

COMMONWEALTH OF PENNSYLVANIA



OFFICE OF CONSUMER ADVOCATE

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April 28, 2022

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

Re: Application of Aqua Pennsylvania Wastewater, Inc.
pursuant to Sections 1102, 1329, 507 and 2102 of
the Public Utility Code for Approval of its
Acquisition of the Wastewater System Assets of
East Whiteland Township
Docket No. A-2021-3026132

Dear Secretary Chiavetta:

Consistent with 52 Pa. Code Section 5.412a of the Commission's regulations, which requires the electronic submission of pre-served testimony, and per Administrative Law Judge Guhl's Briefing Order dated April 4, 2022, enclosed for electronic filing please find the following Pre-Served Testimony and Exhibits on behalf of the Office of Consumer Advocate (OCA) in the above-referenced proceeding. Please note that the documents listed below were admitted into the record at the evidentiary hearing held on March 31, 2022.

Office of Consumer Advocate's Direct Testimony

OCA Statement 1 - Direct Testimony of David J. Garrett
Appendices A, B and C
OCA Exhibits DJG-1 through DJG-22

OCA Statement 2 - Direct Testimony of Noah D. Eastman
Appendix A

Office of Consumer Advocate's Surrebuttal Testimony

OCA Statement 1SR - Surrebuttal Testimony of David J. Garrett

OCA Statement 2SR - Surrebuttal Testimony of Noah D. Eastman

Rosemary Chiavetta, Secretary
April 28, 2022
Page 2

All testimony is accompanied by a witness verification. The OCA's submission also addresses the requirements of the Commission's January 10, 2013 Implementation Order at Docket M-2012-2331973, which requires electronic access to pre-served testimony.

All parties and the presiding officer have been served previously with the testimony and exhibits and copies have been served per the attached Certificate of Service.

Respectfully submitted,

/s/ Erin L. Gannon
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Enclosures:

cc: The Honorable Marta Guhl (cover letter and Certificate of Service only - **via email**)
Athena DelVillar (cover letter and Certificate of Service only - **via email**: sdelvillar@pa.gov)
Certificate of Service

*327837

CERTIFICATE OF SERVICE

Re: Application of Aqua Pennsylvania Wastewater, :
Inc. pursuant to Sections 1102, 1329, 507, and :
2102 of the Public Utility Code for Approval of its : Docket No. A-2021-3026132
Acquisition of the Wastewater System Assets :
of East Whiteland Township :

I hereby certify that I have this day served a true copy of the following document, the Office of Consumer Advocate's Pre-Served Testimony, upon parties of record in this proceeding in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant), in the manner and upon the persons listed below:

Dated this 28th day of April 2022.

SERVICE BY E-MAIL ONLY

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Dated: April 28, 2022
*327838

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Re: Application of Aqua Pennsylvania Wastewater, :
Inc. pursuant to Sections 507, 1102, 1329 and :
2102 of the Public Utility Code for Approval of : Docket No. A-2021-3026132
its Acquisition of the Wastewater System :
Assets of East Whiteland Township :
:

DIRECT TESTIMONY

OF

DAVID J. GARRETT

ON BEHALF OF

THE PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

March 11, 2022

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	EXECUTIVE SUMMARY	2
	A. Overview.....	2
	B. Recommendation	5
III.	MARKET APPROACH	6
	A. Adjustment to Gannett Fleming’s Market Approach	7
	B. Adjustment to AUS Consultants’ Market Approach	11
IV.	COST APPROACH.....	14
	A. Depreciation Analysis.....	14
	B. Adjustment to Gannett Fleming’s Cost Approach.....	18
	C. Adjustment to AUS Consultants’ Cost Approach	23
V.	INCOME APPROACH	24
	A. Free Cash Flow From Operations	26
	B. Discount Rate – Cost of Capital	27
	C. Cost of Equity	29
	1. DCF Analysis.....	29
	2. CAPM Analysis	36
	A. The Risk-Free Rate	37
	D. Cost of Debt and Capital Structure	44
VI.	CONCLUSION AND RECOMMENDATION.....	45

APPENDICES

Appendix A:	Iowa Curves
Appendix B:	Discounted Cash Flow Model Theory
Appendix C:	Capital Asset Pricing Model Theory

LIST OF EXHIBITS

OCA Exhibit DJG-1	Curriculum Vitae
OCA Exhibit DJG-2	FMV Adjustment Summary
	<u>Market Approach Adjustments</u>
OCA Exhibit DJG-3	Gannett Fleming Market Adjustment Summary
OCA Exhibit DJG-4	Gannett Fleming Selected Transaction Adjustment
OCA Exhibit DJG-5	AUS Market Adjustment
	<u>Cost Approach Adjustments</u>
OCA Exhibit DJG-6	Gannett Fleming Cost Adjustment Summary
OCA Exhibit DJG-7	GF – Account 354.30 Remaining Life Calculation
OCA Exhibit DJG-8	GF – Account 354.40 Remaining Life Calculation
OCA Exhibit DJG-9	GF – Account 360.10 Remaining Life Calculation
OCA Exhibit DJG-10	GF – Account 361.10 Remaining Life Calculation
OCA Exhibit DJG-11	GF – Account 363.20 Remaining Life Calculation
OCA Exhibit DJG-12	AUS Cost Adjustment Summary
OCA Exhibit DJG-13	AUS Cost – Detailed Adjustments
	<u>Income Approach Adjustments</u>
OCA Exhibit DJG-14	Income Adjustment Summary
OCA Exhibit DJG-15	Annual Free Cash Flow Calculation
OCA Exhibit DJG-16	Weighted Cost of Capital Calculation
OCA Exhibit DJG-17	Cost of Capital Summary
OCA Exhibit DJG-18	DCF Stock and Index Prices
OCA Exhibit DJG-19	DCF Constant Growth Rate Determinants
OCA Exhibit DJG-20	CAPM Risk Free Rate
OCA Exhibit DJG-21	CAPM Implied ERP Estimate
OCA Exhibit DJG-22	CAPM ERP Result

I. INTRODUCTION

1 **Q. State your name and occupation.**

2 A. My name is David J. Garrett. I am a consultant specializing in public utility regulation. I
3 am the managing member of Resolve Utility Consulting, PLLC.

4 **Q. Summarize your educational background and professional experience.**

5 A. I received a B.B.A. with a major in Finance, an M.B.A. and a Juris Doctor from the
6 University of Oklahoma. I worked in private legal practice for several years before
7 accepting a position as assistant general counsel at the Oklahoma Corporation Commission
8 in 2011. At the Oklahoma Commission, I worked in the Office of General Counsel in
9 regulatory proceedings. In 2012, I began working for the Public Utility Division as a
10 regulatory analyst providing testimony in regulatory proceedings. After leaving the
11 Oklahoma Commission, I formed Resolve Utility Consulting, PLLC, where I have
12 represented various consumer groups, state agencies, and municipalities in utility
13 regulatory proceedings, primarily in the areas of cost of capital and depreciation. I am a
14 Certified Depreciation Professional with the Society of Depreciation Professionals. I am
15 also a Certified Rate of Return Analyst with the Society of Utility and Regulatory Financial
16 Analysts. A more complete description of my qualifications and regulatory experience is
17 included in my curriculum vitae.¹

18 **Q. On whose behalf are you testifying in this proceeding?**

19 A. I am testifying on behalf of the Pennsylvania Office of Consumer Advocate (“OCA”).

¹ OCA Exhibit DJG-1.

1 **Q. Describe the scope and organization of your testimony.**

2 A. My testimony addresses the application filed by Aqua Pennsylvania Wastewater, Inc.
3 (“Aqua” or the “Company”) for the acquisition of the East Whiteland Township’s (the
4 “Township”) wastewater system assets. My testimony responds to the fair market value
5 (“FMV”) approaches addressed in the testimonies of Harold Walker, III of Gannett
6 Fleming, who sponsors the FMV appraisal commissioned by Aqua, and Jerome C. Weinert,
7 who sponsors the appraisal commissioned by the Township.

II. EXECUTIVE SUMMARY

A. Overview

8 **Q. Please summarize Aqua’s application in this proceeding.**

9 A. In its application, Aqua proposes to acquire the Township’s wastewater assets under
10 Sections 507, 1102, 1329 and 2102 of the Public Utility Code (the “Code”). According to
11 Section 1329(c)(2) of the Code, the ratemaking rate base is the lesser of the negotiated
12 purchase price or the average of two FMV appraisals. The FMV estimated by Gannett
13 Fleming and AUS Consultants is \$55.7 million² and \$57.8 million, respectively,³ which
14 equate to an average valuation of \$56.7 million. The purchase price negotiated by Aqua
15 and the Township is \$54,930,000; thus, this is the amount of proposed rate base in the
16 application.

² Exhibit X, Testimony of Harold Walker, III, p. 13, lines 9-11.

³ Exhibit Y, Testimony of Jerome C. Weinert, p. 3, lines 8-11.

1 **Q. Please summarize the FMV appraisals commissioned by the Company and the**
2 **Township.**

3 A. Gannett Fleming and AUS Consultants provided appraisals using the cost, income, and
4 market approaches, as set forth in Section 1329(a)(3) of the Code. The following table
5 outlines the results of Gannett Fleming's appraisal.⁴

**Figure 1:
Gannett Fleming Appraisal Results**

Approach	Base Value	Weight	Weighted Value
Market	\$ 46,741,589	33.3%	\$ 15,583,646
Cost	59,118,924	33.3%	19,704,337
Income	61,147,544	33.3%	20,380,476
Total			\$ 55,668,460

6 As shown in the table, the weighted average FMV estimated by Gannett Fleming is \$55.7
7 million. The table below shows the results of AUS Consultants' appraisal.

**Figure 2:
AUS Consultants Appraisal Results**

Approach	Base Value	Weight	Weighted Value
Market	\$ 56,178,539	10.0%	\$ 5,617,854
Cost	59,847,171	50.0%	29,923,586
Income	55,600,045	40.0%	22,240,018
Total			\$ 57,781,457

⁴ Mr. Walker rounded the total to \$55,668,000; see Exhibit X, Testimony of Harold Walker, III, p. 13, lines 9-11.

1 The weighted average FMV estimated by AUS Consultants is \$57.8 million. As discussed
2 further in my testimony, the estimates provided by both UVEs under all three approaches
3 are influenced by several unreasonable assumptions.

4 **Q. Please summarize your adjustments to the FMV appraisals.**

5 A. In this case, I provide reasonable adjustments under all three valuation approaches, as
6 discussed further in my testimony. The table below outlines my adjustments to Gannett
7 Fleming’s appraisal under all three approaches.⁵

**Figure 3:
Adjustments to Gannett Fleming Appraisal**

Approach	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Cost	\$ (7,192,756)	\$ 39,548,833	33.3%	\$ 13,182,944
Income	(2,780,373)	56,338,551	33.3%	18,779,517
Market	(19,790,289)	41,357,255	33.3%	13,785,752
Total				\$ 45,748,213

8 Applying reasonable adjustments to Gannett Fleming’s appraisal results in a weighted
9 average FMV of \$45.7 million. The table below outlines my adjustments to AUS
10 Consultants’ appraisal.⁶

⁵ OCA Exhibit DJG-2.

⁶ *Id.*

**Figure 4:
Adjustments to AUS Consultants Appraisal**

Approach	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Cost	\$ (15,232,008)	\$ 40,946,531	10.0%	\$ 4,094,653
Income	(6,722,100)	53,125,071	50.0%	26,562,536
Market	(14,242,790)	41,357,255	40.0%	16,542,902
Total				\$ 47,200,091

1 Applying reasonable adjustments to AUS Consultants’ appraisal results in a weighted
 2 average FMV of \$47.2 million. The detailed technical aspects of my adjustments to these
 3 appraisals are discussed below.

B. Recommendation

4 **Q. Please summarize your recommendation to the Commission.**

5 A. As stated above, according to Section 1329(c)(2) of the Code, the ratemaking rate base is
 6 the lesser of the negotiated purchase price and the average of the two FMV appraisals. In
 7 this case, both UVEs’ FMV estimates were higher than the purchase price of \$54.9 million.
 8 However, when reasonable adjustments are applied to the appraisals, and those adjusted
 9 results are averaged, the resulting FMV average estimate is \$46.5 million, which is less
 10 than the negotiated purchase price. The results are summarized in the table below.⁷

⁷ OCA Exhibit DJG-2

**Figure 5:
OCA’s Recommended Rate Base**

	Appraiser Results	OCA Adjusted
Gannett Fleming	\$ 55,668,460	\$ 45,748,213
AUS Consultants	57,781,457	47,200,091
Average	\$ 56,724,958	\$ 46,500,000
Purchase Price	\$ 54,930,000	\$ 54,930,000
Proposed Ratebase	\$ 54,930,000	\$ 46,500,000

1 If the transaction is approved, I recommend the Commission authorize a ratemaking rate
2 base in the amount of \$46,500,000 pursuant to Section 1329(c)(2) of the Code.

III. MARKET APPROACH

3 **Q. What is the market approach?**

4 A. The Market Approach involves comparing an asset with similar assets that have been sold
5 or are for sale in the relevant marketplace by making adjustments to prices based on
6 marketplace conditions and the properties’ characteristics of value.⁸

7 **Q. Please summarize the UVEs’ valuations under the market approach.**

8 A. Gannett Fleming estimates a market approach valuation of \$46.7 million and AUS
9 Consultants estimates a market approach valuation of \$56.1 million.⁹ The details of these
10 estimates as well as my proposed adjustments are discussed further below.

⁸ https://www.appraisers.org/docs/default-source/5---standards/bv-standards-feb-2022.pdf?sfvrsn=5c9e5ac0_3

⁹ See Exhibit X, Testimony of Harold Walker, III, p. 13, lines 9-11; see also Exhibit Y, Testimony of Jerome C. Weinert, p. 3, lines 8-11.

A. Adjustment to Gannett Fleming's Market Approach

1 **Q. Please describe Gannett Fleming's market approach valuation.**

2 A. In his appraisal, Mr. Walker used the Market Multiples method and Selected Transactions
3 method.

4 **Q. Please describe Gannett Fleming's market Multiples Method.**

5 A. Mr. Walker multiplied certain Township metrics such as gross and net PP&E (property,
6 plant and equipment) and the number of customers by the ratio of enterprise value to the
7 same metric for a group of publicly traded water utilities referred to as the Comparable
8 Group. Mr. Walker increased the Comparable Group ratios (called "multiples") by
9 adjustments which he indicates are intended to reflect growth, risk, and contributions. After
10 this calculation for each metric, Mr. Walker averaged some of the results and determined
11 a Market Approach valuation of \$49.3 million.

12 **Q. Are you proposing any adjustments to Mr. Walker's market multiples method?**

13 A. No. However, I propose several adjustments to Mr. Walker's selected transactions method,
14 as further described below.

15 **Q. Please describe Mr. Walker's Selected Transactions method.**

16 A. In Mr. Walker's selected transactions method, he estimates the valuation of the Township
17 system using ratios based on financial and demographic statistics from other acquired
18 systems. The table below shows an example of this process, using the New Garden
19 acquisition.

**Figure 6:
Example of Selected Transaction Method**

Township / Acquired System	Purchase Price and Capital Statistic	Price / Statistic Ratio	Adjusted Statistic
East Whiteland			
Investor Capital	\$ 42,513,245		
Gross PP&E	43,447,309		
Net PP&E	32,955,596		
New Garden (INT)			
Investor Capital	\$ 29,500,000		
Investor Capital	23,001,140	1.28	\$ 54,525,155
Gross PP&E	25,988,330	1.14	49,318,121
Net PP&E	17,967,319	1.64	54,108,801

1 The table above shows three capital statistics for both the Township and New Garden –
 2 investor capital, PP&E, and net PP&E.¹⁰ As shown in the table, for example, the purchase
 3 price-net PP&E ratio used by Gannett Fleming for New Garden is 1.64. If the same ratio
 4 is applied to the Township’s net PP&E of \$32.9 million, it indicates an adjusted value of
 5 \$54.1 million. Similar calculations were conducted for other Section 1329 acquisitions.

6 **Q. Please describe your adjustments to the Selected Transactions method.**

7 A. The primary difference between Mr. Walker’s FMV estimate under the Selected
 8 Transaction method and my adjusted results stem from the Section 1329 transactions we
 9 selected.

¹⁰ See also OCA Exhibit DJG-4.

1 **Q. Please describe the difference between the Section 1329 transactions Mr. Walker and**
2 **you selected for your market analyses.**

3 A. In this case, my market analysis included transactions involving only
4 collection/distribution systems,¹¹ and did not include transactions involving integrated
5 treatment and collection systems (“integrated systems”). In contrast, Mr. Walker’s market
6 analysis included the Section 1329 transactions involving integrated systems.

7 **Q. Please explain why you excluded transactions involving integrated water systems**
8 **from your market analyses in this case.**

9 A. Conceptually, I do not believe it is necessarily unreasonable to include integrated
10 wastewater transactions when assessing the FMV of a collection-only system under the
11 Selected Transaction method or similar type of market analysis. In this case, however,
12 including integrated systems in the analysis produced several results that are unreasonably
13 high. For example, the Kane and Limerick transactions produced indicated valuations as
14 high as \$69 million and \$62 million, respectively. These results are higher than any of the
15 valuation estimates produced by either appraiser, and they are notably higher than the
16 average adjusted result of \$46.5 million from my analysis.

17 **Q. Does it appear that Mr. Walker also recognizes the propensity for integrated system**
18 **transactions to produce unreasonably high results?**

19 A. Yes. In his appraisal report, Mr. Walker states that he gave “additional weight to the
20 collection/distribution assets selected transactions multiples.”¹² In addition, Mr. Walker

¹¹ The Township owns one wastewater treatment plant, which treats wastewater to a small community system. However, wastewater treatment is mainly provided by another entity such that the East Whiteland system is properly characterized as a collection-only system for purposes of analysis.

¹² Exhibit Q – Gannett Fleming Fair Market Value Appraisal, p. 41.

1 looked at the SJW’s purchase of Connecticut Water for “a range of indicated value” for the
2 East Whiteland system.¹³ Mr. Walker also noted that Connecticut Water was “a fully
3 integrated company” and “may overstate the value of the [East Whiteland] Wastewater
4 System.”¹⁴

5 **Q. Are there other factors indicating your decision to exclude integrated Section 1329**
6 **transactions from your market analysis in this case is reasonable?**

7 A. Yes. My decision to exclude the Section 1329 transactions involving integrated systems
8 from Mr. Walker’s Selected Transactions method ultimately results in a market approach
9 FMV estimate of \$39.5 million, which is very similar to the adjusted market approach
10 valuation I obtained from analyzing Mr. Weinert’s market approach valuation (\$40.9
11 million), which is further discussed below.

12 **Q. Please summarize your adjustments to Gannett Fleming’s market approach.**

13 A. As discussed above, I am not proposing any adjustments to the market multiples approach
14 used by Gannett Fleming. The adjustments to the selected transactions and overall market
15 approach valuation are summarized in the table below.¹⁵

¹³ *Id.*

¹⁴ *Id.* at p. 42.

¹⁵ OCA Exhibit DJG-3.

**Figure 7:
Market Approach Valuation Adjustment**

	<u>Gannett Fleming Market Approach Results</u>			<u>OCA Adjusted Market Approach Results</u>		
	Amount	Weight	Result	Amount	Weight	Result
Market Multiples	\$ 49,340,713	50%	\$ 24,670,357	\$ 49,340,713	50%	\$ 24,670,357
Selected Transactions	44,142,464	50%	<u>22,071,232</u>	29,756,954	50%	<u>14,878,477</u>
Total			\$ 46,741,589			\$ 39,548,833

1 As shown in the table, my adjustments to Gannett Fleming’s market approach result in a
 2 market approach valuation estimate of \$39.5 million, which is about \$7.1 million less than
 3 Gannett Fleming’s market approach valuation of \$46.7 million.

B. Adjustment to AUS Consultants’ Market Approach

4 **Q. Please describe AUS Consultants’ market approach valuation.**

5 A. In his appraisal, Mr. Weinert considered the purchase price and Reproduction Cost New
 6 Less Depreciation (“RCNLD”) data from other comparable acquisitions in Pennsylvania.
 7 Using the price-to-RCNLD ratios for each acquisition, he then applied that ratio to the
 8 RCNLD amount he estimated for the Township in order to arrive at the implied market
 9 valuation for the Township. Mr. Weinert estimates a market value of \$56.2 million under
 10 this approach.¹⁶

11 **Q. Do you agree with Mr. Weinert’s estimate?**

12 A. No. I am proposing three adjustments to AUS Consultants’ market approach valuation.
 13 First, instead of using the purchase price for each transaction, it would be more appropriate

¹⁶ OCA Exhibit DJG-2.

1 to use the Commission's approved ratemaking rate base, which is the actual approved fair
2 market value as defined by Section 1329. This is reasonable because the entire purpose of
3 the appraisal process is to determine a fair market value ratemaking rate base for the
4 Township under Section 1329. In some prior acquisitions, the negotiated purchase price
5 and the Commission-approved ratemaking rate base have been different amounts. To the
6 extent an approved rate base has been less than a negotiated purchase price, the purchase
7 price was in fact greater than the Commission-adjusted average of the UVEs' fair market
8 value appraisals. Thus, for purposes of determining an implied fair market value through
9 the market approach, it is preferable to consider actual Commission-approved rate base
10 amounts, rather than purchase prices.

11 Second, Mr. Weinert applied weightings to his FMV / RCNLD ratios. By doing
12 this, the ratios resulting from higher purchase price / FMV transactions are given more
13 weight. While this approach may be reasonable when analyzing certain transactions, it is
14 arguably unreasonable in this case because relatively incomparable transactions such as
15 McKeesport (with a purchase price of \$159 million) are given the greatest weighting in the
16 analysis of a transaction with a purchase price of \$54.9 million.

17 Finally, consistent with my approach to adjusting Mr. Walker's market valuation,
18 I included transactions involving only collection/distribution systems, and did not include
19 transactions involving integrated treatment and collection systems.

1 **Q. Please summarize the results of your market approach adjustments.**

2 A. The results of my market approach adjustments are summarized in the following table.¹⁷

**Figure 8:
Market Approach Valuation Adjustment**

Acquisitions	Type	Fair Market Value	RCNLD	Ratio
Aqua/New Garden	* Int	\$ 29,500,000	\$ 30,615,410	0.96
PAWC/McKeesport	* Int	158,000,000	160,301,491	0.99
Aqua/Limerick	* Int	64,373,378	86,086,756	0.75
SUEZ/Mahoning Water	C/D	4,734,800	8,899,336	0.53
SUEZ/Mahoning Wastewater	C/D	4,765,200	7,991,234	0.60
Aqua/East Bradford	C/D	5,000,000	9,236,581	0.54
PAWC/Sadsbury	C/D	8,300,000	8,517,587	0.97
PAWC/Exeter	* Int	92,000,000	99,589,819	0.92
PAWC/Steelton	C/D	20,500,000	23,921,473	0.86
Aqua/Cheltenham	C/D	44,558,259	49,940,486	0.89
PAWC/Kane	* Int	17,560,000	29,015,055	0.61
PAWC/Valley Water	C/D	7,325,000	11,664,026	0.63
PAWC/Valley Wastewater	C/D	13,950,000	19,252,333	0.72
PAWC/Upper Pottsgrove	C/D	13,750,000	18,460,028	0.74
PWAC/Royersford	C/D	13,000,000	13,376,109	0.97
Aqua/Lower Makefield	C/D	53,000,000	51,414,555	1.03
Aqua/East Norriton	C/D	20,750,000	27,461,356	0.76
Total		\$ 571,066,637	\$ 655,743,635	0.77
RCNLD Results			[4]	\$ 53,125,071
Market Approach Result			[5]	\$ 40,946,531

3 My proposed adjustments indicate a reasonable fair market value of \$40.9 million, which

4 represents an adjustment of \$15.2 million to Mr. Weinert's market approach valuation.

¹⁷ OCA Exhibit DJG-5.

IV. COST APPROACH

1 **Q. What is the Cost Approach?**

2 A. The Cost Approach is a procedure to estimate the current costs to reproduce or create a
3 property with another of comparable use and marketability.¹⁸

4 **Q. Please summarize the UVEs' valuations under the cost approach.**

5 A. Gannett Fleming's appraisal relied on the reproduction cost method,¹⁹ and AUS
6 Consultants' appraisal relied on the replacement cost method.²⁰ Both UVEs estimated
7 accumulated depreciation, or the depreciation "reserve", as a reduction to their respective
8 cost estimates. As part of their depreciation estimates, both UVEs used Iowa curves to
9 estimate the remaining lives of the Township's depreciable accounts.

10 **Q. Are you proposing adjustments to the UVEs' estimates for replacement or**
11 **reproduction cost?**

12 A. No. However, I am proposing several adjustments to the depreciation parameters assumed
13 by each UVE, as further discussed below.

A. Depreciation Analysis

14 **Q. Please generally describe how depreciation rates are typically estimated.**

15 A. Many utilities keep historical records of asset placements and retirements by vintage year.
16 When such data is available, depreciation experts can use actuarial techniques to analyze
17 the historical retirement patterns in each account. The most common of these techniques

¹⁸ https://www.appraisers.org/docs/default-source/5---standards/bv-standards-feb-2022.pdf?sfvrsn=5c9e5ac0_3

¹⁹ Exhibit X, Testimony of Harold Walker, III, p. 16, lines 20-23.

²⁰ Exhibit Y, Testimony of Jerome C. Weinert, p. 6, lines 3-6.

1 is called the retirement rate method. Under this method, historical retirement patterns can
2 be displayed graphically in the form of original survivor curves. Depreciation experts then
3 use visual and mathematical curve fitting techniques, along with professional judgement,
4 to select empirically derived Iowa curves that best fit the original survivor curve. The Iowa
5 curve is ultimately used to calculate the average remaining life and depreciation rate for
6 each account.²¹

7 **Q. Does the Township have the type of retirement data required to conduct the curve**
8 **fitting techniques you described?**

9 A. No.

10 **Q. Despite the lack of retirement data required to conduct conventional Iowa curve**
11 **fitting analysis, did the UVEs in this case nonetheless choose Iowa curves to estimate**
12 **the remaining life and accumulated depreciation for the Township's accounts?**

13 A. Yes. When aged data are available for conventional actuarial analysis, depreciation
14 analysts can rely on more objective, empirical analysis when selecting the most appropriate
15 Iowa curve and remaining life. In this case, however, the lack of data required for such
16 objective analysis led the UVEs to rely on more subjective elements when choosing their
17 selected Iowa curves. For example, according to Mr. Weinert, the Iowa curves selected for
18 AUS Consultants' appraisal were based on AUS Consultants' "experience in preparing
19 depreciation studies for the water and wastewater industry. . . ." ²² Mr. Walker's
20 justification for his selected Iowa curves was similar: "We believe our average service lives

²¹ Please see OCA St. 1, Appendix A for a more detailed discussion of the Iowa curves.

²² Exhibit Y, Testimony of Jerome C. Weinert, p. 9, lines 1-9.

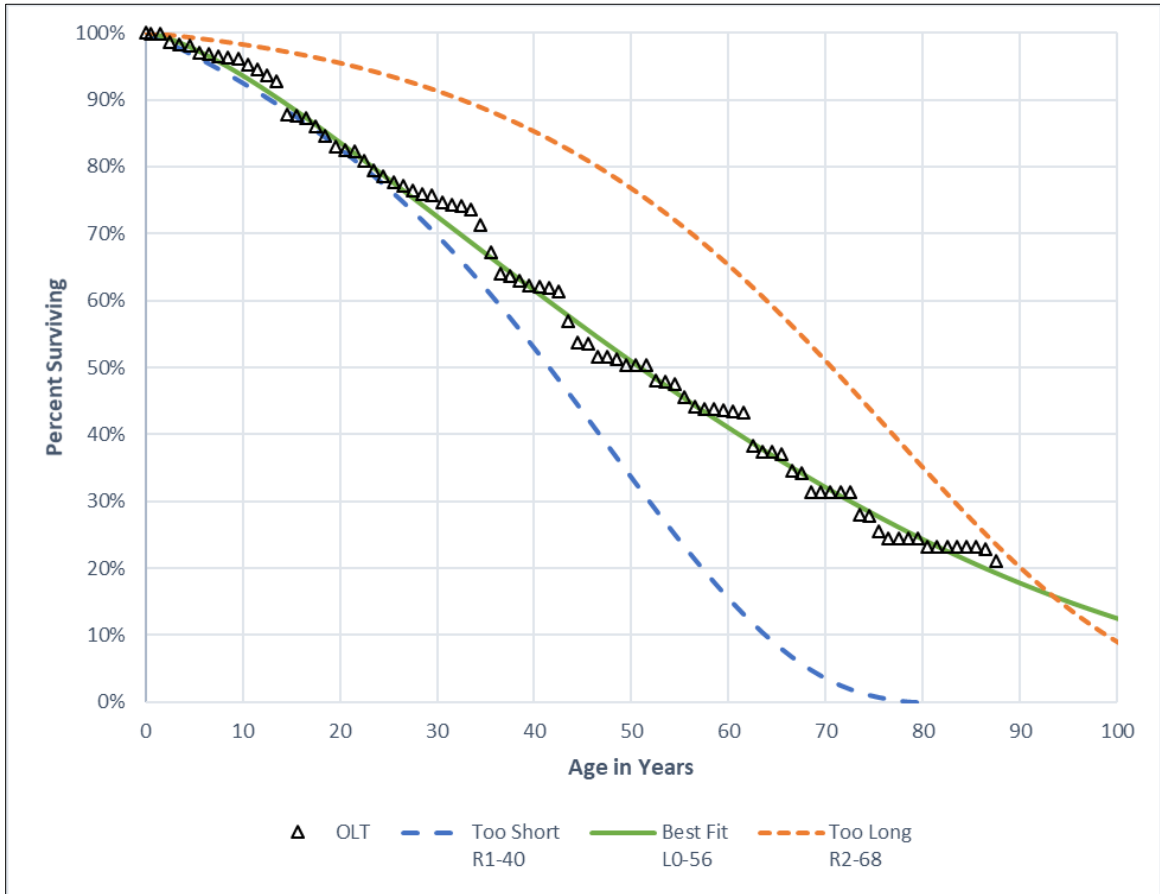
1 of depreciable assets are appropriate based on our experience”²³ Thus, both UVEs
2 are primarily relying on subjective factors, such as “experience,” in support of their
3 proposed service lives, without company-specific empirical support.

4 **Q. Describe the type of objective evidence typically relied upon by depreciation analysts**
5 **when adequate data is available.**

6 A. I have responded to many depreciation studies filed by both Gannett Fleming and AUS
7 Consultants in utility rate cases. When adequate historical retirement is available for
8 analysis, we are able to form observed retirement curves from the data, and then we can
9 use those curves for empirical support of the selected Iowa curves. The following chart
10 illustrates an example of this process.

²³ Exhibit X, Testimony of Harold Walker, III, p. 18, lines 7-11.

**Figure 9:
Account 999 – Widgets – Iowa Curve Fitting**



1 The numerous quantity of retirement data typically utilized in a depreciation study would
 2 be used to create an “observed life table” (“OLT”) from which the “OLT curve” (or original
 3 survivor curve) could be created (shown in black triangles in the graph above). One of the
 4 primary benefits of having adequate historical data to form an OLT curve is that it provides
 5 the analysts (and regulators) with a visual description of the historical retirement pattern in
 6 the account. This is a valuable tool in being able to assess the appropriateness of the fit for
 7 a particular Iowa curve. In the simple example above, we can clearly see that an R1-40
 8 Iowa curve would be too short, an R2-68 Iowa curve would be too long, and that an L0-56

1 Iowa curve would provide the best fit to the observed data. In contrast to this situation, we
2 do not have the type of data required in this case to form an OLT curve for the purposes of
3 Iowa curve fitting.

4 **Q. Please summarize the adjustments you propose to the Iowa curves used by Gannett**
5 **Fleming and AUS Consultants to determine the amount of accrued depreciation?**

6 A. I am proposing adjustments to Accounts 354 (Structures and Improvements), 360
7 (Collection Sewers – Force Mains), 361 (Collection Sewers – Gravity Mains), and 363
8 (Services to Customers). The specific adjustments to each appraisal are described further
9 below.

B. Adjustment to Gannett Fleming’s Cost Approach

10 **Q. Please summarize Gannett Fleming’s approach to estimating accrued depreciation.**

11 A. In Gannett Fleming’s FMV appraisal, estimated accrued depreciation was subtracted from
12 estimated reproduction cost to develop the overall cost approach valuation of \$59.1
13 million.²⁴ The accrued depreciation was estimated through Iowa curves selected by Mr.
14 Walker.

15 **Q. Did Mr. Walker also conduct an analysis using the original cost method?**

16 A. Yes. After factoring the depreciation reserve associated with the original cost for each
17 account studied, Gannett Fleming’s original cost method produced an indicated value of
18 \$33 million.²⁵ However, Mr. Walker did not use the result of this method as part of his

²⁴ OCA Exhibit DJG-6.

²⁵ Exhibit Q – Gannett Fleming Fair Market Value Appraisal, p. 24.

1 recommended FMV under the cost approach, and instead proposed the indicated value of
2 \$59.1 million under the replacement cost method. According to Mr. Walker, the original
3 cost method “can also provide meaningful metric to evaluate the reasonableness of other
4 indications of value produced by other valuation methods.”²⁶ I would generally agree with
5 Mr. Walker on this point. In other Section 1329 proceedings, I have based my proposed
6 adjustments to the cost approach on original cost, rather than replacement cost, based on
7 the overall indicated value produced by the results. While I do not think it would
8 necessarily be unreasonable to use the original cost as the basis for the cost approach
9 valuation in this case, I chose to base my adjustments to Mr. Walker’s cost approach
10 valuation on replacement cost. Furthermore, I am not proposing adjustments to Mr.
11 Walker’s replacement cost estimates in this case. Instead, my proposed adjustments impact
12 accumulated depreciation.

13 **Q. Please summarize your adjustment to Mr. Walker’s cost approach valuation.**

14 A. I am proposing adjustments to several accounts, as outlined in the following table.²⁷

²⁶ *Id.* at p. 26.

²⁷ OCA Exhibit DJG-6.

**Figure 10:
Proposed Iowa Curve and Accrued Depreciation Adjustments**

Account	Description	Gannett Fleming Position		OCA Adjustments	
		Iowa Curve	Accrued Depreciation	Iowa Curve	Accrued Depreciation
354.30	STRUCTURES AND IMPROVEMENTS - PUMPING	60-R3	2,769,664	45-R3	3,478,958
354.40	STRUCTURES AND IMPROVEMENTS - TREATMENT	65-R2.5	1,392,486	55-R2.5	1,553,425
360.10	COLLECTION SEWERS - FORCE - MAINS	70-R2.5	2,493,840	60-R2.5	2,821,192
361.10	COLLECTION SEWERS - GRAVITY - MAINS	65-R2.5	15,386,808	60-R2.5	16,282,307
363.20	SERVICES TO CUSTOMERS	55-R2.5	4,368,034	45-R2.5	5,055,324

1 As shown in the table, I am proposing service lives of 45 and 55 years for the Township’s
2 pumping and treatment structures and improvements accounts, respectively. The 45-R4
3 and 55-R4 curves I propose for these accounts are the same Iowa curves recommended by
4 Mr. Weinert for these accounts in this case and prior Section 1329 proceedings, and they
5 are consistent with my proposed Iowa curves for these accounts in prior Section 1329
6 proceedings. Additionally, I propose 60-R2.5 curves for the force and gravity collection
7 mains accounts. The 60-year average life is the same proposed by Gannett Fleming for
8 these accounts from another wastewater case in which I also testified.²⁸ Regarding the
9 curve shapes, I did not disagree with Mr. Walker’s proposed R2.5 curves for these
10 accounts. Finally, the 45-R3 curve I propose for Account 363.20 (Services) is consistent
11 with my proposal for this account in prior Section 1329 proceedings, and it is within a
12 reasonable range for this account.

²⁸ See OUCR Prefiled Testimony of David J. Garrett – Public’s Exhibit No. 1, filed June 22, 2018, in Cause No. 45039 before the Indiana Utility Regulation Commission, at <http://www.resolveuc.com/representative-engagements>.

1 **Q. Please demonstrate how you used the selected Iowa curves to calculate accrued**
 2 **depreciation for these adjusted accounts.**

3 A. To calculate accrued depreciation, I used the same process as Mr. Walker. By selecting
 4 shorter Iowa curves, however, the amount of accrued depreciation I calculated is higher
 5 than that estimated by Mr. Walker, which ultimately results in a lower cost approach
 6 estimate. The figure below shows how I calculated the accrued depreciation for Account
 7 354.30 using the 45-R3 Iowa curve.

**Figure 11:
 Accrued Depreciation Calculation – Account 354.40**

Year	Replacement Cost	Average Life	Annual Accrual		Remaining Life	Accrued Depreciation	
			Rate	Amount		Factor	Amount
1976	\$ 695,589	45	2.22%	\$ 15,458	9.3	0.79	\$ 551,509
1980	446,536	45	2.22%	9,923	11.4	0.75	333,324
1987	571,548	45	2.22%	12,701	15.8	0.65	370,722
1988	239,299	45	2.22%	5,318	16.5	0.63	151,514
2000	1,765,285	45	2.22%	39,229	25.9	0.42	749,720
2001	181,372	45	2.22%	4,030	26.7	0.41	73,578
2004	421,958	45	2.22%	9,377	29.4	0.35	146,535
2006	214,406	45	2.22%	4,765	31.2	0.31	65,890
2007	854,357	45	2.22%	18,986	32.1	0.29	245,247
2014	5,004,163	45	2.22%	111,204	38.7	0.14	704,423
2017	637,935	45	2.22%	14,176	41.6	0.08	48,628
2018	469,247	45	2.22%	10,428	42.5	0.05	25,591
2019	374,615	45	2.22%	8,325	43.5	0.03	12,276
Total	\$ 11,876,310			\$ 263,918	13.18		\$ 3,478,958

8 The remaining life by vintage year is dictated by the selected Iowa curve.²⁹

²⁹ See also OCA Exhibit DJG-7. The remaining life calculations for the other adjusted accounts are found in OCA Exhibits DJG-7 through DJG-12.

1 **Q. Please summarize your adjustment to Gannett Fleming’s cost approach valuation.**
 2 A. The table below summarizes my proposed adjustments to Gannett Fleming’s cost
 3 valuation.³⁰

**Figure 12:
 Cost Approach Valuation Proposal (to Gannett Fleming)**

Account	Description	Iowa Curve	Replacement Cost	Accrued Depreciation
353.20	LAND AND LAND RIGHTS - COLLECTION	ND	\$ 668	\$ -
353.30	LAND AND LAND RIGHTS - PUMPING	ND	13	-
354.30	STRUCTURES AND IMPROVEMENTS - PUMPING	45-R3	11,876,310	3,478,958
354.40	STRUCTURES AND IMPROVEMENTS - TREATMENT	55-R2.5	13,514,006	1,553,425
355.00	POWER GENERATION EQUIPMENT	30-S2	115,234	29,479
360.10	FORCE MAINS	60-R2.5	6,489,848	2,821,192
361.10	GRAVITY MAINS	60-R2.5	34,298,562	16,282,307
361.12	GRAVITY MAINS MANHOLES	60-R3	13,431,175	6,591,000
363.20	SERVICES TO CUSTOMERS	45-R2.5	12,145,646	5,055,324
365.20	METER PITS	50-R3	389,336	290,133
371.30	PUMPING EQUIPMENT	40-R1.5	134,817	48,972
390.70	COMPUTERS	5-SQ	13,689	13,689
391.70	TRANSPORTATION EQUIPMENT	11-S1.5	236,893	161,246
395.70	POWER OPERATED EQUIPMENT	15-L4	66,140	48,062
Total			\$ 92,712,337	\$ 36,373,787
				\$ 56,338,551

4 Applying the proposed Iowa curves and accrued depreciation adjustments discussed above,
 5 I calculate a cost approach valuation of \$56.3 million, which is about \$2.8 million less than
 6 Mr. Walker’s proposed cost approach valuation of \$59.1 million.³¹
 7

³⁰ OCA Exhibit DJG-6.

³¹ OCA Exhibit DJG-2.

C. Adjustment to AUS Consultants’ Cost Approach

1 **Q. Please summarize AUS Consultants’ approach to estimating accrued depreciation**
 2 **under the cost approach.**

3 A. AUS Consultants used the replacement cost method as the basis for the cost approach
 4 valuation. Similar to Mr. Walker, Mr. Weinert then estimated accrued depreciation in order
 5 to calculate the “replacement cost less depreciation” values for each account.

6 **Q. Please summarize your proposed adjustments to the Iowa curves used by AUS**
 7 **Consultants to calculate accrued depreciation.**

8 A. The following table shows my Iowa curve and service life adjustments to Mr. Weinert’s
 9 proposals.

**Figure 13:
 Proposed Iowa Curve Adjustments to AUS Consultants**

Account	Description	AUS Iowa Curve	OCA Iowa Curve
360.21	COLLECTION SEWERS - FORCE - MAINS	75-R3	60-R3
361.21	COLLECTION SEWERS - GRAVITY - MAINS	80-R2.5	60-R2.5
361.23	COLLECTION SEWERS - GRAVITY - MANHOLES	80-R2.5	60-R2.5

10 The average lives I propose for the collection sewers mains accounts are consistent with
 11 those discussed above in response to Gannett Fleming’s proposals.

12 **Q. Please summarize your adjustment to AUS Consultants’ cost approach valuation.**

13 A. The table below summarizes my proposed adjustments to AUS’s cost valuation.

**Figure 14:
Cost Approach Valuation Proposal (to AUS Consultants)**

	<u>AUS Cost Approach Summary</u>	<u>OCA Cost Approach Summary</u>
Replacement Cost New (RCN)	\$ 85,964,664	\$ 85,964,664
Replacement Cost New Less Depreciation (RCNLD)	\$ 59,847,171	\$ 53,125,071

1 Applying the proposed Iowa curves and accrued depreciation adjustments discussed above,
 2 I calculate a cost approach valuation of \$53.1 million, which is about \$6.7 million less than
 3 AUS Consultants’ proposed cost approach valuation of \$59.8 million.³²

V. INCOME APPROACH

4 **Q. Please summarize the income approach valuations estimated in the UVEs’ appraisals.**

5 A. Mr. Walker and Mr. Weinert estimate income approach valuations of \$61.1 million and
 6 \$55.6 million, respectively.³³

7 **Q. Are you proposing any adjustments to the UVEs’ valuations under the income**
 8 **approach?**

9 A. Yes. I propose adjustments reducing Mr. Walker’s and Mr. Weinert’s income approach
 10 valuations by \$19.8 million and \$14.2 million, respectively.³⁴ I am proposing several
 11 adjustments to the income approaches of each UVE, including the amount of projected
 12 annual cash flow, the discount rate, and the growth rate used in their discounted cash flow
 13 models. Adjustments to the discount rate involve using a fundamental approach to

³² OCA Exhibit DJG-12; *see also* OCA Exhibit DJG-13 for detailed calculations.

³³ OCA Exhibit DJG-2.

³⁴ *Id.*

1 estimating the cost of equity of the Township through the use of financial modeling of a
2 proxy group of utilities, which is further discussed below.

3 **Q. Please summarize your income approach adjustment.**

4 A. My income approach adjustment is based on the theory that assets that are expected to
5 generate cash flows over time can be valued with various discounted cash flow models.
6 While this basic premise also underlies the approach taken by the UVEs in their income
7 approach valuations, I believe several reasonable adjustments are warranted, as further
8 discussed in this section. Under this valuation method, the value of an asset (the
9 Township's wastewater system assets in this case), is equal to the present value of its future
10 cash flows. This model also requires estimates for a growth rate and discount rate. For
11 publicly traded assets, we can use the dividend discount model. A derivation of this model
12 that solves for the discount rate is called the Discounted Cash Flow ("DCF") model in
13 regulatory proceedings. However, since the Township is not publicly traded and does not
14 issue dividends, we must consider its estimated free cash flow from operations, rather than
15 dividends, as part of the valuation model.³⁵ I also proposed adjustments to the UVEs' long-
16 term growth rate and discount rate, which are both key inputs to the DCF Model. Under
17 the DCF Model used for the valuation adjustment in this case, the discount rate is the asset's
18 estimated cost of capital.³⁶ My adjustment is the result of applying these reasonable
19 estimates to the UVE income approaches.

³⁵ OCA Exhibit DJG-14.

³⁶ The discount rate in DCF Model applied to publicly traded firms is the cost of equity, since the cash flows under that model are cash flows to equity (i.e., post debt dividend payments). In the discounted cash flow valuation model

A. Free Cash Flow From Operations

1 **Q. Please summarize how you adjusted the Township’s free cash flows from operations.**

2 A. First, I considered the average amount of operating revenues, earnings before interest and
3 taxes (“EBIT”), depreciation, and capital expenditures for years 2018, 2019, and 2020 to
4 calculate free cash flow from operations as the basis for discounted cash flow analysis.³⁷

5 The reason I selected the average amounts obtained from these three years in this
6 proceeding is because using the amounts from any single year could have produced an
7 inaccurate indicated valuation. For example, using the free cash flow calculation obtained
8 from 2018 alone would have produced an indicated value of \$307 million. On the other
9 hand, using 2020 figures alone would have produced a negative valuation for the system
10 assets, which is not realistic. However, averaging the figures from all three years ultimately
11 produced an indicated valuation that is much more reflective of the results obtained from
12 the other valuation approaches. For example, the indicated valuation adjustment of \$41.3
13 million under the adjusted income approach valuation is almost identical to the adjusted
14 valuation of \$41 million to Mr. Weinert’s market approach.³⁸

applied to the Township, the discount rate is the cost of capital, since we are assuming cash flows to the firm (i.e., pre-debt cash flows).

³⁷ See figures shown in Exhibit Q – Gannett Fleming Fair Market Value Appraisal, Exh. 13.

³⁸ OCA Exhibit DJG-2.

B. Discount Rate – Cost of Capital

1 **Q. Please summarize how you adjusted the Township’s cost of capital.**

2 A. The weighted cost of capital essentially involves several key components, including the
3 cost of debt, the cost of equity, and the capital structure. In terms of estimation, the most
4 critical of these components is the cost of equity. To arrive at my adjusted cost of equity,
5 I considered a proxy group of water utilities substantially similar to the proxy group
6 considered by the UVEs. There are several benefits of using a proxy group when
7 estimating the cost of equity for a regulated utility company. Frequently, the most apparent
8 reason, as is the case here, is that the target asset is often not publicly traded. Publicly
9 traded assets have readily obtainable data regarding some of the key components to cost of
10 equity estimation, including stock prices, dividends, and beta estimates. Because I used
11 the proxy group of utilities for the cost of equity adjustment, I used the same group for the
12 cost of debt and capital structure estimates. This is because these elements of the cost of
13 capital are related. Higher debt ratios can have an increasing effect on the cost of debt and
14 equity (though sometimes a decreasing effect on the overall cost of capital to a certain
15 point). I will discuss my adjustments regarding the individual components of the cost of
16 capital in the following sections.

17 **Q. What is your adjusted cost of capital for the Township?**

18 A. The following table summarizes my cost of capital adjustment for the Township.³⁹

³⁹ OCA Exhibit DJG-16.

**Figure 15:
Cost of Capital Adjustment**

Capital Component	Proposed Ratio	Cost Rate	After-Tax Rate	Weighted Cost
Long Term Debt	50%	3.9%	2.8%	1.39%
Equity	50%	6.1%	6.1%	3.06%
Total	100%			4.45%

1 The capital composition and rates contemplated in this calculation produce a cost of capital
2 estimate of 4.45%. This is the figure I used in the discount rate of my discounted cash flow
3 adjustment for the Township.⁴⁰

4 **Q. How does your cost of capital adjustment compare to the UVEs’ cost of capital**
5 **estimates?**

6 A. Mr. Walker estimates a range for the cost of capital of 6.57% – 7.79%.⁴¹ Mr. Weinert
7 estimates a cost of capital of 7.57%.⁴² Thus, my adjusted cost of capital is less than the
8 estimate of both UVEs. The differences in our cost of capital estimates stem from the
9 differences between the various components of the cost of capital – primarily the cost of
10 equity and capital structure, which are further discussed below.

⁴⁰ See OCA Exhibit DJG-14.

⁴¹ Exhibit X, Testimony of Harold Walker, III, p. 20, lines 7-9.

⁴² Exhibit Y, Testimony of Jerome C. Weinert, p. 19, line 14.

C. Cost of Equity

1 **Q. Describe the cost of equity.**

2 A. The cost of equity refers to the required return on equity expected from a company's equity
3 investor based on the risk inherent in that investment. The required return from the
4 investors' perspective is synonymous with the *cost* from the company's perspective.
5 Unlike the known, contractual and embedded cost of debt, there is not any explicitly
6 quantifiable "cost" of equity. Instead, the cost of equity must be estimated through various
7 financial models. The two most widely used financial models to estimate the cost of equity
8 (particularly in regulatory proceedings) are the DCF Model and the Capital Asset Pricing
9 Model (the "CAPM"). I applied each of these models to the same proxy group in order to
10 calculate my adjustment to the Township's cost of equity.

1. DCF Analysis

11 **Q. Describe the inputs to the DCF Model.**

12 A. There are three primary inputs in the DCF Model: (1) stock price; (2) dividend; and (3) the
13 long-term growth rate. The stock prices and dividends are known inputs based on recorded
14 data, while the growth rate projection must be estimated. The formula is presented as
15 follows:

**Equation 1:
Quarterly Approximation Discounted Cash Flow Model**

1
$$K = \left[\frac{d_0(1 + g)^{1/4}}{P_0} + (1 + g)^{1/4} \right]^4 - 1$$

2 *where:* K = *discount rate / required return*
 d_0 = *current quarterly dividend per share*
 P_0 = *stock price*
 g = *expected growth rate of future dividends*

3 I discuss each of these inputs separately below. Further details regarding the theories of
4 the DCF Model are discussed in Appendix B.

5 **Q. How did you determine the stock price input of the DCF Model?**

6 A. For the stock price (P_0), I used a 30-day average of stock prices for each company in the
7 proxy group.⁴³ Analysts sometimes rely on average stock prices for longer periods (e.g.,
8 60, 90, or 180 days). According to the efficient market hypothesis, however, markets
9 reflect all relevant information available at a particular time, and prices adjust
10 instantaneously to the arrival of new information.⁴⁴ Past stock prices, in essence, reflect
11 outdated information. The DCF Model used in utility rate cases is a derivation of the
12 dividend discount model, which is used to determine the current value of an asset. Thus,
13 according to the dividend discount model and the efficient market hypothesis, the value for
14 the “ P_0 ” term in the DCF Model should technically be the current stock price, rather than
15 an average.

⁴³ OCA Exhibit DJG-19.

⁴⁴ See Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, Vol. 25, No. 2 The Journal of Finance 383 (1970).

1 **Q. Why did you use a 30-day average for the current stock price input?**

2 A. Using a short-term average of stock prices for the current stock price input adheres to
3 market efficiency principles while avoiding any irregularities that may arise from using a
4 single current stock price. In the context of a utility rate proceeding there is a significant
5 length of time from when an application is filed, and testimony is due. Choosing a current
6 stock price for one particular day could raise a separate issue concerning which day was
7 chosen to be used in the analysis. In addition, a single stock price on a particular day may
8 be unusually high or low. It is arguably ill-advised to use a single stock price in a model
9 that is ultimately used to set rates for several years, especially if a stock is experiencing
10 volatility. Thus, it is preferable to use a short-term average of stock prices, which
11 represents a good balance between adhering to well-established principles of market
12 efficiency while avoiding any unnecessary contentions that may arise from using a single
13 stock price on a given day. The stock prices I used in my DCF analysis are based on 30-
14 day averages of adjusted closing stock prices for each company in the proxy group.⁴⁵

15 **Q. Describe how you determined the dividend input of the DCF Model.**

16 A. The dividend term in the Quarterly Approximation DCF Model is the current quarterly
17 dividend per share (d_0). I obtained the most recent quarterly dividend paid for each proxy
18 company.⁴⁶ The Quarterly Approximation DCF Model assumes that the company

⁴⁵ Exhibit DJG-19. Adjusted closing prices, rather than actual closing prices, are ideal for analyzing historical stock prices. The adjusted price provides an accurate representation of the firm's equity value beyond the mere market price because it accounts for stock splits and dividends.

⁴⁶ Exhibit DJG-4. Nasdaq Dividend History, <http://www.nasdaq.com/quotes/dividend-history.aspx>.

1 increases its dividend payments each quarter. Thus, the model assumes that each quarterly
2 dividend is greater than the previous one by $(1 + g)^{0.25}$. This expression could be described
3 as the dividend quarterly growth rate, where the term “g” is the growth rate and the
4 exponential term “0.25” signifies one quarter of the year.

5 **Q. Summarize the growth rate input in the DCF Model.**

6 A. The most critical input in the DCF Model is the growth rate. Unlike the stock price and
7 dividend inputs, the growth rate input (g) must be estimated. As a result, the growth rate
8 is often the most contentious DCF input in utility rate cases. The DCF model used in this
9 case is based on the constant growth valuation model. Under this model, a stock is valued
10 by the present value of its future cash flows in the form of dividends. Before future cash
11 flows are discounted by the cost of equity, however, they must be “grown” into the future
12 by a long-term growth rate. As stated above, one of the inherent assumptions of this model
13 is that these cash flows in the form of dividends grow at a constant rate forever. Thus, the
14 growth rate term in the constant growth DCF model is often called the “constant” or
15 “stable” growth rate. For young, high-growth firms, estimating the growth rate to be used
16 in the model can be especially difficult, and may require the use of multi-stage growth
17 models. For mature, low-growth firms such as utilities, however, estimating the constant
18 growth rate is more transparent.

1 **Q. Is it true that the constant growth rate cannot exceed the growth rate of the economy,**
2 **especially for a regulated utility company?**

3 A. Yes. A fundamental concept in finance is that no firm can grow forever at a rate higher
4 than the growth rate of the economy in which it operates.⁴⁷ Thus, the constant growth rate
5 used in the DCF Model should not exceed the aggregate economic growth rate. This is
6 especially true when the DCF Model is conducted on public utilities because these firms
7 have defined service territories. As stated by Dr. Damodaran: “[i]f a firm is a purely
8 domestic company, either because of internal constraints . . . or external constraints (such
9 as those imposed by a government), the growth rate in the domestic economy will be the
10 limiting value.”⁴⁸

11 In fact, it is reasonable to assume that a regulated utility would grow at a rate that
12 is less than the U.S. economic growth rate. Unlike competitive firms, which might increase
13 their growth by launching a new product line, franchising, or expanding into new and
14 developing markets, utility operating companies with defined service territories cannot
15 partake in any of these growth opportunities. Gross Domestic Product (“GDP”) is one of
16 the most widely used measures of economic production and is used to measure aggregate
17 economic growth. According to the Congressional Budget Office’s Budget Outlook, the
18 long-term forecast for nominal U.S. GDP growth is about 4%, which includes an inflation
19 rate of 2%.⁴⁹ For mature companies in mature industries, such as utility companies, the

⁴⁷ See Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 306 (3rd ed., John Wiley & Sons, Inc. 2012).

⁴⁸ Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 306 (3rd ed., John Wiley & Sons, Inc. 2012).

⁴⁹ <https://www.cbo.gov/publication/56977>

1 constant growth rate will likely fall between the expected rate of inflation and the expected
2 rate of nominal GDP growth. Thus, the Township's constant growth rate is between 2%
3 and 4%.

4 **Q. Is it reasonable to assume that the constant growth rate will not exceed the risk-free**
5 **rate?**

6 A. Yes. In the long term, the risk-free rate will converge on the growth rate of the economy.
7 For this reason, financial analysts sometimes use the risk-free rate for the constant growth
8 rate value in the DCF model.⁵⁰ I discuss the risk-free rate in further detail later in this
9 testimony.

10 **Q. Describe the growth rate input used in your DCF Model.**

11 A. The following chart in the figure below shows three of the long-term growth determinants
12 discussed in this section.⁵¹

⁵⁰ Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 307 (3rd ed., John Wiley & Sons, Inc. 2012).

⁵¹ OCA Exhibit DJG-20.

**Figure 16:
Constant Growth Rate Determinants**

Constant Growth Determinants	Rate
Nominal GDP	3.8%
Real GDP	1.8%
Inflation	2.0%
Risk Free Rate	2.2%
Highest	3.8%

1 For the long-term growth rate in my DCF model, I selected the maximum, reasonable long-
 2 term growth rate of 3.8%, which is consistent with my cost of equity analysis in many other
 3 regulatory proceedings.

4 **Q. How do your adjustments to the DCF Model in this case compare with the approach**
 5 **used by the UVEs?**

6 A. One of the primary differences between the UVEs' DCF Models and my adjustments relate
 7 to the time period over which we are discounting the assumed cash flows. In the vast
 8 majority of utility rate cases, expert witnesses who apply the DCF Model to estimate the
 9 utility's cost of capital use the constant growth form of the DCF Model. That is, annual
 10 cash flows are assumed to be consistent, and one growth rate is applied to those cash flows.
 11 Very rarely do I see cost of capital witnesses use multi-stage DCF Models, as the UVEs
 12 did in this case. In this case, the UVEs have considered cash flows over 20 years. Again,
 13 my application of the DCF Model in this case to arrive at my adjustments to the UVEs'
 14 income approach valuations is consistent with my approach to the DCF Model in other
 15 cases.

1 **Q. Please describe the final results of your DCF Model.**

2 A. My DCF Model cost of equity estimate for the Township is 5.5%.⁵² This is based on the
3 average DCF result for each company in the proxy group.

2. CAPM Analysis

4 **Q. Describe the CAPM.**

5 A. The CAPM is a market-based model founded on the principle that investors expect higher
6 returns for incurring additional risk.⁵³ The CAPM estimates this expected return. The
7 various assumptions, theories, and equations involved in the CAPM are discussed further
8 in Appendix C. The CAPM is a useful model because it directly considers the amount of
9 risk inherent in a business.

10 **Q. Describe the inputs for the CAPM.**

11 A. The basic CAPM equation requires only three inputs to estimate the cost of equity: (1) the
12 risk-free rate; (2) the beta coefficient; and (3) the equity risk premium. Here is the CAPM
13 formula:

**Equation 2:
Basic CAPM**

14 **Cost of Equity = Risk-free Rate + (Beta × Equity Risk Premium)**

15 Each input is discussed separately below.

⁵² OCA Exhibit DJG-17.

⁵³ William F. Sharpe, *A Simplified Model for Portfolio Analysis* 277–93 (Management Science IX 1963).

1 **A. The Risk-Free Rate**

2 **Q. Explain the risk-free rate.**

3 A. The first term in the CAPM is the risk-free rate (R_F). The risk-free rate is simply the level
4 of return investors can achieve without assuming any risk. The risk-free rate represents the
5 bare minimum return that any investor would require on a risky asset. Even though no
6 investment is technically void of risk, investors often use U.S. Treasury securities to
7 represent the risk-free rate because they accept that those securities essentially contain no
8 default risk. The Treasury issues securities with different maturities, including short-term
9 Treasury Bills, intermediate-term Treasury Notes, and long-term Treasury Bonds.

10 **Q. Is it preferable to use the yield on long-term Treasury bonds for the risk-free rate in**
11 **the CAPM?**

12 A. Yes. In valuing an asset, investors estimate cash flows over long periods of time. Common
13 stock is viewed as a long-term investment, and the cash flows from dividends are assumed
14 to last indefinitely. Thus, short-term Treasury Bill yields are rarely used in the CAPM to
15 represent the risk-free rate. Short-term rates are subject to greater volatility and thus can
16 lead to unreliable estimates. Instead, long-term Treasury bonds are usually used to
17 represent the risk-free rate in the CAPM. I considered a 30-day average of daily Treasury
18 yield curve rates on 30-year Treasury Bonds in my risk-free rate estimate, which resulted
19 in a risk-free rate of 2.05%.⁵⁴

⁵⁴ OCA Exhibit DJG-20.

1 **Q. How is the beta coefficient used in this model?**

2 A. As discussed above, beta represents the sensitivity of a given security to movements in the
3 overall market. The CAPM states that in efficient capital markets, the expected risk
4 premium on each investment is proportional to its beta. Recall that a security with a beta
5 greater (or less) than one is more (or less) risky than the market portfolio. An index such
6 as the S&P 500 Index is used as a proxy for the market portfolio. The historical betas for
7 publicly traded firms are published by various institutional analysts. Beta may also be
8 calculated through a linear regression analysis, which provides additional statistical
9 information about the relationship between a single stock and the market portfolio. As
10 discussed above, beta also represents the sensitivity of a given security to the market as a
11 whole. The market portfolio of all stocks has a beta equal to one. Stocks with betas greater
12 than 1.0 are relatively more sensitive to market risk than the average stock. For example,
13 if the market increases (or decreases) by 1.0%, a stock with a beta of 1.5 will, on average,
14 increase (or decrease) by 1.5%. In contrast, stocks with betas of less than 1.0 are less
15 sensitive to market risk. For example, if the market increases (or decreases) by 1.0%, a
16 stock with a beta of 0.5 will, on average, only increase (or decrease) by 0.5%.

17 **Q. Describe the source for the betas you used in your CAPM analysis.**

18 A. I used betas recently published by Value Line Investment Survey. The beta for each proxy
19 company is less than 1.0.⁵⁵ Thus, we have an objective measure to prove the well-known
20 concept that utility stocks are less risky than the average stock in the market.

⁵⁵ See OCA Exhibit DJG-18.

1 **Q. Describe the equity risk premium.**

2 A. The final term of the CAPM is the equity risk premium (“ERP”), which is the required
3 return on the market portfolio less the risk-free rate ($R_M - R_F$). In other words, the ERP is
4 the level of return investors expect above the risk-free rate in exchange for investing in
5 risky securities. To estimate the ERP, I considered expert surveys, an implied ERP
6 calculation, and the ERP published by a third-party financial advising firm.

7 **Q. Describe the expert survey approach to estimating the ERP.**

8 A. As its name implies, the expert survey approach to estimating the ERP involves conducting
9 a survey of experts including professors, analysts, chief financial officers, and other
10 executives around the country and asking them what they think the ERP is. The IESE
11 Business School conducts a periodic survey that asks experts around the country about
12 their opinions on the ERP. Their 2021 expert survey reported an average ERP of 5.6%.⁵⁶

13 **Q. Describe the implied ERP approach.**

14 A. The third method of estimating the ERP is arguably the best. The implied ERP relies on
15 the stable growth model proposed by Gordon, often called the “Gordon Growth Model,”
16 which is a basic stock valuation model widely used in finance for many years.⁵⁷ This model
17 is a mathematical derivation of the DCF Model. In fact, the underlying concept in both
18 models is the same: the current value of an asset is equal to the present value of its future

⁵⁶ Pablo Fernandez, *Survey: Market Risk Premium and Risk-Free Rate used for 88 countries in 2021*, copy available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3861152. IESE Business School is the graduate business school of the University of Navarra. IESE offers Master of Business Administration (MBA), Executive MBA and Executive Education programs. IESE is consistently ranked among the leading business schools in the world.

⁵⁷ Myron J. Gordon and Eli Shapiro, *Capital Equipment Analysis: The Required Rate of Profit* 102–10 (Management Science Vol. 3, No. 1 Oct. 1956).

1 cash flows. Instead of using this model to determine the discount rate of one company, we
2 can use it to determine the discount rate for the entire market by substituting the inputs of
3 the model. Specifically, instead of using the current stock price (P_0), we will use the
4 current value of the S&P 500 (V_{500}). Similarly, instead of using the dividends of a single
5 firm, we will consider the dividends paid by the entire market. Additionally, we should
6 consider potential dividends. In other words, stock buybacks should be considered in
7 addition to paid dividends, as stock buybacks represent another way for the firm to transfer
8 free cash flow to shareholders. Focusing on dividends alone without considering stock
9 buybacks could understate the cash flow component of the model, and ultimately
10 understate the implied ERP. The market dividend yield plus the market buyback yield
11 gives us the gross cash yield to use as our cash flow in the numerator of the discount model.
12 This gross cash yield is increased each year over the next five years by the growth rate.
13 These cash flows must be discounted to determine their present value. The discount rate
14 in each denominator is the risk-free rate (R_F) plus the discount rate (K). The following
15 formula shows how the implied return is calculated. Since the current value of the S&P is
16 known, we can solve for K : the implied market return.⁵⁸

⁵⁸ See Exhibit DJG-9 for detailed calculation.

**Equation 3:
Implied Market Return**

1
$$V_{500} = \frac{CY_1(1+g)^1}{(1+R_F+K)^1} + \frac{CY_2(1+g)^2}{(1+R_F+K)^2} + \dots + \frac{CY_5(1+g)^5 + TV}{(1+R_F+K)^5}$$

where: V_{500} = current value of index (S&P 500)
 CY_{1-5} = average cash yield over last five years (includes dividends and buybacks)
 g = compound growth rate in earnings over last five years
 R_F = risk-free rate
 K = implied market return (this is what we are solving for)
 TV = terminal value = $CY_5(1+R_F)/K$

2 The discount rate is called the “implied” return here because it is based on the current value
3 of the index as well as the value of free cash flow to investors projected over the next five
4 years. Thus, based on these inputs, the market is “implying” the expected return; or in
5 other words, based on the current value of all stocks (the index price), and the projected
6 value of future cash flows, the market is telling us the return expected by investors for
7 investing in the market portfolio. After solving for the implied market return (K), we
8 simply subtract the risk-free rate from it to arrive at the implied ERP.

**Equation 4:
Implied Equity Risk Premium**

9
$$\text{Implied Expected Market Return} - R_F = \text{Implied ERP}$$

10 **Q. Discuss the results of your implied ERP calculation.**

11 A. After collecting data for the index value, operating earnings, dividends, and buybacks for
12 the S&P 500 over the past six years, I calculated the dividend yield, buyback yield, and
13 gross cash yield for each year. I also calculated the compound annual growth rate (g) from
14 operating earnings. I used these inputs, along with the risk-free rate and current value of
15 the index to calculate a current expected return on the entire market of 7.1%. I subtracted

1 the risk-free rate to arrive at the implied equity risk premium of 4.9%.⁵⁹ Dr. Damodaran,
2 one of the world's leading experts on the ERP, promotes the implied ERP method discussed
3 above. He calculates monthly and annual implied ERPs with this method and publishes
4 his results. Dr. Damodaran's highest ERP estimate for February 2022 using several
5 implied ERP variations was 5.1%.⁶⁰

6 **Q. What are the results of your final ERP estimate?**

7 A. For the final ERP estimate I used in my CAPM analysis, I considered the results of the
8 ERP surveys along with the implied ERP calculations and the ERP reported by Duff &
9 Phelps.⁶¹ The results are presented in the following figure:

**Figure 17:
Equity Risk Premium Results**

IESE Business School Survey	5.6%
Duff & Phelps Report	5.5%
Damodaran (average)	5.1%
Garrett	4.9%
Average	5.3%
Highest	5.6%

⁵⁹ OCA Exhibit DJG-21.

⁶⁰ Aswath Damodaran, *Implied Equity Risk Premium Update*, DAMODARAN ONLINE (last visited Nov. 2, 2020) <http://pages.stern.nyu.edu/~adamodar/>.

⁶¹ OCA Exhibit DJG-23.

1 I selected the highest ERP estimate of 5.6% to use in my CAPM analysis, which is
2 consistent with my approach in many other regulatory proceedings.

3 **Q. Please explain the final results of your CAPM analysis.**

4 A. Using the inputs for the risk-free rate, beta coefficient, and ERP discussed above, I estimate
5 that the CAPM cost of equity is 6.6%.⁶²

6 **Q. Please explain how your adjusted CAPM results compare with the UVEs' CAPM**
7 **results.**

8 A. The UVEs' CAPM cost of equity estimates were notably higher than my adjusted estimate.
9 Specifically, Mr. Weinert estimates a CAPM cost of equity of 10.67%.⁶³ Mr. Walker
10 estimates a CAPM cost of equity range of 7.87% - 9.47%.⁶⁴ My lower CAPM adjustment
11 is primarily driven by my ERP input discussed above. Mr. Walker assumes an ERP of
12 6.91%, which is notably higher than the ERPs reported in expert surveys and published by
13 Duff & Phelps.⁶⁵ Likewise, Mr. Weinert assumes an ERP of 6.6%.⁶⁶ Again, my approach
14 with regard to these adjustments is consistent with my approach in many other rate case
15 proceedings.

⁶² OCA Exhibit DJG-17.

⁶³ Exhibit R, AUS Consultants Fair Market Value Appraisal, Attach. F.

⁶⁴ Exhibit X, Testimony of Harold Walker, III, p. 21, lines 1-4.

⁶⁵ Exhibit Q, Gannett Fleming Fair Market Value Appraisal, Exhibit 20.

⁶⁶ Exhibit R, AUS Consultants Fair Market Value Appraisal.

1 **Q. Given the results of your DCF and CAPM analyses, what is your estimated cost of**
2 **equity for the Township?**

3 A. To arrive at my cost of equity estimate, I average the indicated cost of equity results of the
4 CAPM (6.6%) and DCF Model (5.6%), to arrive at an overall cost of equity estimate of
5 6.1%.⁶⁷

6 **Q. Please summarize your adjustment to Gannett Fleming's and AUS Consultants'**
7 **income approach valuations.**

8 A. Based on my cost of equity and the other cost of capital components discussed above, my
9 adjustments to the UVEs' appraisals result in an adjusted income approach valuation of
10 \$41.4 million, which is \$19.8 million less than Mr. Walker's valuation of \$61.1 million,
11 and it is \$14.2 million less than Mr. Weinert's valuation of \$55.6 million.⁶⁸

D. Cost of Debt and Capital Structure

12 **Q. Please describe your adjustments to the cost of debt and capital structure.**

13 A. As discussed above, the cost of debt and capital structure are also components that
14 comprise the overall cost of capital. Since I used the utility proxy group to estimate the
15 cost of equity, I used the same group to estimate the cost of debt and capital structure. In
16 addition, I relied on the same source for the information – Value Line Investment Survey.
17 To estimate the cost of debt, I considered the interest expense and long-term debt reported
18 for each of the proxy companies. To estimate the capital structure, I considered the long-
19 term debt ratios for each proxy company. Again, I considered substantially the same proxy

⁶⁷ OCA Exhibit DJG-17.

⁶⁸ OCA Exhibit DJG-2.

1 group of companies as both UVEs as well as their consideration of Value Line as a source
2 for some of the pertinent financial data used in their analyses, including the debt ratios.
3 My average, adjusted cost of debt (pre-tax) and debt ratio for the proxy group is 3.9% and
4 50%, respectively.⁶⁹

5 **Q. How does your capital structure adjustment compare with the capital structures used**
6 **by the UVEs?**

7 A. Mr. Walker utilized a debt ratio of only 23.9%.⁷⁰ Similarly, Mr. Weinert utilized a debt
8 ratio of only 29%.⁷¹ These debt ratios are significantly lower than the average reported
9 debt ratio of the proxy group (50%), which is what I based my capital structure adjustment
10 on.

VI. CONCLUSION AND RECOMMENDATION

11 **Q. Please summarize the key points of your testimony.**

12 A. I reviewed the market, cost, and income valuations proposed by each appraisal. Certain
13 assumptions made by each UVE caused the results of their valuations under each approach
14 to be unreasonably high. Applying reasonable adjustments to their models, I estimated a
15 reasonable fair market value for acquisition of the Township system.

⁶⁹ OCA Exhibit DJG-17.

⁷⁰ Exhibit X, Testimony of Harold Walker, III, p. 21, line 2.

⁷¹ Exhibit R, AUS Consultants Fair Market Value Appraisal, p. 11.

1 **Q. What is your recommendation to the Commission?**

2 A. If the Commission approves the acquisition, the Commission should adopt my proposed
3 adjustments to the appraisals. Also, if the Commission approves the acquisition, I
4 recommend a ratemaking rate base of \$46,500,000 for the Township's system, as outlined
5 in OCA Exhibit DJG-2, rather than the \$54,930,000 proposed by Aqua. Additionally, the
6 Commission should only approve the acquisition if approval is conditioned upon Aqua
7 providing a separate Cost of Service Study in the first base rate case which includes the
8 Township's assets, in order to separately identify the cost of serving the Township
9 wastewater system.

10 **Q. Does this conclude your testimony?**

11 A. Yes. To the extent that I did not specifically address a particular issue, that does not
12 constitute my agreement with such issue. I reserve the right to modify or supplement my
13 testimony if additional information is received.

APPENDIX A:

IOWA CURVES

Early work in the analysis of the service life of industrial property was based on models that described the life characteristics of human populations.⁷² This explains why the word “mortality” is often used in the context of depreciation analysis. In fact, a group of property installed during the same accounting period is analogous to a group of humans born during the same calendar year. Each period the group will incur a certain fraction of deaths / retirements until there are no survivors. Describing this pattern of mortality is part of actuarial analysis and is regularly used by insurance companies to determine life insurance premiums. The pattern of mortality may be described by several mathematical functions, particularly the survivor curve and frequency curve. Each curve may be derived from the other so that if one curve is known, the other may be obtained. A survivor curve is a graph of the percent of units remaining in service expressed as a function of age.⁷³ A frequency curve is a graph of the frequency of retirements as a function of age. Several types of survivor and frequency curves are illustrated in the figures below.

1. Development

The survivor curves used by analysts today were developed over several decades from extensive analysis of utility and industrial property. In 1931, Edwin Kurtz and Robley Winfrey used extensive data from a range of 65 industrial property groups to create survivor curves

⁷² See Frank K. Wolf & W. Chester Fitch, *Depreciation Systems* 276 (Iowa State University Press 1994).

⁷³ *Id.* at 23.

representing the life characteristics of each group of property.⁷⁴ They generalized the 65 curves into 13 survivor curve types and published their results in *Bulletin 103: Life Characteristics of Physical Property*. The 13 type curves were designed to be used as valuable aids in forecasting probable future service lives of industrial property. Over the next few years, Winfrey continued gathering additional data, particularly from public utility property, and expanded the examined property groups from 65 to 176.⁷⁵ This resulted in 5 additional survivor curve types for a total of 18 curves. In 1935, Winfrey published *Bulletin 125: Statistical Analysis of Industrial Property Retirements*. According to Winfrey, “[t]he 18 type curves are expected to represent quite well all survivor curves commonly encountered in utility and industrial practices.”⁷⁶ These curves are known as the “Iowa curves” and are used extensively in depreciation analysis in order to obtain the average service lives of property groups. (Use of Iowa curves in actuarial analysis is further discussed in Appendix C.)

In 1942, Winfrey published *Bulletin 155: Depreciation of Group Properties*. In Bulletin 155, Winfrey made some slight revisions to a few of the 18 curve types, and published the equations, tables of the percent surviving, and probable life of each curve at five-percent intervals.⁷⁷ Rather than using the original formulas, analysts typically rely on the published tables containing the percentages surviving. This is because absent knowledge of the integration

⁷⁴ *Id.* at 34.

⁷⁵ *Id.*

⁷⁶ Robley Winfrey, *Bulletin 125: Statistical Analyses of Industrial Property Retirements* 85, Vol. XXXIV, No. 23 (Iowa State College of Agriculture and Mechanic Arts 1935).

⁷⁷ Robley Winfrey, *Bulletin 155: Depreciation of Group Properties* 121-28, Vol XLI, No. 1 (The Iowa State College Bulletin 1942); see also Wolf *supra* n. 1, at 305-38 (publishing the percent surviving for each Iowa curve, including “O” type curve, at one percent intervals).

technique applied to each age interval, it is not possible to recreate the exact original published table values. In the 1970s, John Russo collected data from over 2,000 property accounts reflecting observations during the period 1965 – 1975 as part of his Ph.D. dissertation at Iowa State. Russo essentially repeated Winfrey’s data collection, testing, and analysis methods used to develop the original Iowa curves, except that Russo studied industrial property in service several decades after Winfrey published the original Iowa curves. Russo drew three major conclusions from his research:⁷⁸

1. No evidence was found to conclude that the Iowa curve set, as it stands, is not a valid system of standard curves;
2. No evidence was found to conclude that new curve shapes could be produced at this time that would add to the validity of the Iowa curve set; and
3. No evidence was found to suggest that the number of curves within the Iowa curve set should be reduced.

Prior to Russo’s study, some had criticized the Iowa curves as being potentially obsolete because their development was rooted in the study of industrial property in existence during the early 1900s. Russo’s research, however, negated this criticism by confirming that the Iowa curves represent a sufficiently wide range of life patterns, and that though technology will change over time, the underlying patterns of retirements remain constant and can be adequately described by the Iowa curves.⁷⁹

Over the years, several more curve types have been added to Winfrey’s 18 Iowa curves. In 1967, Harold Cowles added four origin-modal curves. In addition, a square curve is sometimes

⁷⁸ See Wolf *supra* n. 1, at 37.

⁷⁹ *Id.*

used to depict retirements which are all planned to occur at a given age. Finally, analysts commonly rely on several “half curves” derived from the original Iowa curves. Thus, the term “Iowa curves” could be said to describe up to 31 standardized survivor curves.

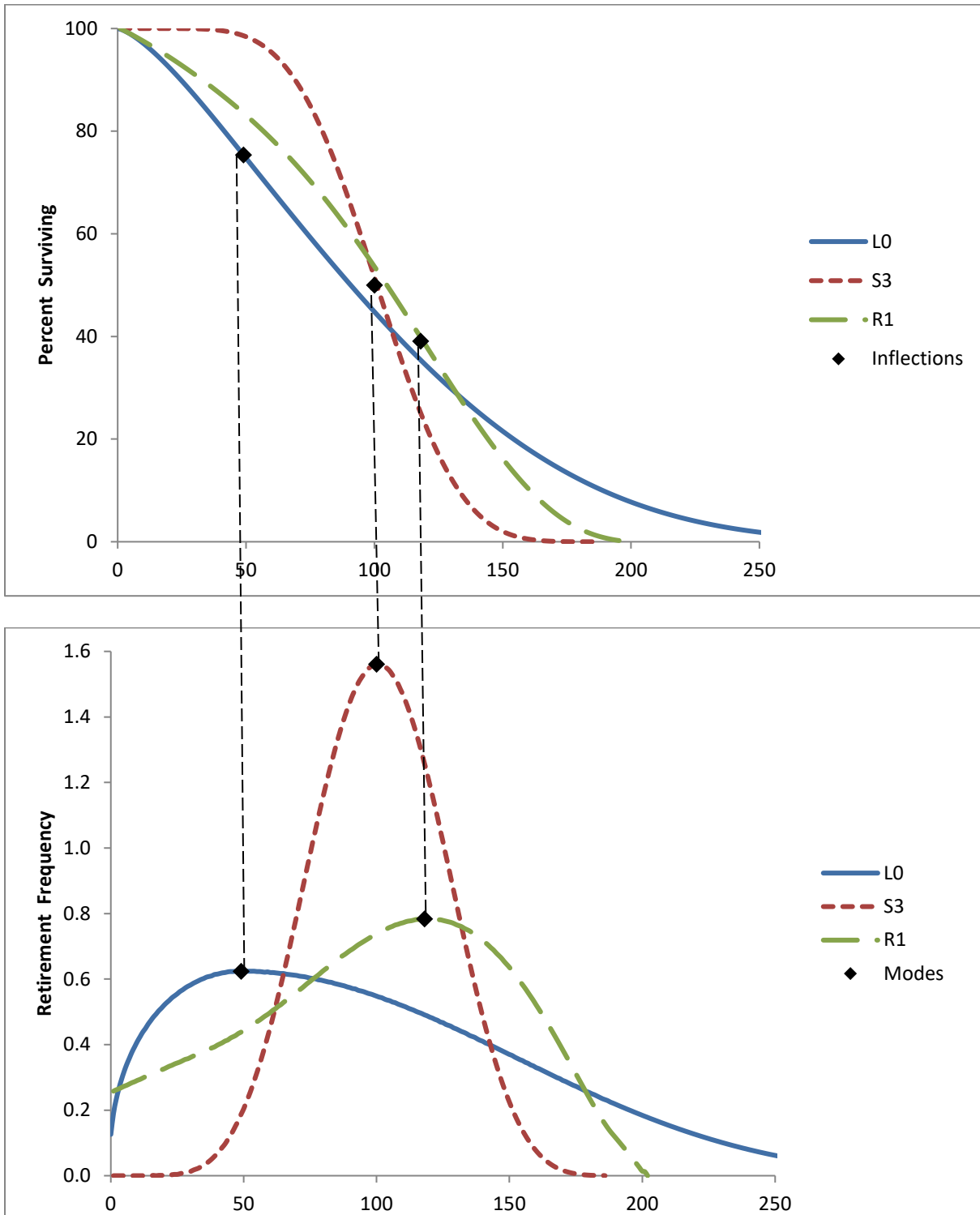
2. Classification

The Iowa curves are classified by three variables: modal location, average life, and variation of life. First, the mode is the percent life that results in the highest point of the frequency curve and the “inflection point” on the survivor curve. The modal age is the age at which the greatest rate of retirement occurs. As illustrated in the figure below, the modes appear at the steepest point of each survivor curve in the top graph, as well as the highest point of each corresponding frequency curve in the bottom graph.

The classification of the survivor curves was made according to whether the mode of the retirement frequency curves was to the left, to the right, or coincident with average service life. There are three modal “families” of curves: six left modal curves (L0, L1, L2, L3, L4, L5); five right modal curves (R1, R2, R3, R4, R5); and seven symmetrical curves (S0, S1, S2, S3, S4, S5, S6).⁸⁰ In the figure below, one curve from each family is shown: L0, S3 and R1, with average life at 100 on the x-axis. It is clear from the graphs that the modes for the L0 and R1 curves appear to the left and right of average life respectively, while the S3 mode is coincident with average life.

⁸⁰ In 1967, Harold A. Cowles added four origin-modal curves known as “O type” curves. There are also several “half” curves and a square curve, so the total amount of survivor curves commonly called “Iowa” curves is about 31 (see NARUC supra n. 10, at 68).

**Figure 18:
Modal Age Illustration**



The second Iowa curve classification variable is average life. The Iowa curves were designed using a single parameter of age expressed as a percent of average life instead of actual age. This was necessary for the curves to be of practical value. As Winfrey notes:

Since the location of a particular survivor on a graph is affected by both its span in years and the shape of the curve, it is difficult to classify a group of curves unless one of these variables can be controlled. This is easily done by expressing the age in percent of average life.”⁸¹

Because age is expressed in terms of percent of average life, any particular Iowa curve type can be modified to forecast property groups with various average lives.

The third variable, variation of life, is represented by the numbers next to each letter. A lower number (e.g., L1) indicates a relatively low mode, large variation, and large maximum life; a higher number (e.g., L5) indicates a relatively high mode, small variation, and small maximum life. All three classification variables – modal location, average life, and variation of life – are used to describe each Iowa curve. For example, a 13-L1 Iowa curve describes a group of property with a 13-year average life, with the greatest number of retirements occurring before (or to the left of) the average life, and a relatively low mode. The graphs below show these 18 survivor curves, organized by modal family.

⁸¹ Winfrey *supra* n. 75, at 60.

Figure 19:
Type L Survivor and Frequency Curves

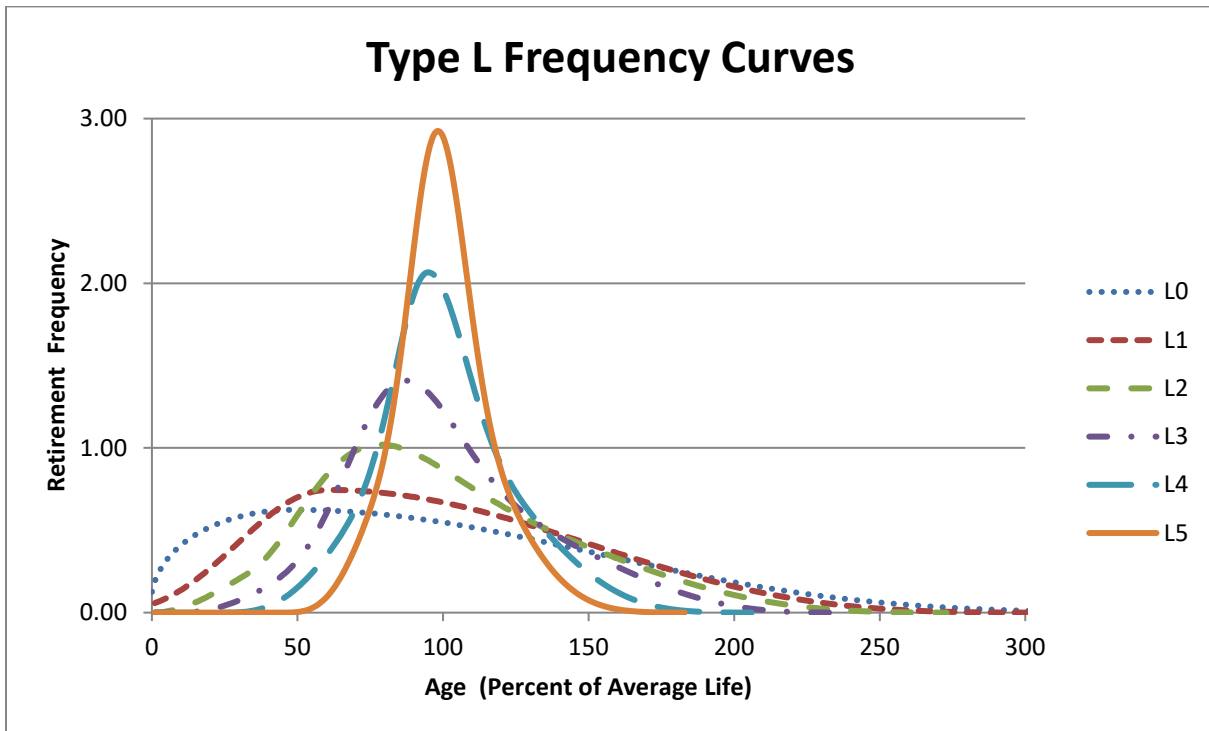
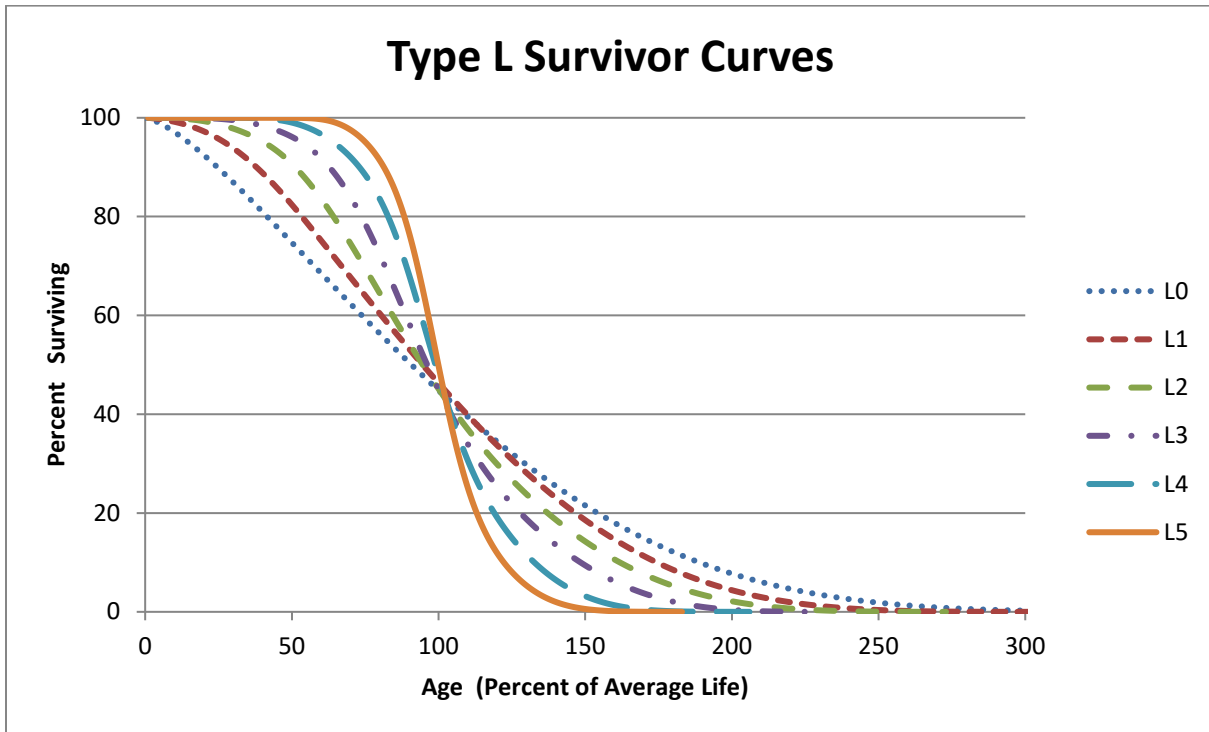


Figure 20:
Type S Survivor and Frequency Curves

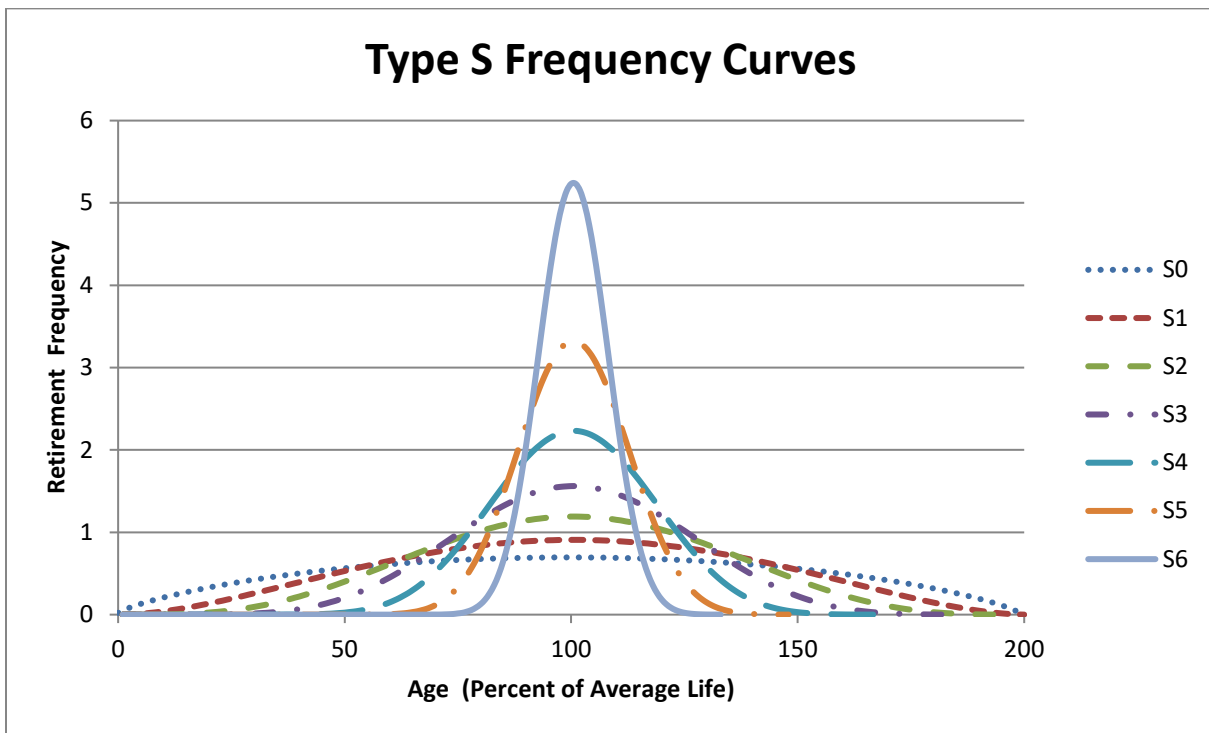
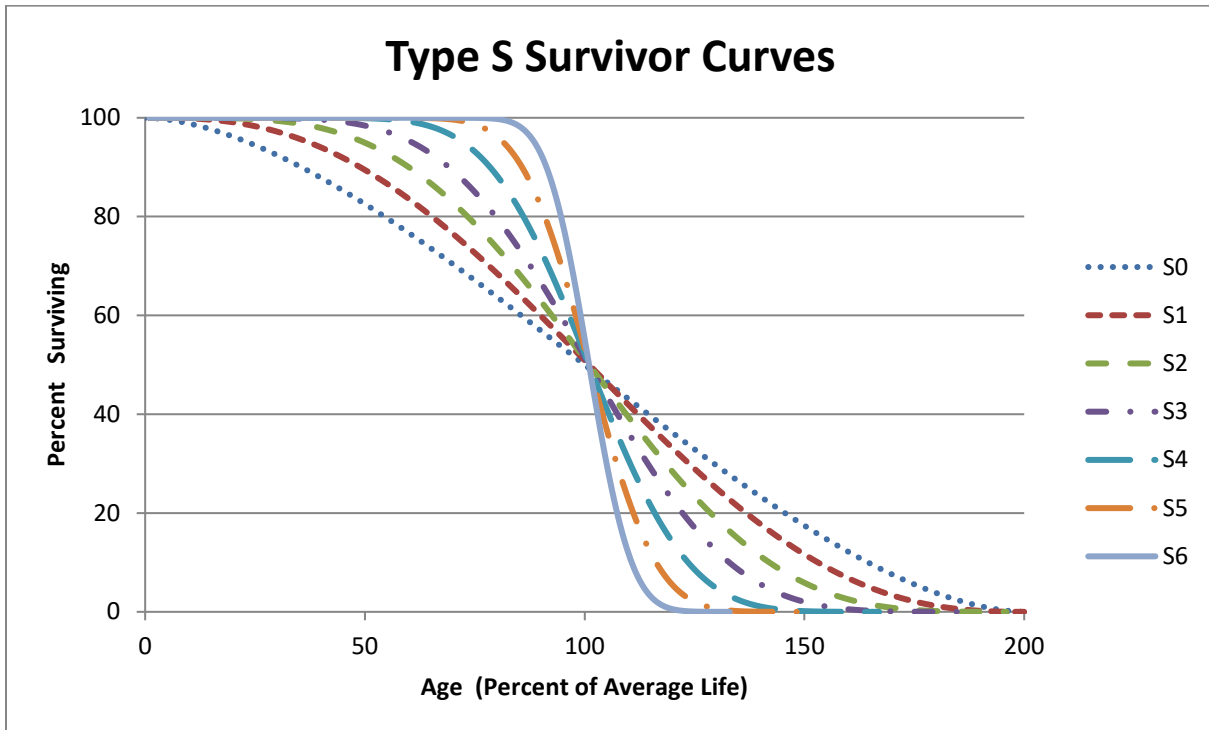
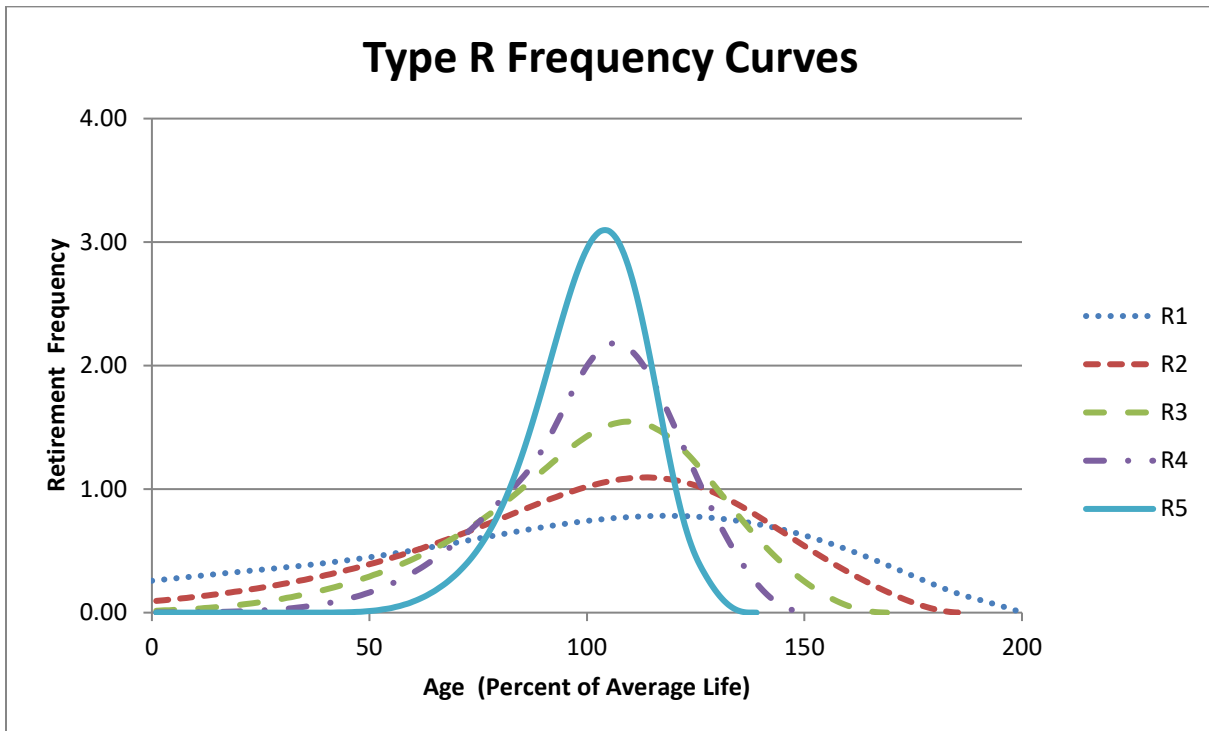
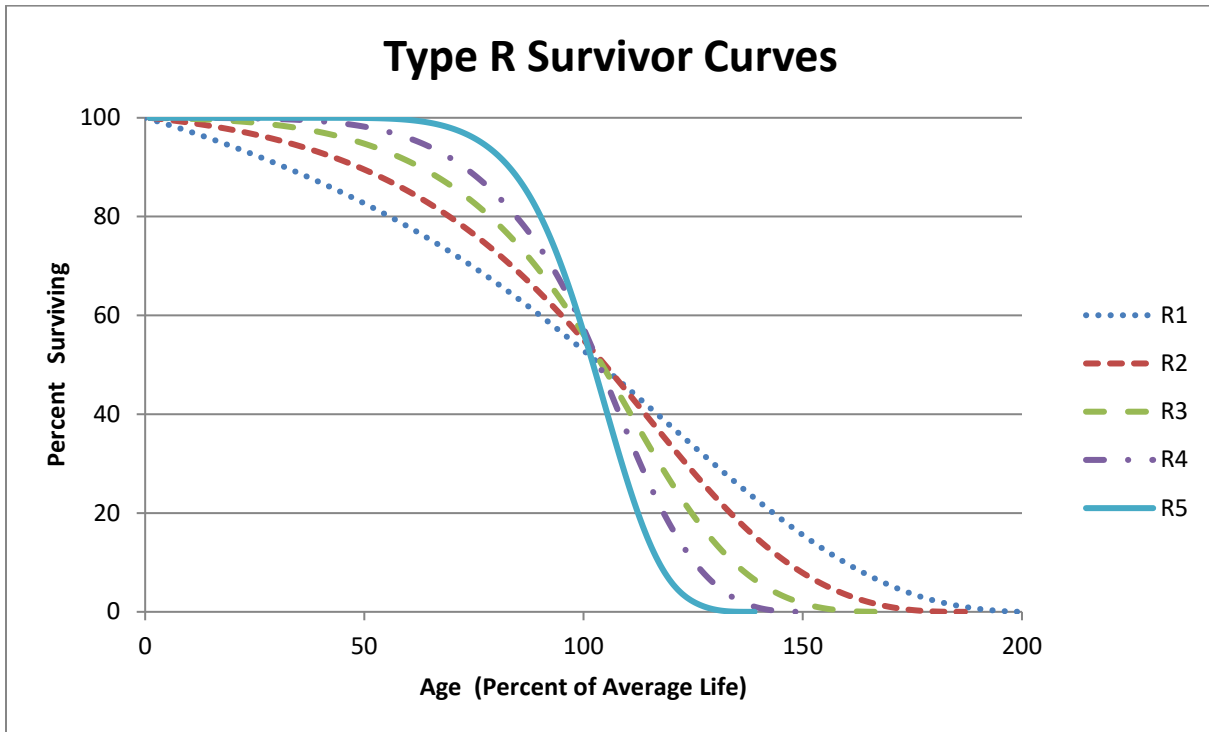


Figure 21:
Type R Survivor and Frequency Curves



As shown in the graphs above, the modes for the L family frequency curves occur to the left of average life (100% on the x-axis), while the S family modes occur at the average, and the R family modes occur after the average.

3. Types of Lives

Several other important statistical analyses and types of lives may be derived from an Iowa curve. These include: 1) average life; 2) realized life; 3) remaining life; and 4) probable life. The figure below illustrates these concepts. It shows the frequency curve, survivor curve, and probable life curve. Age M_x on the x-axis represents the modal age, while age AL_x represents the average age. Thus, this figure illustrates an “L type” Iowa curve since the mode occurs before the average.⁸²

First, average life is the area under the survivor curve from age zero to maximum life. Because the survivor curve is measured in percent, the area under the curve must be divided by 100% to convert it from percent-years to years. The formula for average life is as follows:⁸³

**Equation 5:
Average Life**

$$\text{Average Life} = \frac{\text{Area Under Survivor Curve from Age 0 to Max Life}}{100\%}$$

Thus, average life may not be determined without a complete survivor curve. Many property groups being analyzed will not have experienced full retirement. This results in a “stub” survivor

⁸² From age zero to age M_x on the survivor curve, it could be said that the percent surviving from this property group is decreasing at an increasing rate. Conversely, from point M_x to maximum on the survivor curve, the percent surviving is decreasing at a decreasing rate.

⁸³ See NARUC *supra* n. 10, at 71.

curve. Iowa curves are used to extend stub curves to maximum life in order for the average life calculation to be made (see Appendix C).

Realized life is similar to average life, except that realized life is the average years of service experienced to date from the vintage's original installations.⁸⁴ As shown in the figure below, realized life is the area under the survivor curve from zero to age RL_x . Likewise, unrealized life is the area under the survivor curve from age RL_x to maximum life. Thus, it could be said that average life equals realized life plus unrealized life.

Average remaining life represents the future years of service expected from the surviving property.⁸⁵ Remaining life is sometimes referred to as "average remaining life" and "life expectancy." To calculate average remaining life at age x , the area under the estimated future portion of the survivor curve is divided by the percent surviving at age x (denoted S_x). Thus, the average remaining life formula is:

**Equation 6:
Average Remaining Life**

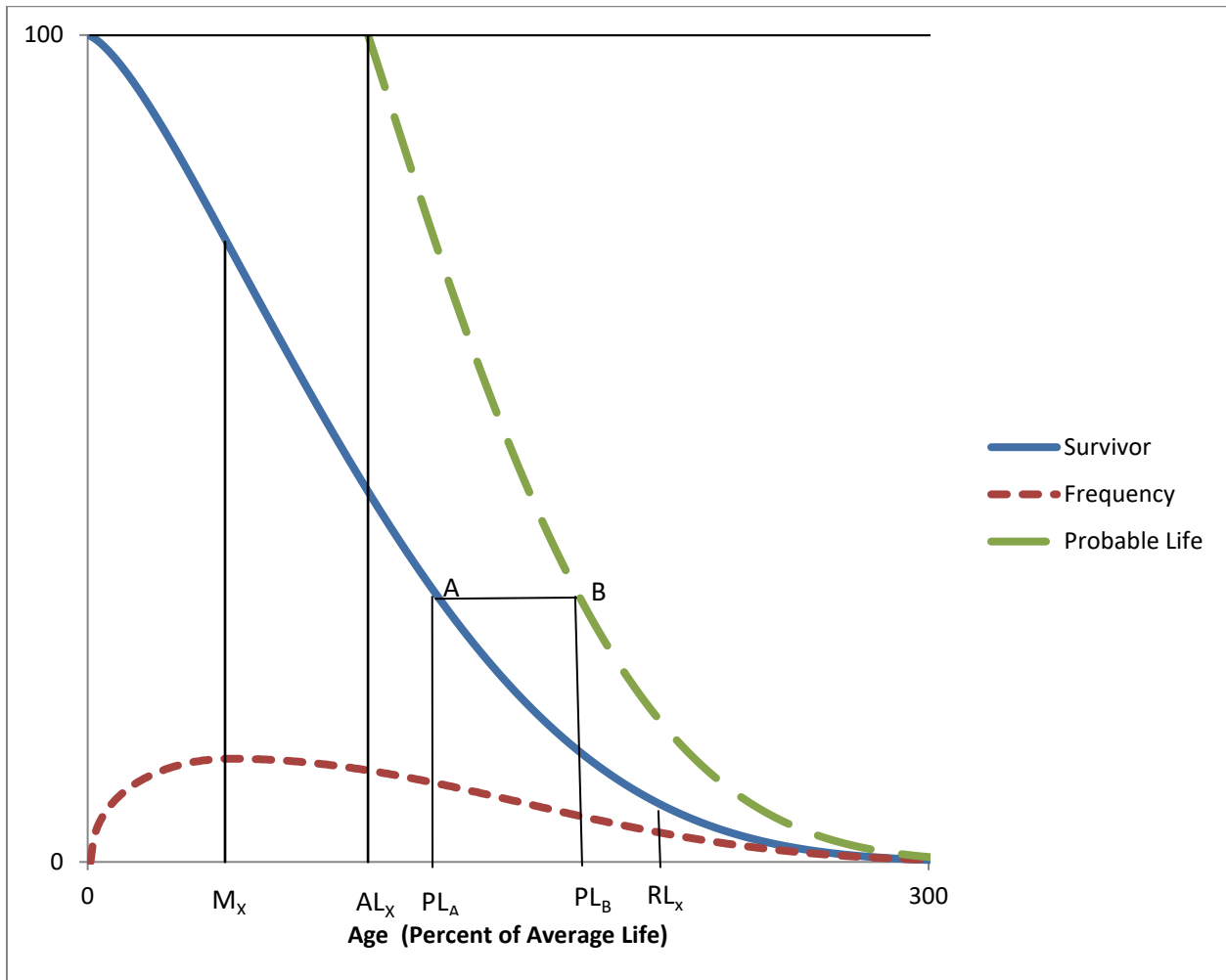
$$\text{Average Remaining Life} = \frac{\text{Area Under Survivor Curve from Age } x \text{ to Max Life}}{S_x}$$

It is necessary to determine average remaining life to calculate the annual accrual under the remaining life technique.

⁸⁴ *Id.* at 73.

⁸⁵ *Id.* at 74.

**Figure 22:
Iowa Curve Derivations**



Finally, the probable life may also be determined from the Iowa curve. The probable life of a property group is the total life expectancy of the property surviving at any age and is equal to the remaining life plus the current age.⁸⁶ The probable life is also illustrated in this figure. The probable life at age PL_A is the age at point PL_B . Thus, to read the probable life at age PL_A , see the corresponding point on the survivor curve above at point “A,” then horizontally to point “B”

⁸⁶ Wolf *supra* n. 1, at 28.

on the probable life curve, and back down to the age corresponding to point “B.” It is no coincidence that the vertical line from AL_x connects at the top of the probable life curve. This is because at age zero, probable life equals average life.

APPENDIX B:

DISCOUNTED CASH FLOW MODEL THEORY

The Discounted Cash Flow (“DCF”) Model is based on a fundamental financial model called the “dividend discount model,” which maintains that the value of a security is equal to the present value of the future cash flows it generates. Cash flows from common stock are paid to investors in the form of dividends. There are several variations of the DCF Model. In its most general form, the DCF Model is expressed as follows:⁸⁷

**Equation 7:
General Discounted Cash Flow Model**

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_n}{(1+k)^n}$$

where:

P_0	=	<i>current stock price</i>
$D_1 \dots D_n$	=	<i>expected future dividends</i>
k	=	<i>discount rate / required return</i>

The General DCF Model would require an estimation of an infinite stream of dividends. Because this would be impractical, analysts use more feasible variations of the General DCF Model, which are discussed further below.

The DCF Models rely on the following four assumptions:⁸⁸

1. Investors evaluate common stocks in the classical valuation framework; that is, they trade securities rationally at prices reflecting their perceptions of value;
2. Investors discount the expected cash flows at the same rate (K) in every future period;

⁸⁷ See Zvi Bodie, Alex Kane & Alan J. Marcus, *Essentials of Investments* 410 (9th ed., McGraw-Hill/Irwin 2013).

⁸⁸ See Roger A. Morin, *New Regulatory Finance* 252 (Public Utilities Reports, Inc. 2006) (1994).

3. The K obtained from the DCF equation corresponds to that specific stream of future cash flows alone; and
4. Dividends, rather than earnings, constitute the source of value.

The General DCF can be rearranged to make it more practical for estimating the cost of equity. Regulators typically rely on some variation of the Constant Growth DCF Model, which is expressed as follows:

**Equation 8:
Constant Growth Discounted Cash Flow Model**

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

where:

K	=	<i>discount rate / required return on equity</i>
D_1	=	<i>expected dividend per share one year from now</i>
P_0	=	<i>current stock price</i>
g	=	<i>expected growth rate of future dividends</i>

Unlike the General DCF Model, the Constant Growth DCF Model solves for the required return (K) directly. In addition, by assuming that dividends grow at a constant rate, the dividend stream from the General DCF Model may be substituted with a term representing the expected constant growth rate of future dividends (g). The Constant Growth DCF Model may be considered in two parts. The first part is the dividend yield (D_1/P_0), and the second part is the growth rate (g). In other words, the required return in the DCF Model is equivalent to the dividend yield plus the growth rate.

In addition to the four assumptions listed above, the Constant Growth DCF Model relies on the following four additional assumptions:⁸⁹

⁸⁹ See Roger A. Morin, *New Regulatory Finance* 254–56 (Public Utilities Reports, Inc. 2006) (1994).

1. The discount rate (K) must exceed the growth rate (g);
2. The dividend growth rate (g) is constant in every year to infinity;
3. Investors require the same return (K) in every year; and
4. There is no external financing; that is, growth is provided only by the retention of earnings.

Because the growth rate in this model is assumed to be constant, it is important not to use growth rates that are unreasonably high. In fact, the constant growth rate estimate for a regulated utility with a defined service territory should not exceed the growth rate for the economy in which it operates.

The basic form of the Constant Growth DCF Model described above is sometimes referred to as the “Annual” DCF Model. This is because the model assumes an annual dividend payment to be paid at the end of every year, as well as an increase in dividends once each year. In reality, however, most utilities pay dividends on a quarterly basis. The Constant Growth DCF equation may be modified to reflect the assumption that investors receive successive quarterly dividends and reinvest them throughout the year at the discount rate. This variation is called the Quarterly Approximation DCF Model.⁹⁰

**Equation 9:
Quarterly Approximation Discounted Cash Flow Model**

$$K = \left[\frac{d_0(1+g)^{1/4}}{P_0} + (1+g)^{1/4} \right]^4 - 1$$

where: K = discount rate / required return
 d_0 = current quarterly dividend per share
 P_0 = stock price
 g = expected growth rate of future dividends

⁹⁰ See Roger A. Morin, *New Regulatory Finance* 348 (Public Utilities Reports, Inc. 2006) (1994).

The Quarterly Approximation DCF Model assumes that dividends are paid quarterly, and that each dividend is constant for four consecutive quarters. All else held constant, this model results in the highest cost of equity estimate for the utility in comparison to other DCF Models because it accounts for the quarterly compounding of dividends. There are several other variations of the Constant Growth (or Annual) DCF Model, including a Semi-Annual DCF Model, which is used by the Federal Energy Regulatory Commission (“FERC”). These models, along with the Quarterly Approximation DCF Model, have been accepted in regulatory proceedings as useful tools for estimating the cost of equity.

APPENDIX C:
CAPITAL ASSET PRICING MODEL THEORY

The Capital Asset Pricing Model (“CAPM”) is a market-based model founded on the principle that investors demand higher returns for incurring additional risk.⁹¹ The CAPM estimates this required return. The CAPM relies on the following assumptions:

1. Investors are rational, risk-adverse, and strive to maximize profit and terminal wealth;
2. Investors make choices based on risk and return. Return is measured by the mean returns expected from a portfolio of assets; risk is measured by the variance of these portfolio returns;
3. Investors have homogenous expectations of risk and return;
4. Investors have identical time horizons;
5. Information is freely and simultaneously available to investors;
6. There is a risk-free asset, and investors can borrow and lend unlimited amounts at the risk-free rate;
7. There are no taxes, transaction costs, restrictions on selling short, or other market imperfections; and
8. Total asset quality is fixed, and all assets are marketable and divisible.⁹²

While some of these assumptions may appear to be restrictive, they do not outweigh the inherent value of the model. The CAPM has been widely used by firms, analysts, and regulators for decades to estimate the cost of equity capital.

The basic CAPM equation is expressed as follows:

⁹¹ William F. Sharpe, *A Simplified Model for Portfolio Analysis* 277-93 (Management Science IX 1963).

⁹² *Id.*

**Equation 10:
Capital Asset Pricing Model**

$$K = R_F + \beta_i(R_M - R_F)$$

where: K = required return
 R_F = risk-free rate
 β = beta coefficient of asset i
 R_M = required return on the overall market

There are essentially three terms within the CAPM equation that are required to calculate the required return (K): (1) the risk-free rate (R_F); (2) the beta coefficient (β); and (3) the equity risk premium ($R_M - R_F$), which is the required return on the overall market less the risk-free rate.

Raw Beta Calculations and Adjustments.

A stock's beta equals the covariance of the asset's returns with the returns on a market portfolio, divided by the portfolio's variance, as expressed in the following formula:⁹³

**Equation 11:
Beta**

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2}$$

where: β_i = beta of asset i
 σ_{im} = covariance of asset i returns with market portfolio returns
 σ_m^2 = variance of market portfolio

Betas that are published by various research firms are typically calculated through a regression analysis that considers the movements in price of an individual stock and movements in the price of the overall market portfolio. The betas produced by this regression analysis are considered "raw" betas. There is empirical evidence that raw betas should be adjusted to account

⁹³ See John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 180–81 (3rd ed., South Western Cengage Learning 2010).

for beta's natural tendency to revert to an underlying mean.⁹⁴ Some analysts use an adjustment method proposed by Blume, which adjusts raw betas toward the market mean of one.⁹⁵ While the Blume adjustment method is popular due to its simplicity, it is arguably arbitrary, and some would say not useful at all. According to Dr. Damodaran: "While we agree with the notion that betas move toward 1.0 over time, the [Blume adjustment] strikes us as arbitrary and not particularly useful."⁹⁶ The Blume adjustment method is especially arbitrary when applied to industries with consistently low betas, such as the utility industry. For industries with consistently low betas, it is better to employ an adjustment method that adjusts raw betas toward an industry average, rather than the market average. Vasicek proposed such a method, which is preferable to the Blume adjustment method because it allows raw betas to be adjusted toward an industry average, and also accounts for the statistical accuracy of the raw beta calculation.⁹⁷ In other words, "[t]he Vasicek adjustment seeks to overcome one weakness of the Blume model by not applying the same adjustment to every security; rather, a security-specific adjustment is made depending on the statistical quality of the regression."⁹⁸ The Vasicek beta adjustment equation is expressed as follows:

⁹⁴ See Michael J. Gombola and Douglas R. Kahl, *Time-Series Processes of Utility Betas: Implications for Forecasting Systematic Risk* 84–92 (Financial Management Autumn 1990).

⁹⁵ See Marshall Blume, *On the Assessment of Risk*, Vol. 26, No. 1 The Journal of Finance 1 (1971).

⁹⁶ See Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 187 (3rd ed., John Wiley & Sons, Inc. 2012).

⁹⁷ Oldrich A. Vasicek, *A Note on Using Cross-Sectional Information in Bayesian Estimation of Security Betas* 1233–1239 (Journal of Finance, Vol. 28, No. 5, December 1973).

⁹⁸ 2012 Ibbotson Stocks, Bonds, Bills, and Inflation Valuation Yearbook 77–78 (Morningstar 2012).

**Equation 12:
Vasicek Beta Adjustment**

$$\beta_{i1} = \frac{\sigma_{\beta_{i0}}^2}{\sigma_{\beta_0}^2 + \sigma_{\beta_{i0}}^2} \beta_0 + \frac{\sigma_{\beta_0}^2}{\sigma_{\beta_0}^2 + \sigma_{\beta_{i0}}^2} \beta_{i0}$$

where:

β_{i1}	=	<i>Vasicek adjusted beta for security i</i>
β_{i0}	=	<i>historical beta for security i</i>
β_0	=	<i>beta of industry or proxy group</i>
$\sigma_{\beta_0}^2$	=	<i>variance of betas in the industry or proxy group</i>
$\sigma_{\beta_{i0}}^2$	=	<i>square of standard error of the historical beta for security i</i>

The Vasicek beta adjustment is an improvement on the Blume model because the Vasicek model does not apply the same adjustment to every security. A higher standard error produced by the regression analysis indicates a lower statistical significance of the beta estimate. Thus, a beta with a high standard error should receive a greater adjustment than a beta with a low standard error. As stated in Ibbotson:

While the Vasicek formula looks intimidating, it is really quite simple. The adjusted beta for a company is a weighted average of the company's historical beta and the beta of the market, industry, or peer group. How much weight is given to the company and historical beta depends on the statistical significance of the company beta statistic. If a company beta has a low standard error, then it will have a higher weighting in the Vasicek formula. If a company beta has a high standard error, then it will have lower weighting in the Vasicek formula. An advantage of this adjustment methodology is that it does not force an adjustment to the market as a whole. Instead, the adjustment can be toward an industry or some other peer group. This is most useful in looking at companies in industries that on average have high or low betas.⁹⁹

Thus, the Vasicek adjustment method is statistically more accurate and is the preferred method to use when analyzing companies in an industry that has inherently low betas, such as the utility industry. The Vasicek method was also confirmed by Gombola, who conducted a study specifically related to utility companies. Gombola concluded that “[t]he strong evidence of auto-

⁹⁹ 2012 Ibbotson Stocks, Bonds, Bills, and Inflation Valuation Yearbook 78 (Morningstar 2012).

regressive tendencies in utility betas lends support to the application of adjustment procedures such as the . . . adjustment procedure presented by Vasicek.”¹⁰⁰ Gombola also concluded that adjusting raw betas toward the market mean of 1.0 is too high, and that “[i]nstead, they should be adjusted toward a value that is less than one.”¹⁰¹ In conducting the Vasicek adjustment on betas in previous cases, it reveals that utility betas are even lower than those published by Value Line.¹⁰² Gombola’s findings are particular important here, because his study was conducted specifically on utility companies. This evidence indicates that using Value Line’s betas in a CAPM cost of equity estimate for a utility company may lead to overestimated results. Regardless, adjusting betas to a level that is higher than Value Line’s betas is not reasonable, and it would produce CAPM cost of equity results that are too high.

¹⁰⁰ Michael J. Gombola and Douglas R. Kahl, *Time-Series Processes of Utility Betas: Implications for Forecasting Systematic Risk* 92 (Financial Management Autumn 1990) (emphasis added).

¹⁰¹ Michael J. Gombola and Douglas R. Kahl, *Time-Series Processes of Utility Betas: Implications for Forecasting Systematic Risk* 91–92 (Financial Management Autumn 1990) (emphasis added).

¹⁰² See e.g. Responsive Testimony of David J. Garrett, filed March 21, 2016, in Cause No. PUD 201500273 before the Corporation Commission of Oklahoma (OG&E’s 2015 rate case), at pp. 56–59.

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EDUCATION

University of Oklahoma Master of Business Administration Areas of Concentration: Finance, Energy	Norman, OK 2014
University of Oklahoma College of Law Juris Doctor Member, American Indian Law Review	Norman, OK 2007
University of Oklahoma Bachelor of Business Administration Major: Finance	Norman, OK 2003

PROFESSIONAL DESIGNATIONS

Society of Depreciation Professionals
Certified Depreciation Professional (CDP)

Society of Utility and Regulatory Financial Analysts
Certified Rate of Return Analyst (CRRA)

The Mediation Institute
Certified Civil / Commercial & Employment Mediator

WORK EXPERIENCE

Resolve Utility Consulting PLLC <u>Managing Member</u> Provide expert analysis and testimony specializing in depreciation and cost of capital issues for clients in utility regulatory proceedings.	Oklahoma City, OK 2016 – Present
Oklahoma Corporation Commission <u>Public Utility Regulatory Analyst</u> <u>Assistant General Counsel</u> Represented commission staff in utility regulatory proceedings and provided legal opinions to commissioners. Provided expert analysis and testimony in depreciation, cost of capital, incentive compensation, payroll and other issues.	Oklahoma City, OK 2012 – 2016 2011 – 2012

Perebus Counsel, PLLC

Managing Member

Represented clients in the areas of family law, estate planning, debt negotiations, business organization, and utility regulation.

Oklahoma City, OK

2009 – 2011

Moricoli & Schovanec, P.C.

Associate Attorney

Represented clients in the areas of contracts, oil and gas, business structures and estate administration.

Oklahoma City, OK

2007 – 2009

TEACHING EXPERIENCE

University of Oklahoma

Adjunct Instructor – “Conflict Resolution”

Adjunct Instructor – “Ethics in Leadership”

Norman, OK

2014 – 2020

Rose State College

Adjunct Instructor – “Legal Research”

Adjunct Instructor – “Oil & Gas Law”

Midwest City, OK

2013 – 2015

PUBLICATIONS

American Indian Law Review

“Vine of the Dead: Reviving Equal Protection Rites for Religious Drug Use”
(31 Am. Indian L. Rev. 143)

Norman, OK

2006

PROFESSIONAL ASSOCIATIONS

Oklahoma Bar Association

2007 – Present

Society of Depreciation Professionals

Board Member – President

Participate in management of operations, attend meetings, review performance, organize presentation agenda.

2014 – Present

2017

Society of Utility Regulatory Financial Analysts

2014 – Present

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Railroad Commission of Texas	Participating Texas gas utilities in consolidated proceeding	OS-21-00007061	Securitization of extraordinary gas costs arising from winter storms	The City of El Paso
Public Service Commission of South Carolina	Palmetto Wastewater Reclamation, Inc.	2021-153-S	Cost of capital, awarded rate of return, capital structure, ring-fencing	South Carolina Office of Regulatory Staff
Public Utilities Commission of the State of Colorado	Public Service Company of Colorado	21AL-0317E	Cost of capital, depreciation rates, net salvage	Colorado Energy Consumers
Pennsylvania Public Utility Commission	City of Lancaster - Water Department	R-2021-3026682	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 51802	Depreciation rates, service lives, net salvage	The Alliance of Xcel Municipalities
Pennsylvania Public Utility Commission	The Borough of Hanover - Hanover Municipal Waterworks	R-2021-3026116	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Maryland Public Service Commission	Delmarva Power & Light Company	9670	Cost of capital and authorized rate of return	Maryland Office of People's Counsel
Oklahoma Corporation Commission	Oklahoma Natural Gas Company	PUD 202100063	Cost of capital, awarded rate of return, capital structure	Oklahoma Industrial Energy Consumers
Indiana Utility Regulatory Commission	Indiana Michigan Power Company	45576	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Utility Commission of Texas	El Paso Electric Company	PUC 52195	Depreciation rates, service lives, net salvage	The City of El Paso
Pennsylvania Public Utility Commission	Aqua Pennsylvania	R-2021-3027385	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
New Mexico Public Regulation Commission	Public Service Company of New Mexico, Avangrid, NM Green Holdings, PNM Resources	20-00222-UT	Ring fencing, capital structure	Albuquerque Bernalillo County Water Utility Authority
Public Service Commission of the State of Montana	NorthWestern Energy	D2021.02.022	Cost of capital, awarded rate of return, capital structure	Montana Consumer Counsel
Pennsylvania Public Utility Commission	PECO Energy Company	R-2021-3024601	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
New Mexico Public Regulation Commission	Southwestern Public Service Company	20-00238-UT	Cost of capital and authorized rate of return	The New Mexico Large Customer Group; Occidental Permian

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Pennsylvania Public Utility Commission	Duquesne Light Company	R-2021-3024750	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Maryland Public Service Commission	Columbia Gas of Maryland	9664	Cost of capital and authorized rate of return	Maryland Office of People's Counsel
Indiana Utility Regulatory Commission	Southern Indiana Gas Company, d/b/a Vectren Energy Delivery of Indiana, Inc.	45447	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 51415	Depreciation rates, service lives, net salvage	Cities Advocating Reasonable Deregulation
New Mexico Public Regulatory Commission	Avangrid, Inc., Avangrid Networks, Inc., NM Green Holdings, Inc., PNM, and PNM Resources	20-00222-UT	Ring fencing and capital structure	The Albuquerque Bernalillo County Water Utility Authority
Indiana Utility Regulatory Commission	Indiana Gas Company, d/b/a Vectren Energy Delivery of Indiana, Inc.	45468	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Utilities Commission of Nevada	Nevada Power Company and Sierra Pacific Power Company, d/b/a NV Energy	20-07023	Construction work in progress	MGM Resorts International, Caesars Enterprise Services, LLC, and the Southern Nevada Water Authority
Massachusetts Department of Public Utilities	Boston Gas Company, d/b/a National Grid	D.P.U. 20-120	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy
Public Service Commission of the State of Montana	ABACO Energy Services, LLC	D2020.07.082	Cost of capital and authorized rate of return	Montana Consumer Counsel
Maryland Public Service Commission	Washington Gas Light Company	9651	Cost of capital and authorized rate of return	Maryland Office of People's Counsel
Florida Public Service Commission	Utilities, Inc. of Florida	20200139-WS	Cost of capital and authorized rate of return	Florida Office of Public Counsel
New Mexico Public Regulatory Commission	El Paso Electric Company	20-00104-UT	Cost of capital, depreciation rates, net salvage	City of Las Cruces and Doña Ana County
Public Utilities Commission of Nevada	Nevada Power Company	20-06003	Cost of capital, awarded rate of return, capital structure, earnings sharing	MGM Resorts International, Caesars Enterprise Services, LLC, Wynn Las Vegas, LLC, Smart Energy Alliance, and Circus Circus Las Vegas, LLC
Wyoming Public Service Commission	Rocky Mountain Power	20000-578-ER-20	Cost of capital and authorized rate of return	Wyoming Industrial Energy Consumers
Florida Public Service Commission	Peoples Gas System	20200051-GU 20200166-GU	Cost of capital, depreciation rates, net salvage	Florida Office of Public Counsel
Wyoming Public Service Commission	Rocky Mountain Power	20000-539-EA-18	Depreciation rates, service lives, net salvage	Wyoming Industrial Energy Consumers

Utility Regulatory Proceedings

<u>Regulatory Agency</u>	<u>Utility Applicant</u>	<u>Docket Number</u>	<u>Issues Addressed</u>	<u>Parties Represented</u>
Public Service Commission of South Carolina	Dominion Energy South Carolina	2020-125-E	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Pennsylvania Public Utility Commission	The City of Bethlehem	2020-3020256	Cost of capital, awarded rate of return, capital structure	Pennsylvania Office of Consumer Advocate
Railroad Commission of Texas	Texas Gas Services Company	GUID 10928	Depreciation rates, service lives, net salvage	Gulf Coast Service Area Steering Committee
Public Utilities Commission of the State of California	Southern California Edison	A.19-08-013	Depreciation rates, service lives, net salvage	The Utility Reform Network
Massachusetts Department of Public Utilities	NSTAR Gas Company	D.P.U. 19-120	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy
Georgia Public Service Commission	Liberty Utilities (Peach State Natural Gas)	42959	Depreciation rates, service lives, net salvage	Public Interest Advocacy Staff
Florida Public Service Commission	Florida Public Utilities Company	20190155-EI 20190156-EI 20190174-EI	Depreciation rates, service lives, net salvage	Florida Office of Public Counsel
Illinois Commerce Commission	Commonwealth Edison Company	20-0393	Depreciation rates, service lives, net salvage	The Office of the Illinois Attorney General
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 49831	Depreciation rates, service lives, net salvage	Alliance of Xcel Municipalities
Public Service Commission of South Carolina	Blue Granite Water Company	2019-290-WS	Depreciation rates, service lives, net salvage	South Carolina Office of Regulatory Staff
Railroad Commission of Texas	CenterPoint Energy Resources	GUID 10920	Depreciation rates and grouping procedure	Alliance of CenterPoint Municipalities
Pennsylvania Public Utility Commission	Aqua Pennsylvania Wastewater	A-2019-3009052	Fair market value estimates for wastewater assets	Pennsylvania Office of Consumer Advocate
New Mexico Public Regulation Commission	Southwestern Public Service Company	19-00170-UT	Cost of capital and authorized rate of return	The New Mexico Large Customer Group; Occidental Permian
Indiana Utility Regulatory Commission	Duke Energy Indiana	45253	Cost of capital, depreciation rates, net salvage	Indiana Office of Utility Consumer Counselor
Maryland Public Service Commission	Columbia Gas of Maryland	9609	Depreciation rates, service lives, net salvage	Maryland Office of People's Counsel
Washington Utilities & Transportation Commission	Avista Corporation	UE-190334	Cost of capital, awarded rate of return, capital structure	Washington Office of Attorney General

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Indiana Utility Regulatory Commission	Indiana Michigan Power Company	45235	Cost of capital, depreciation rates, net salvage	Indiana Office of Utility Consumer Counselor
Public Utilities Commission of the State of California	Pacific Gas & Electric Company	18-12-009	Depreciation rates, service lives, net salvage	The Utility Reform Network
Oklahoma Corporation Commission	The Empire District Electric Company	PUD 201800133	Cost of capital, authorized ROE, depreciation rates	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Arkansas Public Service Commission	Southwestern Electric Power Company	19-008-U	Cost of capital, depreciation rates, net salvage	Western Arkansas Large Energy Consumers
Public Utility Commission of Texas	CenterPoint Energy Houston Electric	PUC 49421	Depreciation rates, service lives, net salvage	Texas Coast Utilities Coalition
Massachusetts Department of Public Utilities	Massachusetts Electric Company and Nantucket Electric Company	D.P.U. 18-150	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy
Oklahoma Corporation Commission	Oklahoma Gas & Electric Company	PUD 201800140	Cost of capital, authorized ROE, depreciation rates	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Public Service Commission of the State of Montana	Montana-Dakota Utilities Company	D2018.9.60	Depreciation rates, service lives, net salvage	Montana Consumer Counsel and Denbury Onshore
Indiana Utility Regulatory Commission	Northern Indiana Public Service Company	45159	Depreciation rates, grouping procedure, demolition costs	Indiana Office of Utility Consumer Counselor
Public Service Commission of the State of Montana	NorthWestern Energy	D2018.2.12	Depreciation rates, service lives, net salvage	Montana Consumer Counsel
Oklahoma Corporation Commission	Public Service Company of Oklahoma	PUD 201800097	Depreciation rates, service lives, net salvage	Oklahoma Industrial Energy Consumers and Walmart
Nevada Public Utilities Commission	Southwest Gas Corporation	18-05031	Depreciation rates, service lives, net salvage	Nevada Bureau of Consumer Protection
Public Utility Commission of Texas	Texas-New Mexico Power Company	PUC 48401	Depreciation rates, service lives, net salvage	Alliance of Texas-New Mexico Power Municipalities
Oklahoma Corporation Commission	Oklahoma Gas & Electric Company	PUD 201700496	Depreciation rates, service lives, net salvage	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Maryland Public Service Commission	Washington Gas Light Company	9481	Depreciation rates, service lives, net salvage	Maryland Office of People's Counsel
Indiana Utility Regulatory Commission	Citizens Energy Group	45039	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Public Utility Commission of Texas	Entergy Texas, Inc.	PUC 48371	Depreciation rates, decommissioning costs	Texas Municipal Group
Washington Utilities & Transportation Commission	Avista Corporation	UE-180167	Depreciation rates, service lives, net salvage	Washington Office of Attorney General
New Mexico Public Regulation Commission	Southwestern Public Service Company	17-00255-UT	Cost of capital and authorized rate of return	HollyFrontier Navajo Refining; Occidental Permian
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 47527	Depreciation rates, plant service lives	Alliance of Xcel Municipalities
Public Service Commission of the State of Montana	Montana-Dakota Utilities Company	D2017.9.79	Depreciation rates, service lives, net salvage	Montana Consumer Counsel
Florida Public Service Commission	Florida City Gas	20170179-GU	Cost of capital, depreciation rates	Florida Office of Public Counsel
Washington Utilities & Transportation Commission	Avista Corporation	UE-170485	Cost of capital and authorized rate of return	Washington Office of Attorney General
Wyoming Public Service Commission	Powder River Energy Corporation	10014-182-CA-17	Credit analysis, cost of capital	Private customer
Oklahoma Corporation Commission	Public Service Co. of Oklahoma	PUD 201700151	Depreciation, terminal salvage, risk analysis	Oklahoma Industrial Energy Consumers
Public Utility Commission of Texas	Oncor Electric Delivery Company	PUC 46957	Depreciation rates, simulated analysis	Alliance of Oncor Cities
Nevada Public Utilities Commission	Nevada Power Company	17-06004	Depreciation rates, service lives, net salvage	Nevada Bureau of Consumer Protection
Public Utility Commission of Texas	El Paso Electric Company	PUC 46831	Depreciation rates, interim retirements	City of El Paso
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-16-24	Accelerated depreciation of North Valmy plant	Micron Technology, Inc.
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-16-23	Depreciation rates, service lives, net salvage	Micron Technology, Inc.
Public Utility Commission of Texas	Southwestern Electric Power Company	PUC 46449	Depreciation rates, decommissioning costs	Cities Advocating Reasonable Deregulation
Massachusetts Department of Public Utilities	Eversource Energy	D.P.U. 17-05	Cost of capital, capital structure, and rate of return	Sunrun Inc.; Energy Freedom Coalition of America

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Railroad Commission of Texas	Atmos Pipeline - Texas	GUD 10580	Depreciation rates, grouping procedure	City of Dallas
Public Utility Commission of Texas	Sharyland Utility Company	PUC 45414	Depreciation rates, simulated analysis	City of Mission
Oklahoma Corporation Commission	Empire District Electric Company	PUD 201600468	Cost of capital, depreciation rates	Oklahoma Industrial Energy Consumers
Railroad Commission of Texas	CenterPoint Energy Texas Gas	GUD 10567	Depreciation rates, simulated plant analysis	Texas Coast Utilities Coalition
Arkansas Public Service Commission	Oklahoma Gas & Electric Company	160-159-GU	Cost of capital, depreciation rates, terminal salvage	Arkansas River Valley Energy Consumers; Wal-Mart
Florida Public Service Commission	Peoples Gas	160-159-GU	Depreciation rates, service lives, net salvage	Florida Office of Public Counsel
Arizona Corporation Commission	Arizona Public Service Company	E-01345A-16-0036	Cost of capital, depreciation rates, terminal salvage	Energy Freedom Coalition of America
Nevada Public Utilities Commission	Sierra Pacific Power Company	16-06008	Depreciation rates, net salvage, theoretical reserve	Northern Nevada Utility Customers
Oklahoma Corporation Commission	Oklahoma Gas & Electric Co.	PUD 201500273	Cost of capital, depreciation rates, terminal salvage	Public Utility Division
Oklahoma Corporation Commission	Public Service Co. of Oklahoma	PUD 201500208	Cost of capital, depreciation rates, terminal salvage	Public Utility Division
Oklahoma Corporation Commission	Oklahoma Natural Gas Company	PUD 201500213	Cost of capital, depreciation rates, net salvage	Public Utility Division

FMV Adjustment Summary

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Gannett Fleming Results and Adjustments							
Approach	Base Value	Weight	Weighted Value	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Market	\$ 46,741,589	33.3%	\$ 15,583,646	\$ (7,192,756)	\$ 39,548,833	33.3%	\$ 13,182,944
Cost	59,118,924	33.3%	19,704,337	(2,780,373)	56,338,551	33.3%	18,779,517
Income	61,147,544	33.3%	20,380,476	(19,790,289)	41,357,255	33.3%	13,785,752
Total			\$ 55,668,460	Total			\$ 45,748,213

AUS Consultants Results and Adjustments							
Approach	Base Value	Weight	Weighted Value	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Market	\$ 56,178,539	10.0%	\$ 5,617,854	\$ (15,232,008)	\$ 40,946,531	10.0%	\$ 4,094,653
Cost	59,847,171	50.0%	29,923,586	(6,722,100)	53,125,071	50.0%	26,562,536
Income	55,600,045	40.0%	22,240,018	(14,242,790)	41,357,255	40.0%	16,542,902
Total			\$ 57,781,457	Total			\$ 47,200,091

Results Summary	
Appraiser Weighted Value	OCA Adjusted Value
Gannett Fleming	\$ 45,748,213
AUS Consultants	47,200,091
Average	\$ 46,500,000
Purchase Price	\$ 54,930,000
Lesser of Purchase Price and Market Value	\$ 46,500,000

[1] Valuation approach
 [2] Appraised value
 [3] Applied weighting
 [4] = [2] * [3]
 [5] = [6] - [2]
 [6] OCA adjusted value
 [7] Applied weighting
 [8] = [6] * [7] ; OCA adjusted average is rounded

FMV Adjustment Summary

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Gannett Fleming Results and Adjustments							
Approach	Base Value	Weight	Weighted Value	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Market	\$ 46,741,589	33.3%	\$ 15,583,646	\$ (7,192,756)	\$ 39,548,833	33.3%	\$ 13,182,944
Cost	59,118,924	33.3%	19,704,337	(2,780,373)	56,338,551	33.3%	18,779,517
Income	61,147,544	33.3%	20,380,476	(19,790,289)	41,357,255	33.3%	13,785,752
Total			\$ 55,668,460	Total			\$ 45,748,213
AUS Consultants Results and Adjustments							
Approach	Base Value	Weight	Weighted Value	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Market	\$ 56,178,539	10.0%	\$ 5,617,854	\$ (15,232,008)	\$ 40,946,531	10.0%	\$ 4,094,653
Cost	59,847,171	50.0%	29,923,586	(6,722,100)	53,125,071	50.0%	26,562,536
Income	55,600,045	40.0%	22,240,018	(14,242,790)	41,357,255	40.0%	16,542,902
Total			\$ 57,781,457	Total			\$ 47,200,091
Results Summary							
Appraiser Weighted Value				OCA Adjusted Value			
Gannett Fleming	\$ 55,668,460						\$ 45,748,213
AUS Consultants Average	<u>57,781,457</u>						<u>47,200,091</u>
Purchase Price	\$ 54,930,000						\$ 54,930,000
Lesser of Purchase Price and Market Value	\$ 54,930,000						\$ 46,500,000

[1] Valuation approach
 [2] Appraised value
 [3] Applied weighting
 [4] = [2] * [3]
 [5] = [6] - [2]
 [6] OCA adjusted value
 [7] Applied weighting
 [8] = [6] * [7] ; OCA adjusted average is rounded

[1] [2] [3] [4] [5] [6]

Gannett Fleming Market Approach Results			OCA Adjusted Market Approach Results		
Amount	Weight	Result	Amount	Weight	Result
\$ 49,340,713	50%	\$ 24,670,357	\$ 49,340,713	50%	\$ 24,670,357
44,142,464	50%	22,071,232	29,756,954	50%	14,878,477
Total		\$ 46,741,589			\$ 39,548,833

[1], [2], [3] Gannett Fleming FMV Appraisal, Exhibit 18

[4] Adjusted amounts from OCA Exhibit DJG-4

[5] Applied weighting

[6] = [4] * [5]

Gannett Fleming Selected Transaction Adjustment

Township / Acquired System	Gannett Fleming Results			OCA Adjusted Results		
	Purchase Price and Capital Statistic	Price / Statistic Ratio	Adjusted Statistic	Purchase Price and Capital Statistic	Price / Statistic Ratio	Adjusted Statistic
Capital Statistics						
East Whiteland						
Investor Capital	\$ 42,513,245			\$ 42,513,245		
Gross PP&E	43,447,309			43,447,309		
Net PP&E	32,955,596			32,955,596		
New Garden (INT)	29,500,000			29,500,000		
Investor Capital	23,001,140	1.28	54,525,155	23,001,140	1.28	54,525,155
Gross PP&E	25,988,330	1.14	49,318,121	27,267,123	1.08	47,005,165
Net PP&E	17,967,319	1.64	54,108,801	18,590,089	1.59	52,296,150
Kane (INT)	17,560,000			17,560,000		
Investor Capital	10,809,115	1.62	69,065,098	10,809,115	1.62	69,065,098
Gross PP&E	20,265,926	0.87	37,646,182	20,265,926	0.87	37,646,182
Net PP&E	8,897,773	1.97	65,038,776	8,897,773	1.97	65,038,776
Limerick (INT)	75,100,000			64,373,378		
Investor Capital	43,501,755	1.73	73,393,469	43,501,755	1.48	62,910,593
Gross PP&E	60,847,250	1.23	53,624,328	63,480,402	1.01	44,058,480
Net PP&E	36,113,701	2.08	68,532,584	46,153,867	1.39	45,965,012
East Bradford (C/D)	5,000,000			5,000,000		
Investor Capital	1,298,627	3.85	163,685,358	1,298,627	3.85	* 163,685,358
Gross PP&E	N/A		N/A	8,294,930	0.60	* 26,189,075
Net PP&E	N/A		N/A	5,473,947	0.91	30,102,224
Mahoning (C/D)	9,500,000			9,500,000		
Investor Capital	NA			NA		
Gross PP&E	NA			10,225,921	0.93	40,363,057
Net PP&E	NA			6,741,997	1.41	46,437,007
Upper Pottsgrove (C/D)	13,750,000			13,750,000		
Investor Capital	NA			NA		
Gross PP&E	15,295,347	0.90	39,057,662	15,295,347	0.90	39,057,662
Net PP&E	11,548,897	1.19	39,236,599	11,548,897	1.19	39,236,599
Average Capital Statistics-Indicated Market Value (excluding max and min result) Collection / Distribution Companies Only						\$ 39,039,310
Demographic Statistics						
Willistown						
Customers	3,895			3,895		
Population	14,720			14,720		
New Garden (INT)	\$ 29,500,000			\$ 29,500,000		
Customers	1,796	\$ 16,425	\$ 63,976,893	2,100	14,048	54,715,476
Population	12,085	2,441	35,932,147	12,085	2,441	35,932,147
Kane (INT)	17,560,000			17,560,000		
Customers	2,019	8,697	33,876,275	2,019	8,697	33,876,275
Population	4,645	3,780	55,647,621	4,645	3,780	55,647,621
Limerick (INT)	75,100,000			64,373,378		
Customers	5,416	\$ 13,866	\$ 54,009,324	5,434	11,846	46,141,757
Population	18,798	3,995	58,807,958	18,798	3,424	50,408,348
East Bradford (C/D)	5,000,000			5,000,000		
Customers	1,248	\$ 4,006	\$ 15,604,968	1,248	4,006	15,604,968
Population	9,942	503	7,402,937	9,942	503	* 7,402,937
Mahoning (C/D)	9,500,000			9,500,000		
Customers	2,403	\$ 3,953	\$ 15,398,460	2,806	3,386	13,186,921
Population	8,472	1,121	16,506,138	8,472	1,121	16,506,138
Upper Pottsgrove (C/D)	13,750,000			13,750,000		
Customers	1,428	\$ 9,629	\$ 37,504,377	1,428	9,629	* 37,504,377
Population	5,530	2,486	36,600,362	5,530	2,486	36,600,362
Average Demographic Statistics-Indicated Market Value (excluding max and min result) Collection / Distribution Companies Only						\$ 20,474,597
Market Approach Result						<u>\$ 29,756,954</u>

* Excluded from final results

AUS Market Approach Adjustment

Acquisitions	Type	Fair Market Value	OCA Adjusted Results		Ratio
			[1]	[2]	
Aqua/New Garden	* Int	\$ 29,500,000	\$ 30,615,410		0.96
PAWC/McKeesport	* Int	158,000,000	160,301,491		0.99
Aqua/Limerick	* Int	64,373,378	86,086,756		0.75
SUEZ/Mahoning Water	C/D	4,734,800	8,899,336		0.53
SUEZ/Mahoning Wastewater	C/D	4,765,200	7,991,234		0.60
Aqua/East Bradford	C/D	5,000,000	9,236,581		0.54
PAWC/Sadsbury	C/D	8,300,000	8,517,587		0.97
PAWC/Exeter	* Int	92,000,000	99,589,819		0.92
PAWC/Steelton	C/D	20,500,000	23,921,473		0.86
Aqua/Cheitzenham	C/D	44,558,259	49,940,486		0.89
PAWC/kane	* Int	17,560,000	29,015,055		0.61
PAWC/Valley Water	C/D	7,325,000	11,664,026		0.63
PAWC/Valley Wastewater	C/D	13,950,000	19,252,333		0.72
PAWC/Upper Pottsgrove	C/D	13,750,000	18,460,028		0.74
PWAC/Royersford	C/D	13,000,000	13,376,109		0.97
Aqua/Lower Makefield	C/D	53,000,000	51,414,555		1.03
Aqua/East Norriton	C/D	20,750,000	27,461,356		0.76
Total		\$ 571,066,637	\$ 655,743,635		0.77
RCNLD Results			[4]	\$	53,125,071
Market Approach Result			[5]	\$	40,946,531

[1] Determined Fair Market Value

[2] AUS reported Replacement Cost New Less Depreciation

[3] = [1] / [2]

[4] Adjusted RCNLD from OCA Exhibit DJG-12

[5] = average ratio * [4]

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
		Gannett Fleming Position			OCA Adjustments		
Account	Description	Iowa Curve	Replacement Cost	Accrued Depreciation	Iowa Curve	Replacement Cost	Accrued Depreciation
353.20	LAND AND LAND RIGHTS - COLLECTION	ND	\$ 668		ND	\$ 668	\$ -
353.30	LAND AND LAND RIGHTS - PUMPING	ND	13		ND	13	-
354.30	STRUCTURES AND IMPROVEMENTS - PUMPING	60-R3	11,876,310	2,769,664	45-R3	11,876,310	3,478,958
354.40	STRUCTURES AND IMPROVEMENTS - TREATMENT	65-R2.5	13,514,006	1,392,486	55-R2.5	13,514,006	1,553,425
355.00	POWER GENERATION EQUIPMENT	30-S2	115,234	29,479	30-S2	115,234	29,479
360.10	FORCE MAINS	70-R2.5	6,489,848	2,493,840	60-R2.5	6,489,848	2,821,192
361.10	GRAVITY MAINS	65-R2.5	34,298,562	15,386,808	60-R2.5	34,298,562	16,282,307
361.12	GRAVITY MAINS MANHOLES	60-R3	13,431,175	6,591,000	60-R3	13,431,175	6,591,000
363.20	SERVICES TO CUSTOMERS	55-R2.5	12,145,646	4,368,034	45-R2.5	12,145,646	5,055,324
365.20	METER PITS	50-R3	389,336	290,133	50-R3	389,336	290,133
371.30	PUMPING EQUIPMENT	40-R1.5	134,817	48,972	40-R1.5	134,817	48,972
390.70	COMPUTERS	5-SQ	13,689	13,689	5-SQ	13,689	13,689
391.70	TRANSPORTATION EQUIPMENT	11-S1.5	236,893	161,246	11-S1.5	236,893	161,246
395.70	POWER OPERATED EQUIPMENT	15-L4	66,140	48,062	15-L4	66,140	48,062
	Total		\$ 92,712,337	\$ 33,593,413		\$ 92,712,337	\$ 36,373,787
	Cost Approach Results	[9]		\$ 59,118,924			\$ 56,338,551

[1], [2], [3], [4], [5], [7] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibits 7-11. ND = nondepreciable

[6] Selected Iowa curve

[8] = Adjusted accrued depreciation calculations from OCA DJG Exhibits 7-11

[9] = total of [7] - total of [8]

Account 354.30

Remaining Life Calculation

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Replacement Cost	Average Life	Annual Accrual		Remaining Life	Accrued Depreciation	
			Rate	Amount		Factor	Amount
1976	\$ 695,589	45	2.22%	\$ 15,458	9.3	0.79	\$ 551,509
1980	446,536	45	2.22%	9,923	11.4	0.75	333,324
1987	571,548	45	2.22%	12,701	15.8	0.65	370,722
1988	239,299	45	2.22%	5,318	16.5	0.63	151,514
2000	1,765,285	45	2.22%	39,229	25.9	0.42	749,720
2001	181,372	45	2.22%	4,030	26.7	0.41	73,578
2004	421,958	45	2.22%	9,377	29.4	0.35	146,535
2006	214,406	45	2.22%	4,765	31.2	0.31	65,890
2007	854,357	45	2.22%	18,986	32.1	0.29	245,247
2014	5,004,163	45	2.22%	111,204	38.7	0.14	704,423
2017	637,935	45	2.22%	14,176	41.6	0.08	48,628
2018	469,247	45	2.22%	10,428	42.5	0.05	25,591
2019	374,615	45	2.22%	8,325	43.5	0.03	12,276
Total	\$ 11,876,310			\$ 263,918	13.18		\$ 3,478,958

Survivor Curve: **45-R3** [9]

[1], [2] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 11.

[3] Average life based on selected Iowa curve at [9]

[4] = 1 / [3]

[5] = [2] * [4]

[6] RL based on selected Iowa curve at [9]

[7] = 1 - ([4] * [6])

[8] = [2] * [7]

[9] Selected Iowa curve

Remaining Life Calculation

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Replacement Cost	Average Life	Annual Accrual		Remaining Life	Accrued Depreciation	
			Rate	Amount		Factor	Amount
2013	11,065,572	55	1.82%	201,192	48.0	0.13	1,406,964
2017	2,448,434	55	1.82%	44,517	51.7	0.06	146,461
Total	\$ 13,514,006			\$ 245,709	6.32		\$ 1,553,425
Survivor Curve:		55-R2.5	[9]				

[1], [2] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 11.

[3] Average life based on selected Iowa curve at [9]

[4] = 1 / [3]

[5] = [2] * [4]

[6] RL based on selected Iowa curve at [9]

[7] = 1 - ([4] * [6])

[8] = [2] * [7]

[9] Selected Iowa curve

Account 360.10

Remaining Life Calculation

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Replacement Cost	Average Life	Annual Accrual		Remaining Life	Accrued Depreciation	
			Rate	Amount		Factor	Amount
1976	\$ 1,287,755	60	1.67%	\$ 21,463	23.1	0.62	\$ 792,137
1979	372,145	60	1.67%	\$ 6,202	25.1	0.58	\$ 216,365
1980	276,429	60	1.67%	\$ 4,607	25.8	0.57	\$ 157,516
1987	2,070,086	60	1.67%	\$ 34,501	30.9	0.48	\$ 1,003,174
1988	435,169	60	1.67%	\$ 7,253	31.7	0.47	\$ 205,342
2000	855,100	60	1.67%	\$ 14,252	41.4	0.31	\$ 264,523
2004	584,623	60	1.67%	\$ 9,744	44.9	0.25	\$ 147,121
2016	104,590	60	1.67%	\$ 1,743	55.8	0.07	\$ 7,365
2017	503,952	60	1.67%	8,399	56.7	0.05	27,649
Total	\$ 6,489,848			\$ 108,164	26.08		\$ 2,821,192

Survivor Curve: **60-R2.5** [9]

[1], [2] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 11.

[3] Average life based on selected lowa curve at [9]

[4] = 1 / [3]

[5] = [2] * [4]

[6] RL based on selected lowa curve at [9]

[7] = 1 - ([4] * [6])

[8] = [2] * [7]

[9] Selected lowa curve

Remaining Life Calculation

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Replacement Cost	Average Life	Annual Accrual		Remaining Life	Accrued Depreciation	
			Rate	Amount		Factor	Amount
1951	\$ 58,774	60	1.67%	\$ 980	10.6	0.82	\$ 48,370
1954	334,674	60	1.67%	5,578	11.7	0.81	269,622
1967	1,180,895	60	1.67%	19,682	17.6	0.71	833,988
1970	935,299	60	1.67%	15,588	19.3	0.68	633,847
1971	238,622	60	1.67%	3,977	19.9	0.67	159,340
1972	209,083	60	1.67%	3,485	20.5	0.66	137,496
1973	854,266	60	1.67%	14,238	21.2	0.65	552,946
1974	849,885	60	1.67%	14,165	21.8	0.64	541,156
1975	7,333,091	60	1.67%	122,218	22.4	0.63	4,590,725
1977	1,039,597	60	1.67%	17,327	23.8	0.60	627,970
1978	2,276,200	60	1.67%	37,937	24.4	0.59	1,349,358
1979	543,532	60	1.67%	9,059	25.1	0.58	316,010
1981	825,565	60	1.67%	13,759	26.5	0.56	460,746
1983	458,944	60	1.67%	7,649	27.9	0.53	245,156
1984	442,331	60	1.67%	7,372	28.7	0.52	230,896
1985	88,819	60	1.67%	1,480	29.4	0.51	45,268
1987	1,495,084	60	1.67%	24,918	30.9	0.48	724,525
1988	2,155,317	60	1.67%	35,922	31.7	0.47	1,017,022
1990	945,462	60	1.67%	15,758	33.2	0.45	421,671
1991	543,378	60	1.67%	9,056	34.0	0.43	235,210
1992	322,056	60	1.67%	5,368	34.8	0.42	135,137
1993	346,181	60	1.67%	5,770	35.6	0.41	140,630
1994	131,809	60	1.67%	2,197	36.4	0.39	51,766
1996	45,912	60	1.67%	765	38.1	0.37	16,776
1997	497,975	60	1.67%	8,300	38.9	0.35	175,059
1998	401,022	60	1.67%	6,684	39.7	0.34	135,377
1999	469,169	60	1.67%	7,819	40.6	0.32	151,785
2000	1,970,712	60	1.67%	32,845	41.4	0.31	609,634
2001	76,594	60	1.67%	1,277	42.3	0.30	22,601
2002	1,254,115	60	1.67%	20,902	43.2	0.28	352,026
2003	282,992	60	1.67%	4,717	44.0	0.27	75,339
2004	308,011	60	1.67%	5,134	44.9	0.25	77,512
2005	2,042,656	60	1.67%	34,044	45.8	0.24	484,096
2006	44,479	60	1.67%	741	46.7	0.22	9,885
2007	953,944	60	1.67%	15,899	47.6	0.21	197,850
2011	180,112	60	1.67%	3,002	51.2	0.15	26,520
2012	327,536	60	1.67%	5,459	52.1	0.13	43,238
2013	626,699	60	1.67%	10,445	53.0	0.12	73,141
2014	60,037	60	1.67%	1,001	53.9	0.10	6,084
2016	178,844	60	1.67%	2,981	55.8	0.07	12,594
2017	670,442	60	1.67%	11,174	56.7	0.05	36,784
2018	130,533	60	1.67%	2,176	57.6	0.04	5,124
2019	44,981	60	1.67%	750	58.6	0.02	1,061
2020	122,935	60	1.67%	2,049	59.5	0.01	968
Total	\$ 34,298,562			\$ 571,643	28.48		\$ 16,282,307

Survivor Curve: 60-R2.5 [9]

[1], [2] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 11.

[3] Average life based on selected Iowa curve at [9]

[4] = 1 / [3]

[5] = [2] * [4]

[6] RL based on selected Iowa curve at [9]

[7] = 1 - ([4] * [6])

[8] = [2] * [7]

[9] Selected Iowa curve

Remaining Life Calculation

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Replacement Cost	Average Life	Annual Accrual		Remaining Life	Accrued Depreciation	
			Rate	Amount		Factor	Amount
1970	\$ 628,820	45	2.22%	\$ 13,974	8.5	0.81	\$ 509,708
1976	1,464,349	45	2.22%	32,541	11.0	0.76	1,106,772
1978	314,687	45	2.22%	6,993	12.0	0.73	231,021
1980	326,382	45	2.22%	7,253	13.0	0.71	231,985
1982	368,476	45	2.22%	8,188	14.1	0.69	252,696
1985	168,546	45	2.22%	3,745	16.0	0.65	108,799
1986	149,996	45	2.22%	3,333	16.6	0.63	94,706
1987	114,085	45	2.22%	2,535	17.2	0.62	70,383
1988	325,570	45	2.22%	7,235	17.9	0.60	196,051
1989	596,599	45	2.22%	13,258	18.6	0.59	350,275
1993	173,791	45	2.22%	3,862	21.4	0.52	91,072
1995	66,918	45	2.22%	1,487	22.9	0.49	32,851
1996	23,763	45	2.22%	528	23.7	0.47	11,264
1997	100,948	45	2.22%	2,243	24.4	0.46	46,116
1998	229,763	45	2.22%	5,106	25.2	0.44	100,968
1999	172,683	45	2.22%	3,837	26.0	0.42	72,841
2000	66,485	45	2.22%	1,477	26.8	0.40	26,859
2001	685,362	45	2.22%	15,230	27.6	0.39	264,505
2002	269,958	45	2.22%	5,999	28.5	0.37	99,258
2003	50,467	45	2.22%	1,121	29.3	0.35	17,624
2004	747,790	45	2.22%	16,618	30.1	0.33	247,189
2012	5,100,208	45	2.22%	113,338	37.1	0.17	892,381
Total	\$ 12,145,646			\$ 269,903	18.73		\$ 5,055,324

Survivor Curve: **45-R2.5** [9]

[1], [2] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 11.

[3] Average life based on selected Iowa curve at [9]

[4] = 1 / [3]

[5] = [2] * [4]

[6] RL based on selected Iowa curve at [9]

[7] = 1 - ([4] * [6])

[8] = [2] * [7]

[9] Selected Iowa curve

Cost Approach Adjustment Summary

	[1]	[2]
	<u>AUS Cost Approach Summary</u>	<u>OCA Cost Approach Summary</u>
Replacement Cost New (RCN)	\$ 85,964,664	\$ 85,964,664
Replacement Cost New Less Depreciation (RCNLD)	\$ 59,847,171	\$ 53,125,071

[1] Direct Testimony of Jerome C. Weinert, p. 13

[2] Adjusted figures from OCA Exhibit DJG-13

Cost Approach Detailed Adjustment

Account	Description	Replacement Cost New	Iowa Curve	Remaining Life	Total Life Expectancy	Condition	RCNLD
Collection Sewers - Force Mains							
360.21	(P.S. 1) Deer Run FM - 4" ACP	162,476	60-R3	34.9	79.4	44%	71,416
360.21	(P.S. 11) Hillbrook Circle FM - 4" PVC	184,910	60-R3	55.5	76.0	73%	135,059
360.21	(P.S. 12) King Road FM - 4" PVC	532,000	60-R3	59.1	75.6	78%	415,812
360.21	(P.S. 13) Malvern Hunt FM - 6" DIP	600,393	60-R3	55.5	76.0	73%	438,530
360.21	(P.S. 14) Planebrook FM - 8" PVC	521,503	60-R3	71.3	74.8	95%	497,108
360.21	(P.S. 2) Mill Lane FM - 14" DIP	1,004,502	60-R3	34.9	79.4	44%	441,525
360.21	(P.S. 3) Wilburdale Rd FM - 10" PVC Replacement	106,330	60-R3	70.6	75.1	94%	99,957
360.21	(P.S. 4) Lee Blvd FM - 8" DIP	857,377	60-R3	43.5	77.0	56%	484,362
360.21	(P.S. 5) Meadow View FM - 4" ACP	246,563	60-R3	37.9	78.4	48%	119,161
360.21	(P.S. 6) Flat Rd FM - 6" ACP	327,626	60-R3	37.3	78.8	47%	155,038
360.21	(P.S. 7) Lapp Rd FM - 6" PVC	1,057,077	60-R3	43.5	77.0	56%	597,180
360.21	(P.S. 8) Westgate FM - 8" PVC	370,510	60-R3	44.8	77.3	58%	214,713
Collection Sewers - Gravity Mains							
361.21	18" ACP	322,651	60-R2.5	40.5	86.0	47%	151,986
361.21	12" ACP	379,717	60-R2.5	40.5	86.0	47%	178,867
361.21	12" ACP	286,414	60-R2.5	43.0	85.5	50%	143,994
361.21	10" ACP	417,893	60-R2.5	40.5	86.0	47%	196,850
361.21	10" ACP	221,681	60-R2.5	42.4	85.9	49%	109,356
361.21	10" ACP	9,223	60-R2.5	71.8	80.3	89%	8,246
361.21	36" ACP	33,227	60-R2.5	34.7	88.2	39%	13,070
361.21	27" ACP	616,552	60-R2.5	34.7	88.2	39%	242,524
361.21	24" ACP	32,598	60-R2.5	34.7	88.2	39%	12,823
361.21	24" ACP	105,503	60-R2.5	40.5	86.0	47%	49,698
361.21	10" PVC	134,594	60-R2.5	53.3	82.8	64%	86,658
361.21	10" PVC	106,553	60-R2.5	54.0	82.5	65%	69,744
361.21	10" PVC	18,549	60-R2.5	55.4	82.9	67%	12,394
361.21	10" PVC	759,689	60-R2.5	67.4	80.9	83%	632,871
361.21	10" PVC	47,397	60-R2.5	78.5	80.0	98%	46,508
361.21	10" PVC	118,796	60-R2.5	79.2	79.7	99%	118,051
361.21	8" ACP	42,533	60-R2.5	24.5	94.0	26%	11,076
361.21	8" ACP	181,742	60-R2.5	26.3	92.8	28%	51,563
361.21	8" ACP	249,051	60-R2.5	34.7	88.2	39%	97,966
361.21	8" ACP	508,771	60-R2.5	37.0	87.5	42%	215,037
361.21	8" ACP	185,236	60-R2.5	37.6	87.1	43%	79,916
361.21	8" ACP	160,533	60-R2.6	38.1	86.6	44%	70,669
361.21	8" ACP	652,551	60-R2.7	39.3	86.8	45%	295,535
361.21	8" ACP	634,190	60-R2.8	39.9	86.4	46%	292,951
361.21	8" ACP	4,676,505	60-R2.9	40.5	86.0	47%	2,202,883
361.21	8" ACP	716,712	60-R2.10	42.4	85.9	49%	353,556
361.21	8" ACP	1,678,760	60-R2.11	43.0	85.5	50%	843,996
361.21	8" ACP	478,511	60-R2.12	43.6	85.1	51%	245,132
361.21	8" ACP	744,489	60-R2.13	45.5	85.0	54%	398,439
361.21	8" ACP	36,770	60-R2.14	71.8	80.3	89%	32,876
361.21	8" PVC	29,844	60-R2.15	37.0	87.5	42%	12,614
361.21	8" PVC	157,263	60-R2.16	46.8	84.3	55%	87,265
361.21	8" PVC	411,181	60-R2.17	47.4	83.9	56%	232,279
361.21	8" PVC	84,236	60-R2.18	48.7	84.2	58%	48,717
361.21	8" PVC	1,382,682	60-R2.19	50.0	83.5	60%	827,953
361.21	8" PVC	1,575,150	60-R2.20	50.7	83.2	61%	959,561
361.21	8" PVC	809,920	60-R2.21	52.7	83.2	63%	512,871
361.21	8" PVC	349,233	60-R2.22	53.3	82.8	64%	224,853
361.21	8" PVC	195,513	60-R2.23	54.0	82.5	65%	127,972
361.21	8" PVC	302,365	60-R2.24	55.4	82.9	67%	202,027
361.21	8" PVC	124,374	60-R2.25	56.1	82.6	68%	84,448
361.21	8" PVC	41,722	60-R2.26	57.4	81.9	70%	29,246
361.21	8" PVC	453,421	60-R2.27	58.8	82.3	71%	323,982
361.21	8" PVC	368,563	60-R2.28	59.5	82.0	73%	267,458
361.21	8" PVC	431,769	60-R2.29	60.2	81.7	74%	318,173
361.21	8" PVC	1,809,857	60-R2.30	60.9	81.4	75%	1,354,170
361.21	8" PVC	69,902	60-R2.31	62.3	81.8	76%	53,246
361.21	8" PVC	1,142,429	60-R2.32	63.1	81.6	77%	883,264
361.21	8" PVC	258,009	60-R2.33	63.8	81.3	78%	202,445
361.21	8" PVC	280,287	60-R2.34	64.5	81.0	80%	223,177
361.21	8" PVC	1,858,509	60-R2.35	65.9	81.4	81%	1,504,703
361.21	8" PVC	39,111	60-R2.36	66.6	81.1	82%	32,122
361.21	8" PVC	69,410	60-R2.37	67.4	80.9	83%	57,823
361.21	8" PVC	165,089	60-R2.38	71.0	80.5	88%	145,614
361.21	8" PVC	248,858	60-R2.39	71.8	80.3	89%	222,506
361.21	8" PVC	34,044	60-R2.40	73.3	80.8	91%	30,882
361.21	8" PVC	10,171	60-R2.41	74.0	80.5	92%	9,350
361.21	8" PVC	314,953	60-R2.42	77.0	80.5	96%	301,256
361.21	8" PVC	136,394	60-R2.43	77.7	80.2	97%	132,144
361.21	8" DIP	53,784	60-R2.44	26.3	92.8	28%	15,259
361.21	8" DIP	25,736	60-R2.45	40.5	86.0	47%	12,123
361.21	8" CIP	11,500	60-R2.46	40.5	86.0	47%	5,417
361.21	20" ACP	714,330	60-R2.47	40.5	86.0	47%	336,487

Cost Approach Detailed Adjustment

Account	Description	Replacement Cost New	Iowa Curve	Remaining Life	Total Life Expectancy	Condition	RCNLD
361.21	16" ACP	50,039	60-R2.48	40.5	86.0	47%	23,571
361.21	12" PVC	185,287	60-R2.49	37.0	87.5	42%	78,313
361.21	12" PVC	9,929	60-R2.50	71.8	80.3	89%	8,878
361.21	12" PVC	181,820	60-R2.51	75.5	80.0	94%	171,591
361.21	15" PVC	100,235	60-R2.52	73.3	80.8	91%	90,925
361.21	15" PVC	266,437	60-R2.53	77.0	80.5	96%	254,850
361.21	18" PVC	259,921	60-R2.54	50.7	83.2	61%	158,341
361.21	18" PVC	474,196	60-R2.55	73.3	80.8	91%	430,153
361.21	18" PVC	23,740	60-R2.56	74.0	80.5	92%	21,823
361.21	18" PVC	112,401	60-R2.57	77.0	80.5	96%	107,513
361.21	10" DI	8,663	60-R2.58	79.2	79.7	99%	8,609
361.21	8" CSP	103,634	60-R2.59	43.0	85.5	50%	52,102
361.21	8" CSP	262,482	60-R2.22	46.8	84.3	55%	145,650
361.21	20" PVC	15,049	60-R2.23	74.0	80.5	92%	13,834
361.21	21" PVC	11,328	60-R2.5	74.0	80.5	92%	10,413
Collection Sewers - Gravity - Manholes							
361.23	Manholes	29,501	60-R2.5	24.5	94.0	26%	7,682
361.23	Manholes	109,228	60-R2.5	26.3	92.8	28%	30,990
361.23	Manholes	214,286	60-R2.5	34.7	88.2	39%	84,291
361.23	Manholes	176,340	60-R2.5	37.0	87.5	42%	74,532
361.23	Manholes	58,864	60-R2.5	37.6	87.1	43%	25,395
361.23	Manholes	34,650	60-R2.6	38.1	86.6	44%	15,253
361.23	Manholes	283,463	60-R2.7	39.3	86.8	45%	128,378
361.23	Manholes	202,351	60-R2.8	39.9	86.4	46%	93,472
361.23	Manholes	1,963,676	60-R2.9	40.5	86.0	47%	924,996
361.23	Manholes	347,776	60-R2.10	42.4	85.9	49%	171,559
361.23	Manholes	580,548	60-R2.11	43.0	85.5	50%	291,870
361.23	Manholes	162,384	60-R2.12	43.6	85.1	51%	83,186
361.23	Manholes	13,038	60-R2.13	44.2	84.7	52%	6,805
361.23	Manholes	231,703	60-R2.14	45.5	85.0	54%	124,004
361.23	Manholes	112,627	60-R2.15	46.8	84.3	55%	62,496
361.23	Manholes	156,673	60-R2.16	47.4	83.9	56%	88,506
361.23	Manholes	31,622	60-R2.17	48.7	84.2	58%	18,288
361.23	Manholes	431,863	60-R2.18	50.0	83.5	60%	258,601
361.23	Manholes	577,096	60-R2.19	50.7	83.2	61%	351,559
361.23	Manholes	269,180	60-R2.20	52.7	83.2	63%	170,455
361.23	Manholes	198,694	60-R2.21	53.3	82.8	64%	127,929
361.23	Manholes	108,088	60-R2.22	54.0	82.5	65%	70,749
361.23	Manholes	131,181	60-R2.23	55.4	82.9	67%	87,649
361.23	Manholes	48,694	60-R2.24	56.1	82.6	68%	33,062
361.23	Manholes	13,540	60-R2.25	57.4	81.9	70%	9,491
361.23	Manholes	161,764	60-R2.26	58.8	82.3	71%	115,585
361.23	Manholes	203,302	60-R2.27	59.5	82.0	73%	147,532
361.23	Manholes	135,935	60-R2.28	60.2	81.7	74%	100,171
361.23	Manholes	756,113	60-R2.29	60.9	81.4	75%	565,738
361.23	Manholes	26,665	60-R2.30	62.3	81.8	76%	20,312
361.23	Manholes	402,106	60-R2.31	63.1	81.6	77%	310,886
361.23	Manholes	86,130	60-R2.32	63.8	81.3	78%	67,581
361.23	Manholes	106,244	60-R2.33	64.5	81.0	80%	84,596
361.23	Manholes	684,069	60-R2.34	65.9	81.4	81%	553,842
361.23	Manholes	28,116	60-R2.35	66.6	81.1	82%	23,092
361.23	Manholes	241,956	60-R2.36	67.4	80.9	83%	201,565
361.23	Manholes	63,094	60-R2.37	71.0	80.5	88%	55,651
361.23	Manholes	120,488	60-R2.38	71.8	80.3	89%	107,729
361.23	Manholes	101,262	60-R2.39	73.3	80.8	91%	91,857
361.23	Manholes	28,966	60-R2.40	74.0	80.5	92%	26,627
361.23	Manholes	36,425	60-R2.41	75.5	80.0	94%	34,376
361.23	Manholes	266,714	60-R2.42	77.0	80.5	96%	255,115
361.23	Manholes	82,954	60-R2.50	77.7	80.2	97%	80,369
361.23	Manholes	15,180	60-R2.6	78.5	80.0	98%	14,895
361.23	Manholes	59,550	60-R2.5	79.2	79.7	99%	59,177
361.23	Manholes	14,624	60-R2.5	80.0	80.0	100%	14,624
TOTAL ADJUSTED ACCOUNTS		\$ 46,662,151					\$ 28,565,582
TOTAL OTHER ACCOUNTS (UNADJUSTED)		39,302,513					24,559,489
TOTAL COST APPROACH RESULT		\$ 85,964,664					\$ 53,125,071

Annual Cash Flow	\$	259,361	[1]
Constant Growth Rate		3.8%	[2]
Discount Rate		4.5%	[3]
Adjusted Value	\$	41,357,255	[4]

[1] From OCA Exhibit DJG-15

[2] From OCA Exhibit DJG-17

[3] From OCA Exhibit DJG-16

[4] = [1] * (1+[2]) / ([3] - [2])

	Year 0	2018	2019	2020
Operating Revenues	\$ 4,734,652	\$ 5,372,388	\$ 4,444,567	\$ 4,387,000
EBIT	1,116,178	2,246,182	596,544	505,808
Tax (28.89%)	322,464	648,922	172,342	146,128
EBIT (1-t)	793,714	1,597,260	424,202	359,680
Depreciation	756,089	718,700	774,783	774,783
Capital Expenditures	1,290,442	393,256	740,070	2,738,000
Free Cash Flow from Operations	\$ 259,361	\$ 1,922,704	\$ 458,915	\$ (1,603,537)

See Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 13.

*Year 0 figures are averages of 2018-2020 figures

<u>Capital Component</u>	<u>Proposed Ratio</u>	<u>Cost Rate</u>	<u>After-Tax Rate</u>	<u>Weighted Cost</u>
Long Term Debt	50%	3.9%	2.8%	1.39%
Equity	<u>50%</u>	6.1%	6.1%	<u>3.06%</u>
Total	100%			4.45%

See OCA Exhibit DJG-17 for capital structure and cost rates

Company	Ticker	[1] Stock Price (\$)	[2] Dividend (\$)	[3] Beta	[4] Debt Ratio	[5] Interest Exp. (mill)	[6] Long-Term Debt (mill)	[7] Debt Cost	[8] DCF Result	[9] CAPM Result
American States Water Co	AWR	87.80	0.365	0.65	46%	\$ 24.0	\$ 412.1	5.8%	5.5%	5.8%
American Water Works Co Inc	AWK	154.01	0.603	0.85	60%	384.0	10,352.0	3.7%	5.4%	7.0%
California Water Service Gp	CWT	59.43	0.250	0.70	49%	40.0	1,059.7	3.8%	5.6%	6.1%
Essential Utilities, Inc.	WTRG	46.84	0.268	0.95	53%	203.0	5,598.7	3.6%	6.2%	7.5%
Middlesex Water Co	MSEX	98.01	0.290	0.70	42%	7.5	266.5	2.8%	5.0%	6.1%
SIW Corp	SIW	66.10	0.360	0.80	57%	50.0	1,420.0	3.5%	6.1%	6.7%
York Water Co	YORW	43.71	0.195	0.85	45%	5.5	132.5	4.2%	5.7%	7.0%
Average		79.41	0.333	0.79	50%	\$ 102.0	\$ 2,748.8	3.9%	5.6%	6.6%

Constant Growth Rate (DCF) **3.8%** [10]

Risk-Free Rate (CAPM) **2.2%** [11]

Equity Risk Premium (CAPM) **5.6%** [12]

Average Cost of Equity Result **6.1%** [13]

[1] Average stock prices from OCA Exhibit DJG-18

[2] Reported quarterly dividends per share. Nasdaq.com

[3], [4], [5], [6] Value Line Investment Survey

[7] = [5] / [6]

[8] Quarterly DCF Approximation = $[d0(1 + g)^0.25/P0 + (1 + g)^0.25]4 - 1$ (where d = dividend, p = price, and g = growth)

[9] = [11] + [3] * [12]

[10] Growth rate from OCA Exhibit DJG-19

[11] Risk-free rate from OCA Exhibit DJG-20

[12] Equity risk premium from OCA Exhibit DJG-22

[13] = Average of [8] and [9]

NR = not reported

DCF Stock and Index Prices

Ticker	^GSPC	AWR	AWK	CWT	WTRG	MSEX	SIW	YORW
30-day Average	4432	87.80	154.01	59.43	46.84	98.01	66.10	43.71
Standard Deviation	95.7	2.96	5.09	1.63	1.09	1.72	1.53	0.95
01/18/22	4577	91.42	161.38	61.71	48.19	98.60	66.84	44.48
01/19/22	4533	91.48	160.40	61.36	48.00	97.57	67.43	44.41
01/20/22	4483	90.91	162.07	60.97	47.94	98.58	67.57	44.30
01/21/22	4398	91.42	160.76	60.87	47.86	97.58	67.95	44.43
01/24/22	4410	90.92	159.17	60.44	47.56	98.55	67.73	45.37
01/25/22	4356	91.06	156.39	61.32	47.60	103.23	68.12	45.18
01/26/22	4350	90.78	154.95	60.54	47.84	100.02	67.59	45.28
01/27/22	4327	89.38	155.54	59.94	46.93	99.14	67.05	44.26
01/28/22	4432	90.16	157.23	60.73	47.38	99.68	68.09	44.84
01/31/22	4516	91.84	160.18	61.83	48.46	100.93	68.49	45.21
02/01/22	4547	89.58	158.09	60.71	47.56	99.35	66.96	43.82
02/02/22	4589	90.37	160.20	60.98	48.54	97.62	68.02	43.73
02/03/22	4477	89.31	156.90	60.25	47.71	96.34	67.42	43.03
02/04/22	4501	88.40	154.90	59.74	47.00	96.85	66.06	42.94
02/07/22	4484	88.50	155.42	59.46	46.72	96.91	66.07	43.03
02/08/22	4522	89.14	155.66	60.10	46.90	98.19	66.61	43.52
02/09/22	4587	87.85	155.73	59.85	46.65	97.02	65.82	43.35
02/10/22	4504	85.61	150.41	58.25	45.67	95.38	64.21	42.02
02/11/22	4419	85.82	149.46	58.77	45.78	96.32	64.67	42.59
02/14/22	4402	85.56	148.03	58.47	45.12	96.51	64.35	42.40
02/15/22	4471	84.66	146.77	58.38	45.28	96.30	64.25	42.83
02/16/22	4475	84.99	146.29	58.23	45.19	96.33	64.46	43.14
02/17/22	4380	85.56	148.06	58.42	45.93	96.81	64.93	42.96
02/18/22	4349	86.03	148.26	58.78	45.52	96.84	65.22	43.11
02/22/22	4305	85.47	147.83	59.05	45.40	97.83	64.73	42.93
02/23/22	4226	83.69	146.73	57.53	44.80	95.85	64.08	42.93
02/24/22	4289	83.13	148.60	56.86	46.65	97.89	63.95	42.81
02/25/22	4385	83.19	152.69	55.97	47.37	98.31	64.94	43.86
02/28/22	4374	84.16	151.09	56.93	47.11	99.99	65.22	44.87
03/01/22	4306	83.51	151.02	56.42	46.61	99.68	64.11	43.63

All prices are adjusted closing prices reported by Yahoo! Finance, <http://finance.yahoo.com>

<u>Constant Growth Determinants</u>	<u>Rate</u>	
Nominal GDP	3.8%	[1]
Real GDP	1.8%	[2]
Inflation	2.0%	[3]
<u>Risk Free Rate</u>	<u>2.2%</u>	[4]
Highest	3.8%	

[1],[2],[3] CBO, The 2021 Long-Term Budget Outlook, p. 34

[4] From OCA Exhibit DJG-20

Date	Rate
01/18/22	2.18%
01/19/22	2.14%
01/20/22	2.14%
01/21/22	2.07%
01/24/22	2.10%
01/25/22	2.12%
01/26/22	2.16%
01/27/22	2.09%
01/28/22	2.07%
01/31/22	2.11%
02/01/22	2.12%
02/02/22	2.11%
02/03/22	2.14%
02/04/22	2.23%
02/07/22	2.22%
02/08/22	2.25%
02/09/22	2.25%
02/10/22	2.30%
02/11/22	2.24%
02/14/22	2.29%
02/15/22	2.37%
02/16/22	2.34%
02/17/22	2.31%
02/18/22	2.24%
02/22/22	2.24%
02/23/22	2.29%
02/24/22	2.28%
02/25/22	2.29%
02/28/22	2.17%
03/01/22	2.11%
Average	2.20%

*Daily Treasury Yield Curve Rates on 30-year T-bonds, <http://www.treasury.gov/resources-center/data-chart-center/interest-rates/>

CAPM Implied Equity Risk Premium Estimate

Year	[1] Market Value	[2] Operating Earnings	[3] Dividends	[4] Buybacks	[5] Earnings Yield	[6] Dividend Yield	[7] Buyback Yield	[8] Gross Cash Yield
2015	17,900	885	382	572	4.95%	2.14%	3.20%	5.33%
2016	19,268	920	397	536	4.77%	2.06%	2.78%	4.85%
2017	22,821	1,066	420	519	4.67%	1.84%	2.28%	4.12%
2018	21,027	1,282	456	806	6.10%	2.17%	3.84%	6.01%
2019	26,760	1,305	485	729	4.88%	1.81%	2.72%	4.54%
2020	31,659	1,019	480	520	3.22%	1.52%	1.64%	3.16%

Cash Yield [9]
 Growth Rate [10]
 Risk-free Rate [11]
 Current Index Value [12]

Year	[13]	[14]	[15]	[16]	[17]
1	213	219	225	231	238
2	199	191	183	176	4955
3					3684
4					
5					

Intrinsic Index Value [18]
 Required Return on Market [19]

Implied Equity Risk Premium 4.9% [20]

[1-4] S&P Quarterly Press Releases, data found at <https://us.spindices.com/indices/equity/sp-500>, Q4 2020

[1] Market value of S&P 500

[5] = [2] / [1]

[6] = [3] / [1]

[7] = [4] / [1]

[8] = [6] + [7]

[9] = Average of [8]

[10] = Compound annual growth rate of [2] = (end value / beginning value)^{1/n} - 1

[11] Risk-free rate from OCA Exhibit DIG-20

[12] 30-day average of closing index prices from OCA Exhibit DIG-18 (^GSPC column)

[13-16] Expected dividends = [9] * [12] * (1 + [10])^t; Present value = expected dividend / (1 + [11] + [19])^t

[17] Expected terminal value = expected dividend * (1 + [11]) / [19]; Present value = (expected dividend + expected terminal value) / (1 + [11] + [19])ⁿ

[18] = Sum([13-17]) present values.

[19] = [20] + [11]

[20] Internal rate of return calculation setting [18] equal to [12] and solving for the discount rate

IESE Business School Survey	5.6%	[1]
Duff & Phelps Report	5.5%	[2]
Damodaran (average)	5.1%	[3]
Garrett	<u>4.9%</u>	[6]
Average	5.3%	
Highest	5.6%	

[1] IESE Business School Survey 2021

[2] Duff & Phelps, 12-9-2020

[3] <http://pages.stern.nyu.edu/~adamodar/>, 2-1-22

[6] From OCA Exhibit DJG-21

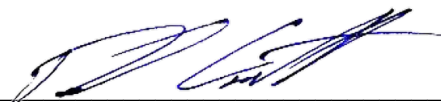
BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Re: Application of Aqua Pennsylvania Wastewater, :
Inc. pursuant to Sections 1102, 1329, 507, and :
2102 of the Public Utility Code for Approval of its : Docket No. A-2021-3026132
Acquisition of the Wastewater System Assets :
of East Whiteland Township :

VERIFICATION

I, David J. Garrett, hereby state that the facts set forth in my Direct Testimony, OCA Statement 1, are true and correct (or are true and correct to the best of my knowledge, information, and belief) and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

DATED: March 11, 2022
*325299

Signature: 

David J. Garrett

Consultant Address: Resolve Utility Consulting, PLLC
101 Park Avenue
Suite 1125
Oklahoma City, OK 73102

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of Aqua Pennsylvania Wastewater,
Inc. Pursuant to Sections 1102, 1329, 507 and
2102 of the Public Utility Code for Approval of its
Acquisition of the Wastewater System Assets of
East Whiteland Township

Docket No. A-2021-3026132

DIRECT TESTIMONY

OF

NOAH D. EASTMAN

ON BEHALF OF

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

March 11, 2022

Contents

Introduction.....	1
Purpose of Direct Testimony	1
Analysis of Affirmative Public Benefits.....	1
Conclusion	16

Appendix A: Background & Qualifications of Noah D. Eastman

1 **Introduction**

2 **Q. Please state your name, business address and occupation.**

3 A. My name is Noah D. Eastman. My business address is 555 Walnut Street, Forum Place, 5th
4 Floor, Harrisburg, Pennsylvania 17101. I am currently employed as a Regulatory Analyst
5 by the Pennsylvania Office of Consumer Advocate (OCA).

6 **Q. Please describe your educational background and qualifications to provide testimony**
7 **in this case.**

8 A. I have a bachelor's degree in Economics with a Business Concentration from Shippensburg
9 University. My educational background and qualifications are described in Appendix A.

10 **Q. On whose behalf are you testifying in this proceeding?**

11 A. I am testifying on behalf of the Office of Consumer Advocate.

12 **Purpose of Direct Testimony:**

13 **Q. What was your assignment in this case?**

14 A. My assignment was to review the application and supporting documents submitted by
15 Aqua Pennsylvania Wastewater, Inc. (Aqua or Company) in the acquisition of the
16 wastewater system assets of East Whiteland Township (Township or East Whiteland). I am
17 providing an analysis of whether the acquisition, if approved by the Pennsylvania Public
18 Utility Commission (Commission), would provide substantial affirmative public benefits.

19 **Analysis of Affirmative Public Benefits:**

20 **Q. What are the requirements of the Public Utility Code for an application for a**
21 **certificate of public convenience?**

1 A. An application asking for a certificate of public convenience will only be granted if the
2 Commission determines that it is necessary and proper. Section 1103(a) of the Public
3 Utility Code (66 Pa. CS § 1103(a)) states:

4 Every application for a certificate of public convenience shall be made to the
5 commission in writing, be verified by oath or affirmation, and be in such form, and
6 contain such information, as the commission may require by its regulations. A
7 certificate of public convenience shall be granted by order of the commission, only
8 if the commission shall find or determine that the granting of such certificate is
9 necessary or proper for the service, accommodation, convenience, or safety of the
10 public. The commission, in granting such certificate, may impose such conditions
11 as it may deem to be just and reasonable.

12 **Q. Does Aqua claim any benefits to acquired customers?**

13 A. On pages 15 and 16 of Aqua Statement No. 1, Aqua witness William C. Packer states that
14 acquired customers would experience the following benefits:

- 15 • “The Township’s customers will become part of a larger scale, efficiently operated,
16 wastewater utility.”
- 17 • “The Company is already the owner and operator of the EWT [Township] water
18 system. As such, we [Aqua] have key operations in nearby service areas and will
19 be able to assume the operations of the EWT [Township] system, fold them into a
20 larger scale, efficiently operated wastewater utility that over time will likely yield
21 further operating efficiencies and improve long term viability as envisioned in the
22 PUC policy statement.”
- 23 • “[O]perational overlap between water and wastewater utility operations will
24 provide the opportunity for better coordination of capital activities throughout the
25 EWT [Township] service area.”
- 26 • “The Company is projecting less operating and maintenance costs under the
27 Company’s ownership that will likely be realized through reductions in costs for
28 wastewater maintenance, as well as efficiencies in administrative and general
29 costs, such as insurance, auditing and legal, among others.”
- 30 • “[C]ustomers of the EWT [Township] System will benefit greatly from the
31 Company’s technical experience and fitness in deploying resources towards capital
32 improvements.”
- 33 • Acquired customers will be able to:
 - 34 ◦ Call toll-free numbers for regular questions and emergencies
 - 35 ◦ Pay their bills online
 - 36 ◦ Participate in customer assistance programs
 - 37 ◦ Gain protections under the Public Utility Code

1 **Q. How will current Township customers' rates be impacted by the proposed**
2 **transaction?**

3 A. In Aqua Statement 1, Mr. Packer states that the current average monthly bill at one
4 Equivalent Dwelling Unit (EDU) is \$33.33 per month (Aqua Statement 1, pg. 18). Mr.
5 Packer calculates in Appendix A that applying 100% of the revenue deficiency to existing
6 rates would increase the average East Whiteland residential customer bill to \$77.64, a
7 132.93% increase.

8
9 **Q. How will current Aqua customers' rates be impacted by the proposed transaction?**

10 A. Because this application was filed under Section 1329, the ratemaking rate base approved
11 in this proceeding will be added into the calculation of Aqua's revenue requirement in its
12 next base rate case proceeding. In estimating rate impacts for current Aqua customers,
13 Aqua assumes a 50% allocation of the revenue deficiency to wastewater customers and
14 50% allocated to Township customers. In its application (Exhibit I1), Aqua estimates that
15 current Aqua residential wastewater customers would see an increase in rates of \$4.62, or
16 4.67% if the entirety of the 50% allocation were applied to existing Aqua wastewater
17 customers. Along with this, Aqua also provides a calculation of an assignment to its water
18 customers under Section 1311(c) (Aqua Statement 1, Appendix A, pg. 1). Under that
19 scenario, the water customers would be allocated about 87.61%¹ of the \$2,505,500 revenue
20 requirement and subsidize 44% of the total revenue deficiency calculated in Appendix A
21 of Aqua Statement 1. This would result in an estimated increase of \$0.33 per month or
22 0.41% for existing residential water customers. Also, to note, the actual percentage of any

¹ (2,195,134/2,505,500) = 87.61%

1 shift of revenue requirement from wastewater to water customers will be determined in the
2 next rate case, so the rates for existing wastewater or water customers could be different
3 than estimated.

4 **Q. Did Aqua propose a rate freeze for Township customers in its application?**

5 A. Aqua states in its application (Section VI, Paragraph 33) that it has agreed with the
6 Township not to increase rates until after the third anniversary of the Closing Date. In Mr.
7 Packer’s view, this is not a rate stabilization plan (Aqua Statement 1, pg. 12).

8 **Q. What impact would this proposed rate freeze have on current Aqua customers?**

9 A. If a base rate case with new rates was made effective before the end of the rate freeze, the
10 revenue deficiency between the cost for Aqua to serve the Township customers and the
11 revenue from the frozen Township rates would be allocated to existing Aqua wastewater
12 customers and likely by Aqua water customers.

13 **Q. Do you have a recommendation?**

14 A. Yes, if the Commission approves the application, it should reject any rate freeze for East
15 Whiteland customers that extends beyond the effective date of new rates in Aqua’s next
16 base rate case. The Commission should not approve a rate freeze that attempts to remove
17 the Commission’s discretion in setting rates. Existing Aqua customers should not be at risk
18 to pay the full revenue deficiency from the East Whiteland acquisition. Also, freezing rates
19 could also harm Township customers. If the rate freeze extends beyond Aqua’s next base
20 rate proceeding, the Township rates will fall behind the increased rates for Aqua’s existing
21 water and wastewater customers, further exacerbating the amount of the subsidy going
22 forward. To catch up, Township customers will see higher rate increases than currently

1 forecasted in order to move towards the rates of the main rate zone.

2 **Q. Is this proposed rate freeze by Aqua a plan that will hold rates constant or phase rates**
3 **in over a period of time after the next base rate case?**

4 A. The legal arguments will be addressed by the OCA’s counsel. In my view, yes. Aqua’s
5 current rate case will be over by May 2022. It could file its next rate case any time after,
6 so the rate freeze that Aqua has agreed to with the Township could hold rates constant after
7 Aqua’s next base rate case.

8 **Q. What is required if an applicant proposes a rate stabilization plan?**

9 A. In the Final Implementation Order of Section 1329 of the Public Utility Code, the
10 Commission stated “if a rate stabilization is proposed, the applicant will be required to
11 provide testimony, schedules, and work papers that establish the basis for the plan and its
12 impact on existing customers who need to cover the revenue requirement that would be
13 shifted to them under the plan” (Order, M-201602543193, pg. 27).

14 **Q. Did Aqua meet the requirements for a rate stabilization plan that were laid out in the**
15 **October 2016 order?**

16 A. No. Aqua should provide the information that the Commission required for a rate
17 stabilization plan (Order, M-201602543193, pg. 27). Aqua did provide this type of
18 information in a previous application filed under Section 1329. (Application, A-2017-
19 2605434, p. 19). Compliance with this requirement would provide helpful information for
20 evaluating the benefits and harms of the proposed transaction.

1 **Q. Aqua claims that Township customers will receive benefits from the Company’s**
2 **technical experience and fitness in deploying resources towards capital**
3 **improvements. Please discuss the anticipated capital improvements.**

4 A. Aqua estimates that it will invest approximately \$16.92 million in the East Whiteland
5 system over the next 10 years (Aqua Statement 2, pg. 11). Aqua witness, Mr. Bubel, states
6 that these investments will include sewer extensions, upgrades to pump stations, and force
7 main and gravity collection system rehabilitation and replacement “based on an assessment
8 of pipe age and condition” (Aqua Statement 2, pg. 11).

9 **Q. Are the above-mentioned upgrades urgent? Have they been described as urgent?**

10 A. No. It does not appear that any of the anticipated improvements and upgrades should be
11 described as urgent. They appear to be to the normal improvements expected as a
12 wastewater system ages, and the Township and Company have given no information
13 leading to an alternate conclusion.

14 **Q. Is the Township financially fit to complete the improvements and upgrades?**

15 A. According to the Township’s Annual Financial Report filed in 2020 (Exhibit J2, pg. 26),
16 the Township as a whole has cash and cash equivalents exceeding \$29 million. In the year
17 2020 alone, the Sewer Fund had an increase to cash and cash equivalents of more than
18 \$500,000 (Exhibit J2, pg. 42). Given this information, it seems likely that the Township
19 would be able to make necessary improvements over the coming decade equal to what
20 Aqua has proposed. As a reminder, as the provider of wastewater service to its customers
21 and residents, it is the Township’s duty to make the necessary investment to comply with
22 regulatory requirements.

1 **Q. Does Mr. Packer claim that Aqua’s existing customers will benefit from the**
2 **acquisition?**

3 A. Mr. Packer, in Aqua Statement 1, states that the acquisition will increase Aqua’s customer
4 base by 9%, so that “future infrastructure investments across the state will be shared at a
5 lower incremental cost per customer for all of Aqua’s customers” (Aqua Statement 1, p.
6 17). He later states that the purchase price per EDU of \$7,200, is almost equal to the
7 Company’s existing rate base per EDU of \$7,000.

8 **Q. Are there any mathematical issues with Mr. Packer’s reasoning above?**

9 A. Possibly. The methods for calculating the number EDUs per customer vary between East
10 Whiteland and Aqua. As such, this may lead to discrepancies when attempting to compare
11 the two as 3254 of East Whiteland’s reported total of 7658 EDUs are attributed to just 250
12 customers, using the Township’s method of calculation (OCA-III-2; Aqua Statement 1, p.
13 17).

14 **Q. Please define economies of scale.**

15 A. *The Regulation of Public Utilities* defines economies of scale as follows: “Economies of
16 scale exist when a firm’s average cost curve decreases as output increases” (Charles F.
17 Phillips, Jr., *The Regulation of Public Utilities: Theory and Practice*, p. 52). This can also
18 be understood as a reduction in cost per unit of output as that output increases.

19 **Q. Do you agree with Mr. Packer’s conclusion regarding economies of scale?**

20 A. No. As I will explain below, the claimed economies of scale are not supported by the
21 evidence.

1 **Q. Please explain.**

2 A. Economies of scale is the reduction in total cost per unit of output, as the output increases.
3 Mr. Packer has not established that there will be a reduction in the total cost per unit of
4 output.

5 First, in Aqua Statement 1, Mr. Packer points to the above-mentioned rate base per EDU
6 comparison of Aqua and the post-acquisition Township. He claims that the rate base per
7 EDU of Aqua and the Township are “almost equal” (pg. 17). While the two might be
8 considered almost equal, they are not equal. By Mr. Packer’s calculation, East Whiteland
9 rate base per EDU is greater, and thus there is no support for economies of scale. Simply
10 put, Aqua is paying \$200 more per EDU than its average cost per EDU of \$7,000 and no
11 reduction in costs result from the increased per EDU price related to Township customers.

12 Second, in response to the interrogatories OCA-IV-2, Mr. Packer estimates that capital
13 investments in the Township system over 10 years, on a per customer basis, are lower than
14 Aqua’s and so will decrease the future per customer cost of capital investments for Aqua
15 from \$5,111 per customer to \$5,050, or \$61. For existing Aqua customers, this decrease is
16 small. For Township customers, it means their per customer costs for capital investment
17 will increase from \$4,344 to \$5,050 or by \$706. Again, either the existing Aqua customers
18 or the acquired Township customers, or both, will pay increased rates as a result of this
19 transaction.

20 Third, in Aqua Statement 1, Mr. Packer states that the current operating expenses of the
21 Township are approximately \$2.8 million, and the Company projects operating expenses
22 of \$2.0 million (\$800,000 less) under Aqua ownership (Aqua Statement 1, pg. 16). This

1 statement, however, ignores the *overall* increase to costs under Aqua’s ownership that will
2 produce an annual revenue deficiency of \$5.011 million and increase rates for the acquired
3 East Whiteland or existing Aqua customers. The overall costs of Aqua ownership include
4 nearly \$4 million for return to Aqua shareholders (Aqua Statement 1, Appendix A, pg. 1).
5 This cost does not exist, except in repaying debts at a much lower rate, for East Whiteland
6 Township.

7 **Q. Why is the cost of ownership so much higher if the East Whiteland Township system**
8 **is acquired by Aqua?**

9 A. Three main reasons contribute to the high cost of ownership for Aqua. First, Aqua is
10 required to pay taxes, whereas East Whiteland Township is not. Second, the acquisition of
11 East Whiteland is a Section 1329 acquisition, and as such, the entirety of the purchase price
12 can be incorporated into rate base without recognizing offsets for contributed plant or
13 capital, as is done in ratemaking. Finally, as stated above, Aqua owners expect a fair return
14 on that rate base, substantially increasing revenue requirement over the cost of debt for
15 East Whiteland of about 3.7% (Application, Exhibit J2).

16 **Q. What is the net book value of the Township’s assets, and what is the purchase price**
17 **to be used for rate base?**

18 A. The net book value of the Township’s assets is \$33.4 million (Aqua Exhibit Y, pg. 22).²
19 This is \$21.5 million less than the \$54.93 million purchase price agreed to by Aqua and the
20 Township (Application, pg. 6).

² Net book value under Section 1329 (and as reflected in the Engineer’s report) does not reflect an offset for contributed plant or capital as is done in ratemaking. 66 Pa. C.S. § 1329(d)(5).

1 **Q. Mr. Packer states that 24/7/365 customer service is a benefit to Township customers**
2 **under Aqua. Do you agree?**

3 A. No. The Township website states that sewer problems during normal business hours can
4 be directed to the sewer department directly, while outside of normal business hours the
5 police department will direct calls to the sewer department on-call staff
6 (www.eastwhiteland.org/203/Sewer). Thus, the Township already has the ability to address
7 emergencies outside of business hours.

8 **Q. Mr. Packer says that online bill payment is a benefit of Aqua ownership. Do you**
9 **agree?**

10 A. The Township website indicates the Township hopes to provide the option of online bill
11 payment in the near future (<http://pa-eastwhitelandtownship.civicplus.com/faq.aspx>).
12 Having the same option from Aqua does not provide a benefit.

13 **Q. Mr. Packer states that low-income programs are a benefit of the proposed**
14 **transaction. Do you agree?**

15 A. Some customers in East Whiteland may be eligible to enroll in Aqua's low income
16 programs, however, the projected rate increases resulting from the transaction could
17 actually increase the number of customers who require that assistance. If East Whiteland
18 customers' bills are increased under Aqua ownership and then decreased through assistance
19 programs to be the same as or higher than current, that is not an affirmative benefit.

20 **Q. On page 18 of Aqua Statement 1, Mr. Packer argues that provisions under Chapter**
21 **14 of the Public Utility Code are an added benefit to East Whiteland customers. Please**
22 **respond.**

1 A. While the acquired Township customers would have these provisions under Aqua
2 ownership, this alone is insufficient to claim a benefit. If it were, any acquisition by a
3 regulated public utility subject to the Public Utility Code would meet the standard. In
4 addition, there has been no evidence that Township residents have experienced issues
5 regarding billing and making payments with the Township.

6 **Q. Do you believe that the proposed benefits of this acquisition outweigh the costs?**

7 A. The benefits claimed by Mr. Packer that are discussed above and in Aqua Statement 1 do
8 not outweigh the costs of this acquisition. I do not think there is any disagreement that the
9 Township will benefit by receiving \$54.93 million, or \$21.53 million more for a system
10 with a depreciated original cost of \$33.4 million or that Aqua shareholders will benefit by
11 earning a return on a larger rate base. However, this acquisition, and whether it provides a
12 net affirmative public benefit to customers, must be judged by reviewing all the benefits
13 and costs together.

14 The potential costs to the Township customers are large, and the effect on rates, when they
15 occur, will very much outweigh any observed changes in services received. Mr. Packer
16 states on page 18 of Aqua Statement 1 that if all of the annual revenue deficiency as a result
17 of the acquisition were applied to Township customers, their rates would increase by
18 132.93%. Even if they would only experience rate increases that would bring them close
19 to Aqua Rate Zone 1, Township customers would see their rates go up by more than 60%.³
20 Rates for existing Aqua customers would also increase. Overall costs would increase.

³ The current monthly bill for an average Aqua residential wastewater customer using 3,020 gallons per month (Aqua Exhibit I1, pg. 2) with a \$31 customer charge is \$53.95 ($\$31 + (\$7.60 \times 3.02)$) (Aqua Tariff Sewer-Pa P.U.C. No. 2, pg. 8.1 (rate zone 1)). Aqua has requested to increase those rates effective May 2022 (R-2021-3027386).

1 There is no showing that current or future service received by customers would improve or
2 that the Township is not currently or would not in the future be able to continue the current
3 level of service. When all of this is weighed, I do not believe that the acquisition would
4 result in an affirmative public benefit.

5 **Q. Do any other witnesses provide testimony regarding affirmative public benefits?**

6 A. Yes. Aqua witness, John Nagel, Township Manager for the Township of East Whiteland
7 provided testimony in Aqua Statement 3.

8 **Q. Please summarize Mr. Nagel’s testimony on the affirmative public benefits.**

9 A. In his testimony, Mr. Nagel stated that the proposed transaction “provides substantial
10 affirmative public benefits and is in the public interest” (Aqua Statement 3, pg. 12). He
11 claims that there are two key benefits to the proposed transaction to the Township and its
12 residents (Aqua Statement 3, pg. 10):

13 1. permit the Township to exit the business of providing sanitary sewer service and
14 instead focus on its core governmental functions while simultaneously ensuring that
15 our residents would have safe and reliable service at affordable rates

16 2. the sale proceeds will allow the Township to address improvements and projects
17 throughout the Township and benefit the Township’s overall financial position.

18 **Q. Do you agree with Mr. Nagel that these alleged benefits establish substantial
19 affirmative public benefits and that the proposed transaction is in the public interest?**

20 A. No. The proposed transaction must affirmatively promote the service, accommodation,
21 convenience or safety of the public in some substantial way. The claims made about
22 benefits by East Whiteland Township are vague and unquantified, and the alleged benefits
23 that are claimed by Mr. Nagel would occur under any sale of any system by a municipality

1 to another entity. Further, these alleged benefits would accrue to Township customers only
2 and would not provide any benefit to existing Aqua wastewater (or water) customers.

3 **Q. Do you agree that the sale would provide an affirmative public benefit by ensuring**
4 **that East Whiteland customers have service at affordable rates?**

5 A. No. The proposed transaction would produce a revenue deficiency that would increase East
6 Whiteland rates by more than 132% if applied to those customers. To the extent that East
7 Whiteland rates are not increased to cover their cost of service, then existing Aqua
8 customers will make up the difference in the rates they pay for service. So, there is no
9 information to show that the proposed transaction would make any customers' rates more
10 affordable in the short-term. As discussed in response to Mr. Packer's testimony, there has
11 also been no showing that rates would become more affordable in the long-term due to
12 economies of scale, only that improvement cost per customer to the entire Aqua system
13 would decrease by about 1%⁴ over 10 years by rolling in the additional capital expenditures
14 for the Township system. This reduction in costs of \$61 over an entire decade, or \$6 per
15 year, is fully negated by projected rate increases of \$554.40 for the same period⁵ for Aqua
16 wastewater customers and \$39.60⁶ for Aqua water customers based on the allocations and
17 calculations in Aqua Statement 1, Appendix A, page 1.

18 **Q. Do you agree that ensuring that East Whiteland customers have safe and reliable**
19 **service should be considered an affirmative public benefit of the acquisition?**

20 A. If there was evidence that East Whiteland customers were not already receiving safe and

⁴ $(5111-5050)/5111 = 1\%$.

⁵ (Aqua estimated monthly increase of $\$4.62 \times 12 \text{ months} \times 10 \text{ years}$)

⁶ (Aqua estimated monthly increase of $\$0.33 \times 12 \text{ months} \times 10 \text{ years}$)

1 reliable service then it would be a public benefit for them to do so, but based on the
2 information provided by Aqua and the Township, the current service provided by the
3 Township is already safe and reliable. Mr. Bubel opined that the Township's system
4 capacity has capacity to meet the demands of current and future customers (Aqua Statement
5 2, pg. 14). He noted that the Township did not have any sanitary system overflows in 2020,
6 per the Chapter 94 reports submitted by the Township (Aqua Statement 2, pg. 14). He
7 further acknowledged that East Whiteland is not currently under a Corrective Action Plan
8 (Aqua Statement 2, pg. 14). All of these facts indicate that the Township is already
9 providing service that is at least as safe and reliable as the service that Aqua provides, and
10 the continuation of safe and reliable service is not an affirmative public benefit. As such,
11 continued service by the Township could just as easily be considered an affirmative public
12 benefit of continued Township ownership as Aqua ownership.

13 **Q. Do you agree that the sale would provide an affirmative public benefit due to Aqua's**
14 **expertise and experience as a PUC-regulated public utility?**

15 A. No. Aqua has failed to show how its expertise and experience as a PUC-regulated public
16 utility would provide any meaningful benefit to the East Whiteland customers that is not
17 already being provided. As discussed above, the information provided by Aqua and the
18 Township shows that existing service being provided by East Whiteland is safe and
19 reliable.

20 **Q. Do you have any other recommendations for the proposed transaction, if it were**
21 **approved?**

22 A. Yes. Regarding the application of the Distribution System Improvement Charge (DSIC) to

1 East Whiteland customers, the Commission's regulations regarding Long Term
2 Infrastructure Improvement Plans (LTIP) require utilities to have a supporting, approved
3 LTIP in place as a condition of DSIC recovery. 52 Pa. Code § 121. As such, Aqua's LTIP,
4 which Mr. Packer indicates will be revised to include the Township system, should be filed
5 and approved before Aqua begins charging the DSIC to the acquired customers (Aqua
6 Statement 1, pg. 12-13). In addition, it should be a condition of approval that the proposed
7 projects reflected in the revised LTIP should be in addition to, and should not reprioritize,
8 any capital improvements that Aqua has already committed to undertake for existing
9 customers. Reprioritization of capital improvements would disadvantage existing Aqua
10 customers. This condition helps to ensure that projects and expenditures already planned
11 for existing Aqua wastewater customers will not be given less priority as a result of the
12 East Whiteland Township acquisition.

13 Section 1329(f) addresses allowance for funds used during construction (AFUDC) and
14 deferred depreciation related to the buyer's post-acquisition improvements but does not
15 specify when the buyer must make those claims. Approval of the acquisition should be
16 conditioned on the requirement that such claims will be made no later than Aqua's *next*
17 base rate case. This would ensure that the AFUDC would be claimed at the same time as
18 the improvements are included in rates.

19 Earlier, I discussed my recommendations that the Commission should decline to approve
20 the rate freeze provision of the Asset Purchase Agreement. If the Commission does not
21 reject the rate freeze provision, I recommend that the Commission condition its approval
22 on the recognition that the Commission retains the ultimate authority to set rates, including

1 but not limited to, the authority to allocate revenues, if appropriate, to the East Whiteland
2 Township customers that are inconsistent with the restrictions contained in Section 7.03 of
3 the Asset Purchase Agreement. Related to this, I support the recommendation made by
4 OCA witness Garrett that Aqua should be required to provide a separate cost of service
5 study for the East Whiteland system (OCA Statement 1, pg. 48-49). Together these
6 conditions provide a way for the Commission to set rates for East Whiteland customers
7 that reduce the potential amount, and length of time, that Aqua's other water and
8 wastewater customers subsidize the East Whiteland revenue deficiency.

9 **Conclusion:**

10 **Q. Do you believe there would be sufficient affirmative public benefits as a result of the**
11 **proposed transaction?**

12 A. No. Neither Aqua nor the Township have demonstrated affirmative public benefits that
13 would outweigh the known harms.

14 **Q. Does this conclude your direct testimony?**

15 A. Yes. However, I reserve the right to modify or supplement my testimony if needed.

**QUALIFICATIONS OF
NOAH D. EASTMAN**

Education

2019 B.S. Economics, Shippensburg University

In Process: M.B.A., Shippensburg University

Positions

Jan. 2020 – Present Regulatory Analyst, Pennsylvania Office of Consumer Advocate

Experience

I am currently employed by the Pennsylvania Office of Attorney General, Office of Consumer Advocate (OCA) as a Regulatory Analyst. My responsibilities include financial and economic analysis, rate of return determination, and other business operations analysis in the review of utility filings with the Pennsylvania Public Utility Commission. Additional responsibilities with the OCA include formulating recommendations for utility filings and preparing testimony.

Relevant Training

IPU Accounting and Ratemaking Course, April 2020

IPU Intermediate Course, August 2020

Previous Cases wherein testimony was submitted

McCloskey v. Hidden Valley Utility Service - C-2014-2447138, C-2014-2447169

Application of Pennsylvania American Water Company - A-2020-3019634

PaPUC v. Duquesne Light Company – R-2021-3024750

PaPUC v. PECO Energy Company – Electric Division – R-2021-3024601

PaPUC v. Community Utilities of Pennsylvania – R-2021-3025206, R-2021-3025207

Application of Aqua Pennsylvania Wastewater, Inc. - A-2021-3026132

Previous cases worked; no testimony submitted

PaPUC v. Reynolds Disposal Company - R-2020-3019612

Application of Pennsylvania American Water Company - A-2020-3021460

PaPUC v. Pike County Light and Power Company – R-2020-3022135, R-2020-3022134

Application of Aqua Pennsylvania Wastewater, Inc. – A-2021-3024267

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Re: Application of Aqua Pennsylvania Wastewater, :
Inc. pursuant to Sections 1102, 1329, 507, and :
2102 of the Public Utility Code for Approval of its : Docket No. A-2021-3026132
Acquisition of the Wastewater System Assets :
of East Whiteland Township :

VERIFICATION

I, Noah D. Eastman, hereby state that the facts set forth in my Direct Testimony, OCA Statement 2, are true and correct (or are true and correct to the best of my knowledge, information, and belief) and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

DATED: March 11, 2022
*325300

Signature: 
Noah D. Eastman

Consultant Address: Office of Consumer Advocate
555 Walnut Street
5th Floor, Forum Place
Harrisburg, PA 17101-1923

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Re: Application of Aqua Pennsylvania Wastewater, :
Inc. pursuant to Sections 507, 1102, 1329 and :
2102 of the Public Utility Code for Approval of : Docket No. A-2021-3026132
its Acquisition of the Wastewater System :
Assets of East Whiteland Township :
:

SURREBUTTAL TESTIMONY

OF

DAVID J. GARRETT

ON BEHALF OF

THE PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

March 25, 2022

TABLE OF CONTENTS

I. INTRODUCTION.....	1
II. VALUATION APPROACH WEIGHTING	2
III. MARKET APPROACH	2
A. Response to Mr. Walker’s Market Approach Rebuttal Testimony.....	2
B. Response to Mr. Weinert’s Market Approach Rebuttal Testimony.....	6
IV. COST APPROACH.....	8
A. Response to Mr. Walker’s Cost Approach Rebuttal Testimony.....	8
B. Response to Mr. Weinert’s Cost Approach Rebuttal Testimony.....	10
V. INCOME APPROACH.....	11
A. Response to Mr. Walker’s Income Approach Rebuttal Testimony	11
B. Response to Mr. Weinert’s Income Approach Rebuttal Testimony	16

I. INTRODUCTION

1 **Q. State your name and occupation.**

2 A. My name is David J. Garrett. I am a consultant specializing in public utility regulation. I
3 am the managing member of Resolve Utility Consulting, PLLC. My business address is
4 101 Park Avenue, Suite 1125, Oklahoma City, Oklahoma 73102.

5 **Q. Have you previously filed testimony in this proceeding?**

6 A. Yes. I provided direct testimony in OCA Statement 1 on March 11, 2022, on behalf of the
7 Pennsylvania Office of Consumer Advocate (“OCA”). A summary of my qualifications is
8 included in my direct testimony. My direct testimony addressed the application filed by
9 Aqua Pennsylvania Wastewater, Inc. (“Aqua” or the “Company”) for the acquisition of
10 East Whiteland Township’s (the “Township”) assets related to its wastewater collection
11 and treatment system (the “Wastewater System”) and proposed adjustments to fair market
12 value (“FMV”) approaches conducted by the Utility Valuation Experts (“UVE”) in their
13 appraisals.

14 **Q. What is the purpose of your surrebuttal testimony?**

15 A. My surrebuttal testimony responds to the rebuttal testimonies of Harold Walker, III of
16 Gannett Fleming, who sponsors the FMV appraisal commissioned by Aqua, and Jerome C.
17 Weinert, who sponsors the appraisal commissioned by the Township.

18 **Q. Did any of the arguments raised by Mr. Walker or Mr. Weinert in their rebuttal**
19 **testimonies persuade you to change your opinions as stated in your direct testimony?**

20 A. No. In addition, to the extent I do not address a particular statement or position raised in
21 the rebuttal testimonies does not constitute my agreement with the same.

II. VALUATION APPROACH WEIGHTING

1 **Q. Please summarize Mr. Walker’s testimony regarding the weightings you applied to**
2 **each valuation approach as part of your adjustment to Mr. Walker’s FMV appraisal.**

3 A. As part of his FMV appraisal, Mr. Walker applied equal weights (one-third) to each of the
4 three valuation approaches, and I did not propose adjustments to the weightings applied by
5 Mr. Walker.

6 **Q. Does there appear to be a discrepancy in Mr. Walker’s testimony regarding the**
7 **weightings issue?**

8 A. Yes. In his rebuttal testimony, Mr. Walker heavily criticizes the weightings I used as part
9 of my adjustment to his proposed valuations, and states that he would not recommend using
10 the weightings that I applied.¹ Again, however, I used the same weightings that Mr. Walker
11 did regarding his three valuation approaches. Thus, I believe Mr. Walker’s rebuttal
12 testimony on this issue is misplaced.

III. MARKET APPROACH

A. Response to Mr. Walker’s Market Approach Rebuttal Testimony

13 **Q. Please summarize Mr. Walker’s rebuttal testimony regarding your proposed**
14 **adjustments to his Market Approach valuation.**

15 A. Mr. Walker claims my opinions regarding his market value estimate are “in direct violation
16 of Section 1329.”² Mr. Walker also disagrees with my adjustments to his selected
17 transactions method as part of his Market Approach. Specifically, Mr. Walker disagrees
18 with my proposal to use the ratemaking rate bases approved by the Commission for each

¹ Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p. 24.

² *Id.* at p. 18, lines 1-6.

1 transaction, rather than the purchases prices (as proposed by Mr. Walker). Mr. Walker also
2 disagrees with my proposal to use Original Cost New Less Depreciation (“OCNLD”) data
3 rather than financial statement data in the selected transactions method.

4 **Q. Did Mr. Walker’s criticisms of your proposal to use the ratemaking rate base values**
5 **approved by the Commission instead of the purchase prices for each transaction**
6 **persuade you to change your opinion?**

7 A. No. Mr. Walker states that “[t]he selected transaction method relies on and reflects
8 information that was known at the time the winning purchase bid (price) was given. After
9 all, the winning purchase bid (price) could not have reflected information that was not
10 available when it was made.”³ There are two notable problems with this argument.

11 First, a primary purpose of Section 1329 proceedings is to establish a ratemaking
12 rate base using the lower of the purchase price or fair market value as defined in 1329. By
13 establishing a ratemaking rate base based on fair market value that is lower than the
14 winning bid / purchase price in any particular case, the Commission is essentially
15 determining that the winning bid does not comport with the fair market value of a particular
16 transaction. For example, the purchase price in the Limerick transaction was \$75.1 million;
17 however, the ratemaking rate base based on fair market value, as determined by the
18 Commission, was \$64.4 million. Suppose the winning bid had been even higher at \$90
19 million – even further divergent from the fair market value. Yet this is still the figure Mr.
20 Walker would have presumably relied on in his selected transaction analysis, despite the
21 fact that it would be grossly excessive relative to the Commission’s ultimate determination.
22 We are using the selected transactions method (and all other models in the case) for the

³ *Id.* at p. 19, lines 5-8.

1 sole purpose of helping the Commission determine the fair market value in this proceeding.
2 It only makes sense that we would incorporate that same figure from comparable
3 transactions as part of the selected transactions method to help the Commission determine
4 the fair market value in this proceeding.

5 The same line of reasoning supports the use of OCNLD determinations rather than
6 financial statement data. Mr. Walker criticizes my approach of relying on OCNLD, or ex-
7 post data, which is consistent with the OCA's approach in prior Section 1329 proceedings.
8 According to Mr. Walker, the Gannett Fleming appraisal used both ex-ante and ex-post
9 data. However, Mr. Walker also acknowledges that if he had only used ex-post data, his
10 indicated market value under the selected transactions method would have been materially
11 different (less than \$1 million).⁴ In other words, using OCNLD in favor of ex-ante data
12 does not appear to have a significant impact on the valuation. Furthermore, if, all else held
13 constant, using OCNLD data produces a higher indicated FMV, then my decision to use
14 OCNLD data contradicts Mr. Walker's claims that I am "doing no more than selectively
15 choosing the parts of the appraisal that are to [my] liking while jettisoning those parts that
16 are not."⁵ There are numerous factors I could identify to show that Mr. Walker's
17 interpretation is inaccurate, and the decision to use OCNLD data appears to be one of them.
18 Rather, my approach is consistent with the OCA's approach in prior proceedings, and as
19 outlined above, I do not believe relevant data should be disregarded simply because it was
20 obtained after the transaction purchase price was determined. Mr. Walker also makes
21 several arguments in support of his selected transaction method based on the premise that

⁴ Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p.18, lines 15-19.

⁵ *Id.* at p. 23, lines 4-6.

1 I “adopted” his market multiples method.⁶ First, it is misleading to say I “adopted” Mr.
2 Walker’s market multiples method; rather, I am not proposing any adjustments to this
3 method. Regardless, the fact that I do not propose adjustments to a particular method does
4 not negate adjustments proposed to another method.

5 Finally, Mr. Walker also states that he included 16 transactions as part of his
6 analysis under the selected transactions method, and criticizes the fact that I did not include
7 all of these transactions. Mr. Walker’s criticisms are misleading because many of the
8 transactions he is referring to did not include the necessary data to make relevant
9 calculations under the selected transactions approach. Furthermore, several of these
10 transactions involved integrated systems, which were excluded under my selected
11 transaction adjustments, so they would not have had an impact on my final results.

12 **Q. Does Mr. Walker make some incorrect statements in his rebuttal testimony regarding**
13 **the market approach that you would like to address?**

14 A, Yes. First, Mr. Walker claims that I do not explain why I excluded certain transactions
15 that Mr. Walker had included in his selected transaction approach.⁷ However, I explained
16 in my direct testimony that I did not include transactions involving integrated treatment
17 and collection systems and provided my reasoning.⁸ Additionally, Mr. Walker states: “I
18 should also note that Mr. Garrett **includes** all the selected transactions that he **excluded**
19 from OCA Exhibit DJG-4 in his adjustments to the AUS Consultants’ appraisal’s Selected

⁶ Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p. 23, lines 16-17.

⁷ Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p.20, lines 14-15 (“Mr. Garrett did not explain why he excluded seven selected transactions.”).

⁸ OCA Statement 1, Direct Testimony of David J. Garrett, p. 9.

1 Transaction Method shown on OCA Exhibit DJG-5.”⁹ This statement is incorrect. I also
2 excluded integrated system transactions as part of my adjustment to AUS Consultants’
3 market approach.¹⁰

B. Response to Mr. Weinert’s Market Approach Rebuttal Testimony

4 **Q. Please summarize Mr. Weinert’s rebuttal testimony regarding your proposed**
5 **adjustments to his Market Approach valuation.**

6 A. Mr. Weinert disagrees with my adjustments to his Market Approach valuation. Mr.
7 Weinert says “the use of the rate base as opposed to the agreed upon purchase price is not
8 an appraisal market comparable approach as it does not represent a market transaction.”¹¹

9 **Q. Do you agree with Mr. Weinert?**

10 A. No. In fact, I think Mr. Weinert’s assertion actually provides support for my position. By
11 considering a negotiated purchase price in Section 1329 transactions, Mr. Weinert is in fact
12 not necessarily considering “market sales” between buyers and sellers. The Commission’s
13 approved fair market value, based on all the evidence presented in the case, is what the
14 ratemaking rate base will ultimately be. To my understanding, once the Commission
15 determines a fair market value under Section 1329, either the buyer or seller to the
16 transaction can still choose not to proceed with the transaction, subject to the terms of the
17 APA. Thus, if the determined fair market value is less than the originally-negotiated
18 purchase price, but the buyer and seller nonetheless agree to proceed with the transaction

⁹ Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p. 20, line 23 – p. 21, lines 1-3.

¹⁰ See OCA Statement 1, Direct Testimony of David J. Garrett, p. 12, lines 17-19.

¹¹ Aqua Statement No. 5-R, Rebuttal Testimony of Jerome C. Weinert, p. 5, lines 4-5.

1 under the Commission-determined fair market value, then we still have a *market sale*
2 *agreed to between buyers and sellers*, as stated by Mr. Weinert.

3 Furthermore, a transaction regulated under Section 1329 fair market valuation is
4 clearly different from a transaction within a competitive market. The Section 1329 process
5 is used for determining the ratemaking rate base, which will be used for setting rates for
6 utility customers in future cases. While the use of the “purchase price” may be appropriate
7 in an open and competitive market, it is not a reasonable substitute for the Commission
8 oversight within a fair market value utility appraisal. In other words, if negotiated purchase
9 prices were as reliable in this context as suggested by Mr. Weinert, then we would not need
10 the regulation inherent in the Section 1329 proceedings.

11 A Section 1329 transaction is not the same as a purely market-driven transaction.
12 For example, when a house is sold, appraisers would consider comparable *market sales*
13 *agreed-to between willing buyers and sellers* such as Mr. Weinert describes. However, in
14 competitive marketplace transactions, both parties have a natural financial incentive to
15 maximize their value. In that case, value is maximized by seeking the lowest price (from
16 the buyer’s perspective) or seeking the highest price (from the seller’s perspective). Those
17 same natural financial incentives are not present in the transaction at hand, and the very
18 existence of Section 1329 regulation arguably confirms this concept.

19 **Q. Mr. Weinert also disagrees with your use of a straight average rather than a weighted**
20 **average in the final fair market value-to-RCNLD ratio. Do you have a response to**
21 **this testimony?**

22 A. Yes. Instead of simply averaging the ratios determined for each transaction by dividing
23 the fair market value (or purchase price in Mr. Weinert’s case) by the Replacement Cost
24 New Less Depreciation (“RCNLD”), Mr. Weinert divided the sum of the purchase price

1 amounts by the sum of the RCNLD amounts. Mr. Weinert's approach effectively places a
2 greater weight on larger transactions, while my calculation, places equal weight on each
3 transaction. In my opinion, it is preferable to place an equal weighting on each transaction
4 unless there is a compelling reason to apply a greater weighting to particular transactions.
5 In this case, Mr. Weinert's approach places the greatest statistical weighting on the
6 McKeesport transaction, which had a FMV of \$158 million. In terms of comparable value,
7 this is the *least* comparable of transactions considered by Mr. Weinert in this market
8 valuation, and yet he applied the *greatest* statistical weighting to this transaction.

IV. COST APPROACH

A. Response to Mr. Walker's Cost Approach Rebuttal Testimony

9 **Q. Please summarize Mr. Walker's rebuttal testimony regarding your Cost Approach**
10 **recommendations.**

11 A. Mr. Walker also disagrees with my recommended service lives for several of the plant
12 accounts, and he claims that I did not conduct a statistical analysis to support my
13 recommendations.¹²

14 **Q. Did Mr. Walker and Mr. Weinert propose the same Iowa curves and service lives for**
15 **the depreciable accounts in this case?**

16 A. No. Mr. Walker and Mr. Weinert have different service life estimates for several accounts,
17 with discrepancies up to 15 years. This highlights the fact that different experts are likely
18 to have different opinions regarding service life estimates.

¹² Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p. 4.

1 **Q. Mr. Walker compares your proposed Iowa curves in this case with those from other**
2 **cases in which you have testified. Is there a notable distinction between those cases**
3 **and the present case?**

4 A. Yes. In the cases from Indiana and South Carolina cited in Mr. Walker’s testimony, the
5 utilities in those cases produced a vast amount of historical retirement data to support their
6 proposed service lives. All depreciation experts had access to that data in those cases, and
7 they were able to base their proposed Iowa curves on that historical data. In contrast, no
8 such data was produced in this case.

9 **Q. Mr. Walker claims that you did not conduct a statistical analysis to support your**
10 **service life recommendation. Do you have a response to this statement?**

11 A. Yes. First, it appears that neither of the UVEs in this case performed the type of statistical
12 analysis Mr. Walker seems to be referring to. As discussed above, the type of data required
13 for the statistical analysis Mr. Walker is apparently referring to was not provided by the
14 Township in this case. In contrast, the type of analysis typically performed in connection
15 with utility depreciation studies, including the study performed in connection with the other
16 cases cited in my direct testimony, typically involves analyzing tens of thousands of data
17 points comprising the utility’s historical plant data in order to develop empirical indications
18 of service life characteristics in the form of observed survivor curves. Finally, Mr. Walker
19 claims that the Commission has not previously accepted my proposed service lives in prior
20 proceedings.¹³ This statement is misleading because my proposed service lives have not
21 yet been litigated by the Commission. Thus, it would be more accurate to say the
22 Commission has not yet rendered a decision regarding my proposed service lives.

¹³ Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p. 5, lines 10-12.

B. Response to Mr. Weinert's Cost Approach Rebuttal Testimony

1 **Q. Please summarize Mr. Weinert's rebuttal testimony regarding your Cost Approach**
2 **recommendations.**

3 A. Mr. Weinert disagrees with my proposed service lives for several accounts.

4 **Q. What arguments does Mr. Weinert offer in his rebuttal testimony in support of his**
5 **recommendation?**

6 A. Mr. Weinert refers to depreciation studies conducted by Gannett Fleming for Aqua
7 Pennsylvania, Inc. and Pennsylvania American Water Company.¹⁴

8 **Q. Do you find Mr. Weinert's arguments persuasive?**

9 A. No. There are several problems with Mr. Weinert's reliance on the Gannett Fleming
10 depreciation studies in support of his service life proposals. First, these depreciation
11 studies were not conducted on the assets at issue in this case. Moreover, Mr. Weinert is
12 relying on his own interpretation of the observed life tables and other data from those
13 depreciation studies, which I would not necessarily agree with if I had the opportunity to
14 fully analyze the data from those depreciation studies. The type of data used to conduct the
15 depreciation studies for Aqua Pennsylvania, Inc. and Pennsylvania American Water
16 Company (historical retirement data, observed life tables, etc.) highlights the contrast in
17 the lack of such data for the Township's assets.

18

19 Further, while Mr. Weinert notes the similarity in his service life proposals in this case,
20 and those of Gannett Fleming's in other cases, he does not explain or note the discrepancy
21 between his and Mr. Walker's service life proposals in this case. For example, Mr. Walker

¹⁴ Aqua Statement No. 5-R, Rebuttal Testimony of Jerome C. Weinert, pp. 8-19.

1 claims that I did not provide support for my proposed 60-year service life for Account
2 361.21 (collection sewers – gravity), and then bases his proposed service life on data
3 obtained from another case. My proposed service life for this account was also based on
4 another case. Since the Township does not maintain the requisite data for a utility-specific
5 actuarial analysis, such a comparative analysis is necessary. However, I think a 60-year
6 average life estimate is more conservative than an 80-year average life estimate when there
7 is no utility-specific actuarial data available to support the service life estimate.

V. INCOME APPROACH

A. Response to Mr. Walker’s Income Approach Rebuttal Testimony

8 **Q. Please summarize Mr. Walker’s rebuttal testimony regarding your Income Approach**
9 **adjustments.**

10 A. Mr. Walker claims that my proposed adjustments to his income approach estimates are “in
11 direct violation of Section 1329.”¹⁵ He also criticizes the inputs and assumptions I used in
12 my Discounted Cash Flow (“DCF”) Model and cost of equity models.

13 **Q. Do you agree with Mr. Walker’s criticisms of your use of a constant growth DCF**
14 **Model in your income approach adjustment?**

15 A. No. When using the DCF Model for mature, low-growth firms such as utility companies,
16 whether in cost of equity derivations or valuation estimates, it is reasonable to assume a
17 constant growth rate based on the cash-flow or dividends from the current period. In
18 contrast, younger firms with high growth opportunities may require the use of varying cash
19 flows and growth rates over different periods. The vast majority of DCF Models used to

¹⁵ Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p. 10, lines 14-15.

1 estimate cost of equity in utility rate proceedings are some variation of a constant-growth
2 DCF Model, consistent with the DCF Model I used in this case. For example, Mr. Walker
3 and I both recently used a constant-growth DCF Models before the Commission in Docket
4 No. R-2020-3020256 (City of Bethlehem) as part of our cost of equity estimates. In that
5 case, in other words, we are not assuming a different amount of cash flows (or dividends)
6 in future years (other than growing each year by a constant growth rate). In contrast, Mr.
7 Walker states in this case that he does not believe it is appropriate to use the cash flow from
8 a single year in the DCF Model as it relates to the income approach valuation. I am not
9 suggesting it is necessarily wrong to assume different levels of cash flow or growth rates
10 in different periods in a DCF Model; however, I believe it is not necessary in this case.
11 The primary reason for this is that with each subsequent period, or “stage” in a multi-state
12 DCF model, a separate assumption will have to be made by the analyst regarding after-tax
13 cash flows to the firm. This allows multiple opportunities for potential biases or
14 unreasonable assumptions to impact the accuracy of the final estimate.

15 **Q. Mr. Walker also criticizes your discount rate and capital structure estimates. Do you**
16 **agree with his testimony?**

17 A. No. Mr. Walker states that my discount rate should “be based on a municipality’s discount
18 rate, not an investor-owned discount rate.”¹⁶ Such an approach, however, is inconsistent
19 with the use of an investor-owned proxy group for other inputs to the cost of equity and
20 DCF Models. Furthermore, it is not practical to estimate the required return on equity of a
21 municipality for valuation purposes because such a low cost of equity (due to very low

¹⁶ *Id.* at p. 15, lines 16-18.

1 risk) would only exist for the entity as a municipality. In other words, some amount of
2 consideration should be given to the fact that the nature of the entity will change once it
3 ceases to be a municipality (i.e., it will have higher risk due to a higher cost of equity).
4 Furthermore, it would be inconsistent to use only some elements of the investor-owned
5 proxy group, which using entity-specific elements and inputs that are unique to a
6 municipality, such as a 100% debt ratio. Several of the key inputs taken from the proxy
7 group, such as the beta term used to assess a firm's susceptibility to market risk, are
8 necessarily connected with other financial characteristics of those firms, such as capital
9 structure and the cost of debt. For example, it would be highly unlikely to observe a firm
10 with a beta of less than 1.0 and a debt ratio of 100%. To be consistent, I used the proxy
11 group to gather all of these required inputs to the CAPM and DCF Models.

12 **Q. Do you have a response to Mr. Walker's rebuttal testimony regarding the period of**
13 **time on which you based your cash flow projections under the discounted cash flow**
14 **model?**

15 A. Yes. While I do not believe it is necessarily inappropriate to use multi-stage discounted
16 cash flow methods (as Mr. Walker did), it should be noted that such methods require
17 different estimates for all of the factors affecting cash flow in each period, or stage. This
18 means there are opportunities for inaccurate assumptions in each period. I selected a three-
19 year average for the basis of my cash flow analysis because, unlike future periods of time,
20 the data are known. As explained in my direct testimony, using the data from any one year
21 would have produced either an unreasonably high or unreasonably low result.

1 **Q. Mr. Walker also criticizes your approach as a “capitalization of earnings.” Do you**
2 **have a response?**

3 A. Yes. Mr. Walker appears to be referring to the fact that my adjustment to his income
4 approach valuation involves discounting projected cash flows (free cash flow from
5 operations) based on a single period, rather than attempting to project up to 20 years of
6 cash flow data based on new ownership, as is contemplated under Mr. Walker’s approach.
7 In my view, the value of an asset is primarily based on its present value. I am not suggesting
8 that projecting future cash flows should entirely ignore future ownership, however, the
9 various and numerous assumptions Mr. Walker has made in his discounted cash flow
10 model indicate a much different (and higher) value than if the analysis is based on a
11 reasonable projected growth (and discount) of known cash flow metrics under current
12 ownership.

13 **Q. Mr. Walker also makes several criticisms about the discount rate you used in your**
14 **discounted cash flow analysis. Do you have a response to these criticisms?**

15 A. Mr. Walker raises five criticisms regarding my estimated discount rate. First, Mr. Walker
16 claims that I have calculated my discount rate in a manner similar to witnesses who provide
17 testimony in rate proceedings and that “discount rates used in the Income Approach to
18 valuation under a standard of value of fair market value are not calculated in this manner”.¹⁷
19 Perhaps what Mr. Walker means is that *he* does not take the same approach as I have in
20 this case with regard to estimating the cost of equity. As discussed above, Mr. Walker uses
21 multi-state DCF approach, which requires separate inputs, estimates and assumptions for
22 each year into the future for the duration of the model. In contrast, I am using known data

¹⁷ Aqua Statement No. 4-R, Rebuttal Testimony of Harold Walker, III, p. 15, lines 23-25.

1 regarding cash flow and applying a reasonable, constant growth rate to those cash flows.
2 This is a perfectly acceptable approach to valuation, despite that Mr. Walker has apparently
3 not yet proposed it in a 1329 proceeding.

4 Second, Mr. Walker claims that my discount rate should be more reflective of the
5 municipality, rather than the potential buyer.¹⁸ I disagree. A buyer attempting to value an
6 asset would conduct a cash flow analysis based upon the buyer's after-tax cash-flow and
7 cost of equity, not the seller's. For example, if the buyer of a rental property were
8 conducting an income-approach valuation, and the seller currently had in place a family
9 member that was paying rent far below market value, the buyer would not conduct a cash
10 flow analysis based upon the seller's unique tenant, but rather a tenant paying market value
11 after the transaction is completed. This also applies to the cost of equity, which is
12 especially true under these circumstances because the cost of capital for the buyer (a non-
13 municipality) will be quite different than a municipality's cost of capital.

14 Third, Mr. Walker criticizes the capital structure used in my cost of equity analysis,
15 claiming instead that I should have used the municipality's capital structure.¹⁹ For the
16 same reasons discussed above regarding cash flow and the cost of equity, it would not make
17 sense for a buyer to conduct a discounted cash flow analysis using the hurdle rate (or
18 discount rate) of another entity, whether it be the seller or another party. Since we used a
19 proxy group to assess the market-based cost of equity of a non-municipal buyer, it makes
20 sense to use the capital structures of the same proxy group. This is because the indicated

¹⁸ *Id.* at pp. 15-16.

¹⁹ *Id.* at p. 16.

1 cost of equity derived from a DCF and CAPM analysis of the proxy group’s metrics cannot
2 be disassociated with the proxy group’s capital structures; they are interrelated.

3 Fourth, Mr. Walker criticizes my cost of debt input because it was not the
4 municipality’s cost of debt.²⁰ As with the cash flow, cost of equity, and capital structure
5 issues discussed above, it is not appropriate to use the seller’s metrics when conducting a
6 valuation model, especially when the seller is a municipality. Any buyer’s cost of debt is
7 not equivalent to municipal revenue bond.

8 Finally, Mr. Walker claims that my cost of equity was not “determined at the
9 valuation date.” Most analysts use various periods of time to develop averages for certain
10 metrics of a cost of equity model. For example, a company will have a daily closing stock
11 price, but most analysts take an average of closing stock prices (typically ranging from 30-
12 90 days) to arrive at a single price to represent the “current” price, rather than relying on
13 the input of a single day, which might be abnormally high or low depending on the
14 circumstances.

B. Response to Mr. Weinert’s Income Approach Rebuttal Testimony

15 **Q. Please summarize Mr. Weinert’s rebuttal testimony regarding your Income**
16 **Approach adjustments.**

17 **A.** Mr. Weinert criticizes my discount rate as being too low when compared to the awarded
18 returns on equity in rate proceedings.²¹

²⁰ *Id.* at p. 16.

²¹ Aqua Statement No. 5-R, Rebuttal Testimony of Jerome C. Weinert, p. 17.

1 **Q. Do you agree with Mr. Weinert's rebuttal testimony on this point?**

2 A. Mr. Weinert is correct that my cost of equity estimate in my income approach adjustment
3 is lower than the awarded returns in base rate proceedings. However, the market-based
4 cost of equity and the authorized return in rate proceedings are different conceptually. The
5 cost of equity is driven by market forces (primarily market risk and interest rates), while
6 authorized returns are simply the return on equity authorized in a rate proceeding. The
7 discrepancy between utility cost of equity and commission-awarded returns is discussed at
8 length in my rate of return testimony.²² From a valuation standpoint, I believe it is much
9 more appropriate to focus on market-based cost of equity rather than commission-awarded
10 ROEs. As a result, my adjustments to Mr. Weinert's cost approach included cost of equity
11 estimates that are lower than his estimate.

12 **Q. Mr. Weinert also criticizes the fact that you relied on projected cash flows under**
13 **current ownership. Do you have a response?**

14 A. Yes. As discussed in my surrebuttal to Mr. Walker on this issue, I believe it is more
15 appropriate to base a FMV analysis on known cash flows under these circumstances, and
16 applying a reasonable, constant growth rate to those cash flows. If a potential buyer would
17 add value to the asset and increase cash flows in the future, that buyer, under normal
18 circumstances, would not necessarily account for the future value added because it would
19 result in overvaluing (and overpaying for) the asset under negotiation.

²² See e.g., Direct Testimony of David J. Garrett, Docket No. 2020-3020256 (City of Bethlehem).

1 **Q. Mr. Weinert presents an “OCA adjusted model” which he claims results in an**
2 **indicated value of \$62 million. Do you have a response?**

3 A. Yes. The model presented by Mr. Weinert is not an income approach model (nor did he
4 claim it was). Thus, it does not help indicate a fair market valuation for the Township’s
5 assets.

6 **Q. Does this conclude your surrebuttal testimony?**

7 A. Yes. To the extent I did not specifically address a particular issue does not constitute my
8 agreement with such issue. I reserve the right to modify or supplement my testimony if
9 additional information is received.


BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Re: Application of Aqua Pennsylvania Wastewater, :
Inc. pursuant to Sections 1102, 1329, 507, and :
2102 of the Public Utility Code for Approval of its : Docket No. A-2021-3026132
Acquisition of the Wastewater System Assets :
of East Whiteland Township :

VERIFICATION

I, David J. Garrett, hereby state that the facts set forth in my Surrebuttal Testimony, OCA Statement 1SR, are true and correct (or are true and correct to the best of my knowledge, information, and belief) and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

DATED: March 25, 2022
*326008

Signature: 

David J. Garrett

Consultant Address: Resolve Utility Consulting, PLLC
101 Park Avenue
Suite 1125
Oklahoma City, OK 73102

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of Aqua Pennsylvania Wastewater,
Inc. Pursuant to Sections 1102, 1329, 507 and
2102 of the Public Utility Code for Approval of its
Acquisition of the Wastewater System Assets of
East Whiteland Township

Docket No. A-2021-3026132

SURREBUTTAL TESTIMONY

OF

NOAH D. EASTMAN

ON BEHALF OF

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

March 25, 2022

Contents

1	Introduction.....	1
2	Summary of Direct Testimony.....	2
3	Response to Aqua Rebuttal Testimony.....	2
4	Conclusion	10

1 **Introduction:**

2 **Q. Please state your name, business address and occupation.**

3 A. My name is Noah D. Eastman. My business address is 555 Walnut Street, Forum Place, 5th
4 Floor, Harrisburg, Pennsylvania 17101. I am currently employed as a Regulatory Analyst
5 by the Pennsylvania Office of Consumer Advocate (OCA).

6 **Q. Have you previously provided testimony in this case?**

7 A. Yes. I provided direct testimony in this case on March 11, 2022, in OCA Statement 2.

8 **Q. What is the purpose of your surrebuttal testimony?**

9 A. In my surrebuttal testimony, I will comment on the rebuttal testimony submitted by Aqua
10 Pennsylvania Wastewater, Inc. (Aqua or Company) witnesses William C. Packer, Aqua
11 Statement No. 1-R, Mark J. Bubel, Sr., Aqua Statement No. 2-R, and John Nagel, Aqua
12 Statement No. 3-R., which responds to issues discussed in my direct testimony.

13 **Q. Did any of the rebuttal testimony you reviewed cause you to change your positions
14 and recommendations as stated in your direct testimony?**

15 A. No. In addition, to the extent that I do not address a particular statement or position raised
16 in the rebuttal testimonies filed in this case, it does not constitute my agreement with the
17 same.

1 **Summary of Direct Testimony:**

2 **Q. Please summarize your direct testimony.**

3 A. In my direct testimony, I provided an analysis of whether the acquisition of East
4 Whiteland Township’s (East Whiteland or Township) wastewater system assets, if
5 approved by the Pennsylvania Public Utility Commission (Commission or PUC), would
6 provide substantial public benefits. I do not believe this transaction would provide such
7 benefits, and neither Aqua nor the Township have demonstrated affirmative public
8 benefits that would outweigh the known harms.

9 **Response to Aqua Rebuttal Testimony:**

10 **Aqua Statement No. 1-R, William C. Packer:**

11 **Q. Mr. Packer disagrees with your testimony regarding the rate impact which the**
12 **proposed three-year rate freeze would have on Aqua’s current customers. Please**
13 **respond.**

14 A. On page 9, Mr. Packer claims that it is unlikely that the three-year rate freeze would
15 extend beyond the effective date of new rates, but it remains possible because Aqua has
16 not committed to the timing of its next base rate filing or been required (e.g., by a stay-
17 out) to maintain a three-year period between its base rate case filings. On pages 3 to 4,
18 Mr. Packer states that, if the rate freeze does extend beyond the effective date of new
19 rates, Aqua would propose to apply a special rate to the Township until the rate freeze
20 expired but calculate its proof of revenue at the full cost of service rate. There is no
21 guarantee that proposal will be approved in the next base rate case. The only guaranteed

1 way to avoid a rate freeze subsidy is for the Commission to reject a rate freeze that
2 extends beyond the effective date of new rates in the Company's next base rate case.

3 **Q. On pages 14 and 15 of his rebuttal testimony, Mr. Packer disagrees with you**
4 **regarding economies of scale. Please respond.**

5 A. First, Mr. Packer and I generally agree that economies of scale means providing more
6 service to more customers for less cost, but Mr. Packer wrongly states that is achieved
7 through a reduction in *incremental* costs. Economies of scale are achieved through a
8 reduction in total cost per service, i.e. when the *average* cost of providing service to a
9 customer is reduced over time as a result of increasing size. If there is not a decrease in
10 average cost per customer, there is no economies of scale.

11 Mr. Packer provides calculations showing that, over the past five years, *incremental*
12 investment cost has been reduced for Aqua customers in its FMV and base (non-FMV)
13 systems (Aqua Statement 1-R, pg. 16). However, there is no showing that average cost per
14 customer will decrease through acquisition of the East Whiteland Township system. The
15 evidence shows instead that acquisition of the East Whiteland Township system will cause
16 an annual revenue deficiency of \$5.011 million. (Aqua Statement 1, Appendix A).

17 Mr. Packer also argues that I ignore “positive indicators of potential future economies of
18 scale (i.e., rate base per EDU)” and “real tangible examples of operating and maintenance
19 reductions (\$800,000 less per year for Aqua to operate than the Township)” (Aqua
20 Statement 1, pg. 15, 17). As I explained in my direct testimony, Aqua calculates that the
21 rate base per EDU of East Whiteland Township, as a result of acquisition by Aqua at fair

1 market value, is *higher* than Aqua’s current rate base per EDU (Aqua Statement 1,
2 Appendix A).

3 Aqua, as a much larger provider of wastewater service than East Whiteland Township, is
4 able to perform some tasks at a cheaper rate. According to Mr. Packer, operation and
5 maintenance expenses for the East Whiteland Township system would be \$800,000 less
6 than for the Township (Aqua Statement 1-R, pg. 15). Mr. Packer claims that I ignore this
7 “benefit.” That is not accurate. I have considered the reduction in O&M in weighing the
8 other claimed benefits and harms of the proposed transaction as a whole. An \$800,000
9 reduction does not offset a \$5.011 million revenue deficiency that would increase rates by
10 **132.93%** if East Whiteland Township customers are responsible for full recovery of that
11 revenue deficiency.

12 **Q. Do you have a response to Mr. Packer’s arguments on pages 15 and 17 of his rebuttal**
13 **that Aqua’s higher cost of capital and income tax costs should be ignored because the**
14 **Legislature and Public Utility Code allow and encourage public utilities to own and**
15 **consolidate with other water and wastewater utilities?**

16 A. Yes. Mr. Packer’s testimony points out the main problems with the Company’s arguments
17 about acquisition and consolidation. Every acquisition of a municipal system by an
18 investor-owned utility does not provide affirmative benefits. Given that an investor-owned
19 utility is likely to have a higher cost of capital and income taxes compared to a municipally-
20 owned systems means that the transaction must provide benefits that outweigh those
21 additional costs. This acquisition does not provide that level of benefit.

1 I also disagree with Mr. Packer’s related statement that my “individualized economic
2 analyses” are unwarranted (Aqua Statement 1-R at 15). While I am not an attorney, I
3 believe that individualized analysis of every system proposed to be acquired under Section
4 1329 is not only in the public interest, but also necessary to ensure that each acquisition
5 complies with the Public Utility Code, particularly Section 1102. Again, Mr. Packer
6 appears to be implying that, whenever Aqua seeks to acquire a system, it is de facto in the
7 public interest. I disagree.

8 **Q. On page 16 of Aqua Statement 1-R, Mr. Packer states that, once Aqua owns and
9 manages the system, specific quantifiable public benefits will be more readily
10 available.” Do you have a response?**

11 A. Yes. I find this logic to be somewhat concerning, as the implication of the comment is that
12 Aqua and other utilities should be allowed to purchase water and wastewater systems on
13 good faith that public benefits will likely exist and they will probably be able to provide
14 specific evidence to prove that those benefits exist at some point in the future. Simply put,
15 I disagree. Support must be provided during the review of the proposed transaction. As I
16 discussed above, there has not been any showing of how acquired and existing Aqua
17 customers will benefit more than they will be harmed by the transaction in the short or
18 long-term.

19 **Q. On pages 18 and 19 of his testimony, Mr. Packer responds to your comments on
20 customer service issues and low-income programs. Do you have a response?**

21 A. Yes. Regarding freeing up police officer time, that may be a benefit to the Township.

1 However, the scale of benefit is the important factor in my analysis. In response to OCA-
2 VII-1 and 2, the Township clarified that over the past five years, the police have been called
3 for a sewer emergency only five times. In no case did the police respond to the emergency,
4 they directed the call to the on-call sewer staff. This indicates those emergencies occur and
5 impact the police department rarely. From the customer's perspective, the Township
6 responds to sewer emergencies outside of business hours and the fact that Aqua will also
7 respond does not provide a significant benefit.

8 Regarding Aqua's online bill payment option, the Township has previously stated that it
9 may deploy its own online bill payment system in the future. To go along with this, there
10 is no evidence of complaints regarding the Township's current bill paying options.

11 While some customers may be eligible for assistance from Aqua's low income programs,
12 if East Whiteland bills are increased under Aqua ownership and then decreased through
13 assistance programs to be the same as or higher than current, that is not an affirmative
14 public benefit.

15 There may be some level of benefit related to these claims or they may be imperceptible to
16 the majority of customers. As I said above, the scale of the benefit is important. I do not
17 consider these to outweigh the known harms to customers.

18 **Q. On page 19 of his rebuttal testimony, Mr. Packer claims that you do not “recognize**
19 **that Chapter 14 of the Public Utility Code provides added process and benefits that**
20 **customers would be able to take advantage of under Aqua's ownership.” Please**
21 **respond.**

1 A. The benefits provided by Chapter 14 are *statutory* requirements that Aqua must meet for
2 all of its customers. While these may be a part of the overall benefit associated with a public
3 utility purchasing a municipal system, even in combination with the benefits to low income
4 customers noted above, they are not sufficient to meet the affirmative public benefits
5 standard. The harms to East Whiteland customers and existing Aqua customers are too
6 substantial.

7 **Q. On page 21 of Aqua Statement No. 1-R, Mr. Packer responds to your**
8 **recommendations regarding future amendments to Aqua’s LTIP. Do you wish to**
9 **comment on his recommendations?**

10 A. I understand Mr. Packer’s concern that Aqua be able to prioritize and allocate projects
11 based on system needs as they evolve. What should not occur is for Aqua’s planned
12 improvements in the East Whiteland Township system to change the prioritization of
13 existing commitments in other service areas for reasons other than need. This helps to
14 ensure that DSIC investment is not shifted away from Aqua’s other wastewater service
15 areas during the amended LTIP period. My recommendation is particularly reasonable
16 given that Aqua’s existing customers are likely to experience increased rates as a result of
17 the proposed transaction if approved, and the APA contains a three-year rate freeze for East
18 Whiteland customers.

19 **Q. Does Mr. Packer agree with your recommendation on page 15 of your direct**
20 **testimony regarding Allowance for Funds Used During Construction (“AFUDC”)?**

21 A. Yes. On page 22 of Aqua Statement 2-R, Mr. Packer states that Aqua accepts my

1 recommendation that the claim will be made no later than the first base rate case that
2 includes the East Whiteland Township system.

3 **Q. Do you have any final comments regarding Mr. Packer’s rebuttal testimony?**

4 A. Yes. Mr. Packer, on pages 20 and 21 of Aqua Statement 1-R, reiterates the value in
5 acquisition and the supposed reductions in cost in the long term to customers. These claims
6 include overlapping service territories, lack of expected short term capital expenditures,
7 and again the decreased operating and maintenance costs. However, these claims are in
8 response to page 13 of my direct testimony, OCA Statement 2, where I discuss Aqua’s
9 calculation that rates of East Whiteland Township customers would have to increase by
10 132% to cover their revenue requirement under Aqua ownership. I also clarify that, if the
11 additional capital expenditures for the Township system are rolled in, the 10-year “savings”
12 (\$61 over an entire decade) are heavily outweighed by the projected rate increases to Aqua
13 customers over the same time period (OCA Statement 2, pg. 13).

14 **Aqua Statement No. 2-R, Mark J. Bubel, Sr.:**

15 **Q. Please summarize Mr. Bubel’s Rebuttal Testimony, in regard to the capital**
16 **investments discussed in your testimony.**

17 A. Mr. Bubel reiterated that Aqua is capable of handling planned and potential capital
18 investment needs in the East Whiteland Township system (Aqua Statement 2-R, pg. 2-3).

19 **Q. Does his testimony change any of your recommendations?**

1 A. No. The Township has been providing adequate, safe and reliable service, is able to
2 continue to make necessary investments in its system, and the total cost to customers will
3 be considerably less under the continued ownership of East Whiteland Township.

4 **Aqua Statement No. 3-R, John Nagel:**

5 **Q. One pages 1 and 2 of Aqua Statement 3-R, Mr. Nagel states that you are incorrect**
6 **when you claim that the proposed benefits to the Township are vague and**
7 **unquantified.**

8 A. Mr. Nagel claims that there will be improvements to the system within the first year of
9 Aqua ownership, and thus, benefits of the acquisition will be realized immediately. As I
10 explained above, it is not a benefit of the acquisition if, as is the case, the Township is able
11 to provide adequate service and necessary improvements at a lower total cost.

12 **Q. Mr. Nagel's believes that the Township should sell the system to "maintain and**
13 **improve" their strong financial position and that you have assessed each benefit**
14 **provided "in a vacuum". Do you have a response?**

15 A. Yes. There is no dispute that the Township would receive a sizeable cash infusion from the
16 proposed acquisition. However, I would further note that the East Whiteland customers are
17 at risk for their rates to increase by **132.93%** under Aqua ownership, more than double
18 their current sewer rates.

19 I have not assessed benefits within a vacuum. The Township acknowledges that it is
20 providing safe and reliable service and that it is in an overall healthy financial position

1 (Aqua Statement 3-R, pg. 2-3). Aqua will provide those services at a much greater cost
2 than East Whiteland Township, and the acquired and existing Aqua customers will pay the
3 revenue deficiency.

4 **Q. Do you have anything else to say in response to Mr. Nagel’s rebuttal testimony?**

5 A. Mr. Nagel erroneously determines that my analysis “seemingly discourages elected
6 officials from selling their wastewater systems unless the system becomes aged and
7 decrepit or the municipality is in imminent financial distress” (Aqua Statement 3-R, pg. 5).
8 This is not accurate. My analysis of this application comprehensively reviews and weighs
9 all of the factors of this proposed acquisition.

10 **Conclusion:**

11 **Q. Please summarize your surrebuttal testimony.**

12 A. For the reasons discussed in my surrebuttal testimony, in addition to my direct testimony,
13 I do not believe sufficient affirmative public benefits as a result of the proposed transaction
14 have been demonstrated. The Commission should consider these specific facts when
15 considering the issues raised by the OCA and other parties in this proceeding.

16 **Q. Does this conclude your surrebuttal testimony?**

17 A. Yes. However, I reserve the right to modify or supplement my testimony if needed.

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Inc. pursuant to Sections 1102, 1329, 507, and :
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Acquisition of the Wastewater System Assets :
of East Whiteland Township :

VERIFICATION

I, Noah D. Eastman, hereby state that the facts set forth in my Surrebuttal Testimony, OCA Statement 2SR, are true and correct (or are true and correct to the best of my knowledge, information, and belief) and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

DATED: March 25, 2022
*326007

Signature: 
Noah D. Eastman

Consultant Address: Office of Consumer Advocate
555 Walnut Street
5th Floor, Forum Place
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