Part 4:
Cash flow, debt and equity financing, and revenue requirements

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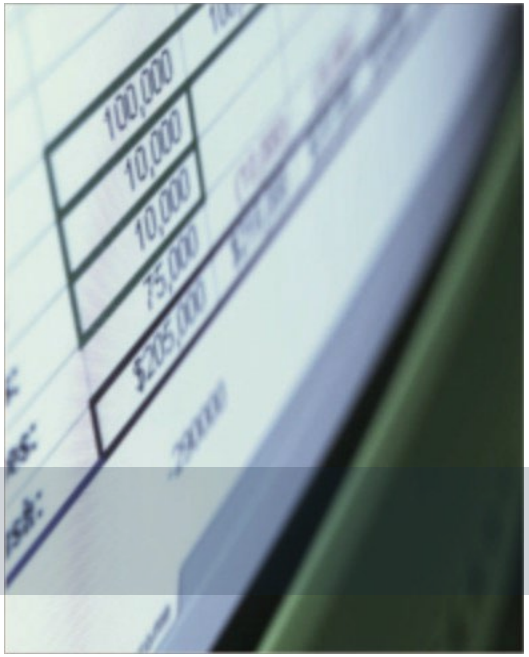

MICHIGAN STATE UNIVERSITY

4.0 Utility, enterprise, or investment basis: private and some public

$$RR = r_a (RB) + O\&M + D + T$$

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where:

RR	=	total test year (annualized) revenue requirements
r_a	=	authorized (not guaranteed) rate of return to compensate debt holders and equity shareholders
RB	=	rate base (original cost of invested utility plant in service net of accumulated depreciation and adjustments)
O&M	=	operation & maintenance expenses, including administrative & general
D	=	depreciation and amortization expense
T	=	taxes other than income and income tax expense

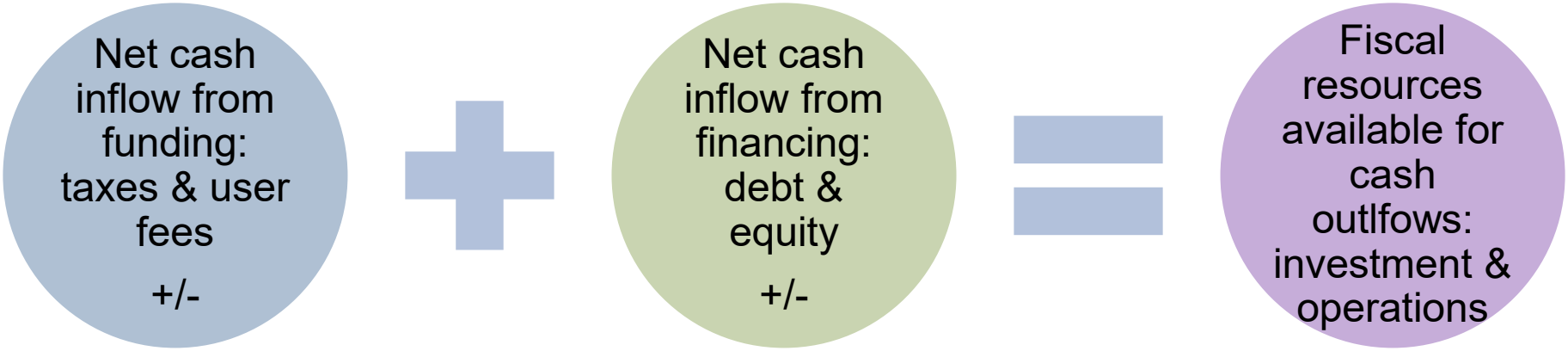
Cost-based rates and revenue sufficiency are a function of both the numerator and denominator:

$$\frac{\text{Revenue requirements (RR)}}{\text{Estimated sales (billing determinants)}}$$

4.0 Financing topics

1. Cash-flow statement
2. Utility ownership structures
3. Corporate governance and accountability
4. Financial regulation and reporting
5. Financial risk disclosure
6. Financial and economic performance metrics
7. Debt financing and credit ratings
8. Equity financing and cost of equity models
9. Return on equity calculation
10. Capital structure
11. Weighted cost of capital
12. Regulated returns and risk
13. Regulatory performance incentives
14. Regulatory lag and returns

4.1 Cash flow from funding and financing



4.1 Cash-flow statement

- Cash-flow statement
  - Reports a company's cash inflows and outflows for a specified period, usually a year
  - Starts with a beginning balance and ends with an ending balance to show net change – analogous to a checking account
  - Relates to balance sheet and income statement data but excludes non-cash items
- Costs and cash flow
  - Costs may be capitalized (balance sheet) or expensed (income statement)
  - Capitalized costs are expected to provide benefits for more than one year (CFI)
  - Expenses are incurred on an ongoing basis to maintain assets & operations (CFO)
- Cash-flow analysis and perspectives
  - Evaluate a company's cash-management activities and abilities
  - Assess the company's ability to pay dividends and to pay creditors
  - Understand changes in assets and liabilities occurring during the period
- Cash flow is classified according to three activities
  - Operating, investing, and financing

4.1 Cash-flow activities

- Cash-flow from operating activities (CFO)
  - **Cash in:** sale of goods or services, interest revenue, dividend revenue
  - **Cash out:** inventory purchases, payroll, taxes, interest expense, other (utilities, rent, etc.)
- Cash-flow from investing activities (CFI)
  - **Cash in:** sale of plant assets, sale of a business segment, sale of investments in equity securities of other entities or debt securities (other than cash equivalents), collection of principal on loans made to other entities
  - **Cash out:** purchase of plant assets, purchase of equity securities of other entities or debt securities (other than cash equivalents), loans to other entities
- Cash-flow from financing activities (CFF)
  - **Cash in:** issuance of own stock, borrowing (bonds, notes, mortgages, etc.)
  - **Cash out:** dividends to stockholders, repaying principal amounts borrowed, repurchasing business' own stock (treasury stock)

Source: https://www.analystforum.com/forums/cfa-forums/cfa-level-i-forum/91311493

4.1 Cash-flow illustration (indirect method)

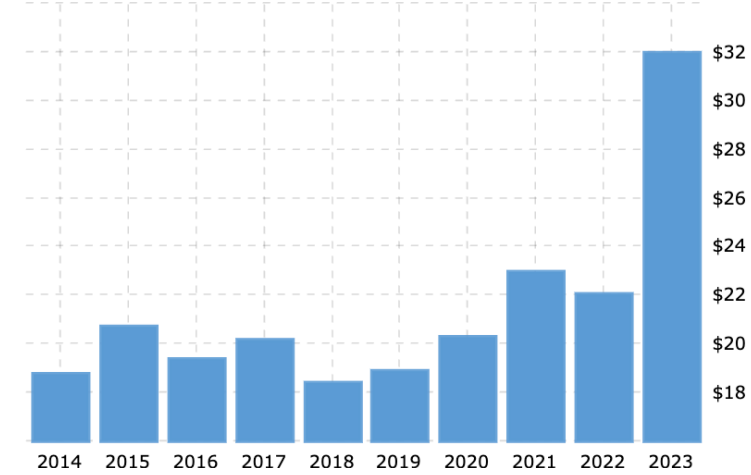
- Illustration
  - Funding = $50k
  - Financing = -$10k
  - Spending = -$40k

	Cash flow ($USD in thousands)	$ inflow (+) or outflow (-)	Category	Activity
1	>Cash balance at beginning of period	$ 0		
2	**Cash flows from operating activities**			
3	Operating revenues	$ 40,000	Funding	Customer payments
4	Operating expenses	(24,000)	Spending	Operations
5	Depreciation and amortization	6,000	Funding	Noncash expense
6	Interest expense	(5,000)	Financing	Debt compensation
7	Other income	1,000	Funding	Non-operating revenues
8	>Net cash from operating activities	$ 18,000		
9				
10	**Cash flows from investing activities**			
11	Purchase of utility plant assets	(17,000)	Spending	Asset purchase
12	Sale of utility plant assets	1,000	(Spending)	Asset sale
13	>Net cash from investing activities	$ (16,000)		
14				
15	**Cash flows from financing activities**			
16	Proceeds of short-term debt	1,000	Financing	Bank credit line
17	Proceeds of debt securities	20,000	Financing	Bond issues
18	Proceeds of equity securities	8,000	Financing	Stock issues
19	Repayment of long-term debt	(21,000)	Financing	Repayment of bonds
20	Dividends paid to shareholders	(14,000)	Financing	Equity compensation
22	Contributed capital from grants	2,000	Funding	Government subsidies
23	Contributions for construction	1,000	Funding	Customer contributions
24	Advances for construction	1,000	Financing	Customer advances
25	>Net cash from financing activities	$ (2,000)		
26	>Cash balance at end of period	$ 0		

4.1 York: net cash flow over time (operating, investing, financing)

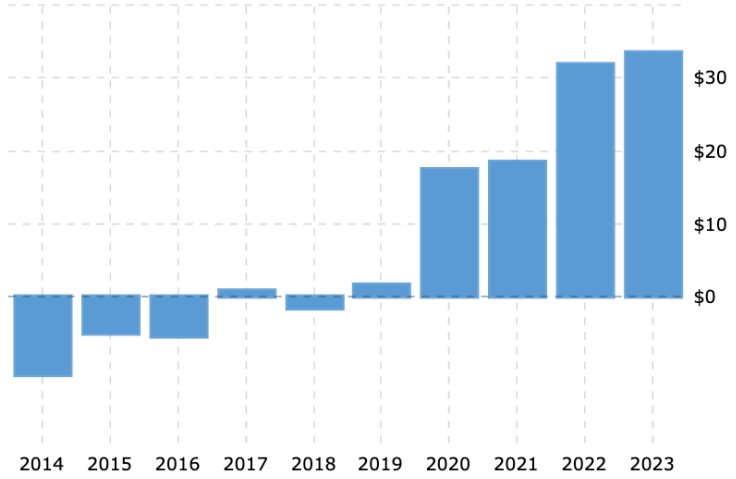
YORW - Cash Flow from Operating Activities

Annual Values (Millions of US $)



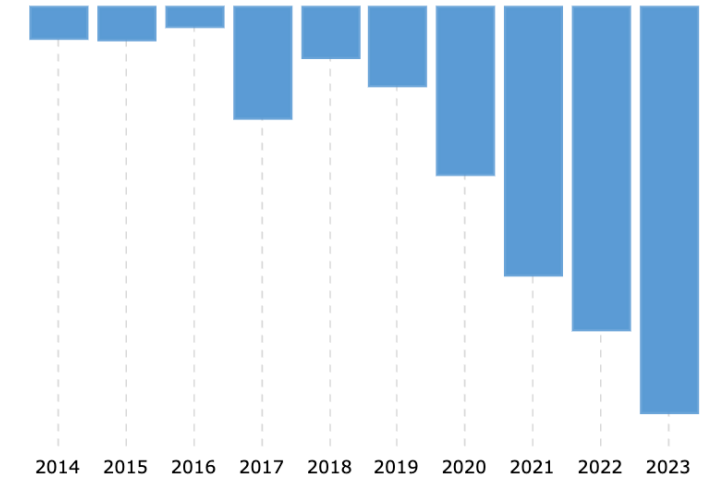
YORW - Cash Flow from Financial Activities

Annual Values (Millions of US $)



YORW - Cash Flow from Investing Activities

Annual Values (Millions of US $)



4.1 York: cash-flow statement (10-K, SEC)

Statements of Cash Flows - USD ($) $ in Thousands	12 Months Ended	
	Dec. 31, 2023	Dec. 31, 2022
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	$ 23,757	$ 19,580
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	11,746	10,139
Stock-based compensation	300	279
Increase in deferred income taxes	530	4
Other	(1,114)	(54)
Changes in assets and liabilities:		
Increase in accounts receivable and unbilled revenues	(1,868)	(3,005)
Decrease in recoverable income taxes	550	12
Increase in materials and supplies, prepaid expenses, prepaid pension cost, regulatory and other assets	(9,512)	(537)
Increase (decrease) in accounts payable, accrued compensation and benefits, accrued expenses, deferred employee benefits, regulatory liabilities, and other deferred credits	6,743	(4,406)
Increase in accrued interest	776	6
Net cash provided by operating activities	31,908	22,018
CASH FLOWS FROM INVESTING ACTIVITIES:		
Utility plant additions, including debt portion of allowance for funds used during construction of $2,321 in 2023 and $839 in 2022	(64,640)	(50,532)
Acquisitions of water and wastewater systems	(625)	(3,388)
Net cash used in investing activities	(65,265)	(53,920)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Customers' advances for construction and contributions in aid of construction	5,064	3,488
Repayments of customer advances	(505)	(972)
Proceeds of long-term debt issues	104,681	54,378
Debt issuance costs	(171)	0
Repayments of long-term debt	(64,148)	(61,458)
Changes in cash overdraft position	(1,628)	1,429
Issuance of common stock	1,654	45,711
Dividends paid	(11,590)	(10,674)
Net cash provided by financing activities	33,357	31,902
Net change in cash and cash equivalents	0	0
Cash and cash equivalents at beginning of period	1	1
Cash and cash equivalents at end of period	1	1
Cash paid during the period for:		
Interest, net of amounts capitalized	$ 3,727	$ 4,041

4.1 Exercise: utilities and cash flow

- Cash flow is used to measure and evaluate financial performance
  - Cash flow (CF) does not equal net income or profit
  - Free cash flow (FCF) does not incorporate financing activities (e.g., debt-related)
  - For capital-intensive utilities, free cash flow may be negative

		Cash provided by operating activities	Plus net cash from investing activities	= Free cash flow
1	2023	$31,908	($65,265)	? ($33,357)
2	2022	$22,018	($53,920)	?
3	2021	$22,959	($46,400)	? ($23,441)
		Cash provided by operating activities	Plus net cash from investing activities and financing activities	= Net change in cash
4	2023	$31,908	($65,265) + $33,357	? $0
5	2022	$22,018	($52,920) + $31,902	?
6	2021	$22,959	($46,400) + $18,440	? ($5,001)*

*Offset by cash balance at beginning of year.

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4	2023	$31,908	($65,265) + $33,357	?	$0
5	2022	$22,018	($52,920) + $31,902	?	$0
6	2021	$22,959	($46,400) + $18,440	?	($5,001)*

*Offset by cash balance at beginning of year.

4.2 Comparing utility ownership structures

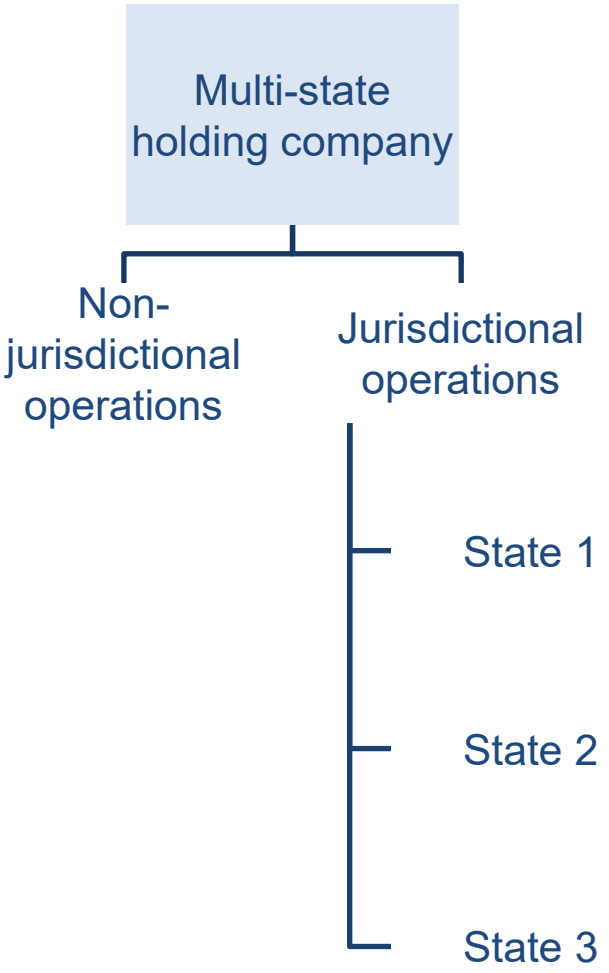
Privately owned	Publicly owned	Cooperatively owned
• For-profit	• Not-for-profit	• Not-for-profit
• Investor-owned	• Government-owned	• Member-owned
• Shareholder orientation	• Constituent orientation	• Member orientation
• Board oversight	• Local oversight	• Member boards
• Pays income taxes	• No income taxes	• No income taxes
• Rate-funded operations	• Rates and taxes	• Rates and members
• Equity & debt financing	• Debt financing	• Debt financing
• FASB rules	• GASB rules	• FASB rules
• SEC oversight if traded	• State fin. oversight	• State fin. oversight
• State economic regulation	• State economic regulation is limited	• State economic regulation varies

4.3 Corporate governance and accountability

- Synergies between regulators and corporate boards
  - Shareholders and directors also provide performance incentives
  - Executive compensation committees
- Accountability under Sarbanes-Oxley (2002)
  - Protects investors but may affect cost of capital
  - Separation of advisory and audit functions
  - Improves transparency and accountability
  - CEOs and CFOs certify reporting
  - Cost of compliance may be high – who should pay?
- Risk management and asset protection
  - Segregation, firewalls, and ring fencing based on business activity
  - Review of and conditions on mergers and acquisitions, including convergence
  - Audits of multi-state holding company and affiliate transactions
- New emphases
  - Cyber-security disclosures for public companies – SEC statement and guidance (2018)
  - Environmental, social, governance (ESG) reporting – SEC Finalized Rules (March 2024)
  - Disclosure of climate risks, resilience planning, and affordable access (SDGs)

4.3 Oversight of complex utility entities

- Public Utility Holding Company Act (1935)
  - PUHCA was repealed in 2005
  - Not applicable to water sector (AWK, Essential)
- Issues for multi-state or multi-utility operations
  - Scale and limits to scale
  - Tracking and allocation of costs
  - Affiliate transactions
  - Private equity and “flippers”
  - Foreign ownership
  - Overhead and executive compensation
  - Inter-jurisdictional regulatory oversight
  - Auditing – XBRL could facilitate
- Cost allocations determine (NRCAM, 2003)
  - Level of total state costs for multi-state utilities
  - Regulated (vs. unregulated) costs
  - Intrastate (vs. interstate) costs
  - Revenue requirement by category of service



4.3 York: corporate governance

- Board of Directors
  - Operates under specific corporate governance principles and guidelines based on the Company's Bylaws, Standing Resolutions, and Policies
- Nomination and Corporate Governance Committee ("the Committee")
  - Monitors, develops and makes recommendations to the Board of Directors based on these principles and guidelines
- Some of the principles and guidelines are listed below
  - Board Selection
  - Director Independence
  - Board Leadership Structure
  - Board Role in Risk Oversight
  - Board Committees and Functions
  - Related Party Transactions
  - Communication With the Board of Directors
  - Executive Sessions of the Board
  - Stock Ownership
  - Code of Ethics
- Source: York Water Shareholder Meeting (2018)

4.3 York virtual annual shareholder meeting (2023)

Home > Investor Relations > Annual Meeting

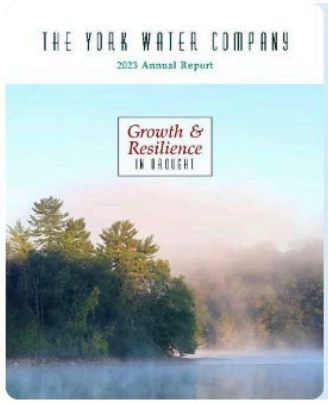
Annual Meeting 2024

May 6, 2024 at 1:00 PM

The Appell Center for the Performing Arts
50 North George Street
York, PA 17401

Doors open at 11:30 AM. A boxed lunch will be provided at 12:00 PM. **Reservation is required.**
Please RSVP to Molly Houck at 717-718-2942 or mollyh@yorkwater.com.

ANNUAL MEETING DOCUMENTS



READ OUR LATEST ANNUAL REPORT.

2023 will be remembered as a year of impressive growth and execution of asset plans as we responded to a drought emergency. York Water experienced historic growth in corporate revenue, capital placement, and earnings. This was also the year that we executed our drought response plan operating both the Susquehanna River Pump Station and the Lake Redman Pump Station in order to keep enough source water flowing to the Grantley Road plant. The drought we experienced tested both operational and financial resources.

Read the Annual Report ›

2023 10-K REPORT

The annual report on Form 10-K provides a comprehensive overview of the company's business and financial condition and includes audited financial statements.

Read the 10-K Report ›

FIND OUR 2024 PROXY HERE.

The York Water Company Proxy provides our shareholders with the information they need to make informed votes at our annual meeting.

Read the Proxy ›

4.3 York: audit committee (2023)

Audit Committee Charter

Audit Committee

A. Purpose

The Audit Committee (the "Audit Committee") of the Board of Directors (the "Board") of The York Water Company (the "Company") is appointed by, and acts on behalf of, the Board. The Audit Committee's purpose shall be:

To assist the Board in its oversight of (1) the accounting and financial reporting processes of the Company and the audits of the financial statements of the Company and its subsidiaries and (2) the Company's compliance with legal and regulatory requirements;

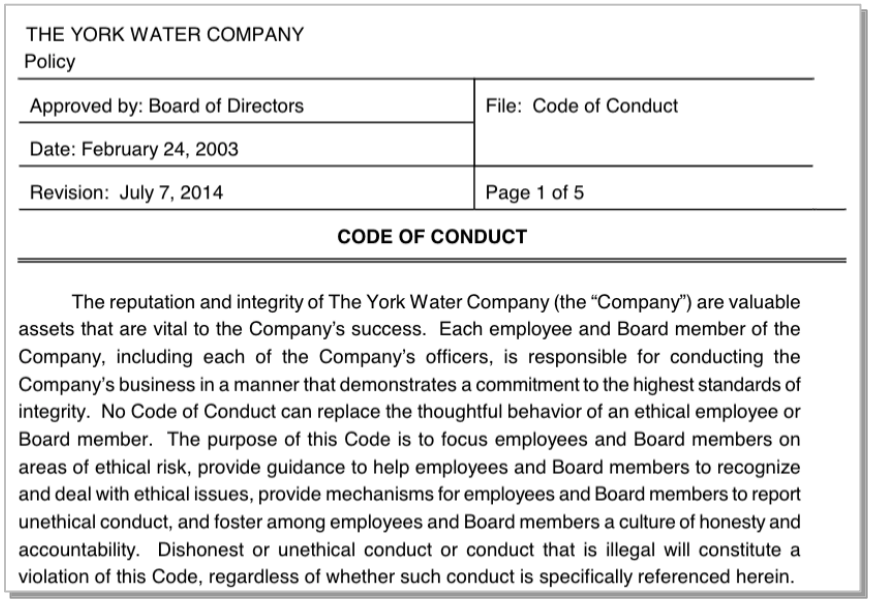
To interact directly with and evaluate the performance of the independent auditors, to determine whether to engage or dismiss the independent auditors and to monitor the independent auditors' qualifications and independence; and

To prepare the report required by the rules of the Securities and Exchange Commission (the "SEC") to be included in the Company's annual proxy statement.

Q. How do board governance and regulation complement each other?

4.3 York: code of conduct (2014)

- The reputation and integrity of The York Water Company (the “Company”) are valuable assets that are vital to the Company’s success”
  - Each officer of the Company will be asked to certify on an annual basis that he/she is in full compliance with the Code of Conduct and related policy statements
- Code subsections
  - Violations of law
  - Conflicts of interest
    - Outside activities/employment
    - Civic/political activities
    - Loans to employees
  - Fair dealing
  - Proper use of company assets
  - Delegation of authority
  - Handing confidential information
  - Handling financial information



THE YORK WATER COMPANY
Policy

Approved by: Board of Directors	File: Code of Conduct
Date: February 24, 2003	
Revision: July 7, 2014	Page 1 of 5

CODE OF CONDUCT

The reputation and integrity of The York Water Company (the “Company”) are valuable assets that are vital to the Company’s success. Each employee and Board member of the Company, including each of the Company’s officers, is responsible for conducting the Company’s business in a manner that demonstrates a commitment to the highest standards of integrity. No Code of Conduct can replace the thoughtful behavior of an ethical employee or Board member. The purpose of this Code is to focus employees and Board members on areas of ethical risk, provide guidance to help employees and Board members to recognize and deal with ethical issues, provide mechanisms for employees and Board members to report unethical conduct, and foster among employees and Board members a culture of honesty and accountability. Dishonest or unethical conduct or conduct that is illegal will constitute a violation of this Code, regardless of whether such conduct is specifically referenced herein.

- The foregoing are set forth as guidelines for the principal executive officer and financial employees but are statements of mandatory conduct

4.3 York: whistleblower policy

THE YORK WATER COMPANY
Policy

Approved by: Board of Directors	File: Whistleblower Policy
Date: November 21, 2011	
Revision: #2 November 20, 2015 #3 December 16, 2015 #4 November 29, 2016	Page 1 of 2

Whistleblower Policy

Purpose

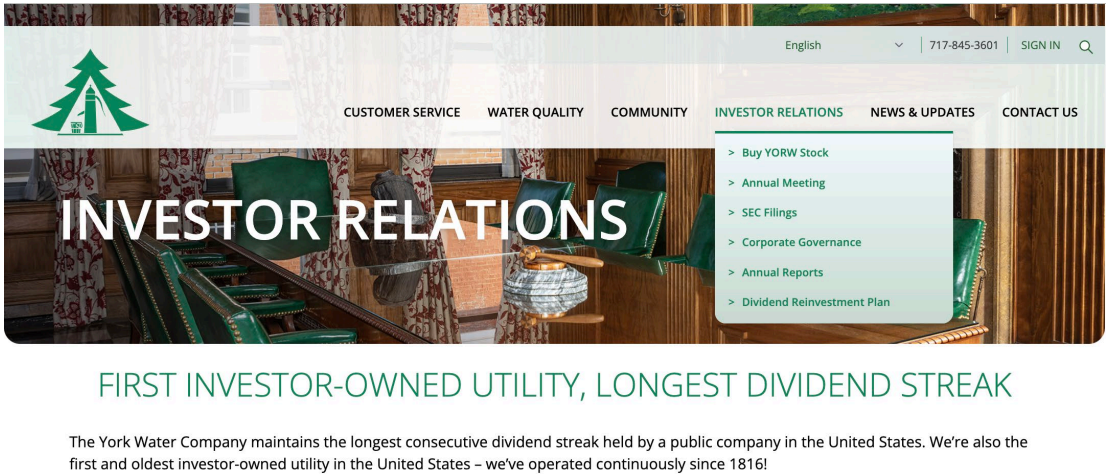
The York Water Company is committed to high standards of ethical, moral and legal business conduct. In line with this commitment, and York Water's commitment to open communication, this policy aims to provide an avenue for employees to raise concerns and reassurance that they will be protected from reprisals or victimization for whistleblowing.

This whistleblowing policy is intended to cover protections for those who raise concerns regarding The York Water Company, such as concerns regarding:

1. incorrect financial reporting;
2. unlawful activity;
3. activities that are a violation of York Water policy, including the Code of Conduct; or
4. activities which otherwise amount to serious improper conduct.

4.4 Financial regulation and reporting

- Common elements of financial statements required of publicly traded companies
  - Risk factors overview – relevant to evaluating risk and the cost of capital
  - Balance sheet – informs the derivation of the rate base
  - Income statement - informs the derivation of revenue requirements
  - Cash-flow statement – useful in the assessment of financial health
  - Managerial and operating information – useful in auditing
  - Notes and footnotes to all financial statements – useful for analysis
  - Auditor's opinion – useful for compliance assessment
  - CEO and CFO certification – required by Sarbanes-Oxley
- Financial reports are under the "investor relations" tab on company websites



4.4 Notes to financial statements (Deloitte, 2012)

- Factors affecting the content of notes for regulated utilities
  - Investment in plant
  - Capitalization
  - Regulation
  - Conflicts with GAAP
- Notes on utility statements that differ from non-utility disclosures
  - Accounting policies
  - Regulatory assets and liabilities
  - Rate matters
  - Retained earnings
  - Commitments
  - Contingencies
  - Jointly owned plants
  - Long-term contracts for purchases (e.g., power or water)
  - Business segments

4.4 Certification of financial reports (10-K, 2023)

EX-31.1 3 exhibit31_1-123123.htm YWC CERTIFICATION OF CEO

EXHIBIT 31.1
CERTIFICATIONS

I, Joseph T. Hand, certify that:

1. I have reviewed this report on Form 10-K of The York Water Company;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent function):

   a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 5, 2024

/s/ Joseph T. Hand
Joseph T. Hand
President and CEO

EX-23 2 exhibit23-123123.htm CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

EXHIBIT 23

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statements on Form S-3 (File No. 333-259809 and 333-268204) and Forms S-8 (File Nos. 333-191497 and 333-211287) of The York Water Company of our report dated March 5, 2024, relating to the financial statements and the financial statement schedule, which appear in this Form 10-K.

/s/ Baker Tilly US, LLP
Philadelphia, Pennsylvania
March 5, 2024

EX-32.1 5 exhibit32_1-123123.htm YWC SECTION 906 CERTIFICATION OF CEO

EXHIBIT 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of The York Water Company on Form 10-K for the year ending December 31, 2023 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Joseph T. Hand, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

THE YORK WATER COMPANY

/s/ Joseph T. Hand
Joseph T. Hand
Chief Executive Officer

Date: March 5, 2024

4.5 Financial risk disclosure

- Utility companies have a unique risk profile that limits risk
  - Typically, less risky than other investment sectors due to essentiality and monopoly
  - Utility managers tend to be risk averse – more aligned with bondholders
- Risk issues are different for bondholders and equity shareholders
  - For bondholders, risk is only to the downside – default only and no upside
  - For shareholders, risk is symmetrical – with upside and downside earnings potential
- Investment risk to utility shareholders
  - Likelihood that an investment's actual return will differ from expectations ("non-normal")
  - Includes the possibility of losing some or all of the original investment
- Types of risk for diversified equity investors – based on portfolio theory
  - Systematic – relevant (e.g., inflation, interest rates, tax policy, war, pandemic)
  - Sector-specific – may be relevant (e.g., technological disruption, restructuring, policies)
  - Firm-specific (idiosyncratic) – *irrelevant* (e.g., project-related, regulatory actions)

Q. How does regulatory risk affect utilities?

4.5 York: risk disclosure to the SEC (10-K, 2023)

Item 1A. **Risk Factors.**

Not applicable.

Item 1B. **Unresolved Staff Comments.**

None.

Table of Contents

Item 1C. **Cybersecurity.**

Risk Management and Strategy

The Company recognizes the critical importance of developing, implementing, and maintaining robust cybersecurity measures to safeguard its information systems and protect the confidentiality, integrity, and availability of its data.

Managing Material Risks & Integrated Overall Risk Management
The Company embraces risk management across the company, to include cybersecurity risk. This comprehensive approach ensures that cybersecurity considerations are an integral part of its decision-making processes at every level. The Company's risk management team works closely with its IT department to continuously evaluate and address cybersecurity risks in alignment with its business objectives and operational needs.

Engage Third Parties on Risk Management
To address the evolving nature and complexity of cybersecurity threats, the Company engages with a range of external experts, including cybersecurity assessors, consultants, and auditors in evaluating and testing its risk management systems. These partnerships enable the Company to leverage specialized knowledge and insights with respect to its cybersecurity strategies and processes. The collaboration with these third parties includes regular audits, threat assessments, penetration testing, and consultation on security enhancements.

Oversee Third-party Risk
The Company recognizes that cybersecurity threats and risks are amplified with the addition of third-party digital service providers. In response, the Company implements stringent processes to oversee and manage these risks. It conducts thorough security assessments of all third-party providers before engagement and maintains ongoing monitoring to ensure compliance with its cybersecurity standards. This process is also intended to provide for the security and integrity of the Company's data that may be stored on third-party systems. The monitoring includes quarterly assessments made by the contracted Chief Information Officer, or CIO, and on an ongoing basis by its dedicated cybersecurity staff. This approach is designed to mitigate risks related to data breaches or other security incidents originating from third parties.

Identified Material Risks

To date, the Company has not encountered cybersecurity challenges, risks, or breaches that have materially impaired its business strategy, operations, or its financial standing.

Board of Directors Oversight of Cybersecurity Material Risks – Governance

The Board of Directors, or the Board, is keenly aware of the critical nature of cybersecurity risks, particularly in its business as a public utility providing a life sustaining product. The Board, in partnership with the Executive team, has created a robust cybersecurity program, with meaningful oversight measures and tools for tracking and managing cyber risks and threats. The Company understands the importance of its product and services to the communities that it serves and is dedicated to maintaining high stakeholder confidence in its operations.

Board Oversight
The Audit Committee is the lead Board committee with oversight of the cybersecurity program and bears the primary responsibility for this aspect of the business. The Audit Committee is comprised of Board members with diverse professional backgrounds, such as accounting/finance, utility security, risk management, and business performance integration. The breadth of experience in this Committee enables it to be the most appropriate lead in oversight of cybersecurity risks and capability.

4.5 Risk disclosure by AWK to the SEC (10-k, 2023, 14 pp. linked)

ITEM 1A. RISK FACTORS

We operate in a market and regulatory environment that involves significant risks, many of which are beyond our control. In addition to the other information included or incorporated by reference in this Annual Report on Form 10-K, the following material factors should be considered in evaluating our business and future prospects. Any of the following risks, either alone or taken together, could materially and adversely affect our business, financial position, results of operations, cash flows and liquidity.

Risks Related to Our Industry and Business Operations

Our Regulated Businesses are subject to extensive regulation by state PUCs and other regulatory agencies, which significantly affects our business, financial condition, results of operations and cash flows. Our Regulated Businesses also may be subject to fines, penalties and other sanctions for an inability to meet these regulatory requirements.

Our Regulated Businesses provide water and wastewater services to our customers through subsidiaries that are subject to regulation by state PUCs. This regulation affects the rates we charge our customers and has a significant impact on our business and operations. Generally, the state PUCs authorize us to charge rates that they determine are sufficient to recover our prudently incurred operating expenses, including, but not limited to, operating and maintenance costs, depreciation, financing costs and taxes, and provide us with the opportunity to earn an appropriate rate of return on invested capital.

Our ability to successfully implement our business plan and strategy depends on the rates authorized by the various state PUCs. We periodically file rate increase applications with state PUCs. The ensuing administrative process may be lengthy and costly. Our rate increase requests may or may not be approved, or may be partially approved, and any approval may not occur in a timely manner. Moreover, a PUC may not approve a rate request in an amount that is sufficient to:

- recover our cost of operations, including: purchased water; chemicals; and fuel, power and other commodities used in our operations;
- recover our operational labor and labor-related expenses, including without limitation costs and expenses associated with our pension and other post-employment benefits;
- enable us to recover our investment; and
- provide us with an opportunity to earn an appropriate rate of return on our investment.

Approval by the PUCs is also required in connection with other aspects of our Regulated Businesses, which are required to have numerous permits, approvals and certificates from the PUCs that regulate their businesses and authorize acquisitions, dispositions, debt and/or equity financing, and, in certain cases, affiliated transactions. Some state PUCs are empowered to impose financial penalties, fines and other sanctions for non-compliance with applicable rules and regulations. Although we believe that each utility subsidiary has obtained or sought renewal of the material permits, approvals and certificates necessary for its existing operations, we are unable to predict the impact that future regulatory activities may have on our business.

In any of these cases, our business, financial condition, results of operations, cash flows and liquidity may be adversely affected. Even if the rates approved are sufficient, we face the risk that we will not achieve the rates of return on equity permitted by state PUCs. This could occur if certain conditions exist, including, but not limited to, (i) water usage is less than the level anticipated in establishing rates, (ii) customers increase their conservation efforts, (iii) we experience unusual or emergent situations, events or conditions, (iv) we experience a significant increase in customers without recovery of the operating and other costs associated with serving them, or a decrease in customers that causes a decrease in operating revenue, or (v) our investments or expenses prove to be higher than the levels estimated in establishing rates. It may be difficult to predict the outcome or impact of these events on us or the actions that may be taken by the PUCs or other governmental authorities in response thereto.

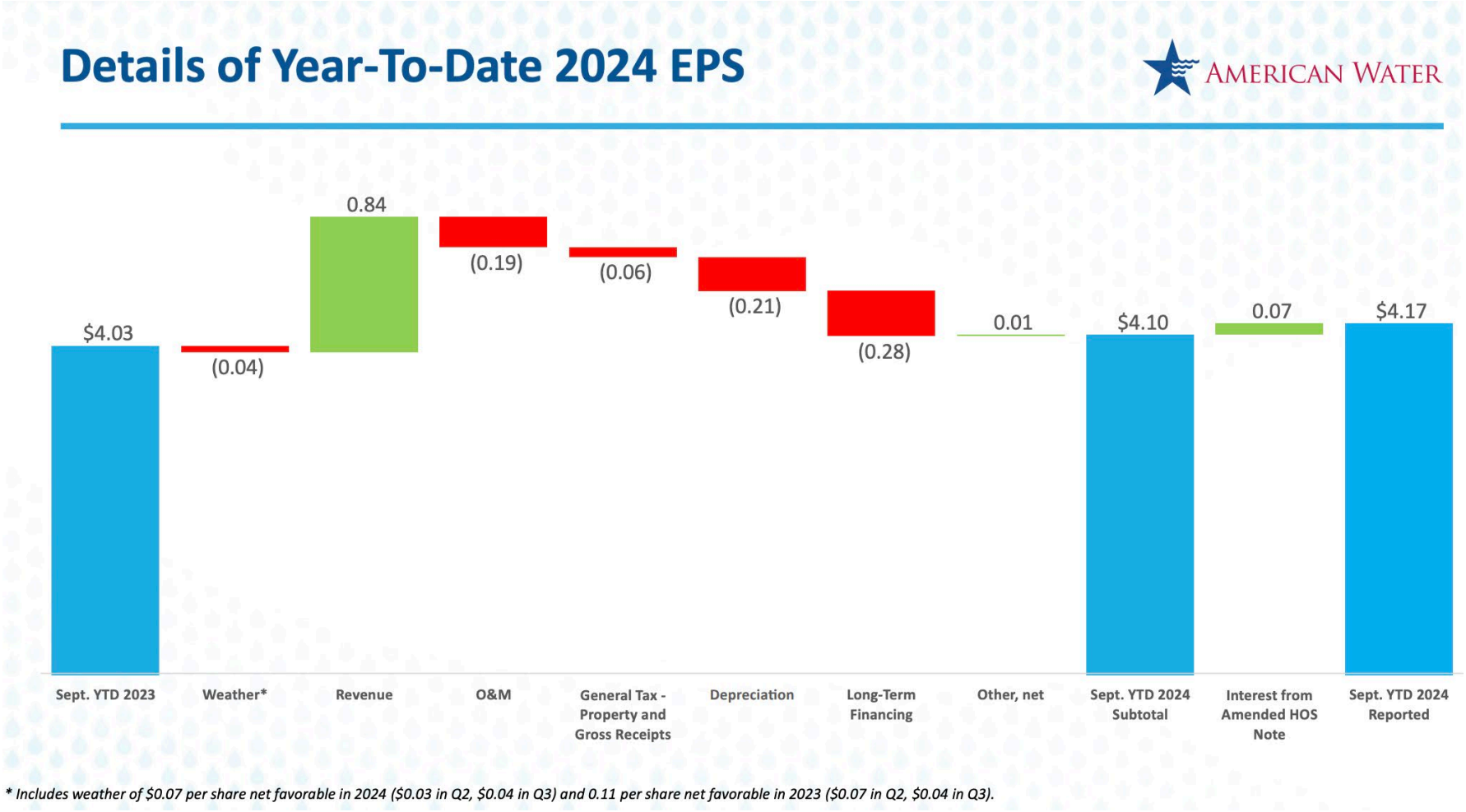
Our operations and the quality of water we supply are subject to extensive and increasingly stringent environmental, water quality and health and safety laws and regulations, including with respect to contaminants of emerging concern, compliance with which could impact both our operating costs and capital expenditures, and violations of which could subject us to substantial liabilities and costs, as well as damage to our reputation.

Our water and wastewater operations are subject to extensive federal, state and local laws and regulations. These requirements include, among others, CERCLA, the Clean Water Act, the Safe Drinking Water Act, the LCR (as amended), and each of their implementing rules and regulations, as well as other federal and state requirements. For example, state PUCs and environmental regulators set conditions and standards for the water and wastewater services we deliver. If the water or wastewater services we provide to our customers do not comply with regulatory standards, or otherwise violate environmental laws, regulations or permits, or other health and safety and water quality regulations, we could incur substantial fines, penalties or other sanctions or costs, as well as damage to our reputation. In the most serious cases, regulators could reduce requested rate increases or force us to discontinue operations and sell our operating assets to another utility or to a municipality. Given the nature of our business which, in part, involves

4.5 Financial disclosure relevant to ratemaking

- Financial statements
  - Financial filings and notes are key to understanding financial accounting details and the company's financial position
  - Relevant ratemaking issues (e.g., rate base and operating expenditures) may be discussed in the notes but not in the rate filing – and may lead to discovery of issues
  - Regulatory auditors might also want to listen in on corporate earnings calls
- Management discussion and analysis (MD&A)
  - Corporate message
  - Narrative explanation of financial performance
  - Discussion and overview of operations
  - Relevant trends, uncertainties, and risks
  - Regulatory environment and ratemaking
- Pandemic was a known risk
  - NARUC Resolution (2005) and tabletop exercises with stakeholders
  - More emphasis on workforce than ratepayer impact
  - Should shareholders share the burden?

4.5 Factors affecting earnings per share (AWK, 2024)

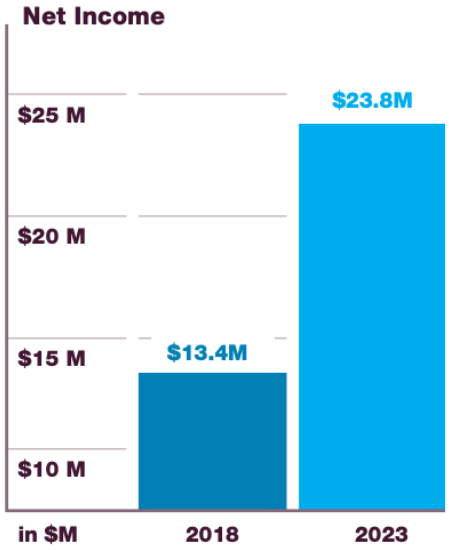


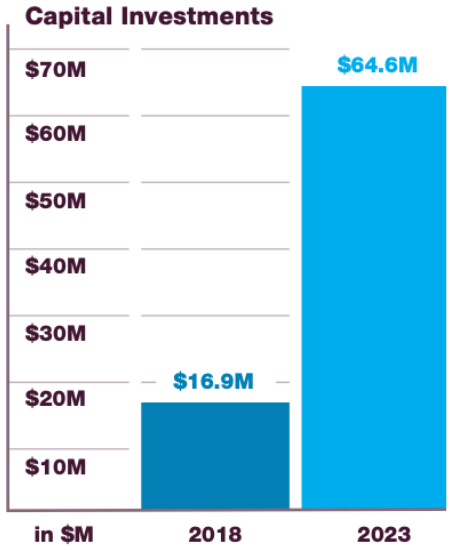
** Includes weather of $0.07 per share net favorable in 2024 ($0.03 in Q2, $0.04 in Q3) and 0.11 per share net favorable in 2023 ($0.07 in Q2, $0.04 in Q3).*

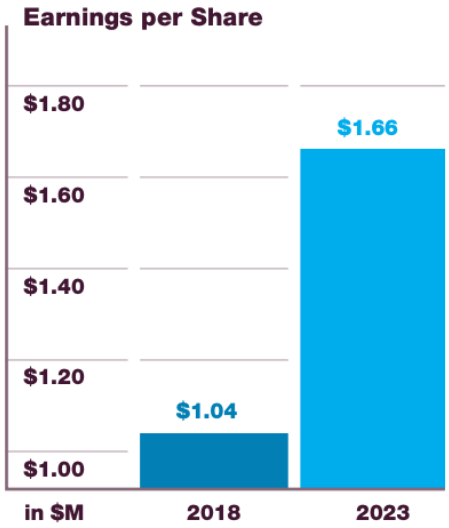
4.6 Select economic and financial performance metrics

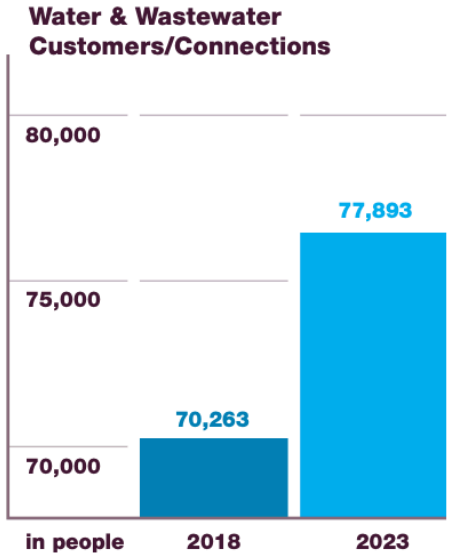
Concept	Name	Numerator	Denominator
	Plant to sales ratio	Utility plant	Annual operating revenues
Leverage	Debt ratio	Long-term debt	Total assets
Liquidity	Current ratio	Current assets	Current liabilities
	Ret. earnings to equity	Retained earnings	Shareholder equity
		Earnings before interest & tax (EBIT)	(Total assets – current liabilities)
	Return on equity	Net income	Rate base
		O&M expense	Units sold
		Customers	Employees
		Units sold	Units produced

4.6 General performance metrics







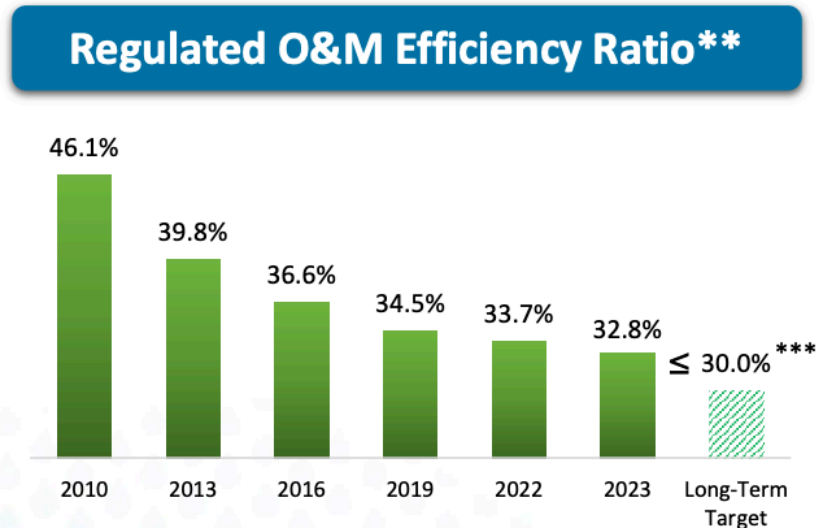


4.5 Poll: Efficiency metrics

- Which of the following is *not* a measure of efficiency?
  - A. Energy expenses/water produced
  - B. Employees/customer connections
  - C. Peak load/average load served
  - D. Operating expenses/operating revenues

4.6 Measuring efficiency

- O&M/revenues is not a measure of efficiency
- Efficiency is measured in terms of costs relative to outputs
- What might drive this “efficiency ratio”? (hint: other costs?)



Adjusted operations and maintenance expense – Regulated Businesses	**$966**	**$961**	**$959**
Less:			
Impact of adoption of ASU 2017-07**	-	16	12
Adjusted operations and maintenance expense – Regulated Businesses (c)	**$966**	**$945**	**$947**
Adjusted operating revenues—Regulated Businesses	**$2,186**	**$2,498**	**$2,749**
Less pro forma adjustment:			
Pro forma adjustment for impact of the TCJA***	89	124	161
Adjusted pro forma operating revenues—Regulated Businesses (d)	**$2,097**	**$2,374**	**$2,588**
Adjusted O&M efficiency ratio—Regulated Businesses (c)/(d)	**46.1%**	**39.8%**	**36.6%**

4.7 Debt financing and credit ratings

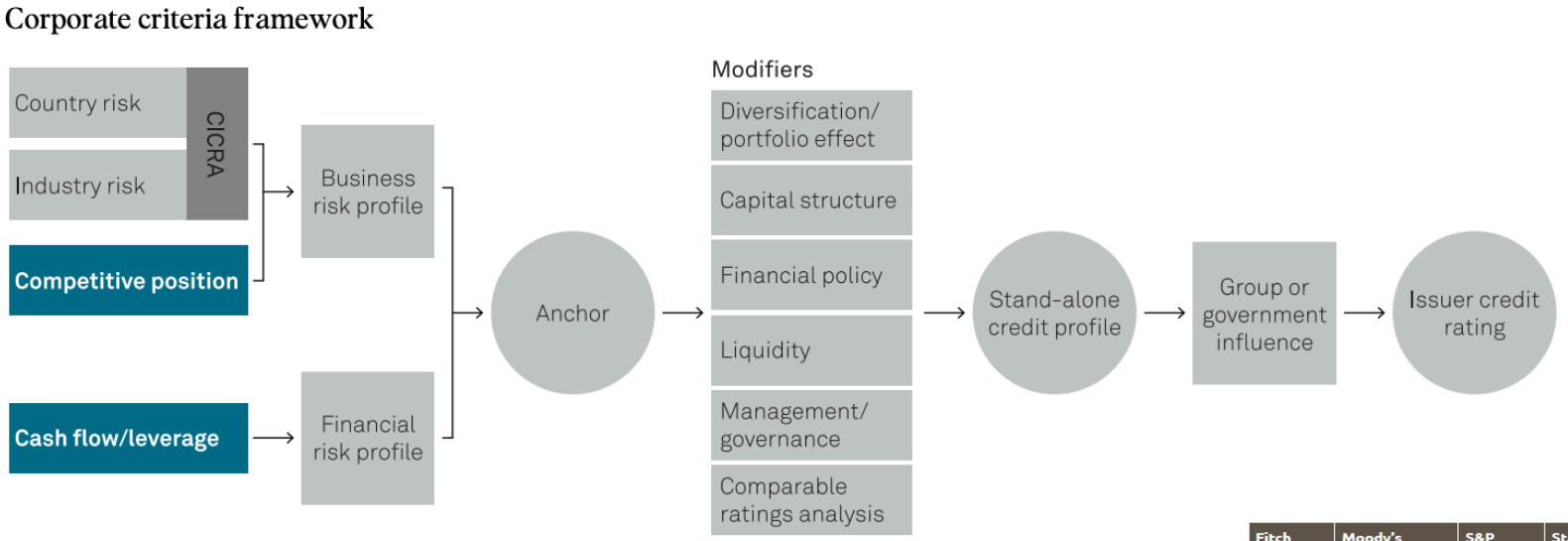
- Debt (“leverage”) provides financial capital to support operations
  - Long-term and short-term instruments and hybrids
  - Short-term debt may be converted to long-term debt
  - Includes bonds and loans, including government loans
  - Revenue bonds are secured by a revenue stream, as from utility sales
  - Debt limitations and coverage may be specified in bond covenants
- Publicly and privately owned utilities are rated in terms of risk
  - Fitch, Moody's, and Standard and Poor’s
  - Favorable credit ratings can lower the cost of debt (interest rate)
  - Commissions are also rated in terms of “regulatory climate”
  - Increasing attention to "double materiality” of financial and ESG factors
- Principal payments on debt
  - Explicit in cash needs basis but implicit in utility basis (may have interest-only debt)
- Interest payments on debt
  - Not reflected in net operating income (revenues-expenses)
  - Actual interest paid may reflect non-utility operations so cost must be calculated
  - Affects calculation of income taxes and net operating income (synchronization)

4.7 General indicators of debt burden

- Two measures of debt burden: debt outstanding and debt service (GFOA, 2000)
- Debt outstanding is the total dollar amount of principal that must be paid as measured in relative terms by
  - Debt as a percentage of the fair market value (FMV) of taxable property
  - Debt per capita or as a percentage of personal income per capita
- Debt service (principal and interest payments) is the allocation of current resources that are otherwise unavailable for other expenditure purposes
  - Debt service as a percentage of property tax revenue
  - Debt service per capita or as a percentage of personal income per capita
  - Debt service as a percentage of general fund revenues
  - Debt service as a percentage of general fund budgeted expenditures
  - Debt service as a percentage of operating expenditures

Q. Should regulators seek favorable credit ratings to lower the cost of debt?

4.7 Credit ratings and risk (S&P)



Source: S&P Global Ratings.

	Fitch	Moody's	S&P	Status
Investment Grade *(Lowest risk/cost)*	AAA	Aaa	AAA	Prime
	AA+	Aa1	AA+	High Grade
	AA	Aa2	AA	
	AA-	Aa3	AA-	
	A+	A1	A+	Upper Medium Grade
	A	A2	A	
	A-	A3	A-	
	BBB+	Baa1	BBB+	Lower Medium Grade
	BBB	Baa2	BBB	
	BBB-	Baa3	BBB-	
Non-Investment Grade	BB+	Ba1	BB+	Non-Investment Grade Speculative
	BB	Ba2	BB	
	BB-	Ba3	BB-	
	B+	B1	B+	Highly Speculative
	B	B2	B	
	B-	B3	B-	
In Default *(Highest risk/cost)*	D	C	D	In Default

Credit ratings below B-/B3/B- and above D/C/D not included in above chart

4.7 Credit ratings and metrics (Moody's, 2017) ⓘ

Exhibit 1

Aggregate Metrics by Rating Category

	EBITA / Average Assets	EBITA / Interest Expense	EBITA Margin	Operating Margin	(FFO + InExp) / IntExp
Aaa	12.3%	11.5	30.6%	25.4%	17.2
Aa	10.2%	13.9	19.5%	17.4%	15.2
A	10.8%	10.7	15.8%	14.9%	13.1
Baa	8.7%	6.3	13.9%	12.0%	8.1
Ba	8.5%	3.7	13.3%	11.5%	5.1
B	6.7%	1.9	11.2%	9.0%	2.9
Caa-C	4.1%	0.7	7.0%	4.6%	1.6

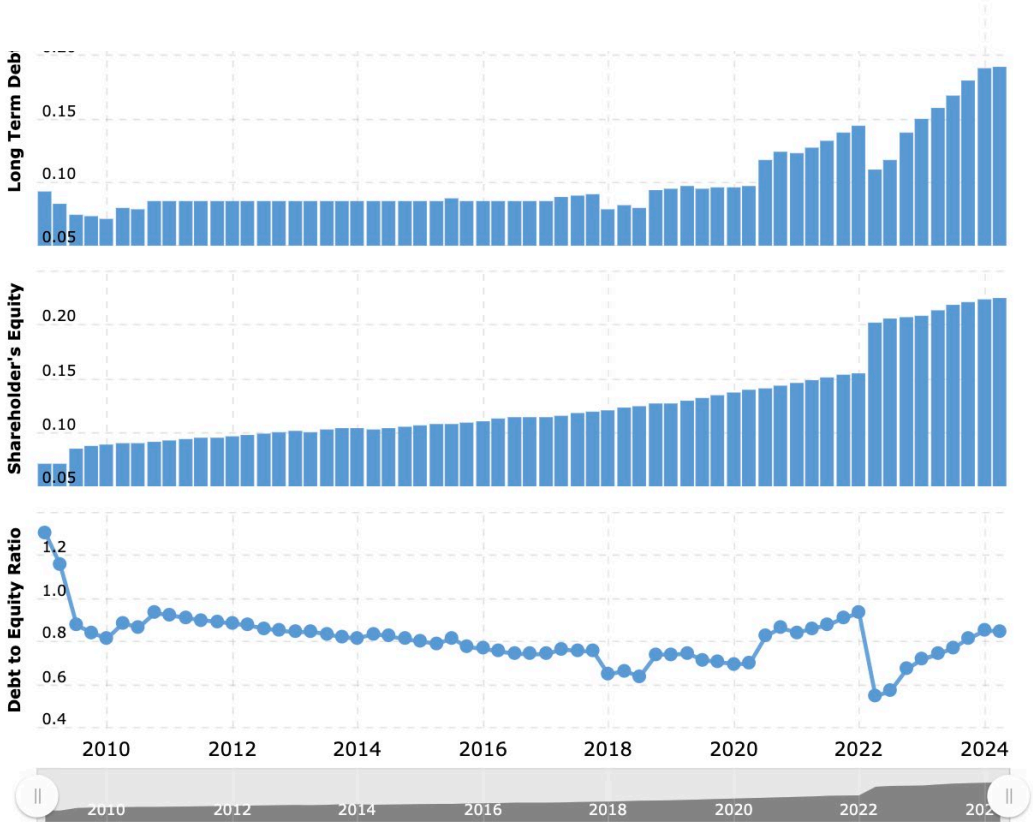
Source: Moody's Financial Metrics™

FFO / Debt	Retained Cash Flow / Net Debt	Debt / EBITDA	DEBT / Book Capitalization	CAPEX / Depreciation	Revenue Volatility
41.5%	31.4%	1.9	35.1%	1.1	6.8
43.4%	30.1%	1.8	31.0%	1.3	8.6
34.1%	27.3%	2.3	40.7%	1.3	7.4
27.1%	25.3%	2.9	46.4%	1.2	10.7
19.9%	19.7%	3.7	55.7%	1.2	14.3
11.7%	11.5%	5.2	65.8%	1.1	18.7
4.6%	5.1%	8.1	89.3%	0.8	18.9

4.7 York: long-term debt over time

Credit Rating

On July 26, 2023, Standard & Poor's affirmed the Company's credit rating at A-, with a stable outlook and adequate liquidity. The Company's ability to maintain its credit rating depends, among other things, on adequate and timely rate relief, which it has been successful in obtaining, its ability to fund capital expenditures in a balanced manner using both debt and equity and its ability to generate cash flow. In 2024, the Company's objectives are to continue to maximize its funds provided by operations and maintain a strong capital structure in order to be able to attract capital.



4.7 York: long-term debt

224. LONG-TERM DEBT - Account Nos. 221.0, 222.0, and 224.0

(Excluding Advances from Affiliated Companies)

1. Give below the particulars indicated of the long-term debt at end of year represented by unmatured obligations issued or assumed by the respondent, exclusive of advances from affiliated companies.
2. Group entries according to accounts and show the total for each account.
3. For obligations assumed by the respondent show in Column (a) the name of the issuing company and the class and series of such obligations.
4. For Receivers' Certificates show the name of the court and date of court order under which such certificates were issued.
5. If respondent has pledged any of its long-term debt securities give particulars in a footnote, including name of the pledge and purpose of pledge.
6. If interest expense was incurred during the year on any obligations retired or reacquired before end of year, include such interest expense in Column (g).
7. If interest has matured but is unpaid on any obligation, state in a footnote the class, series and principal amount of such obligation and the amount of interest matured thereon.

Line No.	Class and Series of Obligations (a)	Nominal Date of Issue (b)	Date of Maturity (c)	Principal Amount Authorized (d)	Outstanding Per Balance Sheet* (e)	Interest For Year		Held By Respondent	
						Rate (f)	Amount (g)	As Reacquired. Lg.-Term Debt (h)	In Sinking & Other Funds (i)
1	**Obligations Other Than PENNVEST**	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
2									
3	Account 221								
4									
5	Variable Rate Pedfa Series A	2008	2029	12,000,000	12,000,000	3.54	424,472		
6	4% - 4.5% YCIDA Series 2015	2015	2045	10,000,000	10,000,000	4 - 4.5	425,044		
7	4.54% Senior Notes	2019	2049	20,000,000	20,000,000	4.54	908,000		
8	3.23% Senior Notes	2019	2040	15,000,000	15,000,000	3.23	484,500		
9	3% Pedfa Series 2019A	2019	2036	10,500,000	10,500,000	3	315,000		
10	3.1% Pedfa Series 2019B	2019	2038	14,870,000	14,870,000	3.1	460,970		
11	3.24% Senior Notes	2020	2050	30,000,000	30,000,000	3.24	972,000		
12	5.5% Senior Notes	2023	2053	40,000,000	40,000,000	5.5	1,870,000		
13	Account 224								
14	Committed Line of Credit	2020	2025	50,000,000	30,273,001	S + 1.17	1,006,897		
15									
16									
17									
18	Total Obligations Other Than PENNVEST			202,370,000	182,643,001		6,866,883		
19	**PENNVEST Obligations**	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
36									
37	Total PENNVEST Obligations								
38	TOTAL OBLIGATIONS			202,370,000	182,643,001		6,866,883		

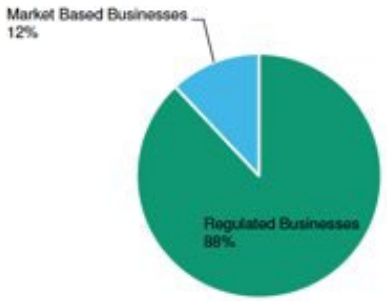
* Total amount outstanding without reduction for amount held by respondent.

4.8 Equity financing and cost of equity models

- Equity investors may be individuals or shareholders – not just listed companies
  - Including large institutions (such as pension funds and insurance companies)
- Cost of equity capital compensates investors by providing a return on investment
  - Depreciation expense is the return of their investment over time
- Cost of equity is based on "comparable risk”
  - Models require assumptions and subjective judgment
  - Impactful in terms of revenue requirements and often controversial
- Risk is generally lower for regulated than non-regulated (competitive) companies
  - Utilities are valued for stable and high dividends, especially during volatile markets
  - Protective role of the compact

Exhibit 3

The vast majority of American Water's operating revenue is derived from low-risk regulated utilities

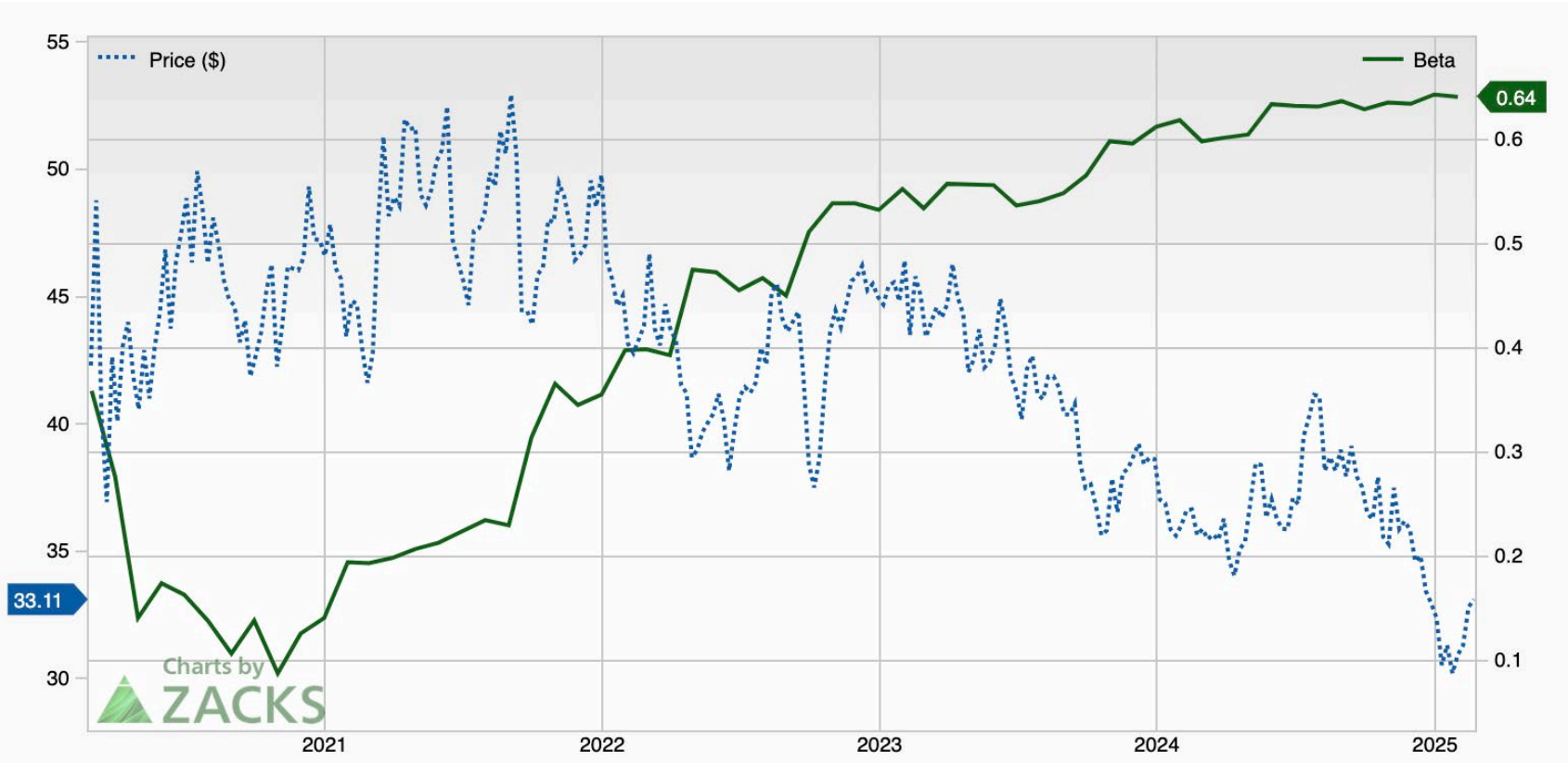


4.8 Cost of equity models (based on Deloitte, 2012)

- Discounted cash flow (DCF) or dividend discount model
  - ROE = dividend over share price + growth
  - Observed current annual dividends divided by current market price plus expected annual rate of growth measured in terms of dividends, earnings per share, or book value
- Capital asset pricing model (CAPM)
  - ROE = risk-free rate + overall market risk (beta)
  - Assumes that the expected rate of return consists of a risk-free return (adjusted for inflation) plus compensation for risk (market-based premium)
  - Beta is a measure of systematic (non-diversifiable) risk by which a stock is compared to the overall market; a lower beta reflects relatively lower risk (and potential return)
- Risk-differential or risk-premium method
  - ROE = risk-free rate + premium
  - Risk premium compensates investors for added risk and measured by the difference between the risk-free rate and average of returns for the industry
- Price-to-earnings ratio
  - Based on earnings from some past period and concurrent or present market prices
- Comparable earnings or opportunity cost
  - Considers what the invested capital would have earned in enterprises with similar risks
  - May be used to set “generic returns” for sector (e.g., Florida, Massachusetts for water)

4.8 York: beta over time

- “Beta is a measure of risk commonly used to compare the volatility of stocks, mutual funds, or ETFs to that of the overall market. The S&P 500 Index is the base for calculating beta with a value of 1.0. Securities with betas below 1 have historically been less volatile than the market. While securities with betas above 1, have historically been more volatile than the market. The beta is calculated using data over a 5-year period” (Zacks).



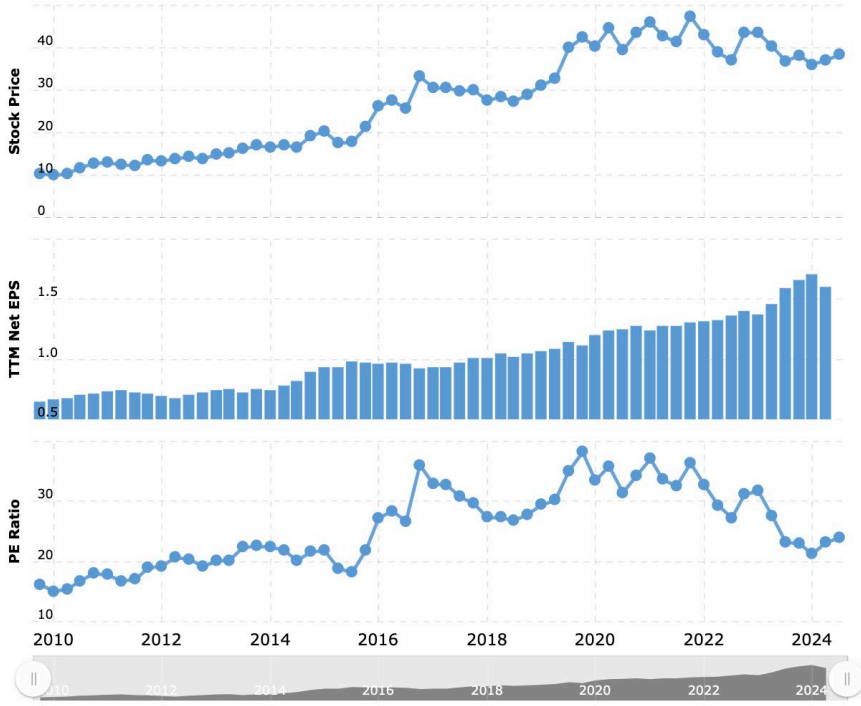
4.8 York: price to earnings (P/E) ratio

- The P/E ratio essentially measures market expectations of a company.
- York Water has a P/E ratio that is roughly in line with the water utilities industry average (28.5).
- Its P/E ratio suggests that York Water shareholders think that in the future it will perform about the same as other companies in its industry classification.
- If York Water actually outperforms its peers going forward, that should be a positive for the share price.
- York Water trades on a P/E ratio of 30.5, which is above the US market average of 16.8. With debt at prudent levels and improving earnings, it's fair to say the market expects steady progress in the future.
- Source: Simply Wall St. (1/18/19)

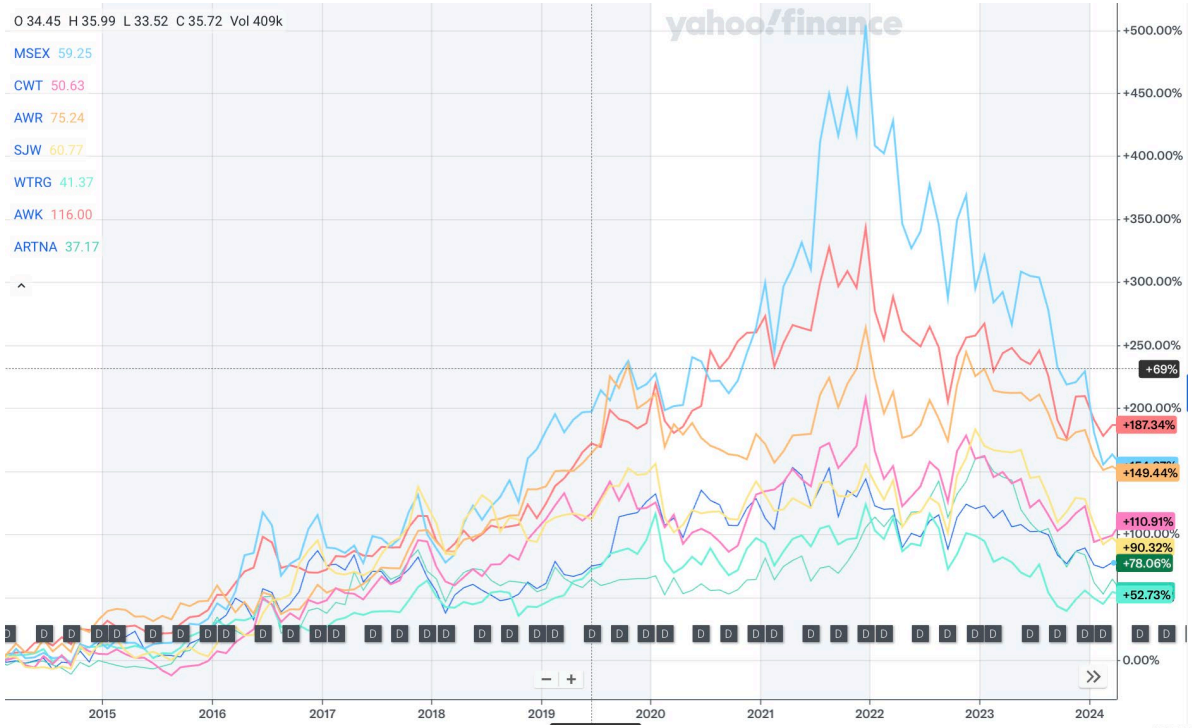
What Does The York Water Company's (NASDAQ:YORW) P/E Ratio Tell You?

Kari Hurd

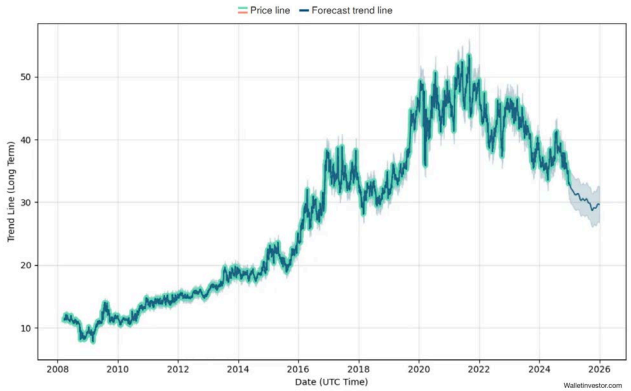
Simply Wall St. January 18, 2019



4.8 York: comparative stock prices and forecast



YORW Forecast, Long-Term Price Predictions for Next Months and Year: 2023, 2024



4.9 Return on equity (ROE) calculation

- Pennsylvania PUC approach
- The ROE is calculated using two DCF models for DSIC utilities
  - To calculate the current dividend DCF: K = D1/P0 + G
  - To calculate the 52-week average dividend DCF: K = D0/Pa + G
- Definitions

K	=	Cost of equity
D1	=	Dividend expected during the year = D0 + ½g
D0	=	Latest indicated dividend, obtained from Yahoo! Finance
g	=	Expected 5-year dividend growth rate base of barometer group, obtained from Value Line Investment Survey
P0	=	Current price of the stock, obtained from Yahoo! Finance
Pa	=	Average of high and low stock price over the latest 52-week period, obtained from Yahoo! Finance
G	=	Average of 5-year expected earnings growth rate forecasts obtained from a reputable online source

Note: dividend per share/price = D/P = yield

4.9 ROE calculation (continued)

- CAPM uses the yield of a risk-free interest-bearing obligation plus a rate of return premium that is proportionate to the systematic risk of an investment
- The following formula is used to calculate CAPM:

  $K = Rf + \beta(Rm-Rf)$
- Three components are necessary to calculate the CAPM cost of equity:

  β = Beta, a measure of systematic risk for each stock

  Rf = The risk-free rate of return, 10-year U.S. Treasury yields are used for Rf; yields are taken from the previous two quarters and forecasted next four quarters

  Rm = Total return of the equity market as determined by the SBBI Yearbook
- Commission determines the ROE used for DSIC purposes based on the range of reasonableness from the DCF barometer group data
- CAPM data, recent ROEs adjudicated by the Commission, and informed judgment

Source: PA PUC, Report on the Quarterly Earnings of Jurisdictional Utilities for the Year Ended September 30, 2018.

4.9 ROE calculation (Pennsylvania PUC)

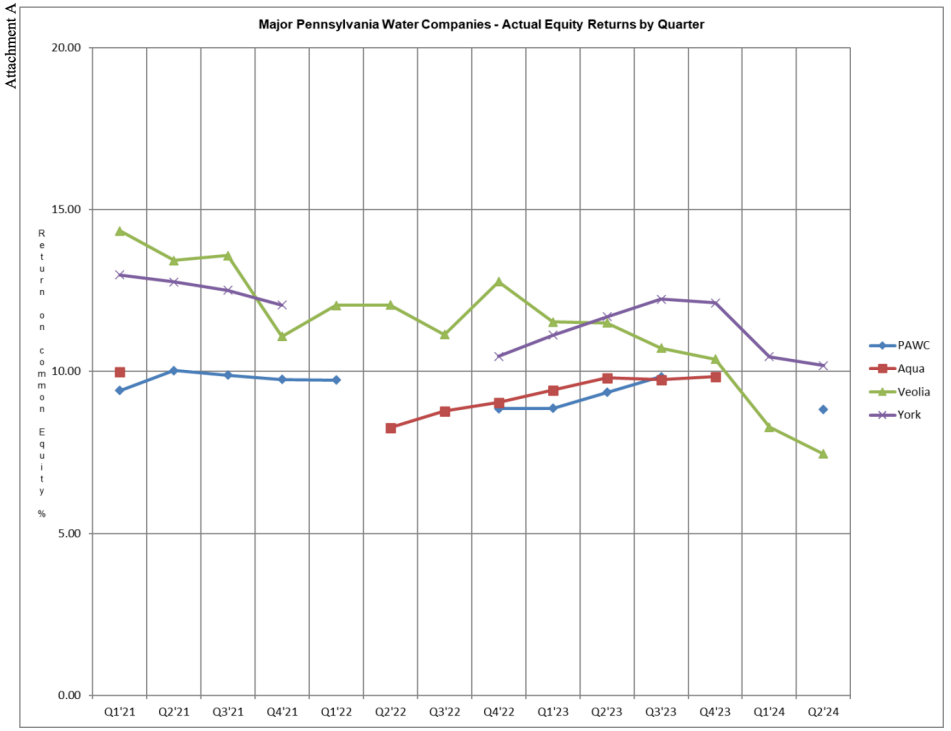
Market Based Returns on Common Equity [1]
September 18, 2024

Water Company Barometer Group

	Cost Rates %
(1) Current DCF	9.16
(2) 52-Week Average DCF	9.26
(3) Average DCF	9.21
(4) Market Indicated Common Equity Cost Rate Range @ 1 standard deviation around the mean.[2]	7.45-10.97
(5) CAPM Check of DCF Reasonableness	10.67
(6) Recent Commission Approved ROEs[3]:	
Columbia Water Company, R-2023-3040258	9.75
Pennsylvania-American water Company, R-2023-3043189	9.45
(7) Distribution System Improvement Charge (DSIC) Return[4]:	**9.65%**

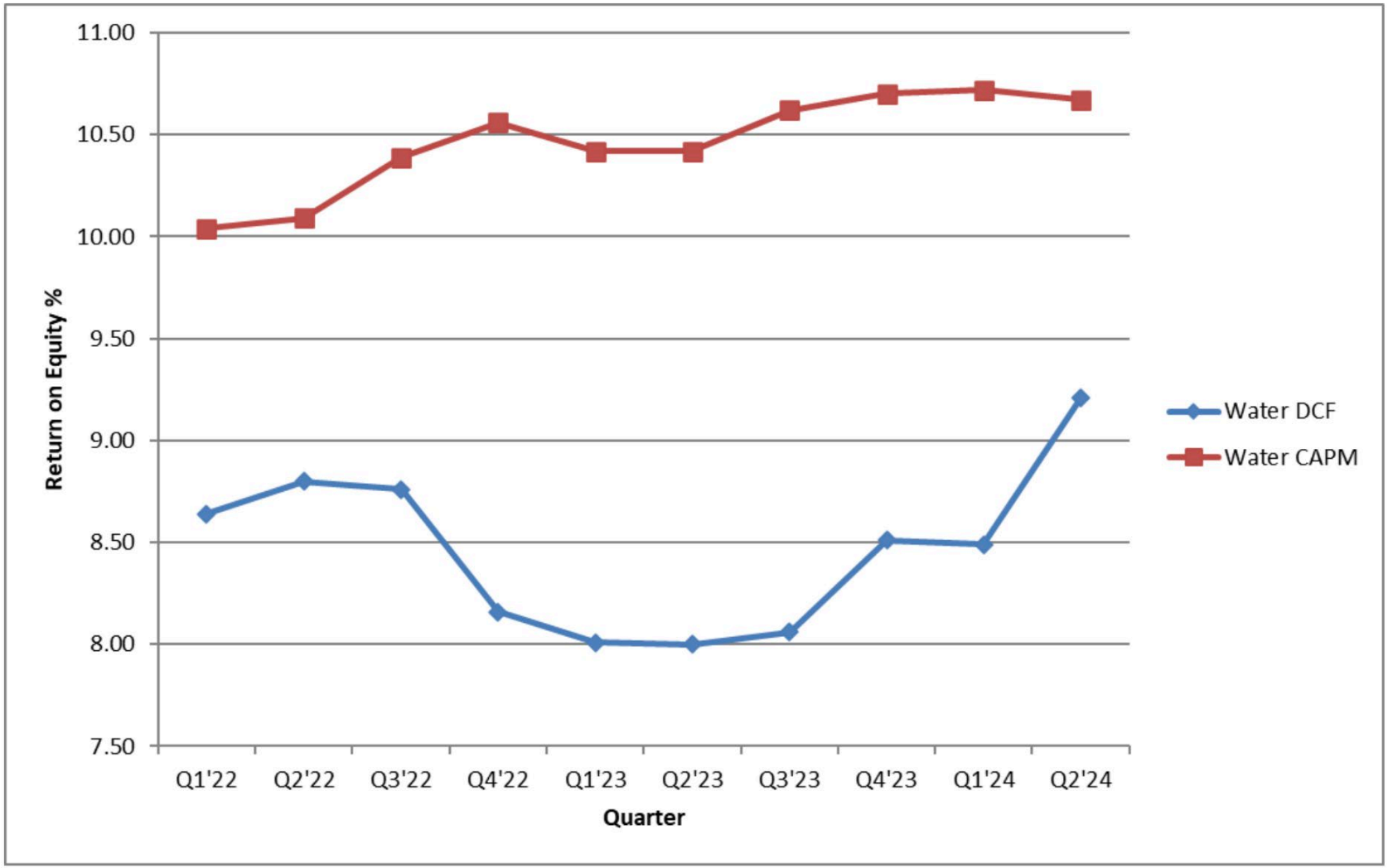
[1] As calculated by the Bureau of Technical Utility Services
[2] Standard Deviation of 12 DCF observations
[3] ROEs from base rate cases within last two years, fully litigated or stipulated for DSIC purposes
[4] Commission authorized Return on Equity (ROE) for DSIC purposes

Attachment A

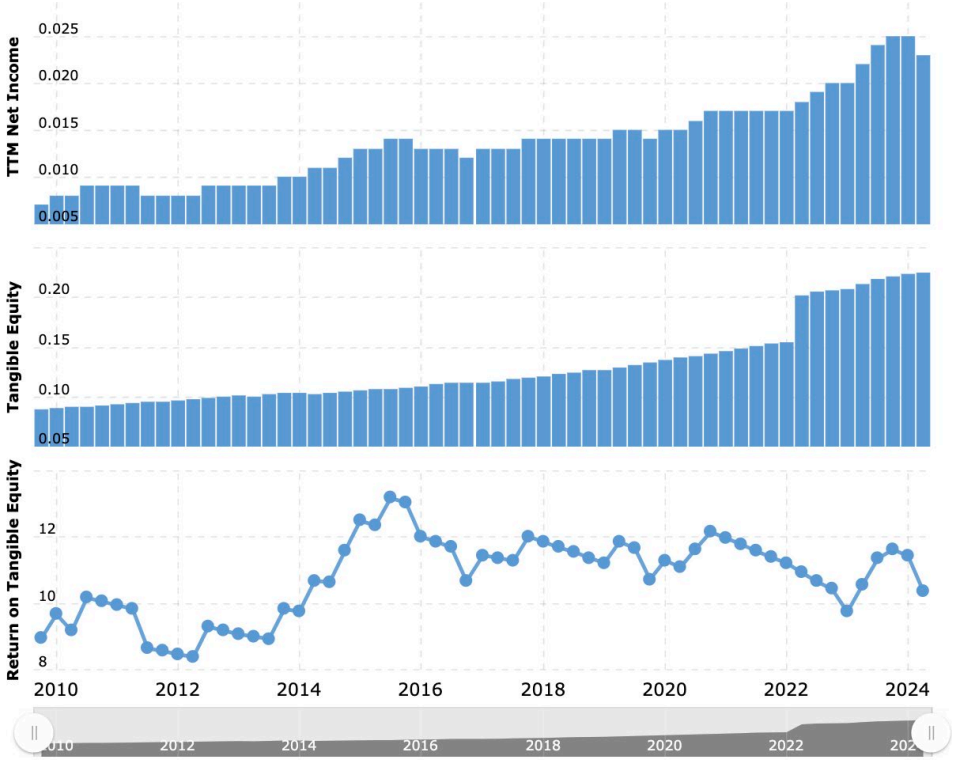


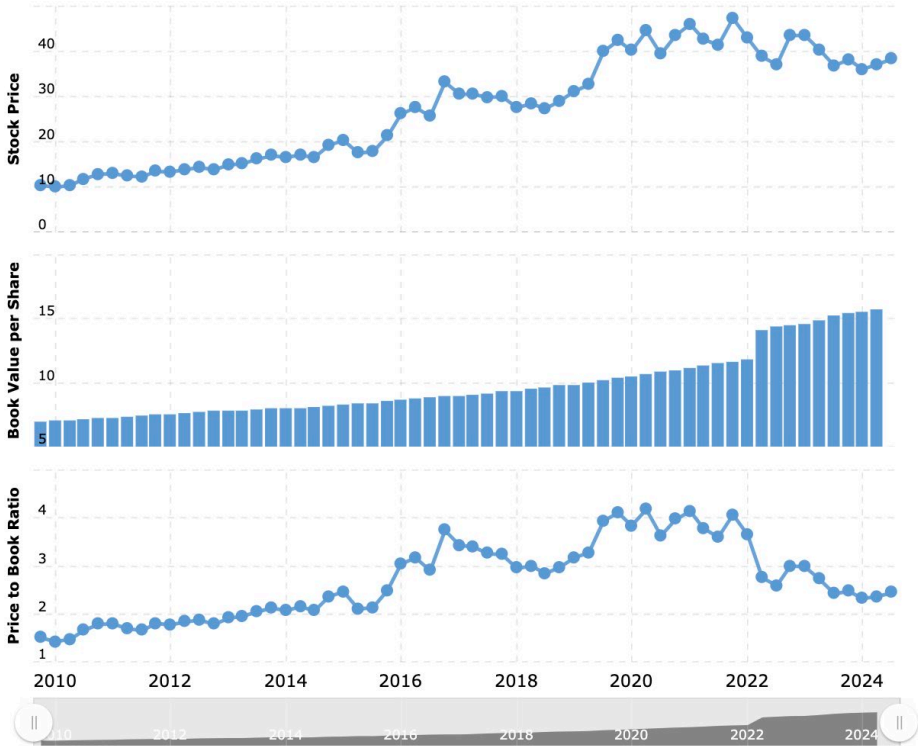
	Utility Adjusted ROE[3] (%)	Commission Approved ROE[4] (%)
WATER		
PA American Water Company	8.56	9.45
PA American – Wastewater	8.56	9.45
AQUA Pennsylvania*		9.65
AQUA Pennsylvania – Wastewater*		9.65
York Water Company	8.00	9.65
Veolia Water Pennsylvania, Inc.	5.70	9.65
Columbia Water Company	3.19	9.75
Newtown Artesian Water	-1.11	9.65

4.9 DCF vs. CAPM average ROEs (Pennsylvania PUC)

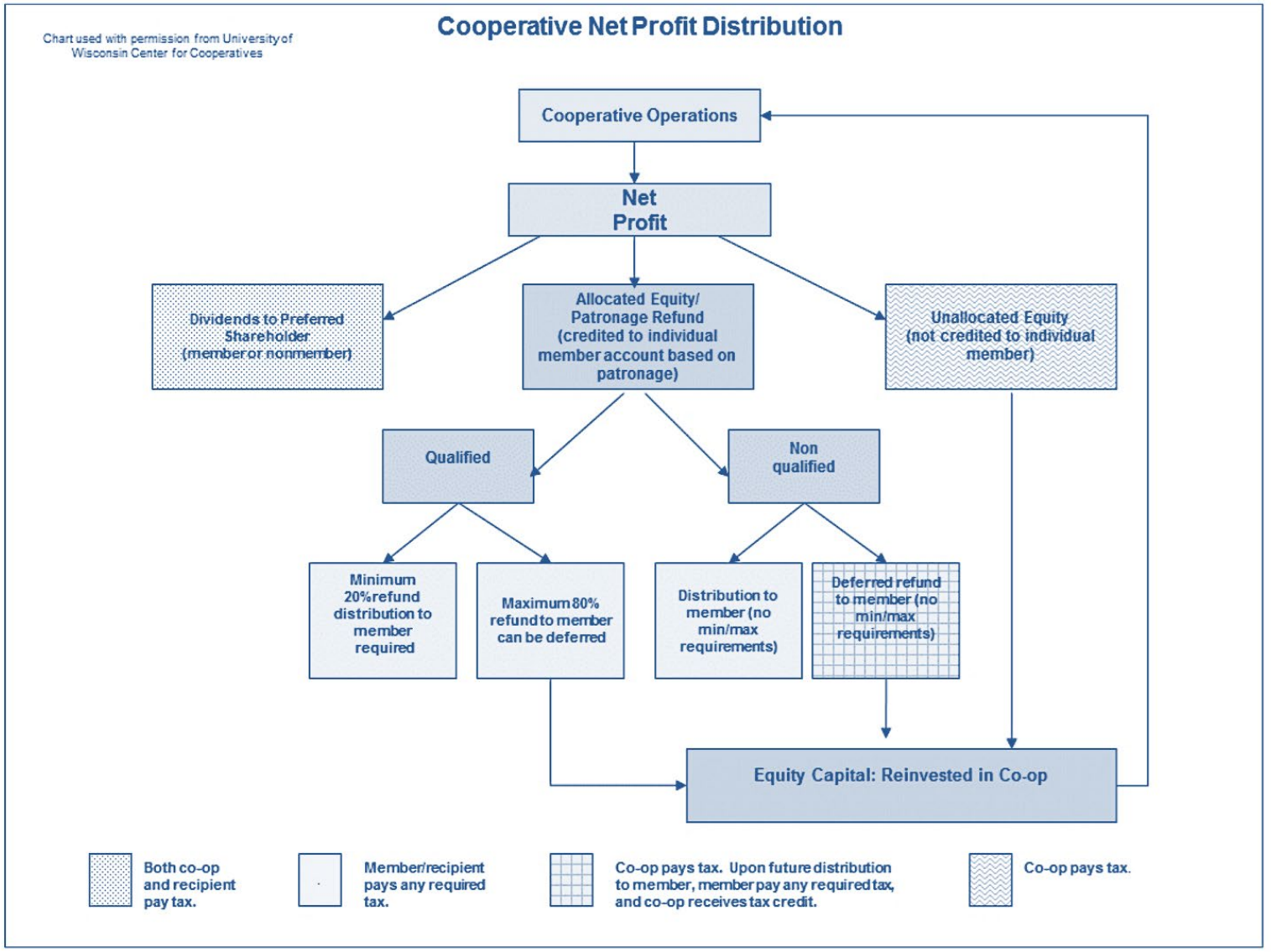


4.9 York: returns and price-to-book ratio





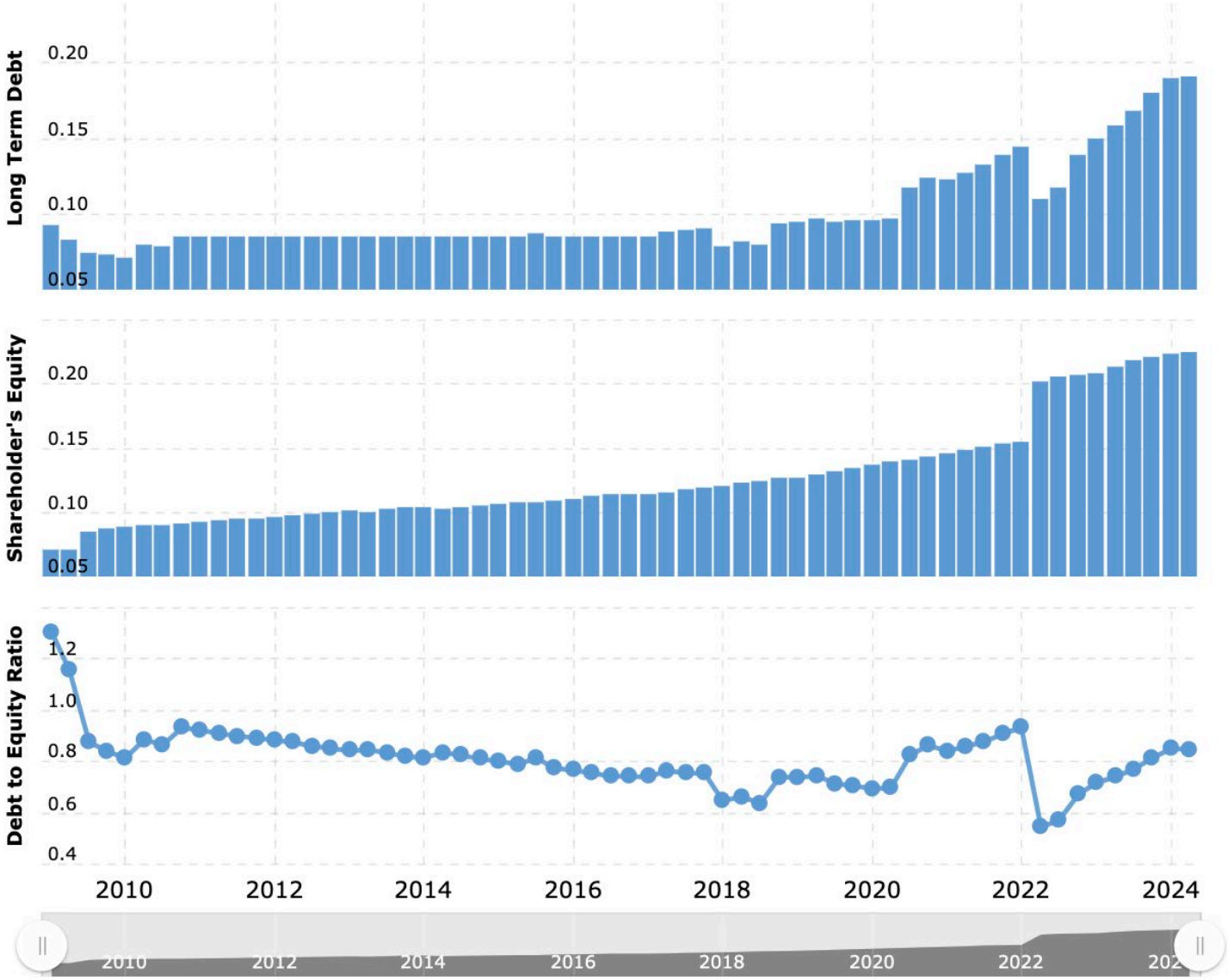
4.9 Fund distributions by cooperatives (Lund, 2013)



4.10 Capital structure: debt and equity

- Capital structure
  - Combination of investor-supplied debt and equity on a rolling basis to support capital investment needs of the utility, balancing cost and risk
  - Found on the company's balance sheet: capital assets = debt + equity
  - Reviewed by regulators in rate cases and when approving major issuances
- Capitalization ratios
  - Debt-to-equity ratio
  - Long-term debt ratio
  - Debt—to-capitalization ratio
- Capital structure generally is optimized in the range of 45-55 or 55-45
  - To maintain investment quality credit ratings
  - To maintain sufficient capital investment
  - To maintain low overall financial costs relative to risk
- Imputing the capital structure
  - "If the utility's proportion or cost of debt is significantly different than that indicated as industry averages, the auditor may wish to consider using [imputing] a hypothetical capital structure, in lieu of the actual capital structure" (NRCAM, 2003)

4.10 York: capital structure (debt and equity)



4.10 Equity and debt on the balance sheet

- Equity Capital
  - 201. Common Stock Issued
  - 202. Common Stock Subscribed
  - 203. Common Stock Liability for Conversion
  - 204. Preferred Stock Issued
  - 205. Preferred Stock Subscribed
  - 206. Preferred Stock Liability for Conversion
  - 207. Premium on Capital Stock
  - 209. Reduction in Par on Stated Value of Capital Stock
  - 210. Gain on Resale or Cancellation of Reacquired Capital Stock
  - 211. Other Paid-In Capital
  - 212. Discount on Capital Stock
  - 213. Capital Stock Expense
  - 214. Appropriated Retained Earnings
  - 215. Unappropriated Retained Earnings
  - 216. Reacquired Capital Stock
  - 218. Proprietary Capital (for proprietorships and partnerships only)
- Long-Term Debt
  - 221. Bonds
  - 222. Reacquired Bonds

4.10 York: statement of retained earnings

223. STATEMENT OF RETAINED EARNINGS SUPPORTING SCHEDULE
Account Nos. 214.0 and 215.0

1. Dividends should be shown for each class and series of capital stock. Show amounts of dividends per share.
2. Show separately the state and federal income tax effect of items shown in Account No. 409.0.

Line No.	Item (a)	Amounts (b)
1	**Unappropriated Retained Earnings Account No. 215.0:**	XXXXX
2	Balance Beginning of Year	74,339,257
3	Changes to Account:	XXXXX
4	Adjustments to Retained Earnings *	
5	Credits	
6	Debits	
7	Balance Transferred From Income	22,844,985
8	Total Unappropriated Retained Earnings	97,184,242
9		
10	**Appropriated Retained Earnings Account No. 214.0:**	XXXXX
11	Total Appropriations of Retained Earnings	
12	Dividends Declared:	XXXXX
13	Preferred Stock Dividends Declared	
14	Common Stock Dividend Declared	(11,715,563)
15	Total Dividends Declared	(11,715,563)
16	Total Appropriated Retained Earnings	(11,715,563)
17	**Total Retained Earnings**	85,468,679

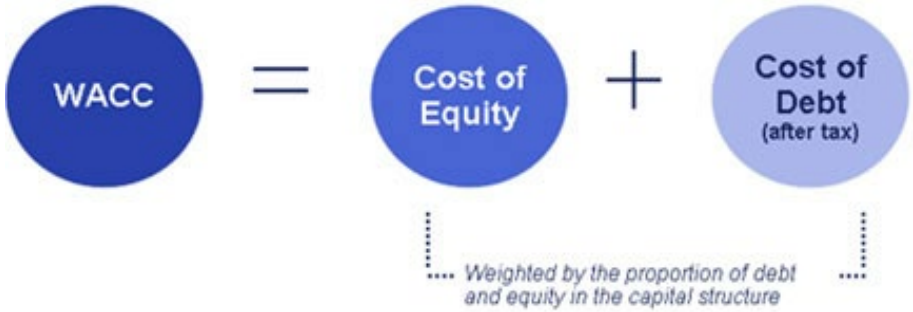
* Requires Commission approval prior to use.

Period Ended December 31				
In 000's (except per share)				
	Quarter		Twelve Months	
	2023	2022	2023	2022
Operating Revenues	$ 18,096	$ 15,111	$ 71,031	$ 60,061
Net Income	$ 6,012	$ 5,011	$ 23,757	$ 19,580
Average Number of Common Shares Outstanding	14,314	14,266	14,295	13,958
Basic and Diluted Earnings Per Common Share	$ 0.42	$ 0.35	$ 1.66	$ 1.40
Dividends Declared Per Common Share	$ 0.2108	$ 0.2027	$ 0.8189	$ 0.7874

4.11 Weighted cost of capital

- Cost of capital (debt and equity) is informed by finance (vs. accounting)
- Cost of debt: risk-free rate plus credit risk premium
  - Calculated based on utility data
  - Lower cost reflects lower risk (first in line)
- Cost of equity: risk-free rate plus equity risk premium
  - Modeled based on market data
  - Higher cost reflects higher risk (last in line)
- Weighted cost of capital: weights cost by proportion of debt and equity
  - May or may not include short-term debt
  - Preferred stock may be included but doing so is uncommon
  - Customer advances can provide a repayable but cost-free source of capital
- Optimal capital structure is assessed based on weighted cost of capital
  - Utilities should maintain a capital structure than minimizes capital costs and is flexible enough to raise funds from any capital class at a reasonable cost (Deloitte, 2012)
  - Cost of debt is lower and has tax advantages, lowering revenue requirements
  - But too much debt exposes equity shareholders to more financial risk and thus raises the cost of equity capital (i.e., an inflection point)

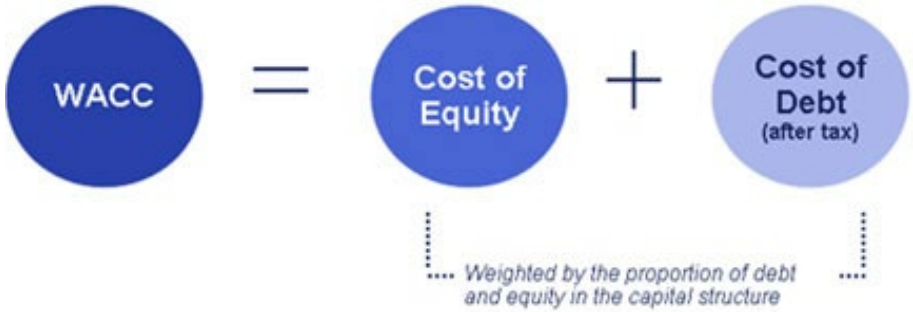
4.11 Exercise: weighted (average) cost of capital



$$WACC = (E/(D+E))\ K_E + (D/(D+E))\ K_D\ (1 - t)$$

		Amount (000)	Percentage	Rate	Weighted cost
1	Equity	$221,642	54.82%	9.65%	? 5.29%
2	Debt	$182,643	45.18%	3.86%	?
3	Total	$404,285	100.00%		? 7.03%

4.11 Exercise: weighted (average) cost of capital



$$WACC = (E/(D+E))\ K_E + (D/(D+E))\ K_D\ (1 - t)$$

		Amount (000)	Percentage	Rate	Weighted cost
1	Equity	$221,642	54.82%	9.65%	? 5.29%
2	Debt	$182,643	45.18%	3.86%	? 1.74%
3	Total	$404,285	100.00%		? 7.03%

4.11 York: capital structure and weighted cost

Line no.	Acct.	Item	2018		
1		Equity Capital and Liabilities			
2	201.0	Common Stock Issued	140,473		
3	213.0	Capital Stock Expense	(4,299)		
4	215.0	Unappropriated Retained Earnings	85,469		
5		>Total Equity Capital	221,642		
6		Long-Term Debt			
7	221.0	Bonds	152,370		
8	224.0	Other Long-Term Debt	30,273		
9		>Total Long-Term Debt	182,643		
10		>TOTAL CAPITAL	404,285		
11		Total interest expense	7,047		
12		COST OF CAPITAL			
13		Return on Equity (ROE) (auth.)	9.65%		
14		Interest Rate on Debt (est.)	3.86%		
15		CAPITAL STRUCTURE	Percentage	Rate	Weighted Cost
16		Percentage Common Equity Capital	54.82%	9.65%	5.29%
17		Percentage Long-Term Debt	45.18%	3.86%	1.74%
18		>Total	100.00%		7.03%

4.12 Regulated returns and risk

- Key conceptions of regulated returns
  - Cost of capital is a finance concept – an efficient return (markets)
  - Return on capital is an accounting concept – a measurable return (data)
  - Authorized return is a policy concept – a fair return (regulators)
- Regulatory risk is an economic concept
  - Includes both process and political factors
  - Regulatory policies and decisions can mitigate the effects of all other forms of risk
  - Regulatory risk a firm-specific risk that is irrelevant to diversified investors
- Fair return is not determined by risk models
  - Authorized returns typically exceed the cost of capital (dynamic) and can be affected by self-reinforcing circularity

Q. What explains the spread between yields and authorized ROEs?

4.12 Authorized, earned, and allowed returns

- Returns compensate debt holders and equity shareholders
  - Net operating income / rate base = overall rate of return (ROR)
  - Net income / equity capital = return on equity (ROE)
- Authorized return
  - Authorized return must be compensatory under the U.S. Constitution (minimum or floor)
  - Returns are authorized and should be reasonable *but are not guaranteed*
  - Reasonable opportunity is afforded by test year, grossing up, and cost-adjustment mechanisms
- Earned return
  - Expressed as a percentage of the rate base
  - Utilities must "reach" for their authorized return and may not be able to earn it
  - Earnings will be affected by operational inefficiency/efficiency, cost inflation/deflation or sales erosion/growth
- Allowed return
  - What regulators will tolerate in terms of earned above authorized returns
  - Allowed returns may exceed authorized (for a time) – suggesting low regulatory risk unless and until regulators intervene
  - Earnings above authorized returns call for rate adjustments

4.12 Core regulatory precedents on rates of return

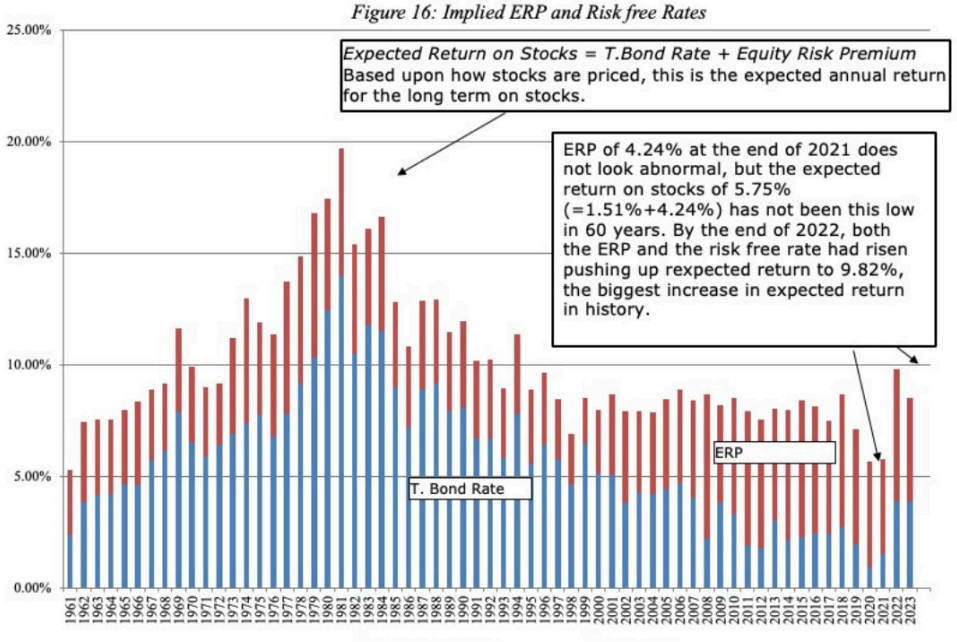
- Fifth Amendment to the U.S. Constitution (”takings clause”)
  - Returns to investors cannot be “confiscatory” and must be “compensatory”
- *Bluefield Water Works & Improvement Company vs. Public Service Commission of West Virginia* (1923)
  - “The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.”
- *Federal Power Commission vs. Hope Natural Gas Company* (1944)
  - “Under the statutory standard of "just and reasonable," it is the result reached, not the method employed, which is controlling... It is not theory, but the impact of the rate order, which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end.”
  - “The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.”

4.12 Fair returns

Regulatory consideration of policy	^	Excessive or extortive return	An economically inefficient return
	^	Incentive or bonus return	A return with a premium to motivate desired performance
	^	**Fair return**	A return with a premium to motivate beneficial investment
Regulatory consideration of risk	^	Compensatory return	A return based on the cost of equity including an equity-risk premium
	^	Risk-free return	A return based on the yield on risk-free securities*
	^	Confiscatory return	A return below the cost of capital (unconstitutional taking)**

* Government-owned and not-for-profit utilities are generally insulated from equity risk.
** For an investor-owned utility that still faces equity risk, any return below the cost of equity would be considered confiscatory.

4.12 Equity risk premiums (U.S. and Energy)



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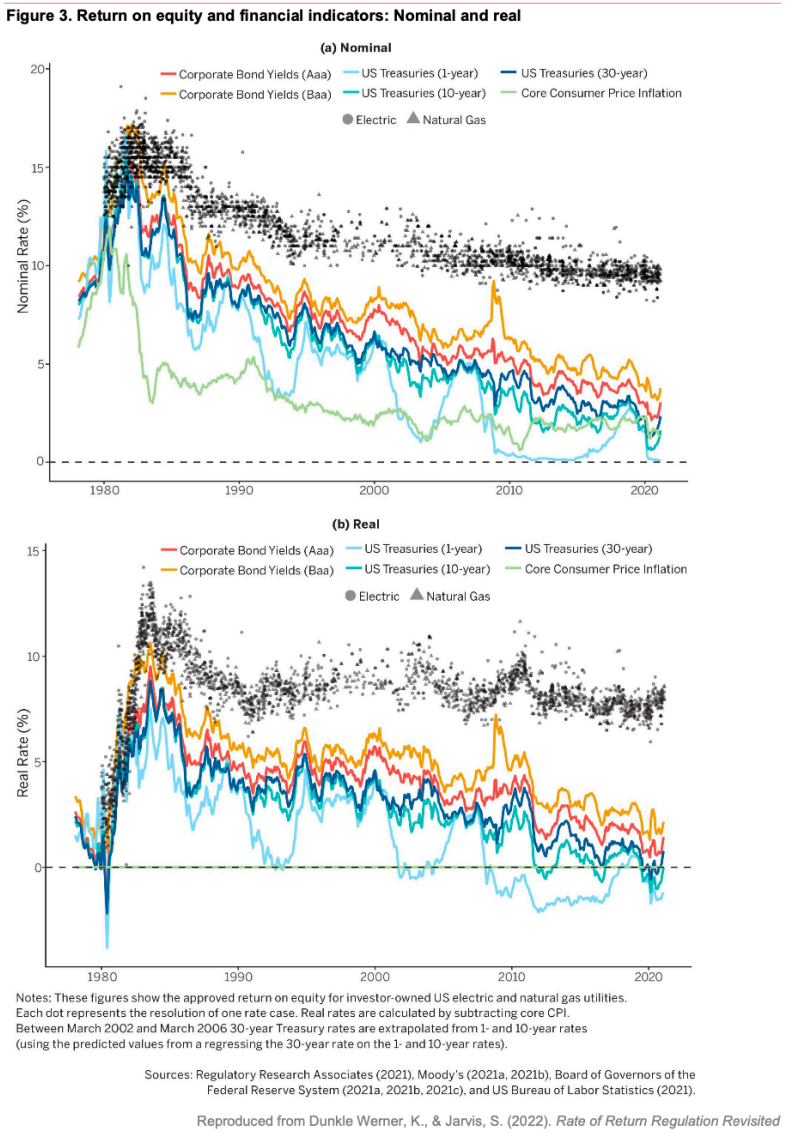
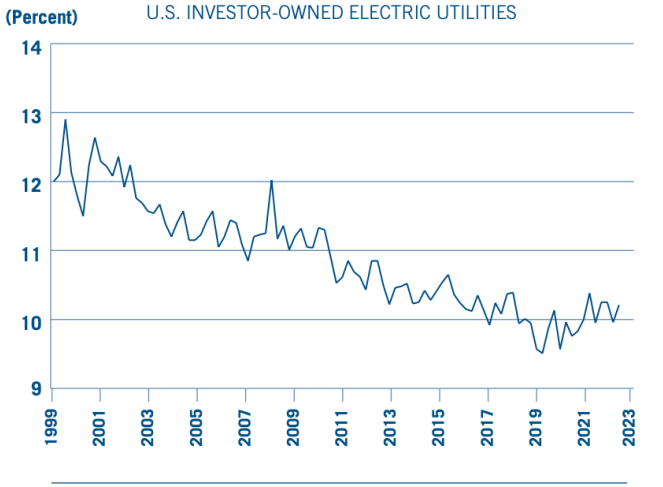


4.12 Requested and authorized returns for electric utilities (EEI)

Average Requested ROE

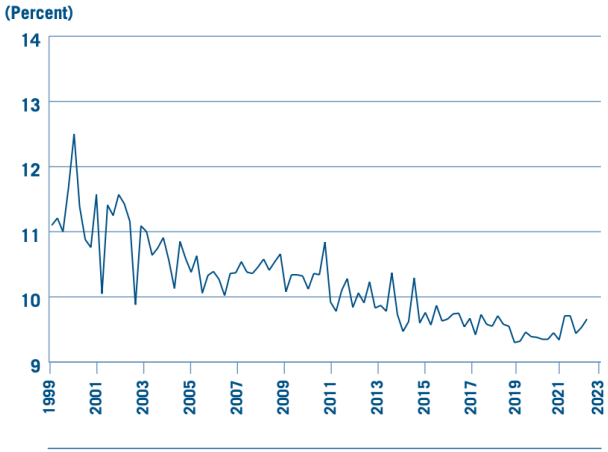
U.S. INVESTOR-OWNED ELECTRIC UTILITIES



Source: S&P Global Market Intelligence/Regulatory Research Assoc. and EEI Finance Department.

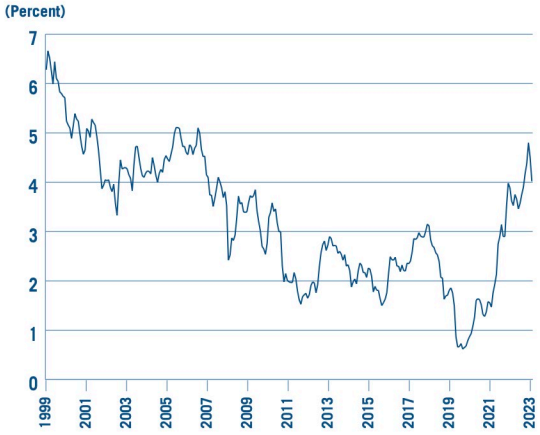
Average Awarded ROE

U.S. INVESTOR-OWNED ELECTRIC UTILITIES



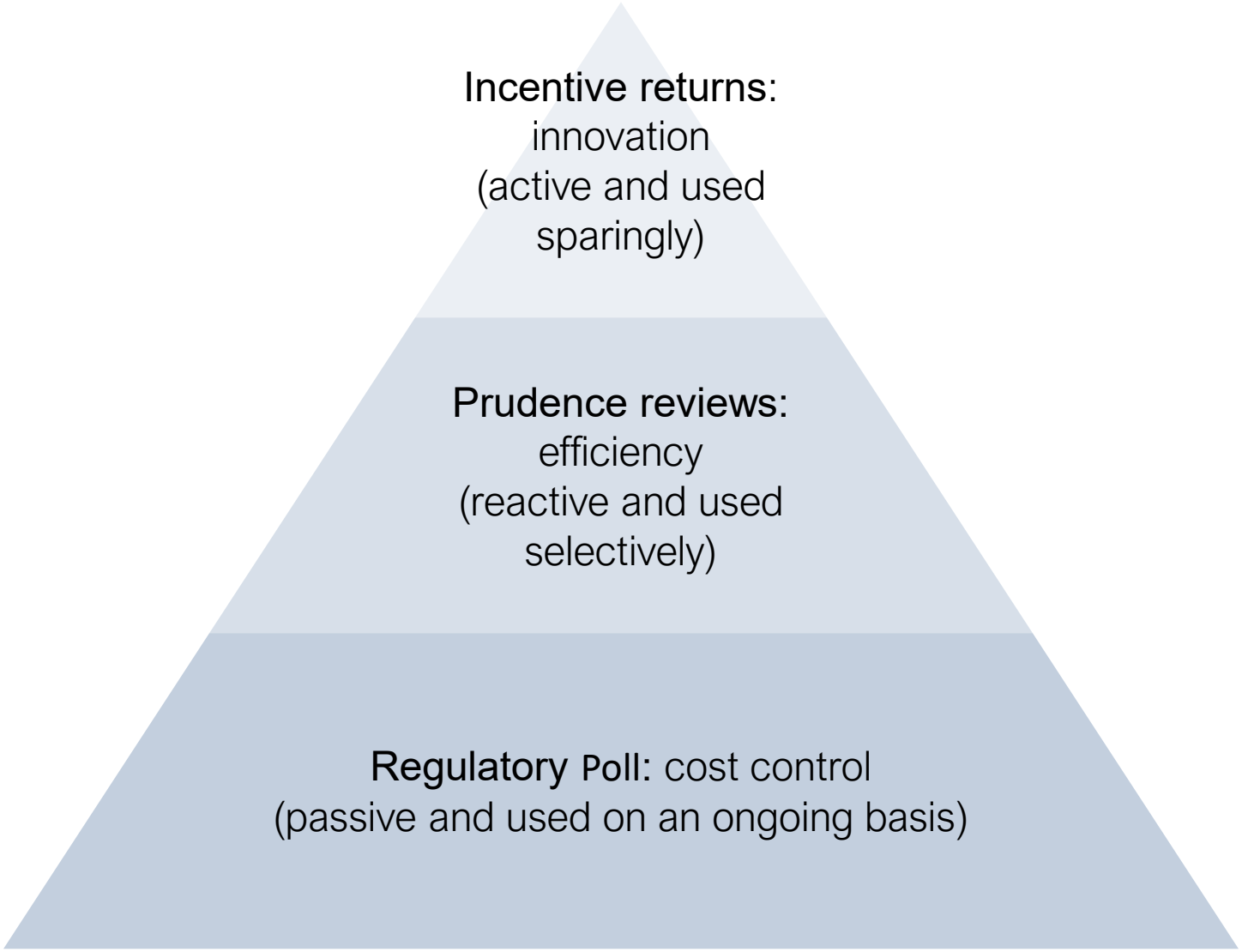
Source: S&P Global Market Intelligence/Regulatory Research Assoc. and EEI Finance Department.

10-Year Treasury Yield



Source: U.S. Federal Reserve.

4.13 Regulatory performance incentives



4.13 Performance-based (incentive) regulation

- *"All regulation is incentive regulation"*
  - Regulation should always be about performance and related standards, accountability, and incentives
- Variations and alternatives to traditional regulation
  - Price-cap regulation, multi-year ratemaking, formula ratemaking, and profit sharing
- Cost-of-service ratemaking is the starting point
  - Even for alternative methods (e.g., price-cap regulation)
- Regulatory methods can be refined to send clear signals
  - Metrics for prudent and efficient performance are essential
  - Positive and negative performance incentives (risk), including returns
  - Recognize asymmetrical information favoring regulated utilities
- Uses of financial and economic metrics by utilities and regulators
  - To track and compare performance over time and among utilities
  - To screen and monitor as part of viability assessment and capacity development

Q. What performance metrics should utilities and regulators use?

4.14 Poll: Regulatory lag

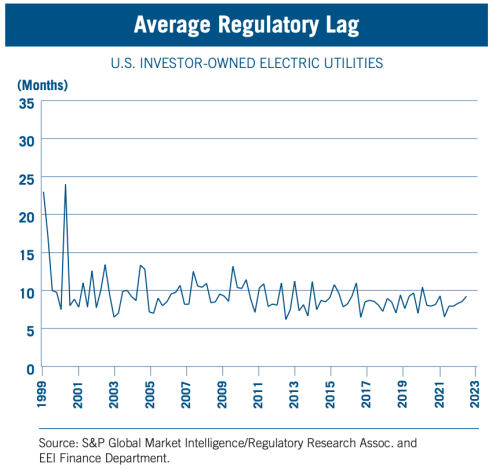
- Is regulatory lag beneficial or harmful?
  A. Beneficial
  B. Harmful
  C. It depends

4.14 Role of regulatory lag

- Allred Kahn (1971) on regulatory lag
  - Lag should be “regarded as not a deplorable imperfection of regulation but as a positive advantage. Freezing rates for the period of the lag imposes penalties for inefficiency, excessive conservatism, and wrong guesses, and offers rewards for their opposites”
- Much maligned as a “blunt” policy instrument
  - But purposive in maintaining short-term risk
  - Price-cap regulation formalizes regulatory lag (e.g., five-year periods)
- Reducing lag reduces revenue and earnings risk
  - Utilities, rating agencies, and other interests promote practices to reduce lag
  - Key rationale is that automation/mechanization will reduce rate case frequency/expense
  - Potential costs from shifting risk, weakening incentives, reducing oversight
  - Firms facing (global) competition also face information asymmetry and pricing lag
- Utilities rationally try to alleviate lag and maintain earnings
  - May spend more effort on reducing lag than reducing costs (lean practices)
  - Methods include cost-recovery and revenue-assurance mechanisms
  - Certain and expedient cost recovery and rate case time limits (“shot clocks”) shift burdens of proof and risks from investors to ratepayers

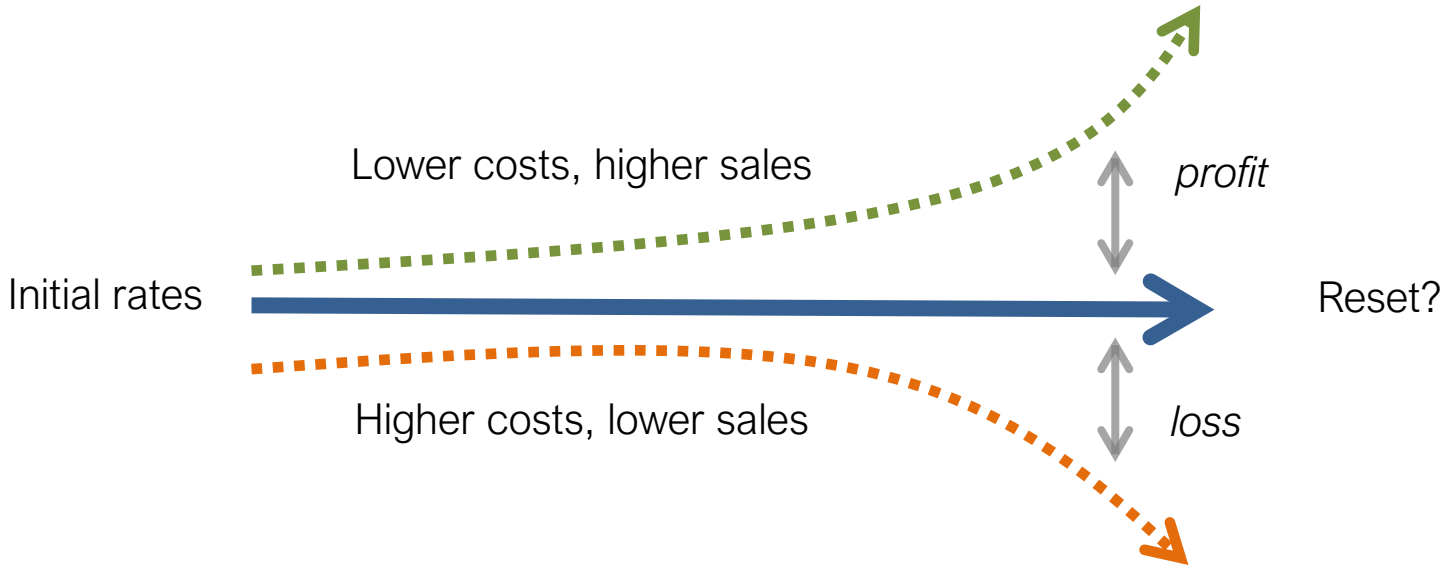
4.14 Definitions of regulatory lag ⓘ

- Formal definition of regulatory lag
  - Period between a change in costs or revenues (+/-) and a change in authorized prices charged to ratepayers of a regulated utility (regulatory
- Alternative conceptions of regulatory lag
  - Period between when an unregulated firm and a regulated firm could put in place a defensive price adjustment (economic)
  - Period between rate filing and rate authorization (procedural)
  - Period associated with decision-making process delays (bureaucratic)
  - Period associated with test years or adjustment mechanisms (rate policy)
  - Period associated with financial conditions affecting realized returns (financial)
  - Period between rate-case decisions when prices are capped (practical)



4.14 Regulatory vs. utility lag

- Lag presents upside and downside potential – lag "cuts both ways"
  - During lag, some forces work to the advantage of utilities - utilities should "resort" to rate cases only when necessary (F. Welch, 1954)
  - Lag may have helped some municipal utilities, given declining usage
- Not all lag is regulatory – "utility lag" may signal managerial deficiencies
  - Responsibility for proactively managing changing conditions and risks
  - Regulated firms have unique opportunities and tools to address lag
  - For non-private utilities, making timely adjustments may be easier



4.14 Regulatory lag and returns

- Regulators should address lag
  - When it materially jeopardizes the reasonable opportunity to earn a fair return
  - Under-earning may be more likely to be addressed than over-earning (asymmetry)
- How regulated utilities can address lag
  - Better forecasting, strategic management, subsequent cost control
  - Accounting for elasticities and other relevant factors
  - Making timely, complete, and convincing regulatory filings
  - Adoption of emerging technologies and practices

		Efficiency trend between rate adjustments	
		Increasing operational efficiency	Decreasing operational efficiency
Cost and sales trends between rate adjustments	Falling costs and/or rising sales	Achieving returns is likely	Achieving returns is possible
	Rising costs and/or falling sales	Achieving returns is possible	Achieving returns is unlikely

4.15 Deriving revenue requirements

- For non-private utilities
  - Revenue requirements = cost of service, including reserve requirements
  - Debt service coverage ratios (DSCR) may be used (CFR §1718) – see Part 2
- For regulated private utilities
  - Revenue requirements = profit + expenditures based on the cost of service
- Utility revenue requirements
  - Level of gross revenue from sales needed to recover prudent, necessary, and economical operating and capital expenditures, including the cost of capital
  - Reflects what is known and measurable in terms of cost of service for the rate year, as established by the budget (nonregulated) or test year (regulated)
  - Sets a reasonable opportunity for full-cost recovery – but no guarantee
- Revenue requirements reflect adjustments to current levels at current rates
  - Based on the cost of service and set for a test or rate “year” going forward
  - Difference between current revenues and revenue identify shortfall or excess
  - Must be multiplied by a conversion factor to achieve new levels and rates

4.15 Factors affecting revenue requirements

Factors raising revenue requirements	Factors lowering revenue requirements
Increased capital expenditures	Decreased capital expenditures
Increased operating expenditures	Decreased operating expenditures
Accelerated depreciation	Decelerated depreciation
Increased tax rates	Decreased tax rates
Efficiency losses	Efficiency gains
Higher rates of return	Lower rates of return

Q. How are regulated utilities motivated to improve efficiency?

4.15 Transfer from utility funds (non-private)

- Types of transfers
  - Direct cost reimbursement for goods or services
  - Return on capital investment (assets)
  - Finance-related risk compensation
  - Local franchise fees
  - Payments in lieu of taxes (PILT, PILoT)
- Payments in lieu of taxes
  - Substitute for property taxes
  - May be less than corporate assessments
  - Create a conflict for local officials between non-tax fiscal inflows and ratepayer affordability

4.15 Exercise: deriving revenue requirements

	Revenue requirements formula	Amount (mil.
1	r_a (RB) = Net operating income (overall return)	$26,575
2	O&M = Operation & maintenance expense	$24,606
3	D = Depreciation and amortization expense	$10,826
4	T = Taxes (total)	$2,473
5	RR = Total revenue requirements (total operating revenues)	?
	Income statement data	
6	Total operating revenues from sales (RR)	$64.480
7	Total utility operating expenses (lines 2 thru 4)	($37,905)
8	Net operating income (overall return)	?
	Balance sheet data	
9	Rate base	$348,230
10	Overall return on investment (ROR%)	?
11	Net operating income (overall return)	$26,575
12	Interest expense	($7,057)
13	Net income available to shareholders	?
14	Shareholder equity capital	$221,642
15	Shareholder return (ROE%)	?

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1	r_a (RB) = Net operating income (overall return)	$26,575
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	Income statement data	
6	Total operating revenues from sales (RR)	$64.480
7	Total utility operating expenses (lines 2 thru 4)	($37,905)
8	Net operating income (overall return)	? $26,575
	Balance sheet data	
9	Rate base	$348,230
10	Overall return on investment (ROR%)	? 7.63%
11	Net operating income (overall return)	$26,575
12	Interest expense	($7,057)
13	Net income available to shareholders	? $19,528
14	Shareholder equity capital	$221,642
15	Shareholder return (ROE%)	? 8.81%

4.16 Deriving revenue requirements

Line no.	Item	Item	Private: RBROR* W		Public: DSCR (1.25)*		Coop: TIER (2.0)*		Private: RBROR* WW	
1		RATEMAKING: Revenues = Net Income + Expenses	$	%	$	%	$	%	$	%
2	r(RB)	**Net Operating Income (NOI) = Overall Return ($)**	26,575	41%	16,913	32%	14,094	**26%**	1,029	2%
3	O&M	**Operation & Maintanence Expense**	**24,606**	38%	24,606	46%	24,606	**46%**	**4,731**	7%
4	D	**Depreciation and Amortization Expense**	**10,826**	17%	10,826	20%	10,826	**20%**	**920**	1%
5	T	**Taxes Other than Income**	**1,383**						**(121)**	
6		**Payment in Lieu of Taxes (PILT)**			1,106	2%	553	1%		
8		**Federal and State Income Taxes**	**861**						**0**	
9		**Total Deferred Income Taxes**	**264**						**(204)**	
10		**Total Tax Credits**	**(35)**						**0**	
11		**>Total Taxes (net of credits)**	2,473	4%	1,106	2%	553	1%	(204)	0%
12	RR	**>Total Revenue Requirements**	64,480	100%	53,451	100%	50,079	100%	6,475	10%
13	NOI	**Net Operating Income (after PILT)**	26,575		16,913		14,094		1,029	
14	RB	**Rate Base**	**348,230**						**38,233**	
15	r	**>Overall Return for Debt and Equity (%)**	**7.63%**						**2.69%**	
16	Int	**Total Interest Expense (INT)**	**7,047**		**10,987**		**6,867**		**0**	
17	P	**Principal Payments**			**2,197**		**1,373**			
18	DS	**>Total Debt Service**			**13,185**		**8,240**			
19	DSCR	**>Net Operating Income (after taxes) = 1.25 * (DS)**			16,481					
20	TIER	>Net Operating Income (after taxes) = 2.0 * (INT)					13,734			
21		<Net Operating Income (after taxes) less expenses			3,296		5,494			
22		FINANCIAL SUMMARY								
23		**Total Operating Revenues from Sales**	64,480		53,451		50,079		6,475	
24		**>Total Utility Operating Expenses (inclusive of D&T)**	**(37,905)**		**(36,538)**		**(35,985)**		**(5,447)**	
25		**>Net Operating Income**	26,575		16,913		14,094		1,029	
26		**Interest or Debt Service**	(7,047)		(13,185)		(8,240)		0	
27		**>Net Income (NI)****	19,528						1,029	
28		**>Retained in Fund Balance for Coverage (Reserves)**			3,728		5,853			
29	Equity	**Shareholder Equity Capital**	**221,642**						**n/a**	
30	ROE%	**>Shareholder Return (ROE%) or Coverage (DSCR or TIER)**	**8.81%**		**1.28**		**2.05**		**n/a**	

4.16 Income deficiency and revenue conversion

- Rate cases typically address an income deficiency resulting in earnings attrition
- Revenue conversion, net-to-gross, or gross-up factors (multipliers)
  - Converts an *income deficiency* into a *revenue deficiency*
  - Ensure coverage of total revenue requirements by ratepayers following accounting adjustments upward for a revenue deficiency or downward for a revenue excess in order to ensure that utilities have a reasonable opportunity to earn a fair return
- Used in ratemaking to account for (neutralize) dynamic effects on cost of service
  - Income-based federal and taxes
  - Revenue-sensitive fees or expenses
  - Uncollectible revenues from customers
- Basic revenue conversion factors
  - Conversion factor = 1 / (1 – percentage rate)
  - Conversion factor = (revenue need)/(revenue net of taxes & fees))
  - Can be calculated for compound and interactive effects
- Example calculations – all are hypothetical
  - 0.5% effective rate: 1 / (1 – .005) = 1.0050 conversion factor
  - 5.0% effective rate: 1 / (1 – .050) = 1.0526 conversion factor
  - 20.0% effective rate: 1 / (1 – .200) = 1.2500 conversion factor

4.16 Illustration of income and revenue adjustments (NRCAM, 2003)

Example Computation of Revenue Deficiency

	Company Adjusted	Staff Adjusted
Rate Base	$792,534,826	$775,266,347
Recommended Return on Rate Base	9.79%	9.49%
Calculated Allowed Return	$77,589,159	$73,572,776
Net Operating Income	$57,006,682	$59,995,491
Income Deficiency	$20,582,477	$13,577,286
Net to Gross Tax Multiplier	1.61	1.61
Revenue Deficiency	$33,137,789	$21,859,430
Deficiency as Percent of Retail Revenue	15.3%	9.94%

4.16 Revenue conversion calculator

Line no.	Item	Rate	Before gross up: income deficiency	After gross up: revenue deficiency
1	Deficiency or Excess		$6,000.00	$8,661.30
2	Applied to Gross Revenue			
3	Uncollectible expense	0.50%	$30.00	$43.31
4	Regulatory fee	0.15%	$9.00	$12.99
5	Gross receipts tax or franchise fee	3.00%	$180.00	$259.84
6	Net income for tax purposes		$5,781.00	$8,345.17
7	Applied to Net Revenue			
8	State income taxes (PA rate 2023)	8.99%	$519.71	$750.23
9	Income before federal income taxes		$5,261.29	$7,594.94
10	Federal income taxes	21.00%	$1,104.87	$1,594.94
11	Income net of taxes and fees		$4,156.42	$6,000.00
12	Shortfall (or excess) in revenue	30.73%	$1,843.58	
13	Other expenses and fees		$219.00	$316.14
14	Combined income tax rate on net income	28.10%	$1,624.58	$2,345.17
15	Total expenses, fees, and taxes		$1,843.58	$2,661.30
16	Revenue conversion factor (1/1-r)	1.4436		
17	Revenue conversion factor (need/net)	1.4436		

4.16 Revenue conversion calculator

Line no.	Item	Rate	Before gross up: income deficiency	After gross up: revenue deficiency
1	Deficiency or Excess		$6,000.00	$8,661.30
2	Applied to Gross Revenue			
3	Uncollectible expense	0.50%	$30.00	$43.31
4	Regulatory fee	0.15%	$9.00	$12.99
5	Gross receipts tax or franchise fee	3.00%	$180.00	$259.84
6	Net income for tax purposes		$5,781.00	$8,345.17
7	Applied to Net Revenue			
8	State income taxes (PA rate 2023)	8.99%	$519.71	$750.23
9	Income before federal income taxes		$5,261.29	$7,594.94
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16	Revenue conversion factor (1/1-r)	1.4436		
17	Revenue conversion factor (need/net)	1.4436		

4.16 Exercise: simple revenue conversion

	Receipts tax (example)	Calculation
1	Income deficiency	$100
2	**Receipts tax rate: 3%**	.03
3	Conversion factor	1 / (1 – .03) = 1.0309
4	Revenue deficiency	$100.00 * 1.0309 = $103.09
5	Utility receipts payment	$103.09 * 3% = $3.09
6	Net revenues to utility	$103.09 - $3.09 = $100.00
	Uncollectible rate (exercise)	Calculation
7	Income deficiency	$100
8	**Uncollectible rate: 0.5%**	.005
9	Conversion factor	?
10	Revenue deficiency	?
11	Uncollectible shortfall	?
12	Net revenues to utility	?

4.16 Exercise: simple revenue conversion

	Receipts tax (example)		Calculation
1	Income deficiency		$100
2	**Receipts tax rate: 3%**		.03
3	Conversion factor		1 / (1 – .03) = 1.0309
4	Revenue deficiency		$100.00 * 1.0309 = $103.09
5	Utility receipts payment		$103.09 * 3% = $3.09
6	Net revenues to utility		$103.09 - $3.09 = $100.00
	Uncollectible rate (exercise)		Calculation
7	Income deficiency		$100
8	**Uncollectible rate: 0.5%**		.005
9	Conversion factor	?	1 / (1 – .005) = 1.0050
10	Revenue deficiency	?	$100.00 * 1.005 = $100.50
11	Uncollectible shortfall	?	$100.00 * 0.5% = $.50
12	Net revenues to utility	?	$100.50 - .50 = $100

4.16 Revenue conversion: consolidated income taxes ⓘ

- Grossing up for the combined effects of taxes on earnings
  - Taxes complicate the calculation of revenue requirements
  - More rate revenues mean more income taxes that ratepayers pay
  - Formula is based on deductibility of state taxes for federal tax purposes

	Assumptions	
1	State income tax rate (SIT): 6% (.06) = 1.0638 conversion factor	
2	Federal income tax rate (FIT): 21% (.21) = 1.2658 conversion factor	
3	Consolidated tax rate accounts for deductibility of SIT	
4	SIT + (FIT * (1 – SIT))	
5	.06 + (.21 * (1 – .06)) = .2574 or 25.74%	
		Calculation
7	Income deficiency	$100
9	Conversion factor	1 / (1 – .2574) = 1.3466
10	Revenue deficiency	$100.00 * 1.3466 = $134.66
11	Consolidated income taxes	$134.66 * 25.74% = $34.66
12	Net revenues to utility	$134.66 - $34.66 = $100.00

4.16 Revenue deficiency: private (RBROR)

Line no.	Description	2023 End-of-Year Actual	Change in Expense Only	Change in Rate Base Only	Change in Expense and Rate Base
1	RESULTS BEFORE ADJUSTMENT				
2	Total Utility Operating Revenues	**64,480**	64,480	**64,480**	64,480
3	Total Utility Operating Expenses	**37,905**	37,905	37,905	37,905
4	> Change to Operating Expense	**0**	6,000	0	3,000
5	Revised Net Operating Income	**26,575**	**20,575**	**26,575**	**23,575**
6	Hypothetical Rate Base	**348,230**	348,230	348,230	348,230
7	> Change to Rate Base	0	0	113,800	74,000
8	Revised Rate Base	**348,230**	**348,230**	**462,030**	**422,230**
9	Return on Rate Base (NOI/RB)	**7.63%**	5.91%	5.75%	5.58%
10	REVENUE CONVERSION				
11	Total Income Deciency (Excess)	**0**	6,000	6,000	6,000
12	Revenue Conversion Factor	0	**1.4436**	**1.4436**	**1.4436**
13	Revenue Deficiency (Excess)	0	8,661	8,661	8,661
14	RESULTS AFTER ADJUSTMENT				
15	Total Utility Operating Revenues (adjusted)		73,141	73,141	73,141
16	Total Utility Operating Expenses (adjusted)		46,566	37,905	40,905
17	Net Operating Income (adjusted)		26,575	35,236	32,236
18	Adjusted Rate Base		348,230	462,030	422,230
19	Net Operating Income		26,575	35,236	32,236
20	Return on Rate Base (ROR)		7.63%	7.63%	7.63%
21	Total Income Deciency (Excess)		0	0	0

4.16 Revenue deficiency: nonprivate (DSCR and TIER)

Line No	Description	Public: DSCR (1.25)	Coop: TIER (2.0)
1	Annual Debt Service*	13,185	
2	Debt Service Coverage Ratio (DSCR)	**1.25**	
3	Net Operating Income Requirement	16,481	
4	Interest Expense		6,867
5	TIER requirement set by lenders		**2.00**
6	Minimum Net Operating Income Requirement		13,734
7	Net Operating Income before Adjustment	10,913	8,094
8	DSCR without increase	**0.83**	
9	TIER without increase		**1.18**
10	Operating Income Deficiency (Excess)	6,000	6,000
11	Revenue Conversion Factor (based on PILT)	1.0204	1.0101
12	Revenue Deficiency (Excess)	6,122	6,061
13	Net Operating Income After Taxes (NOI)	10,913	14,094
14	Change in Operating Income	6,122	6,061
15	Change in Operating Expenses	122	61
16	Adjusted Net Operating Income	16,913	14,094
17	DSCR after adjustment to income	**1.28**	
18	TIER after adjumstment to income		**2.05**

4.16 Formulas for various adjustments* ⓘ

- Revenue or expense adjustments
  - Revenue or expense adjustment * (1-combined tax rate) * revenue conversion factor)
- Rate base adjustments
  - (Rate base adj. * rate of return * gross revenue converter) –
  - ((rate base adj * weighted debt cost *combined tax rate) * revenue conversion factor)
- Adjustments impacting both rate base and expenses
  - Rate base adj. * rate of return * gross revenue converter) –
  - ((rate base adj. * weighted debt cost * combined tax rate) +
  - (revenue or expense adjustment * (1-combined tax rate) * revenue conversion factor)
- Adjustments to income taxes
  - Tax adjustment * revenue conversion factor
- Interest synchronization
  - Adjusted rate base * weighted cost of debt = interest deduction
  - Interest deduction * consolidated tax rate = reduction to income tax expense for interest

* Simplified without the cash working capital impact calculated

4.17 Ratemaking scenarios

1. A utility capital structure is heavily tilted toward debt (highly leveraged) or equity (equity rich), which the commission discovers during the course of a rate case.
2. A utility has a debt coverage ratio of less than 1.0 because of short-term loans becoming due and files to increase rates to cover the needed cash flow.
3. A utility claims that it is entitled to a higher return on equity due to revenue risk associated with seasonal fluctuations in sales.
4. A utility owner loans personal funds to the utility at the cost equity. Prevailing interest rates are substantially lower.
5. A utility consistently fails to achieve authorized returns and seeks various means of cost-recovery and revenue-assurance mechanisms to lower risk.
6. A utility wins approval for multiple capital and operating cost surcharges but argues that these have no effect on risk or the cost of capital.

Appendix: links to financial trend data

- https://sec.report/Ticker/YORW
- https://www.macrotrends.net/
- https://walletinvestor.com/
- https://www.macroaxis.com/
- https://charts.equityclock.com
- https://finance.yahoo.com/
- https://www.marketwatch.com/
- http://pages.stern.nyu.edu/~adamodar/
- https://www.salary.com/
- https://www.eei.org/issues-and-policy/finance-and-tax#financialreview