

Exhibit No:
Issue: Replacement Programs, Meaning
of Depreciation in Determining
Worn Out or Deteriorated
Condition
Witness: John J. Spanos
Type of Exhibit: Direct Testimony
Sponsoring Party: Spire Missouri Inc.
Case Nos.: GO-2018-0309, GO-2018-0310

Date Prepared: May 13, 2020

SPIRE MISSOURI, INC.

File Nos. GO-2018-0309, GO-2018-0310

DIRECT TESTIMONY

OF

JOHN J. SPANOS

May 2020

TABLE OF CONTENTS

I. PURPOSE OF DIRECT TESTIMONY.....3

***II. WORN OUT OR DETERIORATED CONDITION OF CAST IRON AND BARE
STEEL FACILITIES.....3***

III. AGE OF FACILITIES BEING RETIRED.....4

IV. COMPARISON TO AVERAGE SERVICE LIVES OF SUCH FACILITIES.....8

V. EXPERIENCE WITH FACILITIES OF OTHER GAS UTILITIES.....10

VI. USE OF DATA FOR RATEMAKING PURPOSES.....13

VII. DEPRECIATION EXPERIENCE OF JOHN J. SPANOS.....JJS-D1

DIRECT TESTIMONY JOHN J. SPANOS

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. My name is John J. Spanos. My business address is 207 Senate Avenue, Camp Hill,
3 Pennsylvania, 17011.

4 **Q. ARE YOU ASSOCIATED WITH ANY FIRM?**

5 A. Yes. I am associated with the firm of Gannett Fleming Valuation and Rate Consultants,
6 LLC. (“Gannett Fleming”)

7 **Q. HOW LONG HAVE YOU BEEN ASSOCIATED WITH GANNETT FLEMING,**
8 **INC.**

9 A. I have been associated with the firm since college graduation in June 1986.

10 **Q. WHAT IS YOUR POSITION WITH THE FIRM?**

11 A. I am President.

12 **Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?**

13 A. I have Bachelor of Science degrees in Industrial Management and Mathematics from
14 Carnegie-Mellon University, and a Master of Business Administration from York College.
15 Please refer to Schedule-JJS-D1 for my professional memberships, certifications, and other
16 qualifications.

17 **Q. DO YOU BELONG TO ANY PROFESSIONAL SOCIETIES?**

18 A. Yes. I am a member and a past President of the Society of Depreciation Professionals. I
19 am also a member of the American Gas Association/ Edison Electric Institute Industry
20 Accounting Committee.

21 **Q. DO YOU HOLD ANY SPECIAL CERTIFICATION AS A DEPRECIATION**
22 **EXPERT?**

1 A. Yes. The Society of Depreciation Professionals has established national standards for
2 depreciation professionals. The Society administers an examination to become certified in
3 this field. I passed the certification exam in September 1997 and was recertified in August
4 2003, February 2008, January 2013 and February 2018.

5 **Q. PLEASE OUTLINE YOUR EXPERIENCE IN THE FIELD OF DEPRECIATION**
6 **DURING YOUR CAREER.**

7 A. I have over 33 years of depreciation experience which includes giving expert testimony in
8 over 330 cases before 41 regulatory commissions, including this Commission. The cases
9 include depreciation studies in the electric, gas, water, wastewater and pipeline industries.
10 In addition to the cases that I have submitted testimony, I have supervised in over 600 other
11 depreciation or valuation assignments. Please refer to Schedule JJS-D1 for additional
12 information on my qualifications, which includes further information with respect to my
13 work history, case experience, and my leadership in the Society of Depreciation
14 Professionals.

15 **Q. HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE THIS**
16 **COMMISSION?**

17 A. Yes. I have presented testimony before the Commission in multiple cases, including rate
18 cases for Spire Missouri under its current name and under its previous name, Laclede Gas
19 Company. I also prepared depreciation studies and data bases for submission in the last
20 rate case proceeding conducted by Spire Missouri for its Spire East and Spire West
21 operation units (the “2016 Depreciation Studies”). See Case No. GR-2017-0215, Exhibit
22 3 (EFIS 300) and Case No. GR-2017-0216, Exhibit 3 (EFIS 298).

23

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

I. PURPOSE OF DIRECT TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my testimony is to address whether the cast iron and steel facilities retired by the Company in connection with its 2018 ISRS filing are “worn out or in a deteriorated condition” within the meaning of the ISRS Statute. Specifically, I will address this issue through the lens of a depreciation professional who routinely determines, for ratemaking purposes, the average service lives, net salvage values and depreciation rates for gas utilities like Spire Missouri as well as other gas utilities throughout the United States.

II. WORN OUT OR DETERIORATED CONDITION OF CAST IRON AND BARE STEEL FACILITIES

Q. ARE YOU FAMILIAR WITH THE MISSOURI WESTERN DISTRICT COURT OF APPEALS OPINION THAT INSTRUCTED THE COMMISSION TO EXCLUDE COSTS INCURRED BY THE COMPANY TO REPLACE CAST IRON AND BARE STEEL TO THE EXTENT THERE IS NOT SUFFICIENT EVIDENCE TO SHOW THAT THESE FACILITIES ARE “WORN OUT OR IN A DETERIORATED CONDITION” WITHIN THE MEANING OF THE ISRS STATUTE?

A. Yes, I have reviewed the Missouri Court of Appeals Opinion which was based on its review of the 2018 ISRS cases filed by Spire East and Spire West.

Q. IN YOUR OPINION, IS SPIRE MISSOURI’S CAST IRON AND STEEL FACILITIES IN THESE CASES WORN OUT OR IN A DETERIORATED CONDITION?

1 A. Yes. While I believe the witnesses provided by Spire Missouri who have safety
2 backgrounds are in a better position to address whether and to what extent such facilities
3 are “worn out”, I can say from the perspective of a depreciation professional that the cast
4 iron and steel facilities retired and replaced as a part of this ISRS filing are undoubtedly
5 “in a deteriorated condition.”

6 **Q. ON WHAT DO YOU BASE THAT CONCLUSION?**

7 A. I base it on a number of factors, including: (a) my review of the age of the cast iron and
8 steel facilities that were retired in and replaced by the investments included in the Spire
9 Missouri’s ISRS filings in these cases (b) a comparison of those ages to the average service
10 lives that have been estimated by me, the Commission Staff and the Office of the Public
11 Counsel in rate cases involving Spire Missouri; (c) my knowledge and experience
12 involving the facilities of numerous other gas utilities for which I have also prepared
13 depreciation studies over the years; and (d) my understanding of how such data is used and
14 has been used for decades to determine the condition of natural gas facilities and the pace
15 of their deterioration over time – determinations that are relied upon for ratemaking
16 purposes like that being effectuated through the ISRS mechanism.

17

18 **III. SPIRE MISSOURI’S 2016 DEPRECIATION STUDY**

19 **Q. WHY ARE DEPRECIATION STUDIES PERFORMED FOR REGULATED**
20 **UTILITIES LIKE SPIRE MISSOURI?**

21 A. The primary reason for preparing such studies is to spread the cost of the utilities’ assets
22 over the estimated service lives of those assets so that utility customers are appropriately
23 charged in proportion to their consumption of the asset over time.

1 **Q. PLEASE EXPLAIN THE PROCESS FOR ESTIMATING SERVICE LIVES.**

2 A. The process for estimating service lives is based on informed judgment that incorporates a
3 number of factors, including the statistical analysis of the historical data. The statistical
4 analysis used in the study is known as the retirement rate method. I have described this
5 method in Part II of the 2016 Depreciation Studies. When using the retirement rate method,
6 original life tables are developed from the Company's historical accounting data. The
7 original life tables provide an indication of the percentage of assets that have historically
8 survived to each age for which data is available.

9 **Q. HOW ARE ORIGINAL LIFE TABLES USED TO FORECAST SERVICE LIVES?**

10 A. Iowa survivor curves can be fit to the original life tables developed from the Company's
11 actual experience in order to smooth and extrapolate the historical survivor characteristics
12 for a group of assets. Iowa survivor curves provide a complete indication of the percentage
13 of assets forecast to survive to each age, and average service lives and remaining lives can
14 be derived from a given Iowa curve in order to calculate depreciation expense. Curve
15 fitting or curve matching of Iowa curves to an original life table can be performed either
16 visually or mathematically.

17 **Q. HOW ARE SERVICE LIVES ESTIMATED FOR MASS PROPERTY?**

18 A. A mass property account is typically a group of assets for which there will be a range of
19 service lives. For example, some mains will retire at early ages (for example, relocation or
20 dig in damage) and some will survive for much longer. The range of lives for a group of
21 assets is referred to as the "dispersion" of lives or dispersion of retirements. Service lives
22 are estimated for mass property accounts using established survivor curves, which provide

1 an estimate of both an average service life and a dispersion of lives around the average.
2 This concept is discussed in more detail in Part II of the 2016 Depreciation Studies

3 **Q. IS THERE ANY DISAGREEMENT WITH THE ESTABLISHED SERVICE LIVES**
4 **FOR GAS MAINS?**

5 A. No. All parties have agreed on the average service lives of the gas mains, however, there
6 appears to be some disagreement on the recovery method for the cost incurred to replace
7 such mains.

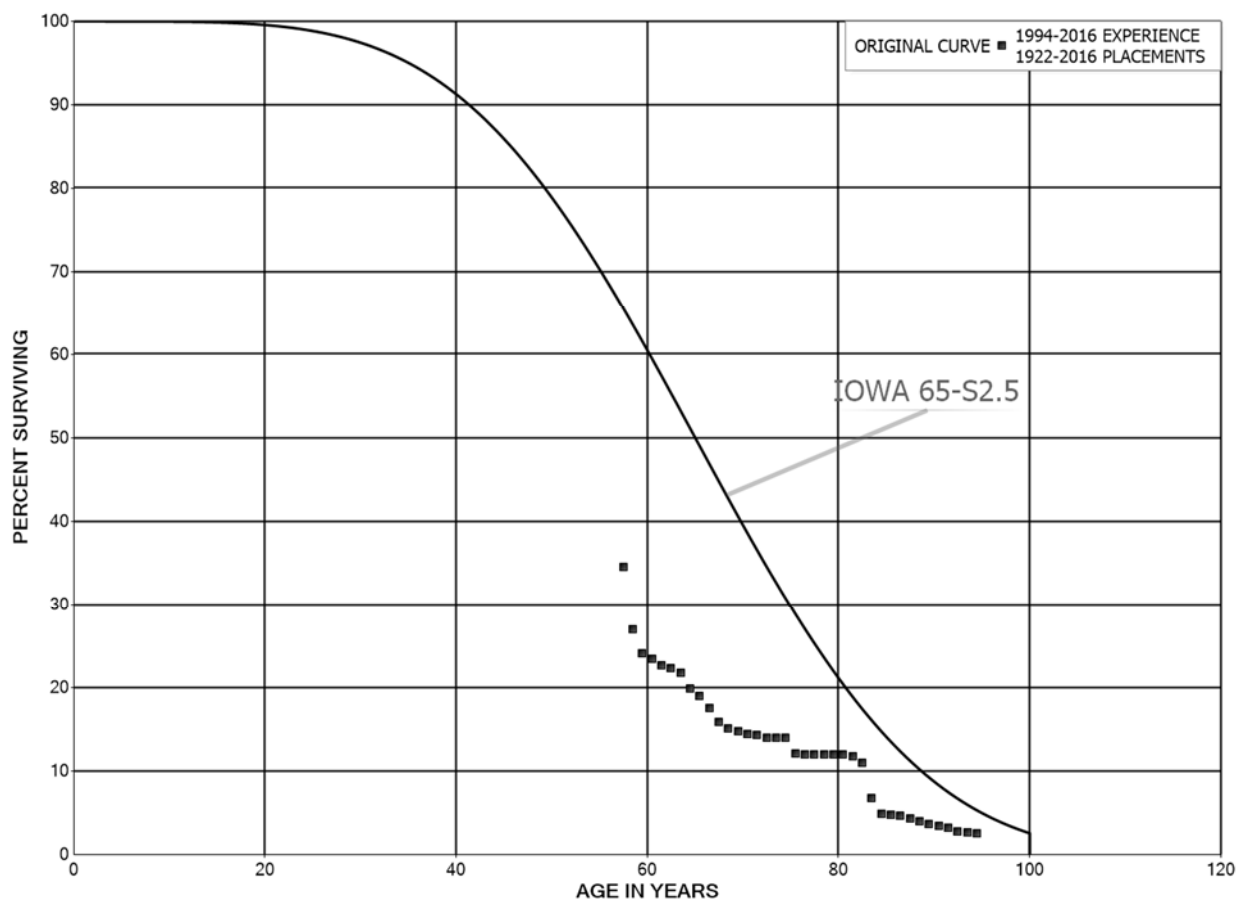
8 **Q. IS THERE ANOTHER COMPONENT OF THE SERVICE LIFE INCLUDED IN**
9 **THE DEPRECIATION STUDIES FOR CAST IRON MAINS?**

10 A. Yes. The service life estimate for cast iron gas main assets for both companies includes a
11 truncation date of December 2025 which means there was a plan in place to replace all cast
12 iron mains by the end of 2025 which represents 100 years from initial installation for Spire
13 Missouri West and 120 years from initial installation of Spire Missouri East.

14 **Q. CAN YOU PRESENT HOW THE ESTABLISHED SURVIVOR CURVE FOR**
15 **CAST IRON MAINS FOR EACH COMPANY PROJECTS THE LIFE CYCLE**
16 **CONSISTENT WITH EACH COMPANY'S PRACTICE?**

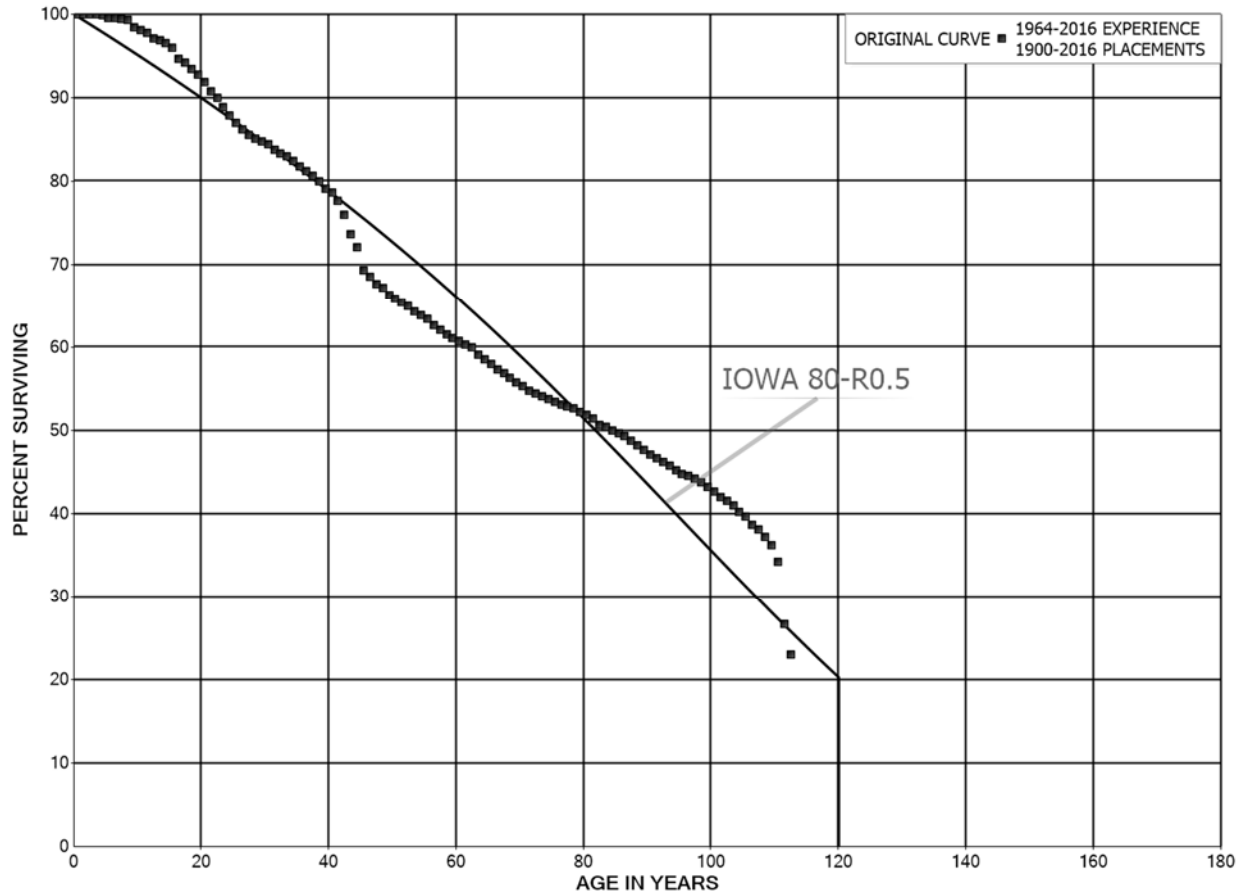
17 A. Yes. Figure 1 sets forth Account 376.2, Mains – Cast Iron, for Spire Missouri West. Based
18 on the historical data and effects of the cast iron replacement program, the 65-S2.5 survivor
19 curve is truncated at age 100. The smooth curve with truncation estimates that all cast iron
20 mains will be gone by age 100 or year 2025 based on the data. Given the small percentage
21 of assets still in service as of 2016, it is expected that the assets older than 85 years should
22 be gone in the next few years as the original curve indicates. As shown in Figure 1, there
23 is less than 5 percent surviving of those statistically exposed to retirement since age 85.

FIGURE 1
 MISSOURI GAS ENERGY
 ACCOUNT 376.20 MAINS - CAST IRON
 ORIGINAL AND SMOOTH SURVIVOR CURVES



1
 2 Similarly, Figure 2 sets forth Account 376.2, Mains – Cast Iron, for Spire Missouri East.
 3 The average service life for Spire Missouri East is 80 years, however, the historical
 4 indications within the asset class is quite clear that there is a focus on replacing all mains
 5 older than 100 years. As shown in the graph, the original curve (small squares) which
 6 represents actual company data, has shown a big decline in percent surviving for ages 105
 7 and older.

FIGURE 2
 LACLEDE GAS COMPANY
 ACCOUNTS 376.2 AND 376.21 MAINS - CAST IRON
 ORIGINAL AND SMOOTH SURVIVOR CURVES



1
2
3
4
5
6
7
8

IV. AGE OF FACILITIES BEING RETIRED

Q. HAVE YOU REVIEWED THE AGE OF THE CAST IRON AND STEEL FACILITIES THAT WERE RETIRED AND REPLACED IN SPIRE MISSOURI'S 2018 ISRS FILINGS?

A. Yes. I have examined the age of the cast iron and steel main facilities retired by Spire Missouri in connection with its 2018 ISRS cases. Breaking this down by the percentage of

1 total footage that was retired from each vintage age shows the following for the Spire East
2 retirements

3
4 **Spire East GO-2018-0309 Retirements**

Vintage	Cast Iron	%	Steel	%
1900-1910	277581	63.79%	0	0.00%
1911-1920	51755	11.89%	0	0.00%
1921-1930	73106	16.80%	780	1.15%
1931-1940	5772	1.33%	24	0.04%
1941-1950	13654	3.14%	3943	5.79%
1951-1960	11566	2.66%	14703	21.60%
1961-1970	1710	0.39%	40772	59.91%
1971-1980	0	0.00%	4439	6.52%
1981-1990	0	0.00%	1048	1.54%
1991-2000	0	0.00%	1608	2.36%
2001-2010	0	0.00%	487	0.72%
2011-2020	0	0.00%	252	0.37%
Total	435144	100%	68056	100%

5
6 **Q. WHAT DOES YOUR ANALYSIS SHOW FOR SPIRE WEST?**

7 A. The comparable data for the retirements that were included in Spire West's 2018 ISRS case
8 is shown below:

Spire West GO-2018-0310 Retirements

	Cast Iron	%	Steel	%
1900-1910	0	0.00%	0	0.00%
1911-1920	0	0.00%	0	0.00%
1921-1930	202506	84.67%	69060	6.78%
1931-1940	7137	2.98%	241133	23.66%
1941-1950	14818	6.20%	106859	10.49%
1951-1960	14709	6.15%	314562	30.87%
1961-1970	0	0.00%	173606	17.04%
1971-1980	0	0.00%	85252	8.37%
1981-1990	0	0.00%	17158	1.68%
1991-2000	0	0.00%	7251	.71%
2001-2010	0	0.00%	2144	.21%
2011-2020	0	0.00%	1974	.19%
Total	239170	100%	1018999	100%

1

2

3 **V. COMPARISON TO AVERAGE SERVICE LIVES OF SUCH FACILITIES**

4 **Q. HOW DO THE AGES OF THE FACILITIES RETIRED IN SPIRE MISSOURI'S**
 5 **2018 ISRS FILINGS COMPARE TO THE AVERAGE SERVICE LIVES THAT**
 6 **HAVE BEEN ESTIMATED BY YOU, THE COMMISSION STAFF AND OPC?**

7 **A.** In terms of cast iron facilities, the approved survivor curve for cast iron mains for Spire
 8 Missouri East is an 80-R0.5 which represents an eighty year average service life. For Spire

1 West the approved survivor curve for cast iron gas mains for Spire West is a 65-S2.5 which
2 represents a sixty-five year average service life. As the data presented above shows, nearly
3 85% of the cast iron facilities retired by Spire East in the 2018 ISRS case had already
4 exceeded the expected average service life of such facilities, with the remaining 15%
5 exceeding more than two thirds of the expected average service life. For Spire West, nearly
6 100 percent of the cast iron mains retired in its 2018 ISRS had reached their estimated
7 average service life of 65 years, with nearly 85% exceeding the average service life by an
8 astounding 25 years or more.

9 **Q. WHAT ARE THE RESULTS FOR THE STEEL MAIN FACILITIES RETIRED**
10 **IN THE 2018 ISRS PROCEEDING?**

11 A. In terms of steel facilities, and as identified in the testimony of Company witness Selinger,
12 the estimated service life for steel mains at Spire West (which has such mains) is 69
13 years. Although only slightly more than one third of the bare steel mains that have been
14 replaced had reached or exceeded their estimated service life, it is important to note that
15 such facilities begin to corrode as soon as they are installed and many of these facilities
16 went without cathodic protection for a number of decades.

17 **Q. WHAT DOES THIS DATA INDICATE TO YOU REGARDING WHETHER**
18 **THESE FACILITIES ARE WORN OUT OR IN A DETERIORATED**
19 **CONDITION?**

20 A. In my opinion, the data represents compelling evidence that these facilities are, at a
21 minimum, in a “deteriorated condition.” It is also important to note that while there are
22 many forces that contribute to the retirement of mains, the primary factor for retiring mains

1 beyond reaching the average service life is wear and tear and, as this Commission has
2 recognized, the effects of graphitization in the case of cast iron facilities and corrosion in
3 the case of steel facilities. Over time, these factors have caused these facilities to
4 deteriorate – a process that was gradual and, in the case of unprotected steel facilities, began
5 the moment they were placed in the ground. Given the length of time these facilities had
6 been in the ground at the time they were retired, I am confident based on my experience
7 with such facilities, that they were all in a deteriorated condition to varying degrees in that
8 they were inferior in quality or value compared to their condition when first installed.

9 **Q. BUT WEREN'T SOME OF THE STEEL MAINS RETIRED BY THE COMPANY**
10 **REPLACED PRIOR TO THE END OF THEIR ESTIMATED AVERAGE**
11 **SERVICE LIFE?**

12 A. Yes, but as the depreciation expert for OPC, John Robinett, has recognized, bare steel
13 begins to corrode the moment it is placed in the ground. Because much of the bare steel in
14 Spire West's system was not cathodically protected until at least two – and in many cases
15 three or four – decades after installation, there is a strong probability that they were already
16 in a deteriorated condition at the time such cathodic protection was applied. My
17 understanding is that the placement of cathodic protection would do nothing to change this
18 deteriorated condition.

19
20 **VI. EXPERIENCE WITH FACILITIES OF OTHER GAS UTILITIES**

21 **Q. PLEASE EXPLAIN WHAT YOUR EXPERIENCE IN EVALUATING THE**
22 **FACILITIES OF OTHER GAS UTILITIES WOULD INDICATE REGARDING**

1 **THE CONDITION OF SPIRE MISSOURI'S CAST IRON AND STEEL**
2 **FACILITIES.**

3 A. A component of all depreciation studies that I conduct includes a site visit of a sampling
4 of assets in order to understand the nature of the assets and the causes of retirements. The
5 number of depreciation studies and site visits performed each year for gas utilities provides
6 a wealth of information that can assist in understanding the cause of retirements. Although,
7 my site visits for Spire Missouri assets during the 2016 depreciation studies did not
8 specifically include replacement of cast iron mains, I have seen numerous others across the
9 country in the last few years. In each case that I reviewed cast iron or bare steel main being
10 replaced, there were clear signs of deterioration.

11 **Q. HAVE OTHER UTILITIES ACTED ON THIS INFORMATION IN A WAY**
12 **SIMILAR TO SPIRE MISSOURI?**

13 A. Yes. As Company witness Norfleet has testified, utilities across the United States are
14 replacing their cast iron and steel facilities at a pace that is equal to or even quicker than
15 the pace being maintained by Spire Missouri under its systematic replacement program. In
16 my view, the significant investments required to perform such replacements by utilities
17 whose spending is likewise regulated by other regulatory commissions, only adds to the
18 solid body of evidence showing that these facilities are either worn out or in a deteriorated
19 condition, or both.

20
21 **VII. USE OF DATA FOR RATEMAKING PURPOSES**

1 **Q. HOW IS THE DETERMINATION OF AVERAGE SERVICE LIVES FOR SUCH**
2 **FACILITIES, AND THE RESULTING DEPRECIATION RATES, USED FOR**
3 **RATEMAKING PURPOSES?**

4 A. The purpose of conducting a depreciation study is to match the recovery of each asset class
5 with the utilization of the asset class. For regulated utilities, this is done by group or
6 account, not on an individual asset basis. Therefore, the average service life and survivor
7 curve determine the recovery pattern that is most appropriate for not only the existing assets
8 but for future assets in each account. The resulting depreciation rate for each account is
9 calculated based on the average service life and survivor curve of the surviving vintage
10 balance. Depreciation rates are then calculated for each asset group and used to establish
11 the level of depreciation expense that will be reflected in rates.

12 **Q. TO YOUR KNOWLEDGE HAS THERE EVER BEEN A REQUIREMENT OR**
13 **PRACTICE OBSERVED IN ANY JURISDICTION THAT REQUIRES**
14 **FACILITIES LIKE CAST IRON OR STEEL TO BE UNCOVERED AND**
15 **VISUALLY OBSERVED TO DETERMINE WHETHER THEY ARE**
16 **DETERIORATING IN THE MANNER ASSUMED BY THE DEPRECIATION**
17 **ANALYSIS THAT ESTIMATES SERVICE LIVES?**

18 A. No. It is very costly to uncover mains to visually observe the condition as well as very
19 disruptive to the community to continually have mains being dug up. Additionally, it is
20 not very cost effective for a region that has a lot of cast iron to come back and dig up mains
21 after small segments are actually leaking when larger segments can be replaced at once.
22 Finally, the industry has established that these materials are inherently risky, and many
23 state commissions, including Missouri, have mandatory replacement programs. Given the

1 nature of the cast iron and bare steel material and the time they have been in the ground,
2 cast iron and bare steel are routinely deemed to be deteriorated, and no further proof is
3 necessary or useful.

4 **Q. WAS THIS PRACTICE OF ESTABLISHING THE ESTIMATED SERVICE LIVES**
5 **USED TO SET UTILITY RATES WITHOUT AN ONGOING PHYSICAL**
6 **EXAMINATION OF THE UNDERGROUND FACILITIES FOR WHICH THE**
7 **LIVES ARE BEING CALCULATED COMMON IN 2003 WHEN THE ISRS**
8 **STATUTE WAS ENACTED?**

9 A. Yes, and for many years before then. That's precisely why I do not believe that the ISRS
10 Statute meant to require evidence of whether facilities are in a "deteriorated condition" that
11 is so radically different from the depreciation evidence that utility commissions have relied
12 upon for decades to determine how long facilities can be expected to last and adjust rates
13 accordingly.

14 **Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?**

15 A. Yes.

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of the Application of Spire)
Missouri Inc. to Establish an Infrastructure)
System Replacement Surcharge in its Spire) **File No. GO-2018-0309**
Missouri East Service Territory)

In the Matter of the Application of Spire)
Missouri Inc. to Establish an Infrastructure)
System Replacement Surcharge in its Spire) **File No. GO-2018-0310**
Missouri West Service Territory)

A F F I D A V I T

COMMONWEALTH OF PENNSYLVANIA)
) SS.
COUNTY OF CUMBERLAND)

John J. Spanos, of lawful age, being first duly sworn, deposes and states:

1. My name is John J. Spanos. I am President of Gannett Fleming Valuation and Rate Consultants, LLC. ("Gannett Fleming"). My business address is 207 Senate Avenue, Camp Hill, Pennsylvania, 17011.

2. Attached hereto and made a part hereof for all purposes is my direct testimony on behalf of Spire Missouri Inc.

3. Under penalty of perjury I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.



John J. Spanos

This 13th day of May 2020.

Schedule JJS-D1

JOHN SPANOS

DEPRECIATION EXPERIENCE

Q. Please state your name.

A. My name is John J. Spanos.

Q. What is your educational background?

A. I have Bachelor of Science degrees in Industrial Management and Mathematics from Carnegie-Mellon University and a Master of Business Administration from York College.

Q. Do you belong to any professional societies?

A. Yes. I am a member and past President of the Society of Depreciation Professionals and a member of the American Gas Association/Edison Electric Institute Industry Accounting Committee.

Q. Do you hold any special certification as a depreciation expert?

A. Yes. The Society of Depreciation Professionals has established national standards for depreciation professionals. The Society administers an examination to become certified in this field. I passed the certification exam in September 1997 and was recertified in August 2003, February 2008, January 2013 and February 2018.

Q. Please outline your experience in the field of depreciation.

A. In June 1986, I was employed by Gannett Fleming Valuation and Rate Consultants, Inc. as a Depreciation Analyst. During the period from June 1986 through December, 1995, I helped prepare numerous depreciation and original cost studies for utility companies in various industries. I helped perform depreciation studies for the following telephone companies: United Telephone of Pennsylvania, United Telephone of New Jersey, and Anchorage Telephone Utility. I helped perform depreciation studies for the following

companies in the railroad industry: Union Pacific Railroad, Burlington Northern Railroad, and Wisconsin Central Transportation Corporation.

I helped perform depreciation studies for the following organizations in the electric utility industry: Chugach Electric Association, The Cincinnati Gas and Electric Company (CG&E), The Union Light, Heat and Power Company (ULH&P), Northwest Territories Power Corporation, and the City of Calgary - Electric System.

I helped perform depreciation studies for the following pipeline companies: TransCanada Pipelines Limited, Trans Mountain Pipe Line Company Ltd., Interprovincial Pipe Line Inc., Nova Gas Transmission Limited and Lakehead Pipeline Company.

I helped perform depreciation studies for the following gas utility companies: Columbia Gas of Pennsylvania, Columbia Gas of Maryland, The Peoples Natural Gas Company, T. W. Phillips Gas & Oil Company, CG&E, ULH&P, Lawrenceburg Gas Company and Penn Fuel Gas, Inc.

I helped perform depreciation studies for the following water utility companies: Indiana-American Water Company, Consumers Pennsylvania Water Company and The York Water Company; and depreciation and original cost studies for Philadelphia Suburban Water Company and Pennsylvania-American Water Company.

In each of the above studies, I assembled and analyzed historical and simulated data, performed field reviews, developed preliminary estimates of service life and net salvage, calculated annual depreciation, and prepared reports for submission to state public utility commissions or federal regulatory agencies. I performed these studies under the general direction of William M. Stout, P.E.

In January 1996, I was assigned to the position of Supervisor of Depreciation Studies. In July 1999, I was promoted to the position of Manager, Depreciation and

Valuation Studies. In December 2000, I was promoted to the position as Vice-President of Gannett Fleming Valuation and Rate Consultants, Inc., in April 2012, I was promoted to the position as Senior Vice President of the Valuation and Rate Division of Gannett Fleming Inc. (now doing business as Gannett Fleming Valuation and Rate Consultants, LLC) and in January of 2019, I was promoted to my present position of President of Gannett Fleming Valuation and Rate Consultants, LLC. In my current position I am responsible for conducting all depreciation, valuation and original cost studies, including the preparation of final exhibits and responses to data requests for submission to the appropriate regulatory bodies.

Since January 1996, I have conducted depreciation studies similar to those previously listed including assignments for Pennsylvania-American Water Company; Aqua Pennsylvania; Kentucky-American Water Company; Virginia-American Water Company; Indiana-American Water Company; Iowa-American Water Company; New Jersey-American Water Company; Hampton Water Works Company; Omaha Public Power District; Enbridge Pipe Line Company; Inc.; Columbia Gas of Virginia, Inc.; Virginia Natural Gas Company National Fuel Gas Distribution Corporation - New York and Pennsylvania Divisions; The City of Bethlehem - Bureau of Water; The City of Coatesville Authority; The City of Lancaster - Bureau of Water; Peoples Energy Corporation; The York Water Company; Public Service Company of Colorado; Enbridge Pipelines; Enbridge Gas Distribution, Inc.; Reliant Energy-HLP; Massachusetts-American Water Company; St. Louis County Water Company; Missouri-American Water Company; Chugach Electric Association; Alliant Energy; Oklahoma Gas & Electric Company; Nevada Power Company; Dominion Virginia Power; NUI-Virginia Gas Companies; Pacific Gas & Electric Company; PSI Energy; NUI - Elizabethtown Gas Company; Cinergy Corporation – CG&E; Cinergy Corporation – ULH&P; Columbia Gas of Kentucky; South Carolina Electric & Gas Company; Idaho Power Company; El Paso

Electric Company; Aqua North Carolina; Aqua Ohio; Aqua Texas, Inc.; Aqua Illinois, Inc.; Ameren Missouri; Central Hudson Gas & Electric; Centennial Pipeline Company; CenterPoint Energy-Arkansas; CenterPoint Energy – Oklahoma; CenterPoint Energy – Entex; CenterPoint Energy - Louisiana; NSTAR – Boston Edison Company; Westar Energy, Inc.; United Water Pennsylvania; PPL Electric Utilities; PPL Gas Utilities; Wisconsin Power & Light Company; TransAlaska Pipeline; Avista Corporation; Northwest Natural Gas; Allegheny Energy Supply, Inc.; Public Service Company of North Carolina; South Jersey Gas Company; Duquesne Light Company; MidAmerican Energy Company; Laclede Gas; Duke Energy Company; E.ON U.S. Services Inc.; Elkton Gas Services; Anchorage Water and Wastewater Utility; Kansas City Power and Light; Duke Energy North Carolina; Duke Energy South Carolina; Monongahela Power Company; Potomac Edison Company; Duke Energy Ohio Gas; Duke Energy Kentucky; Duke Energy Indiana; Duke Energy Progress; Northern Indiana Public Service Company; Tennessee-American Water Company; Columbia Gas of Maryland; Maryland-American Water Company; Bonneville Power Administration; NSTAR Electric and Gas Company; EPCOR Distribution, Inc.; B. C. Gas Utility, Ltd; Entergy Arkansas; Entergy Texas; Entergy Mississippi; Entergy Louisiana; Entergy Gulf States Louisiana; the Borough of Hanover; Louisville Gas and Electric Company; Kentucky Utilities Company; Madison Gas and Electric; Central Maine Power; PEPCO; PacifiCorp; Minnesota Energy Resource Group; Jersey Central Power & Light Company; Cheyenne Light, Fuel and Power Company; United Water Arkansas; Central Vermont Public Service Corporation; Green Mountain Power; Portland General Electric Company; Atlantic City Electric; Nicor Gas Company; Black Hills Power; Black Hills Colorado Gas; Black Hills Kansas Gas; Black Hills Service Company; Black Hills Utility Holdings; Public Service Company of Oklahoma; City of

Dubois; Peoples Gas Light and Coke Company; North Shore Gas Company; Connecticut Light and Power; New York State Electric and Gas Corporation; Rochester Gas and Electric Corporation; Greater Missouri Operations; Tennessee Valley Authority; Omaha Public Power District; Indianapolis Power & Light Company; Vermont Gas Systems, Inc.; Metropolitan Edison; Pennsylvania Electric; West Penn Power; Pennsylvania Power; PHI Service Company - Delmarva Power and Light; Atmos Energy Corporation; Citizens Energy Group; PSE&G Company; Berkshire Gas Company; Alabama Gas Corporation; Mid-Atlantic Interstate Transmission, LLC; SUEZ Water; WEC Energy Group; Rocky Mountain Natural Gas, LLC; Illinois-American Water Company; Northern Illinois Gas Company; Public Service of New Hampshire and Newtown Artesian Water Company.

My additional duties include determining final life and salvage estimates, conducting field reviews, presenting recommended depreciation rates to management for its consideration and supporting such rates before regulatory bodies.

Q. Have you submitted testimony to any state utility commission on the subject of utility plant depreciation?

A. Yes. I have submitted testimony to the Pennsylvania Public Utility Commission; the Commonwealth of Kentucky Public Service Commission; the Public Utilities Commission of Ohio; the Nevada Public Utility Commission; the Public Utilities Board of New Jersey; the Missouri Public Service Commission; the Massachusetts Department of Telecommunications and Energy; the Alberta Energy & Utility Board; the Idaho Public Utility Commission; the Louisiana Public Service Commission; the State Corporation Commission of Kansas; the Oklahoma Corporate Commission; the Public Service Commission of South Carolina; Railroad Commission of Texas – Gas Services Division; the New York Public Service Commission; Illinois Commerce Commission; the Indiana

Utility Regulatory Commission; the California Public Utilities Commission; the Federal Energy Regulatory Commission (“FERC”); the Arkansas Public Service Commission; the Public Utility Commission of Texas; Maryland Public Service Commission; Washington Utilities and Transportation Commission; The Tennessee Regulatory Commission; the Regulatory Commission of Alaska; Minnesota Public Utility Commission; Utah Public Service Commission; District of Columbia Public Service Commission; the Mississippi Public Service Commission; Delaware Public Service Commission; Virginia State Corporation Commission; Colorado Public Utility Commission; Oregon Public Utility Commission; South Dakota Public Utilities Commission; Wisconsin Public Service Commission; Wyoming Public Service Commission; the Public Service Commission of West Virginia; Maine Public Utility Commission; Iowa Utility Board; Connecticut Public Utilities Regulatory Authority; New Mexico Public Regulation Commission; Commonwealth of Massachusetts Department of Public Utilities; Rhode Island Public Utilities Commission and the North Carolina Utilities Commission.

Q. Have you had any additional education relating to utility plant depreciation?

A. Yes. I have completed the following courses conducted by Depreciation Programs, Inc.: “Techniques of Life Analysis,” “Techniques of Salvage and Depreciation Analysis,” “Forecasting Life and Salvage,” “Modeling and Life Analysis Using Simulation,” and “Managing a Depreciation Study.” I have also completed the “Introduction to Public Utility Accounting” program conducted by the American Gas Association.

Q. Does this conclude your qualification statement?

A. Yes.

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
01.	1998	PA PUC	R-00984375	City of Bethlehem – Bureau of Water	Original Cost and Depreciation
02.	1998	PA PUC	R-00984567	City of Lancaster	Original Cost and Depreciation
03.	1999	PA PUC	R-00994605	The York Water Company	Depreciation
04.	2000	D.T.&E.	DTE 00-105	Massachusetts-American Water Company	Depreciation
05.	2001	PA PUC	R-00016114	City of Lancaster	Original Cost and Depreciation
06.	2001	PA PUC	R-00017236	The York Water Company	Depreciation
07.	2001	PA PUC	R-00016339	Pennsylvania-American Water Company	Depreciation
08.	2001	OH PUC	01-1228-GA-AIR	Cinergy Corp – Cincinnati Gas & Elect Company	Depreciation
09.	2001	KY PSC	2001-092	Cinergy Corp – Union Light, Heat & Power Co.	Depreciation
10.	2002	PA PUC	R-00016750	Philadelphia Suburban Water Company	Depreciation
11.	2002	KY PSC	2002-00145	Columbia Gas of Kentucky	Depreciation
12.	2002	NJ BPU	GF02040245	NUI Corporation/Elizabethtown Gas Company	Depreciation
13.	2002	ID PUC	IPC-E-03-7	Idaho Power Company	Depreciation
14.	2003	PA PUC	R-0027975	The York Water Company	Depreciation
15.	2003	IN URC	R-0027975	Cinergy Corp – PSI Energy, Inc.	Depreciation
16.	2003	PA PUC	R-00038304	Pennsylvania-American Water Company	Depreciation
17.	2003	MO PSC	WR-2003-0500	Missouri-American Water Company	Depreciation
18.	2003	FERC	ER03-1274-000	NSTAR-Boston Edison Company	Depreciation
19.	2003	NJ BPU	BPU 03080683	South Jersey Gas Company	Depreciation
20.	2003	NV PUC	03-10001	Nevada Power Company	Depreciation
21.	2003	LA PSC	U-27676	CenterPoint Energy – Arkla	Depreciation
22.	2003	PA PUC	R-00038805	Pennsylvania Suburban Water Company	Depreciation
23.	2004	AB En/Util Bd	1306821	EPCOR Distribution, Inc.	Depreciation
24.	2004	PA PUC	R-00038168	National Fuel Gas Distribution Corp (PA)	Depreciation
25.	2004	PA PUC	R-00049255	PPL Electric Utilities	Depreciation
26.	2004	PA PUC	R-00049165	The York Water Company	Depreciation
27.	2004	OK Corp Cm	PUC 200400187	CenterPoint Energy – Arkla	Depreciation
28.	2004	OH PUC	04-680-EI-AIR	Cinergy Corp. – Cincinnati Gas and Electric Company	Depreciation
29.	2004	RR Com of TX	GUD#	CenterPoint Energy – Entex Gas Services Div.	Depreciation
30.	2004	NY PUC	04-G-1047	National Fuel Gas Distribution Gas (NY)	Depreciation
31.	2004	AR PSC	04-121-U	CenterPoint Energy – Arkla	Depreciation
32.	2005	IL CC	05-	North Shore Gas Company	Depreciation
33.	2005	IL CC	05-	Peoples Gas Light and Coke Company	Depreciation
34.	2005	KY PSC	2005-00042	Union Light Heat & Power	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
35.	2005	IL CC	05-0308	MidAmerican Energy Company	Depreciation
36.	2005	MO PSC	GF-2005	Laclede Gas Company	Depreciation
37.	2005	KS CC	05-WSEE-981-RTS	Westar Energy	Depreciation
38.	2005	RR Com of TX	GUD #	CenterPoint Energy – Entex Gas Services Div.	Depreciation
39.	2005	US District Court	Cause No. 1:99-CV-1693- LJM/VSS	Cinergy Corporation	Accounting
40.	2005	OK CC	PUD 200500151	Oklahoma Gas and Electric Company	Depreciation
41.	2005	MA Dept Tele- com & Ergy	DTE 05-85	NSTAR	Depreciation
42.	2005	NY PUC	05-E-934/05-G-0935	Central Hudson Gas & Electric Company	Depreciation
43.	2005	AK Reg Com	U-04-102	Chugach Electric Association	Depreciation
44.	2005	CA PUC	A05-12-002	Pacific Gas & Electric	Depreciation
45.	2006	PA PUC	R-00051030	Aqua Pennsylvania, Inc.	Depreciation
46.	2006	PA PUC	R-00051178	T.W. Phillips Gas and Oil Company	Depreciation
47.	2006	NC Util Cm.		Pub. Service Company of North Carolina	Depreciation
48.	2006	PA PUC	R-00051167	City of Lancaster	Depreciation
49.	2006	PA PUC	R00061346	Duquesne Light Company	Depreciation
50.	2006	PA PUC	R-00061322	The York Water Company	Depreciation
51.	2006	PA PUC	R-00051298	PPL GAS Utilities	Depreciation
52.	2006	PUC of TX	32093	CenterPoint Energy – Houston Electric	Depreciation
53.	2006	KY PSC	2006-00172	Duke Energy Kentucky	Depreciation
54.	2006	SC PSC		SCANA	Accounting
55.	2006	AK Reg Com	U-06-6	Municipal Light and Power	Depreciation
56.	2006	DE PSC	06-284	Delmarva Power and Light	Depreciation
57.	2006	IN URC	IURC43081	Indiana American Water Company	Depreciation
58.	2006	AK Reg Com	U-06-134	Chugach Electric Association	Depreciation
59.	2006	MO PSC	WR-2007-0216	Missouri American Water Company	Depreciation
60.	2006	FERC	IS05-82-002, et al	TransAlaska Pipeline	Depreciation
61.	2006	PA PUC	R-00061493	National Fuel Gas Distribution Corp. (PA)	Depreciation
62.	2007	NC Util Com.	E-7 SUB 828	Duke Energy Carolinas, LLC	Depreciation
63.	2007	OH PSC	08-709-EL-AIR	Duke Energy Ohio Gas	Depreciation
64.	2007	PA PUC	R-00072155	PPL Electric Utilities Corporation	Depreciation
65.	2007	KY PSC	2007-00143	Kentucky American Water Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
66.	2007	PA PUC	R-00072229	Pennsylvania American Water Company	Depreciation
67.	2007	KY PSC	2007-0008	NiSource – Columbia Gas of Kentucky	Depreciation
68.	2007	NY PSC	07-G-0141	National Fuel Gas Distribution Corp (NY)	Depreciation
69.	2008	AK PSC	U-08-004	Anchorage Water & Wastewater Utility	Depreciation
70.	2008	TN Reg Auth	08-00039	Tennessee-American Water Company	Depreciation
71.	2008	DE PSC	08-96	Artesian Water Company	Depreciation
72.	2008	PA PUC	R-2008-2023067	The York Water Company	Depreciation
73.	2008	KS CC	08-WSEE1-RTS	Westar Energy	Depreciation
74.	2008	IN URC	43526	Northern Indiana Public Service Company	Depreciation
75.	2008	IN URC	43501	Duke Energy Indiana	Depreciation
76.	2008	MD PSC	9159	NiSource – Columbia Gas of Maryland	Depreciation
77.	2008	KY PSC	2008-000251	Kentucky Utilities	Depreciation
78.	2008	KY PSC	2008-000252	Louisville Gas & Electric	Depreciation
79.	2008	PA PUC	2008-20322689	Pennsylvania American Water Co. - Wastewater	Depreciation
80.	2008	NY PSC	08-E887/08-00888	Central Hudson	Depreciation
81.	2008	WV TC	VE-080416/VG-8080417	Avista Corporation	Depreciation
82.	2008	IL CC	ICC-09-166	Peoples Gas, Light and Coke Company	Depreciation
83.	2009	IL CC	ICC-09-167	North Shore Gas Company	Depreciation
84.	2009	DC PSC	1076	Potomac Electric Power Company	Depreciation
85.	2009	KY PSC	2009-00141	NiSource – Columbia Gas of Kentucky	Depreciation
86.	2009	FERC	ER08-1056-002	Entergy Services	Depreciation
87.	2009	PA PUC	R-2009-2097323	Pennsylvania American Water Company	Depreciation
88.	2009	NC Util Cm	E-7, Sub 090	Duke Energy Carolinas, LLC	Depreciation
89.	2009	KY PSC	2009-00202	Duke Energy Kentucky	Depreciation
90.	2009	VA St. CC	PUE-2009-00059	Aqua Virginia, Inc.	Depreciation
91.	2009	PA PUC	2009-2132019	Aqua Pennsylvania, Inc.	Depreciation
92.	2009	MS PSC	09-	Entergy Mississippi	Depreciation
93.	2009	AK PSC	09-08-U	Entergy Arkansas	Depreciation
94.	2009	TX PUC	37744	Entergy Texas	Depreciation
95.	2009	TX PUC	37690	El Paso Electric Company	Depreciation
96.	2009	PA PUC	R-2009-2106908	The Borough of Hanover	Depreciation
97.	2009	KS CC	10-KCPE-415-RTS	Kansas City Power & Light	Depreciation
98.	2009	PA PUC	R-2009-	United Water Pennsylvania	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
99.	2009	OH PUC		Aqua Ohio Water Company	Depreciation
100.	2009	WI PSC	3270-DU-103	Madison Gas & Electric Company	Depreciation
101.	2009	MO PSC	WR-2010	Missouri American Water Company	Depreciation
102.	2009	AK Reg Cm	U-09-097	Chugach Electric Association	Depreciation
103.	2010	IN URC	43969	Northern Indiana Public Service Company	Depreciation
104.	2010	WI PSC	6690-DU-104	Wisconsin Public Service Corp.	Depreciation
105.	2010	PA PUC	R-2010-2161694	PPL Electric Utilities Corp.	Depreciation
106.	2010	KY PSC	2010-00036	Kentucky American Water Company	Depreciation
107.	2010	PA PUC	R-2009-2149262	Columbia Gas of Pennsylvania	Depreciation
108.	2010	MO PSC	GR-2010-0171	Laclede Gas Company	Depreciation
109.	2010	SC PSC	2009-489-E	South Carolina Electric & Gas Company	Depreciation
110.	2010	NJ BD OF PU	ER09080664	Atlantic City Electric	Depreciation
111.	2010	VA St. CC	PUE-2010-00001	Virginia American Water Company	Depreciation
112.	2010	PA PUC	R-2010-2157140	The York Water Company	Depreciation
113.	2010	MO PSC	ER-2010-0356	Greater Missouri Operations Company	Depreciation
114.	2010	MO PSC	ER-2010-0355	Kansas City Power and Light	Depreciation
115.	2010	PA PUC	R-2010-2167797	T.W. Phillips Gas and Oil Company	Depreciation
116.	2010	PSC SC	2009-489-E	SCANA – Electric	Depreciation
117.	2010	PA PUC	R-2010-22010702	Peoples Natural Gas, LLC	Depreciation
118.	2010	AK PSC	10-067-U	Oklahoma Gas and Electric Company	Depreciation
119.	2010	IN URC		Northern Indiana Public Serv. Company - NIFL	Depreciation
120.	2010	IN URC		Northern Indiana Public Serv. Co. - Kokomo	Depreciation
121.	2010	PA PUC	R-2010-2166212	Pennsylvania American Water Co. - WW	Depreciation
122.	2010	NC Util Cn.	W-218,SUB310	Aqua North Carolina, Inc.	Depreciation
123.	2011	OH PUC	11-4161-WS-AIR	Ohio American Water Company	Depreciation
124.	2011	MS PSC	EC-123-0082-00	Entergy Mississippi	Depreciation
125.	2011	CO PUC	11AL-387E	Black Hills Colorado	Depreciation
126.	2011	PA PUC	R-2010-2215623	Columbia Gas of Pennsylvania	Depreciation
127.	2011	PA PUC	R-2010-2179103	City of Lancaster – Bureau of Water	Depreciation
128.	2011	IN URC	43114 IGCC 4S	Duke Energy Indiana	Depreciation
129.	2011	FERC	IS11-146-000	Enbridge Pipelines (Southern Lights)	Depreciation
130.	2011	IL CC	11-0217	MidAmerican Energy Corporation	Depreciation
131.	2011	OK CC	201100087	Oklahoma Gas & Electric Company	Depreciation
132.	2011	PA PUC	2011-2232243	Pennsylvania American Water Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
133.	2011	FERC	RP11-____-000	Carolina Gas Transmission	Depreciation
134.	2012	WA UTC	UE-120436/UG-120437	Avista Corporation	Depreciation
135.	2012	AK Reg Cm	U-12-009	Chugach Electric Association	Depreciation
136.	2012	MA PUC	DPU 12-25	Columbia Gas of Massachusetts	Depreciation
137.	2012	TX PUC	40094	El Paso Electric Company	Depreciation
138.	2012	ID PUC	IPC-E-12	Idaho Power Company	Depreciation
139.	2012	PA PUC	R-2012-2290597	PPL Electric Utilities	Depreciation
140.	2012	PA PUC	R-2012-2311725	Borough of Hanover – Bureau of Water	Depreciation
141.	2012	KY PSC	2012-00222	Louisville Gas and Electric Company	Depreciation
142.	2012	KY PSC	2012-00221	Kentucky Utilities Company	Depreciation
143.	2012	PA PUC	R-2012-2285985	Peoples Natural Gas Company	Depreciation
144.	2012	DC PSC	Case 1087	Potomac Electric Power Company	Depreciation
145.	2012	OH PSC	12-1682-EL-AIR	Duke Energy Ohio (Electric)	Depreciation
146.	2012	OH PSC	12-1685-GA-AIR	Duke Energy Ohio (Gas)	Depreciation
147.	2012	PA PUC	R-2012-2310366	City of Lancaster – Sewer Fund	Depreciation
148.	2012	PA PUC	R-2012-2321748	Columbia Gas of Pennsylvania	Depreciation
149.	2012	FERC	ER-12-2681-000	ITC Holdings	Depreciation
150.	2012	MO PSC	ER-2012-0174	Kansas City Power and Light	Depreciation
151.	2012	MO PSC	ER-2012-0175	KCPL Greater Missouri Operations Company	Depreciation
152.	2012	MO PSC	GO-2012-0363	Laclede Gas Company	Depreciation
153.	2012	MN PUC	G007,001/D-12-533	Integrus – MN Energy Resource Group	Depreciation
154.	2012	TX PUC		Aqua Texas	Depreciation
155.	2012	PA PUC	2012-2336379	York Water Company	Depreciation
156.	2013	NJ BPU	ER12121071	PHI Service Company– Atlantic City Electric	Depreciation
157.	2013	KY PSC	2013-00167	Columbia Gas of Kentucky	Depreciation
158.	2013	VA St CC	2013-00020	Virginia Electric and Power Company	Depreciation
159.	2013	IA Util Bd	2013-0004	MidAmerican Energy Corporation	Depreciation
160.	2013	PA PUC	2013-2355276	Pennsylvania American Water Company	Depreciation
161.	2013	NY PSC	13-E-0030, 13-G-0031, 13-S-0032	Consolidated Edison of New York	Depreciation
162.	2013	PA PUC	2013-2355886	Peoples TWP LLC	Depreciation
163.	2013	TN Reg Auth	12-0504	Tennessee American Water	Depreciation
164.	2013	ME PUC	2013-168	Central Maine Power Company	Depreciation
165.	2013	DC PSC	Case 1103	PHI Service Company – PEPCO	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
166.	2013	WY PSC	2003-ER-13	Cheyenne Light, Fuel and Power Company	Depreciation
167.	2013	FERC	ER13-2428-0000	Kentucky Utilities	Depreciation
168.	2013	FERC	ER13- -0000	MidAmerican Energy Company	Depreciation
169.	2013	FERC	ER13-2410-0000	PPL Utilities	Depreciation
170.	2013	PA PUC	R-2013-2372129	Duquesne Light Company	Depreciation
171.	2013	NJ BPU	ER12111052	Jersey Central Power and Light Company	Depreciation
172.	2013	PA PUC	R-2013-2390244	Bethlehem, City of – Bureau of Water	Depreciation
173.	2013	OK CC	UM 1679	Oklahoma, Public Service Company of	Depreciation
174.	2013	IL CC	13-0500	Nicor Gas Company	Depreciation
175.	2013	WY PSC	20000-427-EA-13	PacifiCorp	Depreciation
176.	2013	UT PSC	13-035-02	PacifiCorp	Depreciation
177.	2013	OR PUC	UM 1647	PacifiCorp	Depreciation
178.	2013	PA PUC	2013-2350509	Dubois, City of	Depreciation
179.	2014	IL CC	14-0224	North Shore Gas Company	Depreciation
180.	2014	FERC	ER14- -0000	Duquesne Light Company	Depreciation
181.	2014	SD PUC	EL14-026	Black Hills Power Company	Depreciation
182.	2014	WY PSC	20002-91-ER-14	Black Hills Power Company	Depreciation
183.	2014	PA PUC	2014-2428304	Borough of Hanover – Municipal Water Works	Depreciation
184.	2014	PA PUC	2014-2406274	Columbia Gas of Pennsylvania	Depreciation
185.	2014	IL CC	14-0225	Peoples Gas Light and Coke Company	Depreciation
186.	2014	MO PSC	ER-2014-0258	Ameren Missouri	Depreciation
187.	2014	KS CC	14-BHCG-502-RTS	Black Hills Service Company	Depreciation
188.	2014	KS CC	14-BHCG-502-RTS	Black Hills Utility Holdings	Depreciation
189.	2014	KS CC	14-BHCG-502-RTS	Black Hills Kansas Gas	Depreciation
190.	2014	PA PUC	2014-2418872	Lancaster, City of – Bureau of Water	Depreciation
191.	2014	WV PSC	14-0701-E-D	First Energy – MonPower/PotomacEdison	Depreciation
192.	2014	VA St CC	PUC-2014-00045	Aqua Virginia	Depreciation
193.	2014	VA St CC	PUE-2013	Virginia American Water Company	Depreciation
194.	2014	OK CC	PUD201400229	Oklahoma Gas and Electric Company	Depreciation
195.	2014	OR PUC	UM1679	Portland General Electric	Depreciation
196.	2014	IN URC	Cause No. 44576	Indianapolis Power & Light	Depreciation
197.	2014	MA DPU	DPU. 14-150	NSTAR Gas	Depreciation
198.	2014	CT PURA	14-05-06	Connecticut Light and Power	Depreciation
199.	2014	MO PSC	ER-2014-0370	Kansas City Power & Light	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
200.	2014	KY PSC	2014-00371	Kentucky Utilities Company	Depreciation
201.	2014	KY PSC	2014-00372	Louisville Gas and Electric Company	Depreciation
202.	2015	PA PUC	R-2015-2462723	United Water Pennsylvania Inc.	Depreciation
203.	2015	PA PUC	R-2015-2468056	NiSource - Columbia Gas of Pennsylvania	Depreciation
204.	2015	NY PSC	15-E-0283/15-G-0284	New York State Electric and Gas Corporation	Depreciation
205.	2015	NY PSC	15-E-0285/15-G-0286	Rochester Gas and Electric Corporation	Depreciation
206.	2015	MO PSC	WR-2015-0301/SR-2015-0302	Missouri American Water Company	Depreciation
207.	2015	OK CC	PUD 201500208	Oklahoma, Public Service Company of	Depreciation
208.	2015	WV PSC	15-0676-W-42T	West Virginia American Water Company	Depreciation
209.	2015	PA PUC	2015-2469275	PPL Electric Utilities	Depreciation
210.	2015	IN URC	Cause No. 44688	Northern Indiana Public Service Company	Depreciation
211.	2015	OH PSC	14-1929-EL-RDR	First Energy-Ohio Edison/Cleveland Electric/ Toledo Edison	Depreciation
212.	2015	NM PRC	15-00127-UT	El Paso Electric	Depreciation
213.	2015	TX PUC	PUC-44941; SOAH 473-15-5257	El Paso Electric	Depreciation
214.	2015	WI PSC	3270-DU-104	Madison Gas and Electric Company	Depreciation
215.	2015	OK CC	PUD 201500273	Oklahoma Gas and Electric	Depreciation
216.	2015	KY PSC	Doc. No. 2015-00418	Kentucky American Water Company	Depreciation
217.	2015	NC UC	Doc. No. G-5, Sub 565	Public Service Company of North Carolina	Depreciation
218.	2016	WA UTC	Docket UE-17	Puget Sound Energy	Depreciation
219.	2016	NY PSC	Case No. 16-W-0130	SUEZ Water New York, Inc.	Depreciation
220.	2016	MO PSC	ER-2016-0156	KCPL – Greater Missouri	Depreciation
221.	2016	WI PSC		Wisconsin Public Service Commission	Depreciation
222.	2016	KY PSC	Case No. 2016-00026	Kentucky Utilities Company	Depreciation
223.	2016	KY PSC	Case No. 2016-00027	Louisville Gas and Electric Company	Depreciation
224.	2016	OH PUC	Case No. 16-0907-WW-AIR	Aqua Ohio	Depreciation
225.	2016	MD PSC	Case 9417	NiSource - Columbia Gas of Maryland	Depreciation
226.	2016	KY PSC	2016-00162	Columbia Gas of Kentucky	Depreciation
227.	2016	DE PSC	16-0649	Delmarva Power and Light Company – Electric	Depreciation
228.	2016	DE PSC	16-0650	Delmarva Power and Light Company – Gas	Depreciation
229.	2016	NY PSC	Case 16-G-0257	National Fuel Gas Distribution Corp – NY Div	Depreciation
230.	2016	PA PUC	R-2016-2537349	Metropolitan Edison Company	Depreciation
231.	2016	PA PUC	R-2016-2537352	Pennsylvania Electric Company	Depreciation
232.	2016	PA PUC	R-2016-2537355	Pennsylvania Power Company	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
233.	2016	PA PUC	R-2016-2537359	West Penn Power Company	Depreciation
234.	2016	PA PUC	R-2016-2529660	NiSource - Columbia Gas of PA	Depreciation
235.	2016	KY PSC	Case No. 2016-00063	Kentucky Utilities / Louisville Gas & Electric Co	Depreciation
236.	2016	MO PSC	ER-2016-0285	KCPL Missouri	Depreciation
237.	2016	AR PSC	16-052-U	Oklahoma Gas & Electric Co	Depreciation
238.	2016	PSCW	6680-DU-104	Wisconsin Power and Light	Depreciation
239.	2016	ID PUC	IPC-E-16-23	Idaho Power Company	Depreciation
240.	2016	OR PUC	UM1801	Idaho Power Company	Depreciation
241.	2016	ILL CC	16-	MidAmerican Energy Company	Depreciation
242.	2016	KY PSC	Case No. 2016-00370	Kentucky Utilities Company	Depreciation
243.	2016	KY PSC	Case No. 2016-00371	Louisville Gas and Electric Company	Depreciation
244.	2016	IN URC		Indianapolis Power & Light	Depreciation
245.	2016	AL RC	U-16-081	Chugach Electric Association	Depreciation
246.	2017	MA DPU	D.P.U. 17-05	NSTAR Electric Company and Western Massachusetts Electric Company	Depreciation
247.	2017	TX PUC	PUC-26831, SOAH 973-17-2686	El Paso Electric Company	Depreciation
248.	2017	WA UTC	UE-17033 and UG-170034	Puget Sound Energy	Depreciation
249.	2017	OH PUC	Case No. 17-0032-EL-AIR	Duke Energy Ohio	Depreciation
250.	2017	VA SCC	Case No. PUE-2016-00413	Virginia Natural Gas, Inc.	Depreciation
251.	2017	OK CC	Case No. PUD201700151	Public Service Company of Oklahoma	Depreciation
252.	2017	MD PSC	Case No. 9447	Columbia Gas of Maryland	Depreciation
253.	2017	NC UC	Docket No. E-2, Sub 1142	Duke Energy Progress	Depreciation
254.	2017	VA SCC	Case No. PUR-2017-00090	Dominion Virginia Electric and Power Company	Depreciation
255.	2017	FERC	ER17-1162	MidAmerican Energy Company	Depreciation
256.	2017	PA PUC	R-2017-2595853	Pennsylvania American Water Company	Depreciation
257.	2017	OR PUC	UM1809	Portland General Electric	Depreciation
258.	2017	FERC	ER17-217-000	Jersey Central Power & Light	Depreciation
259.	2017	FERC	ER17-211-000	Mid-Atlantic Interstate Transmission, LLC	Depreciation
260.	2017	MN PUC	Docket No. G007/D-17-442	Minnesota Energy Resources Corporation	Depreciation
261.	2017	IL CC	Docket No. 17-0124	Northern Illinois Gas Company	Depreciation
262.	2017	OR PUC	UM1808	Northwest Natural Gas Company	Depreciation
263.	2017	NY PSC	Case No. 17-W-0528	SUEZ Water Owego-Nichols	Depreciation
264.	2017	MO PSC	GR-2017-0215	Laclede Gas Company	Depreciation
265.	2017	MO PSC	GR-2017-0216	Missouri Gas Energy	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
266.	2017	ILL CC	Docket No. 17-0337	Illinois-American Water Company	Depreciation
267.	2017	FERC	Docket No. ER18-22-000	PPL Electric Utilities Corporation	Depreciation
268.	2017	IN URC	Cause No. 44988	Northern Indiana Public Service Company	Depreciation
269.	2017	NJ BPU	BPU Docket No. WR17090985	New Jersey American Water Company, Inc.	Depreciation
270.	2017	RI PUC	Docket No. 4800	SUEZ Water Rhode Island	Depreciation
271.	2017	OK CC	Cause No. PUD 201700496	Oklahoma Gas and Electric Company	Depreciation
272.	2017	NJ BPU	ER18010029 & GR18010030	Public Service Electric and Gas Company	Depreciation
273.	2017	NC Util Com.	Docket No. E-7, SUB 1146	Duke Energy Carolinas, LLC	Depreciation
274.	2017	KY PSC	Case No. 2017-00321	Duke Energy Kentucky, Inc.	Depreciation
275.	2017	MA DPU	D.P.U. 18-40	Berkshire Gas Company	Depreciation
276.	2018	IN IURC	Cause No. 44992	Indiana-American Water Company, Inc.	Depreciation
277.	2018	IN IURC	Cause No. 45029	Indianapolis Power and Light	Depreciation
278.	2018	NC Util Com.	Docket No. W-218, Sub 497	Aqua North Carolina, Inc.	Depreciation
279.	2018	PA PUC	Docket No. R-2018-2647577	NiSource - Columbia Gas of Pennsylvania, Inc.	Depreciation
280.	2018	OR PUC	Docket UM 1933	Avista Corporation	Depreciation
281.	2018	WA UTC	Docket No. UE-108167	Avista Corporation	Depreciation
282.	2018	ID PUC	AVU-E-18-03, AVU-G-18-02	Avista Corporation	Depreciation
283.	2018	IN URC	Cause No. 45039	Citizens Energy Group	Depreciation
284.	2018	FERC	Docket No. ER18-	Duke Energy Progress	Depreciation
285.	2018	PA PUC	Docket No. R-2018-3000124	Duquesne Light Company	Depreciation
286.	2018	MD PSC	Case No. 948	NiSource - Columbia Gas of Maryland	Depreciation
287.	2018	MA DPU	D.P.U. 18-45	NiSource - Columbia Gas of Massachusetts	Depreciation
288.	2018	OH PUC	Case No. 18-0299-GA-ALT	Vectren Energy Delivery of Ohio	Depreciation
289.	2018	PA PUC	Docket No. R-2018-3000834	SUEZ Water Pennsylvania Inc.	Depreciation
290.	2018	MD PSC	Case No. 9847	Maryland-American Water Company	Depreciation
291.	2018	PA PUC	Docket No. R-2018-3000019	The York Water Company	Depreciation
292.	2018	FERC	ER-18-2231-000	Duke Energy Carolinas, LLC	Depreciation
293.	2018	KY PSC	Case No. 2018-00261	Duke Energy Kentucky, Inc.	Depreciation
294.	2018	NJ BPU	BPU Docket No. WR18050593	SUEZ Water New Jersey	Depreciation
295.	2018	WA UTC	Docket No. UE-180778	PacifiCorp	Depreciation
296.	2018	UT PSC	Docket No. 18-035-36	PacifiCorp	Depreciation
297.	2018	OR PUC	Docket No. UM-1968	PacifiCorp	Depreciation
298.	2018	ID PUC	Case No. PAC-E-18-08	PacifiCorp	Depreciation
299.	2018	WY PSC	20000-539-EA-18	PacifiCorp	Depreciation
300.	2018	PA PUC	Docket No. R-2018-3003068	Aqua Pennsylvania, Inc.	Depreciation

LIST OF CASES IN WHICH JOHN J. SPANOS SUBMITTED TESTIMONY, cont.

	<u>Year</u>	<u>Jurisdiction</u>	<u>Docket No.</u>	<u>Client Utility</u>	<u>Subject</u>
301.	2018	IL CC	Docket No. 18-1467	Aqua Illinois, Inc.	Depreciation
302.	2018	KY PSC	Case No. 2018-00294	Louisville Gas & Electric Company	Depreciation
303.	2018	KY PSC	Case No. 2018-00295	Kentucky Utilities Company	Depreciation
304.	2018	IN URC	Cause No. 45159	Northern Indiana Public Service Company	Depreciation
305.	2018	VA SCC	Case No. PUR-2019-00175	Virginia American Water Company	Depreciation
306.	2019	PA PUC	Docket No. R-2018-3006818	Peoples Natural Gas Company, LLC	Depreciation
307.	2019	OK CC	Cause No. PUD201800140	Oklahoma Gas and Electric Company	Depreciation
308.	2019	MD PSC	Case No. 9490	FirstEnergy – Potomac Edison	Depreciation
309.	2019	SC PSC	Docket No. 2018-318-E	Duke Energy Progress	Depreciation
310.	2019	SC PSC	Docket No. 2018-319-E	Duke Energy Carolinas	Depreciation
311.	2019	DE PSC	DE 19-057	Public Service of New Hampshire	Depreciation
312.	2019	NY PSC	Case No. 19-W-0168 & 19-W-0269	SUEZ Water New York	Depreciation
313.	2019	PA PUC	Docket No. R-2019-3006904	Newtown Artesian Water Company	Depreciation
314.	2019	MO PSC	ER-2019-0335	Ameren Missouri	Depreciation
315.	2019	MO PSC	EC-2019-0200	KCP&L Greater Missouri Operations Company	Depreciation
316.	2019	MN DOC	G011/D-19-377	Minnesota Energy Resource Corp.	Depreciation
317.	2019	NY PSC	Case 19-E-0378 & 19-G-0379	New York State Electric and Gas Corporation	Depreciation
318.	2019	NY PSC	Case 19-E-0380 & 19-G-0381	Rochester Gas and Electric Corporation	Depreciation
319.	2019	WA UTC	Docket UE-19 / UG-19	Puget Sound Energy	Depreciation
320.	2019	PA PUC	Docket No. R-2019-	City of Lancaster	Depreciation
321.	2019	IURC	Cause No. 45253	Duke Energy Indiana	Depreciation
322.	2019	KY PSC	Case No. 2019-00271	Duke Energy Kentucky, Inc.	Depreciation
323.	2019	OH PUC	Case No. 18-1720-GA-AIR	Northeast Ohio Natural Gas Corp	Depreciation
324.	2019	NC Util. Com.	Docket No. E-2, Sub 1219	Duke Energy Carolinas	Depreciation
325.	2019	FERC	Docket No. ER20-277-000	Jersey Central Power & Light Company	Depreciation
326.	2019	MA DPU	D.P.U. 19-120	NSTAR Gas Company	Depreciation
327.	2019	SC PSC	Docket No. 2019-290-WS	Blue Granite Water Company	Depreciation
328.	2019	NC Util. Com.	Docket No. E-2, Sub 1219	Duke Energy Progress	Depreciation
329.	2019	MD PSC	Case no. 9609	NiSource Columbia Gas of Maryland, Inc.	Depreciation
330.	2020	NJ BPU	Docket No. ER20020146	Jersey Central Power & Light Company	Depreciation
331.	2020	PA PUC	Docket No. R-2020-3018835	NiSource - Columbia Gas of Pennsylvania, Inc.	Depreciation
332.	2020	PA PUC	Docket No. R-2020-3019369	Pennsylvania-American Water Company	Depreciation
333.	2020	PA PUC	Docket No. R-2020-3019371	Pennsylvania-American Water Company	Depreciation