authority, the TCEQ enforces both the state and federal permitting standards. Now, a utility may apply to the TCEQ for a joint federal/state permit.

The wastewater treatment standards in Texas are different throughout the state depending on the particular point of discharge. For example, a wastewater treatment plant seeking to discharge into a lake or river used for public recreation and swimming will encounter higher standards for wastewater treatment than a plant seeking to discharge into a commercial body of water, such as the Houston Ship Channel. While the standards may differ, the overall goal is the same—maintain public health and water quality in the receiving body of water. Monarch must comply with all of these state and federal standards. The likelihood is that discharge standards will continue to be strengthened over time, which will require continuing capital improvements, making it extremely important that a well-capitalized organization like Monarch is there to make the needed improvements.

V. CAPITAL ADDITIONS

Q. PLEASE DESCRIBE THE MAJOR CAPITAL INVESTMENTS MONARCH HAS MADE SINCE THE LAST GENERAL RATE CASE IN ITS WATER SYSTEMS IN THE MONARCH WEST REGION.

A. In Monarch's last general rate case, a test year ending June 30, 2015 was used. A list of major capital investments in the Monarch West Region since Monarch's last general rate case through the end of the 2019 test year is provided in the table below, with details of each following:[3]

[3] Monarch defines a "major capital investment" as a discrete project of a cost amount greater than $50,000.

Table 1—Major Capital Projects in Monarch West Region since June 30, 2015

Year Completed	Systems	Amount Invested as of 12/31/2019
2015	Country Bend/Country Springs Water Line Replacement	$124,663.14
2016	Lake Medina Shores Recoat Pressure Tanks	$54,366.32
2016	Inverness Point Plant Rehab and Improvement	$219,162.43
2016	River Bend Estates Well Rehab	$87,796.79
2016	River Oaks Ranch Well Improvement	$325,621.55
2017	Wiedenfeld AMR Installation	$227,005.93
2017	Huntington Pressure Tanks and Ground Storage	$103,400.72
2017	Country Bend/Country Springs Pressure Tank Replacement	$66,827.02
2017	Plum Creek SCADA	$205,391.80
2017	Plum Creek Pump Station #2	$137,250.71
2017	Holiday Villages of Medina Well	$542,228.53
2018	Southern Hills Pump Station Improvement	$60,201.30
2018	Plum Creek TXDOT Line Relocation	$115,849.51
2018	Inverness Point Plan Intake Barge	$106,308.47
2018	Inverness WTP Recycle & Basin Process Piping	$245,931.26
2018	River Oaks Ranch GST #1 Improvement	$184,746.83

2019	Inverness Point Tank Rehab	$155,655.51
2019	Huntington SCADA Control	$50,037.43
2019	Lake Medina Shores Line Replacement	$99,602.21
2019	Enchanted River Estates Water Line Replacement	$106,560.00
2019	Oak Village North Valve Improvements	$289,020.51
2019	Oak Village North Standpipes Rehab	$224,244.61
2020	Bavarian Hills	$235,331.16

Details of the listed capital projects are provided below:

- In 2015, Monarch invested $124,663.14 in the Country Springs/Country Bend system. The project consisted of installing approximately 900 linear feet of water line along Boerne Forest to the intersection of Autumn Glen. This project replaced a section of water line that was in poor condition and had experienced multiple water line breaks, thereby decreasing water loss and improving reliability for customers.
- In 2016, Monarch invested $54,366.32 in the Lake Medina Shores/Holiday Villages of Medina system. The project consisted of inspection and recoating of two 7,500-gallon hydro-tanks. The tanks were prepared and recoated per TCEQ requirements. A temporary pumping-and-control system was required to inspect the tanks. This project improved the reliability of the system.
- In 2016, Monarch invested $219,162.43 in the Inverness Point system. The project consisted of rehabilitating the existing Trimite Water Treatment Units at the Surface Water Treatment Plant. The base work included replacing filter media in the two water treatment units, replacing the filtration assembly

(under-drain and laterals) under both units, and removal and replacement of the mechanical float valves with electronic globe valves. This project improved the reliability and water quality of the system.

- In 2016, Monarch invested $87,796.79 in the River Bend system. The project consisted of the rehabilitation of the water well. The work included the replacement of the well pump, well column pipe, electrical conductor, and airline. As this was a single well system, supplemental water hauling was performed throughout the project. The work resulted in providing additional life to the mechanical elements of the well and greater reliability to our customers.
- In 2016, Monarch invested $325,621.55 in the River Oaks Ranch system. The project consisted of the design, permitting, and installation of a public water supply well. The well provides an alternate source of raw water to what had been a single-well system.
- In 2017, Monarch invested $227,005.93 in the recently acquired Wiedenfeld Water Works systems. The project consisted of the conversion of approximately 840 existing meters to automatic meter reading ("AMR") meter equipment. AMR meters were installed in following systems: Cedar Springs (45), Center Point (55), Heritage Park (25), Hills & Dales (70), Oak Ridge Estates (40), Platten Creek (35), Rocky Creek (35), Southern Hills (295), Verde Park (70), Vista Hills (10), Westwood Oaks MHP (110), Winwood Oaks (20), and Woodhaven MHP (30). From the time of system installation to 2015, Wiedenfeld Water Works systems have not systematically replaced customer meters. With time and use, the mechanical components of water

meters deteriorate, resulting in a continual decline in poor meter accuracy and under registering. Water not registered is considered water loss, and the cost to produce and distribute this water is included in the water rates charged to all water customers. This results in inequitable billing for customers who use less water or who have more accurate meters. Further, accurate meter reading and billing is required to send price signals to customers to encourage water conservation that is so important to Monarch's ability to meet customer demands during periods of extended drought, which is often experienced throughout Texas.

- In 2017, Monarch invested $103,400.72 in the Huntington Utility Company system. The project consisted of rehabilitating the hydro-tank and water reservoir at the water plant. The task work included installing a temporary bypass system to maintain water service to customers while the work was performed. This project extends the useful life of the tanks and provides for greater reliability for the customer.
- In 2017, Monarch invested $66,827.02 in the Country Springs/Country Bend system. The project consisted of the removal and replacement of four 50-gallon bladder-tanks with two new 500-gallon hydro-tanks at Pump Station No. 2. This project was required to bring the facility into TCEQ compliance. Building improvement was required to fit the tanks in the existing pump station building.
- In 2017, Monarch invested $205,391.80 in the Plum Creek system. The project consisted of replacement of the existing obsolete Plum Creek Supervisory Control and Data Acquisition ("SCADA") components no longer

supported by the manufacturer with SCADA components that allow for superior operational control and monitoring of the existing water facilities and allow for future growth as needed. The project included an analysis of the water facilities, followed by the installation of remote terminal units for the following sites: Elevated Storage Tank No. 1, Elevated Storage Tank No. 2, Pump Station No. 2, Pump Station No. 3, Pump Station No. 4, Well Nos. 1 and 2, and the Guadalupe-Blanco River Authority delivery point. Additional work included installation of antenna towers, antennas, and coax, as required for each site, as well as programming and testing.

- In 2017, Monarch invested $137,250.41 in the Plum Creek system. The project consisted of the installation of an additional pump and the associated power and control components at Pump Station No. 2. The improvements, which were driven primarily by connection growth in the system, provide increased capacity to transfer water throughout the system, enhancing reliability and system pressure.
- In 2017, Monarch invested $542,228.53 in the Holiday Villages of Medina system. The project consisted of the design, permitting, and installation of a public supply well to replace an existing, failing water well. The existing water well had a collapsed screen section inhibiting well bore transmissibility and water production. The replacement well provides a more reliable source of groundwater. This project was started in May 2017 and was completed in October 2017. This project was not due to a TCEQ or EPA enforcement order. However, the project was required to ensure our utility system is in compliance with all TCEQ or EPA requirements.

- In 2018, Monarch invested $60,201.30 in the Southern Hills system. The project consisted of a comprehensive engineering report and equipment installation to resolve a TCEQ Notice of Enforcement for Compliance by increasing the total service pump capacity.
- In 2018, Monarch invested $115,849.51 in the Plum Creek system. The project consisted of the relocation and casing extension for existing Monarch water lines located at the intersection of Loop 4 and Robert S. Light Boulevard. This project was required to accommodate a Texas Department of Transportation road project.
- In 2018, Monarch invested $106,308.47 in the Inverness Point system. The project consisted of the fabrication and installation of a replacement raw-water intake barge assembly located at Inverness Point. The replacement barge provides a more stable platform and improved anchor system to accommodate varying lake levels, therefore providing greater reliability in the system.
- In 2018, Monarch invested $184,746.83 in the River Oaks Ranch system. The project consisted of the replacement of a 24,000-gallon storage tank with the installation of a new 30,000-gallon ground storage reservoir. The 24,000-gallon tank was at the end of its useful life and failing. The 30,000-gallon reservoir will adequately supply subdivision build-out and provide greater system reliability.
- In 2018, Monarch invested $245,931.26 in the Inverness Point water system. The project consisted of piping and process enhancements to the water sludge basin. Additionally, the project created a draw line from the settling basin to remove settled organics. The project was needed to improve plant

performance and meet TCEQ disinfectant byproducts standards. Removing the organics from the settling basin will reduce operator time at the plant as well as reduce chemical treatment costs.

- In 2019, Monarch invested $155,655.51 in the Inverness Point system. The existing intake barge supplying the surface water treatment plant had inverted during the historic flooding event on Lake Travis in October 2018. This project replaced the existing barge with a new intake structure that is larger and better-anchored in order to be more stable and reliable.
- In 2019, Monarch invested $50,037.43 in the Huntington Utility Company system. The project consisted of installing a SCADA system at the Huntington water facility. This improvement enhances reliability by providing the ability to monitor system conditions remotely.
- In 2019, Monarch invested $99,602.21 in the Lake Medina Shores system. The scope of work was the construction of 2,000 lineal feet of 4-inch SDR-21 PVC water mains with valves, fittings, and all appurtenances along Grandview Circle in Bandera, Texas. This project replaced water lines that were in poor condition and had been subject to frequent water main breaks.
- In 2019, Monarch invested $106,560.00 in the Enchanted River system. The scope of work was the construction of 2-inch and 4-inch SDR-21 PVC water mains with valves, fittings and all appurtenances in three separate sections, which are described more fully as follows:
  - Section 1—240 linear feet of Enchanted River Road water line installation;

- Section 2—1,200 linear feet of Enchanted River Road water line installation; and
- Section 3—1,000 linear feet of Enchanted River Road water line installation.

This project replaced water lines that were in poor condition and had been subject to frequent water main breaks.

- In 2019, Monarch invested $289,020.51 in the Oak Village North system. The project consisted of "cutting in" gate valves in the water lines, which allows the system to be isolated into zones, thereby lessening the impact of water outages when system leak repairs occur. The project included five 6-inch installations, 52 4-inch installations, and two 2-inch installations, all of which were completed in place and required traffic control.
- In 2019, Monarch invested $224,244.61 in the Oak Village North system. The project consisted of rehabilitation of two standpipes by recoating the exterior and interior of the two reservoirs. Further task work included metal fabrications, electrical probe improvements, vent improvements, and piping improvements. The rehabilitation was needed due to heavy corrosion on both standpipes, causing potential water leaks.
- Through 2019, Monarch invested $235,331.16, with a total project cost at completion in 2020 of $1,433,801.64, in the Bavarian Hills system. This project included the design, permitting, installation, and inspection of 5,000 lineal feet of 6-inch C-900 distribution main, with valves and services, along Bonn Mountain Drive, Ike Way, and Nimitz Way. The existing water distribution system was made from sub-standard materials and had been

subject to frequent leaks with water loss as high as 85%. The project replaced the entire distribution system. The project was started in November 2019 and was completed and placed into service in April 2020. This will improve system reliability and decrease water loss. This project was not due to a TCEQ or EPA enforcement order. However, the project was required to ensure our utility system is in compliance with all TCEQ or EPA requirements.

Q. ARE THE MAJOR CAPITAL PROJECTS COMPLETED FOR MONARCH'S WATER SYSTEMS IN THE MONARCH WEST REGION SINCE MONARCH'S LAST GENERAL RATE CASE ALL USED AND USEFUL TO MONARCH'S PROVISION OF UTILITY SERVICE?

A. Yes, these projects are all currently used and useful to the provision of utility service in Monarch's West Region. Please see the direct testimony of George Freitag.

Q. HAS THERE BEEN A NEED TO INVEST IN MAJOR CAPITAL PROJECTS FOR MONARCH'S WASTEWATER SYSTEM IN THE MONARCH WEST REGION SINCE MONARCH'S LAST GENERAL RATE CASE?

A. No. Monarch's West Region has a single wastewater system, which has not required major capital investments since 2015.

VI. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

PUC DOCKET NO. 50994

APPLICATION OF MONARCH UTILITIES I L.P. FOR AUTHORITY TO CHANGE RATES	§ § §	PUBLIC UTILITY COMMISSION OF TEXAS

DIRECT TESTIMONY

OF

VICTORIA R. SHUPAK

ON BEHALF OF

MONARCH UTILITIES I L.P.

JULY 15, 2020

DIRECT TESTIMONY OF
VICTORIA R. SHUPAK

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DIRECT TESTIMONY OF VICTORIA R. SHUPAK

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Victoria R. Shupak. My business address is 12535 Reed Road, Sugar Land, TX 77478.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by SouthWest Water Company ("SouthWest") as Tax Manager in the Financial Function of Corporate Shared Services.

Q. BRIEFLY DESCRIBE YOUR PRESENT EMPLOYMENT.

A. I am responsible for all areas of taxation for SouthWest and its subsidiaries, including Monarch Utilities I L.P. ("Monarch"). These areas include, but are not limited to:

- Federal, state, and local tax compliance;
- Ensuring deferred tax calculations are prepared accurately;
- Complying with Internal Revenue Service ("IRS") normalization requirements;
- Complying with the Financial Accounting Standard Board's Accounting Standards Codification 740—Accounting for Income Taxes "ASC 740";
- Representation of SouthWest in tax controversies with the IRS as well as state and local taxing authorities; and
- Representation of SouthWest on tax matters with utility regulatory bodies.

Q. BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. My educational background consists of a Bachelor of Business Administration in Accounting from the University of Houston. I have more than 22 years of experience in federal, state, local, and international taxation. Prior to becoming employed by SouthWest in 2016, I held various roles in public accounting firms and large multinational real estate and oil and gas companies. I have a wide range of experience in all areas of tax, including tax provision and financial reporting under ASC 740; operational and acquisition tax planning; tax structuring and restructuring; federal, state, and local tax compliance; and tax controversies at the federal, state, and local levels. During my time at SouthWest, I have worked extensively on utility-specific regulations related to the Tax Cuts and Jobs Act of 2017 ("TCJA") in compliance with the normalization guidelines in flowing the changes through to ratepayers. I have also represented SouthWest in two IRS audits, one with no findings and the other resulting in a refund due to taxpayer disclosure items.

II. PURPOSE OF DIRECT TESTIMONY

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of Monarch.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY IN THIS PROCEEDING?

A. The purpose of my direct testimony in this proceeding is to sponsor and support the tax-related cost of service information provided by Monarch in compliance with the Public Utility Commission of Texas ("PUC or "Commission") rate filing rules and regulations. I also discuss the effects of the TCJA on Monarch.

Q. WAS THIS MATERIAL PREPARED BY YOU OR UNDER YOUR SUPERVISION?

A. Yes, it was.

Q. INSOFAR AS THIS MATERIAL IS FACTUAL IN NATURE, DO YOU BELIEVE IT TO BE CORRECT?

A. Yes, I do.

Q. INSOFAR AS THIS MATERIAL IS IN THE NATURE OF OPINION OR JUDGMENT, DOES IT REPRESENT YOUR BEST JUDGMENT?

A. Yes, it does.

Q. WHAT SCHEDULES IN THE RATE FILING PACKAGE ARE YOU SPONSORING?

A. A list of schedules I sponsor is included in the testimony of Jeffrey L. McIntyre.

III. TAX CUTS AND JOBS ACT OF 2017

Q. PLEASE SUMMARIZE THE TAX CUTS AND JOBS ACT OF 2017.

A. The TCJA had two major effects on water and wastewater utilities. First, it reduced the corporate federal tax rate to 21 percent. The result of this rate reduction affected utilities' accumulated deferred federal income tax ("ADFIT") balance. Second, it made contributions in aid of construction ("CIAC") taxable to utilities as ordinary income.

Q. HAS MONARCH ADDRESSED THE REDUCTION IN CORPORATE TAX RATE THROUGH A FILING WITH THE COMMISSION?

A. Yes. In PUC Docket No. 48329, Monarch filed an application requesting to implement a Federal Tax Change Credit Rider to refund to customers "the difference

between the revenues collected under existing rates and the revenues that would have been collected had the existing rates been set using the recently approved federal income tax rates." In its Order issued on February 13, 2019 ("Order"), the Commission approved: 1) an ongoing monthly bill credit to customers; and 2) a "catch-up" credit to be refunded to customers over a six-month period. The ongoing monthly bill credit "must remain in effect until Monarch's next rate case." The Order also states that Monarch must address in its next rate case the regulatory liability related to its ADFIT balance resulting from the decrease in federal income tax rates.

Q. DID MONARCH REFUND TO CUSTOMERS THE APPROVED "CATCH-UP" CREDIT?

A. Yes. Consistent with the Order and pursuant to the Notice Approving Interim Rates on an Interim Basis, Monarch refunded the "catch-up" credit to customers over a period of six months between September 2018 and February 2019.

Q. IS MONARCH CURRENTLY PROVIDING MONTHLY TCJA BILL CREDITS TO CUSTOMERS?

A. Yes. In June 2018, Monarch implemented the monthly credits to customers approved by the Order and is still currently providing these credits. Per the Order, the credits will cease at the time rates go into effect in the current rate filing.

Q. WAS THE TCJA'S EFFECT ON DEFERRED TAXES ADDRESSED IN DOCKET NO. 48329?

A. No. Per agreement between the parties to that proceeding, and as approved in the Order, Monarch's treatment of the TCJA's effect on deferred taxes will be addressed in the current proceeding (Monarch's next general rate filing).

Q. HOW IS MONARCH PROPOSING TO ADDRESS THE TCJA'S EFFECT ON DEFERRED TAXES IN THIS PROCEEDING?

A. The TCJA, signed into law on December 22, 2017, reduced the federal corporate income tax rate for Monarch from 34% to 21% effective for tax years beginning after December 31, 2017. Regulated utilities are subject to normalization provisions, which require a certain treatment of excess accumulated deferred income taxes ("EDIT") resulting from the corporate income tax rate reduction. The EDIT subject to the normalization rules are considered "Protected" by the Internal Revenue Code. The EDIT normalization requirements apply only to accelerated federal tax method/life depreciation differences on public utility property; they do not apply to EDIT on other book/tax temporary differences. Because of the TCJA reduction of the federal tax rate from 34% to 21% effective December 31, 2017, Monarch had an excess deferred income tax liability of $407,802.

The excess EDIT normalization provision requires that excess deferred income taxes be used to reduce revenue requirements and revenue no sooner than would occur as the book/tax difference reverses. The Reverse South Georgia Method ("RSGM") is permitted if the utility is unable to identify when book/tax differences originate and reverse. Under RSGM, the EDIT is spread ratably over the estimated book life if the utility is unable to identify the reversal pattern of utility plant components. Monarch has determined that the appropriate methodology to address EDIT is RSGM. Under RSGM, the EDIT is used to reduce rates charged to customers over the estimated remaining book life of the related assets. RSGM requires the reduction to be straight line beginning immediately.

Monarch calculated a total Protected EDIT liability of $469,345 to which the RSGM was applied. Additionally, Monarch calculated a total Unprotected EDIT asset of $61,543. Monarch noted that the Unprotected EDIT (i.e., temporary differences not associated with method/life differences and not subject to normalization) resulted in a regulatory asset. Rather than being a credit to ratepayers (regulatory liability), the regulatory asset represents a charge to ratepayers. Unprotected EDIT are not subject to the normalization provisions of the Internal Revenue Code. However, should the IRS challenge the classification of an Unprotected EDIT, there is no materiality threshold. Any amortization of EDIT that violates the normalization provisions results in a loss of the ability to claim accelerated depreciation and a cash penalty equal to the amount of the violation. Therefore, in order to avoid risk under IRS examination, Monarch proposes to amortize the Unprotected EDIT over the same period as the Protected EDIT.

By applying RSGM, Monarch calculated a Protected liability amortization amount of $15,771 and an Unprotected asset amortization amount of $2,241 to arrive at an annual net amortization to ratepayers of $13,530 as shown in Schedule II-E-3.16.

Q. PLEASE DESCRIBE THE TCJA'S EFFECT ON TAX TREATMENT OF CONTRIBUTIONS IN AID OF CONSTRUCTION.

A. The National Association of Regulatory Utility Commissioners defines CIAC as "any amount or item of money, services or property received by a utility, from any person or governmental agency, any portion of which is provided at no cost to the utility, which represents an addition or transfer to the capital of the utility, and which is utilized to offset the acquisition, improvement or construction costs of the utility's

property, facilities, or equipment used to provide utility services to the public." Before the TCJA was signed into law, CIAC was not subject to tax for water and wastewater utilities but is now considered taxable as ordinary income to the utility. Before the TCJA, tax depreciation was not allowed on the CIAC-related assets due to its nontaxable nature, but is now depreciable for tax purposes under IRS depreciation guidelines for water and wastewater property, so long as the contribution was taxable as ordinary income the year in which it was received.

Q. HAS THE COMMISSION PUBLICLY DISCUSSED OR STATED ITS PREFERENCE FOR HOW UTILITIES SHOULD TREAT THE TAX ON CIAC?

A. No.

Q. WHAT IS MONARCH'S PROPOSAL FOR TREATMENT OF THE TAXES INCURRED ON CIAC?

A. While CIAC itself must be excluded from rate base,[1] the taxes on CIAC are not subject to the same statutory requirement. Therefore, Monarch has included $135,890 of accumulated deferred taxes on CIAC in its rate base. This amount is comprised of CIAC income, net of associated depreciation of CIAC assets recorded by Monarch since the passage of the TCJA multiplied by Monarch's federal tax rate of 21 percent. A deferred tax asset is recorded for the amount of CIAC initially received, and this deferred tax asset is then reduced each subsequent year through an offsetting deferred tax liability created through the depreciation of the associated CIAC assets. Monarch believes the inclusion in rate base of both the deferred tax

[1] 16 Tex. Admin. Code § 24.41(c)3(D).

assets and deferred tax liabilities related to CIAC is essential for accurate representation of deferred taxes, which follows the same accounting as other temporary differences.

Q. IS MONARCH'S PROPOSAL EQUITABLE FOR BOTH CUSTOMERS AND THE UTILITY?

A. Yes. The taxes on CIAC represent an actual cost to the utility that is incurred for the benefit of customers. The CIAC assets are used to provide service to the customers, and actual cash is paid out by the utility to maintain, upgrade, or expand its systems, similar to an expenditure for a capital project. Because rates are set based on a utility's appropriately incurred costs, it is just and reasonable for rate base to include CIAC taxes.

IV. MONARCH'S TAX STATUS & INCOME TAX EXPENSE

Q. PLEASE DESCRIBE MONARCH'S TAX STATUS.

A. Monarch is a limited partnership for state law purposes. Its partners are Monarch Utilities, Inc. ("MUI"), a corporation that owns 99.9 percent of Monarch, and Texas Water Services Group, LLC ("TWSG"), a limited liability company that owns the remaining 0.1 percent. MUI owns all membership interests in TWSG, which, for income tax purposes, is a disregarded entity. Consequently, for income tax purposes, MUI owns both the 99.9 percent interest in Monarch it owns directly as well as the 0.1 percent interest through TWSG. Because, for income tax purposes, a partnership must have two or more partners, Monarch is not considered a partnership but a disregarded entity. The result of this structure is, for federal income tax purposes, Monarch is considered a division of MUI, which is a taxable corporation.

Q. WHAT IS THE RATEMAKING SIGNIFICANCE OF THIS STRUCTURE?

A. For ratemaking purposes, it would be inappropriate to calculate Monarch's cost of service without inclusion of an income tax expense commensurate with Monarch's actual tax liabilities. A utility is "entitled to a reasonable cost of service allowance for federal income taxes *actually* paid by its shareholders."[2] Commission precedent supports this approach as indicated by the order in Docket No. 2818 approving a federal income tax allowance for a sole proprietorship on a conventional corporate tax basis.[3] Therefore, despite being listed as a limited partnership, Monarch's rates should be set in accordance with its federal treatment as an income tax-paying corporation.

Q. WHAT IS MONARCH'S CALCULATED INCOME TAX EXPENSE INCLUDED IN ITS REQUESTED REVENUE REQUIREMENT IN THIS FILING?

A. Monarch's calculated income tax included in its requested revenue requirement is $1,541,681.

V. ACCUMULATED DEFERRED INCOME TAXES

Q. WHAT AMOUNT OF ACCUMULATED DEFERRED INCOME TAXES HAS MONARCH INCLUDED IN RATE BASE IN THE CURRENT APPLICATION?

A. Monarch proposes to include (as a reduction to rate base) an ADFIT liability of $831,540 as shown in Schedule II-E-3.5. This amount was calculated as the annual

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[2] *See Suburban Util Corp v. Pub Util Comm'n*, 652 S.W.2d 358 (Tex. 1983) (emphasis added).

[3] *See Application of Ingram Water Supply*, Docket No. 2818, 6 P.U.C. Bull. 579, 586 (May 1981).

deferred tax amounts accumulated since Monarch's last rate base determination, which included no ADFIT balance.

VI. CONCLUSION

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

PUC DOCKET NO. 50994

APPLICATION OF MONARCH UTILITIES I L.P. FOR AUTHORITY TO CHANGE RATES	**§ § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

DIRECT TESTIMONY

OF

BRUCE FAIRCHILD

ON BEHALF OF

MONARCH UTILITIES I L.P.

JULY 15, 2020

DIRECT TESTIMONY OF
BRUCE FAIRCHILD

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APPLICATION OF MONARCH UTILITIES I L.P. FOR AUTHORITY TO CHANGE RATES	§ § §	PUBLIC UTILITY COMMISSION OF TEXAS

DIRECT TESTIMONY OF BRUCE FAIRCHILD

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Bruce H. Fairchild, 3907 Red River, Austin, Texas 78751.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION.

A. I am a principal in Financial Concepts and Applications, Inc. ("FINCAP"), a firm engaged in financial, economic, and policy consulting to business and government.

A. <u>Qualifications</u>

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND, PROFESSIONAL QUALIFICATIONS, AND PRIOR EXPERIENCE.

A. I received a BBA degree from Southern Methodist University and MBA and PhD degrees from the University of Texas at Austin. I am also a Certified Public Accountant. My previous employment includes working in the Controller's Department at Sears, Roebuck and Company and serving as Assistant Director of Economic Research at the Public Utility Commission of Texas ("PUCT" or "Commission"). I have also been on the business school faculties at the University of Colorado at Boulder and the University of Texas at Austin, where I taught undergraduate and graduate courses in finance and accounting.

Q. BRIEFLY DESCRIBE YOUR EXPERIENCE IN UTILITY-RELATED MATTERS.

A. While at the PUCT, I assisted in managing a division comprised of approximately twenty-five professionals responsible for financial analysis, cost allocation and rate design, economic and financial research, and data processing systems. I testified on behalf of the PUCT staff in numerous cases involving most major investor-owned and cooperative electric, telephone, and water/wastewater utilities in the state regarding a variety of financial, accounting, and economic issues. Since forming FINCAP in 1979, I have participated in a wide range of analytical assignments involving utility-related matters on behalf of utilities, industrial consumers, municipalities, and regulatory commissions. I have also prepared and presented expert testimony before a number of regulatory authorities addressing revenue requirements, cost allocation, and rate design issues for gas, electric, telephone, and water/wastewater utilities. I have been a frequent speaker at regulatory conferences and seminars and have published research concerning various regulatory issues. A resumé that contains the details of my experience and qualifications is attached as Attachment BHF-1, with Attachment BHF-2 listing my prior testimony before regulatory agencies since leaving the PUCT.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS?

A. Yes. As a PUCT Staff member, I participated in some 70 water and wastewater, electric, and telephone rate cases, providing testimony primarily on financial issues and rate design. I have since presented testimony before the PUCT in approximately 20 cases addressing revenue requirements, rate of return, and other issues.

Q. WAS THIS TESTIMONY PREPARED BY YOU OR UNDER YOUR DIRECTION?

A. Yes, it was.

B. Overview

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to develop a fair and reasonable rate of return for Monarch Utilities I L.P. ("Monarch").

Q. WHAT IS THE ROLE OF THE RATE OF RETURN IN SETTING A UTILITY'S RATES?

A. The rate of return serves to compensate investors for the use of their capital to finance the plant and equipment necessary to provide utility service to customers. Investors only commit money in anticipation of earning a return on their investment commensurate with that from other investment alternatives having comparable risks. Consistent with both sound regulatory economics and the standards specified in the U.S. Supreme Court cases of *Bluefield Waterworks & Improvement Co.* (1923)[1] and *Hope Natural Gas Co.* (1944)[2], rates should provide the utility a reasonable opportunity to earn a rate of return sufficient to: 1) fairly compensate capital presently invested in the utility; 2) enable the utility to offer a return adequate to attract new capital on reasonable terms; and 3) maintain the utility's financial integrity.

Q. WHAT OTHER ROLE DOES RATE OF RETURN PLAY?

A. In addition to the above, the rate of return allowed a utility also influences its investment decisions. If the allowed rate of return is insufficient, the utility has no

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[1] *Bluefield Waterworks & Improvement Co. v. Pub Serv. Comm'n of W. Va*, 262 U.S. 679 (1923).

[2] *F P.C. v Hope Natural Gas Co*, 320 U.S. 591 (1944).

incentive to make investments in property, plant, and equipment other than those necessary to provide safe and reliable service to customers in its existing service areas. For a utility to be willing to expand beyond its existing service areas, the allowed rate of return must be sufficient to warrant committing and exposing additional capital to the risks associated with new systems. Thus, to encourage capable and competent utilities to acquire systems that are operationally and financially distressed, out of compliance with health and safety regulations, poorly maintained, and lacking capital to make necessary improvements, the allowed rate of return must be above a minimum, bare bones cost of capital. In other words, a utility such as Monarch will only acquire distressed systems if it is cost-justified to do so, which is an economic decision largely driven by the rate of return it expects to earn on its investment.

Q. IN GENERAL, HOW HAVE YOU GONE ABOUT DEVELOPING YOUR RECOMMENDED RATE OF RETURN FOR MONARCH?

A. My evaluation begins with a brief review of the operations and finances of Monarch and general conditions in the water and wastewater utility industries and capital markets, including a discussion of the actions the Federal Reserve Board ("Fed") has taken since the Great Recession and, most recently, the coronavirus pandemic. With this background, I next develop a mix of investor-supplied capital (i.e., debt and equity) to be used as weightings in calculating an overall rate of return for Monarch. An average cost of debt applicable to the debt component of the capital structure is then calculated. Next, various analyses are conducted to determine a fair rate of return on common equity ("ROE"). These analyses include applications of the discounted cash flow ("DCF") model, capital asset pricing model ("CAPM"), and

comparable earnings method to develop a cost of equity range, from which my recommended ROE is selected and evaluated for reasonableness. Finally, these components are combined to calculate an overall rate of return for Monarch.

C. Summary of Conclusions

Q. WHAT IS YOUR RECOMMENDED RATE OF RETURN FOR MONARCH?

A. As developed on Schedule BHF-1, Monarch is requesting an overall rate of return on its invested capital of 8.32%. This rate of return is based on capital structure ratios of 45.0% debt and 55.0% equity, a cost of debt of 6.26%, and an ROE of 10.0%.

Q. WHAT IS THE BASIS FOR YOUR RECOMMENDED CAPITAL STRUCTURE RATIOS?

A. Because Monarch's capital structure ratios at test year-end do not comport with industry standards, I recommend that Monarch's rate of return be based on those typically maintained by other water and wastewater utilities. The capital structure ratios of a proxy group of publicly traded water and wastewater utilities have historically averaged approximately 45.0% debt and 55.0% equity, which is also consistent with those projected for the proxy group for the 2023–2025 timeframe.

Q. WHAT IS MONARCH'S COST OF DEBT?

A. At December 31, 2019, the weighted average cost of Monarch's long-term debt was 6.26%.

Q. WHAT IS YOUR RECOMMENDED ROE FOR MONARCH?

A. Based on applications of the DCF, CAPM, and comparable earnings methods, I conclude that investors currently require a rate of return from an investment in the common equity of Monarch in the range of 9.25% to 10.25%. From this range, I recommend a point estimate of 10.0% to reflect the extraordinary capital market

uncertainty resulting from coronavirus pandemic and shutdown of the U.S. economy, and to provide Monarch a return sufficient to encourage it to continue investing in distressed water and wastewater systems in Texas. The reasonableness of my recommended 10.0% ROE is supported by risk premium analyses based on ROEs previously authorized for other utilities (i.e., natural gas local distribution companies and electric utilities) by state regulatory commissions, and the ROEs previously granted electric utilities by the PUCT.

II. FUNDAMENTAL ANALYSIS

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. As a predicate to subsequent quantitative analyses, this section briefly reviews the operations and finances of Monarch. This section also examines the water and wastewater utility industry, along with conditions in the capital markets and U.S. economy.

A. Monarch Utilities I L.P.

Q. BRIEFLY DESCRIBE MONARCH.

A. As explained in more detail by Monarch witness Jeffrey L. McIntyre, Monarch provides water supply and wastewater collection and treatment services for residential, commercial, and irrigation use. Its service area is dispersed throughout Texas, primarily in the Dallas-Fort Worth and Austin areas, and in the northeast area of Houston. At test year-end, December 31, 2019, Monarch had total assets of approximately $116 million, with revenues for calendar year being approximately $32 million.

Q. WHO OWNS MONARCH?

A. Monarch is owned by SouthWest Water Company ("SouthWest"), which is headquartered in Sugar Land, Texas. Privately held by an equity infrastructure fund owned by institutional investors (e.g., retirement funds), SouthWest's subsdiaries own, operate, and maintain water and wastewater infrastructure and provides a broad range of operation, maintenance services, including water production; treatment and distribution; wastewater collation and treatment; customer service; and utility infrastructure construction management. Its utility subsidiaries serve over half a million residential and business customers in six states: Alabama, California, Oklahoma, Oregon, South Carolina, and Texas.

B. <u>Water and Wastewater Industries</u>

Q. BRIEFLY DESCRIBE U.S. WATER AND WASTEWATER COMPANIES.

A. Although most water and wastewater systems in the U.S. are government-owned, a significant number are investor-owned utilities ("IOU"). Water and wastewater utilities normally treat, deliver, and sell water to, and collect and treat wastewater from households and businesses. IOU water and wastewater companies usually have an exclusive right to operate in a specified geographic area, with their rates and operations being subject to the jurisdiction of federal, state, and local regulatory authorities.

Q. WHAT RISKS DO IOU WATER AND WASTEWATER COMPANIES FACE THAT ARE OF CONCERN TO INVESTORS?

A. IOU water and wastewater companies face a variety of operating, capital-related, and regulatory risks. Operating risks relate not only to the ongoing operations of water and wastewater systems, but also to major, unexpected risks and hazards (e.g., emerging contaminants, water contamination, and increased environmental

regulations). Fluctuations in customer demand for water due to seasonality, restrictions on use, weather, conservation, and lifestyle affect a company's revenues, while inflation and other cost increases adversely impact its ability to control expenses. More generally, the availability of water supplies, climate variability, drought conditions, competing uses and economic conditions may adversely affect access to and the ability to supply water to customers, while environmental risks associated with the collection, treatment and disposal of wastewater may impose significant costs increases with providing wastewater service. Strikes, natural disasters, security breaches, power failures, and terrorist activities could interrupt or shut down operations, and contamination of water supply or the failure of a treatment plant would cause a disruption of service, which could result in losses and damages that may affect an IOU water and wastewater company's reputation, business, financial condition, and operating results.

Q. WHAT ARE THE CAPITAL-RELATED RISKS FACED BY IOU WATER AND WASTEWATER COMPANIES?

A. Much of the water and wastewater infrastructure in the U.S. is in constant need of modernization and replacement, which is largely driven by increased regulations intended to improve water quality and management of discharges. Significant amounts of capital are required by water and wastewater companies to add, replace, upgrade, and maintain property, plant, and equipment necessary to serve growing customer bases, provide water and wastewater treatment services to community water systems, and to acquire substandard, troubled water and wastewater systems. Because of this need for capital, IOU water and wastewater companies are dependent on an ability to secure funding both internally and externally, with disruptions in the

capital markets or their access to it, or a significant increase in the cost of capital, adversely affecting their ability to provide safe and reliable service to existing and future customers. In addition, an IOU water and wastewater company's ability to retain and attract capital is subject to changes in state and federal tax laws and accounting standards, which could adversely affect their cash flows and financial condition.

Q. WHAT ABOUT THE REGULATORY RISKS FACED BY IOU WATER AND WASTEWATER COMPANIES?

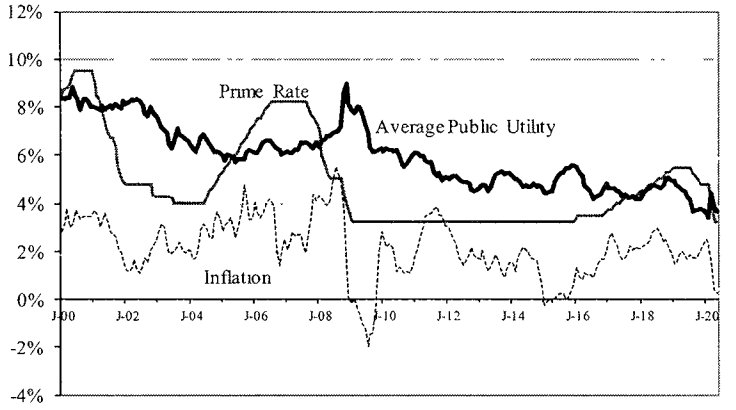
A. Because most aspects of an IOU water and wastewater company's operations (e.g., rates; operating terms and conditions of service; types of services offered; construction of new facilities; the integrity, safety, and security of facilities and operations; acquisition, extension, or abandonment of services or facilities; reporting and information posting requirements; maintenance of accounts and records; and relationships with affiliate companies) are subject to government oversight, investors are understandably concerned with rate, safety, and environmental regulation. Potential changes in laws, regulations, and policies, as well as the inherent uncertainty surrounding regulatory decisions, all represent significant risks to IOU water and wastewater companies.

C. <u>Capital Markets</u>

Q. WHAT HAS BEEN THE PATTERN OF INTEREST RATES OVER THE LAST TWENTY YEARS?

A. Average long-term public utility bond rates, the borrowing prime rate, and inflation as measured by the Consumer Price Index ("CPI") over the last twenty years are plotted in the graph below. Beginning in 2000, the average yield on long-term public utility

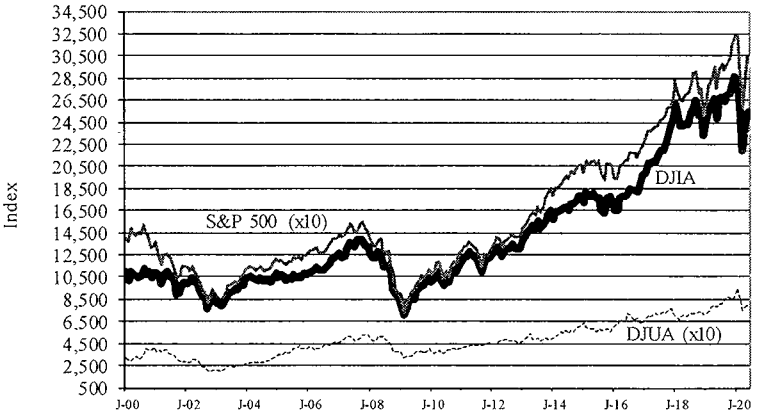
bonds generally fell because of monetary and fiscal policies designed to keep the economy growing. This decline ended abruptly with the 2008 financial market meltdown and global recession. Investors became exceedingly risk averse, causing interest rates on corporate bonds to spike, while government policies pushed down short-term interest rates and depressed economic conditions and lower energy prices reduced inflation. Over the next decade, various actions by the Fed to stimulate the economy through easy-money policies resulted in short- and long-term interest rates reaching record lows. These conditions were interrupted in early 2020 by the coronavirus pandemic and worldwide economic shutdown, although the impact on interest rates has been moderate by extraordinary actions taken by the Fed:



Q. HOW HAS THE MARKET FOR COMMON EQUITY CAPITAL PERFORMED OVER THIS SAME PERIOD?

A. In the early 2000s, stock prices moved steadily higher as one of the longest bull markets in U.S. history continued unabated. In mid-2000, mounting concerns over prospects for future growth, particularly for firms in the high technology and telecommunications sectors, pushed equity prices lower, in some cases precipitously. Common stock prices generally recovered and reached record highs, buoyed in large

part by widespread acquisition activity, until the capital market crisis and Great Recession hit in 2008. Stock prices tumbled by some 40%, and while they recovered and reached all-time highs over the next decade, they crashed again in early 2020 due to the coronavirus pandemic. Although stock prices have largely recovered, the market is extraordinarily volatile, with share prices routinely changing in more than full percentage points during a single day's trading. The graph below plots the performances of the Dow-Jones Industrial Average, the S&P 500, and the Dow Jones Utility Average since 2000 (the latter two indices were scaled for comparability):



Q. WHAT IS THE OUTLOOK FOR THE U.S. ECONOMY?

A. The U.S. economy had fully recovered from the Great Recession when the coronavirus pandemic struck in early 2020 and the world economy largely came to a virtual stand-still. More than 30 million U.S. jobs were lost and unemployment reached almost 15%, not counting furloughed workers, throwing the U.S. into a recession overnight. While steps are being taken to reopen businesses and schools, no one knows whether there will be subsequent waves of infection that cause these actions to be reversed, how long the pandemic and its crippling effects will last, or how long it will take to restart and restore economic activity after the health crisis has

abated. Besides these near-term uncertainties, the long-term impact on inflation and interest rates of the trillions of dollars in deficit spending by the federal government to provide aid to support the economy, and the trillions of dollars of government and corporate debt purchased by the Fed to bolster capital markets, are unknown.

There has not been for several decades as much uncertainty surrounding the U.S. economy as exists today. The economic outlook prior to the coronavirus pandemic was unclear, in large part due to unsettled political environments in both the U.S. and abroad, but the uncertainties then pale in comparison to those that exist today. The various actions taken by the Fed to contain the economic and capital market damage from the coronavirus pandemic (i.e., reducing the target federal funds rate to near zero; reinstituting "quantitative easing" whereby the Fed purchases Treasury and mortgage-backed securities; providing liquidity by reducing bank reserve requirements, lending through repurchase agreements, and other actions; and providing emergency credit facilities to non-bank financial institutions) are expected to keep interest rates suppressed. But the uncertainties surrounding the extent and duration of an economic recovery, coupled with the extraordinary volatility in stock market prices, have dramatically increased the risk of investing in common stocks.

III. CAPITAL STRUCTURE

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. The purpose of this section is to recommend capital structure ratios for use in calculating an overall rate of return for Monarch.

Q. WHAT IS THE ROLE OF CAPITAL STRUCTURE IN SETTING A UTILITY'S RATE OF RETURN?

A. A utility's capital structure reflects the mix of capital—debt, preferred stock (if any), and common equity—used to finance the utility's assets. The proportions of a utility's total capitalization attributable to each source of capital are typically used to weight the cost of debt, cost of preferred stock, and ROE in calculating an overall rate of return.

Q. HOW DOES THE USE OF DIFFERENT AMOUNTS OF DEBT AND EQUITY IN A FIRM'S CAPITAL STRUCTURE AFFECT THE RATES OF RETURN REQUIRED BY INVESTORS?

A. A higher debt ratio, or lower common equity ratio, generally translates into increased financial risk for all investors. A greater amount of debt means more investors have a senior claim on available cash flow, thereby reducing the certainty that each will receive his contractual payments. This, in turn, increases the risks to which lenders are exposed, and they require correspondingly higher rates of interest for bearing this increased risk. From common shareholders' viewpoint, higher debt ratios mean that there are proportionately more investors ahead of them, thereby increasing the uncertainty as to the amount of cash flow, if any, that remains. Again, in accordance with the fundamental risk-return trade-off principle to be discussed in greater detail later, common shareholders require a correspondingly higher rate of return to compensate them for bearing the greater financial risk associated with a lower common equity ratio.

Q. HOW IS MONARCH FINANCED?

A. At December 31, 2019, Monarch was financed with approximately $23.3 million in long-term debt owed to third-parties and $77.8 million in equity provided by

SouthWest. As shown in the following table, this equates to a test year-end capital structure of 22.30% debt and 77.70% equity (dollar amounts in 000s):

Capital Component	Amount	% of Total
Long-term Debt	$ 22,315	22.30%
Common Equity	77,765	77.70
Total	**$ 100,080**	**100.00%**

Q. HOW DO MONARCH'S CAPITAL STRUCTURE RATIOS COMPARE WITH THOSE OF OTHER WATER AND WASTEWATER COMPANIES?

A. Schedule BHF-2 displays the capital structure ratios at calendar year-ends 2017, 2018, and 2019, and projected for 2020 and 2023–2025 of the seven publicly traded water and wastewater utilities included in *The Value Line Investment Survey's* (*"Value Line")* "Water Utility Industry." As shown there, this proxy group of water and wastewater utilities has maintained and is expected to have average capital structure ratios of between approximately 45% and 48% debt and 52% and 55% equity. Monarch's approximately 22% debt ratio is well below, and its 78% equity ratio well above, these industry benchmarks.

Q. WHAT CAPITAL STRUCTURE RATIOS DO YOU RECOMMEND BE USED TO CALCULATE THE RATE OF RETURN FOR MONARCH?

A. Because Monarch's capital structure ratios do not comport with industry standards, I recommend that Monarch's rate of return be based on those typically maintained by other water and wastewater utilities. A review of Schedule BHF-2 shows that the average capital structure ratios for the proxy group at year-ends 2019 and 2020 deviate from those for 2017 and 2018, and projected for 2023–2025. These distortions are primarily attributable to the financing of acquisitions by Essential Utilities, Inc. (formerly Aqua America, Inc.), which purchased Peoples Natural Gas,

and SJW Group, which acquired Connecticut Water Services, Inc. To avoid these abnormalities, I recommend that Monarch's rate of return be based on the average capital structure ratios maintained by the firms in the proxy at year-end 2017 and 2018 of approximately 45.0% debt and 55.0% equity. These are also consistent with the average capital structure ratios projected for the proxy group in the 2023–2025 time frame.

Q. HOW DOES YOUR CAPITAL STRUCTURE RECOMMENDATION COMPARE WITH THAT IN MONARCH'S LAST RATE CASE?

A. In Docket No. 45570,[3] Monarch's test year capital structure ratios were similarly out of line with water and wastewater industry norms. Accordingly, Monarch proposed, and the PUCT Staff recommended, using industry capital structure ratios to calculate Monarch's rate of return, with the case being ultimately settled. My recommended industry capital structure ratios of 45.0% debt and 55.0% equity are the same as those recently recommended by the PUCT Staff witnesses in Docket Nos. 48640[4] and 50200.[5]

IV. COST OF DEBT

Q. WHAT DEBT DID MONARCH'S HAVE OUTSTANDING AT TEST YEAR-END?

A. Shown on Schedule BHF-3, at December 31 2019, Monarch's long-term debt consisted of capitalized lease commitments for equipment and office facilities and

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[3] *Application of Monarch Utilities I L.P. for Authority to Change Rates*, Docket No. 45570, Final Order (Aug. 21, 2017).

[4] *Application of W.E. Vlasek for Authority to Change Water Rates*, Docket No. 48640, Direct Testimony of Emily Sears at 7-8 (Sept. 19, 2019).

[5] *Application of Undine Texas, LLC and Undine Texas Environmental, LLC for Authority to Change Rates*, Docket No. 50200, Direct Testimony of Spencer English at 9 (Jun. 10, 2020).

three loans owed to CoBank, a cooperative bank that is part of the U.S. Farm Credit system. Also properly considered in calculating a utility's overall weighted embedded cost of debt are deferred financing costs, which reduce the amount of funds available for investment and, therefore, slightly increase the effective cost of debt.

Q. WHAT IS THE AVERAGE EMBEDDED COST OF MONARCH'S DEBT?

A. As developed on Schedule BHF-3, the weighted average cost of Monarch's debt at test year-end is 6.26%. This compares with Monarch's cost of debt in Docket No. 45570 in which Monarch proposed a cost of debt of 6.45% and the PUCT Staff recommended 6.36%.

V. RETURN ON EQUITY

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. The purpose of this section is to develop a cost of equity range for Monarch. It begins by introducing the cost of equity concept, explaining the risk-return tradeoff principle fundamental to capital markets, and discussing the importance of using multiple approaches to estimate the cost of equity. The DCF model is developed and applied to the proxy group of publicly traded water and wastewater utilities to estimate their cost of equity, which is then adjusted to reflect Monarch's smaller size. Next, the CAPM is described and alternative cost of equity estimates for Monarch developed using this method. Finally, the comparable earnings method is applied by looking the rates of return the water and wastewater utilities in the proxy group are expected to earn on their book equity. The results of these analyses are then combined to arrive at a cost of equity range for Monarch.

A. **Cost of Equity Concept**

Q. HOW IS A RETURN ON COMMON EQUITY CUSTOMARILY DETERMINED?

A. Unlike debt capital, there is no contractually guaranteed return on common equity capital, since shareholders are the residual owners of the utility. Nonetheless, common equity investors still require a return on their investment, with the "cost of equity" being the minimum rent that must be paid for the use of their money.

Q. WHAT FUNDAMENTAL ECONOMIC PRINCIPLE UNDERLIES THIS COST OF EQUITY CONCEPT?

A. The cost of equity concept is predicated on the notion that investors are risk averse and willingly accept additional risk only if they expect to be compensated for bearing that risk. In capital markets where relatively risk-free assets are available, such as U.S. Treasury securities, investors can be induced to hold more risky assets only if they are offered a premium, or additional return, above the rate of return on a risk-free asset. Since all assets compete with each other for investors' funds, riskier assets must yield a higher expected rate of return than less risky assets in order for investors to be willing to hold them.

Given this risk-return tradeoff, the minimum required rate of return (k) from an asset (i) can be generally expressed as:

$$k_i = R_f + RPi$$

where: R_f = Risk-free rate of return; and

RP_I = Risk premium required to hold more risky asset i.

Thus, the minimum required rate of return for a particular asset at any point in time is a function of: 1) the yield on risk-free assets; and 2) its relative risk, with investors demanding correspondingly larger risk premiums for assets bearing greater risk.

Q. IS THERE EVIDENCE THAT THE RISK-RETURN TRADEOFF PRINCIPLE ACTUALLY OPERATES IN THE CAPITAL MARKETS?

A. Yes. The risk-return tradeoff can be readily documented in certain segments of the capital markets where required rates of return can be directly inferred from market data and generally accepted measures of risk exist. For example, bond yields are reflective of investors' expected rates of return, and bond ratings are indicative of the risk of fixed income securities. The observed yields on government securities and bonds of various rating categories demonstrate that the risk-return tradeoff does, in fact, exist in the capital markets.

To illustrate, average yields during May 2019 on 30-year U.S. Treasury bonds and public utility bonds of different ratings reported by Moody's are shown in the table below. As evidenced there, as risk increases (measured by progressively lower bond ratings), the required rate of return (measured by yields) rises accordingly. Also shown are the indicated risk premiums over long-term government securities for the additional risk associated with each bond rating category.

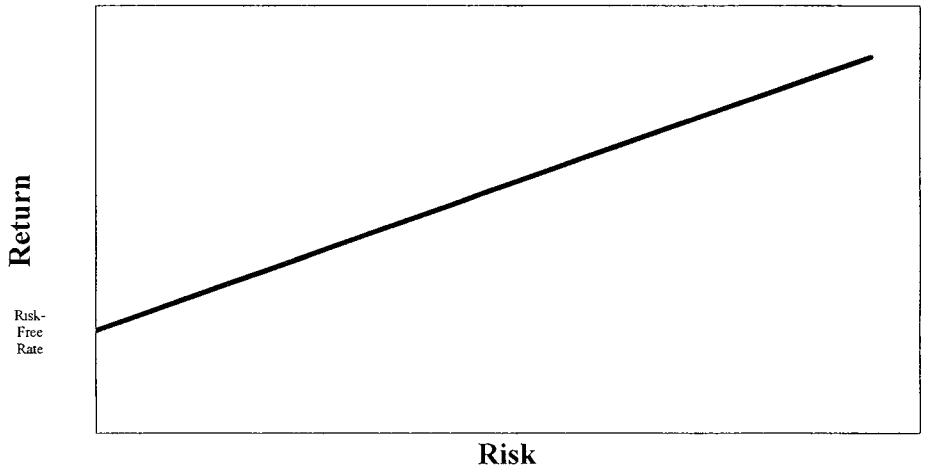
Bond and Rating	May 2020 Yield	Risk Premium Over 30-Year Treasury
U.S. Treasury 30-Year Public Utility	1.38%	—
Aa	2.89%	1.51%
A	3.14%	1.71%
Baa	3.63%	2.25%%

Q. DOES THE RISK-RETURN TRADEOFF OBSERVED WITH FIXED INCOME SECURITIES EXTEND TO COMMON STOCKS AND OTHER ASSETS?

A. Documenting the risk-return tradeoff for assets other than fixed income securities is complicated by two factors. First, there is no standard measure of risk applicable to all assets. Second, for most assets (e.g., common stock), required rates of return cannot be directly observed. Yet there is every reason to believe that investors exhibit risk aversion in deciding whether to hold common stocks and other assets, just as when choosing among fixed income securities. Accordingly, it is generally accepted that the risk-return tradeoff evidenced with long-term debt extends to all assets.

The extension of the risk-return tradeoff from assets with observable required rates of return (e.g., bonds) to other assets is represented by the concept of a "capital market line." In particular, competition between securities and among investors in the capital markets drives the prices of assets to equilibrium such that the expected rate of return from each is commensurate with its risk. Thus, the expected rate of return from any asset is a risk-free rate of return plus a corresponding risk premium. This concept of a capital market line is illustrated below. The vertical axis represents required rates of return and the horizontal axis indicates relative riskiness, with the intercept of the capital market line being the risk-free rate of return.

Capital Market Line



Q. IS THIS RISK-RETURN TRADEOFF LIMITED TO DIFFERENCES BETWEEN FIRMS?

A. No. The risk-return tradeoff principle applies not only to investments in different firms, but also to different securities issued by the same firm. As discussed earlier, the securities issued by a utility vary considerably in risk because they have different characteristics and priorities. Long-term debt secured by a mortgage on property is senior among all capital in its claim on a utility's net revenues and is, therefore, the least risky because mortgage bondholders have a direct claim on the utility's property. Following first mortgage bonds are other debt instruments also holding contractual claims on the utility's net revenues, such as debentures. The last investors in line are common shareholders. They only receive the net revenues, if any, that remain after all other claimants have been paid. As a result, the minimum rate of return that investors require from a utility's common stock, the most junior and riskiest of its securities, must be considerably higher than the yield offered by the utility's senior, long-term debt.

Q. WHAT DOES THE ABOVE DISCUSSION IMPLY WITH RESPECT TO ESTIMATING THE COST OF EQUITY FOR A UTILITY?

A. Although the cost of equity cannot be observed directly, it is a function of the returns available from other investment alternatives and the risks to which the equity capital is exposed. Because it is unobservable, the cost of equity for a particular utility must be estimated by analyzing information about capital market conditions generally, assessing the relative risks of the utility specifically, and employing various quantitative methods that focus on investors' required rates of return. These various quantitative methods typically attempt to infer investors' required rates of return from stock prices, by extrapolating interest rates, or through an analysis of other financial data.

Q. DID YOU RELY ON A SINGLE METHOD TO ESTIMATE THE COST OF EQUITY?

A. No. Despite the theoretical appeal of or precedent for using a particular method to estimate the cost of equity, no single approach can be regarded as wholly reliable. Therefore, I use multiple methods to estimate the cost of equity. It is essential that estimates of investors' minimum required rate of return produced by one method be compared with those produced by other methods, and that all cost of equity estimates be required to pass fundamental tests of reasonableness and economic logic.

B. <u>Discounted Cash Flow Model</u>

Q. HOW ARE DCF MODELS USED TO ESTIMATE THE COST OF EQUITY?

A. The use of DCF models to estimate the cost of equity is essentially an attempt to replicate the market valuation process which led to the price investors are willing to pay for a share of a company's common stock. It is predicated on the assumption that

investors evaluate the risks and expected rates of return from all securities in the capital markets. Given these expected rates of return, the price of each share of stock is adjusted by the market so that investors are adequately compensated for the risks to which they are exposed. Therefore, we can look to the market to determine what investors believe a share of common stock is worth, and by estimating the cash flows they expect to receive from the stock in the way of future dividends and stock price, their required rate of return can be mathematically imputed. In other words, the cash flows that investors expect from a stock are estimated, and given the stock's current market price, we can "back-into" the discount rate, or cost of equity, investors presumably used in arriving at that price.

Q. WHAT MARKET VALUATION PROCESS UNDERLIES DCF MODELS?

A. DCF models are derived from a theory of valuation which posits that the price of a share of common stock is equal to the present value of the expected cash flows (i.e., future dividends and stock price) that will be received while holding the stock, discounted at investors' required rate of return, or the cost of equity. Notationally, the general form of the DCF model is as follows:

$$P_0 = \frac{D_1}{(1+K_e)^1} + \frac{D_2}{(1+K_e)^2} + \cdots + \frac{D_t}{(1+K_e)^t} + \frac{P_t}{(1+K_e)^t}$$

where: P_0 = Current price per share;

P_t = Future price per share in period t;

D_t = Expected dividend per share in period t;

Ke = Cost of equity.

Q. HAS THIS GENERAL FORM OF THE DCF MODEL CUSTOMARILY BEEN SIMPLIFIED FOR USE IN ESTIMATING THE COST OF EQUITY IN RATE CASES?

A. Yes. In an effort to reduce the number of required estimates and computational difficulties, the general form of the DCF model has been simplified to a "constant growth" form. In order to convert the general form of the DCF model to the constant growth DCF model, a number of assumptions must be made. These include:

- A constant growth rate for both dividends and earnings;
- A stable dividend payout ratio;
- The discount rate exceeds the growth rate;
- A constant growth rate for book value and price;
- A constant earned rate of return on book value;
- No sales of stock at a price above or below book value;
- A constant price-earnings ratio;
- A constant discount rate (i.e., no changes in risk or interest rate levels and a flat yield curve); and
- All of the above extend to infinity.

Given these assumptions, the general form of the DCF model can be reduced to the more manageable formula of:

$$P_0 = \frac{D_1}{K_e - g}$$

where: g = Investors' long-term growth expectations.

The cost of equity ("K_e") can be isolated by rearranging terms:

$$K_e = \frac{D_1}{P_0} + g$$

The constant growth form of the DCF model recognizes that the rate of return to stockholders consists of two parts: 1) dividend yield (D1/P0); and 2) growth (g). In other words, investors expect to receive a portion of their total return in the form of current dividends and the remainder through price appreciation.

While the constant growth form of the DCF model provides a more manageable formula to estimate the cost of equity, it is important to note that the assumptions required to convert the general form of the DCF model to the constant growth form are never strictly met in practice. In some instances, where earnings are derived solely from stable activities, and earnings, dividends, and book value track fairly closely, the constant growth form of the DCF model may be a reasonable working approximation of stock valuation. However, in other cases, where the circumstances cause the required assumptions to be severely violated, the constant growth DCF model may produce widely divergent and meaningless results. This is especially the case if the firm's earnings or dividends are unstable, or if investors are expecting the stock price to be affected by factors other than earnings and dividends.

Q. HOW DID YOU ESTIMATE THE COST OF EQUITY USING THE DCF MODEL?

A. Because neither Monarch nor SouthWest has publicly traded common stock, the DCF model cannot be used to estimate the cost of equity directly. For this reason, and to avoid measurement error associated with applying the DCF model to a single firm, I initially applied the constant growth form of the DCF model to the proxy group of the seven publicly traded water and wastewater utilities identified earlier; namely, the

firms included in *Value Line's* Water Utility Industry predominantly engaged in providing water and wastewater utility service.

Q. HOW IS THE CONSTANT GROWTH FORM OF THE DCF MODEL TYPICALLY USED TO ESTIMATE THE COST OF EQUITY?

A. The first step in implementing the constant growth DCF model is to determine the expected dividend yield (D1/P0) for the firm in question. This is usually calculated based on an estimate of dividends to be paid in the coming year divided by the current price of the stock.

Q. HOW DID YOU CALCULATE THE DIVIDEND YIELD COMPONENT OF THE CONSTANT GROWTH DCF MODEL FOR THE WATER AND WASTEWATER UTILITY GROUP?

A. Because estimating the cost of equity using the DCF model is an attempt to replicate how investors arrived at an observed stock price, all of its components should be contemporaneous. Price, dividend, and growth data from different points in time, or averaged over long time periods, violate the matching principle underlying the DCF model. Therefore, dividend yield was calculated by dividing an estimate of dividends to be paid by each of the water and wastewater utilities in the group over the next twelve months, obtained from the index to *Value Line's* June 5, 2020 edition, by the average closing price of each firm's stock during the month of May 2020. The expected dividends, representative price, and resulting dividend yield for each of the seven water and wastewater utilities are displayed on Schedule BHF-4. As also shown there, the average dividend yield for this industry proxy group is 1.91%.

Q. EXPLAIN HOW ESTIMATES OF INVESTORS' LONG-TERM GROWTH EXPECTATIONS ARE CUSTOMARILY DEVELOPED FOR USE IN THE CONSTANT GROWTH DCF MODEL.

A. In constant growth DCF theory, earnings, dividends, book value, and market price are all assumed to grow in lockstep, and the growth horizon of the DCF model is infinite. But implementation of the DCF model is more than just a theoretical exercise; it is an effort to replicate the mechanism investors used to arrive at observable stock prices. Therefore, the only "g" that matters in using the DCF model to estimate the cost of equity is that which investors expect and have embodied in current market prices.

Q. WHAT DRIVES INVESTORS' GROWTH EXPECTATIONS?

A. Trends in earnings, which ultimately support future dividends and share price, play a pivotal role in determining investors' long-term growth expectations. Security analysts' growth forecasts are generally regarded as the closest single measure of the expected long-term growth rate of the constant growth DCF model. While being primarily based on the outlook for a firm, they also reflect the utility's historical experience and other factors considered by investors in forming their long-term growth expectations. Moreover, various empirical studies have found that security analysts' projections are a superior source of DCF growth rates. The 5-year earnings growth projections by security analysts for each of the seven water and wastewater utilities reported by *Value Line*, Thomson Reuters' *Institutional Brokers Estimate System* ("*I/B/E/S*"), and *Zacks Investment Research* ("*Zacks*") are displayed on Schedule BHF-5, with the averages for the group being 7.2%, 8.3%, and 8.2%, respectively. Also shown on Schedule BHF-5 are the 10-year and 5-year historical

earnings growth rates reported by *Value Line* for each of the seven utilities, which average 7.1% and 7.8%, respectively.

Q. HOW ELSE ARE INVESTOR EXPECTATIONS OF FUTURE LONG-TERM GROWTH PROSPECTS FOR A FIRM OFTEN ESTIMATED FOR USE IN THE CONSTANT GROWTH DCF MODEL?

A. In DCF theory and practice, growth in book equity comes from the reinvestment of earnings within the business and the effects of external financing. Accordingly, conventional applications of the constant growth DCF model often examine the relationships between variables that determine the "sustainable" growth attributable to these two factors.

Q. HOW IS A FIRM'S SUSTAINABLE GROWTH ESTIMATED?

A. The sustainable growth rate is calculated by the formula:

$$g = br + sv$$

Where "b" is the expected earnings retention ratio (one minus the dividend payout ratio), "r" is the expected rate of return earned on book equity, "s" is the percent of common equity expected to be issued annually as new common stock, and "v" is the equity accretion ratio. The "br" term represents the growth from reinvesting earnings within the firm while the "sv" term represents the growth from external financing. This external financing growth results because existing shareholders share in a portion of any excess received from selling new shares at a price above book value.

Q. WHAT GROWTH RATE DOES THE SUSTAINABLE GROWTH METHOD SUGGEST FOR THE WATER AND WASTEWATER UTILITY GROUP?

A. The sustainable growth rate for each firm in the proxy group based on *Value Line's* projections for 2023–25 is developed in Schedule BHF-6. As shown there, the

sustainable growth method implies an average long-term growth rate for the water and wastewater utility group of 6.5%.

Q. WHAT ARE OTHER PROJECTED AND HISTORICAL GROWTH RATES FOR THE INDUSTRY GROUP?

A. Schedule BHF-7 displays *Value Line* projected growth rates and 10- and 5-year historical growth rates in book value per share, dividends per share, and stock price for each of the seven water and wastewater utilities in the industry group. The averages for the proxy group range from 0.2% to 15.0%. Besides the fact that several of these growth rates, when combined with the industry group's 1.91% dividend yield, imply implausible cost of equity estimates, the variation in these other growth rates results in them providing limited guidance as to the prospective growth that investors expect.

Q. WHAT IS YOUR CONCLUSION AS TO THE GROWTH THAT INVESTORS ARE EXPECTING FROM THE WATER AND WASTEWATER UTILITY PROXY GROUP?

A. After excluding clearly unreliable indicators of growth, the plausible growth rates shown on Schedules BHF-5, BHF-6, and BHF-7 indicate a range for the water and wastewater utility group of between approximately 6.5% and 8.2%. Meanwhile, *Zacks* reports projected earnings growth rates for its water utility industry of 10.3%. Giving the greatest weight to earnings growth rates and lesser to sustainable growth, I conclude that investors expect long-term growth from the water and wastewater utility group in the 7.0% to 8.0% range.

Q. WHAT CURRENT DCF COST OF EQUITY ESTIMATES DOES THIS GROWTH RATE RANGE IMPLY FOR THE WATER AND WASTEWATER UTILITY PROXY GROUP?

A. Summing the publicly traded water and wastewater utility group's average dividend yield of approximately 1.9% with a 7.0% to 8.0% growth rate range indicates a DCF cost of equity for the industry group of between approximately 8.9% and 9.9%.

Q. IS THIS DCF COST OF EQUITY RANGE DIRECTLY APPLICABLE TO MONARCH?

A. No. As will be discussed in more detail in the next section on the CAPM, it is well accepted in the financial literature that investors require a higher return from smaller firms than from larger firms, all other things equal. As shown on Schedule BHF-9, the average market capitalization ("market cap") of the firms in the water and wastewater proxy group is almost $6 billion. While neither Monarch nor SouthWest has a market cap *per se* because they are not publicly traded, one can be estimated by multiplying SouthWest's $274 million book equity by the average market-to-book ratio of the firms in the proxy group of 3.22 times (Schedule BHF-9), which implies a market cap of approximately $882 million. This market caps is less than one-sixth the size of the average firm in the proxy group. Accordingly, to make the DCF cost of equity range for the proxy group applicable to Monarch, an adjustment is necessary to account for its smaller size relative to all but one of the firms in the water and wastewater utility group.

Q. WHAT IS THE MAGNITUDE OF THE ADJUSTMENT NECESSARY TO ACCOUNT FOR THE SMALLER SIZE OF MONARCH RELATIVE TO THE PROXY GROUP?

A. In the lower portion of Schedule BHF-9, the generally accepted schedule of size premiums by market cap published by Duff & Phelps for 2020 is reproduced. In the far right columns of the table in the upper portion of Schedule BHF-9, the market cap of each water and wastewater utility in the proxy group is displayed along with its corresponding size premium, with the average size premium for the firms in the proxy group being 1.15%. Meanwhile, from the schedule of size premiums at the bottom of Schedule BHF-9, the size premium for a firm with a market cap of $882 million is 1.59%. Thus, the adjustment necessary to account for Monarch's smaller size relative to the firms in the water and wastewater utility group and, in turn, to make the DCF cost of equity range for the proxy group applicable to Monarch, is the difference between a size premium of 1.59% and the average for the proxy group of 1.15%, or 0.44%.

Q. WHAT COST OF EQUITY FOR MONARCH IS IMPLIED BY YOUR DCF ANALYSIS?

A. Adding the 0.44% adjustment necessary to account for Monarch's smaller size relative to the firms in the water and wastewater utility group to the 8.9% to 9.9% percent DCF cost of equity range determined above produces a DCF cost of equity range for Monarch of 9.34% to 10.34%.

C. <u>Capital Asset Pricing Model</u>

Q. HOW ELSE DID YOU ESTIMATE THE COST OF EQUITY?

A. The cost of equity to the water and wastewater utility group was also estimated using the CAPM, which is a theory of market equilibrium that serves as the basis for current financial education and management. Under the CAPM, investors are assumed fully diversified, so that the relevant risk of an individual asset (*e.g.*, common stock) is its

volatility relative to the market as a whole, which is measured using a "beta" coefficient. Beta reflects the tendency of a stock's price to follow changes in the market, with stocks having a beta less than 1.00 being considered less risky and stocks with a beta greater than 1.00 being regarded as more risky. The CAPM is mathematically expressed as:

$$R_J = R_f + \beta_J (R_m - R_f)$$

where: R_J = required rate of return for stock j;

R_f = risk-free interest rate;

R_m = expected return on the market portfolio; and

β_J = beta, or systematic risk, for stock j.

While the CAPM is not without controversy, it is routinely referenced in the financial literature and regulatory proceedings, and firms' beta values are widely reported.

Q. HOW DID YOU APPLY THE CAPM?

A. I applied the CAPM using two methods to determine the risk premium for the market as a whole, or the (R_m - R_f) term in the CAPM formula. The first was based on historical rates of return and the second was based on forward-looking estimates of investors' required rates of return. In both instances, the companies included in the S&P 500 index were used as a proxy for the market portfolio and the 30-year U.S. Treasury bond served as the risk-free investment.

Q. PLEASE DESCRIBE THE FIRST METHOD BASED ON HISTORICAL RATES OF RETURN.

A. Under the historical rate of return approach, equity risk premiums are calculated by first measuring the rate of return (including dividends and capital gains and losses) actually realized on an investment in common stocks over historical time periods.

The historical return on bonds is then subtracted from that earned on common stocks to measure equity risk premiums. Widely used in academia, the historical rate of return approach is based on the assumption that, given a sufficiently large number of observations over long historical periods, average market rates of return will converge to investors' required rates of return. From a more practical perspective, investors may base their expectations for the future on, or may have come to expect that they will earn, rates of return corresponding to those in the past.

Q. WHAT IS THE MARKET RISK PREMIUM BASED ON HISTORICAL RATES OF RETURN?

A. The most exhaustive study of historical rates of return, and the one most frequently cited in regulatory proceedings, is that contained in Duff & Phelps' (formerly Ibbotson Associates and Morningstar) *Market Results for Stocks, Bonds, Bills and Inflation.*[6] In its most recent publication, Duff & Phelps reports that the annual rate of return realized on the S&P 500 averaged 11.88% over the period 1926 through 2019 while the annual average income rate of return on 30-year Treasury bonds over this same period averaged 4.94%. Thus, the market risk premium based on historical average annual rates of return is 6.94%.

Q. PLEASE DESCRIBE THE SECOND METHOD BASED ON FORWARD-LOOKING REQUIRED RATES OF RETURN.

A. Consistent with the CAPM being an expectational (i.e., forward-looking) model, the second method estimated the market risk premium using current indicators of investors' required rates of return. For the market portfolio, the cost of equity was

[6] Duff & Phelps, *2020 Stocks, Bonds, Bills and Inflation (SBBI) Yearbook* (2020).

estimated by applying the DCF model to the firms in the S&P 500 paying cash dividends, with each firm's dividend yield and growth rate being weighted by its proportionate share of total market value. The expected dividend yield for each firm was obtained from *Value Line*, with the expected growth rate being based on the earnings forecasts published for each firm by *Value Line*, *I/B/E/S*, and *Zacks*. As shown in footnote (b) on Schedule BHF-8, summing the 2.55% expected dividend yield for this market group, which is composed primarily of non-regulated firms, with the average *Value Line*, *I/B/E/S*, and *Zacks* projected growth rate of 8.70% produces a required rate of return from the market portfolio (R_m) of 11.25%.

Q. WHAT IS THE MARKET RISK PREMIUM BASED ON FORWARD-LOOKING REQUIRED RATES OF RETURN?

A. From the 11.25% required rate of return on the market portfolio, a market risk premium is calculated by subtracting the average yield on 30-year Treasury bonds during May 2020 of 1.38%. This produces a forward-looking market risk premium of 9.87%.

Q. WHAT IS THE NEXT STEP IN APPLYING THE CAPM?

A. Having calculated market risk premiums of 6.94% and 9.87% using historical rates of return and forward-looking rates of return, respectively, the next step is to calculate specific risk premiums for the risk associated a water and wastewater utility. This is done by multiplying the alternative market risk premium estimates by a beta of 0.77, which is the average beta obtained from *Value Line* for the water and wastewater utilities in the proxy group and shown on Schedule BHF-9. This produces water and wastewater utility industry risk premiums of 5.35% and 7.62%.

Q. WHAT ARE THE RESULTING THEORETICAL CAPM COST OF EQUITY ESTIMATES FOR THE WATER AND WASTEWATER INDUSTRY?

A. Summing the industry risk premiums of 5.35% and 7.62% with the May 2020 30-year U.S. Treasury bond yield of 1.38% produces theoretical CAPM cost of equity estimates for the water and wastewater utility industry of 6.73% and 8.99%.

Q. ARE THESE THEORETICAL CAPM COST OF EQUITY ESTIMATES ACCURATE MEASURES OF INVESTORS' REQUIRED RATE OF RETURN?

A. No. These cost of equity estimates are based on CAPM theory. However, as explained by Morningstar in its *2015 Classic Yearbook* edition of *Stocks, Bonds, Bills and Inflation*:

> One of the most remarkable discoveries of modern finance is that of a relationship between company size and return. Historically on average, small companies have higher returns than those of large ones . . . . The relationship between company size and return cuts across the entire size spectrum; it is not restricted to the smallest stocks.[7]

In other words, in addition to the systematic risk measured by beta, investors' required rate of return depends on a firm's relative size. To account for this, Morningstar has developed size premiums that need to be added to the theoretical CAPM cost of equity estimates to account for the level of a firm's market capitalization in determining the CAPM cost of equity.

Q. WHAT ARE THE CURRENT CAPM COST OF EQUITY ESTIMATES FOR MONARCH ONCE SIZE EFFECTS ARE TAKEN INTO ACCOUNT?

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[7] Morningstar, Inc., *2015 Stocks, Bonds, Bills, and Inflation (SBBI) Classic Yearbook* at 99 (2015). (Footnote omitted).

A. As discussed earlier, the size premium for Monarch is 1.59%, which means that the theoretical CAPM cost of equity estimates need to be increased by this amount to account for its size relative to the S&P 500. As shown on Schedule BHF-8, increasing the theoretical CAPM cost of equity estimates by a 1.59% size premium results in current CAPM cost of equity estimates for Monarch based on historical rates of return and forward-looking rates of return of 8.32% and 10.58%, respectively.

D. Comparable Earnings Method

Q. HOW ELSE DID YOU ESTIMATE THE COST OF EQUITY FOR MONARCH?

A. Often referred to as the comparable earnings method, I also looked to the rates of return that other firms of comparable risk and that compete for investors' capital are expected to earn on their book equity. Reference to the expected return on book equity of other water and wastewater utility companies demonstrates the level of earnings that Monarch needs in order to offer investors a competitive return, be able to attract capital on reasonable terms, and maintain its financial integrity.

Q. WHAT RETURN ON BOOK EQUITY ARE WATER AND WASTEWATER UTILITY COMPANIES EXPECTED TO EARN?

A. Schedule BHF-10 displays the return on book equity projected for each of the seven publicly traded water and wastewater utilities in the proxy group for the 2020, 2021, and the 2023-25 timeframes, calculated by dividing *Value Line's* projected earnings per share by average book value per share. As shown there, the average expected book ROE for the group is 10.3% in 2020, 10.8% for 2021, and 12.1% for 2023-2025.

E. Recommended Rate of Return on Equity

Q. WHAT IS YOUR CONCLUSION AS TO THE CURRENT COST OF EQUITY RANGE FOR MONARCH?

A. The DCF method indicates a cost of equity range for Monarch of between approximately 9.3% and 10.3%, while the CAPM indicates a cost of equity range of between approximately 8.3% and 10.6%. Meanwhile, the comparable earnings method implies a fair rate of return on book equity for water and wastewater utilities of between 10.3% and 12.1%. Taken together, I conclude that investors currently require a ROE from Monarch in the range of 9.25% to 10.25%.

Q. WHAT ROE DO YOU RECOMMEND FOR MONARCH?

A. As discussed earlier, the outlook for the U.S. economy is more uncertain than it has been in decades because of the coronavirus pandemic. While the various actions taken by the Fed to contain the economic and capital market damage from the pandemic are expected to keep interest rates suppressed, the uncertainties surrounding the extent and duration of an economic recovery, coupled with the extraordinary volatility in stock market prices, have dramatically increased the risk of investing in common stocks. So that Monarch is able to offer investors a competitive return, attract capital on reasonable terms, and maintain its financial integrity, the allowed ROE should reflect the higher risk and capital market requirements from common stocks. Additionally, to encourage Monarch to continue acquiring operationally and financially distressed water and wastewater systems in Texas, its ROE must be sufficient to cost-justify its initial investment and necessary additional capital improvements. Taken together, I recommend an ROE for Monarch from the upper end of my 9.25% to 10.25% cost of equity range, or 10.0%.

Q. HAVE YOU CONDUCTED ANY CHECKS OF REASONABLENESS OF YOUR RECOMMENDED ROE FOR MONARCH?

A. Yes. I evaluated the reasonableness of my recommended 10.0% ROE for Monarch in two ways. The first was using a risk premium method based on ROEs previously authorized for other utilities (i.e., natural gas local distribution companies and electric utilities) by state regulatory commissions, and the second was by examining the ROEs previously granted electric utilities by the PUCT. A risk premium analysis based on allowed ROEs for water and wastewater companies was not performed because I am not aware of similar historical ROE data being published for these utilities.

Q. PLEASE DESCRIBE THE RISK PREMIUM METHOD TO ESTIMATE THE COST OF EQUITY?

A. The risk premium method to estimate investors' required rate of return is an extension of the risk-return tradeoff observed with bonds to common stocks. The cost of equity is estimated by determining the additional return investors require to forego the relative safety of a bond and bear the greater risks associated with common stock, and then adding this equity risk premium to the current yield on bonds.

Q. DESCRIBE GENERALLY THE APPLICATION OF THE RISK PREMIUM METHOD USING AUTHORIZED ROES.

A. Application of the risk premium method based on authorized ROEs is predicated on the presumption that allowed returns reflect regulatory commissions' best estimates of the cost of equity, however determined, at the time they issued their final orders. A current risk premium is estimated based on the difference between past authorized

ROEs and then-prevailing interest rates. This risk premium is then added to current interest rates to estimate the cost of equity.

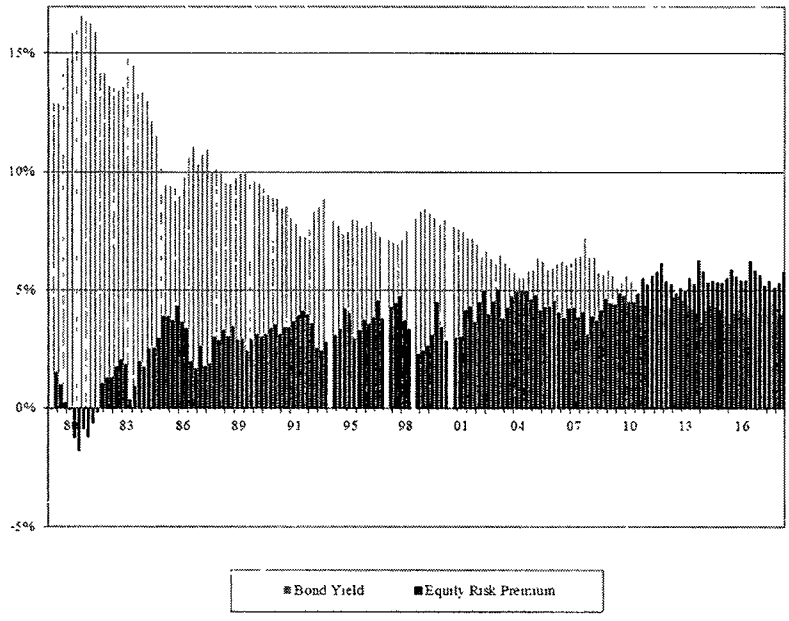
Q. WHAT WAS THE PRINCIPAL SOURCE OF THE DATA USED TO APPLY THIS RISK PREMIUM METHOD?

A. Regulatory Research Associates, Inc. ("RRA") and its predecessor have compiled the ROEs authorized for major electric and gas utilities by regulatory commissions across the U.S. The average ROE authorized natural gas distribution utilities published by RRA in each quarter between 1980 and March 2020 are displayed on Schedule BHF-11, with the average ROE authorized electric utilities in each quarter over this same time period are shown on Schedule BHF-12. As shown there, the ROEs granted gas distribution companies and electric utilities over this approximately 40-year period have averaged 11.54% and 11.68%, respectively, while the average public utility bond yield has averaged approximately 7.9%, resulting in an average risk premiums of 3.65% for gas distribution companies and 3.79% for electric utilities.

Q. ARE THESE 3.65% AND 3.79% AVERAGE RISK PREMIUMS THE RELEVANT VALUE FOR ESTIMATING THE COST OF EQUITY?

A. No. It is necessary to account for the fact that authorized ROEs do not move in lockstep with interest rates. In particular, when interest rate levels are relatively high, ROEs tend to be lower (i.e., equity risk premiums narrow), and when interest rates are relatively low, authorized ROEs are greater (i.e., equity risk premiums increase). This inverse relationship can be observed in the data for gas distribution companies displayed on Schedule BHF-11, which is shown graphically below (a similar inverse relationship exists for electric utilities). As evident there, the higher the level of interest rates (shaded bars), the lower the equity risk premiums (the solid bars

calculated as the difference between authorized ROEs and bond yields), and vice versa:



The implication of this inverse relationship is that for a one percent increase or decrease in interest rates, the cost of equity only rises or falls approximately one-half of a percent, respectively.

Q. HOW DID YOU ACCOUNT FOR THE RELATIONSHIP BETWEEN EQUITY RISK PREMIUMS AND INTEREST RATES IN ESTIMATING THE COST OF EQUITY USING PAST AUTHORIZED ROES?

A. To account for the fact that equity risk premiums are lower when interest rates are high and higher when interest rates are low, I developed alternative regression equations that relate past authorized equity risk premiums to average public utility bond yields for the gas distribution companies and for electric utilities. The first equation for each utility industry group was a simple linear regression between equity

risk premiums and interest rates, with the second equation being adjusted for first order autocorrelation using the Prais-Winsten algorithm. As shown at the bottom of both Schedule BHF-11 and Schedule BHF-12, substituting the May 2020 yield on single-A public utility bonds of 3.14% into the various regression equations indicates that the equity risk premium for gas distribution companies is currently between approximately 5.89% and 6.08%, and for electric utilities the equity risk premium is between 6.03% and 6.17%.

Q. WHAT CURRENT COSTS OF EQUITY DO THESE RISK PREMIUM RANGES IMPLY FOR THE TWO GROUP OF UTILITIES?

A. Adding the 5.89% and 6.08% equity risk premiums developed on Schedule BHF-11 for gas distribution companies to the May 2020 yield on single-A utility bonds of 3.14% produces a current risk premium cost of equity range of between 9.03% and 9.22%. Meanwhile, adding the 6.03% and 6.17% equity risk premiums for electric utilities results in cost of equity estimates of between 9.17% and 9.31%.

Q. DO THESE RISK PREMIUM COST OF EQUITY ESTIMATES NEED TO BE ADJUSTED TO MAKE THEM APPLICABLE TO MONARCH?

A. Yes. Just as the DCF cost of equity estimates for the water and wastewater utility group required adjustment to account for the smaller size of Monarch relative to the proxy group, so too do these risk premium costs of equity estimates for gas distribution and electric utilities need to be adjusted to reflect their much larger size. Specifically, the average market cap of the LDCs followed by *Value Line* is approximately $4.7 billion, while that of the electric utilities that *Value Line* follows is approximately $22.7 billion. Again referring to the schedule of size premiums on Schedule BHF-10, the 9.03% to 9.22% cost of equity estimates for gas distribution

companies needs to be increased approximately 80 basis points to reflect Monarch's smaller size versus the gas utilities' $4.7 billion (i.e., 1.59% minus 0.79%), and the 9.30% to 9.43% cost of equity estimates for electric utilities needs to be increased approximately 1.1% (i.e., 1.59% minus 0.50%) to reflect that their average market cap is $22.7 billion. Thus, these risk premium analyses imply that a fair ROE for Monarch based on the ROEs allowed gas distribution and electric utilities is between 9.83% and 10.02%, and 10.40% and 10.53%, respectively. These ranges fully support the reasonableness of my recommended 10.0% ROE for Monarch.

Q. HOW DOES YOUR RECOMMENDED ROE COMPARE WITH THE ROES THAT THE PUCT HAS AUTHORIZED ELECTRIC UTILITIES?

A. In the table below, the ROEs authorized electric utilities in Texas between 2015 and the present are listed:

Date	Docket	Utility	ROE
May 2015	43950	Cross Texas Trans.	9.60%
Sep. 2015	44746	Wind Energy Trans.	9.60%
Dec. 2015	43695	Southwestern PS	9.70%
Aug. 2016	44941	El Paso Electric	9.70%
Jan. 2017	45524	Southwestern PS	9.70%
Oct. 2017	46957	Oncor	9.80%
Dec. 2017	46831	El Paso Electric	9.65%
Mar. 2018	46449	SW Electric Power	9.60%
Dec. 2018	47527	Southwestern PS	9.50%
Dec. 2018	48371	Entergy Texas	9.65%
Dec. 2018	48401	Texas-New Mexico	9.65%
Mar. 2020	49421	CenterPoint	9.40%
Apr. 2020	499494	AEP Texas	9.40%

The ROEs allowed electric utilities by the PUCT over the last five years have ranged between 9.4% and 9.8%. Because most of these electric utilities have multi-billion

dollar market caps, size adjustments are again necessary to make the allowed ROEs comparable to a smaller Monarch. Even a modest size adjustment of, say, 0.50% to 0.75% to reflect Monarch's lower market cap indicates that my recommended 10.0% ROE is reasonable.

Q. IS THERE A HISTORY OF CASES THAT PROVIDE A MEANINGFUL GUIDE TO THE RATE OF RETURN THE PUCT HAS AUTHORIZED WATER AND WASTEWATER UTILITIES?

A. No. There have been only a handful of final orders deciding rates of return for water and wastewater companies in the almost six years since their rates became subject to the Commission's jurisdiction in 2014. In Docket No. 45720, Rio Concho Aviation, Inc. requested the Commission's presumptive ROE for Class B water companies, but the PUCT Staff's recommended rate of return was accepted when no rebuttal testimony was filed by the utility.[8] Similarly, the PUCT's Staff's recommendation was accepted in Docket No. 46747 when no rate of return testimony was provided by Cypress Garden Mobile Home Subdivision.[9] In Docket No. 46245, Double Diamond Utilities, the Commission adopted the PUCT Staff's recommended ROE in this contentious case.[10] I understand that all the other water and wastewater cases filed with the PUCT over the last six years have been settled.

VI. OVERALL RATE OF RETURN

Q. WHAT OVERALL RATE OF RETURN IS MONARCH REQUESTING?

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[8] *Application of Rio Concho Aviation, Inc. for a Rate/Tariff Change*, Docket No. 45720, Order (Jun. 29, 2017).

[9] *Application of Cypress Gardens Mobile Home Subdivision for Authority to Change Rates*, Docket No. 46747, Final Order (Sept. 25, 2019).

[10] *Application of Double Diamond Utility Company, Inc for Water and Sewer Rate/Tariff Change*, Docket No. 46245, Order on Rehearing (Dec. 12, 2019).

A. As developed on Schedule BHF-1, Monarch is requesting that it be allowed the opportunity to earn an overall rate of return of 8.32% on its invested capital. This rate of return is the result of combining representative water and wastewater utility industry capital structure ratios 45.0% debt and 55.0% equity with its average cost of debt of 6.26% and an ROE of 10.0%.

Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY IN THIS CASE?

A. Yes, it does.

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Summary of Qualifications

M.B.A. and Ph.D. in finance, accounting, and economics; Certified Public Accountant. Extensive consulting experience involving regulated industries, valuation of closely-held businesses, and other economic analyses. Previously held managerial and technical positions in government, academia, and business, and taught at the undergraduate, graduate, and executive education levels. Broad experience in technical research, computer modeling, and expert witness testimony.

Employment

Principal, FINCAP, Inc. (Sep. 1979 to present)	Economic consulting firm specializing in regulated industries and valuation of closely-held businesses. Assignments have involved electric, gas, telecommunication, and water/sewer utilities, with clients including utilities, consumer groups, municipalities, regulatory agencies, and cogenerators. Areas of participation have included revenue requirements, rate of return, rate design, tariff analysis, avoided cost, forecasting, and negotiations. Other assignments have involved some seventy valuations as well as various economic (e.g., damage) analyses, typically in connection with litigation. Presented expert witness testimony before courts and regulatory agencies on over one hundred occasions.
Adjunct Assistant Professor, University of Texas at Austin (Sep. 1979 to May. 1981)	Taught undergraduate courses in finance: Fin. 370 – Integrative Finance and Fin. 357 – Managerial Finance.
Assistant Director, Economic Research Division, Public Utility Commission of Texas (Sep. 1976 to Aug. 1979)	Division consisted of approximately twenty-five financial analysts, economists, and systems analysts responsible for rate of return, rate design, special projects, and computer systems. Directed Staff participation in rate cases, presented testimony on approximately thirty-five occasions, and was involved in some forty other cases ultimately settled. Instrumental in the initial development of rate of return and financial policy for newly-created agency. Performed independent research and managed State and Federal funded projects. Assisted in preparing appeals to the Texas Supreme Court and testimony presented before the Interstate Commerce Commission and Department of Energy. Maintained communications with financial community, industry representatives, media, and consumer groups. Appointed by Commissioners as Acting Director.

Assistant Professor, College of Business Administration, University of Colorado at Boulder (Jan. 1977 to Dec. 1978)	Taught graduate and undergraduate courses in finance: Fin. 305 – Introductory Finance, Fin. 401 – Managerial Finance, Fin. 402 – Case Problems in Finance, and Fin. 602 – Graduate Corporate Finance.
Teaching Assistant, University of Texas at Austin (Jan. 1973 to Dec. 1976)	Taught undergraduate courses in finance and accounting: Acc. 311 – Financial Accounting, Acc. 312 – Managerial Accounting, and Fin. 357 – Managerial Finance. Elected to College of Business Administration Teaching Assistants' Committee.
Internal Auditor, Sears, Roebuck and Company, Dallas, Texas (Nov. 1970 to Aug 1972)	Performed audits on internal operations involving cash, accounts receivable, merchandise, accounting, and operational controls, purchasing, payroll, etc. Developed operating and administrative policy and instruction. Performed special assignments on inventory irregularities and Justice Department Civil Investigative Demands.
Accounts Payable Clerk, Transcontinental Gas Pipeline Corp., Houston, Texas (May. 1969 to Aug. 1969)	Processed documentation and authorized payments to suppliers and creditors.

Education

Ph D , Finance, Accounting, and Economics, University of Texas at Austin (Sep. 1974 to May 1980)	Doctoral program included coursework in corporate finance, investment theory, accounting, and economics. Elected to honor society of Phi Kappa Phi. Received University outstanding doctoral dissertation award. Dissertation: *Estimating the Cost of Equity to Texas Public Utility Companies*
M B A., Finance and Accounting, University of Texas at Austin, (Sep. 1972 to Aug. 1974)	Awarded Wright Patman Scholarship by World and Texas Credit Union Leagues. Professional Report: *Planning a Small Business Enterprise in Austin, Texas*
B B A , Accounting and Finance, Southern Methodist University, Dallas, Texas (Sep. 1967 to Dec. 1971)	Dean's List 1967-1971 and member of Phi Gamma Delta Fraternity.

Other Professional Activities

Certified Public Accountant, Texas Certificate No. 13,710 (October 1974); entire exam passed in May 1972. Member of the American Institute of Certified Public Accountants (Honorary).

Participated as session chairman, moderator, and paper discussant at annual meetings of Financial Management Association, Southwestern Finance Association, American Finance Association, and other professional associations.

Visiting lecturer in Executive M.B.A program at the University of Stellenbosch Graduate Business School, Belleville, South Africa (1983 and 1984).

Associate Editor of *Austin Financial Digest*, 1974-1975. Wrote and edited a series of investment and economic articles published in a local investment advisory service.

Military

Texas Army National Guard, Feb. 1970 to Sep. 1976. Specialist 5th Class with duty assignments including recovery vehicle operator for armor unit and company clerk for finance unit.

Bibliography

Monographs

"On the Use of Security Analysts' Growth Projections in the DCF Model," with William E. Avera, *Earnings Regulation Under Inflation*, J. R. Foster and S. R. Holmberg, eds., Institute for Study of Regulation (1982).

"An Examination of the Concept of Using Relative Customer Class Risk to Set Target Rates of Return in Electric Cost-of-Service Studies", with William E. Avera, Electricity Consumers Resource Council (ELCON) (1981); portions reprinted in *Public Utilities Fortnightly* (Nov. 11, 1982).

"The Spring Thing (A) and (B)" and "Teaching Notes", with Mike E. Miles, a two-part case study in the evaluation, management, and control of risk; distributed by *Harvard's Intercollegiate Case Clearing House*; reprinted in *Strategy and Policy: Concepts and Cases*, A. A. Strickland and A. J. Thompson, Business Publications, Inc. (1978) and *Cases in Managing Financial Resources*, I. Matur and D. Loy, Reston Publishing Co., Inc. (1984).

"Energy Conservation in Existing Residences, Project Director for development of instruction manual and workshops promoting retrofitting of existing homes, *Governor's Office of Energy Resources* and *Department of Energy* (1977-1978).

"Linear Algebra," "Calculus," "Sets and Functions," and "Simulation Techniques," contributed to and edited four mathematics programmed learning texts for MBA students, *Texas Bureau of Business Research* (1975).

Articles and Notes

"How to Value Personal Service Practices," with Keith Wm. Fairchild, *The Practical Accountant* (August 1989).

"The Impact of Regulatory Climate on Utility Capital Costs: An Alternative Test," with Adrien M. McKenzie, *Public Utilities Fortnightly* (May 25, 1989).

"North Arctic Industries, Limited," with Keith Wm. Fairchild, *Case Research Journal* (Spring 1988).

"Regulatory Effects on Electric Utilities' Cost of Capital Reexamined," with Louis E. Buck, Jr., *Public Utilities Fortnightly* (September 2, 1982).

"Capital Needs for Electric Utility Companies in Texas: 1976-1985", *Texas Business Review* (January-February 1979), reprinted in "The Energy Picture: Problems and Prospects", J. E. Pluta, ed., *Bureau of Business Research* (1980).

"Some Thoughts on the Rate of Return to Public Utility Companies," with William E. Avera, *Proceedings of the NARUC Biennial Regulatory Information Conference* (1978).

"Regulatory Problems of EFTS," with Robert McLeod, *Issues in Bank Regulation* (Summer 1978) reprinted in *Illinois Banker* (January 1979).

"Regulation of EFTS as a Public Utility," with Robert McLeod, *Proceedings of the Conference on Bank Structure and Competition* (1978).

"Equity Management of REA Cooperatives," with Jerry Thomas, *Proceedings of the Southwestern Finance Association* (1978).

"Capital Costs Within a Firm," *Proceedings of the Southwestern Finance Association* (1977).

"The Cost of Capital to a Wholly-Owned Public Utility Subsidiary," *Proceedings of the Southwestern Finance Association* (1977).

Selected Papers and Presentations

"Federal Energy Regulatory Commission Audits of Common Carriers (Procedures for Audit Compliance)", Energy Transfer Accounting Employee Education, Dallas and Houston, Texas (December 2018).

"Perspectives on Texas Utility Regulation", TSCPA 2016 Energy Conference, Austin, Texas (May 16, 2016).

"Legislative Changes Affecting Texas Utilities," Texas Committee of Utility and Railroad Tax Representatives, Fall Meeting, Austin, Texas (September 1995).

"Rate of Return," "Origins of Information," Economics," and "Deferred Taxes and ITC's," New Mexico State University and National Association of Regulatory Utility Commissioners Public Utility Conferences on Regulation and the Rate-Making Process, Albuquerque, New Mexico (October 1983, 1984, 1985, 1986, 1987, 1988, 1990, 1991, 1992, 1994, and 1995, and September 1989); Pittsburgh, Pennsylvania (April 1993); and Baltimore, Maryland (May 1994 and 1995).

"Developing a Cost-of-Service Study," 1994 Texas Section American Water Works Association Annual Conference, Amarillo, Texas (March 1994).

"Financial Aspects of Cost of Capital and Common Cost Considerations," Kidder, Peabody & Co. Two-Day Rate Case Workshop for Regulated Utility Companies, New York, New York (June 1993).

"Cost-of-Service Studies and Rate Design," General Management of Electric Utilities (A Training Program for Electric Utility Managers from Developing Countries), Austin, Texas (October 1989 and November 1990 and 1991).

"Rate Base and Revenue Requirements," The University of Texas Regulatory Institute Fundamentals of Utility Regulation, Austin, Texas (June 1989 and 1990).

"Determining the Cost of Capital in Today's Diversified Companies," New Mexico State University Public Utilities Course Part II, Advanced Analysis of Pricing and Utility Revenues, San Francisco, California (June 1990).

"Estimating the Cost of Equity," Oklahoma Association of Tax Representatives, Tulsa, Oklahoma (May 1990).

"Impact of Regulations," Business and the Economy, Leadership Dallas, Dallas, Texas (November 1989).

"Accounting and Finance Workshop" and "Divisional Cost of Capital," New Mexico State University Current Issues Challenging the Regulatory Process, Albuquerque, New Mexico (April 1985 and 1986) and Santa Fe, New Mexico (March 1989).

"Divisional Cost of Equity by Risk Comparability and DCF Analyses," NARUC Advanced Regulatory Studies Program, Williamsburg, Virginia (February 1988) and USTA Rate of Return Task Force, Chicago, Illinois (June 1988).

"Revenue Requirements," Revenue, Pricing, and Regulation in Texas Water Utilities, Texas Water Utilities Conference, Austin, Texas (August 1987 and May 1988).

"Rate Filing – Basic Ratemaking," Texas Gas Association Accounting Workshop, Austin, Texas (March 1988).

"The Effects of Regulation on Fair Market Value: P.H. Robinson – A Case Study," Annual Meeting of the Texas Committee of Utility and Railroad Tax Representatives, Austin, Texas (September 1987).

"How to Value Closely-held Businesses," TSCPA 1987 Entrepreneurs Conference, San Antonio, Texas (May 1987).

"Revenue Requirements" and "Determining the Rate of Return", New Mexico State University Regulation and the Rate-Making Process, Southwestern Water Utilities Conference, Albuquerque, New Mexico (July 1986) and El Paso, Texas (November 1980).

"How to Evaluate Personal Service Practices," TSCPA CPE Exposition 1985, Houston and Dallas, Texas (December 1985).

"How to Start a Small Business – Accounting and Record Keeping," University of Texas Management Development Program, Austin, Texas (October 1984).

"Project Financing of Public Utility Facilities", TSCPA Conference on Public Utilities Accounting and Ratemaking, San Antonio, Texas (April 1984).

"Valuation of Closely-Held Businesses," Concho Valley Estate Planning Council, San Angelo, Texas (September 1982).

"Rating Regulatory Performance and Its Impact on the Cost of Capital," New Mexico State University Seminar on Regulation and the Cost of Capital, El Paso, Texas (May 1982).

"Effect of Inflation on Rate of Return," Cost of Capital Conference and Workshop, Pinehurst, North Carolina (April 1981).

"Original Cost Versus Current Cost Regulation: A Re-examination," Financial Management Association, New Orleans, Louisiana (October 1980).

"Capital Investment Analysis for Electric Utilities," The University of Texas at Dallas, Richardson, Texas (June 1980).

"The Determinants of Capital Costs to the Electric Utility Industry," with Cedric E. Grice, Southwestern Finance Association, San Antonio, Texas (March 1980).

"The Entrepreneur and Management: A Case Study," Small Business Administration Seminar, Austin, Texas (October 1979).

"Capital Budgeting by Public Utilities: A New Perspective," with W. Clifford Atherton, Jr., Financial Management Association, Boston, Massachusetts (October 1979).

"Issues in Regulated Industries – Electric Utilities," University of Texas at Dallas 4th Annual Public Utilities Conference, Dallas, Texas (July 1979).

"Investment Conditions and Strategies in Today's Markets," American Society of Women Accountants, Austin, Texas (January 1979).

"Attrition: A Practical Problem in Determining a Fair Return to Public Utility Companies," Financial Management Association, Minneapolis, Minnesota (October 1978).

"The Cost of Equity to Wholly-Owned Electric Utility Subsidiaries," with William L. Beedles, Financial Management Association, Minneapolis, Minnesota (October 1978).

"PUC Retrofitting Program," Texas Electric Cooperatives Spring Workshop, Austin, Texas (May 1978).

"The Economics of Regulated Industries," Consumer Economics Forum, Houston, Texas (November 1977).

"Public Utilities as Consumer Targets – Is the Pressure Justified?" University of Texas at Dallas 2nd Annual Public Utilities Conference, Dallas, Texas (July 1977).

BRUCE H. FAIRCHILD
SUMMARY OF TESTIMONY BEFORE REGULATORY AGENCIES

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
1.	Arkansas Electric Cooperative	Arkansas PSC	U-3071	Aug-80	Wholesale Rate Design
2.	East Central Oklahoma Electric Cooperative	Oklahoma CC	26925	Sep-80	Retail Rate Design
3.	Kansas Gas & Electric Company	Kansas CC	115379-U	Nov-80	PURPA Rate Design Standards
4.	Kansas Gas & Electric Company	Kansas CC	128139-U	May-81	Attrition
5.	City of Austin Electric Department	City of Austin	--	Jun-81	PURPA Rate Design Standards
6.	Tarrant County Water Control and Improvement District No. 1	Texas Water Commission	--	Oct-81	Wholesale Rate Design
7.	Owentown Gas Company	Texas RRC	2720	Jan-82	Revenue Requirements and Retail Rate Design
8.	Kansas Gas & Electric Company	Kansas CC	134792-U	Aug-82	Attrition
9.	Mississippi Power Company	Mississippi PSC	U-4190	Sep-82	Working Capital
10.	Lone Star Gas Company	Texas RRC	3757; 3794	Feb-83	Rate of Return on Equity
11.	Kansas Gas & Electric Company	Kansas CC	134792-U	Feb-83	Rate of Return on Equity
12.	Southwestern Bell Telephone Company	Oklahoma CC	28002	Oct-83	Rate of Return on Equity
13.	Morgas Company	Texas RRC	4063	Nov-83	Revenue Requirements
14.	Seagull Energy	Texas RRC	4541	Jul-84	Rate of Return
15.	Southwestern Bell Telephone Company	FCC	84-800	Nov-84	Rate of Return on Equity
16.	Kansas Gas & Electric Company, Kansas City Power & Light Company, and Kansas Electric Power Cooperatives	Kansas CC	142098-U; 142099-U; 142100-U	May-85	Nuclear Plant Capital Costs and Allowance for Funds Used During Construction
17.	Lone Star Gas Company	Texas RRC	5207	Oct-85	Overhead Cost Allocation
18.	Westar Transmission Company	Texas RRC	5787	Nov-85 Jan-86 Jul-86	Rate of Return, Rate Design, and Gas Processing Plant Economics
19.	City of Houston	Texas Water Commission	RC-022; RC-023	Nov-86	Line Losses and Known and Measurable Changes
20.	ENSTAR Natural Company	Alaska PUC	TA 50-4; R-87-2; U-87-2	Nov-86 May-87 May-87	Cost Allocation, Rate Design, and Tax Rate Changes
21.	Brazos River Authority	Texas Water Commission	RC-020	Jan-87	Revenue Requirements and Rate Design
22.	East Texas Industrial Gas Company	Texas RRC	5878	Feb-87	Revenue Requirements and Rate Design

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Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
23.	Seagull Energy	Texas RRC	6629	Jun-87	Revenue Requirements
24.	ENSTAR Natural Company	Alaska PUC	U-87-42	Jul-87 Sep-87 Sep-87	Cost Allocation, Rate Design, and Contracts
25.	High Plains Natural Gas Company	Texas RRC	6779	Sep-87	Rate of Return
26.	Hughes Texas Petroleum	Texas RRC	2-91,855	Jan-88	Interim Rates
27.	Cavallo Pipeline Company	Texas RRC	7086	Sep-88	Revenue Requirements
28.	Union Gas System, Inc.	Kansas CC	165591-U	Mar-89 Aug-89	Rate of Return
29.	ENSTAR Natural Gas Company	Alaska PUC	U-88-70	Mar-89	Cost Allocation and Bypass
30.	Morgas Co.	Texas RRC	7538	Aug-89	Rate of Return and Cost Allocation
31.	Corpus Christi Transmission Company	Texas RRC	7346	Sep-89	Revenue Requirements
32.	Amoco Gas Co.	Texas RRC	7550	Oct-89	Rate of Return and Cost Allocation
33.	Iowa Southern Utilities	Iowa Utilities Board	RPU-89-7	Nov-89 Mar-90	Rate of Return on Equity
34.	Southwestern Bell Telephone Company	FCC	89-624	Feb-90 Apr-90	Rate of Return on Equity
35.	Lower Colorado River Authority	Texas PUC	9427	Mar-90 Aug-90 Aug-90	Revenue Requirements
36.	Rio Grande Valley Gas Company	Texas RRC	7604	May-90	Consolidated FIT and Depreciation
37.	Southern Union Gas Company	El Paso PURB	--	Oct-90	Disallowed Expenses and FIT
38.	Iowa Southern Utilities	Iowa Utilities Board	RPU-90-8	Nov-90 Feb-91	Rate of Return on Equity
39.	East Texas Gas Systems	Texas RRC	7863	Dec-90	Revenue Requirements
40.	San Jacinto Gas Transmission	Texas RRC	7865	Dec-90	Revenue Requirements
41.	Southern Union Gas Company	Austin; Texas RRC	-- 7878	Feb-91 Feb-91	Rate of Return and Acquisition Adjustment
42.	Southern Union Gas Company	Port Arthur; Texas RRC	-- 8033	Mar-91 Aug-91 Oct-91	Rate of Return and Acquisition Adjustment
43.	Cavallo Pipeline Company	Texas RRC	8016	Jun-91	Revenue Requirements

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
44.	New Orleans Public Service Inc.	New Orleans City Council	CD-91-1	Jun-91 Mar-92	Rate of Return on Equity
45.	Houston Pipe Line Company	Texas RRC	8017	Jul-91	Rate of Return
46.	Southern Union Gas Company	El Paso PURB	--	Aug-91 Sep-91	Acquisition Adjustment
47.	Southwestern Gas Pipeline, Inc.	Texas RRC	8040	Jan-92 Feb-92	Rate Design and Settlement
48.	City of Fort Worth	Texas Water Commission	8748-A 9261-A	Mar-92 Aug-92 Dec-92 Oct-94 Nov-94	Interim Rates, Revenue Requirements, and Public Interest
49.	Southern Union Gas Company	Oklahoma Corp. Com.	--	Jun-92	Rate of Return
50.	Minnegasco	Minnesota PUC	G-008/GR-92-400	Jul-92 Dec-92	Rate of Return
51.	Guadalupe-Blanco River Authority	Texas PUC	11266	Sep-92	Cost Allocation and Bond Funds
52.	Dorchester Intra-State Gas System	Texas RRC	8111	Oct-92 Nov-92	Rate Impact of System Upgrade
53.	Corpus Christi Transmission Company GP and GPII	Texas RRC	8300 8301	Oct-92 Oct-92	Revenue Requirements
54.	East Texas Industrial Gas Company	Texas RRC	8326	Mar-93	Revenue Requirements
55.	Arkansas Louisiana Gas Company	Arkansas PSC	93-081-U	Apr-93 Oct-93	Rate of Return on Equity
56.	Texas Utilities Electric Company	Texas PUC	11735	Jun-93 Jul-93	Impact of Nuclear Plant Construction Delay
57.	Minnegasco	Minnesota PUC	G-008/GR-93-1090	Nov-93 Apr-94	Rate of Return
58.	Gulf States Utilities Company	Municipalities	--	May-94 Oct-94 Nov-94	Rate of Return on Equity
59.	Louisiana Power & Light Company	Louisiana PSC	U-20925	Aug-94 Feb-95	Rate of Return on Equity
60.	San Jacinto Gas Transmission	Texas RRC	8429	Sep-94	Revenue Requirements
61.	Cavallo Pipeline Company	Texas RRC	8465	Sep-94	Revenue Requirements
62.	Eastrans Limited Partnership	Texas RRC	8385	Oct-94	Revenue Requirements
63.	Gulf States Utilities Company	Louisiana PSC	U-19904	Oct-94	Rate of Return on Equity

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
64.	Entergy Services, Inc.	FERC	ER95-112-000	Mar-95 Nov-95	Rate of Return on Equity
65.	East Texas Gas Systems	Texas RRC	8435	Apr-95	Revenue Requirements
66.	System Energy Resources, Inc.	FERC	ER95-1042-000	May-95 Dec-95 Jan-96	Rate of Return on Equity
67.	Minnegasco	Minnesota PUC	G-008/GR-95-700	Aug-95 Dec-95	Rate of Return
68.	Entex	Louisiana PSC	U-21586	Aug-95	Rate of Return
69.	City of Fort Worth	Texas NRCC	SOAH 582-95-1084	Nov-95	Public Interest of Contract
70.	Seagull Energy Corporation	Texas RRC	8589	Nov-95	Revenue Requirements
71.	Corpus Christi Transmission Company LP	Texas RRC	8449	Feb-96	Revenue Requirements
72.	Missouri Gas Energy	Missouri PSC	GR-96-285	Apr-96 Sep-96 Oct-96	Rate of Return
73.	Entex	Mississippi PSC	96-UA-202	May-96	Rate of Return
74.	Entergy Gulf States, Inc.	Louisiana PSC	U-22084	May-96	Rate of Return on Equity (Gas)
75.	Entergy Gulf States, Inc.	Louisiana PSC	U-22092	May-96 Oct-96	Rate of Return on Equity
76.	American Gas Storage, L.P.	Texas RRC	8591	Sep-96	Revenue Requirements
77.	Entergy Louisiana, Inc.	Louisiana PSC	U-20925	Sep-96 Oct-96	Rate of Return on Equity
78.	Lone Star Pipeline and Gas Company	Texas RRC	8664	Oct-96 Jan-97	Rate of Return
79.	Entergy Arkansas, Inc.	Arkansas PSC	96-360-U	Oct-96 Sep-97	Rate of Return on Equity
80.	East Texas Gas Systems	Texas RRC	8658	Nov-96	Revenue Requirements
81.	Entergy Gulf States, Inc.	Texas PUC	16705	Nov-96 Jul-97	Rate of Return on Equity
82.	Eastrans Limited Partnership	Texas RRC	8657	Nov-96	Revenue Requirements
83.	Enserch Processing, Inc.	Texas RRC	8763	Nov-96	Interim Rates
84.	Entergy New Orleans, Inc.	City of New Orleans	UD-97-1	Feb-97 Mar-97 May-98	Rate of Return on Equity

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
85.	ENSTAR Natural Gas Company	Alaska PUC	U-96-108	Mar-97 Apr-97	Service Area Certificate
86.	San Jacinto Gas Transmission	Texas RRC	8741	Sep-97	Revenue Requirements
87.	Missouri Gas Energy	Missouri PSC	GR-98-140	Nov-97 Apr-98 May-98	Rate of Return
88.	Corpus Christi Transmission Company LP	Texas RRC	8762	Dec-97	Revenue Requirements
89.	Texas-New Mexico Power Company	Texas PUC	17751	Feb-98	Excess Cost Over Market
90.	Southern Union Gas Company	Texas RRC	8878	May-98	Rate of Return
91.	Entergy Louisiana, Inc.	Louisiana PSC	U-20925	May-98 Jul-98	Financial Integrity
92.	Entergy Gulf States, Inc.	Louisiana PSC	U-22092	May-98 Jul-98	Financial Integrity
93.	ACGC Gathering Company, LLC	Texas RRC	8896	Sep-98	Cost-based Rates
94.	American Gas Storage, L.P.	Texas RRC	8855	Oct-98	Revenue Requirements
95.	Duke Energy Intrastate Network	Texas RRC	8940	Jun-99	Rate of Return
96.	Aquila Energy Corporation	Texas RRC	8970	Aug-99	Revenue Requirements
97.	San Jacinto Gas Transmission	Texas RRC	8974	Sep-99	Revenue Requirements
98.	Southern Union Gas Company	El Paso PURB	--	Oct-99	Rate of Return
99.	TXU Lone Star Pipeline	Texas RRC	8976	Oct-99 Feb-00	Rate of Return
100.	Sharyland Utilities, L.P.	Texas PUC	21591	Nov-99	Rate of Return
101.	TXU Lone Star Gas Distribution	Texas RRC	9145	Apr-00 Aug-00	Rate of Return
102.	Rotherwood Eastex Gas Storage	Texas RRC	9136	May-00	Revenue Requirements
103.	Eastex Gas Storage & Exchange, Inc.	Texas RRC	9137	May-00	Revenue Requirements
104.	Eastex Gas Storage & Exchange, Inc.	Texas RRC	9138	Jul-00	Revenue Requirements
105.	East Texas Gas Systems	Texas RRC	9139	Jul-00	Revenue Requirements
106.	Eastrans Limited Partnership	Texas RRC	9140	Aug-00	Revenue Requirements
107.	Reliant Energy – Entex	City of Tyler	--	Oct-00	Rate of Return
108.	City of Fort Worth	Texas NRCC	SOAH 582-00-1092	Dec-00	CCN – Rates and Financial Ability
109.	Entergy Services, Inc.	FERC	RTO1-75	Dec-00	Rate of Return on Equity

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
110	ENSTAR Natural Gas Company	Alaska PUC	U-00-88	Jun-01 Aug-01 Nov-01 Sep-02 Dec-02	Revenue Requirements, Cost Allocation, and Rate Design
111.	TXU Gas Distribution	Texas RRC	9225	Jul-01	Rate of Return
112.	Centana Intrastate Pipeline LLC	Texas RRC	9243	Aug-01	Rate of Return
113.	Maxwell Water Supply Corp.	Texas NRCC	SOAH-582-01-0802	Oct-01 Mar-02 Apr-02	Reasonableness of Rates
114.	Reliant Energy Arkla	Arkansas PSC	01-243-U	Dec-01 Jun-01	Rate of Return
115.	Entergy Services, Inc.	FERC	ER01-2214-000	Mar-02	Rate of Return on Equity
116.	TXU Lone Star Pipeline	Texas RRC	9292	Apr-02	Rate of Return
117.	Southern Union Gas Company	El Paso PURB	--	Apr-02	Rate of Return
118.	San Jacinto Gas Transmission Co.	Texas RRC	9301	May-02	Rate of Return
119.	Duke Energy Intrastate Network	Texas RRC	9302	May-02	Rate of Return
120.	Reliant Energy Arkla	Oklahoma CC	200200166	May-02	Rate of Return
121.	TXU Gas Distribution	Texas RRC	9313	Jul-02 Sep-02	Rate of Return
122.	Entergy Mississippi, Inc.	Mississippi PSC	2002-UN-256	Aug-02	Rate of Return on Equity
123.	Aquila Storage & Transportation LP	Texas RRC	9323	Sep-02	Revenue Requirements
124.	Panther Pipeline Ltd.	Texas RRC	9291	Oct-02	Revenue Requirements
125.	SEMCO Energy	Michigan PSC	U-13575	Nov-02	Revenue Requirements
126.	CenterPoint Energy Entex	Louisiana PSC	U-26720	Jan-03	Rate of Return
127.	Crosstex CCNG Transmission Ltd.	Texas RRC	9363	May-03	Revenue Requirements
128.	TXU Gas Company	Texas RRC	9400	May-03 Jan-04	Rate of Return
129.	Eastrans Limited Partnership	Texas RRC	9386	May-03	Rate of Return
130.	CenterPoint Energy Entex	City of Houston		Jun-03	Rate of Return
131.	East Texas Gas Systems, L.P.	Texas RRC	9385	Jun-03	Rate of Return
132.	ENSTAR Natural Gas Company	Alaska RCA	U-03-084	Aug-03 Nov-03	Line Extension Surcharge
133.	CenterPoint Energy Arkla	Louisiana PSC		Nov-03	Rate of Return
134.	ENSTAR Natural Gas Company	Alaska RCA	U-03-091	Feb-04	Cost Separation and Taxes

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies

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No.	Utility Case	Agency	Docket	Date	Nature of Testimony
135.	Sid Richardson Pipeline, Ltd.	Texas RRC	9532	Jun-04 Nov-04	Revenue Requirements
136.	ETC Katy Pipeline, Ltd.	Texas RRC	9524	Sep-04	Revenue Requirements
137.	CenterPoint Energy Entex	Mississippi PSC	03-UN-0831	Sep-04	Rate Formula
138.	Centana Intrastate Pipeline LLC	Texas RRC	9527	Sep-04	Rate of Return
139.	SEMCO Energy	Michigan PSC	U-14338	Dec-04	Revenue Requirements
140.	Atmos Energy – Energas	Texas RRC	9539	Feb-05	Regulatory Policy
141.	Crosstex North Texas Pipeline, L.P.	Texas RRC	9613	Sep-05	Revenue Requirements
142.	SiEnergy, L.P.	Texas RRC	9604	Dec-05	Rate of Return, Income Taxes, and Cost Allocation
143.	ENSTAR Natural Gas Company	Alaska RCA	TA-140-4	Feb-06	Connection Fees
144.	SEMCO Energy	Michigan PSC	U-14984	May-06 Dec-06	Revenue Requirements
145.	Atmos Energy – Mid-Tex	Texas RRC	9676	May-06 Oct-06	Revenue Requirements
146.	EasTrans Limited Partnership	Texas RRC	9659	Jun-06	Rate of Return
147.	Kinder Morgan Texas Pipeline, L.P.	Texas RRC	9688	Jul-06	Rate of Return
148.	Crosstex CCNG Transmission Ltd.	Texas RRC	9660	Aug-06	Revenue Requirements
149.	Enbridge Pipelines (North Texas), LP	Texas RRC	9691	Oct-06	Rate of Return
150.	Panther Interstate Pipeline Energy	FERC	CP03-338-00	Mar-07	Revenue Requirements
151.	El Paso Electric Company	Texas PUC	34494	Jul-07	CCN
152.	El Paso Electric Company	NM PRC	07-00301-UT	Jul-07	CCN
153.	Atmos Energy	Kansas CC	08-ATMG-280-RTS	Sep-07 Feb-08	Rate of Return on Equity
154.	Centana Intrastate Pipeline LLC	Texas RRC	9759	Sep-07	Rate of Return
155.	Texas Gas Service Company	Texas RRC	9770	Nov-07	Rate of Return
156.	ENSTAR Natural Gas Company	Alaska RCA	U-08-25	Jun-08	Rate Class Switching
157.	ConocoPhillips Transportation Alaska	Alaska RCA	TL-131-301	Oct-08	Rate of Return
158.	ExxonMobil Pipeline Co.	Alaska RCA	TL-140-304	Nov-08	Rate of Return
159.	Crosstex North Texas Pipeline, L.P.	Texas RRC	9843	Dec-08	Revenue Requirements
160.	Koch Alaska Pipeline Company	Alaska RCA	TL 128-308	Dec-08	Rate of Return
161.	Unocal Pipeline Company	Alaska RCA	TL 118-312	Dec-08	Rate of Return

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies
(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
162.	ETC Katy Pipeline, Ltd.	Texas RRC	9841	Dec-08	Revenue Requirements
163.	Oklahoma Natural Gas	Oklahoma CC	200800348	Jan-09	Rate of Return on Equity
164.	Entergy Mississippi, Inc.	Mississippi PSC	EC-123-0082	Mar 09	Rate of Return on Equity
165.	ENSTAR Natural Gas Company	Alaska RCA	U-09-69 U-09-70	Jun-09 Jul-09 Oct-09	Revenue Requirements, Cost Allocation, and Rate Design
166.	EasTrans, LLC	Texas RRC	9857	Jun-09	Rate of Return
167.	Oklahoma Natural Gas	Oklahoma CC	200900110	Jun-09	Rate of Return
168.	Crosstex CCNG Transmission Ltd.	Texas RRC	9858	Jun-09	Revenue Requirements
169.	ConocoPhillips Transportation Alaska	Alaska RCA	TL-137-301	Jul-09	Rate of Return
170.	ENSTAR Natural Gas Company	Alaska RCA	U-08-142	Jul-09	Gas Cost Adjustment
171.	Kinder Morgan Texas Pipeline, LLC	Texas RRC	9889	Jul-09	Rate of Return
172.	Koch Alaska Pipeline Company	Alaska RCA	TL 133-308	Aug-09	Rate of Return
173.	ExxonMobil Pipeline Co.	Alaska RCA	TL-147-304	Nov-09	Rate of Return
174.	Texas Gas Service Company	El Paso PURB	--	Dec-09	Rate of Return
175.	Unocal Pipeline Company	Alaska RCA	TL126-312	Dec-09	Rate of Return
176.	Kuparuk Transportation Company	Alaska RCA	P-08-05	Apr-10	Rate of Return
177.	Trans-Alaska Pipeline System	FERC	ISO9-348-000	Apr 10 Oct 10	Rate of Return
178.	Texas Gas Service	Texas RRC	9988	May 10 Aug 10	Rate of Return
179.	SEMCO Energy Gas Company	Michigan PSC	U-16169	Jun 10 Dec 10	Revenue Requirements
180.	ConocoPhillips Transportation Alaska	Alaska RCA	TL-137-301	Jul 10	Rate of Return
181.	Koch Alaska Pipeline Company, LLC	Alaska RCA	TL-138-308	Aug 10	Rate of Return
182.	CPS Energy	Texas PUC	36633	Sep 10 Apr 11	Rate of Return for MOU
183.	ExxonMobil Pipeline Co.	Alaska RCA	TL-151-304	Dec 10	Rate of Return
184.	Unocal Pipeline Company	Alaska RCA	TL132-312	Feb 11	Rate of Return
185.	New Mexico Gas Company	NM PRC	11-00042-UT	Mar 11	Rate of Return
186.	ConocoPhillips Transportation Alaska	Alaska RCA	TL-143-301	May 11	Rate of Return

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
187.	Enbridge Pipelines (Southern Lights)	FERC	IS11-146-000	Jun 11 Nov 11	Rate of Return
188.	Koch Alaska Pipeline Company, LLC	Alaska RCA	TL-138-___	Jul 11	Rate of Return
189.	Unocal Pipeline Company	Alaska RCA	TL126-___	Dec 11	Rate of Return
190.	Kansas Gas Service	Kansas CC	12-KGSC-835-RTS	May 12 Oct 12	Rate of Return
191.	ExxonMobil Pipeline Co.	Alaska RCA	TL-157-304	Jun 12	Rate of Return
192.	ConocoPhillips Transportation Alaska	Alaska RCA	TL-149-301	Jul 12	Rate of Return
193.	Seaway Crude Pipeline Company	FERC	IS12-226-000	Aug 12 Feb 13	Rate of Return
194.	Cross Texas Transmission, LLC	Texas PUC	40604	Aug 12 Oct 12 Nov 12	Revenue Requirements
195.	Wind Energy Transmission Texas	Texas PUC	40606	Aug 12 Nov 12	Revenue Requirements
196.	Lone Star Transmission LLC	Texas PUC	40798	Nov 12	Revenue Requirements
197.	West Texas Gas Company	Texas RRC	10235	Jan 13	Rate of Return
198.	Cross Texas Transmission, LLC	Texas PUC	41190	Feb 13	Revenue Requirements
199.	ExxonMobil Pipeline Co.	Alaska RCA	TL-162-304	Apr 13	Rate of Return
200.	EasTrans,LLC	Texas RRC	10276	Jul 13	Rate of Return
201.	ConocoPhillips Transportation Alaska	Alaska RCA	TL-152-301	Jul 13	Rate of Return
202.	BP Pipelines (Alaska) Inc.	Alaska RCA	TL-143-311	Sep 13	Rate of Return
203.	Wind Energy Transmission Texas	Texas PUC	41923	Oct 13	Revenue Requirements
204.	Oliktok Pipeline Company	Alaska RCA	P-13-013	Nov 13	Rate of Return
205.	Aqua Texas Southeast Region-Gray	Texas CEQ	2013-2007-UCR	Apr 14	Revenue Requirements
206.	Entergy Mississippi	Mississippi PSC	EC-123-0082	Jun 14	Rate of Return on Equity
207.	Westlake Ethylene Pipeline	Texas RRC	10358	Jul 14 Aug 15	Rates
208.	ExxonMobil Pipeline Co.	Alaska RCA	TL-164-304	Jul 14	Rate of Return
209.	ConocoPhillips Transportation Alaska	Alaska RCA	TL-154-301	Aug 14	Rate of Return
210.	Enstar Natural Gas Company	Alaska RCA	TA-262-4	Sep 14 Jun 15	Revenue Requirements, Cost Allocation, and Rate Design

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
211.	Oliktok Pipeline Company	Alaska RCA	TL-44-334	Mar 15	Rate of Return
212.	Entergy Arkansas, Inc.	Arkansas PSC	15-0150U	Apr 15 Oct 15 Dec 15	Rate of Return on Equity
213.	Wind Energy Transmission Texas	Texas PUC	44746	Jun 15	Revenue Requirements
214.	Texas City	Texas RRC	10408	Jun 15 Nov 15	Pipeline Annual Assessment
215.	Oklahoma Natural Gas	Oklahoma CC	201500213	Jul 15 Nov 15	Rate of Return
216.	PTE Pipeline LLC	Alaska RCA	P-12-015	Sep 15	Rate of Return
217.	Northeast Transmission Development, LLC	FERC	ER16-453	Dec 15	Formula Rates
218.	Oncor Electric Delivery	Texas PUC	45188	Dec 15	Public Interest of Acquisition
219.	Corix Utilities (Texas)	Texas PUC	45418	Dec 15 Oct 16	Rate of Return
220.	Texas Gas Service	Texas RRC	10488	Dec 15	Rate of Return
221.	Texas Gas Service	Texas RRC	10506	Mar 16 Jun 16	Rate of Return
222.	Kansas Gas Service	Kansas CC	16-KGSG-491-RTS	May 16 Sep 16	Rate of Return on Equity
223.	Enstar Natural Gas Company	Alaska RCA	TA-285-4	Jun 16 Apr 17	Revenue Requirements, Cost Allocation, and Rate Design
224.	Texas Gas Service	Texas RRC	10526	Jun 16	Rate of Return
225.	West Texas LPG Pipeline	Texas RRC	10455	Aug 16 Jan 17	Rates and Rate of Return
226.	Liberty Utilities	Texas PUC	46356	Sep 16 Feb 17 Jun 17	Revenue Requirements and Rate of Return
227.	DesertLink LLC	FERC	ER17-135	Oct 16	Formula Rates
228.	Houston Pipe Line Co.	Texas RRC	10559	Nov 16	Revenue Requirements
229.	Texas Gas Service	Texas RRC	10656	Jun 17	Rate of Return
230.	Trans-Pecos Pipeline	Texas RRC	10646	Sep 17 Feb 18	Revenue Requirements
231.	Comanche Trail Pipeline	Texas RRC	10647	Sep 17 Feb 18	Revenue Requirements
232.	Alpine High Pipeline	Texas RRC	10665	Oct 17 Feb 18	Revenue Requirements

Bruce H. Fairchild
Summary of Testimony Before Regulatory Agencies

(Continued)

No.	Utility Case	Agency	Docket	Date	Nature of Testimony
233.	SiEnergy, LP	Texas RRC	10679	Jan 18	Rate of Return
234.	Targa Midland Gas Pipeline LLC	Texas RRC	10690	Jan 18	Revenue Requirements
235.	ET Fuel, LP	Texas RRC	10706	Apr 18	Revenue Requirements
236.	Texas Gas Service	Texas RRC	10739	Jun 18	Rate of Return
237.	Kansas Gas Service	Kansas CC	18-KGSG-560-RTS	Jun 18 Nov 18	Rate of Return on Equity
238.	Oliktok Pipeline Company	Alaska RCA	P-18-0__	Jul 18	Rate of Return
239.	Red Bluff Express, LLC	Texas RRC	10752	Jul 18	Revenue Requirements
240.	PTE Pipeline LLC	Alaska RCA	P-18-0__	Jul 18	Rate of Return
241.	Agua Blanca, LLC	Texas RRC	10761	Aug 18	Revenue Requirements
242.	Texas Gas Service	Texas RRC	10766	Aug 18	Rate of Return
243.	Republic Transmission LLC	FERC	ER19-___	Dec 18	Formula Rates
244.	Gulf Coast Express Pipeline LLC	Texas RRC	10825	Feb 19	Revenue Requirements
245.	Cook Inlet Natural Gas Storage Alaska, LLC	Alaska RCA	U-18-043	Mar 19 Apr 19	Accumulated Deferred Income Taxes and Working Capital
246.	Impulsora Pipeline LLC	Texas RRC	10829	Mar 19	Revenue Requirements
247.	SEMCO Energy Gas Co.	Michigan PSC	U-20479	May 19 Oct 19	Revenue Requirements
248.	Liberty Utilities (Fox River) LLC	AAA	01-18-0002-2510	Jul 19 Oct 19	Revenue Requirements
249.	AMP Intrastate Pipeline LLC	Texas RRC	10887	Aug 19	Revenue Requirements
250.	Corix Utilities (Texas) Inc.	Texas PUC	49923	Aug 19	TCJA Tax Expense Reduction
251.	Colonial Pipeline Company	FERC	OR18-7-002	Nov 19 Feb 20 May 20	Rate of Return
252.	Texas Gas Service	Texas RRC	10928	Dec 19 Apr 20	Rate of Return
253.	Mississippi Power Company	Mississippi PSC	2019-UN-219	Feb 20	Rate of Return on Equity
254.	Corix Utilities (Texas)	Texas PUC	50557	Mar 20	Rate of Return
255.	Southcross CCNG Transmission	Texas RRC	10967	May 20	Revenue Requirements
256.	Kinder Morgan Border Pipeline LLC	Texas RRC	10980	Jun 20	Revenue Requirements

OVERALL RATE OF RETURN

Capital Component	Percent of Total	Component Cost	Weighted Cost
Long-term Debt	45.00%	6.26%	2 82%
Common Equity	55.00%	10.00%	5 50%
Total	**100.00%**		**8.32%**

MONARCH UTILITIES I, LP
CAPITAL STRUCTURE

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WATER AND SEWER PROXY GROUP

	2017		2018		2019		Projected 2020		Projected 2023-2025	
Company (b)	Long-term Debt	Common Equity	Long-term Debt	Common Equity	Long-term Debt	Common Equity	Long-term Debt	Common Equity	Long-term Debt	Common Equity
American States Water Co.	38 0%	62 0%	40 5%	59 5%	44 4%	55 6%	46 0%	54 0%	49 5%	50 5%
American Water Works Co	54 7%	45.3%	56 3%	43 7%	58.5%	41.5%	58 5%	41 5%	59 0%	41.0%
California Water Service Group	42 7%	57 3%	49.3%	50 7%	50 2%	49 8%	49 0%	51 0%	47 0%	53 0%
Essential Utilities, Inc	50 6%	49 4%	54 4%	45 6%	43 1%	56.9%	49 0%	51 0%	55 0%	45 0%
Middlesex Water Company	37 5%	62 5%	37 8%	62.2%	41 5%	58 5%	42 5%	57 5%	39 0%	61 0%
SJW Group	48 2%	51 8%	32 7%	67 3%	59 0%	41 0%	51 0%	49 0%	35 5%	64 5%
York Water Company	43 0%	57 0%	42 5%	57 5%	41 3%	58 7%	38 5%	61 5%	36.0%	64.0%
Average	**45.0%**	**55.0%**	**44.8%**	**55.2%**	**48.3%**	**51.7%**	**47.8%**	**52.2%**	**45.9%**	**54.1%**

(a) *The Value Line Investment Survey* (April 10, 2020)

000585

MONARCH UTILITIES I, LP

Description (a)	Amounts (000s)	Costs	Annual Expense
Capital Lease Obligation	391	4 619%	18
5 77% fixed rate term loan due 2022	127	5 770%	7
7 37% fixed rate term loan due 2022	1,797	7 370%	132
6 10% fixed rate term loan due 2031	20,000	6 100%	1,220
Deferred Financing Costs (b)	(124)		11
Totals	**$ 22,191**		**$ 1,389**
AVERAGE COST OF DEBT		**6.26%**	

(a) Monarch Utilities I, LP Audited Financial Statements-- December 31, 2019 and 2018
(b) Company books and records

DCF MODEL -- DIVIDEND YIELD

Company		Expected Dividend (a)	Price (b)	Dividend Yield (c)
American States Water Co.	AWR	$ 1.28	$ 77.38	1.65%
American Water Works Co.	AWK	$ 2.20	$ 120.13	1.83%
California Water Service Group	CWT	$ 0 85	$ 45.06	1.89%
Essential Utilities, Inc.	WTRG	$ 0.98	$ 40.77	2.40%
Middlesex Water Company	MSEX	$ 1 03	$ 62.56	1.65%
SJW Group	SJW	$ 1.28	$ 57.92	2.21%
York Water Company	YORW	$ 0.72	$ 42.20	1 71%
AVERAGE				**1.91%**

(a) *The Value Line Investment Survey* (June 5, 2020).
(b) Fidelity Investments Stock Research "Price History" (Average of daily May 2020 closing prices).
(c) Expected Dividend / Price.

DCF MODEL -- EARNINGS GROWTH RATES

	Projected Growth			Historical Growth	
Company	Value Line (a)	I/B/E/S (b)	Zacks (c)	10-Year (a)	5-Year (a)
American States Water Co	6.5%	N/A	4.9%	9.5%	5.0%
American Water Works Co.	8.5%	8 3%	8.1%	NMF	6.5%
California Water Service Group	6.5%	N/A	N/A	4.5%	4.5%
Essential Utilities, Inc.	10.0%	N/A	5.9%	7.0%	1.5%
Middlesex Water Company	6.0%	N/A	N/A	8.0%	12.0%
SJW Group	6.0%	N/A	14.0%	8.0%	18.5%
York Water Company	7.0%	N/A	N/A	5.5%	6.5%
AVERAGE	**7.2%**	**8.3%**	**8.2%**	**7.1%**	**7.8%**

(a) *The Value Line Investment Survey* (April 10, 2020).
(b) REFINITIV *Stock Reports* (June 5, 2020).
(c) Zacks *Quotes and Research* (Retrieved June 8, 2020)

NMF -- No meaningful figure N/A -- Not applicable.

DCF MODEL -- SUSTAINABLE GROWTH RATES (a)

Company	2023-25 Projected: Earnings per Share	Dividends per Share	Book Value per Share	Price per Share	Shares Outstanding: 2019	Shares Outstanding: Proj 2023-25	Earnings Retention Growth: Retention Ratio	Return on Equity	"b x r"	External Financing Growth: 2023-2025 Market-to-Book Ratio	Growth Rate in Shares	"s"	"v"	"s x v"	Sustainable Growth
American States Water Co	$ 2 90	$ 1 85	$ 21 35	$ 70 00	36 85	37 50	36 2%	13 6%	4 9%	3 28	0 4%	1 1%	69 5%	0 8%	5 7%
American Water Works Co	$ 4 90	$ 2 90	$ 42 50	$ 115 00	180 81	189 00	40 8%	11 5%	4 7%	2 71	0 9%	2 4%	63 0%	1 5%	6 2%
California Water Service Group	$ 2 00	$ 1 05	$ 16 05	$ 45 00	48 53	53 00	47 5%	12 5%	5 9%	2 80	1 8%	5 0%	64 3%	3 2%	9 1%
Essential Utilities, Inc	$ 2 05	$ 1 30	$ 19 55	$ 47 50	220 76	230 00	36 6%	10 5%	3 8%	2 43	0 8%	2 0%	58 8%	1 2%	5 0%
Middlesex Water Company	$ 2 50	$ 1 25	$ 17 35	$ 52 50	17 43	18 00	50 0%	14 4%	7 2%	3 03	0 6%	2 0%	67 0%	1 3%	8 5%
SJW Group	$ 3 65	$ 1 58	$ 39 15	$ 80 00	28 46	30 00	56 7%	9 3%	5 3%	2 04	1 1%	2 2%	51 1%	1 1%	6 4%
York Water Company	$ 1 60	$ 0 95	$ 12 50	$ 37 50	13 01	12 80	40 6%	12 8%	5 2%	3 00	-0 3%	-1 0%	66 7%	-0 6%	4.6%
AVERAGE									5 3%					1.2%	6.5%

(a) *The Value Line Investment Survey* (April 10, 2020)

DCF MODEL -- OTHER PROJECTED AND HISTORICAL GROWTH RATES

	Net Book Value (a)			Dividends per Share (a)			Price per Share		
	Pro-	Historical		Pro-	Historical		Pro-	Historical (b)	
Company	jected	10-Year	5-Year	jected	10-Year	5-Year	jected (a)	10-Year	5-Year
American States Water Co.	5.5%	5.5%	4.0%	9.5%	8.0%	7.5%	-2.5%	15.6%	15 0%
American Water Works Co.	5.0%	2.5%	4.0%	8 5%	16.0%	10 5%	-1.1%	19 1%	17 7%
California Water Service Group	1 0%	4 5%	4.5%	5 5%	2 5%	3 5%	0 0%	9 2%	13.5%
Essential Utilities, Inc	6.5%	8.0%	9.0%	7.5%	7.5%	8.0%	3.9%	11.2%	9 0%
Middlesex Water Company	1.5%	4.5%	6.0%	5.5%	2.5%	4.0%	-4.3%	13.6%	23.2%
SJW Group	6 5%	5 5%	8 0%	7.0%	4.5%	5.0%	8.4%	8.4%	14.2%
York Water Company	4.5%	4.5%	4.0%	5.5%	3.5%	4.0%	-2.9%	12 0%	12 8%
AVERAGE	**4.4%**	**5.0%**	**5.6%**	**7.0%**	**6.4%**	**6.1%**	**0.2%**	**12.7%**	**15.0%**

(a) *The Value Line Investment Survey* (April 10, 2020).
(b) Fidelity Investments Stock Research "Price History" (Average of daily May 2010 and 2015 closing prices)

CAPITAL ASSET PRICING MODEL

	Historical Rates of Return (a)	Forward-Looking Rates of Return (b)
Market Required Rate of Return	11 88%	11 25%
Long-term Government Bond Return (a,c)	4.94%	1 38%
Market Risk Premium (d)	6.94%	9 87%
Water and Sewer Proxy Group Beta (e)	0 77	0 77
Water and Sewer Utility Risk Premium (f)	5 35%	7.62%
Risk-free Rate of Interest (c)	1 38%	1 38%
Theoretical CAPM Cost of Equity Estimate (g)	6 73%	8.99%
Size Premium (e)	1 59%	1 59%
CAPM Cost of Equity Estimates (h)	**8.32%**	**10.58%**

(a) Duff & Phelps, *Summary of Statistics of Annual Total Returns, Income Returns, and Capital Appreciation Returns of Basic U S Asset Classes (1926-2019)*

(b) Calculated by applying DCF model applied to S&P 500 firms paying dividends (May 7, 2020):

Expected Dividend Yield		2 55%
Projected Earnings Growth Rate:		
Value Line	9.53%	
I/B/E/S	7.62%	
Zacks	8.95%	
Average		8.70%
Market Required Rate of Return		11.25%

(c) May 2020 yield on 30-year U S Treasury bonds (Federal Reserve) 1.38%

(d) Market Required Rate of Return minus Long-term Government Bond Return

(e) Schedule BHF-9

(f) Market risk premium times beta

(g) Sum of Risk Premium and Risk-free Rate of Interest

(h) Sum of Unadjusted CAPM Cost of Equity Estimate and Size Premium

BOND RATINGS, BETA, MARKET CAPITALIZATION, AND SIZE PREMIUMS

Risk Measures

Company	Bond Rating Moody's (a)	Bond Rating S&P (b)	Beta (c)	Market-to-Book Ratio (d)	Market Capitalization (millions) (c)	Size Premium
American States Water Co	A2	A+	0 65	4 51	$ 3,100	1 10%
American Water Works Co	Baa1	A	0 85	3 40	$ 22,900	0 50%
California Water Service Group	N/R	A+	0 65	2 87	$ 2,500	1 34%
Essential Utilities, Inc	Baa2	A	0 90	2 35	$ 9,600	0 73%
Middlesex Water Company	N/R	A	0 75	3 87	$ 1,100	1 47%
SJW Group	N/R	A-	0 80	1 74	$ 1,700	1 34%
York Water Company	N/R	A-	0 80	3 77	$ 600	1 59%
PROXY GROUP AVERAGE	**Baa1**	**A**	**0.77**	**3.22**	**$ 5,929**	**1.15%**

CRSP Deciles Size Premiums (e)

Decile	Market Capitalization of Smallest Company (in millions)		Market Capitalization of Largest Company (in millions)	Size Premium (Return in Excess of CAPM)
1-Largest	$ 31,090 379	-	$ 1,061,355 011	-0 28%
2	13,142 606	-	30,542 936	0 50%
3	6,618 604	-	13,100 225	0 73%
4	4,312 546	-	6,614 962	0 79%
5	2,688 889	-	4,311 252	1 10%
6	1,669 856	-	2,685.865	1 34%
7	993 855	-	1,668 282	1 47%
8	515 621	-	993 847	1 59%
9	230 024	-	515 602	2 22%
10- Smallest	1 973	-	229 748	4 99%

(a) Moody's com (June 14, 2020)
(b) StandardandPoors com (Retreived June 14, 2020)
(c) *The Value Line Investment Survey* (June 5, 2020)
(d) Schedule BHF-4 and *The Value Line Investment Survey* (April 10, 2020)
(e) *Duff & Phelps, 2019 CRSP Deciles Size Study -- Supplementary Data Exhibits*

MONARCH UTILITIES I, LP
RETURN ON EQUITY

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COMPARABLE EARNINGS METHOD

Company	Projected Earned Return on Book Equity (a) 2020	2021	2023-25
American States Water Co.	13.4%	13.7%	13 6%
American Water Works Co.	10.7%	11.1%	11.5%
California Water Service Group	9.4%	10.4%	12.5%
Essential Utilities, Inc	8.3%	8.9%	10.5%
Middlesex Water Company	12.1%	13.5%	14.4%
SJW Group	7.3%	7.8%	9.3%
York Water Company	10.7%	10.5%	12.8%
AVERAGE	**10.3%**	**10.8%**	**12.1%**

(a) *The Value Line Investment Survey* (April 10, 2020).

COSERVE GAS, LTD.
CHECK OF REASONABLENESS

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RISK PREMIUM METHOD

Year	Qtr		Allowed ROE (a)	Single-A Utility Bond Yield (b)	Risk Premium
1980	1		13 45%	13 49%	-0 04%
	2		14 38%	12 87%	1 51%
	3		13 87%	12 88%	0 99%
	4		14 35%	14 11%	0 24%
1981	1		14 69%	14 77%	-0 08%
	2		14 61%	15 82%	-1 21%
	3		14 86%	16 65%	-1 79%
	4		15 70%	16 57%	-0 87%
1982	1		15 55%	16 72%	-1 17%
	2		15 62%	16 26%	-0 64%
	3		15 72%	15 88%	-0 16%
	4		15 62%	14 56%	1 06%
1983	1		15 41%	14 15%	1 26%
	2		14 84%	13 58%	1 26%
	3		15 24%	13 52%	1 72%
	4		15 41%	13 38%	2 03%
1984	1		15 39%	13 56%	1 83%
	2		15 07%	14 72%	0 35%
	3		15 37%	14 47%	0 90%
	4		15 33%	13 38%	1 95%
1985	1		15 03%	13 31%	1 72%
	2		15 44%	12 95%	2 49%
	3		14 64%	12 11%	2 53%
	4		14 44%	11 49%	2 95%
1986	1		14 05%	10 18%	3 87%
	2		13 28%	9 41%	3 87%
	3		13 09%	9 39%	3 70%
	4		13 62%	9 31%	4 31%
1987	1		12 61%	8 96%	3 65%
	2		13 13%	9 77%	3 36%
	3		12 56%	10 61%	1 95%
	4		12 73%	11 05%	1 68%
1988	1		12 94%	10 32%	2 62%
	2		12 48%	10 71%	1 77%
	3		12 79%	10 94%	1 85%
	4		12 98%	9 98%	3 00%
1989	1		12 99%	10 13%	2 86%
	2		13 25%	9 94%	3 31%
	3		12 56%	9 53%	3 03%
	4		12 94%	9 50%	3 44%
1990	1		12 60%	9 72%	2 88%
	2		12 81%	9 91%	2 90%
	3		12 34%	9 93%	2 41%
	4		12 77%	9 89%	2 88%
1991	1		12 69%	9 58%	3 11%
	2		12 53%	9 50%	3.03%
	3		12 43%	9 33%	3 10%
	4		12 38%	9 02%	3 36%
1992	1		12 42%	8 91%	3 51%
	2		11 98%	8 86%	3 12%
	3		11 87%	8 47%	3 40%
	4		11 94%	8 53%	3 41%
1993	1		11 75%	8 07%	3 68%
	2		11 71%	7 81%	3 90%
	3		11 39%	7 28%	4 11%
	4		11 15%	7 22%	3 93%
1994	1		11 12%	7 55%	3 57%
	2		10 81%	8 29%	2 52%
	3		10 95%	8 51%	2 44%
	4	(c)	11 64%	8 87%	2 77%
1995	2		11 00%	7 93%	3 07%
	3		11 07%	7 72%	3 35%
	4		11 56%	7 37%	4 19%
1996	1		11 45%	7 44%	4 01%
	2		10 88%	7 98%	2 90%
	3		11.25%	7 96%	3 29%
	4		11 32%	7 62%	3 70%
1997	1		11 31%	7 76%	3 55%
	2		11 70%	7 88%	3 82%
	3		12 00%	7 49%	4 51%
	4	(c)	11 01%	7 25%	3 76%
1998	2		11 37%	7 12%	4 25%
	3		11-41%	6 99%	4 42%
	4		11 69%	6 97%	4 72%
1999	1		10 82%	7 11%	3 71%
	2	(c)	10 82%	7 48%	3 34%
	4		10 33%	8 05%	2 28%
2000	1		10 71%	8 29%	2 42%
	2		11 08%	8 45%	2 63%
	3		11 33%	8 25%	3 08%
	4		12 50%	8 03%	4 47%
2001	1		11 16%	7 74%	3 42%
	2	(c)	10 75%	7 93%	2 82%
	4		10 65%	7 68%	2 97%
2002	1		10 67%	7 65%	3 02%
	2		11 64%	7 50%	4 14%
	3		11 50%	7 19%	4 31%
	4		10 78%	7 15%	3 63%
2003	1		11 38%	6 93%	4 45%
	2		11 36%	6 40%	4 96%
	3		10 61%	6 64%	3 97%
	4		10 84%	6 35%	4 49%
2004	1		11 10%	6 09%	5 01%
	2		10 25%	6 48%	3 77%
	3		10 37%	6 13%	4 24%
	4		10 66%	5 94%	4 72%
2005	1		10 65%	5 74%	4 91%
	2		10 52%	5 52%	5 00%
	3		10 47%	5 51%	4 96%
	4		10 40%	5 82%	4 58%
2006	1		10 63%	5 85%	4 78%
	2		10 50%	6 37%	4 13%
	3		10 45%	6 19%	4 26%
	4		10 14%	5 86%	4 28%
2007	1		10 44%	5 90%	4 54%
	2		10 12%	6 09%	4 03%
	3		10 03%	6 22%	3 81%
	4		10 27%	6 08%	4 19%
2008	1		10 38%	6 15%	4 23%
	2		10 17%	6 32%	3 85%
	3		10 49%	6 42%	4 07%
	4		10 34%	7 23%	3 11%
2009	1		10 24%	6 37%	3 87%
	2		10 11%	6 39%	3 72%
	3		9 88%	5 74%	4 14%
	4		10 27%	5 66%	4 61%
2010	1		10 24%	5 83%	4 41%
	2		9 99%	5 61%	4 38%
	3		9 93%	5 09%	4 84%
	4		10 09%	5 34%	4 75%
2011	1		10 10%	5 60%	4 50%
	2		9 85%	5 38%	4 47%
	3		9 65%	4 81%	4 84%
	4		9 88%	4 37%	5 51%
2012	1		9 63%	4 39%	5 24%
	2		9 83%	4 23%	5 60%
	3		9 75%	3 98%	5 77%
	4		10 07%	3 92%	6 15%
2013	1		9 57%	4 18%	5 39%
	2		9 47%	4 23%	5 24%
	3		9 60%	4 74%	4 86%
	4		9 83%	4 76%	5 07%
2014	1		9 54%	4 56%	4 98%
	2		9 84%	4.32%	5 52%
	3		9 45%	4 20%	5 25%
	4		10 28%	4 03%	6 25%
2015	1		9 47%	3 66%	5 81%
	2		9 43%	4 10%	5 33%
	3		9 75%	4 35%	5 40%
	4		9 68%	4 35%	5 33%
2016	1		9 48%	4 18%	5 30%
	2		9 42%	3 90%	5 52%
	3		9 47%	3 61%	5 86%
	4		9 60%	4 04%	5 56%
2017	1		9 60%	4 18%	5 42%
	2		9 47%	4 06%	5 41%
	3		10 14%	3 91%	6 23%
	4		9 68%	3 84%	5 84%
2018	1		9 68%	4 03%	5 65%
	2		9 43%	4 24%	5 19%
	3		9 69%	4 28%	5 41%
	4		9 53%	4 45%	5 08%
2019	1		9 55%	4 25%	5 30%
	2		9 73%	3 96%	5 77%
	3		9 80%	3 45%	6 35%
	4		9 73%	3 40%	6 33%
2020	1		9 35%	3 30%	6 05%
Average			**11.54%**	**7.90%**	**3 65%**

Unadusted

Risk Premium = Intercept + (Slope X Interest Rate) (d)

RP	=	0 07371	+	-0 47149 X	3 14%
RP	=	0 07371	+	-0 01480	
RP	=	**5.89%**			

Adjusted (Using Iterative Prais-Winsten algorithm)

Risk Premium = Intercept + (Slope X Interest Rate) (d)

RP	=	0 07696	+	-0 51387 X	3 14%
RP	=	0 07696	+	-0 01614	
RP	=	**6.08%**			

(a) Regulatory Research Associates, Inc , Major Rate Case Decisions, (April 20, 2020, January 24, 2002, January 18, 1995, and January 16, 1990)
(b) Mergent Public Utility Manual (2003), Mergent Bond Record (September 2005), Moody's Credit Perspectives (Various Editions)
(c) No decisions reported for following quarter
(d) Moody's Investor Services single-A utility bond yield for May 2020

RISK PREMIUM METHOD -- ELECTRIC UTILITIES

Year	Qtr	Allowed ROE (a)	Single-A Utility Bond Yield (b)	Risk Premium	Year	Qtr	Allowed ROE (a)	Single-A Utility Bond Yield (b)	Risk Premium
1980	1	13 97%	13 49%	0 48%	2000	1	11 06%	8 29%	2 77%
	2	14 25%	12 87%	1 38%		2	11 11%	8 45%	2 66%
	3	14 30%	12 88%	1 42%		3	11 68%	8 25%	3 43%
	4	14 32%	14 11%	0 21%		4	12 08%	8 03%	4 05%
1981	1	14 87%	14 77%	0 10%	2001	1	11 38%	7 74%	3 64%
	2	15 03%	15 82%	-0 79%		2	10 88%	7 93%	2 95%
	3	15 31%	16 65%	-1 34%		3	10 78%	7 71%	3 07%
	4	15 58%	16 57%	-0 99%		4	11 50%	7 68%	3 82%
1982	1	15 71%	16 72%	-1 01%	2002	1	10 87%	7 65%	3 22%
	2	15 60%	16 26%	-0 66%		2	11 41%	7 50%	3 91%
	3	15 83%	15 88%	-0 05%		3	11 06%	7 19%	3 87%
	4	15 97%	14 56%	1 41%		4	11 20%	7 15%	4 05%
1983	1	15 53%	14 15%	1 38%	2003	1	11 47%	6 93%	4 54%
	2	15 10%	13 58%	1 52%		2	11 16%	6 40%	4 76%
	3	15 39%	13 52%	1 87%		3	9 95%	6 64%	3 31%
	4	15 35%	13 38%	1 97%		4	11 09%	6 35%	4 74%
1984	1	15 08%	13 56%	1 52%	2004	1	11 00%	6 09%	4 91%
	2	15 07%	14 72%	0 35%		2	10 54%	6 48%	4 06%
	3	15 38%	14 47%	0 91%		3	10 33%	6 13%	4 20%
	4	15 69%	13 38%	2 31%		4	10 91%	5 94%	4 97%
1985	1	15 51%	13 31%	2 20%	2005	1	10 51%	5 74%	4 77%
	2	15 27%	12 95%	2 32%		2	10 05%	5 52%	4 53%
	3	14 91%	12 11%	2 80%		3	10 84%	5 51%	5 33%
	4	15 11%	11 49%	3 62%		4	10 75%	5 82%	4 93%
1986	1	14 35%	10 18%	4 17%	2006	1	10.38%	5 85%	4 53%
	2	14 27%	9 41%	4 86%		2	10 68%	6 37%	4 31%
	3	13 18%	9 39%	3 79%		3	10 06%	6 19%	3 87%
	4	13 52%	9 31%	4 21%		4	10 39%	5 86%	4 53%
1987	1	12 92%	8 96%	3 96%	2007	1	10 27%	5 90%	4 37%
	2	13 15%	9 77%	3 38%		2	10 27%	6 09%	4 18%
	3	13 17%	10 61%	2 56%		3	10 02%	6 22%	3 80%
	4	12 79%	11 05%	1.74%		4	10 56%	6 08%	4 48%
1988	1	12 74%	10 32%	2 42%	2008	1	10 45%	6 15%	4 30%
	2	12 70%	10 71%	1 99%		2	10 57%	6 32%	4.25%
	3	12 68%	10 94%	1 74%		3	10 47%	6 42%	4 05%
	4	12 98%	9 98%	3 00%		4	10 33%	7.23%	3 10%
1989	1	13 04%	10 13%	2 91%	2009	1	10 29%	6 37%	3 92%
	2	13 22%	9 94%	3 28%		2	10 55%	6 39%	4 16%
	3	12 38%	9 53%	2 85%		3	10 46%	5 74%	4 72%
	4	12 84%	9 50%	3 34%		4	10 54%	5 66%	4 88%
1990	1	12 67%	9 72%	2 95%	2010	1	10 66%	5 83%	4 83%
	2	12 85%	9 91%	2 94%		2	10 08%	5 61%	4 47%
	3	12 54%	9 93%	2 61%		3	10 26%	5 09%	5 17%
	4	12 69%	9 89%	2 80%		4	10 30%	5 34%	4 96%
1991	1	12 67%	9 58%	3 09%	2011	1	10 32%	5 60%	4 72%
	2	12 67%	9 50%	3 17%		2	10 23%	5 38%	4 85%
	3	12 49%	9 33%	3 16%		3	10 36%	4 81%	5 55%
	4	12 45%	9 02%	3 43%		4	10 29%	4 37%	5 92%
1992	1	12 37%	8 91%	3 46%	2012	1	10 84%	4 39%	6 45%
	2	11 83%	8 86%	2 97%		2	9 92%	4 23%	5 69%
	3	12 03%	8 47%	3 56%		3	9 78%	3 98%	5 80%
	4	12 12%	8 53%	3 59%		4	10.05%	3 92%	6 13%
1993	1	11 84%	8 07%	3 77%	2013	1	10.24%	4 18%	6 06%
	2	11 64%	7 81%	3 83%		2	9 84%	4 23%	5 61%
	3	11 15%	7 28%	3 87%		3	10 06%	4 74%	5 32%
	4	11 07%	7 22%	3 85%		4	9 90%	4 76%	5 14%
1994	1	11 20%	7 55%	3 65%	2014	1	10 23%	4 56%	5 67%
	2	11 13%	8 29%	2 84%		2	9 83%	4 32%	5 51%
	3	12 75%	8 51%	4 24%		3	9 90%	4 20%	5 70%
	4	11 41%	8 87%	2 54%		4	9 78%	4 03%	5 75%
1995	1	11 96%	7 93%	4 03%	2015	1	10 37%	3 66%	6 71%
	2	11 36%	7 72%	3 64%		2	9 73%	4 10%	5 63%
	3	11 33%	7 37%	3 96%		3	9 40%	4 35%	5 05%
	4	11 53%	7 44%	4 09%		4	9 62%	4 35%	5 27%
1996	1	11 28%	7 98%	3 30%	2016	1	10 29%	4 18%	6 11%
	2	11 46%	7 96%	3 50%		2	9 60%	3 90%	5 70%
	3	10 76%	7 62%	3 14%		3	9 76%	3 61%	6 15%
	4	11 58%	7 76%	3 82%		4	9 57%	4 04%	5 53%
1997	1	11 30%	7 88%	3 42%	2017	1	9 87%	4 18%	5 69%
	2	11 62%	7 49%	4 13%		2	9 63%	4 06%	5 57%
	3	12 00%	7 49%	4 51%		3	9 66%	3 91%	5 75%
	4	11 11%	7 25%	3 86%		4	9 74%	3 84%	5 90%
1998	1	11 31%	7 11%	4.20%	2018	1	9 75%	4 03%	5 72%
	2	12 20%	7 12%	5 08%		2	9 54%	4 24%	5 30%
	3	11 80%	6 99%	4 81%		3	9 67%	4 28%	5 39%
	4	11 83%	6 97%	4 86%		4	9 42%	4 45%	4 97%
1999	1	10 58%	7 11%	3 47%	2019	1	9 73%	4 25%	5 48%
	2	10 94%	7 48%	3 46%		2	9 58%	3 96%	5 62%
	3	10 63%	7 85%	2 78%		3	9 55%	3 45%	6 10%
	4	11 08%	8 05%	3 03%		4	9 65%	3 40%	6 25%
					2020	1	9 58%	3 30%	6 28%
					Average		**11.68%**	**7 89%**	**3 79%**

Unadusted:

Risk Premium = Intercept + (Slope X Interest Rate) (c)

RP	=	0 07515	+	-0 47245 X	3 14%
RP	=	0 07515	+	-0 01483	
RP	=	**6.03%**			

Adjusted (Usmg Iterative Prais-Winsten algorithm).

Risk Premium = Intercept + (Slope X Interest Rate) (c)

RP	=	0 07755	+	-0 50322 X	3 14%
RP	=	0 07755	+	-0 01580	
RP	=	**6 17%**			

(a) Regulatory Research Associates, Inc , Major Rate Case Decisions, (April 20, 2020, January 24, 2002, January 18, 1995, and January 16, 1990)
(b) Mergent Public Utility Manual (2003), Mergent-Bond Record (September 2005) Moody's Credit Perspectives (Various Editions)
(c) Moody s Investor Services for May 2020

WORKPAPER -- STOCK PRICES

		May 2020	May 2015	May 2010
American States Water Co.	AWR	77.38	38.55	18.22
American Water Works Co	AWK	120.13	53.22	21.00
California Water Service Group	CWT	45.06	23.92	18.71
Essential Utilities, Inc.	WTRG	40.77	26.51	14 13
Middlesex Water Company	MSEX	62.56	22.03	17.49
SJW Group	SJW	57.92	29.85	25.79
York Water Company	YORW	42.20	23.11	13 64

1	2	3	4	5			8	9	10	11	12	13	14	15	16	17	18	19
				EPS Growth Rates			Market	Weighted			Weighted			Weighted			Weighted	
			Dividend				Cap	Dividend Yield			IBES			Zacks			Value Line	
	Company	Ticker	Yield	IBES	Zacks	VL	($Billions)	Weight	Product	Mkt Cap	Weight	Product	Mkt Cap	Weight	Product	Mkt Cap	Weight	Product
				5 37%					2.55%			7 62%			8.95%			9.53%
	(a)		(b)	(c)	(d)	(b)	(b)											
1	Agilent Technologies Inc	A	0 92%	8 37%	n/a	10 50%	24 40	0 001240	0 000011	24 40	0 001254	0 000105	--	--	--	24 40	0 001268	0 000133
2	American Airlines Group Inc	AAL	3 17%	4 43%	5 75%	6 50%	5 41	0 000275	0 000009	5 41	0 000278	0 000012	5 41	0 000287	0 000016	5 41	0 000281	0 000018
3	Advance Auto Parts Inc	AAP	0 80%	7 00%	10 52%	11 00%	8 65	0 000439	0 000004	8 65	0 000444	0 000031	8 65	0 000458	0 000048	8 65	0 000449	0 000049
4	Apple Inc	AAPL	1 14%	11 47%	10 67%	14 00%	1,261 68	0 064117	0 000731	1,261 68	0 064812	0 007434	1,261 68	0 066884	0 007136	1,261 68	0 065556	0 009178
5	AbbVie Inc	ABBV	5 64%	4 87%	3 50%	8 00%	123 87	0 006295	0 000355	123 87	0 006363	0 000310	123 87	0 006567	0 000230	123 87	0 006436	0 000515
6	AmerisourceBergen Corporation	ABC	1 88%	8 27%	7 53%	7 50%	18 38	0 000934	0 000018	18 38	0 000944	0 000078	18 38	0 000975	0 000073	18 38	0 000955	0 000072
7	Abbott Laboratories	ABT	1 56%	10 50%	8 07%	10 50%	163 23	0 008295	0 000129	163 23	0 008385	0 000880	163 23	0 008653	0 000698	163 23	0 008481	0 000891
8	Accenture PLC	ACN	1 74%	7 36%	10 00%	7 50%	119 63	0 006079	0 000106	119 63	0 006145	0 000452	119 63	0 006342	0 000634	119 63	0 006216	0 000466
9	Analog Devices Inc	ADI	2 19%	6 95%	12 50%	7 00%	41 73	0 002121	0 000046	41 73	0 002144	0 000149	41 73	0 002212	0 000277	41 73	0 002168	0 000152
10	Archer Daniels Midland Company	ADM	3 75%	-8 80%	n/a	9 00%	21 39	0 001087	0 000041	21 39	0 001099	(0 000097)	--	--	--	21 39	0 001112	0 000100
11	Automatic Data Processing Inc	ADP	2 60%	12 20%	12 00%	12 00%	62 97	0 003200	0 000083	62 97	0 003235	0 000395	62 97	0 003338	0 000401	62 97	0 003272	0 000393
12	Alliance Data Systems Corporation	ADS	1 53%	5 60%	7 14%	8 00%	2 62	0 000133	0 000002	2 62	0 000134	0 000008	2 62	0 000139	0 000010	2 62	0 000136	0 000011
13	Ameren Corporation	AEE	2 72%	6 50%	6 75%	6 00%	18 37	0 000934	0 000025	18 37	0 000944	0 000061	18 37	0 000974	0 000066	18 37	0 000955	0 000057
14	American Electric Power Company Inc	AEP	3 46%	6 00%	5 78%	5 00%	41 08	0 002088	0 000072	41 08	0 002110	0 000127	41 08	0 002178	0 000126	41 08	0 002134	0 000107
15	The AES Corporation	AES	3 98%	7 70%	7 72%	n/a	9 51	0 000483	0 000019	9 51	0 000488	0 000038	9 51	0 000504	0 000039	--	--	--
16	Aflac Incorporated	AFL	2 88%	2 18%	5 00%	7 00%	28 48	0 001447	0 000042	28 48	0 001463	0 000032	28 48	0 001510	0 000075	28 48	0 001480	0 000104
17	Allergan plc	AGN	1 56%	3 15%	7 07%	2 50%	62 11	0 003156	0 000049	62 11	0 003190	0 000100	62 11	0 003292	0 000233	62 11	0 003227	0 000081
18	American International Group Inc	AIG	4 70%	3 23%	n/a	28 50%	23 69	0 001204	0 000057	23 69	0 001217	0 000039	--	--	--	23 69	0 001231	0 000351
19	Apartment Investment and Management Compan	AIV	4 32%	7 10%	4 51%	-1 50%	5 80	0 000295	0 000013	5 80	0 000298	0 000021	5 80	0 000307	0 000014	5 80	0 000301	(0 000005)
20	Assurant Inc	AIZ	2 30%	19 40%	n/a	11 50%	6 58	0 000334	0 000008	6 58	0 000338	0 000066	--	--	--	6 58	0 000342	0 000039
21	Arthur J Gallagher Co	AJG	2 26%	6 29%	10 88%	13 50%	14 99	0 000762	0 000017	14 99	0 000770	0 000048	14 99	0 000794	0 000086	14 99	0 000779	0 000105
22	Albemarle Corporation	ALB	2 38%	15 00%	9 53%	4 00%	6 86	0 000348	0 000008	6 86	0 000352	0 000053	6 86	0 000364	0 000035	6 86	0 000356	0 000014
23	The Allstate Corporation	ALL	2 04%	-0 74%	7 50%	9 00%	33 76	0 001715	0 000035	33 76	0 001734	(0 000013)	33 76	0 001789	0 000134	33 76	0 001754	0 000158
24	Allegion PLC	ALLE	1 25%	3 56%	6 10%	9 00%	9 49	0 000482	0 000006	9 49	0 000488	0 000017	9 49	0 000503	0 000031	9 49	0 000493	0 000044
25	Applied Materials Inc	AMAT	1 62%	19 10%	10 85%	7 50%	49 90	0 002536	0 000041	49 90	0 002563	0 000490	49 90	0 002645	0 000287	49 90	0 002593	0 000194
26	Amcor PLC	AMCR	5 20%	2 06%	n/a	n/a	14 96	0 000760	0 000040	14 96	0 000768	0 000016	--	--	--	--	--	--
27	AMETEK Inc	AME	0 85%	-1 20%	8 16%	12 50%	19 36	0 000984	0 000008	19 36	0 000994	(0 000012)	19 36	0 001026	0 000084	19 36	0 001006	0 000126
28	Amgen Inc	AMGN	2 78%	5 94%	7 53%	6 50%	139 39	0 007084	0 000197	139 39	0 007160	0 000425	139 39	0 007389	0 000556	139 39	0 007242	0 000471
29	Ameriprise Financial Inc	AMP	3 29%	11 56%	n/a	11 00%	14 63	0 000743	0 000024	14 63	0 000751	0 000087	--	--	--	14 63	0 000760	0 000084
30	American Tower Corporation REIT	AMT	1 93%	20 45%	14 71%	11 50%	104 99	0 005335	0 000103	104 99	0 005393	0 001103	104 99	0 005565	0 000819	104 99	0 005455	0 000627
31	Anthem Inc	ANTM	1 35%	14 33%	14 64%	14 00%	70 72	0 003594	0 000049	70 72	0 003633	0 000521	70 72	0 003749	0 000549	70 72	0 003674	0 000514
32	Aon plc	AON	1 06%	11 89%	n/a	7 50%	39 60	0 002012	0 000021	39 60	0 002034	0 000242	--	--	--	39 60	0 002057	0 000154
33	A O Smith Corporation	AOS	2 18%	8 00%	8 00%	6 00%	7 15	0 000364	0 000008	7 15	0 000368	0 000029	7 15	0 000379	0 000030	7 15	0 000372	0 000022
34	Apache Corporation	APA	0 77%	-20 95%	n/a	13 50%	4 91	0 000249	0 000002	4 91	0 000252	(0 000053)	--	--	--	4 91	0 000255	0 000034
35	Air Products and Chemicals Inc	APD	2 32%	10 39%	9 45%	12 00%	50 90	0 002587	0 000060	50 90	0 002615	0 000272	50 90	0 002698	0 000255	50 90	0 002645	0 000317
36	Amphenol Corporation	APH	1 09%	2 90%	8 95%	9 00%	27 27	0 001386	0 000015	27 27	0 001401	0 000041	27 27	0 001446	0 000129	27 27	0 001417	0 000128
37	Aptiv PLC	APTV	0 00%	8 59%	10 94%	9 50%	n/a	--	--	--	--	--	--	--	--	--	--	--
38	Alexandria Real Estate Equities Inc	ARE	2 64%	0 10%	3 33%	16 50%	17 36	0 000882	0 000023	17 36	0 000892	0 000001	17 36	0 000920	0 000031	17 36	0 000902	0 000149
39	Atmos Energy Corporation	ATO	2 27%	7 50%	7 15%	7 00%	12 82	0 000652	0 000015	12 82	0 000659	0 000049	12 82	0 000680	0 000049	12 82	0 000666	0 000047
40	Activision Blizzard Inc	ATVI	0 63%	11 78%	12 22%	8 00%	49 81	0 002531	0 000016	49 81	0 002559	0 000301	49 81	0 002640	0 000323	49 81	0 002588	0 000207
41	AvalonBay Communities Inc	AVB	3 88%	2 54%	4 66%	2 50%	23 32	0 001185	0 000046	23 32	0 001198	0 000030	23 32	0 001236	0 000058	23 32	0 001212	0 000030
42	Broadcom Inc	AVGO	4 71%	12 35%	11 56%	17 00%	110 13	0 005597	0 000264	110 13	0 005657	0 000699	110 13	0 005838	0 000675	110 13	0 005722	0 000973
43	Avery Dennison Corporation	AVY	2 17%	8 55%	6 80%	9 50%	9 54	0 000485	0 000011	9 54	0 000490	0 000042	9 54	0 000506	0 000034	9 54	0 000496	0 000047
44	American Water Works Company Inc	AWK	1 69%	8 20%	8 08%	8 50%	22 73	0 001155	0 000020	22 73	0 001168	0 000096	22 73	0 001205	0 000097	22 73	0 001181	0 000100
45	American Express Company	AXP	1 79%	5 99%	12 49%	7 50%	77 38	0 003932	0 000070	77 38	0 003975	0 000238	77 38	0 004102	0 000512	77 38	0 004020	0 000302
46	Bank of America Corporation	BAC	2 91%	5 12%	7 00%	5 00%	218 96	0 011127	0 000324	218 96	0 011248	0 000576	218 96	0 011607	0 000813	218 96	0 011377	0 000569
47	Baxter International Inc	BAX	0 96%	11 00%	11 00%	10 50%	46 31	0 002353	0 000023	46 31	0 002379	0 000262	46 31	0 002455	0 000270	46 31	0 002406	0 000253
48	Best Buy Co Inc	BBY	2 75%	7 95%	7 63%	9 00%	20 81	0 001058	0 000029	20 81	0 001069	0 000085	20 81	0 001103	0 000084	20 81	0 001081	0 000097
49	Becton Dickinson and Company	BDX	1 23%	7 90%	9 17%	9 00%	69 92	0 003553	0 000044	69 92	0 003592	0 000284	69 92	0 003707	0 000340	69 92	0 003633	0 000327
50	Franklin Resources Inc	BEN	5 95%	-8 94%	n/a	6 50%	9 20	0 000468	0 000028	9 20	0 000473	(0 000042)	--	--	--	9 20	0 000478	0 000031
51	BrownForman Corporation	BF B	1 11%	3 45%	n/a	11 00%	30 19	0 001534	0 000017	30 19	0 001551	0 000053	--	--	--	30 19	0 001568	0 000173
52	The Bank of New York Mellon Corporation	BK	3 26%	2 48%	7 33%	3 00%	34 24	0 001740	0 000057	34 24	0 001759	0 000044	34 24	0 001815	0 000133	34 24	0 001779	0 000053
53	Baker Hughes Company	BKR	4 86%	28 16%	8 00%	45 50%	9 63	0 000489	0 000024	9 63	0 000495	0 000139	9 63	0 000510	0 000041	9 63	0 000500	0 000228
54	BlackRock Inc	BLK	2 84%	2 39%	11 68%	7 00%	78 95	0 004012	0 000114	78 95	0 004055	0 000097	78 95	0 004185	0 000489	78 95	0 004102	0 000287
55	Ball Corporation	BLL	0 90%	11 79%	5 00%	21 00%	21 69	0 001102	0 000010	21 69	0 001114	0 000131	21 69	0 001150	0 000057	21 69	0 001127	0 000237
56	BristolMyers Squibb Company	BMY	2 92%	12 15%	8 56%	9 50%	138 73	0 007050	0 000206	138 73	0 007126	0 000866	138 73	0 007354	0 000630	138 73	0 007208	0 000685
57	Broadridge Financial Solutions Inc	BR	2 03%	10 00%	n/a	11 00%	13 26	0 000674	0 000014	13 26	0 000681	0 000068	--	--	--	13 26	0 000689	0 000076
58	BorgWarner Inc	BWA	2 29%	2 91%	5 30%	6 00%	6 12	0 000311	0 000007	6 12	0 000315	0 000009	6 12	0 000325	0 000017	6 12	0 000318	0 000019
59	Boston Properties Inc	BXP	4 05%	7 00%	3 29%	3 50%	15 18	0 000771	0 000031	15 18	0 000780	0 000055	15.18	0 000804	0 000026	15 18	0 000788	0 000028
60	Citigroup Inc	C	4 06%	-10 19%	10 50%	3 50%	106 26	0 005400	0 000219	106 26	0 005458	(0 000556)	106 26	0 005633	0 000591	106 26	0 005521	0 000193
61	Conagra Brands Inc	CAG	2 54%	8 67%	7 00%	5 00%	16 66	0 000847	0 000022	16 66	0 000856	0 000074	16 66	0 000883	0 000062	16 66	0 000866	0 000043
62	Cardinal Health Inc	CAH	3 76%	4 72%	4 35%	11 00%	15 00	0 000762	0 000029	15 00	0 000770	0 000036	15 00	0 000795	0 000035	15 00	0 000779	0 000086
63	Caterpillar Inc	CAT	3 43%	-2 97%	9 67%	10 50%	66 04	0 003356	0 000115	66 04	0 003393	(0 000101)	66 04	0 003501	0 000339	66 04	0 003432	0 000360
64	Chubb Limited	CB	2 68%	0 43%	10 00%	9 00%	50 65	0 002574	0 000069	50 65	0 002602	0 000011	50 65	0 002685	0 000269	50 65	0 002632	0 000237

	Company	Ticker	Dividend Yield	EPS Growth Rates IBES	Zacks	VL	Market Cap ($Billions)	Weighted Dividend Yield Weight	Weighted Dividend Yield Product	Weighted IBES Mkt Cap	Weighted IBES Weight	Weighted IBES Product	Weighted Zacks Mkt Cap.	Weighted Zacks Weight	Weighted Zacks Product	Weighted Value Line Mkt. Cap	Weighted Value Line Weight	Weighted Value Line Product
			5.37%						2.55%			7.62%			8.95%			9.53%
	(a)		(b)	(c)	(d)	(b)	(b)											
65	Cboe Global Markets Inc	CBOE	1.45%	3.04%	2.60%	12.50%	10.99	0.000559	0.000008	10.99	0.000565	0.000017	10.99	0.000583	0.000015	10.99	0.000571	0.000071
66	Crown Castle International Corporation	CCI	3.19%	21.00%	15.50%	15.50%	64.66	0.003286	0.000105	64.66	0.003322	0.000698	64.66	0.003428	0.000531	64.66	0.003360	0.000521
67	Carnival Corporation	CCL	0.00%	-4.35%	n/a	-2.50%	n/a	--	--	--	--	--	--	--	--	--	--	--
68	CDW Corporation	CDW	1.37%	9.22%	13.10%	11.00%	15.91	0.000809	0.000011	15.91	0.000818	0.000075	15.91	0.000844	0.000111	15.91	0.000827	0.000091
69	Celanese Corporation	CE	2.87%	4.60%	4.22%	7.00%	10.21	0.000519	0.000015	10.21	0.000524	0.000024	10.21	0.000541	0.000023	10.21	0.000530	0.000037
70	Cerner Corporation	CERN	1.01%	14.90%	13.36%	9.50%	21.61	0.001098	0.000011	21.61	0.001110	0.000165	21.61	0.001145	0.000153	21.61	0.001123	0.000107
71	CF Industries Holdings Inc	CF	4.24%	-3.54%	6.00%	29.50%	6.27	0.000318	0.000014	6.27	0.000322	(0.000011)	6.27	0.000332	0.000020	6.27	0.000326	0.000096
72	Citizens Financial Group Inc	CFG	6.69%	5.72%	5.74%	1.50%	10.10	0.000514	0.000034	10.10	0.000519	0.000030	10.10	0.000536	0.000031	10.10	0.000525	0.000008
73	Church Dwight Co Inc	CHD	1.40%	7.90%	8.21%	7.50%	16.78	0.000853	0.000012	16.78	0.000862	0.000068	16.78	0.000889	0.000073	16.78	0.000872	0.000065
74	CH Robinson Worldwide Inc	CHRW	2.86%	10.00%	9.00%	8.00%	9.61	0.000489	0.000014	9.61	0.000494	0.000049	9.61	0.000510	0.000046	9.61	0.000499	0.000040
75	Cigna Corporation	CI	0.02%	12.59%	11.09%	14.00%	73.14	0.003717	0.000001	73.14	0.003757	0.000473	73.14	0.003877	0.000430	73.14	0.003800	0.000532
76	Cincinnati Financial Corporation	CINF	3.41%	-6.00%	n/a	11.00%	11.47	0.000583	0.000020	11.47	0.000589	(0.000035)	--	--	--	11.47	0.000596	0.000066
77	ColgatePalmolive Company	CL	2.51%	5.24%	5.30%	5.50%	59.97	0.003047	0.000076	59.97	0.003080	0.000161	59.97	0.003179	0.000168	59.97	0.003116	0.000171
78	The Clorox Company	CLX	2.31%	4.28%	5.51%	2.50%	23.00	0.001169	0.000027	23.00	0.001181	0.000051	23.00	0.001219	0.000067	23.00	0.001195	0.000030
79	Comerica Incorporated	CMA	7.26%	3.60%	15.36%	8.00%	5.21	0.000265	0.000019	5.21	0.000268	0.000010	5.21	0.000276	0.000042	5.21	0.000271	0.000022
80	Comcast Corporation	CMCSA	2.36%	7.41%	9.40%	9.50%	177.57	0.009024	0.000213	177.57	0.009122	0.000676	177.57	0.009413	0.000885	177.57	0.009226	0.000876
81	CME Group Inc	CME	1.87%	5.13%	5.39%	2.50%	64.87	0.003297	0.000062	64.87	0.003332	0.000171	64.87	0.003439	0.000185	64.87	0.003371	0.000084
82	Cummins Inc	CMI	3.17%	-7.37%	6.50%	7.00%	24.37	0.001238	0.000039	24.37	0.001252	(0.000092)	24.37	0.001292	0.000084	24.37	0.001266	0.000089
83	CMS Energy Corporation	CMS	2.90%	7.29%	6.95%	7.50%	16.39	0.000833	0.000024	16.39	0.000842	0.000061	16.39	0.000869	0.000060	16.39	0.000851	0.000064
84	CenterPoint Energy Inc	CNP	3.39%	-5.96%	5.00%	6.50%	8.88	0.000452	0.000015	8.88	0.000456	(0.000027)	8.88	0.000471	0.000024	8.88	0.000462	0.000030
85	Capital One Financial Corporation	COF	2.29%	8.00%	9.00%	-0.50%	31.85	0.001618	0.000037	31.85	0.001636	0.000131	31.85	0.001688	0.000152	31.85	0.001655	(0.000008)
86	Cabot Oil Gas Corporation	COG	1.93%	25.68%	n/a	40.50%	8.26	0.000420	0.000008	8.26	0.000425	0.000109	--	--	--	8.26	0.000429	0.000174
87	The Cooper Companies Inc	COO	0.02%	10.00%	11.00%	11.00%	14.36	0.000730	0.000000	14.36	0.000738	0.000074	14.36	0.000761	0.000084	14.36	0.000746	0.000082
88	ConocoPhillips	COP	3.98%	-1.63%	6.00%	10.50%	45.79	0.002327	0.000093	45.79	0.002352	(0.000038)	45.79	0.002428	0.000146	45.79	0.002379	0.000250
89	Costco Wholesale Corporation	COST	0.93%	6.56%	8.64%	10.00%	135.62	0.006892	0.000064	135.62	0.006967	0.000457	135.62	0.007189	0.000621	135.62	0.007047	0.000705
90	Coty Inc	COTY	9.16%	7.60%	8.05%	4.50%	4.15	0.000211	0.000019	4.15	0.000213	0.000016	4.15	0.000220	0.000018	4.15	0.000216	0.000010
91	Campbell Soup Company	CPB	2.79%	2.75%	7.16%	1.50%	16.21	0.000824	0.000023	16.21	0.000833	0.000023	16.21	0.000859	0.000062	16.21	0.000842	0.000013
92	Cisco Systems Inc	CSCO	3.32%	5.34%	5.40%	7.00%	183.80	0.009341	0.000310	183.80	0.009442	0.000504	183.80	0.009744	0.000526	183.80	0.009550	0.000669
93	CSX Corporation	CSX	1.53%	5.35%	7.79%	12.00%	52.17	0.002651	0.000041	52.17	0.002680	0.000143	52.17	0.002765	0.000215	52.17	0.002711	0.000325
94	Cintas Corporation	CTAS	1.26%	8.80%	10.44%	15.00%	24.03	0.001221	0.000015	24.03	0.001234	0.000109	24.03	0.001274	0.000133	24.03	0.001248	0.000187
95	CenturyLink Inc	CTL	9.07%	6.00%	5.99%	2.50%	12.01	0.000610	0.000055	12.01	0.000617	0.000037	12.01	0.000637	0.000038	12.01	0.000624	0.000016
96	Cognizant Technology Solutions Corporation	CTSH	1.49%	5.64%	11.33%	4.00%	32.46	0.001649	0.000025	32.46	0.001667	0.000094	32.46	0.001721	0.000195	32.46	0.001686	0.000067
97	Corteva Inc	CTVA	2.00%	12.72%	10.07%	n/a	20.25	0.001029	0.000021	20.25	0.001040	0.000132	20.25	0.001073	0.000108	--	--	--
98	Citrix Systems Inc	CTXS	1.00%	6.40%	7.85%	9.00%	18.21	0.000925	0.000009	18.21	0.000935	0.000060	18.21	0.000965	0.000076	18.21	0.000946	0.000085
99	CVS Health Corporation	CVS	3.19%	5.82%	6.32%	6.00%	81.52	0.004143	0.000132	81.52	0.004188	0.000244	81.52	0.004321	0.000273	81.52	0.004236	0.000254
100	Chevron Corporation	CVX	5.45%	5.50%	5.00%	13.50%	178.09	0.009050	0.000493	178.09	0.009148	0.000503	178.09	0.009441	0.000472	178.09	0.009253	0.001249
101	Concho Resources Inc	CXO	1.35%	5.54%	4.38%	18.00%	11.92	0.000606	0.000008	11.92	0.000612	0.000034	11.92	0.000632	0.000028	11.92	0.000619	0.000111
102	Dominion Energy Inc	D	4.78%	4.88%	4.68%	7.00%	65.93	0.003350	0.000160	65.93	0.003387	0.000165	65.93	0.003495	0.000164	65.93	0.003425	0.000240
103	DuPont de Nemours Inc	DD	2.55%	2.07%	4.72%	n/a	35.58	0.001808	0.000046	35.58	0.001828	0.000038	35.58	0.001886	0.000089	--	--	--
104	Deere Company	DE	2.07%	3.07%	7.00%	10.00%	46.13	0.002344	0.000049	46.13	0.002370	0.000073	46.13	0.002446	0.000171	46.13	0.002397	0.000240
105	Discover Financial Services	DFS	3.83%	-7.42%	6.06%	4.50%	14.24	0.000724	0.000028	14.24	0.000731	(0.000054)	14.24	0.000755	0.000046	14.24	0.000740	0.000033
106	Dollar General Corporation	DG	0.82%	10.89%	12.22%	11.50%	44.04	0.002238	0.000018	44.04	0.002262	0.000246	44.04	0.002335	0.000285	44.04	0.002288	0.000263
107	Quest Diagnostics Incorporated	DGX	1.97%	4.78%	6.57%	9.00%	15.10	0.000767	0.000015	15.10	0.000776	0.000037	15.10	0.000801	0.000053	15.10	0.000785	0.000071
108	DR Horton Inc	DHI	1.44%	9.90%	9.98%	7.00%	17.65	0.000897	0.000013	17.65	0.000907	0.000090	17.65	0.000936	0.000093	17.65	0.000917	0.000064
109	Danaher Corporation	DHR	0.44%	12.42%	12.66%	15.00%	114.74	0.005831	0.000026	114.74	0.005894	0.000732	114.74	0.006082	0.000770	114.74	0.005962	0.000894
110	The Walt Disney Company	DIS	1.57%	2.51%	5.09%	5.50%	199.92	0.010160	0.000160	199.92	0.010270	0.000258	199.92	0.010598	0.000539	199.92	0.010387	0.000571
111	Digital Realty Trust Inc	DLR	3.02%	16.66%	6.59%	6.00%	30.68	0.001559	0.000047	30.68	0.001576	0.000263	30.68	0.001626	0.000107	30.68	0.001594	0.000096
112	Dover Corporation	DOV	2.04%	7.20%	11.50%	9.50%	13.86	0.000705	0.000014	13.86	0.000712	0.000051	13.86	0.000735	0.000085	13.86	0.000720	0.000068
113	Dow Inc	DOW	7.61%	-0.96%	3.33%	n/a	27.78	0.001412	0.000107	27.78	0.001427	(0.000014)	27.78	0.001473	0.000049	--	--	--
114	Duke Realty Corporation	DRE	2.70%	6.00%	4.11%	-1.00%	12.74	0.000647	0.000017	12.74	0.000654	0.000039	12.74	0.000675	0.000028	12.74	0.000662	(0.000007)
115	DTE Energy Company	DTE	3.92%	5.96%	5.50%	5.00%	20.67	0.001050	0.000041	20.67	0.001062	0.000063	20.67	0.001096	0.000060	20.67	0.001074	0.000054
116	Duke Energy Corporation	DUK	4.42%	4.14%	4.64%	6.00%	63.50	0.003227	0.000143	63.50	0.003262	0.000135	63.50	0.003366	0.000156	63.50	0.003299	0.000198
117	Devon Energy Corporation	DVN	3.80%	-270.00%	4.11%	16.50%	4.82	0.000245	0.000009	4.82	0.000248	(0.000669)	4.82	0.000256	0.000011	4.82	0.000251	0.000041
118	DXC Technology Company	DXC	4.46%	-5.33%	n/a	7.50%	4.77	0.000242	0.000011	4.77	0.000245	(0.000013)	--	--	--	4.77	0.000248	0.000019
119	eBay Inc	EBAY	1.67%	6.81%	12.41%	7.00%	31.07	0.001579	0.000026	31.07	0.001596	0.000109	31.07	0.001647	0.000204	31.07	0.001614	0.000113
120	Ecolab Inc	ECL	0.95%	9.38%	11.27%	8.50%	56.98	0.002896	0.000028	56.98	0.002927	0.000275	56.98	0.003021	0.000340	56.98	0.002961	0.000252
121	Consolidated Edison Inc	ED	3.80%	2.41%	2.00%	3.50%	27.07	0.001375	0.000052	27.07	0.001390	0.000034	27.07	0.001435	0.000029	27.07	0.001406	0.000049
122	Equifax Inc	EFX	1.09%	0.50%	2.44%	7.50%	17.42	0.000885	0.000010	17.42	0.000895	0.000004	17.42	0.000924	0.000023	17.42	0.000905	0.000068
123	Edison International	EIX	4.31%	3.30%	2.97%	12.00%	21.85	0.001111	0.000048	21.85	0.001123	0.000037	21.85	0.001158	0.000034	21.85	0.001135	0.000136
124	The Estee Lauder Companies Inc	EL	0.00%	7.73%	9.69%	13.00%	n/a	--	--	--	--	--	--	--	--	--	--	--
125	Eastman Chemical Company	EMN	4.16%	6.79%	4.32%	5.00%	8.63	0.000438	0.000018	8.63	0.000443	0.000030	8.63	0.000457	0.000020	8.63	0.000448	0.000022
126	Emerson Electric Co	EMR	3.39%	1.47%	6.28%	9.00%	35.29	0.001794	0.000061	35.29	0.001813	0.000027	35.29	0.001871	0.000117	35.29	0.001834	0.000165
127	EOG Resources Inc	EOG	3.14%	-6.80%	9.38%	26.50%	27.77	0.001411	0.000044	27.77	0.001426	(0.000097)	27.77	0.001472	0.000138	27.77	0.001443	0.000382
128	Equinix Inc	EQIX	1.59%	22.30%	17.60%	16.00%	57.95	0.002945	0.000047	57.95	0.002977	0.000664	57.95	0.003072	0.000541	57.95	0.003011	0.000482
129	Equity Residential	EQR	3.69%	6.10%	5.20%	-11.50%	24.31	0.001236	0.000046	24.31	0.001249	0.000076	24.31	0.001289	0.000067	24.31	0.001263	(0.000145)

	Company	Ticker	Dividend Yield	EPS Growth Rates IBES	Zacks	VL	Market Cap ($Billions)	Weighted Dividend Yield Weight	Product	Mkt. Cap.	Weighted IBES Weight	Product	Mkt Cap.	Weighted Zacks Weight	Product	Mkt. Cap	Weighted Value Line Weight	Product
				5 37%					2.55%			7 62%			8 95%			9 53%
	(a)		(b)	(c)	(d)	(b)	(b)											
130	Eversource Energy	ES	2 72%	5 73%	6 13%	5 50%	27 50	0 001398	0 000038	27 50	0 001413	0 000081	27 50	0 001458	0 000089	27 50	0 001429	0 000079
131	Essex Property Trust Inc	ESS	3 36%	7 90%	4 22%	1 00%	16 42	0 000835	0 000028	16 42	0 000844	0 000067	16 42	0 000871	0 000037	16 42	0 000853	0 000009
132	ETRADE Financial Corporation	ETFC	1 34%	4 36%	n/a	5 50%	9 33	0 000474	0 000006	9 33	0 000479	(0 000021)	--	--	--	9 33	0 000485	0 000027
133	Eaton Corporation PLC	ETN	3 40%	4 69%	11 00%	6 50%	35 45	0 001802	0 000061	35 45	0 001821	0 000085	35 45	0 001879	0 000207	35 45	0 001842	0 000120
134	Entergy Corporation	ETR	3 82%	6 00%	5 95%	3 00%	19 59	0 000996	0 000038	19 59	0 001006	0 000060	19 59	0 001039	0 000062	19 59	0 001018	0 000031
135	Evergy Inc	EVRG	3 49%	3 90%	4 95%	n/a	13 51	0 000686	0 000024	13 51	0 000694	0 000027	13 51	0 000716	0 000035	--	--	--
136	Exelon Corporation	EXC	3 99%	-2 45%	4 00%	8 00%	37 29	0 001895	0 000076	37 29	0 001915	(0 000047)	37 29	0 001977	0 000079	37 29	0 001937	0 000155
137	Expeditors International of Washington Inc	EXPD	1 38%	4 95%	n/a	7 50%	12 30	0 000625	0 000009	12 30	0 000632	0 000031	--	--	--	12 30	0 000639	0 000048
138	Expedia Group Inc	EXPE	0 66%	-8 72%	12 00%	12 00%	n/a	--	--	--	--	--	--	--	--	--	--	--
139	Extra Space Storage Inc	EXR	4 11%	6 00%	3 33%	3 00%	11 38	0 000578	0 000024	11 38	0 000585	0 000035	11 38	0 000603	0 000020	11 38	0 000591	0 000018
140	Diamondback Energy Inc	FANG	3 39%	13 26%	21 94%	4 50%	7 03	0 000357	0 000012	7 03	0 000361	0 000048	7 03	0 000372	0 000082	7 03	0 000365	0 000016
141	Fastenal Company	FAST	2 72%	19 00%	14 00%	9 00%	21 05	0 001070	0 000029	21 05	0 001081	0 000205	21 05	0 001116	0 000156	21 05	0 001093	0 000098
142	Fortune Brands Home Security Inc	FBHS	1 86%	2 30%	9 00%	7 50%	7 19	0 000365	0 000007	7 19	0 000369	0 000008	7 19	0 000381	0 000034	7 19	0 000374	0 000028
143	FreeportMcMoRan Inc	FCX	0 00%	260.47%	n/a	19 50%	n/a	--	--	--	--	--	--	--	--	--	--	--
144	FedEx Corporation	FDX	2 01%	-1 65%	12 00%	5 00%	33 83	0 001719	0 000035	33 83	0 001738	(0 000029)	33 83	0 001793	0 000215	33 83	0 001758	0 000088
145	FirstEnergy Corporation	FE	3 71%	-6 00%	n/a	7 00%	22 90	0 001164	0 000043	22 90	0 001176	(0 000078)	--	--	--	22 90	0 001190	0 000083
146	Fidelity National Information Services Inc	FIS	1 04%	12 55%	13 45%	28 50%	82 45	0 004190	0 000044	82 45	0 004236	0 000532	82 45	0 004371	0 000588	82 45	0 004284	0 001221
147	Fifth Third Bancorp	FITB	5 49%	10 15%	8 25%	6 50%	13 96	0 000709	0 000039	13 96	0 000717	0 000073	13 96	0 000740	0 000061	13 96	0 000725	0 000047
148	FLIR Systems Inc	FLIR	1 56%	21 90%	n/a	9 00%	6 12	0 000311	0 000005	6 12	0 000314	0 000069	--	--	--	6 12	0 000318	0 000029
149	Flowserve Corporation	FLS	2 70%	7.99%	7.93%	12.50%	3 87	0 000197	0 000005	3 87	0 000199	0 000016	3 87	0 000205	0 000016	3 87	0 000201	0 000025
150	FMC Corporation	FMC	1 89%	9 79%	10 70%	11 00%	12 27	0 000624	0 000012	12 27	0 000630	0 000062	12 27	0 000650	0 000070	12 27	0 000638	0 000070
151	Fox Corporation	FOX	n/a	9 20%	n/a	n/a	n/a	--	--	--	--	--	--	--	--	--	--	--
152	Fox Corporation	FOXA	1 62%	-5 03%	n/a	n/a	17 32	0 000880	0 000014	17 32	0 000890	(0 000045)	--	--	--	--	--	--
153	First Republic Bank	FRC	0 75%	2 05%	7 43%	9 00%	18 01	0 000915	0 000007	18 01	0 000925	0 000019	18 01	0 000955	0 000071	18 01	0 000936	0 000084
154	Federal Realty Investment Trust	FRT	5 05%	6 70%	3 28%	1 50%	6 35	0 000322	0 000016	6 35	0 000326	0 000022	6 35	0 000336	0 000011	6 35	0 000330	0 000005
155	Fortive Corporation	FTV	0 43%	5 76%	n/a	8 00%	22 01	0 001118	0 000005	22 01	0 001130	0 000065	--	--	--	22 01	0 001143	0 000091
156	General Dynamics Corporation	GD	3 22%	3 90%	5 38%	7 00%	39 20	0 001992	0 000064	39 20	0 002014	0 000079	39.20	0 002078	0 000112	39 20	0 002037	0 000143
157	General Electric Company	GE	0 61%	1 60%	5.75%	8 00%	57 50	0 002922	0 000018	57 50	0 002954	0 000047	57 50	0 003048	0 000175	57 50	0 002988	0 000239
158	Gilead Sciences Inc	GILD	3 27%	1 84%	3 69%	-1 50%	105 26	0 005349	0 000175	105 26	0 005407	0.000099	105 26	0 005580	0 000206	105 26	0 005469	(0 000082)
159	General Mills Inc	GIS	3 30%	5 69%	7 50%	4 00%	36 53	0 001856	0 000061	36 53	0 001877	0 000107	36 53	0 001936	0 000145	36 53	0 001898	0 000076
160	Globe Life Inc	GL	0 88%	6 80%	4 90%	9 00%	9 20	0 000467	0 000004	9 20	0 000473	0 000032	9 20	0 000488	0 000024	9 20	0 000478	0 000043
161	Corning Incorporated	GLW	3 92%	4 80%	1.86%	13 50%	17 13	0 000871	0 000034	17 13	0 000880	0 000042	17 13	0 000908	0 000017	17 13	0 000890	0 000120
162	General Motors Company	GM	0 00%	1 54%	9 85%	2 50%	n/a	--	--	--	--	--	--	--	--	--	--	--
163	Genuine Parts Company	GPC	3 85%	-1 90%	1 50%	7 00%	11 94	0 000607	0 000023	11 94	0 000613	(0 000012)	11 94	0 000633	0 000009	11 94	0 000620	0 000043
164	Global Payments Inc	GPN	0 46%	17 37%	17 25%	11 50%	50 98	0 002591	0 000012	50 98	0 002619	0 000455	50 98	0 002703	0 000466	50 98	0 002649	0 000305
165	Garmin Ltd	GRMN	2 94%	6 42%	7 35%	7 00%	15 84	0 000805	0 000024	15 84	0 000814	0 000052	15 84	0 000840	0 000062	15 84	0 000823	0 000058
166	The Goldman Sachs Group Inc	GS	2 63%	5 37%	18.51%	6 50%	66 01	0 003354	0 000088	66 01	0 003391	0 000182	66 01	0 003499	0 000648	66 01	0 003430	0 000223
167	WW Grainger Inc	GWW	2 05%	9 50%	11 33%	8 00%	15 01	0 000763	0 000016	15 01	0 000771	0 000073	15 01	0 000795	0 000090	15 01	0 000780	0 000062
168	Halliburton Company	HAL	0 36%	-28 62%	10 39%	4 50%	9 63	0 000489	0 000002	9 63	0 000495	(0 000142)	9 63	0 000511	0 000053	9 63	0 000500	0 000023
169	Hasbro Inc	HAS	3 73%	13 90%	12 44%	8 50%	9 21	0 000468	0 000017	9 21	0 000473	0 000066	9 21	0 000488	0.000061	9 21	0 000478	0 000041
170	Huntington Bancshares Incorporated	HBAN	6 54%	4 90%	4 92%	9 00%	9 83	0 000500	0 000033	9 83	0 000505	0 000025	9 83	0 000521	0 000026	9 83	0 000511	0 000046
171	Hanesbrands Inc	HBI	5 78%	-3 61%	3 30%	2 50%	3 76	0 000191	0 000011	3 76	0 000193	(0 000007)	3 76	0 000199	0 000007	3 76	0 000195	0 000005
172	HCA Healthcare Inc	HCA	0 00%	7 98%	9 54%	10 50%	n/a	--	--	--	--	--	--	--	--	--	--	--
173	The Home Depot Inc	HD	2 71%	7 07%	10 99%	8 00%	238 89	0 012140	0 000329	238 89	0 012272	0 000868	238 89	0 012664	0 001392	238 89	0 012412	0 000993
174	Hess Corporation	HES	2 04%	-23 40%	n/a	n/a	14 95	0 000760	0 000015	14 95	0 000768	(0 000180)	--	--	--	--	--	--
175	HollyFrontier Corporation	HFC	4 16%	-6 51%	n/a	16 50%	5 44	0 000277	0 000012	5 44	0 000280	(0 000018)	--	--	--	5 44	0 000283	0 000047
176	The Hartford Financial Services Group Inc	HIG	3 16%	0 01%	n/a	11.50%	14 85	0 000755	0 000024	14 85	0 000763	0 000000	--	--	--	14 85	0 000772	0 000089
177	Huntington Ingalls Industries Inc	HII	2 11%	-0 71%	n/a	6 00%	8 02	0 000407	0 000009	8 02	0 000412	(0 000003)	--	--	--	8 02	0 000417	0 000025
178	HarleyDavidson Inc	HOG	0 33%	0 50%	8 00%	10 50%	3 71	0 000189	0 000001	3 71	0 000191	0 000001	3 71	0 000197	0.000016	3 71	0 000193	0 000020
179	Honeywell International Inc	HON	2 46%	4 79%	7 44%	8 00%	103 93	0 005282	0 000130	103 93	0 005339	0 000256	103 93	0 005510	0 000410	103 93	0 005400	0 000432
180	Helmerich Payne Inc	HP	4 71%	-7 76%	5 54%	n/a	2 31	0 000117	0 000006	2 31	0 000119	(0 000009)	2 31	0.000122	0 000007	--	--	--
181	Hewlett Packard Enterprise Company	HPE	4 85%	4 91%	3 88%	7 50%	13 33	0 000677	0 000033	13 33	0 000685	0 000034	13 33	0 000707	0 000027	13 33	0 000693	0 000052
182	HP Inc	HPQ	4 42%	7 56%	2 16%	10 50%	23 33	0 001186	0 000052	23 33	0 001198	0 000091	23 33	0 001237	0 000027	23 33	0 001212	0 000127
183	HR Block Inc	HRB	6 20%	10 00%	10 00%	6 00%	3 23	0 000164	0 000010	3 23	0 000166	0 000017	3 23	0 000171	0 000017	3 23	0 000168	0 000010
184	Hormel Foods Corporation	HRL	2 06%	4 00%	6 00%	8 50%	25 58	0 001300	0 000027	25 58	0 001314	0 000053	25 58	0 001356	0 000081	25 58	0 001329	0 000113
185	Host Hotels Resorts Inc	HST	6 36%	28 40%	n/a	-2 50%	9 31	0 000473	0 000030	9 31	0 000478	0 000136	--	--	--	9 31	0 000484	(0 000012)
186	Hershey Company The	HSY	2 42%	6 85%	7 67%	4 50%	27 98	0 001422	0 000034	27 98	0 001437	0 000098	27 98	0 001483	0 000114	27 98	0 001454	0 000065
187	Humana Inc	HUM	0 66%	12 48%	12 34%	10 50%	49 85	0 002534	0 000017	49 85	0 002561	0 000320	49 85	0 002643	0 000326	49 85	0 002590	0 000272
188	Howmet Aerospace Inc	HWM	0 70%	7 20%	n/a	12 00%	6 01	0 000306	0 000002	6 01	0 000309	0 000022	--	--	--	6 01	0 000312	0 000037
189	International Business Machines Corporation	IBM	5 13%	3 92%	3 94%	1 50%	114 16	0 005802	0 000298	114 16	0 005864	0 000230	114 16	0 006052	0 000238	114 16	0 005932	0 000089
190	Intercontinental Exchange Inc	ICE	1 32%	8 97%	8 14%	9 00%	54 78	0 002784	0 000037	54 78	0 002814	0 000252	54 78	0 002904	0 000236	54 78	0 002846	0 000256
191	IDEX Corporation	IEX	1 27%	11 50%	10 00%	7 50%	11 89	0 000604	0 000008	11 89	0 000611	0 000070	11 89	0 000630	0 000063	11 89	0 000618	0 000046
192	International Flavors Fragrances Inc	IFF	2 33%	3 80%	n/a	7 50%	14 23	0 000723	0 000017	14 23	0 000731	0 000028	--	--	--	14 23	0 000740	0 000055
193	IHS Markit Ltd	INFO	1 00%	11 35%	12 00%	12 00%	27 24	0 001384	0 000014	27 24	0 001399	0 000159	27 24	0 001444	0 000173	27 24	0 001415	0 000170
194	Intel Corporation	INTC	2 14%	9 07%	7 50%	9 00%	261 66	0 013297	0 000285	261 66	0 013441	0 001219	261 66	0 013871	0 001040	261 66	0 013596	0 001224