present Value Factor for the 5th Period (Terminal Value)	Present Value of Stock Price		—		—		—		—		31.23
Value of dividends = sum of all Present Value Dividends for periods 1-5	Value of Dividends	\$	6.14								
Present value of Stock Price obtained by multiplying nominal Stock Price by the Present Value Factor for the 5th Period (Terminal Value)	Value of Stock Price	\$	31.23								
Total Value of investment sum of all Present Value Dividends for periods 1-5 and Present Value of Stock in period 5 (Terminal Value)	Value of Investment	\$	37.36								

[1] Note, for purposes of this exhibit, these data are illustrative only.

[2] Note: Illustrative only.

Growth Rate Regression Analysis

Company	Ticker	Median P/E	Past 10 Year Earnings Growth Rate	Past 10 Year Dividend Growth Rate	Past 10 Year Book Value Growth Rate	Past 5 Year Earnings Growth Rate	Past 5 Year Dividend Growth Rate	Past 5 Year Book Value Growth Rate	Proj. Earnings Growth Rate	Proj. Dividend Growth Rate	Proj. Book Value Growth Rate
Atmos Energy Corporation	ATO	16.00	6.50%	3.50%	5.50%	10.00%	5.50%	7.00%	7.50%	7.00%	7.00%
Chesapeake Utilities Corporation	CPK	17.00	9.00%	5.00%	10.00%	8.00%	6.00%	10.50%	9.00%	9.00%	9.00%
Spire Inc	SR	17.00	4.00%	4.00%	7.50%	7.50%	5.00%	8.00%	5.50%	4.00%	4.00%
New Jersey Resources Corporation	NJR	16.00	7.00%	7.50%	7.00%	5.50%	6.50%	8.00%	3.50%	4.00%	7.00%
NiSource Inc.	NI	20.00	-3.00%	-2.50%	-3.50%	-7.50%	-5.50%	-6.50%	12.50%	9.00%	7.00%
Northwest Natural Gas Company	NWN	21.00	-10.50%	2.50%	2.00%	-18.00%	1.00%	-	27.00%	2.50%	1.00%
ONE Gas, Inc.	OGS	NMF	-	-	-	-	-	-	8.00%	8.50%	4.50%
South Jersey Industries, Inc.	SJI	18.00	1.50%	8.00%	6.50%	-2.50%	6.00%	6.00%	10.50%	4.00%	4.50%
Southwest Gas Corporation	SWX	17.00	7.00%	8.50%	5.50%	4.50%	10.50%	6.00%	9.00%	5.00%	7.50%
UGI Corporation	UGI	16.00	7.00%	7.50%	8.00%	11.50%	6.50%	7.00%	7.00%	6.50%	8.50%
ALLETE, Inc.	ALE	17.00	1.00%	3.00%	5.50%	4.00%	3.00%	5.50%	5.00%	5.00%	3.00%
Alliant Energy Corporation	LNT	16.00	4.50%	7.50%	4.00%	4.50%	7.00%	4.50%	6.50%	5.50%	7.50%
Ameren Corporation	AEE	16.00	0.50%	-3.50%	-0.50%	4.50%	2.50%	0.50%	6.50%	6.00%	5.00%
American Electric Power Company, Inc.	AEP	15.00	3.00%	4.50%	4.00%	5.00%	5.00%	3.50%	4.00%	6.00%	4.50%
Avangrid, Inc.	AGR	NMF	-	-	-	-	-	-	10.00%	3.00%	1.50%
Avista Corporation	AVA	17.00	5.50%	8.50%	4.00%	5.00%	4.50%	4.50%	3.50%	4.00%	3.50%
Black Hills Corporation	BKH	18.00	6.50%	3.00%	2.50%	11.00%	4.00%	3.00%	6.00%	6.50%	5.50%
CenterPoint Energy, Inc.	CNP	17.00	-1.50%	5.50%	6.50%	-3.00%	7.50%	1.00%	12.50%	2.50%	13.50%
CMS Energy Corporation	CMS	17.00	10.00%	21.50%	4.50%	7.00%	7.00%	5.50%	7.00%	7.00%	7.50%
Consolidated Edison, Inc.	ED	15.00	2.50%	2.00%	4.00%	2.00%	2.50%	4.00%	3.00%	3.50%	3.00%
Dominion Energy Inc.	D	20.00	3.00%	7.50%	4.50%	3.50%	7.50%	6.50%	6.50%	6.00%	7.00%
DTE Energy Company	DTE	16.00	8.00%	4.50%	4.00%	8.00%	6.50%	4.50%	5.50%	6.00%	6.50%
Duke Energy Corporation	DUK	18.00	2.50%	7.00%	1.00%	0.50%	3.00%	1.50%	6.00%	3.00%	2.50%
Edison International	EIX	13.00	-3.50%	6.50%	3.00%	-9.00%	11.00%	3.00%	NMF	3.50%	3.00%
El Paso Electric Company	EE	16.00	4.00%	-	7.00%	-	8.00%	5.50%	4.50%	6.50%	4.00%
Entergy Corporation	ETR	12.00	0.50%	3.00%	1.00%	-0.50%	1.00%	-2.50%	0.50%	2.50%	5.00%
Eversource Energy	EVERG	NMF	-	-	-	-	-	-	NMF	NMF	NMF
Exelon Corporation	EXC	14.00	-5.50%	-3.50%	7.00%	-3.50%	-7.00%	4.50%	10.50%	5.50%	5.50%
FirstEnergy Corp.	FE	17.00	-7.00%	-2.50%	-8.00%	-2.50%	-5.00%	-17.50%	8.00%	3.50%	9.00%
Hawaiian Electric Industries, Inc.	HE	18.00	5.00%	-	3.00%	4.00%	-	3.50%	4.50%	3.00%	4.00%
IDACORP, Inc.	IDA	14.00	7.00%	6.50%	5.50%	4.00%	10.00%	5.00%	3.50%	6.00%	4.00%
MGE Energy, Inc.	MGEE	18.00	4.50%	3.00%	5.50%	3.50%	4.00%	6.00%	9.00%	4.50%	6.00%
NextEra Energy, Inc.	NEE	16.00	6.00%	9.00%	8.50%	6.00%	10.50%	9.50%	10.00%	10.00%	6.50%
Eversource Energy	ES	18.00	8.00%	9.50%	6.50%	7.00%	8.00%	5.00%	5.50%	5.50%	5.00%
NorthWestern Corporation	NWE	16.00	8.50%	5.00%	5.50%	7.00%	7.00%	8.00%	3.00%	4.50%	3.00%
OGE Energy Corp.	OGE	17.00	4.00%	6.50%	7.50%	1.00%	9.50%	6.00%	6.50%	7.50%	3.50%
Otter Tail Corporation	OTTR	22.00	2.00%	1.00%	-	14.00%	1.50%	3.50%	5.00%	4.00%	4.50%
Pinnacle West Capital Corporation	PNW	15.00	4.50%	2.50%	2.50%	5.00%	3.00%	4.50%	5.00%	6.00%	3.50%
PNM Resources, Inc.	PNM	18.00	7.00%	2.50%	-	6.00%	11.00%	1.00%	8.50%	7.00%	4.50%
Portland General Electric Company	POR	16.00	3.50%	4.50%	2.50%	4.00%	4.50%	3.50%	4.50%	6.50%	3.00%
PPL Corporation	PPL	13.00	0.00%	2.50%	1.00%	-0.50%	2.00%	-4.00%	1.50%	2.00%	6.00%
Public Service Enterprise Group Incorporated	PEG	13.00	1.50%	3.50%	6.50%	1.00%	4.00%	5.00%	6.00%	5.00%	5.00%
Sempra Energy	SRE	19.00	1.00%	10.00%	5.50%	2.00%	7.50%	4.00%	11.00%	8.00%	6.50%
Southern Company	SO	16.00	3.00%	3.50%	4.00%	2.50%	3.50%	3.00%	3.00%	3.00%	3.50%
WEC Energy Group, Inc.	WEC	17.00	8.50%	15.50%	8.50%	6.00%	11.00%	10.50%	6.00%	6.00%	3.50%
Xcel Energy Inc.	XEL	15.00	5.50%	4.50%	4.50%	5.00%	6.00%	4.50%	5.50%	6.00%	4.50%

Notes:

Source: Value Line Reports as of June 28, 2019

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SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.53085
R Square	0.28181
Adjusted R Square	0.26385
Standard Error	1.73333
Observations	42

ANOVA

	df	SS	MS	F	Significance F
Regression	1	47.15555	47.15555	15.69528	0.00030
Residual	40	120.17778	3.00444		
Total	41	167.33333			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	14.94021	0.51131	29.21924	0.00000	13.90681	15.97361
Proj. Earnings Growth Rate	25.39796	6.41083	3.96172	0.00030	12.44118	38.35474

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.11578
R Square	0.01340
Adjusted R Square	-0.01056
Standard Error	2.08389
Observations	43

ANOVA

	df	SS	MS	F	Significance F
Regression	1	2.41819	2.41819	0.55685	0.45879
Residual	41	178.04693	4.34261		
Total	42	180.46512			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	15.91033	0.95378	16.68143	0.00000	13.98415	17.83652
Proj. Dividend Growth Rate	12.71173	17.03473	0.74622	0.45979	-21.69060	47.11407

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.04030
R Square	0.00162
Adjusted R Square	-0.02273
Standard Error	2.09629
Observations	43

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.29309	0.29309	0.06670	0.79750
Residual	41	180.17202	4.39444		
Total	42	180.46512			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	16.38672	0.81879	20.01327	0.00000	14.73313	18.04031
Proj. Book Value Growth Rate	3.71221	14.37415	0.25826	0.79750	-25.31698	32.74140

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.09830
R Square	0.00966
Adjusted R Square	-0.01509
Standard Error	2.03541
Observations	42

ANOVA

	df	SS	MS	F	Significance F
Regression	1	1.61704	1.61704	0.39031	0.53568
Residual	40	165.71630	4.14291		
Total	41	167.33333			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	16.81783	0.39647	42.41937	0.00000	16.01654	17.61912
Past 10 Year Earnings Growth Rate	-4.47107	7.15655	-0.62475	0.53568	-16.93500	8.99287

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.06269
R Square	0.00393
Adjusted R Square	-0.02161
Standard Error	2.13276
Observations	41

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.69997	0.69997	0.15388	0.69699
Residual	39	177.39759	4.54866		
Total	40	178.09756			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	16.41494	0.46952	32.86131	0.00000	15.40457	17.42532
Past 10 Year Dividend Growth Rate	2.67651	7.33786	0.36229	0.69699	-11.86372	17.72074

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.07123
R Square	0.00507
Adjusted R Square	-0.02044
Standard Error	1.94277
Observations	41

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.75073	0.75073	0.19890	0.65807
Residual	39	147.20049	3.77437		
Total	40	147.95122			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	16.59483	0.50528	32.84289	0.00000	15.57281	17.61685
Past 10 Year Book Value Growth Rate	-4.09307	9.17762	-0.44598	0.65807	-22.65856	14.47042

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.02180
R Square	0.00048
Adjusted R Square	-0.02451
Standard Error	2.12151
Observations	42

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.08637	0.08637	0.01919	0.89052
Residual	40	180.03268	4.50082		
Total	41	180.11905			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	16.56999	0.37467	44.22566	0.00000	15.81278	17.32723
Past 5 Year Earnings Growth Rate	0.79725	5.75523	0.13853	0.89052	-10.83450	12.42900

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.05181
R Square	0.00266
Adjusted R Square	-0.02227
Standard Error	2.10909
Observations	42

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.47517	0.47517	0.10682	0.74548
Residual	40	177.82859	4.44824		
Total	41	178.40476			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	16.67850	0.51601	32.32199	0.00000	15.63560	17.72140
Past 5 Year Dividend Growth Rate	-2.58682	7.91469	-0.32684	0.74548	-18.58301	13.40937

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.02677
R Square	0.00072
Adjusted R Square	-0.02427
Standard Error	2.00226
Observations	42

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.11502	0.11502	0.02869	0.86635
Residual	40	160.38117	4.00903		
Total	41	160.47619			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	16.43336	0.39926	41.15996	0.00000	15.62643	17.24028
Past 5 Year Book Value Growth Rate	1.11052	6.55635	0.16938	0.86635	-12.14036	14.36139

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.71747
R Square	0.51477
Adjusted R Square	0.34680
Standard Error	1.37218
Observations	36

ANOVA

	df	SS	MS	F	Significance F
Regression	9	51.93439	5.77049	3.05474	0.01221
Residual	26	48.95450	1.88287		
Total	35	100.88889			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	14.82193	0.92280	16.06189	0.00000	12.92509	16.71878
Past 10 Year Earnings Growth Rate	4.26574	17.34646	0.24591	0.80768	-31.39042	39.92190
Past 10 Year Dividend Growth Rate	8.61351	7.93510	1.08549	0.28767	-7.69733	24.92434
Past 10 Year Book Value Growth Rate	-40.52140	21.26476	-1.90557	0.06782	-84.23175	3.16895
Past 5 Year Earnings Growth Rate	9.67661	11.10394	0.87146	0.39148	-13.14788	32.50109
Past 5 Year Dividend Growth Rate	4.54908	10.63041	0.42793	0.67223	-17.30204	26.40019
Past 5 Year Book Value Growth Rate	14.18284	18.30905	0.77464	0.44554	-23.45196	51.81763
Proj. Earnings Growth Rate	59.13230	16.01072	3.69330	0.00103	26.22180	92.04280
Proj. Dividend Growth Rate	-22.21128	17.56117	-1.26480	0.21716	-58.30877	13.88622
Proj. Book Value Growth Rate	-17.39438	17.06760	-1.01915	0.31752	-52.47733	17.68857

Monthly Historical Market Risk Premium Regression Analysis

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.131530
R Square	0.017300
Adjusted R Square	0.015517
Standard Error	0.211587
Observations	1105

ANOVA

	df	SS	MS	F	Significance F
Regression	2	0.868540	0.434270	9.700262	0.000067
Residual	1102	49.335314	0.044769		
Total	1104	50.203854			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.135158	0.019421	6.959361	0.000000	0.097052	0.173265
Risk Free Rate (Rf)	-0.939711	0.253161	-3.711915	0.000216	-1.436443	-0.442980
Time	-0.000001	0.000001	-0.806342	0.420220	-0.000002	0.000001

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.129308
R Square	0.016720
Adjusted R Square	0.015829
Standard Error	0.211553
Observations	1105

Risk-free rate	4.00%	Source: Exhibit JRW-9
Implied MRP	8.32%	
Market Return	12.32%	
Beta Coefficient	0.650	Source: Exhibit JRW-9
Implied CAPM Result	9.41%	
Implied ECAPM Result	10.13%	

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.839432	0.839432	18.756285	0.000016
Residual	1103	49.364422	0.044755		
Total	1104	50.203854			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.123811	0.013383	9.251654	0.000000	0.097553	0.150070
Risk Free Rate (Rf)	-1.016252	0.234654	-4.330853	0.000016	-1.476670	-0.555833

Source: Duff & Phelps, 2019 SBBI Yearbook, Appendix A-1 and A-7.

Ibbotson Historical MRP and Risk-Free rate

Month	MRP	Risk Free	Time
Dec-26	0.0801	0.0360	9832
Jan-27	0.0585	0.0360	9863
Feb-27	0.1671	0.0324	9894
Mar-27	0.2489	0.0348	9922
Apr-27	0.2448	0.0324	9953
May-27	0.2973	0.0336	9983
Jun-27	0.2318	0.0324	10014
Jul-27	0.2549	0.0324	10044
Aug-27	0.2860	0.0348	10075
Sep-27	0.3139	0.0324	10106
Oct-27	0.2825	0.0336	10136
Nov-27	0.3313	0.0324	10167
Dec-27	0.3424	0.0324	10197
Jan-28	0.3638	0.0324	10228
Feb-28	0.2785	0.0300	10259
Mar-28	0.4077	0.0324	10288
Apr-28	0.4292	0.0312	10319
May-28	0.3715	0.0324	10349
Jun-28	0.3266	0.0324	10380
Jul-28	0.2592	0.0324	10410
Aug-28	0.2922	0.0348	10441
Sep-28	0.2703	0.0324	10472
Oct-28	0.3586	0.0360	10502
Nov-28	0.4365	0.0324	10533
Dec-28	0.4013	0.0348	10563
Jan-29	0.4911	0.0348	10594
Feb-29	0.5099	0.0324	10625
Mar-29	0.3540	0.0336	10653
Apr-29	0.3242	0.0408	10684
May-29	0.2541	0.0360	10714
Jun-29	0.4600	0.0348	10745
Jul-29	0.5050	0.0384	10775
Aug-29	0.5395	0.0360	10806
Sep-29	0.4243	0.0384	10837
Oct-29	0.1175	0.0372	10867
Nov-29	-0.1360	0.0312	10898
Dec-29	-0.1213	0.0372	10928
Jan-30	-0.1140	0.0348	10959
Feb-30	-0.0848	0.0312	10990
Mar-30	-0.0103	0.0348	11018
Apr-30	-0.0337	0.0324	11049
May-30	-0.0061	0.0324	11079
Jun-30	-0.2633	0.0348	11110
Jul-30	-0.2683	0.0336	11140
Aug-30	-0.3275	0.0312	11171
Sep-30	-0.3906	0.0348	11202
Oct-30	-0.2985	0.0324	11232
Nov-30	-0.2003	0.0312	11263
Dec-30	-0.2826	0.0336	11293
Jan-31	-0.2922	0.0336	11324
Feb-31	-0.2223	0.0312	11355
Mar-31	-0.3372	0.0348	11383

Month	MRP	Risk Free	Time
Apr-31	-0.3949	0.0324	11414
May-31	-0.4698	0.0312	11444
Jun-31	-0.2681	0.0336	11475
Jul-31	-0.3485	0.0324	11505
Aug-31	-0.3458	0.0324	11536
Sep-31	-0.4790	0.0324	11567
Oct-31	-0.3754	0.0348	11597
Nov-31	-0.4250	0.0372	11628
Dec-31	-0.4719	0.0384	11658
Jan-32	-0.5136	0.0384	11689
Feb-32	-0.5428	0.0384	11720
Mar-32	-0.5673	0.0372	11749
Apr-32	-0.6211	0.0360	11780
May-32	-0.6623	0.0336	11810
Jun-32	-0.7093	0.0336	11841
Jul-32	-0.5506	0.0336	11871
Aug-32	-0.3758	0.0336	11902
Sep-32	-0.1274	0.0312	11933
Oct-32	-0.3148	0.0324	11963
Nov-32	-0.2839	0.0312	11994
Dec-32	-0.1144	0.0324	12024
Jan-33	-0.0806	0.0324	12055
Feb-33	-0.2867	0.0276	12086
Mar-33	-0.1649	0.0324	12114
Apr-33	0.5153	0.0300	12145
May-33	1.2798	0.0336	12175
Jun-33	1.5988	0.0300	12206
Jul-33	0.7076	0.0312	12236
Aug-33	0.3737	0.0312	12267
Sep-33	0.2626	0.0300	12298
Oct-33	0.3352	0.0312	12328
Nov-33	0.5566	0.0300	12359
Dec-33	0.5061	0.0336	12389
Jan-34	0.6548	0.0348	12420
Feb-34	0.9585	0.0288	12451
Mar-34	0.8872	0.0324	12479
Apr-34	0.2827	0.0300	12510
May-34	0.0109	0.0300	12540
Jun-34	-0.0897	0.0288	12571
Jul-34	-0.1174	0.0288	12601
Aug-34	-0.1658	0.0288	12632
Sep-34	-0.0592	0.0276	12663
Oct-34	-0.0038	0.0324	12693
Nov-34	-0.0185	0.0300	12724
Dec-34	-0.0444	0.0300	12754
Jan-35	-0.1762	0.0300	12785
Feb-35	-0.1731	0.0252	12816
Mar-35	-0.1986	0.0264	12844
Apr-35	-0.0953	0.0276	12875
May-35	0.0199	0.0276	12905
Jun-35	0.0692	0.0264	12936
Jul-35	0.3117	0.0288	12966
Aug-35	0.2711	0.0276	12997
Sep-35	0.3087	0.0276	13028

Month	MRP	Risk Free	Time
Oct-35	0.4550	0.0276	13058
Nov-35	0.3904	0.0288	13089
Dec-35	0.4478	0.0288	13119
Jan-36	0.6142	0.0288	13150
Feb-36	0.7115	0.0276	13181
Mar-36	0.8095	0.0288	13210
Apr-36	0.5221	0.0264	13241
May-36	0.5423	0.0264	13271
Jun-36	0.4863	0.0288	13302
Jul-36	0.4667	0.0276	13332
Aug-36	0.4479	0.0276	13363
Sep-36	0.4179	0.0252	13394
Oct-36	0.4153	0.0276	13424
Nov-36	0.3696	0.0264	13455
Dec-36	0.3128	0.0264	13485
Jan-37	0.2789	0.0252	13516
Feb-37	0.2759	0.0240	13547
Mar-37	0.2298	0.0264	13575
Apr-37	0.2207	0.0276	13606
May-37	0.1546	0.0264	13636
Jun-37	0.0553	0.0300	13667
Jul-37	0.0914	0.0288	13697
Aug-37	0.0226	0.0276	13728
Sep-37	-0.1275	0.0276	13759
Oct-37	-0.2742	0.0276	13789
Nov-37	-0.3497	0.0288	13820
Dec-37	-0.3778	0.0276	13850
Jan-38	-0.3927	0.0276	13881
Feb-38	-0.3602	0.0252	13912
Mar-38	-0.5241	0.0276	13940
Apr-38	-0.3993	0.0264	13971
May-38	-0.4186	0.0264	14001
Jun-38	-0.2249	0.0252	14032
Jul-38	-0.2467	0.0252	14062
Aug-38	-0.2269	0.0264	14093
Sep-38	-0.0798	0.0252	14124
Oct-38	0.1032	0.0264	14154
Nov-38	0.1777	0.0252	14185
Dec-38	0.2850	0.0264	14215
Jan-39	0.1795	0.0252	14246
Feb-39	0.1498	0.0228	14277
Mar-39	0.3266	0.0252	14305
Apr-39	0.1549	0.0228	14336
May-39	0.2832	0.0240	14366
Jun-39	-0.0401	0.0216	14397
Jul-39	-0.0083	0.0228	14427
Aug-39	-0.0509	0.0216	14458
Sep-39	0.0918	0.0228	14489
Oct-39	-0.0060	0.0276	14519
Nov-39	-0.0155	0.0240	14550
Dec-39	-0.0270	0.0228	14580
Jan-40	0.0079	0.0240	14611
Feb-40	-0.0153	0.0216	14642
Mar-40	0.1535	0.0228	14671

Month	MRP	Risk Free	Time
Apr-40	0.1551	0.0216	14702
May-40	-0.1774	0.0228	14732
Jun-40	-0.0495	0.0228	14763
Jul-40	-0.1176	0.0240	14793
Aug-40	-0.0197	0.0228	14824
Sep-40	-0.1517	0.0216	14855
Oct-40	-0.1037	0.0216	14885
Nov-40	-0.0959	0.0216	14916
Dec-40	-0.1182	0.0204	14946
Jan-41	-0.1288	0.0192	14977
Feb-41	-0.1458	0.0192	15008
Mar-41	-0.1528	0.0216	15036
Apr-41	-0.2028	0.0204	15067
May-41	0.0593	0.0204	15097
Jun-41	0.0375	0.0192	15128
Jul-41	0.0618	0.0192	15158
Aug-41	0.0263	0.0192	15189
Sep-41	0.0065	0.0192	15220
Oct-41	-0.0997	0.0192	15250
Nov-41	-0.0942	0.0168	15281
Dec-41	-0.1350	0.0192	15311
Jan-42	-0.0831	0.0252	15342
Feb-42	-0.0901	0.0228	15373
Mar-42	-0.1595	0.0252	15401
Apr-42	-0.1386	0.0240	15432
May-42	-0.0841	0.0228	15462
Jun-42	-0.1182	0.0252	15493
Jul-42	-0.1389	0.0252	15523
Aug-42	-0.1253	0.0252	15554
Sep-42	-0.0917	0.0240	15585
Oct-42	0.0403	0.0252	15615
Nov-42	0.0704	0.0240	15646
Dec-42	0.1783	0.0252	15676
Jan-43	0.2477	0.0240	15707
Feb-43	0.3448	0.0228	15738
Mar-43	0.5175	0.0252	15766
Apr-43	0.5884	0.0240	15797
May-43	0.5532	0.0228	15827
Jun-43	0.5511	0.0252	15858
Jul-43	0.4195	0.0252	15888
Aug-43	0.4205	0.0252	15919
Sep-43	0.4179	0.0240	15950
Oct-43	0.3117	0.0240	15980
Nov-43	0.2258	0.0252	16011
Dec-43	0.2339	0.0252	16041
Jan-44	0.1675	0.0252	16072
Feb-44	0.1077	0.0240	16103
Mar-44	0.0690	0.0252	16132
Apr-44	0.0554	0.0240	16163
May-44	0.0482	0.0264	16193
Jun-44	0.0843	0.0240	16224
Jul-44	0.1220	0.0252	16254
Aug-44	0.1205	0.0252	16285
Sep-44	0.0914	0.0240	16316

Month	MRP	Risk Free	Time
Oct-44	0.1050	0.0252	16346
Nov-44	0.2013	0.0240	16377
Dec-44	0.1733	0.0240	16407
Jan-45	0.1706	0.0252	16438
Feb-45	0.2505	0.0216	16469
Mar-45	0.1687	0.0240	16497
Apr-45	0.2907	0.0228	16528
May-45	0.2519	0.0228	16558
Jun-45	0.1854	0.0228	16589
Jul-45	0.1882	0.0216	16619
Aug-45	0.2447	0.0228	16650
Sep-45	0.3024	0.0216	16681
Oct-45	0.3407	0.0228	16711
Nov-45	0.3773	0.0216	16742
Dec-45	0.3425	0.0216	16772
Jan-46	0.4184	0.0204	16803
Feb-46	0.2425	0.0180	16834
Mar-46	0.3627	0.0192	16862
Apr-46	0.2970	0.0204	16893
May-46	0.3078	0.0216	16923
Jun-46	0.2619	0.0192	16954
Jul-46	0.2506	0.0228	16984
Aug-46	0.0957	0.0204	17015
Sep-46	-0.0590	0.0216	17046
Oct-46	-0.0958	0.0228	17076
Nov-46	-0.1323	0.0216	17107
Dec-46	-0.1035	0.0228	17137
Jan-47	-0.1417	0.0216	17168
Feb-47	-0.0863	0.0192	17199
Mar-47	-0.1447	0.0216	17227
Apr-47	-0.2073	0.0204	17258
May-47	-0.2289	0.0204	17288
Jun-47	-0.1554	0.0228	17319
Jul-47	-0.0991	0.0216	17349
Aug-47	-0.0513	0.0204	17380
Sep-47	0.0429	0.0216	17411
Oct-47	0.0748	0.0216	17441
Nov-47	0.0597	0.0204	17472
Dec-47	0.0318	0.0252	17502
Jan-48	-0.0324	0.0240	17533
Feb-48	-0.0623	0.0228	17564
Mar-48	0.0260	0.0264	17593
Apr-48	0.0999	0.0240	17624
May-48	0.1994	0.0216	17654
Jun-48	0.1380	0.0252	17685
Jul-48	0.0407	0.0228	17715
Aug-48	0.0775	0.0252	17746
Sep-48	0.0603	0.0240	17777
Oct-48	0.1115	0.0228	17807
Nov-48	0.0184	0.0252	17838
Dec-48	0.0311	0.0240	17868
Jan-49	0.0769	0.0240	17899
Feb-49	0.0899	0.0216	17930
Mar-49	0.0408	0.0228	17958

Month	MRP	Risk Free	Time
Apr-49	-0.0067	0.0216	17989
May-49	-0.1151	0.0240	18019
Jun-49	-0.1176	0.0228	18050
Jul-49	-0.0047	0.0204	18080
Aug-49	-0.0010	0.0228	18111
Sep-49	0.0580	0.0204	18142
Oct-49	0.0196	0.0216	18172
Nov-49	0.1516	0.0204	18203
Dec-49	0.1675	0.0204	18233
Jan-50	0.1850	0.0216	18264
Feb-50	0.2489	0.0192	18295
Mar-50	0.2148	0.0216	18323
Apr-50	0.3009	0.0192	18354
May-50	0.4013	0.0228	18384
Jun-50	0.3238	0.0204	18415
Jul-50	0.2555	0.0216	18445
Aug-50	0.2835	0.0216	18476
Sep-50	0.3266	0.0204	18507
Oct-50	0.2920	0.0228	18537
Nov-50	0.2924	0.0216	18568
Dec-50	0.2958	0.0216	18598
Jan-51	0.3503	0.0240	18629
Feb-51	0.3482	0.0204	18660
Mar-51	0.3151	0.0228	18688
Apr-51	0.3168	0.0240	18719
May-51	0.2125	0.0252	18749
Jun-51	0.2556	0.0240	18780
Jul-51	0.3269	0.0276	18810
Aug-51	0.3338	0.0252	18841
Sep-51	0.2619	0.0228	18872
Oct-51	0.2322	0.0276	18902
Nov-51	0.2255	0.0252	18933
Dec-51	0.2138	0.0264	18963
Jan-52	0.1594	0.0276	18994
Feb-52	0.1105	0.0252	19025
Mar-52	0.1841	0.0276	19054
Apr-52	0.0803	0.0264	19085
May-52	0.1559	0.0240	19115
Jun-52	0.2402	0.0264	19146
Jul-52	0.1793	0.0264	19176
Aug-52	0.1173	0.0252	19207
Sep-52	0.0934	0.0276	19238
Oct-52	0.1073	0.0276	19268
Nov-52	0.1631	0.0252	19299
Dec-52	0.1547	0.0288	19329
Jan-53	0.1292	0.0276	19360
Feb-53	0.1525	0.0252	19391
Mar-53	0.0675	0.0300	19419
Apr-53	0.0876	0.0288	19450
May-53	0.0589	0.0288	19480
Jun-53	-0.0094	0.0324	19511
Jul-53	0.0007	0.0300	19541
Aug-53	-0.0439	0.0300	19572
Sep-53	-0.0228	0.0300	19603

Month	MRP	Risk Free	Time
Oct-53	0.0318	0.0276	19633
Nov-53	-0.0061	0.0288	19664
Dec-53	-0.0386	0.0288	19694
Jan-54	0.0208	0.0276	19725
Feb-54	0.0450	0.0264	19756
Mar-54	0.1001	0.0300	19784
Apr-54	0.1909	0.0264	19815
May-54	0.2345	0.0240	19845
Jun-54	0.2495	0.0300	19876
Jul-54	0.2925	0.0264	19906
Aug-54	0.3227	0.0276	19937
Sep-54	0.4338	0.0264	19968
Oct-54	0.3371	0.0252	19998
Nov-54	0.4288	0.0276	20029
Dec-54	0.4986	0.0276	20059
Jan-55	0.4507	0.0264	20090
Feb-55	0.4488	0.0264	20121
Mar-55	0.3957	0.0288	20149
Apr-55	0.3818	0.0264	20180
May-55	0.3292	0.0300	20210
Jun-55	0.4413	0.0276	20241
Jul-55	0.4459	0.0276	20271
Aug-55	0.4790	0.0324	20302
Sep-55	0.3822	0.0288	20333
Oct-55	0.3642	0.0300	20363
Nov-55	0.3549	0.0288	20394
Dec-55	0.2867	0.0288	20424
Jan-56	0.2153	0.0300	20455
Feb-56	0.2566	0.0276	20486
Mar-56	0.3519	0.0276	20515
Apr-56	0.2952	0.0312	20546
May-56	0.2097	0.0312	20576
Jun-56	0.1639	0.0276	20607
Jul-56	0.1500	0.0312	20637
Aug-56	0.1141	0.0312	20668
Sep-56	0.0508	0.0300	20699
Oct-56	0.0850	0.0348	20729
Nov-56	-0.0033	0.0324	20760
Dec-56	0.0320	0.0336	20790
Jan-57	0.0248	0.0348	20821
Feb-57	-0.0393	0.0300	20852
Mar-57	-0.0863	0.0312	20880
Apr-57	-0.0528	0.0348	20911
May-57	0.0547	0.0348	20941
Jun-57	0.0171	0.0300	20972
Jul-57	-0.0322	0.0396	21002
Aug-57	-0.0470	0.0360	21033
Sep-57	-0.0650	0.0372	21064
Oct-57	-0.1005	0.0372	21094
Nov-57	-0.0717	0.0348	21125
Dec-57	-0.1427	0.0348	21155
Jan-58	-0.0617	0.0324	21186
Feb-58	-0.0470	0.0300	21217
Mar-58	-0.0386	0.0324	21245

Month	MRP	Risk Free	Time
Apr-58	-0.0422	0.0312	21276
May-58	-0.0612	0.0288	21306
Jun-58	-0.0382	0.0324	21337
Jul-58	-0.0069	0.0324	21367
Aug-58	0.0666	0.0324	21398
Sep-58	0.1896	0.0384	21429
Oct-58	0.2620	0.0384	21459
Nov-58	0.2736	0.0336	21490
Dec-58	0.3941	0.0396	21520
Jan-59	0.3427	0.0372	21551
Feb-59	0.3693	0.0372	21582
Mar-59	0.3226	0.0420	21610
Apr-59	0.3335	0.0396	21641
May-59	0.3373	0.0396	21671
Jun-59	0.2934	0.0432	21702
Jul-59	0.2836	0.0420	21732
Aug-59	0.2474	0.0420	21763
Sep-59	0.1327	0.0408	21794
Oct-59	0.1152	0.0420	21824
Nov-59	0.1042	0.0420	21855
Dec-59	0.0766	0.0432	21885
Jan-60	-0.0061	0.0420	21916
Feb-60	0.0016	0.0444	21947
Mar-60	-0.0121	0.0432	21976
Apr-60	-0.0631	0.0384	22007
May-60	-0.0609	0.0444	22037
Jun-60	-0.0344	0.0408	22068
Jul-60	-0.0900	0.0384	22098
Aug-60	-0.0522	0.0408	22129
Sep-60	-0.0650	0.0384	22160
Oct-60	-0.0792	0.0396	22190
Nov-60	-0.0517	0.0384	22221
Dec-60	-0.0350	0.0396	22251
Jan-61	0.1103	0.0396	22282
Feb-61	0.1334	0.0360	22313
Mar-61	0.1788	0.0372	22341
Apr-61	0.2050	0.0372	22372
May-61	0.1909	0.0408	22402
Jun-61	0.1347	0.0384	22433
Jul-61	0.2027	0.0396	22463
Aug-61	0.1938	0.0396	22494
Sep-61	0.2482	0.0384	22525
Oct-61	0.2850	0.0408	22555
Nov-61	0.2852	0.0384	22586
Dec-61	0.2317	0.0372	22616
Jan-62	0.1040	0.0444	22647
Feb-62	0.0977	0.0384	22678
Mar-62	0.0616	0.0396	22706
Apr-62	-0.0105	0.0396	22737
May-62	-0.1149	0.0384	22767
Jun-62	-0.1626	0.0360	22798
Jul-62	-0.1412	0.0408	22828
Aug-62	-0.1443	0.0408	22859
Sep-62	-0.1652	0.0360	22890

Month	MRP	Risk Free	Time
Oct-62	-0.1910	0.0420	22920
Nov-62	-0.1341	0.0372	22951
Dec-62	-0.1257	0.0384	22981
Jan-63	-0.0431	0.0384	23012
Feb-63	-0.0831	0.0348	23043
Mar-63	-0.0458	0.0372	23071
Apr-63	0.0675	0.0408	23102
May-63	0.1898	0.0396	23132
Jun-63	0.2756	0.0360	23163
Jul-63	0.1854	0.0432	23193
Aug-63	0.2283	0.0396	23224
Sep-63	0.2761	0.0408	23255
Oct-63	0.3121	0.0408	23285
Nov-63	0.1763	0.0384	23316
Dec-63	0.1846	0.0432	23346
Jan-64	0.1597	0.0420	23377
Feb-64	0.2108	0.0384	23408
Mar-64	0.1801	0.0444	23437
Apr-64	0.1330	0.0420	23468
May-64	0.1330	0.0384	23498
Jun-64	0.1695	0.0456	23529
Jul-64	0.1995	0.0420	23559
Aug-64	0.1226	0.0420	23590
Sep-64	0.1706	0.0408	23621
Oct-64	0.1421	0.0408	23651
Nov-64	0.1469	0.0420	23682
Dec-64	0.1231	0.0420	23712
Jan-65	0.1325	0.0396	23743
Feb-65	0.1203	0.0384	23774
Mar-65	0.0791	0.0456	23802
Apr-65	0.1165	0.0396	23833
May-65	0.0947	0.0396	23863
Jun-65	0.0161	0.0456	23894
Jul-65	0.0159	0.0408	23924
Aug-65	0.0540	0.0444	23955
Sep-65	0.0599	0.0420	23986
Oct-65	0.0822	0.0408	24016
Nov-65	0.0746	0.0444	24047
Dec-65	0.0801	0.0444	24077
Jan-66	0.0482	0.0456	24108
Feb-66	0.0353	0.0408	24139
Mar-66	0.0202	0.0480	24167
Apr-66	0.0110	0.0432	24198
May-66	-0.0438	0.0492	24228
Jun-66	-0.0069	0.0468	24259
Jul-66	-0.0331	0.0456	24289
Aug-66	-0.1374	0.0516	24320
Sep-66	-0.1692	0.0492	24351
Oct-66	-0.1505	0.0480	24381
Nov-66	-0.1367	0.0456	24412
Dec-66	-0.1473	0.0468	24442
Jan-67	-0.0827	0.0480	24473
Feb-67	-0.0556	0.0408	24504
Mar-67	0.0001	0.0468	24532

Month	MRP	Risk Free	Time
Apr-67	0.0272	0.0420	24563
May-67	0.0192	0.0516	24593
Jun-67	0.0606	0.0468	24624
Jul-67	0.1217	0.0516	24654
Aug-67	0.2057	0.0504	24685
Sep-67	0.2580	0.0480	24716
Oct-67	0.1562	0.0540	24746
Nov-67	0.1526	0.0540	24777
Dec-67	0.1871	0.0528	24807
Jan-68	0.0394	0.0600	24838
Feb-68	0.0127	0.0504	24869
Mar-68	-0.0190	0.0516	24898
Apr-68	0.0130	0.0588	24929
May-68	0.0884	0.0552	24959
Jun-68	0.0837	0.0504	24990
Jul-68	0.0072	0.0576	25020
Aug-68	0.0395	0.0504	25051
Sep-68	0.0432	0.0528	25082
Oct-68	0.0829	0.0540	25112
Nov-68	0.1379	0.0516	25143
Dec-68	0.0520	0.0588	25173
Jan-69	0.0922	0.0600	25204
Feb-69	0.0775	0.0552	25235
Mar-69	0.1042	0.0564	25263
Apr-69	0.0298	0.0660	25294
May-69	0.0248	0.0564	25324
Jun-69	-0.0540	0.0660	25355
Jul-69	-0.0931	0.0624	25385
Aug-69	-0.0607	0.0576	25416
Sep-69	-0.1300	0.0660	25447
Oct-69	-0.0979	0.0684	25477
Nov-69	-0.1646	0.0588	25508
Dec-69	-0.1569	0.0720	25538
Jan-70	-0.2143	0.0672	25569
Feb-70	-0.1193	0.0624	25600
Mar-70	-0.1541	0.0672	25628
Apr-70	-0.2515	0.0648	25659
May-70	-0.2991	0.0660	25689
Jun-70	-0.3051	0.0768	25720
Jul-70	-0.1893	0.0708	25750
Aug-70	-0.1823	0.0684	25781
Sep-70	-0.1281	0.0672	25812
Oct-70	-0.1769	0.0660	25842
Nov-70	-0.1041	0.0696	25873
Dec-70	-0.0233	0.0636	25903
Jan-71	0.1096	0.0612	25934
Feb-71	0.0664	0.0552	25965
Mar-71	0.0938	0.0672	25993
Apr-71	0.2647	0.0576	26024
May-71	0.2911	0.0564	26054
Jun-71	0.3515	0.0672	26085
Jul-71	0.2044	0.0624	26115
Aug-71	0.1891	0.0660	26146
Sep-71	0.1474	0.0588	26177

Month	MRP	Risk Free	Time
Oct-71	0.1125	0.0564	26207
Nov-71	0.0512	0.0612	26238
Dec-71	0.0832	0.0600	26268
Jan-72	0.0585	0.0600	26299
Feb-72	0.0795	0.0564	26330
Mar-72	0.0432	0.0588	26359
Apr-72	0.0104	0.0576	26390
May-72	0.0670	0.0660	26420
Jun-72	0.0486	0.0588	26451
Jul-72	0.0964	0.0612	26481
Aug-72	0.0965	0.0588	26512
Sep-72	0.1012	0.0564	26543
Oct-72	0.1568	0.0624	26573
Nov-72	0.2198	0.0576	26604
Dec-72	0.1358	0.0540	26634
Jan-73	0.0838	0.0648	26665
Feb-73	0.0169	0.0612	26696
Mar-73	0.0030	0.0672	26724
Apr-73	-0.0463	0.0684	26755
May-73	-0.0833	0.0696	26785
Jun-73	-0.0642	0.0660	26816
Jul-73	-0.0357	0.0732	26846
Aug-73	-0.1077	0.0744	26877
Sep-73	-0.0555	0.0660	26908
Oct-73	-0.0755	0.0756	26938
Nov-73	-0.2182	0.0672	26969
Dec-73	-0.2187	0.0720	26999
Jan-74	-0.2134	0.0732	27030
Feb-74	-0.1749	0.0660	27061
Mar-74	-0.1977	0.0696	27089
Apr-74	-0.2077	0.0816	27120
May-74	-0.2195	0.0816	27150
Jun-74	-0.2178	0.0732	27181
Jul-74	-0.3259	0.0864	27211
Aug-74	-0.3575	0.0780	27242
Sep-74	-0.4744	0.0852	27273
Oct-74	-0.3722	0.0840	27303
Nov-74	-0.3120	0.0744	27334
Dec-74	-0.3449	0.0804	27364
Jan-75	-0.2470	0.0816	27395
Feb-75	-0.1828	0.0720	27426
Mar-75	-0.1488	0.0792	27454
Apr-75	-0.0663	0.0804	27485
May-75	0.0151	0.0804	27515
Jun-75	0.0770	0.0840	27546
Jul-75	0.0920	0.0816	27576
Aug-75	0.1831	0.0780	27607
Sep-75	0.2937	0.0876	27638
Oct-75	0.1741	0.0864	27668
Nov-75	0.2877	0.0732	27699
Dec-75	0.2833	0.0888	27729
Jan-76	0.2878	0.0780	27760
Feb-76	0.2001	0.0720	27791
Mar-76	0.1980	0.0852	27820

Month	MRP	Risk Free	Time
Apr-76	0.1340	0.0768	27851
May-76	0.0729	0.0708	27881
Jun-76	0.0523	0.0876	27912
Jul-76	0.1340	0.0780	27942
Aug-76	0.1487	0.0828	27973
Sep-76	0.2279	0.0768	28004
Oct-76	0.1281	0.0732	28034
Nov-76	0.0846	0.0792	28065
Dec-76	0.1629	0.0756	28095
Jan-77	-0.0190	0.0708	28126
Feb-77	-0.0264	0.0684	28157
Mar-77	-0.0809	0.0780	28185
Apr-77	-0.0647	0.0732	28216
May-77	-0.0798	0.0804	28246
Jun-77	-0.0692	0.0744	28277
Jul-77	-0.0740	0.0708	28307
Aug-77	-0.0982	0.0804	28338
Sep-77	-0.1147	0.0732	28369
Oct-77	-0.1375	0.0756	28399
Nov-77	-0.1019	0.0756	28430
Dec-77	-0.1462	0.0744	28460
Jan-78	-0.1650	0.0828	28491
Feb-78	-0.1552	0.0720	28522
Mar-78	-0.1293	0.0828	28550
Apr-78	-0.0406	0.0756	28581
May-78	-0.0250	0.0900	28611
Jun-78	-0.0815	0.0828	28642
Jul-78	-0.0140	0.0876	28672
Aug-78	0.0410	0.0840	28703
Sep-78	0.0416	0.0780	28734
Oct-78	-0.0236	0.0876	28764
Nov-78	-0.0325	0.0852	28795
Dec-78	-0.0159	0.0816	28825
Jan-79	0.0862	0.0948	28856
Feb-79	0.0882	0.0780	28887
Mar-79	0.1114	0.0888	28915
Apr-79	0.0169	0.0912	28946
May-79	-0.0176	0.0924	28976
Jun-79	0.0510	0.0852	29007
Jul-79	-0.0034	0.0912	29037
Aug-79	0.0287	0.0876	29068
Sep-79	0.0429	0.0816	29099
Oct-79	0.0551	0.0984	29129
Nov-79	0.0824	0.0996	29160
Dec-79	0.0848	0.0996	29190
Jan-80	0.1062	0.0996	29221
Feb-80	0.1441	0.1008	29252
Mar-80	-0.0578	0.1188	29281
Apr-80	-0.0174	0.1200	29312
May-80	0.0801	0.1044	29342
Jun-80	0.0683	0.1032	29373
Jul-80	0.1363	0.1008	29403
Aug-80	0.0839	0.0972	29434
Sep-80	0.0949	0.1164	29465

Month	MRP	Risk Free	Time
Oct-80	0.2042	0.1164	29495
Nov-80	0.2843	0.1092	29526
Dec-80	0.1946	0.1296	29556
Jan-81	0.0806	0.1128	29587
Feb-81	0.1089	0.1056	29618
Mar-81	0.2655	0.1332	29646
Apr-81	0.1914	0.1212	29677
May-81	0.1256	0.1248	29707
Jun-81	0.0740	0.1308	29738
Jul-81	-0.0015	0.1308	29768
Aug-81	-0.0791	0.1320	29799
Sep-81	-0.1641	0.1368	29830
Oct-81	-0.1351	0.1404	29860
Nov-81	-0.1896	0.1356	29891
Dec-81	-0.1691	0.1200	29921
Jan-82	-0.1513	0.1296	29952
Feb-82	-0.2143	0.1236	29983
Mar-82	-0.2781	0.1488	30011
Apr-82	-0.2079	0.1344	30042
May-82	-0.2269	0.1212	30072
Jun-82	-0.2582	0.1440	30103
Jul-82	-0.2707	0.1368	30133
Aug-82	-0.1013	0.1344	30164
Sep-82	-0.0203	0.1200	30195
Oct-82	0.0530	0.1092	30225
Nov-82	0.0490	0.1128	30256
Dec-82	0.1025	0.1116	30286
Jan-83	0.1728	0.1044	30317
Feb-83	0.2839	0.0972	30348
Mar-83	0.3333	0.1068	30376
Apr-83	0.3857	0.1020	30407
May-83	0.4147	0.1092	30437
Jun-83	0.5021	0.1080	30468
Jul-83	0.4884	0.1056	30498
Aug-83	0.3152	0.1236	30529
Sep-83	0.3273	0.1152	30560
Oct-83	0.1651	0.1140	30590
Nov-83	0.1412	0.1128	30621
Dec-83	0.1123	0.1128	30651
Jan-84	0.0526	0.1236	30682
Feb-84	-0.0016	0.1104	30713
Mar-84	-0.0295	0.1176	30742
Apr-84	-0.1064	0.1248	30773
May-84	-0.1546	0.1236	30803
Jun-84	-0.1732	0.1272	30834
Jul-84	-0.1684	0.1392	30864
Aug-84	-0.0653	0.1272	30895
Sep-84	-0.0649	0.1128	30926
Oct-84	-0.0647	0.1296	30956
Nov-84	-0.0791	0.1092	30987
Dec-84	-0.0549	0.1176	31017
Jan-85	0.0366	0.1152	31048
Feb-85	0.1087	0.0984	31079
Mar-85	0.0762	0.1128	31107

Month	MRP	Risk Free	Time
Apr-85	0.0547	0.1224	31138
May-85	0.2035	0.1164	31168
Jun-85	0.2159	0.0960	31199
Jul-85	0.2147	0.1128	31229
Aug-85	0.0840	0.1020	31260
Sep-85	0.0421	0.1056	31291
Oct-85	0.0891	0.1068	31321
Nov-85	0.1974	0.0972	31352
Dec-85	0.2184	0.1032	31382
Jan-86	0.1379	0.0948	31413
Feb-86	0.2210	0.0876	31444
Mar-86	0.2934	0.0852	31472
Apr-86	0.2903	0.0756	31503
May-86	0.2830	0.0744	31533
Jun-86	0.2743	0.0840	31564
Jul-86	0.2052	0.0792	31594
Aug-86	0.3133	0.0756	31625
Sep-86	0.2390	0.0780	31656
Oct-86	0.2480	0.0828	31686
Nov-86	0.2029	0.0708	31717
Dec-86	0.1007	0.0840	31747
Jan-87	0.2611	0.0768	31778
Feb-87	0.2239	0.0708	31809
Mar-87	0.1809	0.0792	31837
Apr-87	0.1867	0.0780	31868
May-87	0.1320	0.0792	31898
Jun-87	0.1609	0.0900	31929
Jul-87	0.3048	0.0876	31959
Aug-87	0.2554	0.0900	31990
Sep-87	0.3436	0.0900	32021
Oct-87	-0.0290	0.0948	32051
Nov-87	-0.1359	0.0900	32082
Dec-87	-0.0413	0.0936	32112
Jan-88	-0.1191	0.0864	32143
Feb-88	-0.1126	0.0852	32174
Mar-88	-0.1681	0.0864	32203
Apr-88	-0.1476	0.0840	32234
May-88	-0.1595	0.0936	32264
Jun-88	-0.1602	0.0912	32295
Jul-88	-0.2019	0.0852	32325
Aug-88	-0.2772	0.0996	32356
Sep-88	-0.2147	0.0912	32387
Oct-88	0.0562	0.0912	32417
Nov-88	0.1480	0.0840	32448
Dec-88	0.0781	0.0900	32478
Jan-89	0.1053	0.0960	32509
Feb-89	0.0360	0.0828	32540
Mar-89	0.0860	0.0948	32568
Apr-89	0.1445	0.0840	32599
May-89	0.1720	0.0960	32629
Jun-89	0.1212	0.0840	32660
Jul-89	0.2371	0.0816	32690
Aug-89	0.3110	0.0792	32721
Sep-89	0.2504	0.0780	32752

Month	MRP	Risk Free	Time
Oct-89	0.1766	0.0864	32782
Nov-89	0.2310	0.0768	32813
Dec-89	0.2381	0.0768	32843
Jan-90	0.0564	0.0876	32874
Feb-90	0.1091	0.0792	32905
Mar-90	0.1062	0.0852	32933
Apr-90	0.0150	0.0900	32964
May-90	0.0759	0.0900	32994
Jun-90	0.0824	0.0816	33025
Jul-90	-0.0241	0.0888	33055
Aug-90	-0.1350	0.0852	33086
Sep-90	-0.1758	0.0828	33117
Oct-90	-0.1720	0.0972	33147
Nov-90	-0.1205	0.0852	33178
Dec-90	-0.1181	0.0864	33208
Jan-91	-0.0014	0.0852	33239
Feb-91	0.0698	0.0768	33270
Mar-91	0.0670	0.0768	33298
Apr-91	0.0849	0.0912	33329
May-91	0.0358	0.0816	33359
Jun-91	-0.0017	0.0756	33390
Jul-91	0.0366	0.0912	33420
Aug-91	0.1872	0.0816	33451
Sep-91	0.2310	0.0816	33482
Oct-91	0.2571	0.0780	33512
Nov-91	0.1317	0.0720	33543
Dec-91	0.2239	0.0816	33573
Jan-92	0.1538	0.0732	33604
Feb-92	0.0889	0.0708	33635
Mar-92	0.0301	0.0804	33664
Apr-92	0.0616	0.0780	33695
May-92	0.0255	0.0732	33725
Jun-92	0.0543	0.0804	33756
Jul-92	0.0520	0.0756	33786
Aug-92	0.0075	0.0720	33817
Sep-92	0.0405	0.0696	33848
Oct-92	0.0310	0.0684	33878
Nov-92	0.1111	0.0732	33909
Dec-92	0.0011	0.0756	33939
Jan-93	0.0343	0.0708	33970
Feb-93	0.0399	0.0660	34001
Mar-93	0.0766	0.0756	34029
Apr-93	0.0238	0.0684	34060
May-93	0.0533	0.0624	34090
Jun-93	0.0614	0.0744	34121
Jul-93	0.0219	0.0648	34151
Aug-93	0.0842	0.0672	34182
Sep-93	0.0699	0.0600	34213
Oct-93	0.0899	0.0588	34243
Nov-93	0.0372	0.0636	34274
Dec-93	0.0339	0.0660	34304
Jan-94	0.0625	0.0660	34335
Feb-94	0.0246	0.0588	34366
Mar-94	-0.0551	0.0696	34394

Month	MRP	Risk Free	Time
Apr-94	-0.0149	0.0684	34425
May-94	-0.0331	0.0756	34455
Jun-94	-0.0598	0.0732	34486
Jul-94	-0.0201	0.0720	34516
Aug-94	-0.0247	0.0792	34547
Sep-94	-0.0364	0.0732	34578
Oct-94	-0.0398	0.0792	34608
Nov-94	-0.0660	0.0768	34639
Dec-94	-0.0661	0.0792	34669
Jan-95	-0.0783	0.0840	34700
Feb-95	0.0029	0.0708	34731
Mar-95	0.0790	0.0768	34759
Apr-95	0.1046	0.0696	34790
May-95	0.1230	0.0780	34820
Jun-95	0.1955	0.0648	34851
Jul-95	0.1934	0.0672	34881
Aug-95	0.1461	0.0684	34912
Sep-95	0.2343	0.0624	34943
Oct-95	0.1948	0.0684	34973
Nov-95	0.3078	0.0612	35004
Dec-95	0.3155	0.0588	35034
Jan-96	0.3207	0.0648	35065
Feb-96	0.2890	0.0576	35096
Mar-96	0.2580	0.0624	35125
Apr-96	0.2312	0.0708	35156
May-96	0.2152	0.0696	35186
Jun-96	0.1957	0.0648	35217
Jul-96	0.0912	0.0744	35247
Aug-96	0.1187	0.0684	35278
Sep-96	0.1313	0.0720	35309
Oct-96	0.1711	0.0696	35339
Nov-96	0.2162	0.0624	35370
Dec-96	0.1635	0.0672	35400
Jan-97	0.1965	0.0672	35431
Feb-97	0.2006	0.0612	35462
Mar-97	0.1270	0.0708	35490
Apr-97	0.1802	0.0708	35521
May-97	0.2248	0.0696	35551
Jun-97	0.2758	0.0708	35582
Jul-97	0.4516	0.0696	35612
Aug-97	0.3480	0.0588	35643
Sep-97	0.3353	0.0696	35674
Oct-97	0.2570	0.0648	35704
Nov-97	0.2290	0.0564	35735
Dec-97	0.2689	0.0648	35765
Jan-98	0.2120	0.0576	35796
Feb-98	0.2974	0.0528	35827
Mar-98	0.4186	0.0624	35855
Apr-98	0.3528	0.0588	35886
May-98	0.2495	0.0576	35916
Jun-98	0.2397	0.0624	35947
Jul-98	0.1347	0.0588	35977
Aug-98	0.0235	0.0576	36008
Sep-98	0.0378	0.0528	36039

Month	MRP	Risk Free	Time
Oct-98	0.1696	0.0504	36069
Nov-98	0.1827	0.0540	36100
Dec-98	0.2318	0.0540	36130
Jan-99	0.2744	0.0504	36161
Feb-99	0.1493	0.0480	36192
Mar-99	0.1209	0.0636	36220
Apr-99	0.1605	0.0576	36251
May-99	0.1562	0.0540	36281
Jun-99	0.1615	0.0660	36312
Jul-99	0.1407	0.0612	36342
Aug-99	0.3333	0.0648	36373
Sep-99	0.2155	0.0624	36404
Oct-99	0.1966	0.0600	36434
Nov-99	0.1416	0.0672	36465
Dec-99	0.1443	0.0660	36495
Jan-00	0.0350	0.0684	36526
Feb-00	0.0561	0.0612	36557
Mar-00	0.1146	0.0648	36586
Apr-00	0.0449	0.0564	36617
May-00	0.0376	0.0672	36647
Jun-00	0.0101	0.0624	36678
Jul-00	0.0273	0.0624	36708
Aug-00	0.1032	0.0600	36739
Sep-00	0.0776	0.0552	36770
Oct-00	-0.0027	0.0636	36800
Nov-00	-0.0997	0.0576	36831
Dec-00	-0.1450	0.0540	36861
Jan-01	-0.0677	0.0588	36892
Feb-01	-0.1324	0.0504	36923
Mar-01	-0.2708	0.0540	36951
Apr-01	-0.1861	0.0564	36982
May-01	-0.1656	0.0600	37012
Jun-01	-0.2046	0.0564	37043
Jul-01	-0.2056	0.0624	37073
Aug-01	-0.2990	0.0552	37104
Sep-01	-0.3154	0.0492	37135
Oct-01	-0.3066	0.0576	37165
Nov-01	-0.1714	0.0492	37196
Dec-01	-0.1740	0.0552	37226
Jan-02	-0.2191	0.0576	37257
Feb-02	-0.1467	0.0516	37288
Mar-02	-0.0491	0.0516	37316
Apr-02	-0.1910	0.0648	37347
May-02	-0.1972	0.0588	37377
Jun-02	-0.2326	0.0528	37408
Jul-02	-0.2975	0.0612	37438
Aug-02	-0.2328	0.0528	37469
Sep-02	-0.2552	0.0504	37500
Oct-02	-0.1991	0.0480	37530
Nov-02	-0.2131	0.0480	37561
Dec-02	-0.2751	0.0540	37591
Jan-03	-0.2794	0.0492	37622
Feb-03	-0.2725	0.0456	37653
Mar-03	-0.2956	0.0480	37681

Month	MRP	Risk Free	Time
Apr-03	-0.1811	0.0480	37712
May-03	-0.1274	0.0468	37742
Jun-03	-0.0407	0.0432	37773
Jul-03	0.0609	0.0456	37803
Aug-03	0.0702	0.0504	37834
Sep-03	0.1888	0.0552	37865
Oct-03	0.1589	0.0492	37895
Nov-03	0.1041	0.0468	37926
Dec-03	0.2305	0.0564	37956
Jan-04	0.2954	0.0504	37987
Feb-04	0.3397	0.0456	38018
Mar-04	0.2997	0.0516	38047
Apr-04	0.1820	0.0468	38078
May-04	0.1353	0.0480	38108
Jun-04	0.1334	0.0576	38139
Jul-04	0.0801	0.0516	38169
Aug-04	0.0605	0.0540	38200
Sep-04	0.0906	0.0480	38231
Oct-04	0.0485	0.0456	38261
Nov-04	0.0793	0.0492	38292
Dec-04	0.0571	0.0516	38322
Jan-05	0.0129	0.0492	38353
Feb-05	0.0276	0.0420	38384
Mar-05	0.0175	0.0492	38412
Apr-05	0.0164	0.0468	38443
May-05	0.0342	0.0480	38473
Jun-05	0.0198	0.0432	38504
Jul-05	0.0995	0.0408	38534
Aug-05	0.0775	0.0480	38565
Sep-05	0.0804	0.0420	38596
Oct-05	0.0403	0.0468	38626
Nov-05	0.0375	0.0468	38657
Dec-05	0.0021	0.0468	38687
Jan-06	0.0556	0.0480	38718
Feb-06	0.0407	0.0432	38749
Mar-06	0.0703	0.0468	38777
Apr-06	0.1072	0.0468	38808
May-06	0.0286	0.0576	38838
Jun-06	0.0334	0.0528	38869
Jul-06	-0.0003	0.0540	38899
Aug-06	0.0371	0.0516	38930
Sep-06	0.0610	0.0468	38961
Oct-06	0.1130	0.0504	38991
Nov-06	0.0955	0.0468	39022
Dec-06	0.1147	0.0432	39052
Jan-07	0.0935	0.0516	39083
Feb-07	0.0740	0.0456	39114
Mar-07	0.0715	0.0468	39142
Apr-07	0.1020	0.0504	39173
May-07	0.1788	0.0492	39203
Jun-07	0.1579	0.0480	39234
Jul-07	0.1061	0.0552	39264
Aug-07	0.1009	0.0504	39295
Sep-07	0.1201	0.0444	39326

Month	MRP	Risk Free	Time
Oct-07	0.0940	0.0516	39356
Nov-07	0.0305	0.0468	39387
Dec-07	0.0107	0.0444	39417
Jan-08	-0.0710	0.0480	39448
Feb-08	-0.0793	0.0408	39479
Mar-08	-0.0977	0.0444	39508
Apr-08	-0.0913	0.0420	39539
May-08	-0.1138	0.0444	39569
Jun-08	-0.1815	0.0480	39600
Jul-08	-0.1601	0.0468	39630
Aug-08	-0.1569	0.0432	39661
Sep-08	-0.2686	0.0468	39692
Oct-08	-0.4070	0.0444	39722
Nov-08	-0.4258	0.0432	39753
Dec-08	-0.4113	0.0396	39783
Jan-09	-0.4167	0.0288	39814
Feb-09	-0.4692	0.0360	39845
Mar-09	-0.4229	0.0420	39873
Apr-09	-0.3879	0.0348	39904
May-09	-0.3653	0.0396	39934
Jun-09	-0.3078	0.0456	39965
Jul-09	-0.2429	0.0432	39995
Aug-09	-0.2258	0.0432	40026
Sep-09	-0.1100	0.0408	40057
Oct-09	0.0582	0.0396	40087
Nov-09	0.2117	0.0420	40118
Dec-09	0.2237	0.0408	40148
Jan-10	0.2880	0.0432	40179
Feb-10	0.4964	0.0396	40210
Mar-10	0.4495	0.0480	40238
Apr-10	0.3427	0.0456	40269
May-10	0.1689	0.0408	40299
Jun-10	0.0998	0.0444	40330
Jul-10	0.1018	0.0372	40360
Aug-10	0.0113	0.0384	40391
Sep-10	0.0710	0.0312	40422
Oct-10	0.1334	0.0324	40452
Nov-10	0.0615	0.0384	40483
Dec-10	0.1128	0.0384	40513
Jan-11	0.1805	0.0420	40544
Feb-11	0.1880	0.0384	40575
Mar-11	0.1139	0.0432	40603
Apr-11	0.1320	0.0408	40634
May-11	0.2170	0.0432	40664
Jun-11	0.2692	0.0384	40695
Jul-11	0.1580	0.0384	40725
Aug-11	0.1453	0.0396	40756
Sep-11	-0.0186	0.0300	40787
Oct-11	0.0545	0.0264	40817
Nov-11	0.0508	0.0276	40848
Dec-11	-0.0052	0.0264	40878
Jan-12	0.0170	0.0252	40909
Feb-12	0.0284	0.0228	40940
Mar-12	0.0589	0.0264	40969

Month	MRP	Risk Free	Time
Apr-12	0.0175	0.0300	41000
May-12	-0.0306	0.0264	41030
Jun-12	0.0340	0.0204	41061
Jul-12	0.0672	0.0240	41091
Aug-12	0.1595	0.0204	41122
Sep-12	0.2826	0.0192	41153
Oct-12	0.1278	0.0240	41183
Nov-12	0.1383	0.0228	41214
Dec-12	0.1382	0.0216	41244
Jan-13	0.1412	0.0264	41275
Feb-13	0.1081	0.0264	41306
Mar-13	0.1143	0.0252	41334
Apr-13	0.1377	0.0312	41365
May-13	0.2463	0.0264	41395
Jun-13	0.1784	0.0276	41426
Jul-13	0.2140	0.0360	41456
Aug-13	0.1546	0.0324	41487
Sep-13	0.1587	0.0348	41518
Oct-13	0.2371	0.0348	41548
Nov-13	0.2720	0.0312	41579
Dec-13	0.2869	0.0372	41609
Jan-14	0.1781	0.0372	41640
Feb-14	0.2238	0.0300	41671
Mar-14	0.1838	0.0348	41699
Apr-14	0.1720	0.0324	41730
May-14	0.1709	0.0336	41760
Jun-14	0.2162	0.0300	41791
Jul-14	0.1382	0.0312	41821
Aug-14	0.2225	0.0300	41852
Sep-14	0.1698	0.0276	41883
Oct-14	0.1427	0.0300	41913
Nov-14	0.1410	0.0276	41944
Dec-14	0.1105	0.0264	41974
Jan-15	0.1183	0.0240	42005
Feb-15	0.1372	0.0180	42036
Mar-15	0.1023	0.0252	42064
Apr-15	0.1071	0.0228	42095
May-15	0.0942	0.0240	42125
Jun-15	0.0467	0.0276	42156
Jul-15	0.0834	0.0288	42186
Aug-15	-0.0214	0.0264	42217
Sep-15	-0.0312	0.0252	42248
Oct-15	0.0271	0.0252	42278
Nov-15	0.0014	0.0264	42309
Dec-15	-0.0123	0.0264	42339
Jan-16	-0.0316	0.0252	42370
Feb-16	-0.0857	0.0240	42401
Mar-16	-0.0036	0.0216	42430
Apr-16	-0.0081	0.0204	42461
May-16	-0.0066	0.0240	42491
Jun-16	0.0186	0.0216	42522
Jul-16	0.0396	0.0168	42552
Aug-16	0.1066	0.0192	42583
Sep-16	0.1365	0.0180	42614

Month	MRP	Risk Free	Time
Oct-16	0.0261	0.0192	42644
Nov-16	0.0591	0.0216	42675
Dec-16	0.0934	0.0264	42705
Jan-17	0.1718	0.0288	42736
Feb-17	0.2247	0.0252	42767
Mar-17	0.1444	0.0276	42795
Apr-17	0.1542	0.0252	42826
May-17	0.1461	0.0288	42856
Jun-17	0.1539	0.0252	42887
Jul-17	0.1342	0.0264	42917
Aug-17	0.1362	0.0264	42948
Sep-17	0.1635	0.0228	42979
Oct-17	0.2100	0.0264	43009
Nov-17	0.2037	0.0252	43040
Dec-17	0.1944	0.0240	43070
Jan-18	0.2354	0.0288	43101
Feb-18	0.1447	0.0264	43132
Mar-18	0.1112	0.0288	43160
Apr-18	0.1026	0.0300	43191
May-18	0.1138	0.0300	43221
Jun-18	0.1162	0.0276	43252
Jul-18	0.1324	0.0300	43282
Aug-18	0.1666	0.0300	43313
Sep-18	0.1527	0.0264	43344
Oct-18	0.0375	0.0360	43374
Nov-18	0.0291	0.0336	43405
Dec-18	-0.0762	0.0324	43435

CAPM vs. ECAPM Security Market Line
Using Dr. Woolridge's Inputs

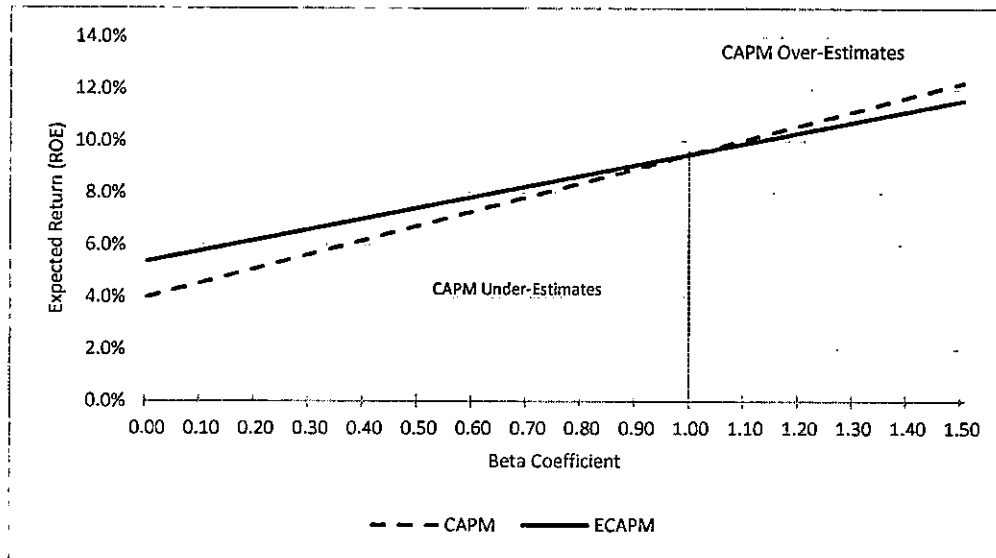
Risk-Free Rate		4.00%	ECAPM alpha	
MRP		5.50%		
Beta	CAPM	ECAPM	1.00%	2.00%
0.00	4.00%	5.38%	5.00%	6.00%
0.01	4.06%	5.42%	5.05%	6.04%
0.02	4.11%	5.46%	5.09%	6.07%
0.03	4.17%	5.50%	5.14%	6.11%
0.04	4.22%	5.54%	5.18%	6.14%
0.05	4.28%	5.58%	5.23%	6.18%
0.06	4.33%	5.62%	5.27%	6.21%
0.07	4.39%	5.66%	5.32%	6.25%
0.08	4.44%	5.71%	5.36%	6.28%
0.09	4.50%	5.75%	5.41%	6.32%
0.10	4.55%	5.79%	5.45%	6.35%
0.11	4.61%	5.83%	5.50%	6.39%
0.12	4.66%	5.87%	5.54%	6.42%
0.13	4.72%	5.91%	5.59%	6.46%
0.14	4.77%	5.95%	5.63%	6.49%
0.15	4.83%	5.99%	5.68%	6.53%
0.16	4.88%	6.04%	5.72%	6.56%
0.17	4.94%	6.08%	5.77%	6.60%
0.18	4.99%	6.12%	5.81%	6.63%
0.19	5.05%	6.16%	5.86%	6.67%
0.20	5.10%	6.20%	5.90%	6.70%
0.21	5.16%	6.24%	5.95%	6.74%
0.22	5.21%	6.28%	5.99%	6.77%
0.23	5.27%	6.32%	6.04%	6.81%
0.24	5.32%	6.37%	6.08%	6.84%
0.25	5.38%	6.41%	6.13%	6.88%
0.26	5.43%	6.45%	6.17%	6.91%
0.27	5.49%	6.49%	6.22%	6.95%
0.28	5.54%	6.53%	6.26%	6.98%
0.29	5.60%	6.57%	6.31%	7.02%
0.30	5.65%	6.61%	6.35%	7.05%
0.31	5.71%	6.65%	6.40%	7.09%
0.32	5.76%	6.70%	6.44%	7.12%
0.33	5.82%	6.74%	6.49%	7.16%
0.34	5.87%	6.78%	6.53%	7.19%
0.35	5.93%	6.82%	6.58%	7.23%
0.36	5.98%	6.86%	6.62%	7.26%
0.37	6.04%	6.90%	6.67%	7.30%
0.38	6.09%	6.94%	6.71%	7.33%
0.39	6.15%	6.98%	6.76%	7.37%
0.40	6.20%	7.03%	6.80%	7.40%
0.41	6.26%	7.07%	6.85%	7.44%

Beta	CAPM	ECAPM	1.00%	2.00%
0.42	6.31%	7.11%	6.89%	7.47%
0.43	6.37%	7.15%	6.94%	7.51%
0.44	6.42%	7.19%	6.98%	7.54%
0.45	6.48%	7.23%	7.03%	7.58%
0.46	6.53%	7.27%	7.07%	7.61%
0.47	6.59%	7.31%	7.12%	7.65%
0.48	6.64%	7.36%	7.16%	7.68%
0.49	6.70%	7.40%	7.21%	7.72%
0.50	6.75%	7.44%	7.25%	7.75%
0.51	6.81%	7.48%	7.30%	7.79%
0.52	6.86%	7.52%	7.34%	7.82%
0.53	6.92%	7.56%	7.39%	7.86%
0.54	6.97%	7.60%	7.43%	7.89%
0.55	7.03%	7.64%	7.48%	7.93%
0.56	7.08%	7.69%	7.52%	7.96%
0.57	7.14%	7.73%	7.57%	8.00%
0.58	7.19%	7.77%	7.61%	8.03%
0.59	7.25%	7.81%	7.66%	8.07%
0.60	7.30%	7.85%	7.70%	8.10%
0.61	7.36%	7.89%	7.75%	8.14%
0.62	7.41%	7.93%	7.79%	8.17%
0.63	7.47%	7.97%	7.84%	8.21%
0.64	7.52%	8.02%	7.88%	8.24%
0.65	7.58%	8.06%	7.93%	8.28%
0.66	7.63%	8.10%	7.97%	8.31%
0.67	7.69%	8.14%	8.02%	8.35%
0.68	7.74%	8.18%	8.06%	8.38%
0.69	7.80%	8.22%	8.11%	8.42%
0.70	7.85%	8.26%	8.15%	8.45%
0.71	7.91%	8.30%	8.20%	8.49%
0.72	7.96%	8.35%	8.24%	8.52%
0.73	8.02%	8.39%	8.29%	8.56%
0.74	8.07%	8.43%	8.33%	8.59%
0.75	8.13%	8.47%	8.38%	8.63%
0.76	8.18%	8.51%	8.42%	8.66%
0.77	8.24%	8.55%	8.47%	8.70%
0.78	8.29%	8.59%	8.51%	8.73%
0.79	8.35%	8.63%	8.56%	8.77%
0.80	8.40%	8.68%	8.60%	8.80%
0.81	8.46%	8.72%	8.65%	8.84%
0.82	8.51%	8.76%	8.69%	8.87%
0.83	8.57%	8.80%	8.74%	8.91%
0.84	8.62%	8.84%	8.78%	8.94%
0.85	8.68%	8.88%	8.83%	8.98%
0.86	8.73%	8.92%	8.87%	9.01%
0.87	8.79%	8.96%	8.92%	9.05%
0.88	8.84%	9.01%	8.96%	9.08%
0.89	8.90%	9.05%	9.01%	9.12%

Beta	CAPM	ECAPM	1.00%	2.00%
0.90	8.95%	9.09%	9.05%	9.15%
0.91	9.01%	9.13%	9.10%	9.19%
0.92	9.06%	9.17%	9.14%	9.22%
0.93	9.12%	9.21%	9.19%	9.26%
0.94	9.17%	9.25%	9.23%	9.29%
0.95	9.23%	9.29%	9.28%	9.33%
0.96	9.28%	9.34%	9.32%	9.36%
0.97	9.34%	9.38%	9.37%	9.40%
0.98	9.39%	9.42%	9.41%	9.43%
0.99	9.45%	9.46%	9.46%	9.47%
1.00	9.50%	9.50%	9.50%	9.50%
1.01	9.56%	9.54%	9.55%	9.54%
1.02	9.61%	9.58%	9.59%	9.57%
1.03	9.67%	9.62%	9.64%	9.61%
1.04	9.72%	9.67%	9.68%	9.64%
1.05	9.78%	9.71%	9.73%	9.68%
1.06	9.83%	9.75%	9.77%	9.71%
1.07	9.89%	9.79%	9.82%	9.75%
1.08	9.94%	9.83%	9.86%	9.78%
1.09	10.00%	9.87%	9.91%	9.82%
1.10	10.05%	9.91%	9.95%	9.85%
1.11	10.11%	9.95%	10.00%	9.89%
1.12	10.16%	10.00%	10.04%	9.92%
1.13	10.22%	10.04%	10.09%	9.96%
1.14	10.27%	10.08%	10.13%	9.99%
1.15	10.33%	10.12%	10.18%	10.03%
1.16	10.38%	10.16%	10.22%	10.06%
1.17	10.44%	10.20%	10.27%	10.10%
1.18	10.49%	10.24%	10.31%	10.13%
1.19	10.55%	10.28%	10.36%	10.17%
1.20	10.60%	10.33%	10.40%	10.20%
1.21	10.66%	10.37%	10.45%	10.24%
1.22	10.71%	10.41%	10.49%	10.27%
1.23	10.77%	10.45%	10.54%	10.31%
1.24	10.82%	10.49%	10.58%	10.34%
1.25	10.88%	10.53%	10.63%	10.38%
1.26	10.93%	10.57%	10.67%	10.41%
1.27	10.99%	10.61%	10.72%	10.45%
1.28	11.04%	10.66%	10.76%	10.48%
1.29	11.10%	10.70%	10.81%	10.52%
1.30	11.15%	10.74%	10.85%	10.55%
1.31	11.21%	10.78%	10.90%	10.59%
1.32	11.26%	10.82%	10.94%	10.62%
1.33	11.32%	10.86%	10.99%	10.66%
1.34	11.37%	10.90%	11.03%	10.69%
1.35	11.43%	10.94%	11.08%	10.73%
1.36	11.48%	10.99%	11.12%	10.76%
1.37	11.54%	11.03%	11.17%	10.80%

Beta	CAPM	ECAPM	1.00%	2.00%
1.38	11.59%	11.07%	11.21%	10.83%
1.39	11.65%	11.11%	11.26%	10.87%
1.40	11.70%	11.15%	11.30%	10.90%
1.41	11.76%	11.19%	11.35%	10.94%
1.42	11.81%	11.23%	11.39%	10.97%
1.43	11.87%	11.27%	11.44%	11.01%
1.44	11.92%	11.32%	11.48%	11.04%
1.45	11.98%	11.36%	11.53%	11.08%
1.46	12.03%	11.40%	11.57%	11.11%
1.47	12.09%	11.44%	11.62%	11.15%
1.48	12.14%	11.48%	11.66%	11.18%
1.49	12.20%	11.52%	11.71%	11.22%
1.50	12.25%	11.56%	11.75%	11.25%

Source:
Exhibit JRW-9, Page 1



1/A

Bond Yield Plus Risk Premium - Settled Cases

	[1]	[2]	[3] 30-Year Treasury Yield	[4] Risk Premium	[5] Return on Equity
	Constant	Slope			
Current	-2.29%	-0.026	2.63%	7.09%	9.72%
Near-Term Projected	-2.29%	-0.026	2.70%	7.03%	9.73%
Long-Term Projected	-2.29%	-0.026	3.70%	6.21%	9.91%

Notes:

[1] Constant of regression equation

[2] Slope of regression equation

[3] Source: Current = Bloomberg Professional

[3] Near Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 7, July 1, 2019, at 2.

[3] Long Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1 2019, at 14.

[4] Equals [1] + ln([3]) x [2]

[5] Equals [3] + [4]

Bond Yield Plus Risk Premium - Fully Litigated Cases

	[1]	[2]	[3] 30-Year Treasury Yield	[4] Risk Premium	[5] Return on Equity
	Constant	Slope			
Current	-2.98%	-0.028	2.63%	7.36%	9.99%
Near Term Projected	-2.98%	-0.028	2.70%	7.29%	9.99%
Long-Term Projected	-2.98%	-0.028	3.70%	6.39%	10.09%

Notes:

[1] Constant of regression equation

[2] Slope of regression equation

[3] Source: Current = Bloomberg Professional

[3] Near Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 7, July 1, 2019, at 2.

[3] Long Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1 2019, at 14.

[4] Equals [1] + ln([3]) x [2]

[5] Equals [3] + [4]

Implied Return on Equity with M/B Ratio at Unity

Institution Name	Ticker	2018	Price/ Book (%)
		ROACE	Value
ALLETE, Inc.	ALE	8.26	182.1
Alliant Energy Corporation	LNT	11.68	217.5
Ameren Corporation	AEE	10.98	209.0
American Electric Power Company, Inc.	AEP	10.28	193.7
Atmos Energy Corporation	ATO	13.11	219.1
Avangrid, Inc.	AGR	3.93	102.5
Avista Corporation	AVA	7.77	157.4
Black Hills Corporation	BKH	13.98	172.7
CenterPoint Energy, Inc.	CNP	6.74	223.9
Chesapeake Utilities Corporation	CPK	11.18	255.3
CMS Energy Corporation	CMS	14.12	295.9
Consolidated Edison, Inc.	ED	8.74	146.7
Dominion Energy, Inc.	D	13.44	242.0
DTE Energy Company	DTE	11.25	196.0
Duke Energy Corporation	DUK	6.27	143.2
Edison International	EIX	-3.63	176.8
El Paso Electric Company	EE	7.29	175.2
Entergy Corporation	ETR	10.34	184.0
Eversource Energy	ES	9.15	179.4
Exelon Corporation	EXC	6.58	141.9
FirstEnergy Corp.	FE	14.59	285.1
Hawaiian Electric Industries, Inc.	HE	9.54	184.4
IDACORP, Inc.	IDA	9.83	197.8
MGE Energy, Inc.	MGEE	10.56	254.5
New Jersey Resources Corporation	NJR	16.70	286.8
NextEra Energy, Inc.	NEE	20.24	243.3
NiSource Inc.	NI	-1.31	164.1
Northwest Natural Holding Company	NWN	8.55	229.0
NorthWestern Corporation	NWE	10.50	154.0
OGE Energy Corp.	OGE	10.85	195.4
ONE Gas, Inc.	OGS	8.55	204.8
Otter Tail Corporation	OTTR	11.51	270.1
Pinnacle West Capital Corporation	PNW	9.96	182.9
PNM Resources, Inc.	PNM	4.99	193.9
Portland General Electric Company	POR	8.60	163.3
PPL Corporation	PPL	16.08	175.1
Public Service Enterprise Group Incorporated	PEG	10.14	182.5
Sempra Energy	SRE	6.49	199.1
South Jersey Industries, Inc.	SJI	1.40	187.6
Southern Company	SO	9.12	183.7
Southwest Gas Holdings, Inc.	SWX	9.36	180.1
Spire Inc.	SR	9.87	165.2
WEC Energy Group, Inc.	WEC	10.92	223.2
Xcel Energy Inc.	XEL	10.68	207.2

Source of Information: S&P Market Intelligence

Implied Return on Equity with M/B Ratio at Unity

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.533472682
R Square	0.284593103
Adjusted R Square	0.267559605
Standard Error	35.32285153
Observations	44

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	20846.44721	20846.44721	16.70784888	0.00019237
Residual	42	52403.5613	1247.703841		
Total	43	73250.00851			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	149.3350974	13.12185297	11.38064096	2.05708E-14	122.854126	175.8160688
X Variable 1	5.145452231	1.258818977	4.087523563	0.00019237	2.605052686	7.685851776

ROE (%)	PRICE/BOOK
-28.83	1.00
-28.81	1.10

I/A

Constant Growth Discounted Cash Flow Model and Credit Ratings
30 Day Dividend Yield

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
		Dividend Yield	Expected Dividend Yield	Yahoo Earnings Growth	Reuters Earnings Growth	Zacks Earnings Growth	Average Earnings Growth	Mean ROE	S&P Issuer Credit Rating
Atmos Energy Company	ATO	2.00%	2.07%	6.50%	6.50%	6.50%	6.50%	8.57%	A
Chesapeake Utilities	CPK	1.70%	1.76%	6.00%	7.20%	7.00%	6.73%	8.49%	NR
New Jersey Resources Corp	NJR	2.40%	2.48%	6.00%	6.00%	7.00%	6.33%	8.81%	A
Northwest Natural Gas Co.	NWN	2.80%	2.86%	4.00%	4.00%	4.50%	4.17%	7.03%	BBB+
One Gas, Inc.	OGS	2.20%	2.26%	5.00%	5.00%	5.90%	5.30%	7.56%	A
South Jersey Industries, Inc.	SJI	3.50%	3.61%	5.90%	5.90%	7.20%	6.33%	9.94%	BBB
Southwest Gas Corporation	SWX	2.50%	2.58%	6.10%	6.10%	6.20%	6.13%	8.71%	BBB+
Spire Inc.	SR	2.80%	2.85%	2.80%	2.80%	4.90%	3.50%	6.35%	A-
PROXY GROUP MEAN		2.49%	2.56%	5.29%	5.44%	6.15%	5.63%	8.18%	A-
PROXY GROUP MEDIAN		2.45%	2.53%	5.95%	5.95%	6.35%	6.23%	8.53%	A-

Notes:

- [1] Source: Exhibit JRW-8
[2] Equals [1] x (1 + 0.5 x [6])
[3] Source: Exhibit JRW-8
[4] Source: Exhibit JRW-8
[5] Source: Exhibit JRW-8
[6] Equals Average([3], [4], [5])
[7] Equals [2] + [6]
[8] Source: Exhibit JRW-2

Constant Growth Discounted Cash Flow Model and Credit Ratings
90 Day Dividend Yield

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
		Dividend Yield	Expected Dividend Yield	Yahoo Earnings Growth	Reuters Earnings Growth	Zacks Earnings Growth	Average Earnings Growth	Mean ROE	S&P Issuer Credit Rating
Atmos Energy Company	ATO	2.10%	2.17%	6.50%	6.50%	6.50%	6.50%	8.67%	A
Chesapeake Utilities	CPK	1.80%	1.86%	6.00%	7.20%	7.00%	6.73%	8.59%	NR
New Jersey Resources Corp	NJR	2.40%	2.48%	6.00%	6.00%	7.00%	6.33%	8.81%	A
Northwest Natural Gas Co.	NWN	2.80%	2.86%	4.00%	4.00%	4.50%	4.17%	7.03%	BBB+
One Gas, Inc.	OGS	2.30%	2.36%	5.00%	5.00%	5.90%	5.30%	7.66%	A
South Jersey Industries, Inc.	SJI	3.60%	3.71%	5.90%	5.90%	7.20%	6.33%	10.05%	BBB
Southwest Gas Corporation	SWX	2.60%	2.68%	6.10%	6.10%	6.20%	6.13%	8.81%	BBB+
Spire Inc.	SR	2.90%	2.95%	2.80%	2.80%	4.90%	3.50%	6.45%	A-
PROXY GROUP MEAN		2.56%	2.63%	5.29%	5.44%	6.15%	5.63%	8.26%	A-
PROXY GROUP MEDIAN		2.50%	2.58%	5.95%	5.95%	6.35%	6.23%	8.63%	A-

Notes:

- [1] Source: Exhibit JRW-8
- [2] Equals $[1] \times (1 + 0.5 \times [6])$
- [3] Source: Exhibit JRW-8
- [4] Source: Exhibit JRW-8
- [5] Source: Exhibit JRW-8
- [6] Equals Average([3], [4], [5])
- [7] Equals [2] + [6]
- [8] Source: Exhibit JRW-2

Constant Growth Discounted Cash Flow Model and Credit Ratings
180 Day Dividend Yield

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
		Dividend Yield	Expected Dividend Yield	Yahoo Earnings Growth	Reuters Earnings Growth	Zacks Earnings Growth	Average Earnings Growth	Mean ROE	S&P Issuer Credit Rating
Atmos Energy Company	ATO	2.10%	2.17%	6.50%	6.50%	6.50%	6.50%	8.67%	A
Chesapeake Utilities	CPK	1.80%	1.86%	6.00%	7.20%	7.00%	6.73%	8.59%	NR
New Jersey Resources Corp	NJR	2.40%	2.48%	6.00%	6.00%	7.00%	6.33%	8.81%	A
Northwest Natural Gas Co.	NWN	2.90%	2.96%	4.00%	4.00%	4.50%	4.17%	7.13%	BBB+
One Gas, Inc.	OGS	2.40%	2.46%	5.00%	5.00%	5.90%	5.30%	7.76%	A
South Jersey Industries, Inc.	SJI	3.70%	3.82%	5.90%	5.90%	7.20%	6.33%	10.15%	BBB
Southwest Gas Corporation	SWX	2.70%	2.78%	6.10%	6.10%	6.20%	6.13%	8.92%	BBB+
Spire Inc.	SR	3.00%	3.05%	2.80%	2.80%	4.90%	3.50%	6.55%	A-
PROXY GROUP MEAN		2.63%	2.70%	5.28%	5.44%	6.15%	5.63%	8.32%	A-
PROXY GROUP MEDIAN		2.55%	2.63%	5.95%	5.95%	6.35%	6.23%	8.63%	A-

Notes:

- [1] Source: Exhibit JRW-8
- [2] Equals $[1] \times (1 + 0.5 \times [6])$
- [3] Source: Exhibit JRW-8
- [4] Source: Exhibit JRW-8
- [5] Source: Exhibit JRW-8
- [6] Equals Average([3], [4], [5])
- [7] Equals [2] + [6]
- [8] Source: Exhibit JRW-2

I/A

Dr. Woolridge Exhibit JRW-13 Corrected Operating Income

COMPANY POSITION			
	% Total	Cost Rate	Wgtd Cost Rate
[1] Long-Term Debt	47.18%	4.55%	2.15%
[2] Short-Term Debt	0.82%	2.82%	0.02%
[3] Common Equity	52.00%	10.60%	5.51%
[4]			7.68%
[5] Rate Base		\$	3,299,177,177
[6] Operating Income		\$	253,436,654 Equals [4] x [5]
[7]			
[8]			
[9] EXHIBIT JRW-13 AS FILED			
	% Total	Cost Rate	Wgtd Cost Rate
[11] Long-Term Debt	0.85%	4.55%	0.04%
[12] Short-Term Debt	49.15%	2.82%	1.39%
[13] Common Equity	50.00%	9.00%	4.50%
[14]			5.92%
[15] Rate Base		\$	3,299,177,177
[16] Operating Income		\$	195,466,515 Equals [14] x [15]
[17]			
[18]			
[19] DIFFERENCE NET INCOME		\$	(57,970,139) Equals [16] - [6]
[20]			
[21]			
[22] EXHIBIT JRW-13 CORRECTED			
	% Total	Cost Rate	Wgtd Cost Rate
[24] Long-Term Debt	49.15%	4.55%	2.24%
[25] Short-Term Debt	0.85%	2.82%	0.02%
[26] Common Equity	50.00%	9.00%	4.50%
[27]			6.76%
[28] Rate Base		\$	3,299,177,177
[29] Operating Income		\$	223,034,110 Equals [27] x [28]
[30]			
[31] CORRECTED DIFFERENCE		\$	(30,402,545) Equals [29] - [6]
[32]			
[33] Revenue Requirement		\$	1,003,429,366 Exhibit_(PKP-7), Page 1 of 5
[34] Difference as a % of Revenue Requirement			-3.03% Equals [31] / [33]
[35] Difference as a % of Operating Income			-12.00% Equals [31] / [6]

Dr. Woolridge Exhibit JRW-13 Corrected Net Income

COMPANY POSITION

	% Total	Cost Rate	Wgtd Cost Rate
[1] Long-Term Debt	47.18%	4.55%	2.15%
[2] Short-Term Debt	0.82%	2.82%	0.02%
[3] Common Equity	52.00%	10.60%	5.51%
[4]			7.68%
[5] Rate Base		\$	3,299,177,177
[6] Net Income		\$	181,850,646

Equals [3] x [5]

[7]

[8]

[9] EXHIBIT JRW-13 AS FILED

	% Total	Cost Rate	Wgtd Cost Rate
[11] Long-Term Debt	0.85%	4.55%	0.04%
[12] Short-Term Debt	49.15%	2.82%	1.39%
[13] Common Equity	50.00%	9.00%	4.50%
[14]			5.92%
[15] Rate Base		\$	3,299,177,177
[16] Net Income		\$	148,462,973

Equals [13] x [15]

[17]

[18]

[19] DIFFERENCE NET INCOME

\$ (33,387,673) Equals [16] - [6]

[20]

[21]

[22] EXHIBIT JRW-13 CORRECTED

	% Total	Cost Rate	Wgtd Cost Rate
[24] Long-Term Debt	49.15%	4.55%	2.24%
[25] Short-Term Debt	0.85%	2.82%	0.02%
[26] Common Equity	50.00%	9.00%	4.50%
[27]			6.76%
[28] Rate Base		\$	3,299,177,177
[29] Net Income		\$	148,462,973

Equals [26] x [28]

[30]

[31] CORRECTED DIFFERENCE

\$ (33,387,673) Equals [29] - [6]

[32]

[33] Revenue Requirement

\$ 1,003,429,366 Exhibit_(PKP-7), Page 1 of 5

[34] Difference as a % of Revenue Requirement

-3.33% Equals [31] / [33]

[35] Difference as a % of Net Income

-18.36% Equals [31] / [6]

Recently Authorized ROEs by RRA Ranking

State	Company	Case Identification	Service	Case Type	Date	Return on Equity (%)	RRA Rank	Electric Utilities		
								Top Tier (Average/1 and higher)	Middle Tier (Average/2)	Bottom Tier (Average/3 and lower)
New York	Consolidated Edison Co. of NY	C-16-G-0081	Natural	Distribution	1/24/2017	9.00	Average / 1	9.00		
Georgia	Atlanta Gas Light Co.	D-40828	Natural	Distribution	2/21/2017	10.55	Above Average / 2	10.55		
District of Columbia	Washington Gas Light Co.	FC-1137	Natural	Distribution	3/4/2017	9.25	Below Average / 3			9.25
Arizona	Southwest Gas Corp.	D-G-01551A-16-0107	Natural	Distribution	4/11/2017	9.50	Average / 3			9.50
New York	Natl Fuel Gas Distribution Cor	C-16-G-0257	Natural	Distribution	4/20/2017	8.70	Average / 1	8.70		
Idaho	Intermountain Gas Co.	C-INT-G-16-2	Natural	Distribution	4/28/2017	9.50	Average / 2		9.50	
Texas	CenterPoint Energy Resources	D-GUD-10567	Natural	Distribution	5/23/2017	9.60	Average / 2		9.60	
Delaware	Delmarva Power & Light Co.	D-16-0650	Natural	Distribution	6/5/2017	9.70	Average / 3			9.70
Kentucky	Louisville Gas & Electric Co.	C-2016-00371 (gas)	Natural	Distribution	6/22/2017	9.70	Average / 1	9.70		
New Jersey	Elizabethtown Gas Co.	D-GR-18030826	Natural	Distribution	6/30/2017	9.60	Below Average / 1			9.60
Montana	NorthWestern Corp.	D-D2016.9.68	Natural	Distribution	7/20/2017	9.55	Below Average / 1			9.55
Michigan	Consumers Energy Co.	C-U-18124	Natural	Distribution	7/31/2017	10.10	Above Average / 3	10.10		
Oregon	Avista Corp.	D-UG-325	Natural	Distribution	8/13/2017	9.40	Average / 2		9.40	
Maryland	Columbia Gas of Maryland Inc.	C-9447	Natural	Distribution	9/19/2017	9.70	Below Average / 3			9.70
Alaska	ENSTAR Natural Gas Co.	D-U-16-066	Natural	Distribution	9/22/2017	11.88	Below Average / 1			11.88
South Carolina	Piedmont Natural Gas Co.	D-2017-7-G	Natural	Distribution	9/27/2017	10.20	Average / 3			10.20
New Jersey	South Jersey Gas Co.	D-GR-17010071	Natural	Distribution	10/20/2017	9.60	Below Average / 1			9.60
California	San Diego Gas & Electric Co.	Advice No. 2611-G	Natural	Distribution	10/26/2017	10.20	Average / 1	10.20		
California	Southern California Gas Co.	Advice No. 5192	Natural	Distribution	10/30/2017	10.05	Average / 1	10.05		
Washington	Puget Sound Energy Inc.	D-UG-170034	Natural	Distribution	12/5/2017	9.50	Average / 3			9.50
Wisconsin	Northern States Power Co - WI	D-4220-UR-123 (Gas)	Natural	Distribution	12/7/2017	9.80	Above Average / 2	9.80		
Connecticut	Southern Connecticut Gas Co.	D-17-05-42	Natural	Distribution	12/13/2017	9.25	Below Average / 1			9.25
Idaho	Avista Corp.	C-AVU-G-17-01	Natural	Distribution	12/28/2017	9.50	Average / 2		9.50	
Illinois	Northern Illinois Gas Co.	D-17-0124	Natural	Distribution	1/31/2018	9.80	Average / 2		9.80	
Missouri	Missouri Gas Energy	C-GR-2017-0216	Natural	Distribution	2/21/2018	9.80	Average / 3			9.80
Missouri	Spire Missouri Inc.	C-GR-2017-0215	Natural	Distribution	2/21/2018	9.80	Average / 3			9.80
Maine	Northern Utilities Inc.	D-2017-00085	Natural	Distribution	2/28/2018	9.50	Average / 2		9.50	
New York	Niagara Mohawk Power Corp.	C-17-G-0239	Natural	Distribution	3/15/2018	9.00	Average / 1	9.00		
Florida	Pivotal Utility Holdings Inc.	20170179-GU	Natural	Distribution	3/28/2018	10.19	Above Average / 2	10.19		
Washington	Avista Corp.	D-UG-170486	Natural	Distribution	4/26/2018	9.50	Average / 3			9.50
New Hampshire	Liberty Utilities EnergyNorth	D-DG-17-048	Natural	Distribution	4/27/2018	9.30	Average / 3			9.30
New Hampshire	Northern Utilities Inc.	D-DG-17-070	Natural	Distribution	5/2/2018	9.50	Average / 3			9.50
Kentucky	Amos Energy Corp.	C-2017-00349	Natural	Distribution	5/3/2018	9.70	Average / 1	9.70		
Montana	MDU Resources Group Inc.	D2017.9.79	Natural	Distribution	5/29/2018	9.40	Below Average / 1			9.40
Missouri	Liberty Utilities (Midstates)	C-GR-2018-0013	Natural	Distribution	6/6/2018	9.80	Average / 3			9.80
New York	Central Hudson Gas & Electric	C-17-G-0460	Natural	Distribution	6/14/2018	8.80	Average / 1	8.80		
Wyoming	Black Hills Northwest Wyoming	D-30611-97-GR-17	Natural	Distribution	7/16/2018	9.60	Average / 3			9.60
Washington	Cascade Natural Gas Corp.	D-UG-170929	Natural	Distribution	7/20/2018	9.40	Average / 3			9.40
Rhode Island	Norfolk Southern Electric Co.	D-4770 (gas)	Natural	Distribution	8/24/2018	9.28	Average / 2		9.28	
Michigan	Consumers Energy Co.	C-U-18424	Natural	Distribution	8/28/2018	10.00	Above Average / 3	10.00		
Michigan	DTE Gas Co.	C-U-18999	Natural	Distribution	9/13/2018	10.00	Above Average / 3	10.00		
Wisconsin	Wisconsin Power and Light Co	D-6660-UR-121 (Gas)	Natural	Distribution	9/14/2018	10.00	Above Average / 2	10.00		
Indiana	Northern IN Public Svc Co.	Ca-44988	Natural	Distribution	9/19/2018	9.85	Average / 1		9.85	
Wisconsin	Madison Gas and Electric Co.	D-3270-UR-122 (Gas)	Natural	Distribution	9/20/2018	9.80	Above Average / 2		9.80	
North Dakota	MDU Resources Group Inc.	C-PU-17-295	Natural	Distribution	9/28/2018	9.40	Average / 1	9.40		
South Carolina	Piedmont Natural Gas Co.	D-2018-7-G	Natural	Distribution	9/26/2018	10.20	Average / 3			10.20
Massachusetts	Boston Gas Co.	DPU-17-170 (Boston Gas)	Natural	Distribution	9/29/2018	9.50	Average / 2		9.50	
Massachusetts	Colonial Gas Co.	DPU-17-170 (Colonial Gas)	Natural	Distribution	9/28/2018	9.50	Average / 2		9.50	
Arkansas	Black Hills Energy Arkansas	D-17-071-U	Natural	Distribution	10/5/2018	9.61	Average / 1	9.61		

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State	Company	Case Identification	Service	Case Type	Date	Return on Equity (%)	RRA Rank	Top Tier (Average/1 and higher)	Middle Tier (Average/2)	Bottom Tier (Average/3 and lower)
Tennessee	Chattanooga Gas Co.	D-18-00017	Natural	Distribution	10/15/2018	9.80	Above Average / 3	9.80		
Oregon	Northwest Natural Gas Co.	D-UG-344	Natural	Distribution	10/26/2018	9.40	Average / 2		9.40	
New Jersey	Public Service Electric Gas	D-GR18010030	Natural	Distribution	10/29/2018	9.50	Below Average / 1			9.60
Illinois	Ameren Illinois	D-18-0463	Natural	Distribution	11/1/2018	9.87	Average / 2		9.87	
Delaware	Delmarva Power & Light Co.	D-17-0978	Natural	Distribution	11/8/2018	9.70	Average / 3			9.70
Minnesota	Minnesota Energy Resources	D-G-011/GR-17-563	Natural	Distribution	11/8/2018	9.70	Average / 2		9.70	
Maryland	Washington Gas Light Co.	C-9481	Natural	Distribution	12/11/2018	9.70	Below Average / 3			9.70
Connecticut	Yankee Gas Services Co.	D-18-05-10	Natural	Distribution	12/12/2018	9.30	Below Average / 1			9.30
Iowa	Interstate Power & Light Co.	D-RPU-2018-0002	Natural	Distribution	12/13/2018	9.60	Average / 1	9.60		
Connecticut	CT Natural Gas Corp.	D-18-05-16	Natural	Distribution	12/19/2018	9.30	Below Average / 1			9.30
Colorado	Public Service Co. of CO	D-17AL-0353G	Natural	Distribution	12/21/2018	9.35	Average / 2		9.35	
Nevada	Southwest Gas Corp.	D-18-05031 (Southern)	Natural	Distribution	12/24/2018	9.25	Average / 2		9.25	
Nevada	Southwest Gas Corp.	D-18-05031 (Northern)	Natural	Distribution	12/24/2018	9.25	Average / 2		9.25	
Maryland	Baltimore Gas and Electric Co.	C-9484	Natural	Distribution	1/4/2019	9.80	Below Average / 3			9.80
Massachusetts	Berkshire Gas Co.	DPU 18-40	Natural	Distribution	1/18/2019	9.70	Average / 2		9.70	
New York	Orange & Rockland Util. Inc.	C-18-G-0068	Natural	Distribution	3/14/2019	9.00	Average / 1	9.00		
Kentucky	Duke Energy Kentucky Inc.	C-2018-00261	Natural	Distribution	3/27/2019	9.70	Average / 1	9.70		
Kentucky	Louisville Gas & Electric Co.	C-2018-00295 (gas)	Natural	Distribution	4/30/2019	9.73	Average / 1	9.73		
Kentucky	Atmos Energy Corp.	C-2018-00281	Natural	Distribution	5/7/2019	9.65	Average / 1	9.65		
Texas	Atmos Energy Corp.	D-GUD-10779 (Mid-Tex Division)	Natural	Distribution	5/21/2019	9.80	Average / 2		9.80	
						Total Cases	89	25	17	27
						Mean	9.64	9.68	9.52	9.68
						Median	9.60	9.73	9.50	9.60
						Maximum	11.88	10.55	9.87	11.88
						Minimum	8.70	8.70	9.25	9.25
						2019				
						Total Cases	7			
						Mean	9.63			
						Median	9.70			
						Maximum	9.80			
						Minimum	9.00			

Note 1 See Hevert at 3, Rebuttal RBH-R-1, RBH-R-5, RBH-R-6, RBH-R-7.

Note 2 See Woolridge at 2, 50, 64.

Note 3 See O'Donnell testimony at 3, 45.

Note 4 See Hinton testimony at 5, 31, 37, Exh JRH-5, JRH-6.

COMMONWEALTH OF VIRGINIA

STATE CORPORATION COMMISSION

AT RICHMOND, NOVEMBER 29, 2017

SEC. CLERK'S OFFICE
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APPLICATION OF

VIRGINIA ELECTRIC AND POWER COMPANY

CASE NO. PUR-2017-00038

For the determination of the fair
rate of return on common equity to be
applied to its rate adjustment clauses

FINAL ORDER

On March 31, 2017, Virginia Electric and Power Company ("Dominion" or "Company") filed with the State Corporation Commission ("Commission") an application ("Application") for the determination of the fair rate of return on common equity ("ROE") to be applied to its rate adjustment clauses ("RACs") for the next two years pursuant to § 56-585.1:1 of the Code of Virginia ("Code").¹ Enacted in 2015, this provision of the Code requires that:

Commencing in 2017 and concluding in 2019, the State Corporation Commission, after notice and opportunity for a hearing, shall conduct a proceeding every two years to determine the fair rate of return on common equity to be used by a Phase II Utility as the general rate of return applicable to rate adjustment clauses under subdivisions A 5 or A 6 of § 56-585.1. A Phase II [U]tility's filing in such proceedings shall be made on or before March 31 of 2017 and 2019.²

The Company requests that the Commission approve an ROE of 10.5% for Dominion's RACs approved under Subdivision A 5 or A 6 of Code § 56-585.1, to be applied prospectively,

¹ Ex. 2 (Application) at 1.

² Code § 56-585.1:1 C 2. Dominion is a Phase II Utility. See Code § 56-585.1 A 1.

effective with the date of the Commission's final order in this proceeding.³ Dominion currently has a total of nine RACs subject to the ROE to be determined in this proceeding.⁴

On April 21, 2017, the Commission issued an Order for Notice and Hearing that, among other things, docketed the Application; required Dominion to publish notice of its Application; gave interested persons the opportunity to comment on or participate in the proceeding; and scheduled a public hearing. Notices of participation were filed in this proceeding by the Virginia Committee for Fair Utility Rates ("Committee") and the Office of the Attorney General's Division of Consumer Counsel ("Consumer Counsel"). On July 26, 2017, Consumer Counsel filed the testimony and exhibits of its witness. On August 9, 2017, the Commission's Staff ("Staff") filed the testimony and exhibits of its witness. On August 23, 2017, the Company filed rebuttal testimony. No public comments were received on the Application.

The Commission convened a hearing, as scheduled, on September 6, 2017. No public witnesses appeared to testify at the hearing. The Company, the Committee, Consumer Counsel and Staff participated at the hearing. During the hearing, the Commission received testimony from witnesses on behalf of the participants, admitted evidence on the Application, and received closing argument from counsel.

NOW THE COMMISSION, upon consideration of this matter, is of the opinion and finds as follows.

As noted above, the sole purpose of this case is a determination of the fair ROE to be used by Dominion as the general return applicable to RACs under subdivisions A 5 or A 6 of

³ Ex. 2 (Application) at 4.

⁴ Dominion's RACs, and subsequent revisions thereto, approved under these statutes include Riders B, BW, C1/C2, GV, R, S, U, US-2, and W.

Code § 56-585.1 A.⁵ "Such fair rate of return shall be calculated pursuant to the methodology set forth in subdivisions A 2 a and b of § 56-585.1. . . ." ⁶ Thus, the Commission follows a similar process in determining a fair ROE herein as has been done in prior proceedings using the methodology set forth in Code § 56-585.1 A 2 a and b. First, the Commission determines the market cost of equity. Next, the statutory peer group ROE floor is applied.

Market Cost of Equity

Company witness Hevert calculated Dominion's cost of equity to be between 10.25% and 10.75% and determined that, considering the economic requirements necessary to support continuous access to capital, an ROE of 10.5% represents Dominion's cost of equity.⁷ Consumer Counsel witness Woolridge calculated Dominion's market cost of equity to be between 7.6% and 8.75% and determined that 8.75% represents Dominion's market cost of equity.⁸ Staff witness Oliver calculated Dominion's market cost of equity to be between 8.25% and 9.25% and determined that establishing the Company's cost of capital at 9.1% was appropriate.⁹ The Committee examined the testimony presented by Company witness Hevert, Staff witness Oliver, and Consumer Counsel witness Woolridge and recommended that the Commission adopt a market cost of equity that is no higher than the 9.1% recommended by Staff witness Oliver.¹⁰

The Commission finds that a market cost of equity within a range of 8.5% and 9.5% fairly represents the actual cost of equity in capital markets for companies comparable in risk to

⁵ Code § 56-585.1:1 C 2.

⁶ Code § 56-585.1:1 C 3.

⁷ Ex. 3 (Hevert Direct) at 4-50, 54-56.

⁸ Ex. 4 (Woolridge Direct) at 1-82.

⁹ Ex. 5 (Oliver Direct) at 1-16, 24-34.

¹⁰ See Tr. 18.

Dominion seeking to attract equity capital. Furthermore, under the circumstances of this case and for purposes of implementing Code § 56-585.1:1, the Commission finds that using a cost of equity of 9.2% is fair and reasonable for these purposes. The Commission concludes that this return is supported by the evidence in the record, results in a fair and reasonable ROE, and satisfies the following constitutional standards as stated by Staff witness Oliver: "maintenance of financial integrity, the ability to attract capital on reasonable terms, and earnings commensurate with returns on investments of comparable risk."¹¹ Conversely, the Commission further finds that Dominion's proposed cost of equity of 10.25% to 10.75% represents neither the actual cost of equity in the marketplace nor a reasonable ROE for the Company.

We conclude that a market cost of equity of 9.2% is supported by reasonable proxy groups, growth rates, discounted cash flow ("DCF") methods, and risk premium analyses.¹² Indeed, we conclude that the evidence supports a market cost of equity at the midpoint of the range, *i.e.*, 9.0%. We find that approving an ROE above the midpoint of the range found reasonable (9.2%) is supported by the concept of gradualism in ROE determinations.

While the market cost of equity approved herein is supported by reasonable proxy groups, growth rates, DCF methods, risk premium analyses, and gradualism in ROE determinations, the Commission finds that Dominion's proposed market cost of equity of 10.5% is not supported by reasonable growth rates, DCF methods or risk premium analyses. For example, the Company continues to use only earnings per share as the measure of growth in its DCF model.¹³ As the Commission has previously stated, using only earnings per share as the

¹¹ Ex. 5 (Oliver Direct) at 4.

¹² *See, e.g.*, Ex. 5 (Oliver Direct) at 4-16, 24-34; Ex. 4 (Woolridge Direct) at 1-82.

¹³ Ex. 3 (Hevert Direct) at 19-21; Ex. 4 (Woolridge Direct) at 68-70; Ex. 5 (Oliver Direct) at 26-27; Tr. 166-67.

measure of long-term growth results in unreasonably high growth rates that upwardly skew results.¹⁴ Moreover, the Company's Capital Asset Pricing Model ("CAPM") analysis is also flawed. For example, the Company's highest ROE estimates result from the use of a 2019 projected 30-year Treasury bond yield of 4.2% and a 2021 projected 30-year Treasury bond yield of 4.4%.¹⁵ The Commission has explicitly rejected the use of such projected interest rates in prior cases, stating that inclusion of these projected rates inflates the results of the utility's risk premium analysis.¹⁶ In addition, the Company exclusively used earnings per share as the measure of long-term growth to develop the market risk premium component of its CAPM analysis, which results in an overstatement of the cost of equity.¹⁷ The Company's Bond Yield Plus Risk Premium analysis contains similar flaws as its CAPM analysis.¹⁸

¹⁴ See, e.g., *Application of Virginia Electric and Power Company, For a 2013 biennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia*, Case No. PUE-2013-00020, 2013 S.C.C. Ann. Rept. 371, 374, Final Order (Nov. 26, 2013); *Application of Appalachian Power Company, For an increase in electric rates*, Case No. PUE-2006-00065, 2007 S.C.C. Ann. Rept. 321, 327, Final Order (May 15, 2007) (stating that significant biases were embodied in Appalachian Power Company's ("APCo") DCF analysis because the utility's growth rate "primarily emphasized projected earnings per share growth rates and ignored other projected rates of growth for dividends, book value, and retained earnings to estimate a long-term sustainable growth rate assumed by the DCF model and reflected in the rates developed by the other witnesses.").

¹⁵ Ex. 3 (Hevert Direct) at 27; Ex. 9 (Hevert Rebuttal) at 96. Use of the 2021 projected 30-year Treasury bond yield of 4.4% in the Company's original CAPM analysis suggested an ROE range of 10.59% to 12.39%. Ex. 3 (Hevert Direct) at 27. In contrast, use of a current 30-year Treasury bond yield in the Company's original CAPM analysis suggested an ROE range of 9.26% to 11.06%. *Id.*

¹⁶ See, e.g., *Application of Appalachian Power Company, For the determination of the fair rate of return on common equity to be applied to its rate adjustment clauses*, Case No. PUE-2016-00038, 2016 S.C.C. Ann. Rept. 393, 395, Final Order (Oct. 6, 2016); *Application of Aqua Virginia, Inc., For an increase in rates*, Case No. PUE-2014-00045, 2016 S.C.C. Ann. Rept. 206, 209, Final Order (Jan. 7, 2016); *Application of Appalachian Power Company, For an increase in electric rates*, Case No. PUE-2006-00065, 2007 S.C.C. Ann. Rept. 321, 327, Final Order (May 15, 2007). See also Ex. 5 (Oliver Direct) at 27-29.

¹⁷ See, e.g., Ex. 3 (Hevert Direct) at 25-26, Schedule 2; Ex. 4 (Woolridge Direct) at 71-80; Ex. 5 (Oliver Direct) at 29-30.

¹⁸ See Ex. 3 (Hevert Direct) at 27-30; Ex. 4 (Woolridge Direct) at 80-82; Ex. 5 (Oliver Direct) at 29-30.

Further, we reject claims that certain business risks facing Dominion warrant a 10.5% ROE.¹⁹ For example, while Company witness Hevert claims that risks associated with the Company's anticipated capital expenditures warrant a 10.5% ROE, of the approximately \$8.5 billion of additional planned capital expenditures the Company anticipates making, the record indicates that Dominion plans to recover over \$5 billion of this projected amount through RACs, which permit the timely and current recovery of all reasonable and prudent costs on a dollar-for-dollar basis.²⁰

Dominion suggests that its ROE should not be any lower than 9.4%.²¹ The Commission first approved an ROE of 9.4% for Dominion in a February 16, 2017 Order issued in Case Nos. PUE-2016-00059, PUE-2016-00060, PUE-2016-00061, PUE-2016-00062 and PUE-2016-00063.²² The midpoint of the range found reasonable in those cases was 9.0%. The Commission, however, did not direct an ROE of 9.0% but, rather, approved 9.4% based on the concept of gradualism in ROE cases. In addition, the Commission's decision in those proceedings was based on the record of evidence presented there, which reflects earlier financial data. For example, in those proceedings Staff and the Company relied upon financial data from late 2016.²³ In contrast, in the instant case, the Company updated its ROE results with financial data through July 2017.²⁴ Moreover, the record presented in this proceeding shows that

¹⁹ Ex. 3 (Hevert Direct) at 30-37; Ex. 5 (Oliver Direct) at 31-34.

²⁰ Ex. 3 (Hevert Direct) at 30-31; Ex. 5 (Oliver Direct) at 31.

²¹ Tr. 17.

²² See, e.g., *Application of Virginia Electric and Power Company d/b/a Dominion Virginia Power, For revision of rate adjustment clause: Rider S, Virginia City Hybrid Energy Center*, Case No. PUE-2016-00062, Doc. Con. Cen. No. 170220479, Order (Feb. 16, 2017).

²³ *Id.* at 11-12.

²⁴ See, e.g., Ex. 9 (Hevert Rebuttal) at Schedule 1.

The participants differed on which utilities should be included in the statutory peer group in this proceeding. First, Dominion excluded Mississippi Power Company ("Mississippi Power") from the statutory peer group solely because "its Moody's long term bond rating (Ba1) has dropped below the required level of at least Baa."²⁶ Staff and Consumer Counsel included Mississippi Power in their statutory peer group analyses because "Mississippi Power had a Moody's long-term bond rating of Baa3 at the end of the test period."²⁷

Code § 56-585.1 A 2 b mandates that "an investor-owned electric utility shall be deemed part of such peer group if ... (iii) it had a long-term bond rating assigned by Moody's Investors Service of at least Baa at the end of the most recent test period subject to such biennial review...." Code § 56-585.1:1 C 3 states that the ROE "shall be calculated [utilizing] ... a 12-month test period ending December 31 immediately preceding the year in which the proceeding is conducted." Factually, December 31, 2014, is "the end of the most recent test period subject to [a] biennial review"²⁸ for Dominion. Calendar year 2016 is the "12-month test period ending December 31 immediately preceding the year in which the [present] proceeding is conducted."²⁹ Notably, under either plain language interpretation identified above, Mississippi Power's downgrade would not affect its inclusion in the statutory peer group because the downgrade occurred on March 1, 2017, which is clearly after the end of either review period.³⁰ The Commission therefore finds that, for purposes of this proceeding, Mississippi Power shall be considered part of the peer group.

²⁶ Ex. 2 (Application) at Filing Schedule 45 - Statement 3A.

²⁷ Ex 4 (Woolridge Direct) at 86. *See also* Ex. 5 (Oliver Direct) at 19-20.

²⁸ Code § 56-585.1 A 2 b.

²⁹ Code § 56-585.1:1 C 3.

³⁰ Ex 4 (Woolridge Direct) at 86; Ex. 5 (Oliver Direct) at 19; Tr. 132.

The participants also differed on whether APCo should be considered part of the peer group. Staff and Consumer Counsel included APCo in their proposed peer groups, while Dominion excluded APCo from its proposed peer group.³¹ However, as discussed below, we have selected a statutory floor majority that is lower than the ROE approved herein regardless of whether APCo is included as part of the total peer group; thus, we need not address APCo's inclusion or exclusion as part of this proceeding.

The majority that the Commission selects had, on average, a return on average equity close to the ROE found fair and reasonable herein.³² This results in a statutory floor below the ROE approved herein.³³ The Commission concludes that the specific majority chosen herein is reasonable and does not violate any constitutional or statutory provision.³⁴

³¹ Ex. 3 (Hevert Direct) at 51-54; Ex 4 (Woolridge Direct) at 85-86; Ex. 5 (Oliver Direct) at 18-19; Ex. 9 (Hevert Rebuttal) at 55-56, 95.

³² Based upon the facts in this case, the Commission finds that it is reasonable to utilize returns on average equity for this purpose.

³³ The statutory floor without APCo in the peer group is 9.09% and is comprised of the following companies: Entergy Mississippi, Inc., Louisville Gas & Electric Company, Duke Energy Progress, Inc., South Carolina Electric & Gas Company, and Duke Energy Carolinas, LLC. The statutory floor with APCo in the peer group is 9.07% and is comprised of the following companies: Entergy Mississippi, Inc., Louisville Gas & Electric Company, Duke Energy Progress, Inc., South Carolina Electric & Gas Company, Duke Energy Carolinas, LLC, and APCo. See Ex. 5 (Oliver Direct) at Schedule 12.

³⁴ The Code clearly leaves the selection of the "majority" to the Commission's discretion. If the General Assembly wanted the Commission to apply a particular approach or evaluation methodology in selecting a majority, it could have directed as such; it did not. As the Commission has previously determined, it is reasonable in this proceeding to select a majority that has an earned return that is close to the market cost of equity capital found fair and consistent with the public interest herein. The Commission does not, and need not, find that this is the only majority that is reasonable. See, e.g., *Application of Virginia Electric and Power Company, For a 2013 biennial review of the rates, terms and conditions for the provision of generation, distribution and transmission services pursuant to § 56-585.1 A of the Code of Virginia*, Case No. PUE-2013-00020, 2013 S.C.C. Ann. Rept. 371, 375-76, Final Order (Nov. 26, 2013).

In sum, the Commission concludes that the fair ROE in this proceeding for Dominion is 9.2%.³⁵ The Commission finds that this ROE is supported by the record, is fair and reasonable to the Company within the meaning of the Code, permits the attraction of capital on reasonable terms, fairly compensates investors for the risks assumed, enables the Company to maintain its financial integrity, and satisfies all applicable constitutional standards.

Accordingly, IT IS SO ORDERED and this matter is dismissed.

AN ATTESTED COPY hereof shall be sent by the Clerk of the Commission to all persons on the official Service List in this matter. The Service List is available from the Clerk of the Commission, c/o Document Control Center, 1300 East Main Street, First Floor, Tyler Building, Richmond, Virginia 23219. A copy also shall be sent to the Commission's Office of General Counsel and Divisions of Public Utility Regulation and Utility Accounting and Finance.

³⁵ Pursuant to Code § 56-585.1:1 C 3, "any adjustment to the fair rate of return for applicable rate adjustment clauses under subdivisions A 5 and A 6 of § 56-585.1 [shall take] effect on the date of the Commission's final order in the proceeding, utilizing rate adjustment clause true-up protocols as the Commission may in its discretion determine." Accordingly, the 9.2% ROE found appropriate herein shall become effective with respect to the Company RACs under Code § 56-585.1 A 5 and A 6 on the date of this Order and any resulting over- or under-recovery shall be addressed through appropriate true-up protocols in future RAC proceedings.

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF SOUTH DAKOTA

IN THE MATTER OF THE APPLICATION OF) FINAL DECISION AND
OTTER TAIL POWER COMPANY FOR) ORDER; NOTICE OF ENTRY
AUTHORITY TO INCREASE ITS ELECTRIC)
RATES) EL18-021

APPEARANCES

Commissioners Gary Hanson, Chris Nelson, and Kristie Fiegen.

Gary Stephenson, Richard J. Johnson, and Brett Koenecke appeared on behalf of Applicant, Otter Tail Power Company.

Kristen Edwards and Amanda Reiss, 500 E. Capitol Ave., Pierre, South Dakota 57501, appeared on behalf of the South Dakota Public Utilities Commission staff.

James E. Moore and Justin G. Smith appeared on behalf of Valley Queen Cheese Factory, Inc.

PROCEDURAL HISTORY

On April 20, 2018, the South Dakota Public Utilities Commission (Commission) received an application, including Statements A through R as required by ARSD 20:10:13, and supporting prefiled testimony from Otter Tail Power Company (Otter Tail) for approval to increase rates for electric service in its South Dakota service territory (Application).¹ Otter Tail proposed a two-step increase to rates, with the first step increasing rates by \$3,358,547 annually or 10.10 percent based on Otter Tail's 2017 test year. Otter Tail stated a typical residential customer would see an increase of \$11.29 per month under the rate design proposed by the company. Otter Tail proposed to implement \$2,386,538, or 7.17 percent, of this increase on an interim basis on May 21, 2018, once the 30 days passed from the date of the filing, pursuant to SDCL 49-34A-17, with the full amount step-one increase becoming effective upon the Commission's final disposition in this case. The second step proposed an additional \$629,107, or 1.72 percent, increase to rates, effective January 1, 2020. The second step would facilitate the recovery of the Merricourt Wind Project, projected to enter service later in 2019. A typical residential electric customer using 927 kWh would see an additional increase of \$1.75 a month as a result of the step increase. The proposed rates would potentially affect approximately 11,700 customers in Otter Tail's South Dakota service territory.

On April 26, 2018, the Commission electronically transmitted notice of the Application and the intervention deadline of June 1, 2018, to interested individuals and entities on the Commission's PUC Weekly Filings listserv. On May 16, 2018, the Commission issued an Order Suspending Operation of Proposed Rates; Order Assessing Filing Fee; Order Authorizing Executive Director to Enter Into a Consulting Contract. On June 28, 2018, Valley Queen Cheese Factory, Inc. filed a Petition to Intervene. On July 16, 2018, the Commission issued an Order Granting Late Filed Intervention. On September 17, 2018, Otter Tail filed a Notice of Intent to

¹ The Application, Commission Orders, and all other documents are available on the Commission's web page for Docket EL18-021 at: <http://puc.sd.gov/Dockets/Electric/2018/el18-021.aspx>

Implement Interim Electric Service Rates based on current rate design for service provided on and after October 18, 2018, pursuant to SDCL 49-34A-17. On October 18, 2018, Otter Tail implemented an interim rate increase for net annual, non-fuel electric revenues of approximately \$3.36 million, or 10.10 percent, subject to refund. On November 1, 2018, Otter Tail filed Supplemental Direct Testimony and an Errata Filing.

On February 7, 2019, the Commission issued a Scheduling Order. On February 15, 2019, Commission staff (Staff) filed a Joint Motion for Approval of Settlement Stipulation (Joint Motion) and Settlement Stipulation. On February 19, 2019, Staff filed its prefiled testimony. On February 21, 2019, a Staff Memorandum Supporting Settlement Stipulation was filed. On March 6, 2019, the Commission issued an Order Granting Joint Motion for Approval of Settlement Stipulation; Order Approving Settlement Stipulation. As a result of the Settlement Stipulation and Order, one issue remained for the evidentiary hearing: the appropriate return on equity to produce just and reasonable rates. On March 7, 2019, the Commission issued an Order for and Notice of Evidentiary Hearing. On March 15, 2019, the parties filed a Second Stipulation for Procedural Schedule wherein the parties agreed that Otter Tail would refund interim rates through May 31, 2019, or the date of the Commission's oral decision, whichever is earlier, and Otter Tail filed its prefiled rebuttal testimony. On March 18, 2019, the Commission issued an Amended Scheduling Order. On March 21, 2019, Staff filed a Motion in Limine. On March 22, 2019, Otter Tail filed its Response to Staff's Motion in Limine.

The evidentiary hearing was held as scheduled on March 26, 2019, with Otter Tail and Staff appearing and presenting evidence and argument. Valley Queen Cheese Factory, Inc. did not participate in the evidentiary hearing. On March 26, 2019, Staff withdrew its Motion in Limine as the parties had reached an agreement on the matter. On March 29, 2019, the parties filed a Third Stipulation for Procedural Schedule.

On April 2, 2019, the Commission issued a Second Amended Scheduling Order and Otter Tail filed a revised Schedule 2 to Stuart Tommerdahl's prefiled Direct Testimony. On April 23, 2019, Staff and Otter Tail each filed post-hearing briefs. On April 29, 2019, Staff filed a proposed Order and Findings of Fact and Conclusions of Law. On April 30, 2019, Otter Tail filed proposed Findings of Fact and Conclusions of Law.

On May 14, 2019, at its regularly scheduled meeting, the parties made oral arguments. After questions of the parties by the Commissioners and public discussion among the Commissioners, the Commission voted unanimously to approve a return on equity of 8.75%. To address the remaining issues of adjustments to revenue requirement and resulting rates, the Commission directed Staff and Otter Tail to compute the overall rate of return resulting from the decision made by the Commission and make the needed model runs and analyses to finalize the additional adjustments to rate inputs, to exchange their results with each other, and to file such results.

In compliance with the Commission's directives, on May 24, 2019, Staff filed the joint response of Otter Tail and Staff, including Exhibits reflecting the various input computations (Joint Compliance Filing), demonstrating that the overall rate of return resulting from the Commission's decision is 7.09% as reflected on Exhibit 8, that Otter Tail's net revenue deficiency reflecting the Commission's authorized overall rate of return is \$2,211,286 justifying an approximate 6.64% net increase in retail revenue. Exhibits 1 through 7 to the Joint Compliance Filing contain the revenue requirement, operating income statement, rate base schedules, and certain underlying exhibits supporting the revenue requirement determination.

On May 28, 2019, at its regularly scheduled meeting, in conformity with the Joint Compliance Filing, the Commission voted unanimously to approve an overall rate of return of 7.09% based on its decision on return on equity and a corresponding net revenue

requirement increase of \$2,211,286 based on the adjustments reflected in the Exhibits to the Joint Compliance Filing. The Commission further voted unanimously to direct Otter Tail to file for review and approval, its proposed computation methodology and mechanism for refund or credit of interim rate over-collections, including interest, its proposed interest rate on refund/credit amounts, and its final rates and tariff sheets reflecting the Commission's final decision, and to place the refund issues and tariff sheets on the agenda for decision at its regular meeting scheduled for June 25, 2019.

Having considered the evidence of record, applicable law, and the briefs and the arguments of the parties, the Commission makes the following Findings of Fact, Conclusions of Law, and Final Decision:

FINDINGS OF FACT

I. PARTIES

1. Applicant is Otter Tail Power Company, a Minnesota corporation operating in South Dakota and a public utility as defined in SDCL 49-34A-1(12). App. at 1.² Otter Tail provides retail electric service to approximately 132,100 customers, including approximately 11,700 in South Dakota, 61,700 in Minnesota, and 58,800 in North Dakota. Otter Tail serves 454 communities and rural areas in northeastern South Dakota, western Minnesota, and the eastern two-thirds of North Dakota. In South Dakota, Otter Tail serves 54 communities. Otter Tail is headquartered in Fergus Falls, Minnesota and is a subsidiary of Otter Tail Corporation, which has its headquarters in Fargo, North Dakota.³

2. Staff fully participated as a party in this matter.

3. Intervenor Valley Queen Cheese Factory, Inc. did not participate in the evidentiary hearing.

II. PROCEDURAL FINDINGS

4. The Procedural History set forth above is hereby incorporated by reference in its entirety in these Procedural Findings. The procedural findings set forth in the Procedural History are a substantially complete and accurate description of the material documents filed in this docket and the proceedings conducted and decisions rendered by the Commission in this matter.

III. RATE OF RETURN ON EQUITY

5. Determining a reasonable return on equity (ROE) rests primarily on sound judgment looking at the overall results of the analysis. Under SDCL 49-34A-8 and relevant case law, rates set in this proceeding must be just and reasonable.⁴

6. The just and reasonable test focuses on whether the "total effect of the rate order [is] unreasonable."⁵ Under the just and reasonable test "it is the result reached, not

² References to the Hearing Transcript are in the format "TR" followed by the Hearing Transcript page number(s) referenced, references to the Application are in the format "App" followed by the Application page number(s) referenced, and references to the Hearing Exhibits are in the format "Ex" followed by the exhibit numbers and, where applicable, the page number(s) referenced.

³ Ex. OTP-5 at 10.

⁴ *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 603, 64 S.Ct. 281, 88 L.Ed. 333 (1944).

⁵ *Duquesne Light Co. v. Barasch*, 488 U.S. 299, 310 (1989).

the method employed that is controlling" and "the impact of the rate order which counts."⁶ The South Dakota Supreme Court recognized that rates that do not yield a fair return are unreasonable.⁷ The rate of a return should be "commensurate with returns on investments in other enterprises having corresponding risks" and "be sufficient ... to attract capital."⁸

7. "The ratemaking process under the Act, i.e. the fixing of 'just and reasonable' rates, involves a balancing of the investor and the consumer interests."⁹ "Regulation may, consistently with the Constitution, limit stringently the return recovered on investment, for investors' interests provide only one of the variables in the constitutional calculus of reasonableness."¹⁰

8. The overall rate of return of a utility is composed of three components: cost of long-term debt, return on equity, and capital structure.¹¹

9. In the Application and supporting direct prefiled testimony, Otter Tail's proposed revenue requirement reflected an overall rate of return (ROR) on investment of 7.96%, based on a test year average capital structure of 53.10% common equity and 46.90% long-term debt, a cost of long-term debt of 5.30%, and an ROE of 10.3%.¹² Otter Tail proposed a reasonable range for ROE to be from 10.00% to 10.60%.¹³ Otter Tail and Staff reached settlement on updated totals and relative percentages of long-term debt (47.08%) and common equity (52.92%) and the weighted cost of long-term debt to be included in the capital structure.¹⁴

10. Otter Tail's expert witness, Mr. Robert Hevert, and Staff's expert witness, Mr. Basil Copeland, each advocate a range of ROE values and recommended ROE that they believe should be "commensurate with returns on investments in other enterprises having corresponding risks" and "be sufficient ... to attract capital" and therefore just and reasonable.¹⁵

11. Mr. Copeland's analysis resulted in a proposed overall ROR of 6.83% based on an updated capital structure of 52.92% common equity and 47.27% long-term debt, an ROE of 8.25% and a cost of long-term debt of 5.22%.¹⁶ Mr. Copeland proposed a reasonable range for ROE for Otter Tail to be from 8.0% to 8.5%.¹⁷ Although Mr. Copeland recommends an ROE of 8.25%, his analysis indicates the cost of equity is in the 7% range.¹⁸

12. With respect to ROE, Otter Tail witnesses Mr. Bruce Gehardson and Mr. Kevin Moug provided both prefiled and oral testimony in support of Mr. Hevert. Mr. Hevert employed several analytical methodologies including a constant growth discounted cash flow (DCF) determination; a multi-stage DCF; a capital asset pricing model; and a market

⁶ *Hope*, 320 U.S. at 602.

⁷ *In Re Northwestern Bell*, 43 N.W.2d 553, 555 (S.D. 1950).

⁸ *Northwestern Public Service v. Cities of Chamberlain et al*, 265 N.W.2d 867, 874 (S.D. 1978).

⁹ *Hope*, 320 U.S. at 603.

¹⁰ *Permian Basin Area Rate Cases*, 390 U.S. 747, 769 (1968).

¹¹ Ex. OTP-3 at 2-3.

¹² Ex. OTP-3, Schedule 2, p. 1.

¹³ Ex. OTP-1 at 2.

¹⁴ See Settlement Stipulation, p.1; Staff Memorandum Supporting Settlement Stipulation, Attachment 19.

¹⁵ *Northwestern Public Service v. Cities of Chamberlain et al*, 265 N.W.2d at 874.

¹⁶ See Staff Memorandum Supporting Settlement Stipulation, Attachment 19.

¹⁷ Ex. S1 at 3.

¹⁸ Ex. S1 at 3.

risk premium methodology to support his recommendation of 10.3%.¹⁹

13. Mr. Hevert developed a "proxy" group of nine companies to establish his comparisons of various elements factored into his ROE determination.²⁰ Mr. Hevert also employed several financial reporting entities in his development of estimates.²¹ Mr. Hevert's version of the constant growth DCF-indicated ROE relied upon earnings per share (EPS) growth.²² Mr. Hevert eliminated the results of three of his proxy group companies (El Paso Electric Company, IDACORP, Inc., and NorthWestern Corporation) due the DCF method yielding low average returns.²³ The result of his determinations were categorized with three "means"; mean low, mean, mean high.²⁴

14. Mr. Hevert also performed an analysis based on his multi-stage (three stage) DCF model. Mr. Hevert criticized the usage of a single stage DCF due to its assumptions of perpetuity. Mr. Hevert relied upon estimates of EPS growth and long-term gross domestic product (GDP) growth in formulating his results.²⁵

15. Mr. Hevert's capital asset pricing model (CAPM) employs the risk-free rate of return, adjusted Beta coefficients, and risk premium analysis.²⁶ Mr. Hevert also calculates return information based on the constant growth DCF model.²⁷

16. Mr. Hevert's bond yield plus risk premium analysis generally examines yields on bonds which are considered to be relatively "risk-free" (30-year treasuries of varying maturity dates were used) and compares this rate to a "premium" to be required for investment in riskier common equity over a period of years.²⁸

17. Mr. Copeland employed two variations of the DCF methodology, and a supplemental analysis of market-to-book ratios and excess returns on equity reflected in current market-to-book ratios.²⁹ The principal steps to prepare a DCF analysis are the selection of comparable companies to which to apply the method, and the selection of measures of expected growth.³⁰ Mr. Copeland used the constant growth DCF model to estimate growth based upon an average of EPS, dividends per share (DPS) and book value per share (BVPS). Mr. Copeland determined through that application of these three elements that the mean expected growth rate is 4.38%, and the median is 4.41%.³¹

18. Mr. Copeland also developed DCF estimates using the "dividend discount model" (DDM) which is a form of DCF methodology with less restrictive assumptions and the constant growth DCF. When dividend payout ratios are expected to trend upward or downward over extended periods of time, the multiple period DDM provides more accurate and reliable measures of the expected DCF return.³²

¹⁹ Ex. OTP-1 at 2.

²⁰ Ex. OTP-1 at 13-14.

²¹ Ex. OTP-1, Schedule I.

²² Ex. OTP-1 at 20.

²³ Ex. OTP-1 at 24.

²⁴ Ex. OTP-1 at 25.

²⁵ Ex. OTP-1 at 28.

²⁶ Ex. OTP-1 at 30.

²⁷ Ex. OTP-1 at 28, 32.

²⁸ Ex. OTP-1 at 33, 34.

²⁹ Ex. S1 at 11.

³⁰ Ex. S1 at 12.

³¹ Ex. S1 at 14.

³² Ex. S1 at 15.

19. The methodologies advocated by Mr. Copeland in this docket are exactly the same as he used in Docket EL11-019³³ but the input variables differ reflective of a declining cost of capital since that decision.³⁴ Mr. Copeland provided evidence of this decline by graphically showing the "volatility index" downward trend since that decision was made.³⁵ Mr. Copeland also noted for the 2011 to 2018 period a decline of over 100 basis points in Moody's Baa Corporate Bond yield and a 204 basis point decline in the implied market risk premia.³⁶

20. The primary reason for the difference in the witnesses' DCF methodologies was Otter Tail's exclusive use in its DCF model of forecasted growth in earnings per share (EPS) and Staff's use in its DCF model of an average of four different expected growth rate indicators.³⁷

21. As testified to by Mr. Copeland in his prefiled testimony, "it is sometimes possible to derive reasonable and accurate estimates of the cost of equity using only one of these growth measures as a 'proxy' for the expected rate of growth in dividends. But if the payout ratio is not constant, using just projected earnings or dividend growth can result in distorted estimates of the DCF cost of equity."³⁸ Mr. Copeland further testified, "there is substantial disparity between the EPS growth rates projected by Zacks and Yahoo and the DPS growth rates projected by Value Line. The median (which is a better measure of central tendency if there are outliers) projected EPS growth rate, 4.56 percent, is lower than the median DPS growth rate of 5.50 percent. However, the median '% Return to Common Equity' in Column I, 3.50 percent, is well below the median analyst projected EPS growth forecast of 4.56 percent, implying that the projected earnings growth rate is unsustainable for the long term."³⁹

22. Further, Mr. Copeland testified that, "[t]he best way to estimate the constant growth DCF cost of equity to avoid overstating or understating investors long-term growth rates an average of the EPS, DPS, and BVPS projections along with the % return to common equity measure of growth."⁴⁰

23. The Commission finds that the four-indicator average projected growth input employed by Staff in its DCF model is a more reliable methodology for projecting growth rates and the Commission adopts Staff's DCF model approach and its conclusions for purposes of its decision on ROE in this case. The Commission finds that use of this approach in this case is a proper application of the principle that regulatory commissions are to affect a "balancing of the investor and the consumer interests."⁴¹

24. Although Otter Tail raised this as a concern, there is no credible evidence in the record that Otter Tail will be unable to raise capital through equity issuances as a result of a return on equity at the rate recommended by Staff.⁴²

25. Mr. Copeland testified that the proper use of the DCF method for determining ROE is to do a survey of what investors expect as an expected return on the S&P 500. In this

³³ Prior to this docket, the most recent Commission decision regarding ROE was EL11-019 wherein the Commission found the ROE for Xcel was 9.25%.

³⁴ Ex. S1 at 18.

³⁵ Ex. S1 at 8.

³⁶ Ex. S1 at 9.

³⁷ Ex. S1 at 16-23, 47.

³⁸ Ex. S1 at 13.

³⁹ Ex. S1 at 13; S1, Schedule 1.

⁴⁰ Ex. S1 at 13, 14.

⁴¹ *Hope*, 320 U.S. at 603.

⁴² TR. at 114 (Copeland).

case it is 8 percent.⁴³ The Commission finds that a background analysis such as the long-used DCF and the continued downward trend of DCF is verified, and can be considered as a further degree of common-sense confirmation for Mr. Copeland's recommended ROE.⁴⁴

26. Mr. Hevert testified that he considered Otter Tail's low rates to customers, the very high levels of customer satisfaction⁴⁵, and the customer savings resulting from Otter Tail's under-budget completion of recent capital projects⁴⁶ when determining his ROE range.⁴⁷

27. Mr. Tommerdahl testified that Otter Tail, by completing its largest capital project approximately \$125 million below budget, that it saved South Dakota ratepayers approximately \$300,000 in the 2017 Test Year, approximately \$2.9 million in the first ten years, and approximately \$5.4 million over project's 30-year life.⁴⁸ Mr. Tommerdahl testified that setting an ROE that recognizes overall performance in reducing costs and providing high quality of service is an appropriate element of the Commission's regulatory discretion and that the combination of Otter Tail's cost savings and its high quality of service merits consideration by the Commission in determining Otter Tail's ROE.⁴⁹

28. Mr. Gerhardson testified that Otter Tail has made significant investments in South Dakota; that South Dakota benefits from completed infrastructure investments; that the completed and planned infrastructure investments demonstrate Otter Tail's significant commitment to infrastructure in South Dakota; that while South Dakota is home to just 8.8 percent of Otter Tail's customers, the recent and additional near-term investments in South Dakota account for 36.0 percent of Otter Tail's total plant in service by 2021; the investments have and will continue to provide very significant economic benefits to South Dakota.⁵⁰

29. Mr. Gerhardson testified that there was no specific recommendation or any methodology by which to measure or quantify Otter Tail's assertion that Otter Tail's performance and commitment to South Dakota merits an ROE above average for that approved for other utilities.⁵¹

30. The Commission finds that economic development is not a factor in the determination of the appropriate ROE.⁵²

31. Otter Tail shows total company rate base of \$1,096,688,710, and also shows the South Dakota allocation of those costs to be \$83,294,792, or approximately 7.6%.⁵³ While some rate base costs are directly assigned to each state jurisdiction, plant that serves the entire system includes generation plant and bulk transmission. The Commission finds siting decisions for such plant are not and should not be based upon state-by-state economic development motives, but rather on engineering requirements.⁵⁴

32. The Commission finds that plant addition decisions and related costs ultimately paid by ratepayers for reliable electric service should be based on system operating efficiency

⁴³ Ex. S1 at 61.

⁴⁴ TR. at 124 (Copeland).

⁴⁵ Ex. OTP-5; Ex. OTP-6.

⁴⁶ Ex. OTP-8.

⁴⁷ Ex. OTP-1 at 4.

⁴⁸ Ex. OTP-8; TR. at 204 (Tommerdahl).

⁴⁹ Ex. OTP-8; TR. at 204 (Tommerdahl).

⁵⁰ Ex. OTP-5 at 4.

⁵¹ TR. at 184-185 (Gerhardson).

⁵² SDCL 49-34A-6; SDCL 49-34A-8.

⁵³ App. Section 2, Statements A-R, Statement M, p. 5 of 8.

⁵⁴ SDCL 49-34A-6.; SDCL 49-34A-8. *See also*, TR. at 194-195 (Gerhardson).

standards and not on economic development considerations.⁵⁵ The Commission finds that Otter Tail has expended considerable plant expenditures in both North Dakota and Minnesota throughout its operational life and South Dakota has paid its jurisdictional share of the costs. The Commission has allowed the cost recovery of plant expansion in other jurisdictions when such expansion is supported by efficient planning for system reliability.⁵⁶

33. The Commission finds that quality performance and service does not justify a higher return. It is the level of service expected for a utility that is earning the cost of capital.⁵⁷

34. Mr. Hevert testified that in his analysis, a higher ROE is reasonable as Otter Tail is a relatively small-sized utility.⁵⁸ Mr. Copeland testified that his analysis did not show that small utilities deserved a premium. Rather, any evidence that does exist, for unregulated "small cap" equities, is disputed.⁵⁹

35. Beta Coefficients measure relative risks of market participants compared to general market risk, and it has long been shown vertically-integrated utilities bear less market risk than similarly-sized non-regulated companies.⁶⁰ While Otter Tail may be a smaller vertically integrated utility, it is not an insubstantial company as it has a market capitalization near \$2 billion.⁶¹ Electric utilities generally, and Otter Tail specifically, are of less market risk than the market as a whole or the average firm in the S&P 500.⁶²

36. The Commission finds Mr. Copeland's testimony on the subject of premium's for small-sized utilities to be more credible.⁶³

37. Otter Tail and Staff's testimony regarding the magnitude of the recovery of flotation costs also differed. Mr. Copeland recommended 7 to 9 basis points.⁶⁴ Mr. Hevert recommended 13 basis point be allowed.⁶⁵ The Commission finds that recovery of reasonable flotation costs is appropriate, but the issue is moot as its approved ROE of 8.75% exceeds Mr. Copeland's recommendation by 50 basis points, and the high end of his range by 25 basis points, and thus any flotation costs are more than recovered.

38. The Commission approves an ROE of 8.75% as the appropriate and just and reasonable ROE for Otter Tail based on the evidence in this case. Based on this ROE and the cost of debt and capital structure values approved by the Commission's Order Approving Settlement Stipulation, the Commission approves an overall rate of return of 7.09%.⁶⁶

⁵⁵ See SDCL 49-34A-2, requiring all public utilities to provide adequate service. See also, *Mont.-Dakota Utils. Co. v. Parkhill Farms, LLC*, 2017 S.D. 88, ¶ 14, 905 N.W.2d 334, 339 (Court holding that "are required by law to "furnish adequate, efficient, and reasonable service").

⁵⁶ For example, see Docket No. EL11-019 in which the Commission allowed cost recovery for Noble's Wind Project located in Minnesota. See also, Docket No. EL12-06 in which the Commission allowed cost recovery through a phase-in plan for new plant located in Wyoming.

⁵⁷ See SDCL 49-34A-2.

⁵⁸ Ex. OTP-1 at 40-43.

⁵⁹ Ex. S1 at 76.

⁶⁰ Ex. S1 at 78.

⁶¹ TR. at 149 (Moug).

⁶² Ex. S1 at 54; TR. at 65-66 (Hevert); TR. at 92-93 (Copeland).

⁶³ Ex. S1 at 77.

⁶⁴ Ex. S1 at 80.

⁶⁵ Ex. OTP-1 at 23.

⁶⁶ May 24, 2019 Joint Compliance Filing.

IV. REVENUE REQUIREMENT AND CLASS DISTRIBUTION

39. Based on the Settlement Stipulation and Order, the Commission's decision on rate of return and the adjustments reflected in the exhibits to the Joint Compliance Filing, the Commission finds that the net deficiency in Otter Tail's revenue requirement is \$2,211,286.

V. ADDITIONAL MATTERS

40. On October 18, 2018, Otter Tail implemented an interim rate increase pursuant to SDCL 49-34A-17. In accordance with the proceedings conducted in this matter, the Commission finds that it is appropriate for the Commission to issue a future order as contemplated by SDCL 49-34A-17 to require Otter Tail to refund or credit back to customers the amounts, with interest, it collected during the interim rate period and to direct Otter Tail to file its proposed refund plan with the Commission, for review by Staff and Commission action at its regular meeting on June 25, 2019.

41. In accordance with SDCL 49-34A-10 and the proceedings conducted in the matter, the Commission finds that Otter Tail shall file tariff sheets conforming to its decision in this case and the Order Approving Settlement Stipulation, for review by Staff and Commission action at its regular meeting on June 25, 2019.

VI. GENERAL

42. To the extent that any Conclusion of Law set forth below is more appropriately a finding of fact, that Conclusion of Law is incorporated by reference as a Finding of Fact.

43. To the extent that any of the Findings of Fact in this decision are determined to be conclusions of law or mixed findings of fact and conclusions of law, the same are incorporated herein by this reference as a Conclusion of Law as if set forth in full herein.

CONCLUSIONS OF LAW

1. The following South Dakota statutes are applicable: SDCL 49-34A-1, 49-34A-2, 49-34A-3, 49-34A-4, 49-34A-6, 49-34A-8, 49-34A-8.3, 49-34A-8.4, 49-34A-10 through 49-34A-14, 49-34A-17, 49-34A-19 through 49-34A-19.2, 49-34A-21, 49-34A-22, and applicable provisions of SDCL Chaps. 1-26 and 15-6. The Commission has jurisdiction in this matter pursuant to one or more of the above statutes.

2. The following South Dakota administrative rules are applicable: ARSD Chapters 20:10:01 and ARSD 20:10:13.

3. SDCL 49-34A-6 provides:

Every rate made, demanded or received by any public utility shall be just and reasonable. Every unjust or unreasonable rate shall be prohibited. The Public Utilities Commission is hereby authorized, empowered and directed to regulate all rates, fees and charges for the public utility service of all public utilities, including penalty for late payments, to the end that the public shall pay only just and reasonable rates for service rendered.

SDCL 49-34A-8 provides:

The commission, in the exercise of its power under this chapter to determine just

and reasonable rates for public utilities, shall give due consideration to the public need for adequate, efficient, economical, and reasonable service and to the need of the public utility for revenues sufficient to enable it to meet its total current cost of furnishing such service, including taxes and interest, and including adequate provision for depreciation of its utility property used and necessary in rendering service to the public, and to earn a fair and reasonable return upon the value of its property.

SDCL 49-34A-8.4 further provides:

The burden is on the public utility to establish that the underlying costs of any rates, charges, or automatic adjustment charges filed under this chapter are prudent, efficient, and economical and are reasonable and necessary to provide service to the public utility's customers in this state.

SDCL 49-34A-11 states that "[t]he burden of proof to show that any rate filed is just and reasonable shall be upon the public utility filing same."

4. Otter Tail is a "public utility" as defined in SDCL 49-34A-1(12).
5. The Application was properly filed with the Commission on April 20, 2018, included all schedules and information required by ARSD 20:10:13, and was jurisdictionally complete.
6. Otter Tail had the statutory authority pursuant to SDCL 49-34A-17 to "implement the proposed rate" on October 18, 2018, and Otter Tail's interim rate was lawfully implemented on October 18, 2018.
7. The Joint Motion and Settlement Stipulation were duly and lawfully granted and approved by the Commission without objection by any party through its Order Granting Joint Motion for Approval of Settlement Stipulation; Order Approving Settlement Stipulation issued on March 6, 2019.
8. In accordance with the Commission's Order for and Notice of Evidentiary Hearing issued on March 7, 2019, a hearing on the merits of this matter was held on March 26, 2019, with Otter Tail and Staff participating and afforded a full opportunity for a hearing on the merits of their issues.
9. The Commission concludes that an overall rate of return for Otter Tail of 7.09%, based upon a cost of long-term debt of 5.22%, a return on equity of 8.75%, and capital structure of 52.92% common equity and 47.08% long-term debt, will enable Otter Tail to earn a fair and reasonable return upon the value of its property while appropriately balancing investor and consumer interests.
10. Based on the Order Approving Settlement Stipulation, the Commission's decision on rate of return, and the adjustments reflected in the exhibits to the Joint Compliance Filing, the Commission concludes that the net deficiency in Otter Tail's revenue requirement is \$2,211,286.
11. Giving due consideration to the public need for adequate, efficient, economical, and reasonable service and to the need of the public utility for revenues sufficient to enable it to meet its total current cost of furnishing such service, including taxes and interest, and including adequate provision for depreciation of its utility property used and necessary in rendering service to the public, and to earn a fair and reasonable return upon the value of its property, the Commission concludes that the rates, terms and conditions approved in this Final Decision and

Order, incorporating the Order Approving Settlement Stipulation, are just and reasonable and are approved for service on and after the date established by the Commission in connection with its approval of Otter Tail's conforming tariff sheets.

12. SDCL 49-34A-17 and 49-34A-22 permit, but do not require, the Commission to order a public utility to refund or credit amounts, with interest, charged on an interim basis in excess of amounts chargeable under the rates as approved. Having found that a refund or credit of excess charges, with interest, is appropriate in this case, the Commission concludes that Otter Tail shall submit a refund plan for Commission action at its regular meeting on June 25, 2019.

13. In accordance with SDCL 49-34A-10, Otter Tail shall file tariff sheets conforming to this Final Decision and Order and the Order Approving Settlement Stipulation for Commission action at its regular meeting on June 25, 2019.

14. The Commission concludes that the Application and all required filings have been filed with the Commission in conformity with South Dakota law and that all procedural requirements under South Dakota law, including public hearing requirements, have been met or exceeded.

It is therefore

ORDERED, that a rate of return for Otter Tail of 7.09% consisting of a cost of long-term debt of 5.22%, a return on equity of 8.75%, and a capital structure of 52.92% common equity and 46.96% long-term debt is hereby approved. It is further

ORDERED, that a net revenue deficiency and corresponding rate increase for Otter Tail in the amount of \$2,211,286 is hereby approved. It is further

ORDERED, that Otter Tail shall submit a refund plan and tariff sheets conforming to this Final Decision and Order and the Order Approving Settlement Stipulation for Commission action at its regular meeting on June 25, 2019.

Dated at Pierre, South Dakota, this 30th day of May 2019.

NOTICE OF ENTRY

PLEASE TAKE NOTICE that this Final Decision and Order was duly issued and entered on the 30th day of May 2019.

CERTIFICATE OF SERVICE The undersigned hereby certifies that this document has been served today upon all parties of record in this docket, as listed on the docket service list, electronically or by mail. By: _____ Date: _____ (OFFICIAL SEAL)
--

BY ORDER OF THE COMMISSION:

Gary Hanson
GARY HANSON, Chairman

Chris Nelson
CHRIS NELSON, Commissioner

Kristie Fiegen
KRISTIE FIEGEN, Commissioner

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BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 989

FILED

JUL 01 2011

Clerk's Office
N.C. Utilities Commission

In the Matter of)
Application of Duke Energy Carolinas, LLC)
For Adjustment of Rates and Charges Applicable)
To Electric Service in North Carolina)

DIRECT TESTIMONY OF
ROBERT B. HEVERT
FOR
DUKE ENERGY CAROLINAS, LLC

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Table 8: Summary of Analytical Results

Constant Growth DCF Results			
	Low Growth Rate	Mean Growth Rate	High Growth Rate
Proxy Group Mean			
30-day Average Stock Price	9.21%	10.31%	11.40%
90-day Average Stock Price	9.35%	10.45%	11.54%
180-day Average Stock Price	9.44%	10.54%	11.64%
Proxy Group Median			
30-day Average Stock Price	9.87%	10.41%	11.88%
90-day Average Stock Price	10.02%	10.56%	12.05%
180-day Average Stock Price	10.07%	10.59%	12.14%
Supporting Methodologies			
Ex-Ante CAPM Results			
	Twelve-month Beta Coefficient		
	Sharpe Ratio Derived Market Risk Premium	Market Derived Market Risk Premium	
30 Day Average 30 Year Treasury Yield	9.58%	10.34%	
Near Term Forecast 30 Year Treasury Yield	10.13%	10.89%	
Average Bloomberg and Value Line Beta Coefficient			
	Sharpe Ratio Derived Market Risk Premium	Market Derived Market Risk Premium	
30 Day Average 30 Year Treasury Yield	9.67%	10.44%	
Near Term Forecast 30 Year Treasury Yield	10.22%	10.99%	

2

3 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**4 **A. Yes, it does.**

CAPM USING ALTERNATIVE MARKET RISK PREMIUM CALCULATIONS

	[3]	[4]	[5]	[6]	[7]	[8]
	Risk Free Rate	Average Beta	Market Risk Premium Sharpe Ratio Derived	Market Risk Premium DCF Derived	Return on Equity Sharpe Ratio Derived	Return on Equity DCF Derived
PROXY GROUP TWELVE-MONTH BETA						
[1] Current 30-Year Treasury (30-day average)	4.34%	0.726	7.22%	8.27%	9.58%	10.34%
[2] Near-Term Projected 30-Year Treasury	4.88%	0.726	7.22%	8.27%	10.13%	10.89%
PROXY GROUP AVERAGE BLOOMBERG AND VALUE LINE BETA						
[1] Current 30-Year Treasury (30-day average)	4.34%	0.739	7.22%	8.27%	9.67%	10.44%
[2] Near-Term Projected 30-Year Treasury	4.88%	0.739	7.22%	8.27%	10.22%	10.99%

Notes:

- [1] Source: Bloomberg
 [2] Source: Blue Chip Financial Forecasts, Vol. 30, No. 5, May 1, 2011, at 2
 [3] see Notes [1] and [2]
 [4] Source: Twelve-Month = Exhibit No. RBH-4, Average Bloomberg and Value Line = Exhibit No. RBH-2
 [5] Equals Col. [13]
 [6] Source: Exhibit No. RBH-3, pages 2-9
 [7] Equals (Col. [4] x Col. [5]) + Col. [3]
 [8] Equals (Col. [4] x Col. [5]) + Col. [3]

MARKET RISK PREMIUM USING EXPECTED MARKET SHARPE RATIO

[9]	[10]	[11]	[12]	[13]
RP _m	Vol _m	VOL _m	Historical Market Sharpe Ratio	RP _e
6.70%	20.28%	21.87%	33.04%	7.22%

	[14]	[15]	[16]	[17]
Date	VIX	Sep11 VIX Futures	Oct11 VIX Futures	Nov11 VIX Futures
5/31/2011	17.56	20.75	21.90	22.30
5/27/2011	18.13	21.20	22.30	22.70
5/26/2011	18.19	21.65	22.75	23.05
5/25/2011	18.87	22.15	23.20	23.50
5/24/2011	19.17	22.40	23.45	23.65
5/23/2011	19.79	22.60	23.55	23.75
5/20/2011	19.05	22.45	23.30	23.50
5/19/2011	18.17	21.85	22.65	22.85
5/18/2011	18.53	21.85	22.55	22.75
5/17/2011	19.45	22.10	22.80	23.05
5/16/2011	19.87	22.30	22.90	23.10
5/13/2011	19.07	22.15	22.80	22.85
5/12/2011	18.44	21.90	22.55	22.75
5/11/2011	19.05	22.05	22.70	22.90
5/10/2011	18.37	21.75	22.45	22.60
5/9/2011	18.20	22.15	22.85	23.10
5/8/2011	19.91	22.55	23.30	23.55
5/5/2011	19.84	22.70	23.50	23.85
5/4/2011	19.44	22.55	23.30	23.55
5/3/2011	19.11	22.45	23.20	23.45
5/2/2011	18.39	22.15	23.05	23.25
4/29/2011	17.50	21.65	22.55	22.90
4/28/2011	17.52	22.00	22.75	23.05
4/27/2011	17.90	22.30	23.00	23.20
4/26/2011	18.27	22.50	23.25	23.50
4/25/2011	18.55	22.65	23.50	24.05
4/21/2011	18.35	22.90	23.85	24.15
4/20/2011	18.48	23.05	23.80	24.30
4/19/2011	19.18	23.50	24.20	24.50
4/18/2011	19.92	23.80	24.50	24.76

Average 21.87

Notes:

- [9] Source: Morningstar, Inc.
 RP_m = historical arithmetic average Risk Premium
 [10] Source: Morningstar, Inc.
 Vol_m = historical market volatility
 [11] Vol_e = expected market volatility (average of Cols. [14]-[17])
 [12] Equals Col. [9] / Col. [10]
 [13] Equals Col. [11] x Col. [12]
 [14] Source: Bloomberg
 [15] Source: Bloomberg
 [16] Source: Bloomberg
 [17] Source: Bloomberg

$$\frac{RP_m}{Vol_m} \times Vol_e = RP_e$$

FILED

MAR 30 2012

Clerk's Office
N.C. Utilities Commission

PREFILED DIRECT TESTIMONY
OF
ROBERT B. HEVERT
ON BEHALF OF
DOMINION NORTH CAROLINA POWER
BEFORE THE
NORTH CAROLINA UTILITIES COMMISSION
DOCKET E-22, SUB 479

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Table 6a: Summary of Constant Growth DCF Results

	<i>Low Growth Rate</i>	<i>Mean Growth Rate</i>	<i>High Growth Rate</i>
30-Day Average	9.10%	10.27%	11.84%
90-Day Average	9.16%	10.33%	11.90%
180-Day Average	9.29%	10.47%	12.03%

2

Table 6b: Summary of CAPM Results

	<i>Sharpe Ratio Derived Market Risk Premium</i>	<i>Bloomberg Derived Market Risk Premium</i>	<i>Capital IQ Derived Market Risk Premium</i>
<i>Calculated Beta Coefficient</i>			
Current 30-Year Treasury (3.09%)	9.77%	11.17%	10.16%
Near Term Projected 30-Year Treasury (3.50 %)	10.18%	11.58%	10.57%
<i>Average Bloomberg and Value Line Beta Coefficient</i>			
Current 30-Year Treasury (3.09%)	9.41%	10.73%	9.78%
Near Term Projected 30-Year Treasury (3.50 %)	9.82%	11.14%	10.19%

3

4 **Q. Does this conclude your Direct Testimony?**5 **A. Yes, it does.**

Capital Asset Pricing Model Results
Sharpe Ratio, Bloomberg, and Capital IQ Derived Market Risk Premium

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Ex-Ante Market Risk Premium					CAPM Result		
	Risk-Free Rate	Average Beta Coefficient	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived
PROXY GROUP 12-MONTH BETA COEFFICIENT								
Current 30-Year Treasury (30-day average) [9]	3.09%	0.775	8.62%	10.43%	9.13%	9.77%	11.17%	10.16%
Near-Term Projected 30-Year Treasury [10]	3.50%	0.775	8.62%	10.43%	9.13%	10.18%	11.58%	10.57%
Mean						9.97%	11.37%	10.37%
	Ex-Ante Market Risk Premium					CAPM Result		
	Risk-Free Rate	Average Beta Coefficient	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived
PROXY GROUP BLOOMBERG AND VALUE LINE AVERAGE BETA COEFFICIENT								
Current 30-Year Treasury (30-day average) [9]	3.09%	0.733	8.62%	10.43%	9.13%	9.41%	10.73%	9.78%
Near-Term Projected 30-Year Treasury [10]	3.50%	0.733	8.62%	10.43%	9.13%	9.82%	11.14%	10.19%
Mean						9.61%	10.94%	9.99%

Notes:

[1] See Notes [9] and [10]

[2] Source: Exhibit No. RBH-3

[3] Source: Exhibit No. RBH-2

[4] Source: Exhibit No. RBH-2

[5] Source: Exhibit No. RBH-2

[6] Equals Col. [1] + (Col. [2] x Col. [3])

[7] Equals Col. [1] + (Col. [2] x Col. [4])

[8] Equals Col. [1] + (Col. [2] x Col. [5])

[9] Source: Bloomberg Professional

[10] Source: Blue Chip Financial Forecasts, Vol. 31, No. 2, February 1, 2011, at 2

E/A

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1023

FILED

OCT 12 2012

Clerk's Office
N.C. Utilities Commission

In the Matter of)

Application of Progress Energy Carolinas, Inc.)

For Adjustment of Rates and Charges)

Applicable to Electric Service in North Carolina)

**DIRECT TESTIMONY OF
ROBERT B. HEVERT
FOR PROGRESS ENERGY
CAROLINAS, INC.**

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1 a realization occurs, suggesting that the "high vol/high
2 correlation" world is likely to persist, even if we have seen
3 the worst for this cycle.⁷²

4 My findings, that electric utility stocks remains somewhat more
5 volatile than their historical average, but are far more correlated with the
6 broad market than they historically have been, are consistent with the
7 observations noted by The Wall Street Journal.

8 **Q. WHAT CONCLUSIONS DO YOU DRAW FROM THOSE**
9 **ANALYSES?**

10 **A.** First, it is important to recognize the relationships among financial
11 measures relied upon by investors, and to reflect those relationships in
12 Cost of Equity estimates. Simply observing, for example, that long-term
13 Treasury rates are at historically low levels is not a sufficient level of
14 analysis to conclude that the Cost of Equity is at a commensurately low
15 level. As noted above, for example, if investors believed that the current
16 level of long-term Treasury yields is indicative of the Cost of Equity,
17 electric utility dividend yields would be almost 200 basis points below
18 their current levels. Similarly, both sector and market-wide volatility
19 should not be viewed in isolation; rather, they should be considered
20 together with the correlation of returns. Recognizing that volatility and
21 the interaction among key indices provides a more complete perspective,
22 and enables a more accurate determination of the Cost of Equity.

⁷² *Ibid.*

1 **Table 6a: Summary of Constant Growth DCF Results**

	<i>Low Growth Rate</i>	<i>Mean Growth Rate</i>	<i>High Growth Rate</i>
<i>Proxy Group Mean</i>			
30-Day Average	8.83%	10.54%	13.03%
90-Day Average	9.01%	10.71%	13.21%
180-Day Average	9.08%	10.79%	13.29%
30-Day Average	9.25%	9.87%	10.60%
90-Day Average	9.32%	10.07%	10.80%
180-Day Average	9.40%	10.22%	10.95%

2 **Table 6b: Summary of CAPM Results**

	<i>Sharpe Ratio Derived Market Risk Premium</i>	<i>Bloomberg Derived Market Risk Premium</i>	<i>Capital IQ Derived Market Risk Premium</i>
<i>Twelve-month Calculated Beta Coefficient</i>			
Current 30-Year Treasury (2.65%)	8.25%	10.09%	9.94%
Near Term Projected 30-Year Treasury (3.00%)	8.60%	10.44%	10.30%
Long Term Projected 30-Year Treasury (5.30%)	10.90%	12.74%	12.60%
<i>Average Bloomberg Beta Coefficient</i>			
Current 30-Year Treasury (2.65%)	8.17%	9.98%	9.84%
Near Term Projected 30-Year Treasury (3.00%)	8.52%	10.33%	10.19%
Long Term Projected 30-Year Treasury (5.30%)	10.82%	12.63%	12.49%
<i>Average Value Line Beta Coefficient</i>			
Current 30-Year Treasury (2.65%)	8.55%	10.48%	10.33%
Near Term Projected 30-Year Treasury (3.00%)	8.90%	10.84%	10.69%
Long Term Projected 30-Year Treasury (5.30%)	11.20%	13.14%	12.99%

3

4

Capital Asset Pricing Model Results
Sharpe Ratio, Bloomberg, and Capital IQ Derived Market Risk Premium

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Ex-Ante Market Risk Premium					CAPM Result		
	Risk-Free Rate	Average Beta Coefficient	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived
PROXY GROUP 12-MONTH BETA COEFFICIENT								
Current 30-Year Treasury (30-day average) [9]	2.65%	0.699	8.01%	10.64%	10.44%	8.25%	10.09%	9.94%
Near-Term Projected 30-Year Treasury [10]	3.00%	0.699	8.01%	10.64%	10.44%	8.60%	10.44%	10.30%
Long-Term Projected 30-Year Treasury [11]	5.30%	0.699	8.01%	10.64%	10.44%	10.90%	12.74%	12.60%
Mean						9.25%	11.09%	10.95%
PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT								
Current 30-Year Treasury (30-day average) [9]	2.65%	0.689	8.01%	10.64%	10.44%	8.17%	9.98%	9.84%
Near-Term Projected 30-Year Treasury [10]	3.00%	0.689	8.01%	10.64%	10.44%	8.52%	10.33%	10.19%
Long-Term Projected 30-Year Treasury [11]	5.30%	0.689	8.01%	10.64%	10.44%	10.82%	12.63%	12.49%
Mean						9.17%	10.98%	10.84%
PROXY GROUP AVERAGE VALUE LINE BETA COEFFICIENT								
Current 30-Year Treasury (30-day average) [9]	2.65%	0.736	8.01%	10.64%	10.44%	8.55%	10.48%	10.33%
Near-Term Projected 30-Year Treasury [10]	3.00%	0.736	8.01%	10.64%	10.44%	8.90%	10.84%	10.69%
Long-Term Projected 30-Year Treasury [11]	5.30%	0.736	8.01%	10.64%	10.44%	11.20%	13.14%	12.99%
Mean						9.55%	11.49%	11.33%

[1] See Notes [9], [10] and [11]

[2] Source: Exhibit No. RBH-3

[3] Source: Exhibit No. RBH-2

[4] Source: Exhibit No. RBH-2

[5] Source: Exhibit No. RBH-2

[6] Equals Col. [1] + (Col. [2] x Col. [3])

[7] Equals Col. [1] + (Col. [2] x Col. [4])

[8] Equals Col. [1] + (Col. [2] x Col. [5])

[9] Source: Bloomberg Professional

[10] Source: Blue Chip Financial Forecasts, Vol. 31, No. 8, August 1, 2012, at 2

[11] Source: Blue Chip Financial Forecasts, Vol. 31, No. 6, June 1, 2012, at 14

I/A

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BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

FILED

DOCKET NO. E-7, SUB 1026

FEB 04 2013

**Clerk's Office
N.C. Utilities Commission**

In the Matter of)

Application of Duke Energy Carolinas, LLC)
For Adjustment of Rates and Charges Applicable)
to Electric Service in North Carolina)

DIRECT TESTIMONY OF
ROBERT B. HEVERT
FOR

DUKE ENERGY CAROLINAS, LLC

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 1142

In the Matter of:	)	
	)	DIRECT TESTIMONY OF
Application of Duke Energy Progress, LLC	)	ROBERT B. HEVERT
For Adjustment of Rates and Charges	)	FOR DUKE ENERGY
Applicable to Electric Service in North	)	PROGRESS, LLC
Carolina	)	

OFFICIAL COPY

Jun 01 2017

1 risk profile of the Company, it is my view that 10.75 percent is a reasonable
2 and appropriate estimate of DE Progress' Cost of Equity.

3 **Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE ANALYSIS THAT**
4 **LED TO YOUR ROE DETERMINATION.**

5 A. Because all financial models are subject to various assumptions and
6 constraints, equity analysts and investors tend to use multiple methods to
7 develop their return requirements. I therefore relied on three widely accepted
8 approaches to develop my ROE determination: (1) the Constant Growth and
9 Multi-Stage forms of the Discounted Cash Flow ("DCF") model; (2) the
10 Capital Asset Pricing Model ("CAPM"); and (3) the Bond Yield Plus Risk
11 Premium approach.

12 In addition to the methods noted above, my recommendation also
13 takes into consideration factors such as DE Progress' risks associated with
14 environmental regulations, flotation costs, and the increasing uncertainty in
15 the capital markets. Although I did not make explicit adjustments to my ROE
16 estimates for those factors, I did take them into consideration in determining
17 where the Company's Cost of Equity falls within the range of analytical
18 results.

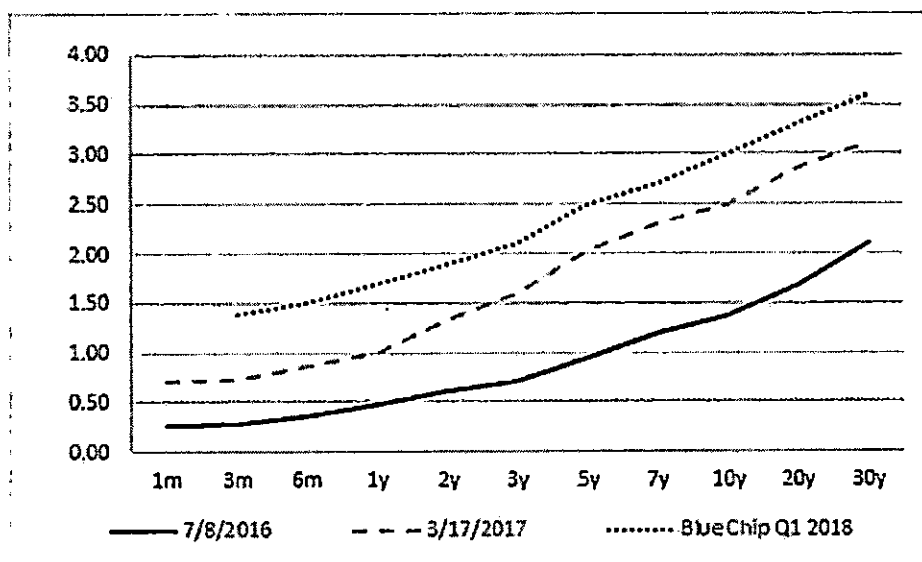
19 **Q. HOW IS THE REMAINDER OF YOUR DIRECT TESTIMONY**
20 **ORGANIZED?**

21 A. The remainder of my Direct Testimony is organized as follows:

22 • Section III – provides a summary of issues regarding Cost of Equity

December 2016 (from 0.25 percent -0.50 percent to 0.50 percent -0.75 percent) and again in March 2017 (to 0.75 percent -1.00 percent), short-term interest rates increased by a corresponding amount.⁷⁴ Long-term yields increased by wider margins, with the 10-year and 30-year Treasury yields increasing by 113 basis points and 100 basis points, respectively, by March 17, 2017 (see Chart 8 below).

Chart 8: Treasury Yield Curve: 7/8/2016, 3/31/2017 and Projected Q1⁷⁵



The increase in the ten and 30-year yields from July 2016 to March 2017 is among the highest increase in at least 25 years.⁷⁶ That increase in Treasury yields is highly related to increasing inflation. To that point, leading

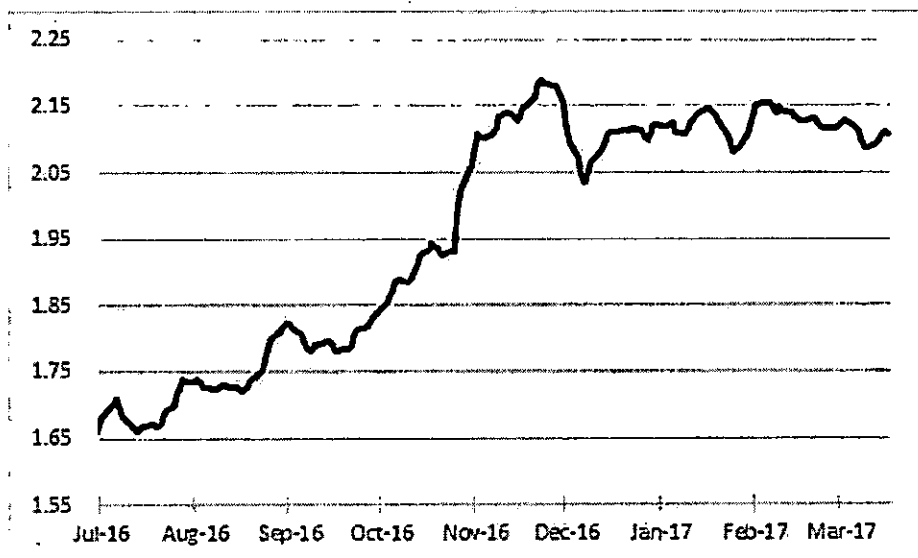
⁷⁴ Federal Reserve Board Schedule H.15. 6-month and 1-year Treasury yields increased by 51 and 52 basis points, respectively, from July 8, 2016 to March 31, 2017.

⁷⁵ Sources: Federal Reserve Board Schedule H.15.; Blue Chip Financial Forecasts, Vol. 36, No. 4, April 1, 2017, at 2. 3-year, 7-year and 20-year projected Treasury yields interpolated.

⁷⁶ Source: Federal Reserve Schedule H.15. The increases fall in the top 100th percentiles for both the 10 and 30-year Treasury yields.

up to and following the November 2016 Presidential election expected inflation, as measured by the difference between nominal Treasury yields and Treasury Inflation Protected Securities (that difference often is referred to as the "TIPS spread") also increased, such that it stands somewhat above the Federal Reserve's 2.00 percent inflation target (see Chart 9, below).

Chart 9: Forward Inflation Estimates 7/8/2016 - 3/31/2017⁷⁷



The increase in both long-term interest rates and inflation, particularly considering the magnitude of the changes over an abbreviated period, suggest higher investor return requirements.

Q. DOES MARKET-BASED DATA INDICATE THAT INVESTORS SEE A PROBABILITY OF INCREASING INTEREST RATES?

A. Yes. Forward Treasury yields implied by the slope of the yield curve and

⁷⁷ Source: Federal Reserve Schedule H.15. Forward inflation estimates calculated as the difference between implied nominal and inflation protected 20-year Treasury yields in 10 years.

1 published projections by sources such as Blue Chip Financial Forecasts
2 (which provides consensus estimates from approximately 50 professional
3 economists) indicate investors expect long-term interest rates to increase.
4 Similarly, investors' expectations for increased long-term Treasury yields are
5 apparent in the prices investors are willing to pay today for the option to buy
6 or sell long-term Government bonds, at today's price, in the future. Because
7 the value of bonds falls as interest rates increase, the option to sell bonds at
8 today's price becomes more valuable when interest rates are expected to
9 increase.⁷⁸ Currently option prices show that investors are willing to pay about
10 50.00 percent more for the option to sell bonds in the future (at today's price)
11 than they are willing to pay for the option to buy those bonds.⁷⁹ That market-
12 based data tells us that investors consider an increase in interest rates as likely.

13 Looking to short-term interest rates, data compiled by CME Groups
14 indicates that investors see a high likelihood of further Federal Funds rate
15 increases, even after the December 14, 2016 and March 15, 2017 increases.
16 As shown in Table 8, (below) the market is now anticipating at least one
17 additional rate hike (91.70 percent probability) and possibly two or more
18 (59.20 percent and 21.20 percent probability, respectively) by January 2018.

⁷⁸ In other words, if there is a high probability that interest rates will increase and bond prices will fall, there is value in the option to sell those bonds in the future at today's price. Conversely, if there is a strong probability that interest rates will decrease (price of bonds will increase), there is value in the option to buy those bonds in the future at today's price.

⁷⁹ The option to sell the TLT index in January 2019 at today's price is approximately one and one half times the value of the option to buy the fund. Source:
<http://www.nasdaq.com/symbol/tlt/option-chain?dateindex=7>.

1 In fact, the implied probability of no increase in the coming year is only 8.40
 2 percent, whereas the likelihood of at least a 50-basis point increase is
 3 approximately 60.00 percent. Importantly, the potential for rising rates
 4 represents risk for utility investors.

5 **Table 8: Probability of Federal Funds Rate Increases⁸⁰**

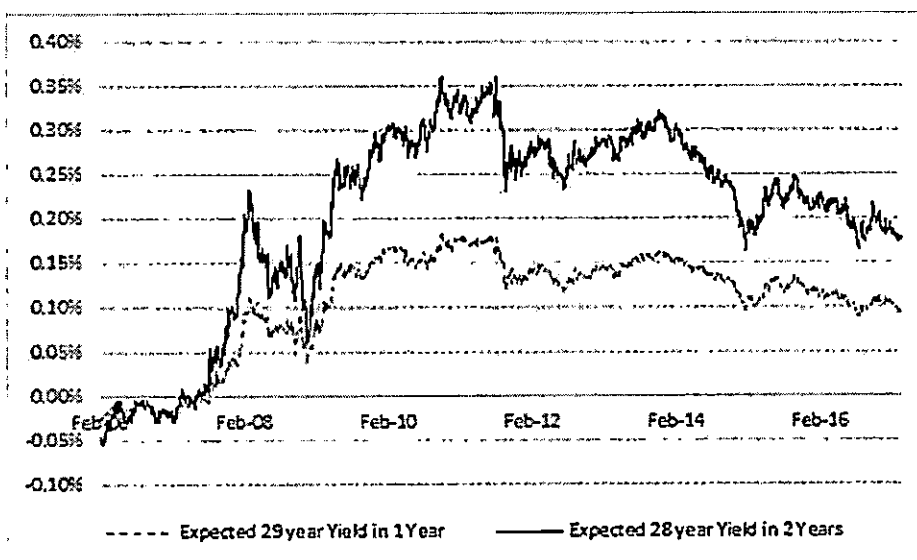
Target Rate (bps)	Federal Reserve Meeting Date						
	5/3/17	6/14/17	7/26/17	9/20/17	11/1/17	12/13/17	1/31/18
75-100	95.7%	29.5%	25.8%	14.5%	14.0%	8.9%	8.4%
100-125	4.3%	67.6%	62.9%	46.7%	45.4%	34.0%	33.3%
125-150		3.0%	11.0%	33.6%	34.1%	38.2%	37.7%
150-175			0.4%	5.0%	6.1%	16.3%	16.7%
175-200				0.2%	0.4%	2.4%	2.7%
200-225					0.0%	0.1%	0.2%
225-250						0.0%	0.0%

6 Lastly, we can view the market's expectations of future interest rates
 7 based on the current yield curve. Those expected rates, often referred to as
 8 "forward yields" are derived from the "Expectations" theory, which states that
 9 (for example) the current 30-year Treasury yield equals the combination of the
 10 current three-year Treasury yield, and the 29-year Treasury yield expected in
 11 one year. That is, an investor would be indifferent to (1) holding a 30-year
 12 Treasury to maturity, or (2) holding a one-year Treasury to maturity, then a 29-

⁸⁰ Source: <http://www.cmegroup.com/trading/interest-rates/countdown-to-fomc.html>, accessed 4/6/2017.

1 year Treasury bond, also to maturity.⁸¹ As Chart 10 (below) indicates, since 2006 the implied forward 29- and 28- year yields (one and two years hence, respectively) consistently exceeded the (interpolated) spot yields. That is, just as economists' projections implied increased interest rates, so did observable Treasury yields.

Chart 10: Forward vs. Interpolated Treasury Yields⁸²



7 **Q. HAVE YOU ALSO REVIEWED THE RELATIONSHIP BETWEEN**
 8 **CREDIT SPREADS FOR A-RATED UTILITY DEBT RELATIVE TO A-**
 9 **RATED CORPORATE DEBT?**

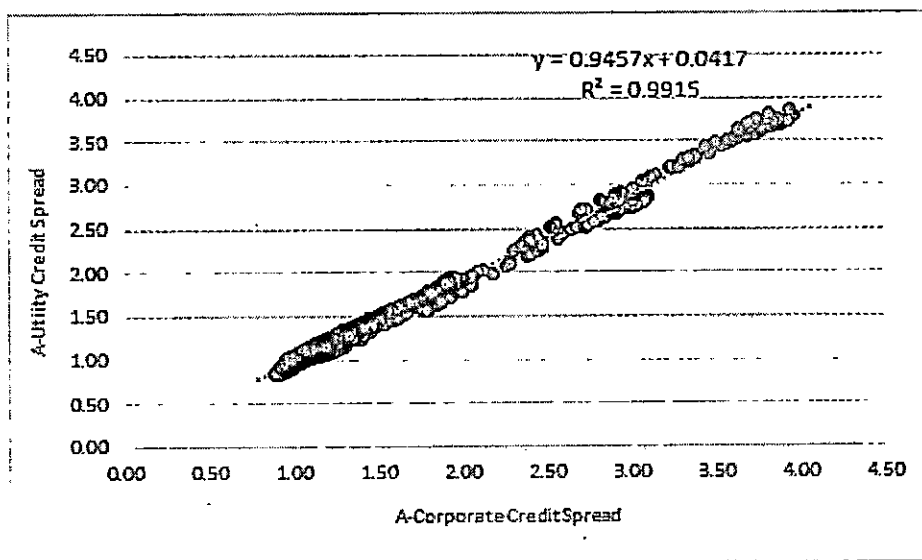
10 **A. Yes, I have. Given the historical volatility in the spread between corporate**

⁸¹ In addition to the Expectations theory, there are other theories regarding the term structure of interest rates including: the Liquidity Premium Theory, which asserts that investors require a premium for holding long term bonds; the Market Segmentation Theory, which states that securities of different terms are not substitutable and, as such, the supply of and demand for short-term and long-term instruments is developed independently; and the Preferred Habitat Theory, which states that in addition to interest rate expectations, certain investors have distinct investment horizons and will require a return premium for bonds with maturities outside of that preference.

⁸² Source: Federal Reserve Schedule H.15. Spot yields are interpolated.

1 and utility A-rated debt, there is no reason to conclude that utility yields are
2 different than those of their corporate counterparts. That conclusion is
3 consistent with the finding that over time, there has been a nearly one-to-one
4 relationship between credit spreads on A-rated corporate and utility bonds. In
5 fact, a regression analysis in which corporate credit spreads are the
6 explanatory variable and utility credit spreads are the dependent variable
7 shows that slope is approximately 1.00 and highly significant (see Chart 11,
8 below). Because the intercept term is statistically insignificant, we can
9 conclude that there has been no material difference between the two, and there
10 certainly is no meaningful difference in the current market.

Chart 11: Corporate and Utility Credit Spreads (A-Rated)⁸³



⁸³

Source: Federal Reserve Schedule H.15.

1 **Q. WHAT DO YOU CONCLUDE FROM THOSE ANALYSES?**

2 A. First, it is clear that interest rates have increased from the low levels
3 experienced in early 2016. Second, it is clear that market-based data indicate
4 investors' expectations of rising interest rates in the near- and longer-term.
5 The observation that interest rates have increased indicates that the financial
6 community sees the strong prospect of increased growth throughout the
7 economy. As that occurs, and as interest rates continue to rise, it would be
8 reasonable to expect lower utility valuations, higher dividend yields and
9 higher growth rates. In the context of the Discounted Cash Flow model, those
10 variables would combine to indicate increases in the Cost of Equity.

11 It is important to keep in mind that although estimating the Cost of
12 Equity is an empirical exercise, the rote application of a specific form of an
13 analysis, or the mechanical use of specific model inputs, may produce
14 misleading results. As noted earlier, it is important to understand the
15 assumptions underlying each model, and the assess the extent to which they
16 do, or do not, comport with market conditions. In doing so, the methods used
17 to estimate the Cost of Equity, or the weight given to any one method, may
18 change from time to time, or from case to case.

19 **Q. HAVE THERE BEEN RECENT PERIODS WHEN UTILITY**
20 **VALUATION LEVELS WERE HIGH RELATIVE TO BOTH THEIR**
21 **LONG-TERM AVERAGE AND THE MARKET?**

22 A. Yes. For example, between July and December 2016, the S&P Electric Utility

Capital Asset Pricing Model Results
Bloomberg, and Value Line Derived Market Risk Premium

	[1]	[2]	[3]	[4]	[5]	[6]
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg MRP	Value Line MRP
PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT						
Current 30-Year Treasury [7]	3.06%	0.592	10.28%	11.05%	9.15%	9.60%
Near-Term Projected 30-Year Treasury [8]	3.52%	0.592	10.28%	11.05%	9.60%	10.05%
Mean					9.37%	9.83%
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg MRP	Value Line MRP
PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT						
Current 30-Year Treasury [7]	3.06%	0.722	10.28%	11.05%	10.49%	11.04%
Near-Term Projected 30-Year Treasury [8]	3.52%	0.722	10.28%	11.05%	10.94%	11.49%
Mean					10.71%	11.27%

Notes:

[1] See Notes [7] and [8]

[2] Source: RBH-4

[3] Source: RBH-3

[4] Source: RBH-3

[5] Equals Col. [1] + (Col. [2] x Col. [3])

[6] Equals Col. [1] + (Col. [2] x Col. [4])

[7] Source: Bloomberg Professional

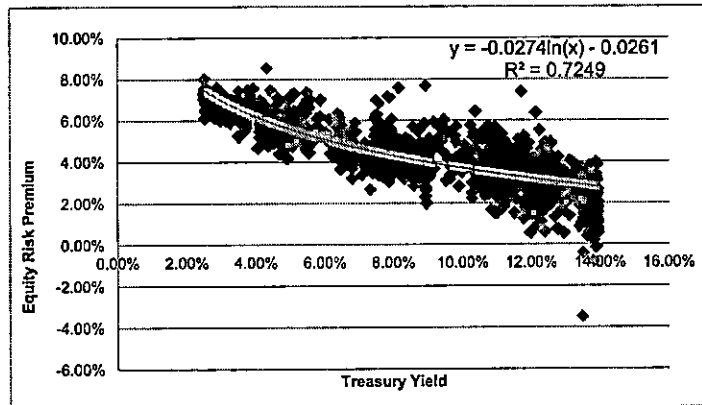
[8] Blue Chip Financial Forecasts, Vol. 36, No. 4, April 1, 2017, at 2.

Jun 01 2017

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Bond Yield Plus Risk Premium

[1]	[2]	[3]	[4]	[5]
Constant	Slope	30-Year Treasury Yield	Risk Premium	Return on Equity
-2.61%	-2.74%			
Current 30-Year Treasury		3.06%	6.93%	10.00%
Near-Term Projected 30-Year Treasury		3.52%	6.55%	10.07%
Long-Term Projected 30-Year Treasury		4.35%	5.97%	10.32%



Notes:

[1] Constant of regression equation

[2] Slope of regression equation

[3] Source: Current = Bloomberg Professional,
Near Term Projected = Blue Chip Financial Forecasts, Vol. 36, No. 4, April 1, 2017, at 2,
Long Term Projected = Blue Chip Financial Forecasts, Vol. 35, No. 12, December 1, 2016, at 14.

[4] Equals [1] + ln([3]) x [2]

[5] Equals [3] + [4]

[6] Source: SNL Financial

[7] Source: SNL Financial

[8] Source: Bloomberg Professional, equals 201-trading day average (i.e. lag period)

[9] Equals [7] - [8]

I/A

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1146

In the Matter of:	)	
	)	
Application of Duke Energy Carolinas, LLC	)	DIRECT TESTIMONY OF
For Adjustment of Rates and Charges	)	ROBERT B. HEVERT
Applicable to Electric Service in North	)	FOR DUKE ENERGY
Carolina	)	CAROLINAS, LLC

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Aug 25 2017

1 low Constant Growth DCF results are far removed from recently authorized
2 returns, I concluded that they should be given less weight than other methods
3 in determining the Company's ROE.

4 *Multi-Stage DCF Model*

5 **Q. IS IT REASONABLE TO CONSIDER ANALYTICAL MODELS IN**
6 **ADDITION TO THE CONSTANT GROWTH DCF MODEL?**

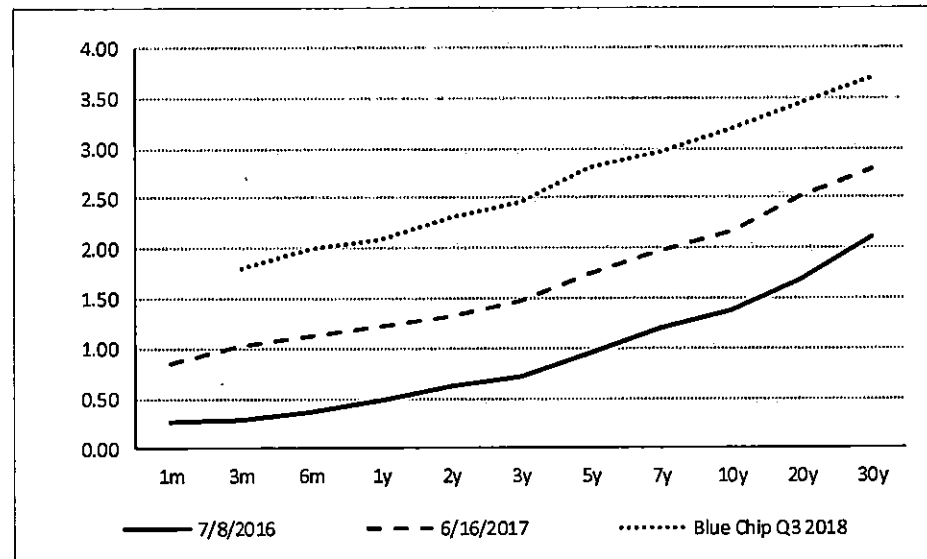
7 A. Yes. First, as noted earlier, it is both prudent and appropriate to use multiple
8 methodologies in order to mitigate the effects of assumptions and inputs
9 associated with any single approach. Second, the Constant Growth DCF
10 model assumes that earnings, dividends and book value will grow at the same,
11 constant rate in perpetuity; that the payout ratio will remain constant in
12 perpetuity; that the P/E ratio will remain constant; and that the return required
13 today will be the same return required every year in the future. However,
14 those assumptions are not likely to hold. In particular, it is likely that over
15 time, payout ratios will increase from their current levels. In addition, to the
16 extent that long-term interest rates increase over the next few years, it is likely
17 that the Cost of Equity also will increase. It therefore is appropriate to
18 consider more than one analytical model in estimating the ROE.

19 **Q. WHAT OTHER FORM OF THE DCF MODEL HAVE YOU USED?**

20 A. To address the considerations underlying the Constant Growth form of the
21 DCF model, discussed above, I also considered the Multi-Stage (three-stage)
22 Discounted Cash Flow Model. The Multi-Stage model, which is an extension

December 2016 (from 0.25 percent - 0.50 percent to 0.50 percent - 0.75 percent), in March 2017 (to 0.75 percent - 1.00 percent), and again in June 2017 (to 1.00 percent - 1.25 percent), short-term interest rates increased significantly.⁷⁵ Long-term yields increased by similar margins, with the 10-year and 30-year Treasury yields increasing by 79 basis points and 67 basis points, respectively, by June 16, 2017 (see Chart 8 below).

Chart 8: Treasury Yield Curve: 7/8/2016, 6/16/2017 and Projected Q3 2018⁷⁶



The increase in the ten and 30-year yields from July 2016 to June 2017 is among the highest increase in at least 25 years.⁷⁷ That increase in Treasury yields is highly related to increasing inflation. To that point, leading up to and

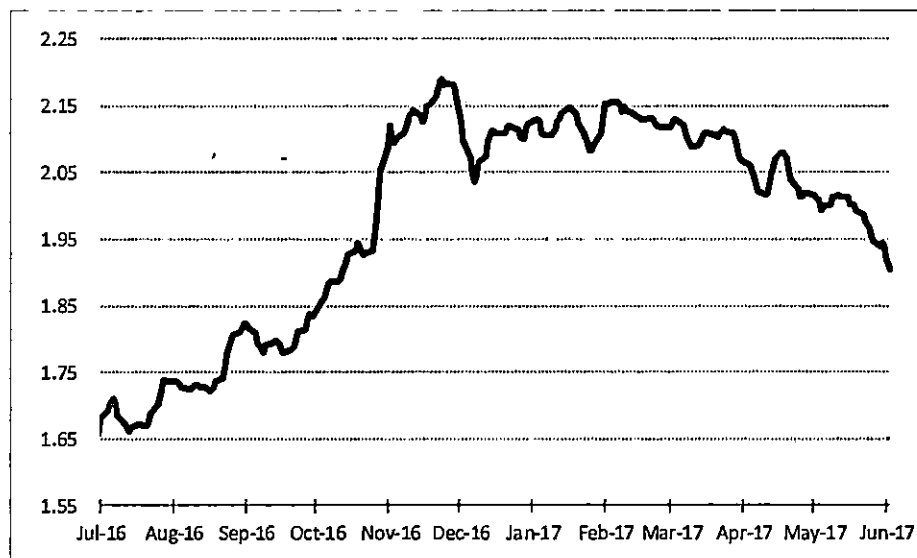
⁷⁵ Federal Reserve Board Schedule H.15. 6-month and 1-year Treasury yields increased by 77 and 73 basis points, respectively, from July 8, 2016 to June 16, 2017.

⁷⁶ Sources: Federal Reserve Board Schedule H.15.; Blue Chip Financial Forecasts, Vol. 36, No. 4, April 1, 2017, at 2. 3-year, 7-year and 20-year projected Treasury yields interpolated.

⁷⁷ Source: Federal Reserve Schedule H.15. The increases fall in the top 97th percentiles for both the 10 and 30-year Treasury yields.

1 following the November 2016 Presidential election expected inflation, as
2 measured by the difference between nominal Treasury yields and Treasury
3 Inflation Protected Securities (that difference often is referred to as the “TIPS
4 spread”) also increased, such that it stands near the Federal Reserve’s 2.00
5 percent inflation target (see Chart 9, below).

6 **Chart 9: Forward Inflation Estimates 7/8/2016 – 6/16/2017⁷⁸**



7 The increase in both long-term interest rates and the convergence of
8 forward inflation towards the Federal Reserve’s target, particularly
9 considering the magnitude of the changes over an abbreviated period, suggest
10 higher investor return requirements.

⁷⁸

Source: Federal Reserve Schedule H.15. Forward inflation estimates calculated as the difference between implied nominal and inflation protected 20-year Treasury yields in 10 years.

1 Q. WHAT CONCLUSIONS DO YOU DRAW FROM YOUR ANALYSES
2 OF THE CURRENT CAPITAL MARKET ENVIRONMENT, AND
3 HOW DO THOSE CONCLUSIONS AFFECT YOUR ROE
4 RECOMMENDATION?

5 A. In my view, we cannot conclude that recent utility valuations are due to a
6 fundamental change in the risk perceptions and tolerances of investors. There
7 is no measurable difference between credit spreads of A-rated utility debt, and
8 A-rated corporate debt. That is, based on analyses of credit spreads, there is
9 no reason to conclude that investors see utilities as less risky relative to either
10 historical levels or to their corporate counterparts.⁸⁴

11 From an analytical perspective, it is important that the inputs and
12 assumptions used to arrive at an ROE determination, including assessments of
13 capital market conditions, are consistent with the conclusion itself. Although
14 all analyses require an element of judgment, the application of that judgment
15 must be made in the context of the quantitative and qualitative information
16 available to the analyst and the capital market environment in which the
17 analyses were undertaken. Because the application of financial models and
18 interpretation of their results often is the subject of differences among analysts
19 in regulatory proceedings, I believe that it is important to review and consider
20 a variety of data points; doing so enables us to put in context both quantitative

⁸⁴ Although they are not a full measure of equity risk, credit spreads do reflect the risk tolerances and preferences of debt investors.

1 analyses and the associated recommendations.

2 Because not all models used to estimate the Cost of Equity adequately
3 reflect those changing market dynamics, it is important to give appropriate
4 weight to the methods and to their results. Moreover, because those models
5 produce a range of results, it is important to consider the type of data
6 discussed above in determining where the Companies' ROE falls within that
7 range. On balance, I believe that the DCF-based results should be viewed
8 very carefully, and that somewhat more weight should be afforded the Risk
9 Premium-based methods. I believe that doing so supports my recommended
10 range of 10.25 percent to 11.00 percent, and my ROE recommendation of
11 10.75 percent.

12 **IX. CONCLUSIONS**

13 **Q. WHAT IS YOUR CONCLUSION REGARDING THE ROE FOR DE**
14 **CAROLINAS?**

15 **A.** As discussed throughout my testimony, it is important to consider a variety of
16 empirical and qualitative information in reviewing analytical results and
17 arriving at ROE determinations. As a practical matter, the Constant Growth
18 DCF results are well below a highly observable and relevant benchmark, *i.e.*,
19 the returns authorized for vertically integrated electric utilities. A more
20 balanced approach therefore would be to consider the relative strengths and
21 weaknesses of multiple methods, and give the appropriate weight to their
22 results.

Capital Asset Pricing Model Results
Bloomberg, and Value Line Derived Market Risk Premium

	[1]	[2]	[3]	[4]	[5]	[6]
					CAPM	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg MRP	Value Line MRP
PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT						
Current 30-Year Treasury [7]	2.90%	0.575	10.79%	10.89%	9.11%	9.17%
Near-Term Projected 30-Year Treasury [8]	3.40%	0.575	10.79%	10.89%	9.61%	9.66%
Mean					9.36%	9.41%
					CAPM	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg MRP	Value Line MRP
PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT						
Current 30-Year Treasury [7]	2.90%	0.703	10.79%	10.89%	10.49%	10.56%
Near-Term Projected 30-Year Treasury [8]	3.40%	0.703	10.79%	10.89%	10.98%	11.05%
Mean					10.73%	10.80%

Notes:

[1] See Notes [7] and [8]

[2] Source: RBH-5

[3] Source: RBH-4

[4] Source: RBH-4

[5] Equals Col. [1] + (Col. [2] x Col. [3])

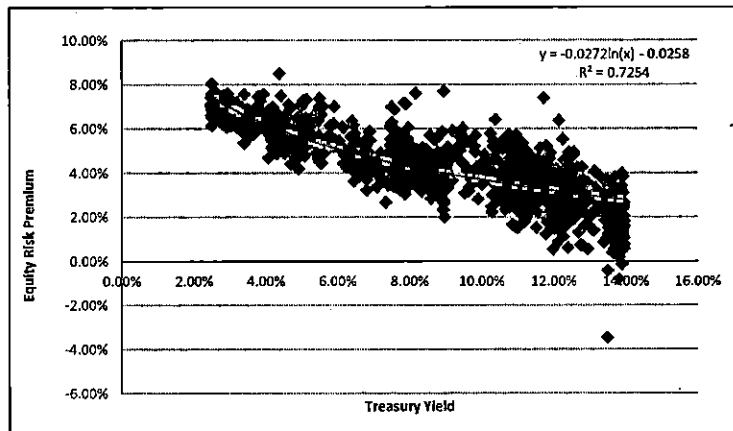
[6] Equals Col. [1] + (Col. [2] x Col. [4])

[7] Source: Bloomberg Professional

[8] Source: Blue Chip Financial Forecasts, Vol. 36, No. 6, June 1, 2017, at 2.

Bond Yield Plus Risk Premium

[1]	[2]	[3]	[4]	[5]
Constant	Slope	30-Year Treasury Yield	Risk Premium	Return on Equity
-2.58%	-2.72%			
Current 30-Year Treasury		2.90%	7.06%	9.97%
Near-Term Projected 30-Year Treasury		3.40%	6.63%	10.03%
Long-Term Projected 30-Year Treasury		4.40%	5.93%	10.33%



Notes:

[1] Constant of regression equation

[2] Slope of regression equation

[3] Source: Current = Bloomberg Professional,

Near Term Projected = Blue Chip Financial Forecasts, Vol. 36, No. 6, June 1, 2017, at 2,

Long Term Projected = Blue Chip Financial Forecasts, Vol. 36, No. 6, June 1, 2017, at 14.

[4] Equals [1] + ln([3]) x [2]

[5] Equals [3] + [4]

[6] Source: SNL Financial

[7] Source: SNL Financial

[8] Source: Bloomberg Professional, equals 201-trading day average (i.e. lag period)

[9] Equals [7] - [8]

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1 credit contractions, and other factors that affect both fundamental equity
2 valuations and investor trading patterns. The recent underperformance of
3 electric utility stocks suggests that the electric utility sector in particular
4 may be facing valuation pressures that could affect the Cost of Equity. To
5 the extent that, on balance, relative underperformance indicates greater
6 downside risk for electric utility equity investors (due to factors such as
7 those noted above), the required ROE would increase.

8 **Q. WHAT CONCLUSIONS DO YOU DRAW FROM THOSE**
9 **ANALYSES?**

10 **A.** First, it is important to recognize the relationships among financial
11 measures relied upon by investors, and to reflect those relationships in
12 Cost of Equity estimates. Simply observing, for example, that long-term
13 Treasury rates are at historically low levels is not a sufficient level of
14 analysis to conclude that the Cost of Equity is at a commensurately low
15 level. As noted above, for example, if investors believed that the current
16 level of long-term Treasury yields is indicative of the Cost of Equity,
17 electric utility dividend yields would be almost 200 basis points below
18 their current levels. Recognizing such factors provides a more complete
19 perspective of investor risk and enables a more reasonable determination
20 of the Cost of Equity.

1

Table 6a: Summary of Constant Growth DCF Results

	<i>Low Growth Rate</i>	<i>Mean Growth Rate</i>	<i>High Growth Rate</i>
<i>Proxy Group Mean</i>			
30-Day Average	8.84%	10.15%	11.66%
90-Day Average	8.76%	10.06%	11.58%
180-Day Average	8.81%	10.12%	11.64%
<i>Proxy Group Median</i>			
30-Day Average	9.60%	9.98%	11.32%
90-Day Average	9.44%	10.10%	11.25%
180-Day Average	9.36%	10.27%	11.30%

2

Table 6b: Summary of CAPM Results

	<i>Sharpe Ratio Derived Market Risk Premium</i>	<i>Bloomberg Derived Market Risk Premium</i>	<i>Capital IQ Derived Market Risk Premium</i>
<i>Average Bloomberg Beta Coefficient</i>			
Current 30-Year Treasury (2.85%)	7.68%	9.93%	9.97%
Near Term Projected 30-Year Treasury (3.14%)	7.97%	10.21%	10.25%
Long-Term Projected 30-Year Treasury (5.10%)	9.93%	12.17%	12.21%
<i>Average Value Line Beta Coefficient</i>			
Current 30-Year Treasury (2.85%)	7.78%	10.07%	10.11%
Near Term Projected 30-Year Treasury (3.14%)	8.07%	10.36%	10.40%
Long-Term Projected 30-Year Treasury (5.10%)	10.03%	12.32%	12.36%

3 Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT
4 TESTIMONY?

5 A. Yes, it does.

Capital Asset Pricing Model Results
Sharpe Ratio, Bloomberg, and Capital IQ Derived Market Risk Premium

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Ex-Ante Market Risk Premium					CAPM Result		
	Risk-Free Rate	Average Beta Coefficient	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived
PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT								
Current 30-Year Treasury (30-day average) [9]	2.85%	0.708	6.82%	9.98%	10.04%	7.68%	9.93%	9.97%
Near-Term Projected 30-Year Treasury [10]	3.14%	0.708	6.82%	9.98%	10.04%	7.97%	10.21%	10.25%
Long-Term Projected 30-Year Treasury [11]	5.10%	0.708	6.82%	9.98%	10.04%	9.93%	12.17%	12.21%
Mean						8.53%	10.77%	10.81%
	Ex-Ante Market Risk Premium					CAPM Result		
	Risk-Free Rate	Average Beta Coefficient	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived	Sharpe Ratio Derived	Bloomberg Market DCF Derived	Capital IQ Market DCF Derived
PROXY GROUP AVERAGE VALUE LINE BETA COEFFICIENT								
Current 30-Year Treasury (30-day average) [9]	2.85%	0.723	6.82%	9.98%	10.04%	7.78%	10.07%	10.11%
Near-Term Projected 30-Year Treasury [10]	3.14%	0.723	6.82%	9.98%	10.04%	8.07%	10.36%	10.40%
Long-Term Projected 30-Year Treasury [11]	5.10%	0.723	6.82%	9.98%	10.04%	10.03%	12.32%	12.36%
Mean						8.62%	10.91%	10.95%

Notes:

[1] See Notes [9], [10] and [11]

[2] Source: Exhibit No. RBH-3

[3] Source: Exhibit No. RBH-2

[4] Source: Exhibit No. RBH-2

[5] Source: Exhibit No. RBH-2

[6] Equals Col. [1] + (Col. [2] x Col. [3])

[7] Equals Col. [1] + (Col. [2] x Col. [4])

[8] Equals Col. [1] + (Col. [2] x Col. [5])

[9] Source: Bloomberg Professional

[10] Source: Blue Chip Financial Forecasts, Vol. 31, No. 12, December 1, 2012, at 2

[11] Source: Blue Chip Financial Forecasts, Vol. 31, No. 12, December 1, 2012, at 14

**DIRECT TESTIMONY
OF
ROBERT B. HEVERT
ON BEHALF OF
DOMINION NORTH CAROLINA POWER
BEFORE THE
NORTH CAROLINA UTILITIES COMMISSION
DOCKET E-22, SUB 532**

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Capital Asset Pricing Model Results
Bloomberg and Value Line Derived Market Risk Premium

	[1]	[2]	[3]	[4]	[5]	[6]
			Ex-Ante Market Risk Premium		CAPM Result	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
PROXY GROUP BLOOMBERG BETA COEFFICIENT						
Current 30-Year Treasury (30-day average) [7]	2.79%	0.590	10.66%	9.99%	9.08%	8.69%
Near-Term Projected 30-Year Treasury [8]	3.35%	0.590	10.66%	9.99%	9.64%	9.25%
Mean					9.36%	8.97%
			Ex-Ante Market Risk Premium		CAPM Result	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
PROXY GROUP VALUE LINE AVERAGE BETA COEFFICIENT						
Current 30-Year Treasury (30-day average) [7]	2.79%	0.778	10.66%	9.99%	11.08%	10.56%
Near-Term Projected 30-Year Treasury [8]	3.35%	0.778	10.66%	9.99%	11.64%	11.12%
Mean					11.36%	10.84%

Notes:

[1] See Notes [7] and [8]

[2] Source: Petitioner's Exhibit 7-E

[3] Source: Petitioner's Exhibit 7-D

[4] Source: Petitioner's Exhibit 7-D

[5] Equals Col. [1] + (Col. [2] x Col. [3])

[6] Equals Col. [1] + (Col. [2] x Col. [4])

[7] Source: Bloomberg Professional

[8] Source: Blue Chip Financial Forecasts, Vol. 35, No. 2, February 1, 2016, at 2.

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Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/27/1990	12.90%	8.33%	4.57%
6/29/1990	12.50%	8.33%	4.17%
7/6/1990	12.10%	8.34%	3.76%
7/6/1990	12.35%	8.34%	4.01%
8/10/1990	12.55%	8.41%	4.14%
8/16/1990	13.21%	8.43%	4.78%
8/22/1990	13.10%	8.45%	4.65%
8/24/1990	13.00%	8.46%	4.54%
9/26/1990	11.45%	8.59%	2.86%
10/2/1990	13.00%	8.61%	4.39%
10/5/1990	12.84%	8.62%	4.22%
10/19/1990	13.00%	8.67%	4.33%
10/25/1990	12.30%	8.68%	3.62%
11/21/1990	12.70%	8.69%	4.01%
12/13/1990	12.30%	8.67%	3.63%
12/17/1990	12.87%	8.67%	4.20%
12/18/1990	13.10%	8.67%	4.43%
12/19/1990	12.00%	8.66%	3.34%
12/20/1990	12.75%	8.66%	4.09%
12/21/1990	12.50%	8.66%	3.84%
12/27/1990	12.79%	8.66%	4.13%
1/2/1991	13.10%	8.65%	4.45%
1/4/1991	12.50%	8.65%	3.85%
1/15/1991	12.75%	8.64%	4.11%
1/25/1991	11.70%	8.63%	3.07%
2/4/1991	12.50%	8.60%	3.90%
2/7/1991	12.50%	8.59%	3.91%
2/12/1991	13.00%	8.58%	4.43%
2/14/1991	12.72%	8.57%	4.15%
2/22/1991	12.80%	8.55%	4.25%
3/6/1991	13.10%	8.53%	4.57%
3/8/1991	12.30%	8.52%	3.78%
3/8/1991	13.00%	8.52%	4.48%
4/22/1991	13.00%	8.49%	4.51%
5/7/1991	13.50%	8.47%	5.03%
5/13/1991	13.25%	8.47%	4.78%
5/30/1991	12.75%	8.44%	4.31%
6/12/1991	12.00%	8.41%	3.59%
6/25/1991	11.70%	8.39%	3.31%
6/28/1991	12.50%	8.38%	4.12%
7/1/1991	12.00%	8.38%	3.62%
7/3/1991	12.50%	8.37%	4.13%
7/19/1991	12.10%	8.34%	3.76%
8/1/1991	12.90%	8.32%	4.58%
8/16/1991	13.20%	8.29%	4.91%
9/27/1991	12.50%	8.23%	4.27%
9/30/1991	12.25%	8.23%	4.02%
10/17/1991	13.00%	8.20%	4.80%
10/23/1991	12.50%	8.20%	4.30%
10/23/1991	12.55%	8.20%	4.35%
10/31/1991	11.80%	8.19%	3.61%
11/1/1991	12.00%	8.19%	3.81%
11/5/1991	12.25%	8.19%	4.06%
11/12/1991	12.50%	8.18%	4.32%
11/12/1991	13.25%	8.18%	5.07%
11/25/1991	12.40%	8.18%	4.22%
11/26/1991	11.60%	8.18%	3.42%
11/26/1991	12.50%	8.18%	4.32%
11/27/1991	12.10%	8.18%	3.92%
12/18/1991	12.25%	8.15%	4.10%
12/19/1991	12.60%	8.15%	4.45%
12/19/1991	12.80%	8.15%	4.65%
12/20/1991	12.65%	8.14%	4.51%
1/9/1992	12.80%	8.09%	4.71%
1/16/1992	12.75%	8.07%	4.68%
1/21/1992	12.00%	8.06%	3.94%
1/22/1992	13.00%	8.06%	4.94%
1/27/1992	12.65%	8.05%	4.60%
1/31/1992	12.00%	8.04%	3.96%
2/11/1992	12.40%	8.03%	4.37%
2/25/1992	12.50%	8.01%	4.49%
3/16/1992	11.43%	7.98%	3.45%
3/18/1992	12.28%	7.98%	4.30%
4/2/1992	12.10%	7.95%	4.15%
4/9/1992	11.45%	7.94%	3.51%
4/10/1992	11.50%	7.93%	3.57%
4/14/1992	11.50%	7.93%	3.57%
5/5/1992	11.50%	7.89%	3.61%
5/12/1992	11.87%	7.88%	3.99%
5/12/1992	12.46%	7.88%	4.58%
6/1/1992	12.30%	7.87%	4.43%
6/12/1992	10.90%	7.86%	3.04%
6/26/1992	12.35%	7.85%	4.50%

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