BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of Aqua Pennsylvania Wastewater, Inc. Pursuant to Sections 1102, 1329 and 507 of the Public Utility Code for Approval of its Acquisition of Wastewater System Assets of East Norriton Township	:	Docket No. A-2019-3009052

DIRECT TESTIMONY

OF

DAVID J. GARRETT

ON BEHALF OF

THE PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

January 3, 2020

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I. INTRODUCTION

Q. State your name and occupation.

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

Q. Summarize your educational background and professional experience.

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

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

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

[1] OCA Exhibit DJG-1.

Q. Describe the scope and organization of your testimony.

A. My testimony addresses the application filed by Aqua Pennsylvania Wastewater, Inc. ("Aqua" or the "Company") for the acquisition of the East Norriton Township (the "Township") wastewater collection system assets. My testimony responds to the fair market value ("FMV") approaches addressed in the testimonies of Harold Walker, III of Gannett Fleming, who sponsors the FMV appraisals commissioned by the Company, and Jerome C. Weinert, who sponsors the appraisal commissioned by the Township. I also discuss the sufficiency of the notices sent to the customers of Aqua and the Township regarding the impact on rates of the proposed acquisition.

II. EXECUTIVE SUMMARY

A. Overview

Q. Please summarizes Aqua's application in this proceeding.

A. Aqua's application proposes to acquire the Township's wastewater assets under Sections 1102 and 1329 of the Public Utility Code (the "Code"). According to Section 1329(c)(2) of the Code, the ratemaking rate base is the lesser of the negotiated purchase price and the average of two FMV appraisals. The FMV estimated by Gannett Fleming and AUS Consultants is $24.2 million and $25.1 million, respectively. The purchase price negotiated by Aqua and the Township is $21 million. Thus, the proposed rate base in the application is $21 million.

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

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

Figure 1:
Gannett Fleming Appraisal Results

Approach	Base Value	Weight	Weighted Value
Cost	$ 33,467,936	37.5%	$ 12,550,476
Income	10,383,787	25.0%	2,595,947
Market	24,368,094	37.5%	9,138,035
Total			$ 24,284,458

As shown in the table, the weighted average FMV estimated by Gannett Fleming is $24.2 million. According to Mr. Walker, the results produced by the income were an "outlier" and thus he gave those results less analytical weight.[2] OCA witness Glenn A. Watkins discusses the income approach in detail in his testimony. The table below shows the results of AUS Consultants' appraisal.

[2] Exhibit Q – Fair Market Value Appraisal Gannett Fleming Valuation and Rate Consultants, Inc., p. 40.

Figure 2:
AUS Consultants Appraisal Results

Approach	Base Value	Weight	Weighted Value
Cost	$ 27,461,356	50.0%	$ 13,730,678
Income	21,729,647	40.0%	8,691,859
Market	26,420,570	10.0%	2,642,057
Total			$ 25,064,594

The weighted average FMV estimated by AUS Consultants is $25.1 million. As discussed further in my testimony, the estimates provided by both appraisers under all three approaches are influenced by several unreasonable assumptions.

Q. Please summarize OCA's adjustments to the FMV appraisals.

A. In this case, OCA provides reasonable adjustments under all three valuation approaches. My testimony discusses the technical adjustments of the cost and market approaches, and the adjustments to the income approach are discussed in the direct testimony of Mr. Watkins. The table below outlines OCA's adjustments to Gannett Fleming's appraisal under all three approaches.[3]

[3] *See* OCA Exhibit DJG-2.

Figure 3:
OCA's Adjustments to Gannett Fleming Appraisal

Approach	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Cost	$ (1,277,783)	$ 32,190,153	33.3%	$ 10,730,051
Income	(1,617,089)	8,766,698	33.3%	2,922,233
Market	(2,442,041)	21,926,053	33.3%	7,308,684
Total				$ 20,960,968

Applying reasonable adjustments to Gannett Fleming's appraisal results in a weighted average FMV of $20.9 million. The table below outlines OCA's adjustments to AUS Consultants' appraisal.[4]

Figure 4:
OCA's Adjustments to AUS Consultants Appraisal

Approach	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Cost	$ (5,625,621)	$ 21,835,735	33.3%	$ 7,278,578
Income	(4,280,018)	17,449,629	33.3%	5,816,543
Market	(8,921,208)	17,499,362	33.3%	5,833,121
Total				$ 18,928,242

Applying reasonable adjustments to AUS Consultants' appraisal results in a weighted average FMV of $18.9 million. The detailed technical aspects of OCA's adjustments to these appraisals are discussed below.

[4] *Id*.

Q. Are you also recommending a different empirical weighting be applied to the valuations?

A. Yes. Each Utility Valuation Expert ("UVE") applied different weightings to the results under the three approaches, as shown in the tables above. However, the UVEs did not provide adequate justification for the different weights applied to each valuation approach. It is also worth noting that each expert gave the greatest weights to their highest results. As part of OCA's proposed adjustments, the OCA recommends applying equal weighting (33.3%) to the results of each valuation approach.[5]

Q. Please describe the results of each appraisal had equal weighting been applied.

A. The following table shows the result of Gannett Fleming's appraisal using equal weighting (and all else held constant).

Figure 5:
Gannett Fleming's Results Using Equal Weighting

Approach	Base Value	Weight	Weighted Value
Cost	$ 33,467,936	33.3%	$ 11,155,979
Income	10,383,787	33.3%	3,461,262
Market	24,368,094	33.3%	8,122,698
Total			$ 22,739,939

Likewise, the following table shows the result of AUS Consultants' appraisal using equal weighting.

[5] *See* OCA Exhibit DJG-2.

Figure 6:
AUS Consultants' Results Using Equal Weighting

Approach	Base Value	Weight	Weighted Value
Cost	$ 27,461,356	33.3%	$ 9,153,785
Income	21,729,647	33.3%	7,243,216
Market	26,420,570	33.3%	8,806,857
Total			$ 25,203,858

I am not suggesting that equal weighting should always be used in FMV appraisals as a matter of policy; however, if equal weighting is not used, I believe it should be supported with sufficient reasoning, and the direct testimonies and exhibits of the two UVEs did not provide that support. OCA witness Watkins also addresses why equal weighting is appropriate for the income approach for Mr. Walker's results.

B. Recommendation

Q. Please summarize OCA's recommendation to the Commission.

A. As stated above, according to Section 1329(c)(2) of the Code, the ratemaking rate base is the lesser of the negotiated purchase price and the average of the two FMV appraisals. In this case, both appraisers' FMV estimates were higher than the purchase price of $21 million. However, when reasonable adjustments are applied to the appraisals, the resulting FMV estimate is $19.9 million, which is less than the negotiated purchase price. The results are summarized in the table below.[6]

[6] *Id*.

Figure 7:
OCA's Recommended Rate Base

	Appraiser Results	OCA Adjustment
Gannett Fleming	$ 24,284,458	$ 20,960,968
AUS Consultants	25,064,594	18,928,242
Average	$ 24,674,526	$ 19,944,605
Purchase Price	$ 21,000,000	$ 21,000,000
Proposed Ratebase	**$ 21,000,000**	**$ 19,944,605**

OCA recommends the Commission approve a rate base of $19.9 million pursuant to Section 1329(c)(2) of the Code.

III. NOTICES

Q. Please summarize the notices sent to East Norriton customers.

A. The customer notices were provided in Exhibits I1 and I2 to the Application. Appendix A to Mr. Packer's testimony shows the calculations used to develop the projected increase amounts shown in the customer notices. The notice sent to East Norriton customers informed customers of an estimated 34.84% increase.[7] Aqua calculated this percentage increase by dividing the entire revenue deficiency of $1,155,000 by East Norriton's current revenues of $3,315,000.[8] This 34.84% increase equates to a monthly increase of $13.42 for a customer with average usage of 4,000 gallons.[9] This increase applied to an average

[7] Exhibit I2, Notice to East Norriton Township Customers.

[8] Exhibit U, Direct Testimony of William C. Packer, Appendix A, p. 1.

[9] *Id*.

monthly wastewater bill of $38.52 would result in a total monthly bill of $51.94 for a wastewater customer with an average usage of 4,000 gallons.

Q. Do you think the notice provides sufficient information to consumers at this time?

A. Yes. It is currently unknown what level of increase the Commission will approve for the East Norriton customers in future base rate cases. However, it is known that the estimated impact of the acquisition is a revenue deficiency of $1,155,000. Therefore, it was appropriate and reasonable that East Norriton customers were provided notice of the potential base rate increase that would result from charging the $1,155,000 increase to these customers.

If, in the next rate case, an amount less than the full revenue deficiency produced by the acquisition is allocated to East Norriton customers, Aqua's existing water and wastewater customers' rates may reflect a portion of the revenue deficiency. As such, as discussed below, it was appropriate that Aqua's existing water and wastewater customers received notice of the proposed acquisition and the possible impact on their rates.

Q. Please summarize the notice that was sent to Aqua's water customers.

A. Aqua sent a notice to its water customers informing them of an estimated monthly increase of $0.17 per month for a customer with average usage of 4,080 gallons per month.[10] As shown on Mr. Packer's Appendix A, Aqua calculated the estimated increase to Aqua customers as one-quarter of the total East Norriton revenue requirement. Based on this

[10] Exhibit I1, Notice to Aqua Customers.

calculation, the estimated increase to Aqua's water customers was a total of $1,117,500.[11] This amount is equal to approximately 97% of the total revenue deficiency created by the $21 million purchase of the East Norriton system.

To calculate the estimated monthly increase, Aqua divided the increase of $1,117,500 by the total existing water revenues from the Settlement of Aqua's 2018/2019 base rate case and calculated a percentage increase of 0.26%.[12] This percentage increase applied to an average monthly water bill of $65.20[13] equals an increase of $0.17 per month.[14]

Q. Do you agree with this approach for noticing Aqua's water customers?

A. Yes. For purposes of the notice, Aqua allocated a fairly significant portion of East Norriton's revenues to Aqua's water customers. The actual portion of revenues which the Commission may allow Aqua to allocate to water customers in the next base rate case is currently unknown. However, this allocation informs Aqua's water customers of their potential increase if the acquisition is approved and as such, it appears to be adequate notice. Importantly, this allocation did not reduce the amounts for which Aqua's existing wastewater customers and East Norriton's customers received notice, as I will explain below.

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[11] Exhibit U, Direct Testimony of William C. Packer, Appendix A, p. 1.

[12] *Id*.

[13] *Id*., p. 9.

[14] *Id*., p. 1.

Q. Please summarize the notices sent to Aqua's wastewater customers.

A. The notice sent to Aqua's wastewater customers informed them of an estimated monthly increase of $1.66 per month for a customer with average usage of 3,020 gallons per month.[15] As shown on Mr. Packer's Appendix A, Aqua calculated the estimated increase to Aqua customers by applying 50% of the revenue deficiency to the East Norriton customers and 50% of the increase to existing Aqua wastewater customers. Thus, the estimated increase to Aqua's wastewater customers was a total of $577,500.[16]

To calculate the estimated monthly increase, Aqua divided the increase of $577,500 by its total existing wastewater revenues. Aqua calculated its total existing wastewater revenues as the sum of the wastewater revenues from the Settlement of Aqua's 2018/2019 base rate case plus the revenues from Aqua's acquisitions of the East Bradford and Limerick wastewater systems. The total of these revenues is $23,774,378; thus, Aqua calculated a percentage increase of 2.43%. Based on this percentage increase, Aqua calculated an estimated monthly increase for existing wastewater customers of $1.66.[17]

Q. Do you think this approach accurately represents Aqua's revenues for purposes of noticing Aqua's wastewater customers?

A. In part. The inclusion of the Limerick revenues in calculating the overall increase to wastewater customers is concerning because Limerick customers are unlikely to pay the full costs of Aqua's ownership of the Limerick system for at least 15 years after

[15] Exhibit I1, Notice to Aqua Customers.

[16] Exhibit U, Direct Testimony of William C. Packer, Appendix A, p. 1.

[17] *Id*.

acquisition.[18] Based on this information, it is unlikely that the Limerick customers' rates will be able to include any portion of the costs of the East Norriton acquisition. Thus, it is likely more realistic to assume that customers of Section 1329 acquisitions such as Limerick will not pay a portion of the costs for additional acquisitions.[19] However, in concert with the notices sent to Aqua's water customers and East Norriton customers, it appears that the estimated increase shown in the Aqua notice sufficiently informs customers of their potential increase as a result of the acquisition.

Q. Please summarize your comments regarding the notices sent to East Norriton and existing Aqua water and wastewater customers.

A. Aqua's methodology informs East Norriton customers of the cost they may incur if Aqua acquires the system. Aqua's methodology also informs water and wastewater customers of costs they may incur if Aqua acquires the East Norriton system. The notices, as described above, provide reasonable information to each group of customers regarding the estimated impact of the acquisition.

[18] *See* OCA Statements 1 and 1S at Docket No. A-2017-2605434. I note that the Commission reduced the Limerick ratemaking rate base from the $75.1 million purchase price to $64,373,378. This may reduce the time that the revenue requirement for the Limerick acquisition will increase rates to other Aqua wastewater ratepayers.

[19] Aqua also acquired East Bradford Township's wastewater system under Section 1329. The East Bradford system was purchased for an amount less than depreciated original cost (as defined by Section 1329). Based on this information and the annual East Bradford revenues shown in that Application, it appears that East Bradford customers may share a portion of other Aqua wastewater customers' costs in future rate cases because the cost of that acquisition was not more (or not significantly more) than the revenues provided by those customers. Aqua's application to acquire the East Bradford system was docketed at A-2018-3001582.

IV. BENEFITS ANALYSIS

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

A. I have been advised by counsel that a public utility must file an application asking for a certificate of public convenience, which the Commission will grant if the application is necessary and proper. The Commission may impose conditions on its granting of the certificate. Section 1103 of the Public Utility Code says as follows:

> A certificate of public convenience shall be granted by order of the commission, only if the commission shall find or determine that the granting of such certificate is necessary or proper for the service, accommodation, convenience, or safety of the public. The commission, in granting such certificate, may impose such conditions as it may deem to be just and reasonable.

Additionally, the Commission has explained the requirements of the Public Utility Code as follows:[20]

> In order for the Commission to approve the proposed transaction under Sections 1102 and 1103 of the Code, the Joint Applicants must demonstrate that the proposed acquisition will "affirmatively promote the 'service, accommodation, convenience, or safety of the public' in some substantial way." *City of York v. Pa. PUC*, 449 Pa. 136, 141, 295 A.2d 825, 828 (1972) (*City of York*).

Q. What is the original cost of the East Norriton assets being acquired?

A. The original cost of the assets, as determined by the engineer's report, is $8,547,998 ($16,212,760 less related depreciation of $7,664,762).[21] I note that the acquisition is of collection system assets (only).[22]

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[20] *Application of Pennsylvania American Water Co.*, Docket No. A-2016-2537209, Order Entered October 19, 2016, p. 11.

[21] Application, p. 5, para. 18.

[22] *Id*., p. 3, para. 10.

Q. How many customers will the acquisition add?

A. The acquisition of East Norriton will add 4,966 customers to Aqua's existing 28,000 wastewater customers. This is an increase in customers of 17.7% (or about 20%).[23]

Q. Will the acquisition increase rates for the customers to be acquired?

A. Yes. Aqua witness Packer states that he reasonably expects that rates for East Norriton customers will increase under Aqua ownership.[24] As discussed above, Aqua calculates that if the entire revenue deficiency resulting from the acquisition is applied to East Norriton Township customers, the adjusted average bill for customers using four thousand gallons per month would increase from approximately $39 per month to $52 per month, which would be a 35% rate increase.[25]

Q. Will the acquisition increase rates for existing Aqua customers?

A. Yes. Mr. Packer's testimony shows that, as a result of the acquisition, rates for existing Aqua water customers and existing Aqua wastewater customers will increase if the revenue deficiency is not fully borne by the East Norriton Township customers. Mr. Packer's schedules show estimated increases to existing total Aqua water and wastewater customers ranging from $0.17 per month to $1.66 per month ($2.04 per year to $19.92 per year).[26] If the costs were spread to only existing wastewater customers, and not water customers, the

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[23] Exhibit U, Direct Testimony of William C. Packer, p. 9, lines 2-3 and 11-12, p. 16, lines 11-12.

[24] Exhibit U, Direct Testimony of William C. Packer, p. 18, lines 17-20 and Appendix A, p.1; Response to OCA-II-4, Attachment 1, p. 22 (attached as OCA Exhibit DJG-12).

[25] Exhibit U, Direct Testimony of William C. Packer, Appendix A, pp. 1-2 ($38.52 + $13.42 = $51.94). ($13.42 ÷ $38.52) x 100 = 34.84%.

[26] Exhibit U, Direct Testimony of William C. Packer, Appendix A, p. 1.

annual cost to existing Aqua wastewater customers would be $3.32 per month, or $39.84 per year.[27]

Q. Does Aqua provide water service in East Norriton?

A. No. Pennsylvania-American Water Company (PAWC) provides water service to East Norriton Township.[28] I note that PAWC made a bid to acquire the Township's wastewater system.[29] If the acquisition by Aqua is approved, East Norriton Township's ratepayers will be receiving water and wastewater service from three providers: water service from PAWC, wastewater collection service from Aqua, and wastewater treatment service from the East Norriton-Plymouth-Whitpain Joint Sewer Authority, in which East Norriton is one-third owner.[30]

Q. Did you identify any concerns regarding East Norriton Township's customer service?

A. No. As part of my analysis, I requested that the Township provide customer complaint logs. The complaint logs indicate that going back to November 2017, there have been 16 customer service requests, all of which appeared to timely reach a conclusion that satisfied the customers' concerns. I have not seen any evidence that would support the conclusion that East Norriton ratepayers have any issues with contacting or making payments to East

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[27] Aqua calculated a $1.66 per month increase if 50% of the revenue deficiency is recovered from Aqua's existing wastewater customers. If the same customers bear 100% of the revenue deficiency, that would double the increase. I note that is calculation uses Aqua's total existing wastewater revenue amount of $23,774,378, which includes the revenues from Aqua's acquisitions of the East Bradford and Limerick wastewater systems. My concerns regarding the inclusion of those revenues are discussed above but, to keep the projected increases comparable, I have not adjusted the revenue amount.

[28] Exhibit V, Direct Testimony of Mark J. Bubel, Sr., p. 11, lines 3-4.

[29] Response to OCA-II-4, Attachment 1, p. 21 (attached as OCA Exhibit DJG-13).

[30] Response to OCA-II-3 Attachment 1, #1; Application, p. 4, para. 15.

Norriton Township in relation to wastewater service. I would also note that East Norriton Township provides its ratepayers with an online bill payment option.[31]

With regard to Aqua's customer service, according to the Protest filed by two customers, when they called Aqua to discuss the Notice of Acquisition and Rate Base Addition, Aqua's representative "didn't seem to know anything about this notice."[32] Aqua must ensure that, going forward, Aqua representatives that have contact with the public have the information necessary to respond to public inquiries regarding notices that were issued by Aqua.

Q. Is Aqua requesting implementation of a Distribution System Improvement Charge for Township customers?

A. Yes, but not at this time. On page 12 of his direct testimony, Mr. Packer states that "APW intends to amend its Long-Term Infrastructure Improvement Plan ("LTIIP") to include East Norriton in the LTIIP." Mr. Packer states that the amended LTIIP filing will include a request to charge the DSIC to the acquired customers, pursuant to Section 1329.

Q. Do you have any recommendations regarding this proposal?

A. When Aqua modifies its LTIIP to include East Norriton, any East Norriton-related projects reflected in the revised LTIIP should be in addition to, and should not reprioritize, any capital improvements that Aqua was already committed to undertake for existing customers. Reprioritizing planned capital improvements would harm existing Aqua customers.

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[31] https://www.eastnorritontwp.org/sewerbill (accessed on December 29, 2019).

[32] Protest of Mrs. Christine Maddalo and Mr. Michael Maddalo, filed on December 2, 2019.

Q. Do you have any other recommendations?

A. Given the potential rate impacts on customers, the Commission should only approve the acquisition if approval is conditioned upon Aqua providing a separate Cost of Service Study in the first base rate case which includes East Norriton's assets, in order to separately identify the cost of serving the East Norriton wastewater system.

V. COST APPROACH

Q. What is the Cost Approach?

A. The Cost Approach is defined by The American Society of Appraisers as "[a] procedure to estimate the current costs to reproduce or create a property with another of comparable use and marketability."[33]

Q. Please summarize the appraisers' valuations under the cost approach.

A. Gannett Fleming's appraisal relied on the reproduction cost method,[34] and AUS Consultants' appraisal relied on the replacement cost method.[35] Both appraisers estimated accumulated depreciation, or the depreciation "reserve", as a reduction to their respective cost estimates. As part of their depreciation estimates, both appraisers used Iowa curves to estimate the remaining lives of the Township's depreciable accounts.

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[33] "Approaches to Value." American Society of Appraisers accessed December 28, 2019. http://www.appraisers.org/Disciplines/Personal-Property/pp-appraiser-resources/approaches-to-value.

[34] Exhibit X, Direct Testimony of Harold Walker, III, p. 14, lines 3-10.

[35] Exhibit Y, Direct Testimony of Jerome C. Weinert, p. 6, lines 5-8.

Q. Are you proposing adjustments to the appraisers' estimates for replacement or reproduction cost?

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

A. Depreciation Analysis

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

A. Many utilities keep historical records of asset placements and retirements by vintage year. When such data is available, depreciation experts can use actuarial techniques to analyze the historical retirement patterns in each account. The most common of these techniques is called the retirement rate method. Under this method, historical retirement patterns can be displayed graphically in the form of original survivor curves. Depreciation experts then use visual and mathematical curve fitting techniques, along with professional judgement, to select empirically derived Iowa curves that best fit the original survivor curve. The Iowa curve is ultimately used to calculate the average remaining life and depreciation rate for each account.[36]

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

A. No.

[36] Please see Appendix A for a more detailed discussion of the Iowa curves.

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

A. Yes. When aged data are available for conventional actuarial analysis, depreciation analysts can rely on more objective, empirical analysis when selecting the most appropriate Iowa curve and remaining life. In this case, however, the lack of data required for such objective analysis led the appraisers to rely on more subjective elements when choosing their selected Iowa curves. For example, according to Mr. Weinert, the Iowa curves selected for AUS Consultants' appraisal were simply "based on AUS Consultants' experience in preparing depreciation studies for the water and wastewater industry. . . ."[37] Mr. Walker's justification for his selected Iowa curves was similar: "We believe our average service lives of depreciable assets are appropriate based on our experience . . . ."[38] Thus, both appraisers are relying upon entirely subjective factors, such as "experience," in support of their proposed service lives, without any objective, empirical support.

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

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

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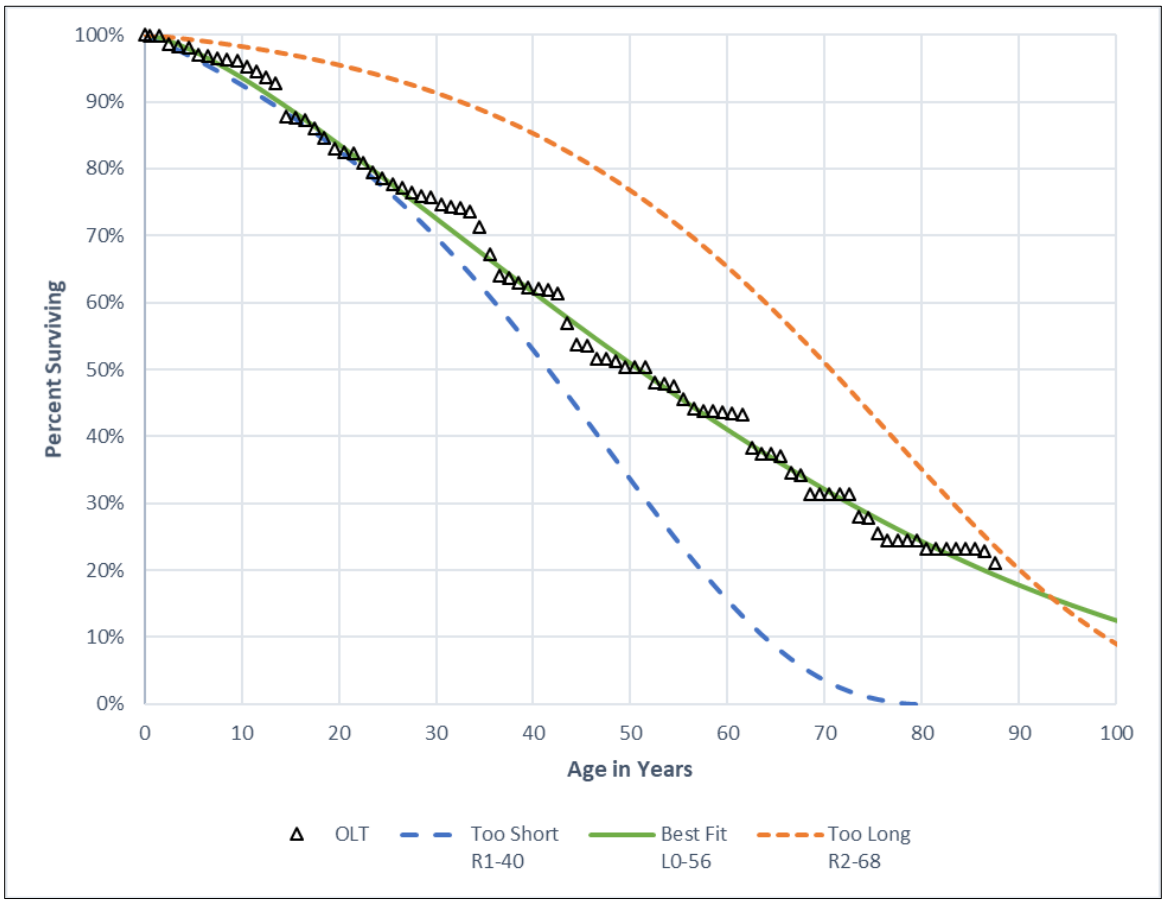
[37] Exhibit Y, Direct Testimony of Jerome C. Weinert, p. 7, lines 12-16.

[38] Exhibit X, Direct Testimony of Harold Walker, III, p. 15, lines 8-11.

Figure 8:
Account 999 – Widgets – Iowa Curve Fitting



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

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

Q. Does simply referring to experience provide adequate justification for a selected Iowa curve?

A. No. While analysts may rely on their experience in developing opinions on Iowa curves, "experience" alone without any objective support is insufficient.

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

A. I am proposing adjustments to Accounts 360, Collection Sewers – Force, and Account 361 (and sub accounts), Collection Sewers – Gravity. I am proposing a 60-year service life for each of these accounts and sub accounts. The specific adjustments to each appraisal are described further below.

B. Adjustment to Gannett Fleming's Cost Approach

Q. Please summarize Gannett Fleming's approach to estimating accrued depreciation.

A. In Gannett Fleming's FMV appraisal, estimated accrued depreciation was subtracted from estimated reproduction cost to develop the overall cost approach valuation of $33.4 million.[39] The accrued depreciation was estimated through Iowa curves selected by Mr. Walker.

[39] *See* Exhibit X, Direct Testimony of Harold Walker III, pp. 14-15.

Q. Are you proposing any adjustments to the reproduction cost estimates recommended by Gannett Fleming?

A. No. However, I am proposing adjustments to the Iowa curves and accrued depreciation for three accounts.

Q. Please summarize your proposed adjustments to the Iowa curves used by Gannett Fleming to calculate accrued depreciation.

A. I am proposing adjustments to three accounts, as outlined in the following table.

Figure 9:
Proposed Iowa Curve and Accrued Depreciation Adjustments

		Gannett Fleming Position		OCA Adjustments	
Account	Description	Iowa Curve	Accrued Depreciation	Iowa Curve	Accrued Depreciation
360.20	COLLECTION SEWERS - FORCE	70-R2.5	2,161,185	60-R3	2,502,571
361.21	COLLECTION SEWERS - GRAVITY - MAINS	70-R2.5	22,037,768	60-S1.5	23,232,506
361.22	COLLECTION SEWERS - GRAVITY - MANHOLES	65-R3	5,027,760	60-S1.5	4,769,419

As shown in the table, I am proposing a 60-year average service life for the Township's collection sewer accounts, as described by the 60-R3 and 60-S1.5 Iowa curves. The Iowa 60-R3 curve for Account 360.20 is the same curve proposed in AUS Consultant's appraisal for this account. The Iowa 60-S1.5 curves proposed for the gravity sewer accounts is the same curve proposed by Gannett Fleming in another recent wastewater case in which I also testified.[40]

[40] *See* OUCC 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. Found at http://www.resolveuc.com/representative-engagements

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

A. To calculate accrued depreciation, I used the same process as Mr. Walker. By selecting shorter Iowa curves, however, the amount of accrued depreciation I calculated is higher than that estimated by Mr. Walker, which ultimately results in a lower cost approach estimate. The figure below shows how I calculated the accrued depreciation for Account 360.20 using the 60-R3 Iowa curve.

Figure 10:
Accrued Depreciation Calculation – Account 360.20

Year	Original Cost	Average Life	Annual Accrual Rate	Annual Accrual Amount	Remaining Life	Accrued Depreciation Factor	Accrued Depreciation Amount
1963	$ 2,290,531	60	1.67%	$ 38,176	14.9	0.75	$ 1,720,570
1975	1,042,876	60	1.67%	17,381	22.6	0.62	650,059
1994	288,103	60	1.67%	4,802	37.8	0.37	106,406
2012	284,787	60	1.67%	4,746	54.6	0.09	25,536
Total	$ 3,906,296			$ 65,105	38.44		$ 2,502,571

The remaining life by vintage year is dictated by the selected Iowa curve.[41]

Q. Please summarize your adjustment to Gannett Fleming's cost approach valuation.

A. Applying the proposed Iowa curves and accrued depreciation adjustments discussed above, I calculate a cost approach valuation of $32.1 million, which is about $1.2 million less than Gannett Fleming's proposed cost approach valuation of $33.5 million.[42]

[41] *See also* OCA Exhibit DJG-4. The remaining life calculations for Accounts 361.21 and 361.22 are found in OCA Exhibit DJG-5 and OCA Exhibit DJG-6.

[42] *See also* OCA Exhibit DJG-3.

C. Adjustment to AUS Consultants' Cost Approach

Q. Please summarize AUS Consultants' approach to estimating accrued depreciation under the cost approach.

A. AUS Consultants used the replacement cost method as the basis for the cost approach valuation.[43] Similar to Mr. Walker, Mr. Weinert then estimated accrued depreciation in order to calculate the "replacement cost less depreciation" values for each account. Mr. Weinert proposes 80 and 90-year average lives for the Township's collection sewer accounts.

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

A. Consistent with my proposed adjustment to Gannett Fleming's Iowa curves discussed above, I am proposing a 60-year average service life for the Township's gravity collection sewer accounts. I used the same curve shape as Mr. Weinert, R3, for these adjusted accounts. To calculate the accrued depreciation resulting from my selected Iowa curves, I used the same model used by Mr. Weinert.[44]

Q. Please summarize your adjustment to AUS Consultants' cost approach valuation.

A. Applying the proposed Iowa curves and accrued depreciation adjustments discussed above, I calculate a cost approach valuation of $21.8 million, which is about $5.6 million less than AUS Consultants' proposed cost approach valuation of $27.5 million.[45]

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[43] Exhibit Y, Direct Testimony of Jerome C. Weinert, p. 6, lines 5-8.

[44] *See e.g.*, Exhibit R, Fair Market Value Appraisal – AUS Consultants, p. 26.

[45] *See also* OCA Exhibit DJG-9 and OCA Exhibit DJG-10.

VI. MARKET APPROACH

Q. What is the market approach?

A. The Market Approach, also called the Sales Comparison Approach by The American Society of Appraisers, is defined as follows: A procedure to conclude an opinion of value for a property by comparing it with similar properties that have been sold or are for sale in the relevant marketplace by making adjustments to prices based on marketplace conditions and the properties' characteristics of value.[46]

Q. Please summarize the appraisers' valuations under the cost approach.

A. Gannett Fleming estimates a market approach valuation of $24.4 million and AUS Consultants estimates a market approach valuation of $26.4 million. The details of these estimates as well as my proposed adjustments are discussed further below.

A. Adjustment to Gannett Fleming's Market Approach

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

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

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

A. As shown on Gannett Fleming's Exhibit 16, Mr. Walker multiplied certain East Norriton metrics such as gross and net PP&E (property, plant and equipment) and the number of customers by the ratio of enterprise value to the same metric for a group of publicly traded

[46] "Approaches to Value." American Society of Appraisers accessed December 27, 2019, http://www.appraisers.org/Disciplines/Personal-Property/pp-appraiser-resources/approaches-to-value

water utilities referred to as the Comparable Group. Mr. Walker increased the Comparable Group ratios (called "multiples") by adjustments which he indicates are intended to reflect growth, risk, and contributions. After this calculation for each metric, Mr. Walker averaged some of the results and determined a Market Approach valuation of $24.1 million.[47]

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

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

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

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

Figure 11:
Example of Selected Transaction Method

Township / Acquired System	Purchase Price and Capital Statistic	Price / Statistic Ratio	Adjusted Statistic
East Norriton			
Investor Capital	$ 4,055,138		
Gross PP&E	16,916,212		
Net PP&E	9,251,450		
Limerick	$ 75,100,000		
Investor Capital	43,501,755	1.73	$ 7,000,657
Gross PP&E	60,847,250	1.23	20,878,635
Net PP&E	36,113,701	2.08	19,238,790

[47] Exhibit Q – Fair Market Value Appraisal Gannett Fleming Valuation and Rate Consultants, Inc., Exhibit 16.

The table above shows three capital statistics for both East Norriton and Limerick – investor capital, gross property, plant and equipment ("PP&E"), and net PP&E.[48] As shown in the table, for example, the purchase price-net PP&E ratio used by Gannett Fleming for Limerick is 2.08. If the same ratio is applied to East Norriton's net PP&E of $9.3 million, it implies a purchase price value of $19.2 million. Similar calculations were conducted for McKeesport, New Garden, East Bradford, and Mahoning.

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

A. In conducting the selected transactions method, Mr. Walker relied on the proposed purchase prices for each acquisition, rather than the fair market value rate base approved by the Commission. Mr. Walker also relied on the PP&E data from financial statements for his capital and demographic statistics, rather than the Original Cost New Less Depreciation ("OCNLD") data used in the respective 1329 proceedings. I am proposing adjustments regarding both of these issues, as further described below.

Q. In adjusting the Selected Transactions method results, did you rely on the Commission-approved fair market values rather than the purchase prices for the comparable transactions?

A. Yes. It is more appropriate to consider the actual fair market value approved by the Commission for these comparable transactions when the objective in this case is to ultimately determine a fair market value for the Township system under Section 1329. Using Commission authorized rate bases instead of purchase prices affected two of the

[48] *See also* OCA Exhibit DJG-8.

comparable acquisitions – McKeesport and Limerick.[49] Specifically, Mr. Walker relied on a purchase price of $156 million for McKeesport, whereas the Commission approved a fair market value of $158 million for McKeesport. Similarly, Mr. Walker used a purchase price of $75.1 million for Limerick, while the Commission-approved value for Limerick is $64.4 million. This adjustment had a decreasing effect on the overall results.[50]

Q. In adjusting the Selected Transactions method results, did you rely on the OCNLD data rather than financial statement data for the comparable transactions?

A. Yes. Mr. Walker relied on the PP&E data from financial statements for his capital and demographic statistics, rather than the OCNLD data used in the respective 1329 proceedings. In order to get a commensurable assessment of an implied fair market value, however, it is better to rely on the OCNLD figures provided by the UVEs for the comparable acquisition group, rather than figures reported on financial statements. This is because when making its assessment of the fair market value for each comparable transaction, the Commission considered the OCNLD figures. Thus, it makes sense that the same OCNLD figures should be considered when assessing a fair value under the market approach in this case. This adjustment had a decreasing effect on the overall market approach results.[51] I note that AUS Consultants did not use financial statement data as part of their market approach valuation.

[49] OCA Exhibit DJG-8.

[50] *Id*.

[51] *Id*.

Q. Did you calculate the amount of Mr. Walker's Selected Transaction methodology with the corrections outlined above?

Yes. Incorporating the adjustments discussed above results in a different implied market approach value for the comparable acquisitions. The table below shows the same Limerick acquisition discussed above as an example, but with using the Commission-approved ratemaking rate base instead of the purchase price and using the OCNLD figures instead of the financial statement figures.

Figure 12:
Example of Selected Transaction Method

Township / Acquired System	Purchase Price and Capital Statistic	Price / Statistic Ratio	Adjusted Statistic
East Norriton			
Investor Capital	$ 4,055,138		
Gross PP&E	16,916,212		
Net PP&E	9,251,450		
Limerick	$ 64,373,378		
Investor Capital	43,501,755	1.48	$ 6,000,745
Gross PP&E	63,480,402	1.01	17,154,172
Net PP&E	46,153,867	1.39	12,903,514

Using the approved ratemaking rate base rather than the purchase price, along with the statistics that were used in the analysis that ultimately led to that approved rate base provides a much more commensurate and accurate indication of the appropriate implied value under the selected transaction method proposed by Gannett Fleming.

Q. Please describe your adjustments to Gannett Fleming's market approach.

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

Figure 13:
Market Approach Valuation Adjustment

	Gannett Fleming Market Approach Results			OCA Adjusted Market Approach Results		
	Amount	Weight	Result	Amount	Weight	Result
Market Multiples	$ 24,089,950	50%	$ 12,044,975	$ 24,089,950	50%	$ 12,044,975
Selected Transactions	24,646,238	50%	12,323,119	19,762,156	50%	9,881,078
Total			$ 24,368,094			$ 21,926,053

As shown in the table, my adjustments to Gannett Fleming's market approach results in a market approach valuation of $21.9 million, which is about $2.4 million less than Gannett Fleming's market approach valuation of $24.3 million.[52]

B. Adjustment to AUS Consultants' Market Approach

Q. Please describe AUS Consultants' market approach valuation.

A. In his appraisal, Mr. Weinert considered the purchase price and Reproduction Cost New Less Depreciation ("RCNLD") data from other comparable acquisitions in Pennsylvania. Using the price-to-RCNLD ratios for each acquisition, he then applied that ratio to the RCNLD amount he estimated for East Norriton. Township in order to arrive at the implied market valuation for the Township. Mr. Weinert's market approach results are summarized below.

[52] *See also* OCA Exhibit DJG-7.

Figure 14:
AUS Market Approach Valuation Adjustment

Acquisitions	Purchase Price		RCNLD		Ratio
Aqua/New Garden	$ 29,500,000		$ 30,615,410		0.96
PAWC/McKeesport	159,000,000		160,301,491		0.99
Aqua/Limerick	75,100,000		86,086,756		0.87
SUEZ/Mahoning Water	4,734,800	*	8,899,336	*	0.53
SUEZ/Mahoning Wastewater	4,765,200	*	7,991,234	*	0.60
Aqua/East Bradford	5,000,000	*	9,236,581	*	0.54
PAWC/Sadsbury	9,250,000		8,517,587		1.09
PAWC/Exeter	96,000,000		99,589,819		0.96
PAWC/Steelton	22,500,000		23,921,473		0.94
Aqua/Cheltenham	50,250,000		49,940,486		1.01
Total Included	$ 441,600,000		$ 458,973,022		0.96
RCNLD Results	[8]				$ 27,461,356
Market Approach Result	[9]				**$ 26,420,570**

As shown in the table, Mr. Weinert estimates a market value of $26.4 million under this approach.

Q. Do you agree with Mr. Weinert's estimate?

A. No. There are several unreasonable assumptions in Mr. Weinert's analysis that should be adjusted.

Q. Please describe your adjustments to AUS Consultants' market approach valuation.

A. As discussed in regard to the Gannett Fleming analysis, I am proposing two adjustments to AUS Consultants' market approach valuation. First, instead of using the purchase price for each transaction, it would be more appropriate to use the Commission's approved ratemaking rate base, which is the actual approved fair market value as defined by Section

1329. This is reasonable because the entire purpose of the appraisal process is to determine a fair market value for the Township under Section 1329. In prior acquisitions, the negotiated purchase price and the Commission-approved ratemaking rate base have often been different amounts.[53] To the extent an approved rate base has been less than a negotiated purchase price, the purchase price was in fact greater than the average of the UVEs' fair market value appraisals. Thus, for purposes of determining an implied fair market value through the market approach, it is preferable to consider actual Commission-approved rate base amounts, rather than purchase prices. This adjustment reduces AUS Consultants' market approach estimate result by about $6.6 million.[54]

In addition to the adjustment discussed above, I am proposing that all of the comparable transactions be included in the market approach estimated by AUS Consultants. Mr. Weinert excluded the results of three of the acquisitions included in the comparable group (as denoted with asterisks in the table above). It is notable that the three acquisitions excluded from Mr. Weinert's analysis would all have a decreasing effect on the market approach valuation if included. First, Mr. Weinert did not appear to provide an adequate justification, if any, as to why he excluded these three transactions from his analysis. All of the transactions were approved by the Commission under the process laid out in Section 1329; none should be excluded. Moreover, without these transactions, the sample size for the market approach analysis would be only seven transactions. In my experience in estimating cost of equity for utility companies using a proxy group of

[53] *See e.g.*, OCA Exhibit DJG-11.

[54] *See* OCA Exhibit DJG-11.

publicly traded utilities, the size of the proxy group is almost always more than seven companies, and sometimes in excess of 20 companies. Larger sample sizes mitigate anomalies and provide additional reliability in the results. It is also worth noting that Mr. Walker included the East Bradford and Mahoning transactions in Gannett Fleming's market approach analysis. Including all of the acquisitions in the analysis results in an additional reduction of $2.3 million in the market approach result. The total impact of the two market approach adjustments I propose is summarized below.

Figure 15:
Market Approach Valuation Adjustment

	AUS Consultants Results		
Acquisitions	Fair Market Value	RCNLD	Ratio
Aqua/New Garden	$ 29,500,000	$ 30,615,410	0.96
PAWC/McKeesport	158,000,000	160,301,491	0.99
Aqua/Limerick	64,373,378	86,086,756	0.75
SUEZ/Mahoning Water	4,734,800	8,899,336	0.53
SUEZ/Mahoning Wastewater	4,765,200	7,991,234	0.60
Aqua/East Bradford	5,000,000	9,236,581	0.54
PAWC/Sadsbury	8,300,000	8,517,587	0.97
PAWC/Exeter	92,000,000	99,589,819	0.92
PAWC/Steelton	20,500,000	23,921,473	0.86
Aqua/Cheltenham	44,558,259	49,940,486	0.89
Total Included	$ 431,731,637	$ 485,100,173	0.80
RCNLD Results			$ 21,835,735
Market Approach Result			**$ 17,499,362**

As shown in the table, using the Commission-approved rate base / fair market value for each transaction instead of the purchase price, and including all of the transactions for a more adequate sample size results in an overall FMV-RCNLD ratio of 0.80. I then applied

that ratio to the RCNLD result of $21.8 million estimated in my cost approach valuation (discussed above). My adjusted market approach result of $17.5 million, is $8.9 million less than AUS Consultants' estimate of $26.4 million.[55]

VII. INCOME APPROACH

Q. Please summarize the income approach valuations estimated in the appraisals.

A. Gannett Fleming and AUS Consultants estimated income approach valuations of $10.3 million, and $21.7 million, respectively.[56]

Q. Are you incorporating any adjustments to the income approach valuation in your testimony?

A. Yes. Please see the direct testimony of OCA witness Mr. Watkins for a detailed discussion of his proposed adjustment to the income approach valuations. I have reflected Mr. Watkins' adjustments on OCA Exhibit DJG-2.

Q. Please summarize the adjustment to the income approach valuation.

A. The adjustment to Gannett Fleming's income approach reduces the valuation to $8.7 million. The adjustment to AUS Consultants' income approach reduces the valuation to $17.4 million.

[55] Of the $8.9 million adjustment proposed, $6.6 million is related to using Commission-approved ratemaking rate bases instead of purchase prices, and $2.3 million is related to including all acquisitions in the comparable group.

[56] *See* OCA Exhibit DJG-2.

VIII. CONCLUSION AND RECOMMENDATION

Q. Please summarize the key points of your testimony.

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

Q. What is your recommendation to the Commission?

A. If the Commission approves the acquisition, the Commission should adopt my proposed adjustments to the appraisals. Also, if the Commission approves the acquisition, I recommend a ratemaking rate base of $19,944,605 for the Township's system, as outlined in OCA Exhibit DJG-2, rather than the $21,000,000 proposed by Aqua. Additionally, the Commission should only approve the acquisition if approval is conditioned upon Aqua providing a separate Cost of Service Study in the first base rate case which includes East Norriton's assets, in order to separately identify the cost of serving the East Norriton wastewater system. Finally, when Aqua modifies its LTIIP to include East Norriton, any East Norriton-related projects reflected in the revised LTIIP should be in addition to, and not reprioritize, any capital improvements that Aqua was already committed to undertake for existing customers.

Q. Does this conclude your testimony?

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

Appendix A
Iowa Curves

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.[1] 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.[2] 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 representing the life characteristics of each group of property.[3] 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

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

[2] *Id*. at 23.

[3] *Id*. at 34.

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.[4] 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."[5] 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.[6] 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 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,

[4] *Id*.

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

[6] 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).

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:[7]

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.[8]

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 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

[7] *See* Wolf *supra* n. 1, at 37.

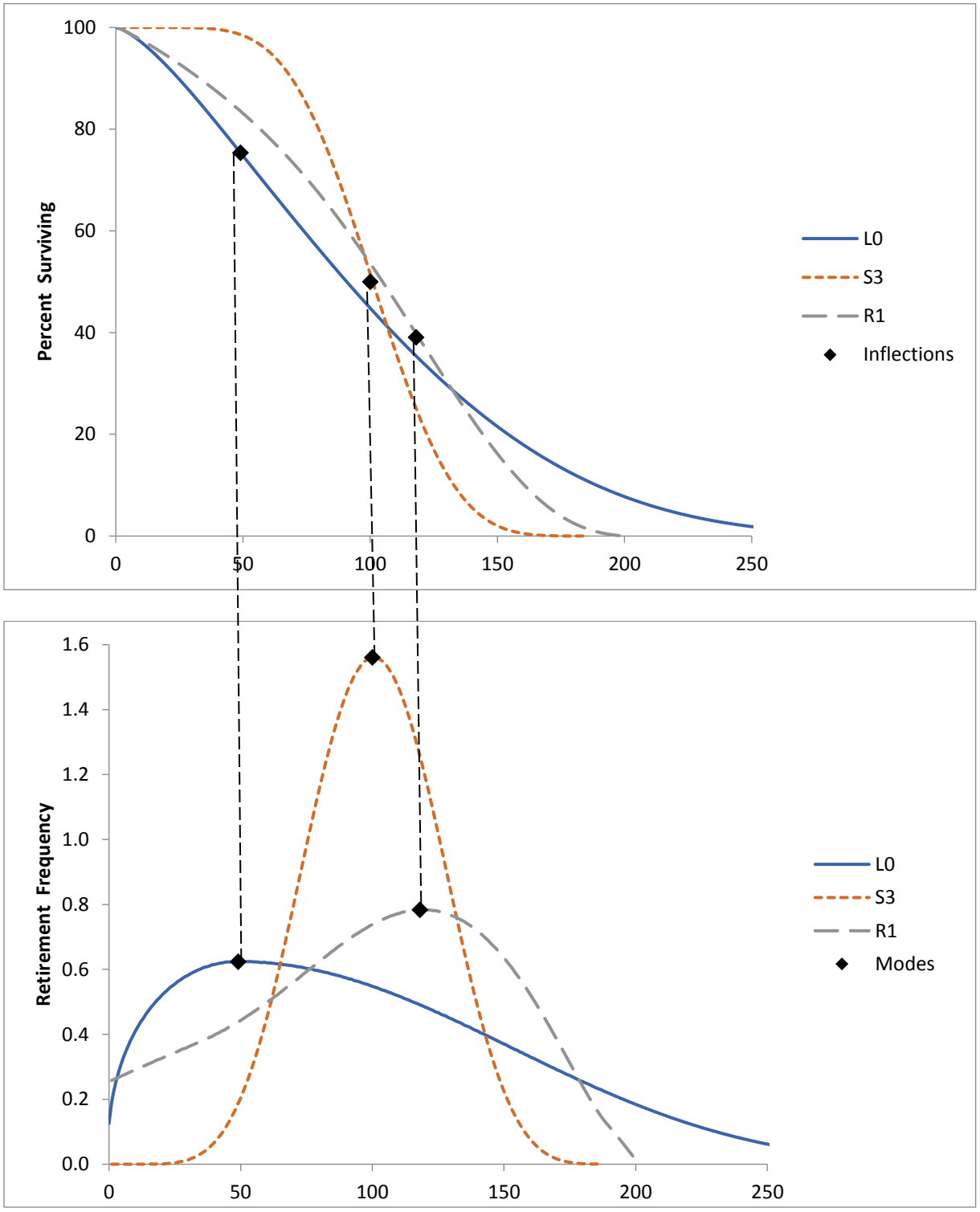
[8] *Id.*

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).[9] 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.

[9] 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 1:
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:

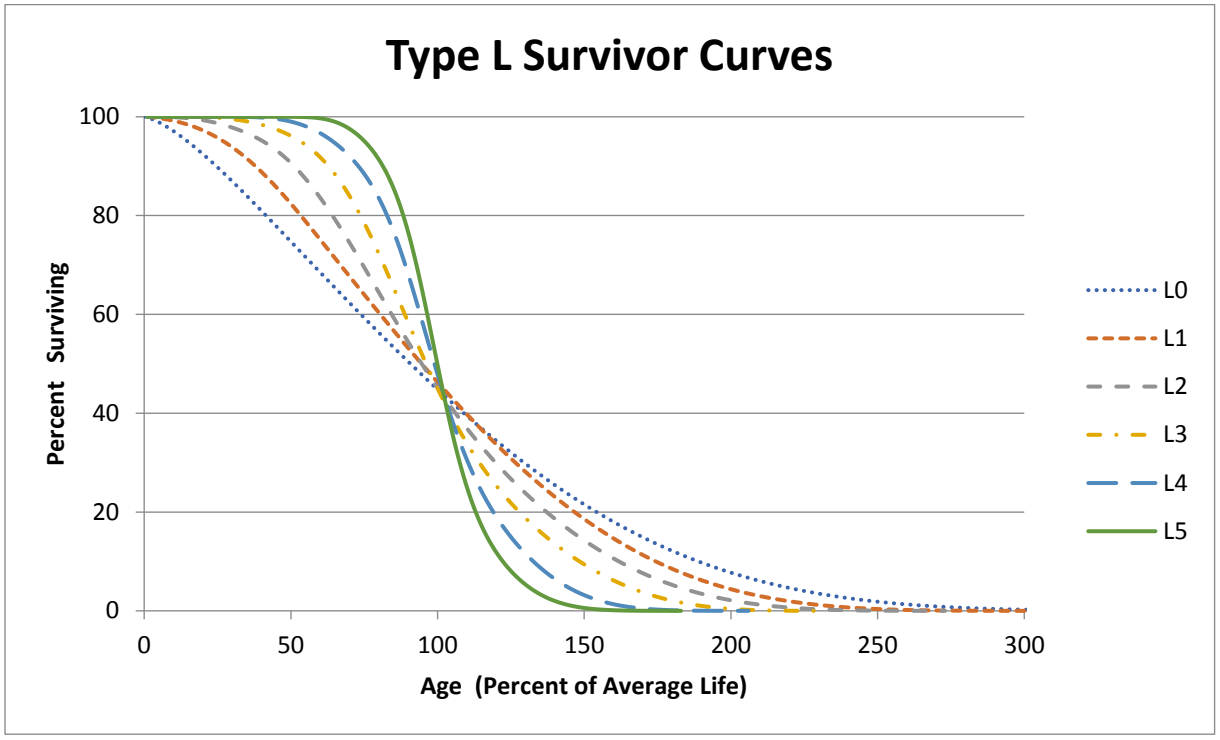
> Since the location of a particular survivor on a graph is affected by both its span in years and the shape of the curve, it is difficult to classify a group of curves unless one of these variables can be controlled. This is easily done by expressing the age in percent of average life."[10]

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.

[10] Winfrey *supra* n. 75, at 60.

Figure 2:
Type L Survivor and Frequency Curves



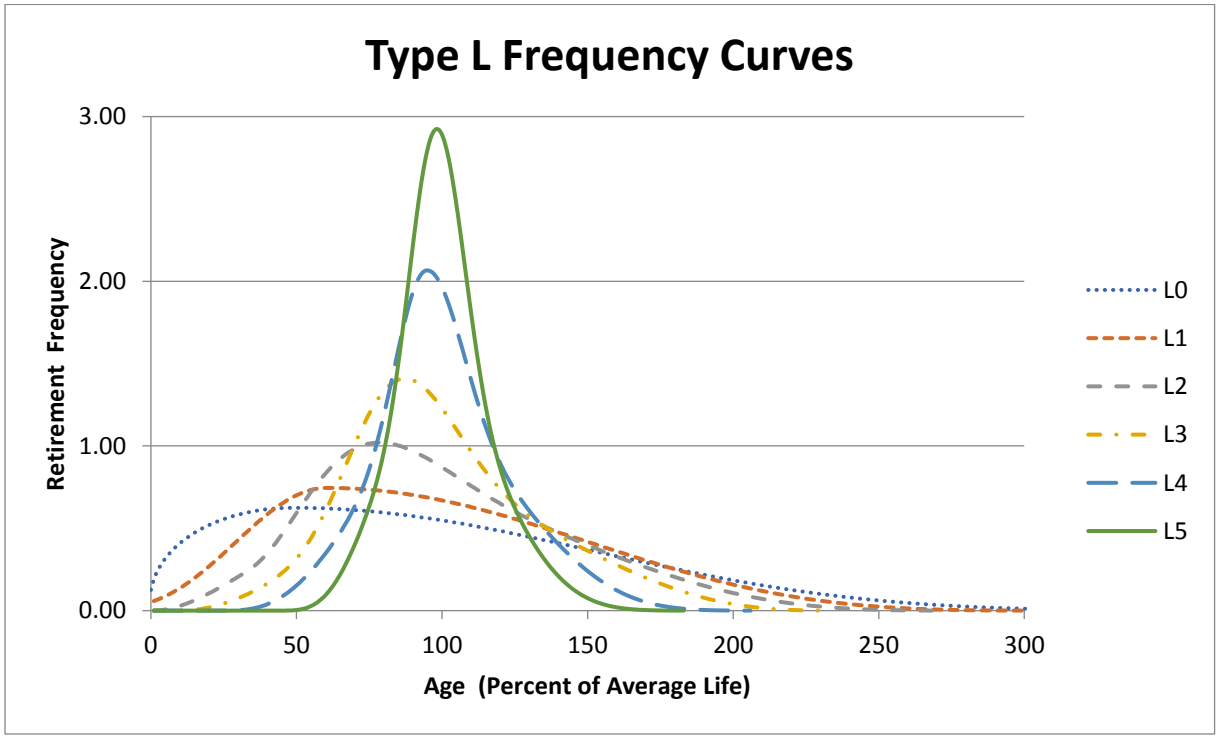
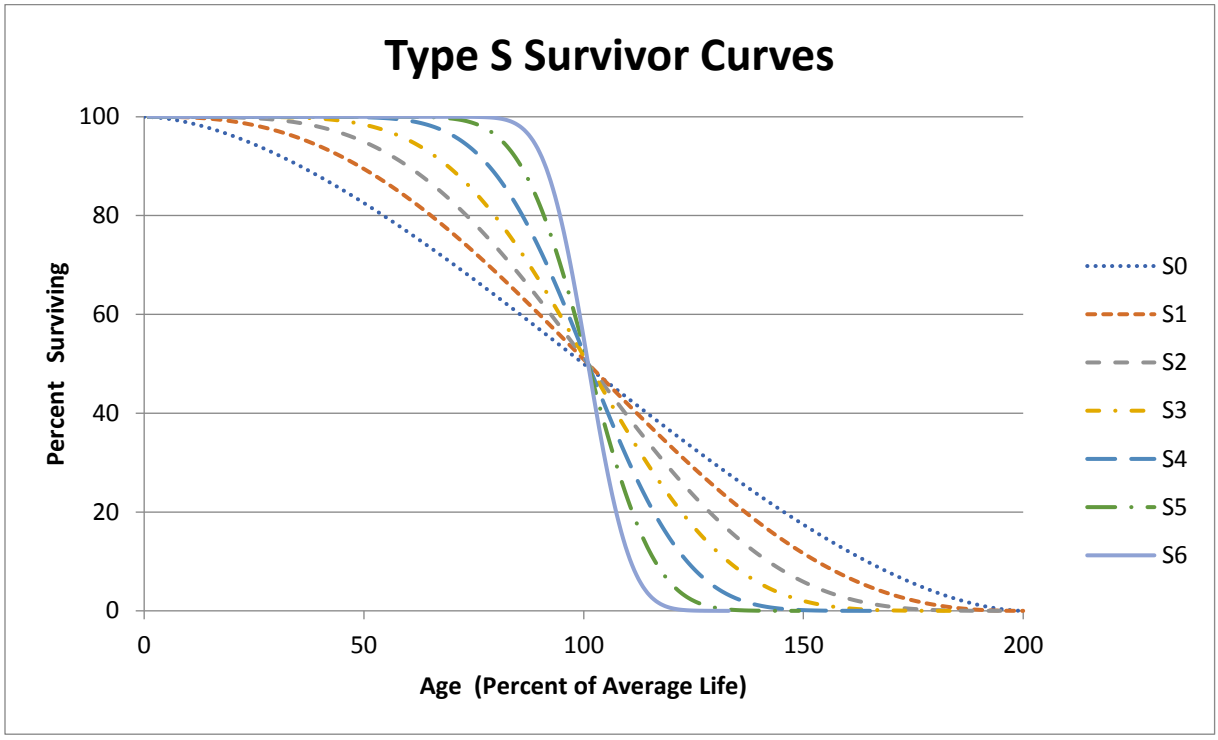


Figure 3:
Type S Survivor and Frequency Curves



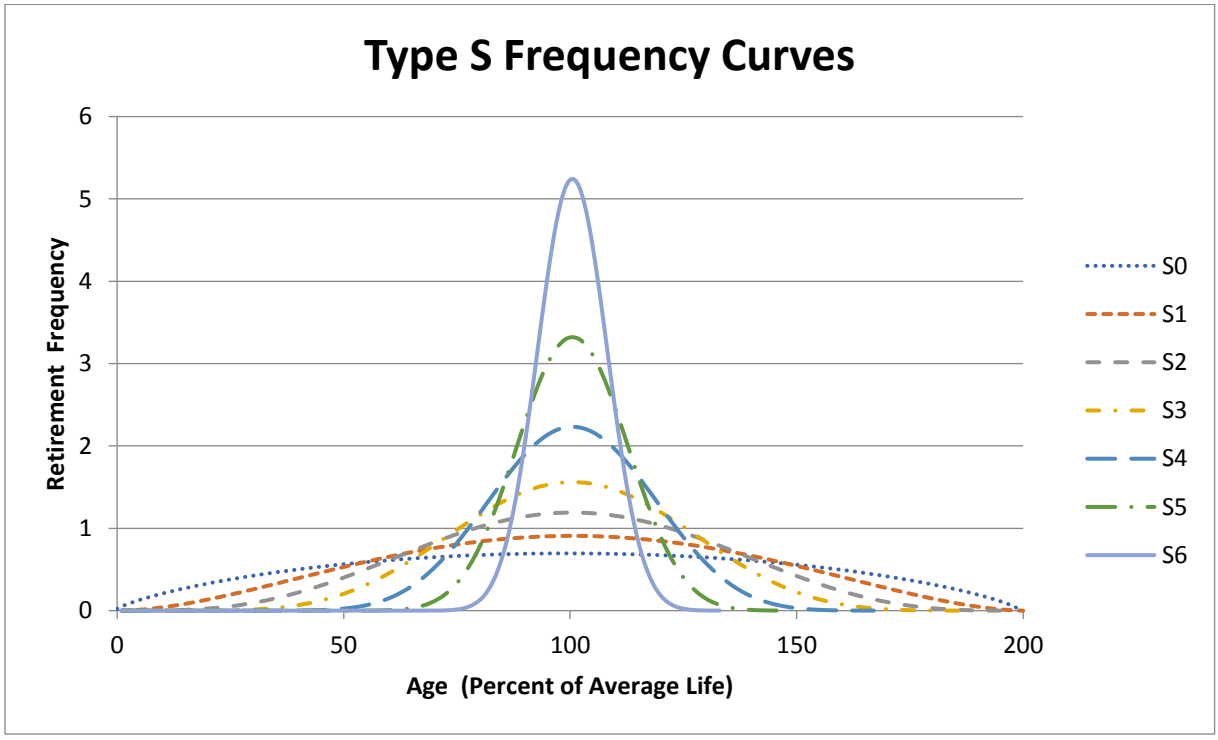
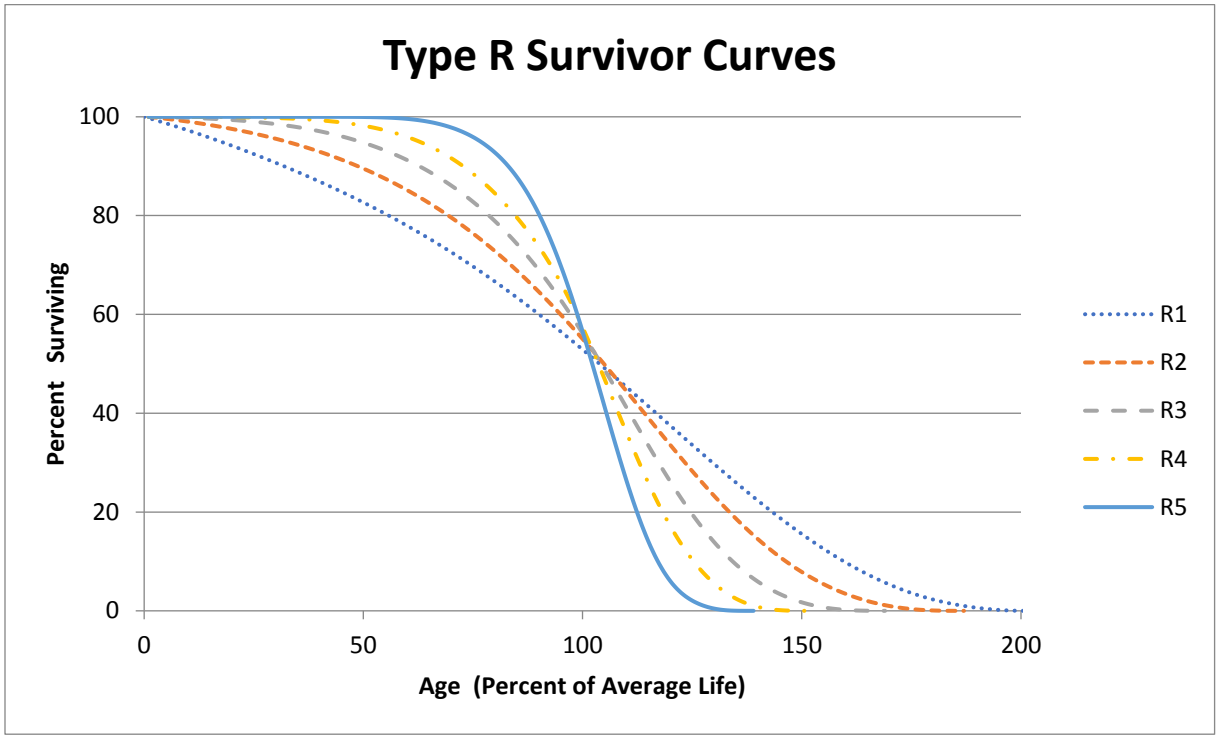
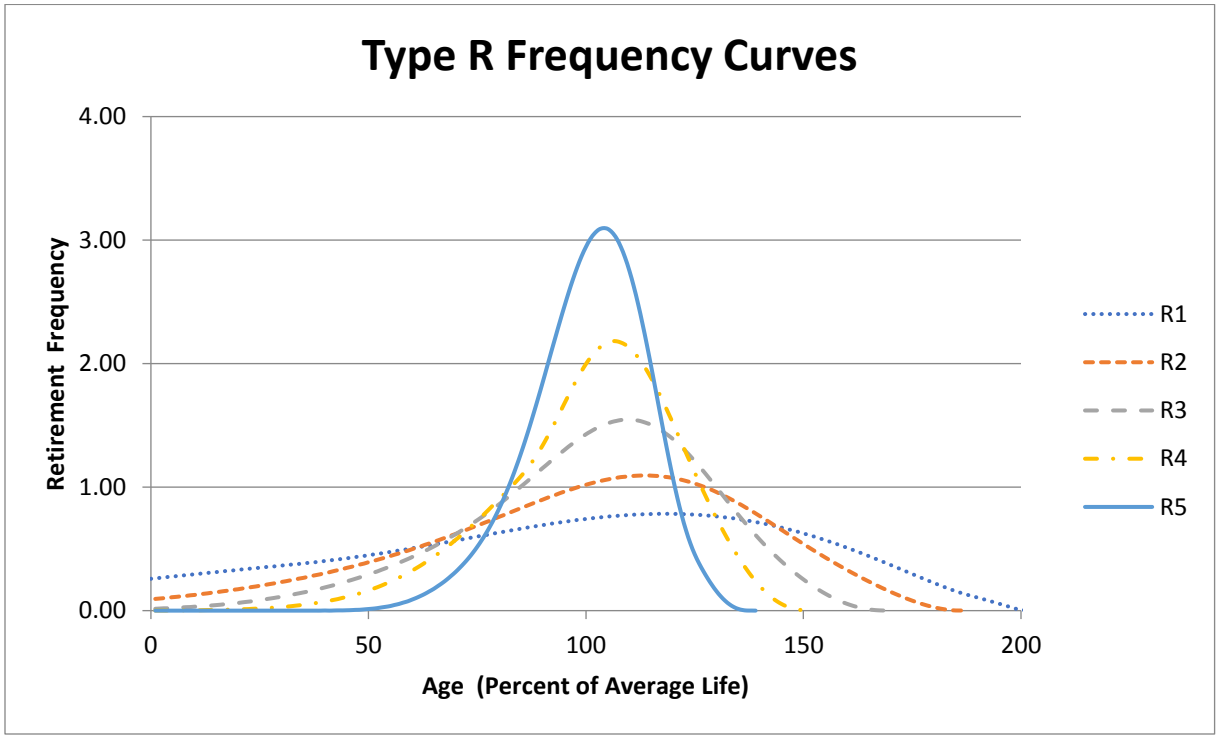


Figure 4:
Type R Survivor and Frequency Curves





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.[11]

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:[12]

Equation 1:
Average Life

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

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 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).

[11] 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.

[12] *See* NARUC *supra* n. 10, at 71.

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.[13] 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.[14] 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 2:
Average Remaining Life

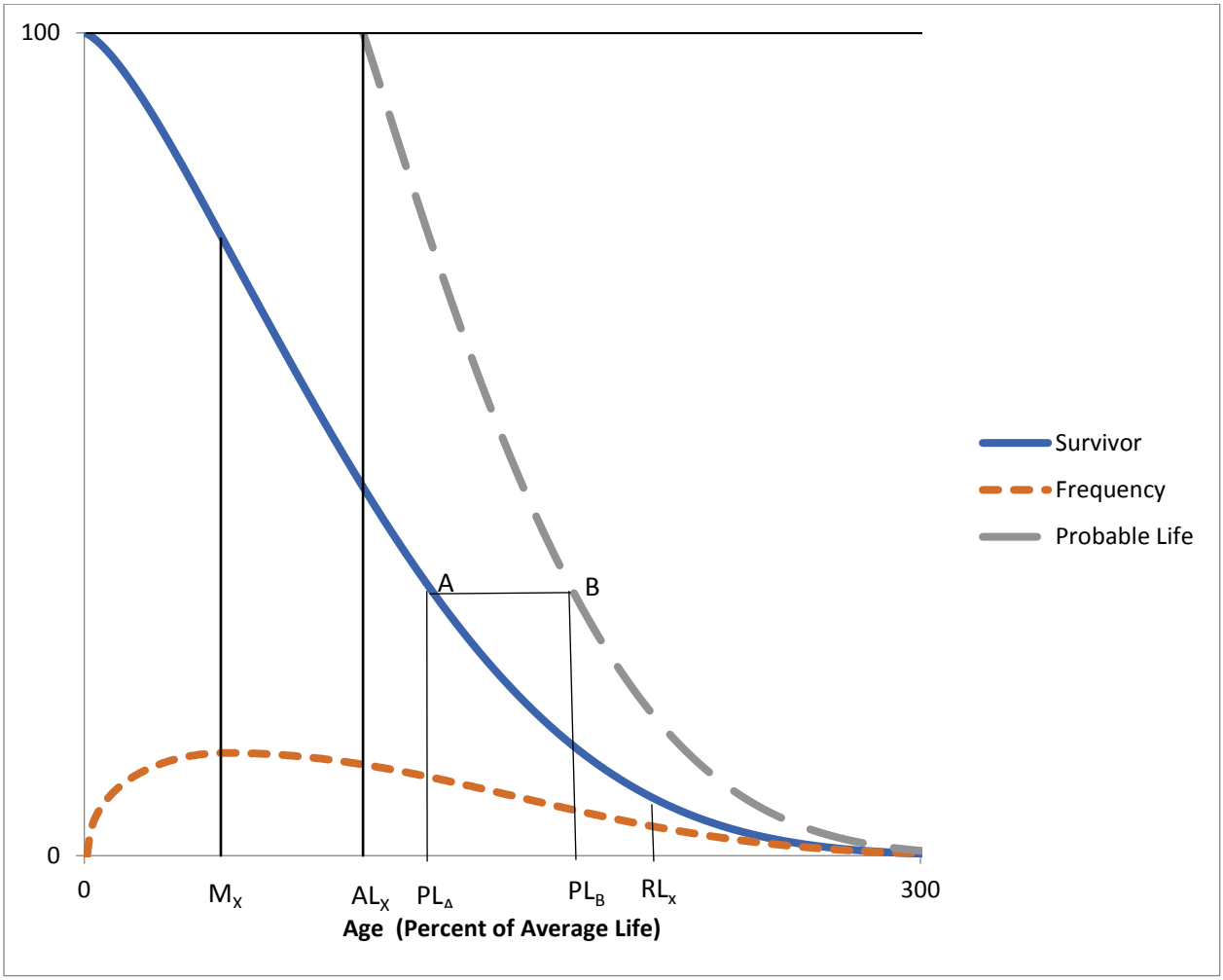
$$Average\ Remaining\ Life\ = \frac{Area\ Under\ Survivor\ Curve\ from\ Age\ x\ to\ Max\ Life}{S_X}$$

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

[13] *Id*. at 73.

[14] *Id*. at 74.

Figure 5:
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.[15] 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" on

[15] Wolf *supra* n. 1, at 28.

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.

OCA Exhibit DJG-1
Curriculum Vitae

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Oklahoma City, OK 73102

DAVID J. GARRETT

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EDUCATION

University of Oklahoma — Norman, OK
Master of Business Administration — 2014
Areas of Concentration: Finance, Energy

University of Oklahoma College of Law — Norman, OK
Juris Doctor — 2007
Member, American Indian Law Review

University of Oklahoma — Norman, OK
Bachelor of Business Administration — 2003
Major: Finance

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 — Oklahoma City, OK
Managing Member — 2016 – Present
Provide expert analysis and testimony specializing in depreciation and cost of capital issues for clients in utility regulatory proceedings.

Oklahoma Corporation Commission — Oklahoma City, OK
Public Utility Regulatory Analyst — 2012 – 2016
Assistant General Counsel — 2011 – 2012
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.

Perebus Counsel, PLLC — Oklahoma City, OK
Managing Member — 2009 – 2011
Represented clients in the areas of family law, estate planning, debt negotiations, business organization, and utility regulation.

Moricoli & Schovanec, P.C. — Oklahoma City, OK
Associate Attorney — 2007 – 2009
Represented clients in the areas of contracts, oil and gas, business structures and estate administration.

TEACHING EXPERIENCE

University of Oklahoma — Norman, OK
Adjunct Instructor – "Conflict Resolution" — 2014 – Present
Adjunct Instructor – "Ethics in Leadership"

Rose State College — Midwest City, OK
Adjunct Instructor – "Legal Research" — 2013 – 2015
Adjunct Instructor – "Oil & Gas Law"

PUBLICATIONS

American Indian Law Review — Norman, OK
"Vine of the Dead: Reviving Equal Protection Rites for Religious Drug Use" — 2006
(31 Am. Indian L. Rev. 143)

VOLUNTEER EXPERIENCE

Calm Waters — Oklahoma City, OK
Board Member — 2015 – 2018
Participate in management of operations, attend meetings, review performance, compensation, and financial records. Assist in fundraising events.

Group Facilitator & Fundraiser — 2014 – 2018
Facilitate group meetings designed to help children and families cope with divorce and tragic events. Assist in fundraising events.

St. Jude Children's Research Hospital — Oklahoma City, OK
Oklahoma Fundraising Committee — 2008 – 2010
Raised money for charity by organizing local fundraising events.

PROFESSIONAL ASSOCIATIONS

Oklahoma Bar Association 2007 – Present

Society of Depreciation Professionals 2014 – Present
Board Member – President 2017
Participate in management of operations, attend meetings, review performance, organize presentation agenda.

Society of Utility Regulatory Financial Analysts 2014 – Present

SELECTED CONTINUING PROFESSIONAL EDUCATION

Society of Depreciation Professionals Austin, TX
"Life and Net Salvage Analysis" 2015
Extensive instruction on utility depreciation, including actuarial and simulation life analysis modes, gross salvage, cost of removal, life cycle analysis, and technology forecasting.

Society of Depreciation Professionals New Orleans, LA
"Introduction to Depreciation" and "Extended Training" 2014
Extensive instruction on utility depreciation, including average lives and net salvage.

Society of Utility and Regulatory Financial Analysts Indianapolis, IN
46th Financial Forum. "The Regulatory Compact: Is it Still Relevant?" 2014
Forum discussions on current issues.

New Mexico State University, Center for Public Utilities Santa Fe, NM
Current Issues 2012, "The Santa Fe Conference" 2012
Forum discussions on various current issues in utility regulation.

Michigan State University, Institute of Public Utilities Clearwater, FL
"39th Eastern NARUC Utility Rate School" 2011
One-week, hands-on training emphasizing the fundamentals of the utility ratemaking process.

New Mexico State University, Center for Public Utilities Albuquerque, NM
"The Basics: Practical Regulatory Training for the Changing Electric Industries" 2010
One-week, hands-on training designed to provide a solid foundation in core areas of utility ratemaking.

The Mediation Institute Oklahoma City, OK
"Civil / Commercial & Employment Mediation Training" 2009
Extensive instruction and mock mediations designed to build foundations in conducting mediations in civil matters.

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
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
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 Wal-Mart
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

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
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
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.

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
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
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

OCA Exhibit DJG-2
OCA FMV Adjustment Summary

Summary Results

[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
Cost	$ 33,467,936	37.5%	$ 12,550,476	$ (1,277,783)	$ 32,190,153	33.3%	$ 10,730,051
Income	10,383,787	25.0%	2,595,947	(1,617,089)	8,766,698	33.3%	2,922,233
Market	24,368,094	37.5%	9,138,035	(2,442,041)	21,926,053	33.3%	7,308,684
Total			$ 24,284,458	**Total**			$ 20,960,968
AUS Consultants Results and Adjustments							
Approach	Base Value	Weight	Weighted Value	OCA Adjustment	Adjusted Value	OCA Weight	OCA Weighted Value
Cost	$ 27,461,356	50.0%	$ 13,730,678	$ (5,625,621)	$ 21,835,735	33.3%	$ 7,278,578
Income	21,729,647	40.0%	8,691,859	(4,280,018)	17,449,629	33.3%	5,816,543
Market	26,420,570	10.0%	2,642,057	(8,921,208)	17,499,362	33.3%	5,833,121
Total			$ 25,064,594	**Total**			$ 18,928,242
Results Summary							
	Appraiser Weighted Value				OCA Adjusted Value		
Gannett Fleming			$ 24,284,458				$ 20,960,968
AUS Consultants			25,064,594				18,928,242
Average			$ 24,674,526				$ 19,944,605
Purchase Price			$ 21,000,000				$ 21,000,000
Lesser of Purchase Price and Market Value			**$ 21,000,000**				**$ 19,944,605**

[1] Valuation apprach
[2] Appraised value
[3] Applied weighting
[4] = [2] * [3]
[5] = [6] - [2]
[6] OCA adjusted value
[7] Applied weighting
[8] = [6] * [7]

OCA Exhibit DJG-3
Cost Approach Adjustment Results

Gannett Fleming Cost Approach Adjustment Summary

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
		Gannett Fleming Position			OCA Adjustments		
Account	Description	Iowa Curve	Reporduction Cost	Accrued Depreciation	Iowa Curve	Reporduction Cost	Accrued Depreciation
353.30	LAND AND LAND RIGHTS - PUMPING	NA	$ 275	$ -	NA	$ 275	$ -
354.30	STRUCTURES AND IMPROVEMENTS - PUMPHOUSE	55-R3	7,429,036	4,398,183	55-R3	7,429,036	4,398,183
355.30	POWER GENERATION EQUIPMENT - PUMPING	30-S2	1,714,673	1,161,308	30-S2	1,714,673	1,161,308
360.20	COLLECTION SEWERS - FORCE	70-R2.5	3,906,296	2,161,185	60-R3	3,906,296	2,502,571
361.21	COLLECTION SEWERS - GRAVITY - MAINS	70-R2.5	39,091,771	22,037,768	60-S1.5	39,091,771	23,232,506
361.22	COLLECTION SEWERS - GRAVITY - MANHOLES	65-R3	8,312,116	5,027,760	60-S1.5	8,312,116	4,769,419
363.20	SERVICES TO CUSTOMERS	55-R2.5	10,976,951	7,301,601	55-R2.5	10,976,951	7,301,601
364.20	FLOW MEASURING DEVICES	30-L3	466,942	289,644	30-L3	466,942	289,644
371.30	PUMPING EQUIPMENT	40-R1.5	7,096,494	3,228,835	40-R1.5	7,096,494	3,228,835
391.70	TRANSPORTATION EQUIPMENT	11-S1.5	390,750	365,383	11-S1.5	390,750	365,383
394.70	LABORATORY EQUIPMENT	20-SQ	65,775	43,053	20-SQ	65,775	43,053
396.70	COMMUNICATION EQUIPMENT	15-SQ	172,779	146,828	15-SQ	172,779	146,828
397.70	MISCELLANEOUS EQUIPMENT	15-SQ	20,249	14,622	15-SQ	20,249	14,622
	Total		$ 79,644,106	$ 46,176,170		$ 79,644,106	$ 47,453,954
	Cost Approach Results	[9]		$ 33,467,936			$ 32,190,153

[1], [2], [3], [4], [5] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 12

[6] Selected Iowa curve

[7] Reporduction cost

[8] = Adjusted accrued depreciation calculations from OCA DJG Exhibits 4, 5 and 6

[9] Total reproduction cost - total accrued depreciation

OCA Exhibit DJG-4
Cost Approach – Account 360.20 Remaining Life Calculation

Account 360.20
Remaining Life Calculation

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Original	Average	Annual Accrual		Remaining	Accrued Depreciation	
Year	Cost	Life	Rate	Amount	Life	Factor	Amount
1963	$ 2,290,531	60	1.67%	$ 38,176	14.9	0.75	$ 1,720,570
1975	1,042,876	60	1.67%	17,381	22.6	0.62	650,059
1994	288,103	60	1.67%	4,802	37.8	0.37	106,406
2012	284,787	60	1.67%	4,746	54.6	0.09	25,536
Total	$ 3,906,296			$ 65,105	38.44		$ 2,502,571
Survivor Curve:		**60-R3**	[9]				

[1], [2] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 12

[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

OCA Exhibit DJG-5
Cost Approach – Account 361.21 Remaining Life Calculation

Account 360.20
Remaining Life Calculation

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Original	Average	Annual Accrual		Remaining	Accrued Depreciation	
Year	Cost	Life	Rate	Amount	Life	Factor	Amount
1963	$ 20,610,594	60	1.67%	$ 343,510	19.5	0.67	$ 13,901,845
1970	8,024,175	60	1.67%	133,736	22.8	0.62	4,970,977
1975	2,199,031	60	1.67%	36,651	25.5	0.58	1,264,809
1978	399,681	60	1.67%	6,661	27.2	0.55	218,425
1979	629,634	60	1.67%	10,494	27.8	0.54	337,798
1980	1,326,128	60	1.67%	22,102	28.4	0.53	697,985
1981	125,545	60	1.67%	2,092	29.0	0.52	64,781
1983	216,497	60	1.67%	3,608	30.3	0.49	107,058
1985	521,162	60	1.67%	8,686	31.7	0.47	246,162
1986	1,020,379	60	1.67%	17,006	32.4	0.46	470,224
1993	154,795	60	1.67%	2,580	37.5	0.37	57,997
1994	606,547	60	1.67%	10,109	38.3	0.36	219,267
1996	264,975	60	1.67%	4,416	39.9	0.33	88,634
2000	505,474	60	1.67%	8,425	43.3	0.28	140,438
2003	510,906	60	1.67%	8,515	46.0	0.23	119,212
2006	236,411	60	1.67%	3,940	48.8	0.19	44,248
2007	1,425,966	60	1.67%	23,766	49.7	0.17	244,553
2009	179,560	60	1.67%	2,993	51.6	0.14	25,079
2010	24,221	60	1.67%	404	52.6	0.12	2,995
2012	110,089	60	1.67%	1,835	54.5	0.09	10,018
Total	$ 39,091,771			$ 651,530	35.66		$ 23,232,506
Survivor Curve:		**60-S1.5**	[9]				

[1], [2] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 12

[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

OCA Exhibit DJG-6
Cost Approach – Account 361.22 Remaining Life Calculation

Account 360.20
Remaining Life Calculation

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Original	Average	Annual Accrual		Remaining	Accrued Depreciation	
Year	Cost	Life	Rate	Amount	Life	Factor	Amount
1963	$ 4,012,365	60	1.67%	$ 66,873	19.5	0.67	$ 2,706,340
1970	1,600,646	60	1.67%	26,677	22.8	0.62	991,600
1975	469,479	60	1.67%	7,825	25.5	0.58	270,029
1978	112,932	60	1.67%	1,882	27.2	0.55	61,717
1979	120,600	60	1.67%	2,010	27.8	0.54	64,702
1980	288,229	60	1.67%	4,804	28.4	0.53	151,705
1981	23,734	60	1.67%	396	29.0	0.52	12,247
1983	46,565	60	1.67%	776	30.3	0.49	23,027
1985	135,612	60	1.67%	2,260	31.7	0.47	64,054
1986	328,178	60	1.67%	5,470	32.4	0.46	151,235
1993	50,770	60	1.67%	846	37.5	0.37	19,022
1994	135,803	60	1.67%	2,263	38.3	0.36	49,093
1996	90,749	60	1.67%	1,512	39.9	0.33	30,356
2000	129,044	60	1.67%	2,151	43.3	0.28	35,853
2003	167,208	60	1.67%	2,787	46.0	0.23	39,015
2006	66,810	60	1.67%	1,114	48.8	0.19	12,505
2007	452,532	60	1.67%	7,542	49.7	0.17	77,609
2009	32,747	60	1.67%	546	51.6	0.14	4,574
2010	11,029	60	1.67%	184	52.6	0.12	1,364
2012	37,084	60	1.67%	618	54.5	0.09	3,375
Total	$ 8,312,116			$ 138,535	34.43		$ 4,769,419
Survivor Curve:		**60-S1.5**	[9]				

[1], [2] Exhibit Q - Gannett Fleming FMV Appraisal, Exhibit 12

[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

OCA Exhibit DJG-7
Market Approach Adjustment Results

Gannett Fleming
Cost Approach Adjustment Summary

	[1]	[2]	[3]	[4]	[5]	[6]
	Gannett Fleming Market Approach Results			**OCA Adjusted Market Approach Results**		
	Amount	**Weight**	**Result**	**Amount**	**Weight**	**Result**
Market Multiples	$ 24,089,950	50%	$ 12,044,975	$ 24,089,950	50%	$ 12,044,975
Selected Transactions	24,646,238	50%	12,323,119	19,762,156	50%	9,881,078
Total			$ 24,368,094			$ 21,926,053

[1], [2], [3] Exhibit Q - Gannett Fleming FMV Appraisal
[4] Adjusted amounts from OCA Exhibit DJG-8
[5] Applied weighting
[6] = [4] * [5]

OCA Exhibit DJG-8
Market Approach – Selected Transactions Adjustment

Gannett Fleming
Market Approach Adjustment

Township / Acquired System	Gannett Fleming Results: Purchase Price and Capital Statistic	Gannett Fleming Results: Price / Statistic Ratio	Gannett Fleming Results: Adjusted Statistic	OCA Adjusted Results: Purchase Price and Capital Statistic	OCA Adjusted Results: Price / Statistic Ratio	OCA Adjusted Results: Adjusted Statistic
Capital Statistics						
East Norriton						
Investor Capital	$ 4,055,138			$ 4,055,138		
Gross PP&E	16,916,212			16,916,212		
Net PP&E	9,251,450			9,251,450		
McKeesport	$ 156,000,000			$ 158,000,000		
Investor Capital	83,903,219	1.86	$ 7,539,657	83,903,219	1.88	$ 7,636,320
Gross PP&E	91,435,797	1.71	28,861,006	108,231,570	1.46	24,694,842
Net PP&E	73,813,794	2.11	19,552,256	80,085,602	1.97	18,252,084
New Garden	29,500,000			29,500,000		
Investor Capital	23,001,140	1.28	5,200,897	23,001,140	1.28	5,200,897
Gross PP&E	25,988,330	1.14	19,202,013	27,267,123	1.08	18,301,463
Net PP&E	17,967,319	1.64	15,189,677	18,590,089	1.59	14,680,821
Limerick	75,100,000			64,373,378		
Investor Capital	43,501,755	1.73	7,000,657	43,501,755	1.48	6,000,745
Gross PP&E	60,847,250	1.23	20,878,635	63,480,402	1.01	17,154,172
Net PP&E	36,113,701	2.08	19,238,790	46,153,867	1.39	12,903,514
East Bradford	5,000,000			5,000,000		
Investor Capital	1,298,627	3.85	15,613,175	1,298,627	3.85	15,613,175
Gross PP&E	N/A		N/A	8,294,930	0.60	10,196,718
Net PP&E	N/A		N/A	5,473,947	0.91	8,450,438
Mahoning	9,500,000			9,500,000		
Investor Capital	2,815,114	3.37	13,684,636	2,815,114	3.37	13,684,636
Gross PP&E	5,460,043	1.74	29,432,738	10,225,921	0.93	15,715,358
Net PP&E	2,815,114	3.37	31,220,325	6,741,997	1.41	13,036,015
Minimum (All Acquisitions)			$ 5,200,897			$ 5,200,897
Maximum (All Acquisitions)			31,220,325			24,694,842
Minimum (Collection / Distribution)			$ 13,684,636			$ 8,450,438
Maximum (Collection / Distribution)			31,220,325			15,715,358
Demographic Statistics						
East Norriton						
Customers	4,966			4,966		
Population	14,296			14,296		
McKeesport	$ 156,000,000			$ 158,000,000		
Customers	20,320	$ 7,677	$ 38,124,803	20,320	7,776	38,613,583
Population	61,752	2,526	36,115,041	61,752	2,559	36,578,054
New Garden	$ 29,500,000			$ 29,500,000		
Customers	1,796	$ 16,425	$ 81,568,486	2,100	14,048	69,760,476
Population	12,085	2,441	34,897,145	12,085	2,441	34,897,145
Limerick	$ 75,100,000			$ 64,373,378		
Customers	5,416	$ 13,866	$ 68,860,155	5,434	11,846	58,829,259
Population	18,798	3,995	57,114,033	18,798	3,424	48,956,368
East Bradford	$ 5,000,000			$ 5,000,000		
Customers	1,248	$ 4,006	$ 19,895,833	1,248	4,006	19,895,833
Population	9,942	503	7,189,700	9,942	503	7,189,700
Mahoning	$ 9,500,000			$ 9,500,000		
Customers	2,403	$ 3,953	$ 19,632,543	2,806	3,386	16,812,901
Population	8,472	1,121	16,030,689	8,472	1,121	16,030,689
Minimum (All Acquisitions)			$ 7,189,700			$ 7,189,700
Maximum (All Acquisitions)			81,568,486			69,760,476
Minimum (Collection / Distribution)			$ 7,189,700			$ 7,189,700
Maximum (Collection / Distribution)			19,895,833			19,895,833
Market Approach Result			**$ 24,646,238**			**$ 19,762,156**

OCA Exhibit DJG-9
Cost Approach Adjustment Results

AUS Consultants
Cost Approach Adjustment Summary

	[1] AUS Cost Approach Summary	[2] OCA Cost Approach Summary
Replacement Cost New (RCN)	$ 70,770,233	$ 70,770,233
Replacement Cost New Less Depreciation (RCNLD)	$ 27,461,356	$ 21,835,735

[1] Exhibit R - AUS Consultants FMV Appraisal

[2] Figures from OCA Exhibit DJG-9

OCA Exhibit DJG-10
Cost Approach – Depreciation Analysis

AUS Consultants

Cost Approach Adjustment Summary

Account	Description	Replacement Cost New	Iowa Curve	Remaining Life	Total Life Expectancy	Condition	RCNLD
	Collection Mains - Gravity						
361.10	SEWER DISTRICT NO. 1 PHASE I - Mains VCP	$ 14,787,200	60-R3	14.2	69.7	20%	$ 3,015,978
361.20	SEWER DISTRICT NO. 1 PHASE I - Mains CIP	15,977	60-R3	14.2	69.7	20%	3,259
361.10	SEWER DISTRICT NO. 1 PHASE I - Mains VCP	294,246	60-R3	14.2	69.7	20%	60,014
361.20	SEWER DISTRICT NO. 1 PHASE I - Mains CIP	34,297	60-R3	14.2	69.7	20%	6,995
361.10	SEWER DISTRICT NO. 1 PHASE I - Mains VCP	225,212	60-R3	14.2	69.7	20%	45,934
361.10	SEWER DISTRICT NO. 1 PHASE I - Mains VCP	367,570	60-R3	14.2	69.7	20%	74,969
361.50	SEWER DISTRICT NO. 1 PHASE I - Mains RCP	95,916	60-R3	14.2	69.7	20%	19,563
361.50	SEWER DISTRICT NO. 1 PHASE I - Mains RCP	565,217	60-R3	14.2	69.7	20%	115,281
361.50	SEWER DISTRICT NO. 1 PHASE I - Mains RCP	107,811	60-R3	14.2	69.7	20%	21,989
361.70	SEWER DISTRICT NO. 1 PHASE I - Manholes	3,194,732	60-R3	14.2	69.7	20%	651,593
361.10	SEWER DISTRICT NO. 1 PHASE II - Mains VCP	6,236,920	60-R3	18.5	67.0	28%	1,719,438
361.10	SEWER DISTRICT NO. 1 PHASE II - Mains VCP	521,674	60-R3	18.5	67.0	28%	143,819
361.10	SEWER DISTRICT NO. 1 PHASE II - Mains VCP	205,110	60-R3	18.5	67.0	28%	56,546
361.10	SEWER DISTRICT NO. 1 PHASE II - Mains VCP	533,099	60-R3	18.5	67.0	28%	146,969
361.70	SEWER DISTRICT NO. 1 PHASE II - Manholes	1,120,649	60-R3	18.5	67.0	28%	308,948
361.30	AUTUMN RIDGE - Mains 8" PVC	378,142	60-R3	42.2	60.7	70%	262,950
361.70	AUTUMN RIDGE - Manholes	87,625	60-R3	42.2	60.7	70%	60,932
361.30	OLD ARCH CROSSING - Mains 8" PVC	346,994	60-R3	30.3	62.8	48%	167,447
361.70	OLD ARCH CROSSING - Manholes	86,774	60-R3	30.3	62.8	48%	41,874
361.10	NEW HOPE VILLAGE - Mains 8" VCP	100,314	60-R3	25.6	64.1	40%	40,072
361.70	NEW HOPE VILLAGE - Manholes	41,925	60-R3	25.6	64.1	40%	16,748
361.10	VILLAGE EAST - Mains 8" VCP	226,884	60-R3	23.8	64.3	37%	84,045
361.70	VILLAGE EAST - Manholes	64,988	60-R3	23.8	64.3	37%	24,074
361.30	FOX HUNT - Mains 8" PVC	177,583	60-R3	36.9	61.4	60%	106,689
361.70	FOX HUNT - Manholes	44,716	60-R3	36.9	61.4	60%	26,864
361.30	RESERVE AT PENNS CROSSING - Mains 8" PVC	410,686	60-R3	45.0	60.5	74%	305,451
361.70	RESERVE AT PENNS CROSSING - Manholes	123,108	60-R3	45.0	60.5	74%	91,563
361.10	KIMBERLY KNOLL - Mains 8" VCP	564,379	60-R3	24.7	64.2	38%	217,191
361.70	KIMBERLY KNOLL - Manholes	91,859	60-R3	24.7	64.2	38%	35,350
361.30	EVERGREEN TERRACE - Mains 8" PVC	20,907	60-R3	51.8	60.3	86%	17,960
361.70	EVERGREEN TERRACE - Manholes	9,888	60-R3	51.8	60.3	86%	8,494
361.60	THOMAS END - Mains 8" Unknown	192,695	60-R3	27.9	63.4	44%	84,832
361.70	THOMAS END - Manholes	33,137	60-R3	27.9	63.4	44%	14,588
361.30	BARLEY SHEAF - Mains 8" PVC	285,874	60-R3	30.3	62.8	48%	137,953
361.40	BARLEY SHEAF - Mains 8" DIP	18,391	60-R3	30.3	62.8	48%	8,875
361.70	BARLEY SHEAF - Manholes	105,993	60-R3	30.3	62.8	48%	51,149
361.30	MARION AVENUE SEWER EXTENENSION - 8" PVC	139,017	60-R3	50.7	60.2	84%	117,065
361.70	MARION AVENUE SEWER EXTENENSION - Manholes	29,293	60-R3	50.7	60.2	84%	24,667
361.10	WHITEHALL ROAD PROJECT - Mains 8" VCP	1,136,406	60-R3	25.6	64.1	40%	453,960
361.70	WHITEHALL ROAD PROJECT Manholes	172,358	60-R3	25.6	64.1	40%	68,852
361.30	WOODLANDS AT WHITEHALL - Mains 8" PVC	128,907	60-R3	35.8	61.3	58%	75,309
361.70	WOODLANDS AT WHITEHALL - Manholes	39,472	60-R3	35.8	61.3	58%	23,060
361.30	SUNSET KNOLL - Mains 8" PVC	220,785	60-R3	30.3	62.8	48%	106,543
361.70	SUNSET KNOLL - Manholes	36,867	60-R3	30.3	62.8	48%	17,791
361.30	HEATHERWOOD - Mains 8" PVC	177,911	60-R3	47.8	60.3	79%	141,031
361.70	HEATHERWOOD - Manholes	55,231	60-R3	47.8	60.3	79%	43,782
361.10	LINFOOT WALKER - Mains 8" VCP	86,125	60-R3	29.3	62.8	47%	40,212
361.70	LINFOOT WALKER - Manholes	22,587	60-R3	29.3	62.8	47%	10,546
361.30	PIMLICO FARMS - Mains 8" PVC	295,864	60-R3	48.9	60.4	81%	239,570
361.40	PIMLICO FARMS - Mains 8" DIP	27,632	60-R3	48.9	60.4	81%	22,374
361.70	PIMLICO FARMS - Manholes	120,063	60-R3	48.9	60.4	81%	97,218

AUS Consultants

Cost Approach Adjustment Summary

Account	Description	Replacement Cost New	Iowa Curve	Remaining Life	Total Life Expectancy	Condition	RCNLD
361.10	WHITEHALL ESTATES - Mains 8" VCP	243,378	60-R3	29.3	62.8	47%	113,633
361.70	WHITEHALL ESTATES - Manholes	45,175	60-R3	29.3	62.8	47%	21,092
361.30	VILLAGE OF CARALEA - Mains 8" PVC	255,583	60-R3	48.9	60.4	81%	206,953
361.40	VILLAGE OF CARALEA - Mains 8" DIP	9,940	60-R3	48.9	60.4	81%	8,048
361.70	VILLAGE OF CARALEA - Manholes	67,235	60-R3	48.9	60.4	81%	54,442
361.30	NORRITON BUSINESS CAMPUS - Mains 8" PVC	460,505	60-R3	48.9	60.4	81%	372,884
361.70	NORRITON BUSINESS CAMPUS - Manholes	182,495	60-R3	48.9	60.4	81%	147,771
361.30	STONEBRIDGE ESTATES - Mains 8" PVC	272,417	60-R3	36.9	61.4	60%	163,663
361.40	STONEBRIDGE ESTATES - Mains 8" DIP	86,561	60-R3	36.9	61.4	60%	52,004
361.70	STONEBRIDGE ESTATES - Manholes	59,621	60-R3	36.9	61.4	60%	35,819
361.10	ELIZABETH MYERS - Mains 8" VCP	178,679	60-R3	29.3	62.8	47%	83,425
361.30	ELIZABETH MYERS - Mains 8" PVC	34,865	60-R3	42.2	60.7	70%	24,244
361.70	ELIZABETH MYERS - Manholes	27,105	60-R3	29.3	62.8	47%	12,655
361.70	ELIZABETH MYERS - Manholes	9,736	60-R3	42.2	60.7	70%	6,770
361.10	GLEN MOORE - Mains 8" VCP	157,685	60-R3	23.8	64.3	37%	58,412
361.70	GLEN MOORE - Manholes	24,995	60-R3	23.8	64.3	37%	9,259
361.10	WOODLAND MANOR - Mains 8" VCP	299,144	60-R3	21.7	65.2	33%	99,500
361.70	WOODLAND MANOR - Manholes	54,139	60-R3	21.7	65.2	33%	18,008
361.30	NICK & LES - Mains 8" PVC	189,360	60-R3	38.5	61.0	63%	119,457
361.70	NICK & LES - Manholes	53,204	60-R3	38.5	61.0	63%	33,563
361.10	TANGLEWOOD - Mains 8" VCP	368,799	60-R3	21.7	65.2	33%	122,669
361.70	TANGLEWOOD - Manholes	72,186	60-R3	21.7	65.2	33%	24,010
361.30	VALLEY FORGE GREENE - Mains 8" PVC	23,711	60-R3	38.5	61.0	63%	14,958
361.70	VALLEY FORGE GREENE - Manholes	14,510	60-R3	38.5	61.0	63%	9,154
361.10	WOODSTREAM CROSSING II - Mains 8" VCP	644,308	60-R3	21.7	65.2	33%	214,308
361.70	WOODSTREAM CROSSING II - Manholes	108,279	60-R3	21.7	65.2	33%	36,015
361.10	HOLLY HILL EAST - Mains 8" VCP	464,257	60-R3	21.7	65.2	33%	154,420
361.70	HOLLY HILL EAST - Manholes	85,721	60-R3	21.7	65.2	33%	28,512
361.10	TIOGA LEASING - Mains 8" VCP	346,646	60-R3	21.7	65.2	33%	115,301
361.70	TIOGA LEASING - Manholes	54,139	60-R3	21.7	65.2	33%	18,008
361.30	EINSTEIN MEDICAL CENTER - Mains 8" PVC	93,099	60-R3	53.6	60.1	89%	83,022
361.70	EINSTEIN MEDICAL CENTER - Manholes	35,464	60-R3	53.6	60.1	89%	31,625
361.60	UKNOWN SEWER EXTENSIONS - Mains 8" Unknown	110,183	60-R3	26.1	63.6	41%	45,176
361.70	UKNOWN SEWER EXTENSIONS - Manholes	17,291	60-R3	26.1	63.6	41%	7,089
	TOTAL ADJUSTED ACCOUNTS	$ 39,557,426					$ 12,224,249
	TOTAL OTHER ACCOUNTS (UNADJUSTED)	31,212,807					9,611,486
	TOTAL COST APPROACH RESULT	**$ 70,770,233**					**$ 21,835,735**

OCA Exhibit DJG-11
Market Approach Adjustment Results

AUS Market Approach Adjustment

[1]	[2]		[3]		[4]	[5]	[6]	[7]
	AUS Consultants Results					OCA Adjusted Results		
Acquisitions	Purchase Price		RCNLD		Ratio	Fair Market Value	RCNLD	Ratio
Aqua/New Garden	$ 29,500,000		$ 30,615,410		0.96	$ 29,500,000	$ 30,615,410	0.96
PAWC/McKeesport	159,000,000		160,301,491		0.99	158,000,000	160,301,491	0.99
Aqua/Limerick	75,100,000		86,086,756		0.87	64,373,378	86,086,756	0.75
SUEZ/Mahoning Water	4,734,800	*	8,899,336	*	0.53	4,734,800	8,899,336	0.53
SUEZ/Mahoning Wastewater	4,765,200	*	7,991,234	*	0.60	4,765,200	7,991,234	0.60
Aqua/East Bradford	5,000,000	*	9,236,581	*	0.54	5,000,000	9,236,581	0.54
PAWC/Sadsbury	9,250,000		8,517,587		1.09	8,300,000	8,517,587	0.97
PAWC/Exeter	96,000,000		99,589,819		0.96	92,000,000	99,589,819	0.92
PAWC/Steelton	22,500,000		23,921,473		0.94	20,500,000	23,921,473	0.86
Aqua/Cheltenham	50,250,000		49,940,486		1.01	44,558,259	49,940,486	0.89
Total Included	$ 441,600,000		$ 458,973,022		0.96	$ 431,731,637	$ 485,100,173	0.80
RCNLD Results	[8]				$ 27,461,356			$ 21,835,735
Market Approach Result	[9]				**$ 26,420,570**			**$ 17,499,362**

* Excluded from total

[1] Proxy group - company name

[2] Purchase price

[3] AUS reported Replacement Cost New Less Depreciation - excludes several proxy companies

[4] = [2] / [3]

[5] Fair market value decided by Commission for each proxy company

[6] RCNLD from proxy group - includes all data points

[7] = [5] / [6]

[8] RCNLD Results

[9] Total ratio in [8] * [9]

Est. Rate Projections – Township vs. Aqua

Projected Sewer Rates Differential (Estimated)[1]								
Year	2018	2019	2020	2021	2022	2023	2024	2025
Projected Sewer Rates (If Township Keeps System)[2]	$462	$462	$499	$499	$499	$499	$499	$535
Projected Sewer Rates (If Township Sells to Aqua)[3]	$462	$462	$462	$462	$611 - $652	$611 - $652	$611 - $652	$653 - $709

[1] Assumes 48,000 gallons of usage per year

[2] Assumes the Township borrows $5,000,000 in 2020 and 2025 for capital projects

[3] Estimated rate projections provided by Aqua. Actual rate would be deteremined by the Pennsylvania PUC. PFM nor the Township can independently verify the accuracy of these rate projections.

Bid Results

- After long and detailed competitive process, bids were received from all three pre-qualified firms responded to the Request for Bids ("RFB")
- Aqua's bid of $21,000,000 is significantly higher than two valuations that were completed prior

	Aqua Pennsylvania Wastewater, Inc.	Pennsylvania American Water	Bucks County Water and Sewer Authority
1. Purchase Price	**$21,000,000**	$15,000,000	$8,000,000
2. Conditions Included with Bid?	**None**	Yes -Appears to be nonconforming -See pages 1 & 2 of proposal	Yes -May or may not be nonconforming -See page 11 of proposal

Results of Bid	
Highest Purchase Price	**$21,000,000**
Bidder	**Aqua Pennsylvania Wastewater, Inc.**
Cover Bid	$15,000,000
Bidder	Pennsylvania American Water
% Difference*	40.00%
*No Best and Final Offer ("BAFO") required	

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Application of Aqua Pennsylvania Wastewater, Inc. Pursuant to Sections 1102, 1329 and 507 of the Public Utility Code for Approval of the Wastewater System Assets of East Norriton Township	:	Docket No. A-2019-3009052

VERIFICATION

I, David 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: January 3, 2020
*282212

Signature: _____

David Garrett
Resolve Utility Consulting, PLLC
101 Park Avenue
Suite 1125
Oklahoma City, OK 73120